

# HAVERHILL ELEMENTARY SCHOOL BID PACKAGE 6: CONSTRUCTION

## PORTAGE PUBLIC SCHOOLS Portage, Michigan CONSTRUCTION DOCUMENTS

### DESIGN TEAM

#### ARCHITECT/ENGINEER



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#### SITE ADDRESS

PORTAGE PUBLIC SCHOOLS  
HAVERHILL ELEMENTARY SCHOOL  
6633 HAVERHILL AVENUE  
PORTAGE, MICHIGAN 49024

### REFERENCED CODES

BUILDING: 2015 MICHIGAN BUILDING CODE AND 2012 NFPA 101 LIFE SAFETY CODE  
ENERGY: 2015 MICHIGAN ENERGY CODE  
PLUMBING: 2018 MICHIGAN PLUMBING CODE  
MECHANICAL: 2015 MICHIGAN MECHANICAL CODE  
FUEL GAS: (IFGC) 2015 INTERNATIONAL FUEL GAS CODE  
ELECTRICAL: 2017 NATIONAL ELECTRICAL CODE WITH MICHIGAN AMENDMENTS  
BARRIER-FREE: 2015 MICHIGAN BUILDING CODE AND 2009 ICC & C A117.1  
USE GROUP: E  
CONSTRUCTION TYPE: IIB  
AUTOMATIC SPRINKLERS: FULLY SPRINKLED

### PROJECT AREA

TOTAL FIRST FLOOR: 42,026 SQ. FT.  
TOTAL SECOND FLOOR: 26,115 SQ. FT.  
TOTAL FINISHED PROJECT: 68,141 SQ. FT.

### ALTERNATES

ALTERNATE No. 1: TENSILE FABRIC SHADE STRUCTURES  
ALTERNATE No. 2: NOT USED  
ALTERNATE No. 3: RADIANT HEAT IN FLOORS  
ALTERNATE No. 4: SLIDERS AT LEARNING COMMONS (128, 136, 142, 228, 236, 242)  
ALTERNATE No. 5: SLIDERS AT LEARNING COMMONS (134, 234)

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
COVER SHEET

DATE  
JUNE 30, 2023

SHEET NUMBER  
G 001  
21-237.20

DRAWING INDEX

GENERAL  
G 001 COVER SHEET  
G 002 TYPICAL SYMBOLS, GENERAL NOTES AND DRAWING INDEX  
G 003 INTERIOR PARTITION TYPES & DEVICE ALIGNMENT GUIDELINES  
G 100 CODE COMPLIANCE NOTES  
G 101 FIRST FLOOR CODE COMPLIANCE OVERALL PLAN  
G 102 SECOND FLOOR CODE COMPLIANCE OVERALL PLAN

TOPOGRAPHIC SURVEY  
TS 001 TOPOGRAPHIC SURVEY

CIVIL DEMOLITION  
CD 100 EX. CONDITIONS & SITE DEMO PLAN  
CD 101 SITE DEMOLITION PLAN - EAST  
CD 102 SITE DEMOLITION PLAN - WEST

CIVIL  
C 100 PROJECT NOTES  
C 101 PROJECT NOTES  
C 102 MAINTENANCE OF TRAFFIC PLAN  
C 200 SITE LAYOUT PLAN  
C 300 SITE GRADING PLAN  
C 301 SITE S.E.S.C. PLAN  
C 302 SITE SESC NOTES & SCHEDULE  
C 400 SANITARY PLAN & PROFILE  
C 401 WATER MAIN PLAN  
C 402 SITE UTILITY PLAN  
C 403 SITE WATER MAIN PROFILE  
C 404 SITE STORM PROFILES  
C 500 SANITARY DETAILS  
C 501 WATER MAIN DETAILS  
C 502 SITE DETAILS  
C 503 SITE DETAILS  
C 504 UTILITY DETAILS

LANDSCAPE  
L 001 OVERALL LANDSCAPE PLAN  
L 101 NORTH LANDSCAPE PLAN  
L 102 SOUTH LANDSCAPE PLAN  
L 103 WEST PLAYGROUND  
L 200 LANDSCAPE DETAILS  
L 300 IRRIGATION

STRUCTURAL  
S 001 GENERAL NOTES I  
S 002 GENERAL NOTES II  
S 003 SPECIAL INSPECTIONS AND STRUCTURAL TESTING  
S 004 SCHEDULES, LEGENDS, AND ABBREVIATIONS  
S 005 LAP SPLICE SCHEDULES  
S 006 LOADING DIAGRAMS  
S 007 LOADING DIAGRAMS - ROOF SNOW AND WIND  
S 100 FOUNDATION PLAN  
S 101 FIRST FLOOR SLAB ON GRADE PLAN  
S 102 SECOND FLOOR FRAMING PLAN  
S 103 ROOF FRAMING PLAN  
S 111 FIRST FLOOR CMU PLAN  
S 112 SECOND FLOOR CMU PLAN  
S 200 TYPICAL FOOTING DETAILS  
S 210 TYPICAL SLAB ON GRADE DETAILS  
S 211 TYPICAL SLAB ON GRADE DETAILS  
S 212 GATHERING STAIR PARTIAL PLAN, SECTIONS, AND SCHEDULE  
S 213 GATHERING STAIR SECTION  
S 500 TYPICAL STEEL COLUMN DETAILS  
S 501 STEEL COLUMN DETAILS  
S 510 TYPICAL STEEL BEAM DETAILS  
S 511 STEEL BEAM DETAILS  
S 520 TYPICAL STEEL BEAM SHEAR CONNECTIONS  
S 521 TYPICAL STEEL BEAM SHEAR CONNECTIONS  
S 522 TYPICAL STEEL BEAM SHEAR CONNECTIONS  
S 530 TYPICAL ROOF DECK DETAILS  
S 540 TYPICAL STEEL JOIST DETAILS  
S 541 STEEL JOIST DETAILS  
S 600 TYPICAL MASONRY WALL DETAILS  
S 601 TYPICAL MASONRY WALL DETAILS  
S 605 TYPICAL MASONRY SECTIONS  
S 606 EXTERIOR WALL SECTIONS  
S 607 EXTERIOR WALL SECTIONS  
S 608 INTERIOR WALL SECTIONS  
S 609 ELEVATOR SECTIONS

ARCHITECTURAL  
A 101 FIRST FLOOR PLAN  
A 101A FIRST FLOOR PLAN - UNIT A  
A 101B FIRST FLOOR PLAN - UNIT B  
A 101C FIRST FLOOR PLAN - UNIT C  
A 101D FIRST FLOOR PLAN - UNIT D  
A 102 SECOND FLOOR PLAN  
A 102A SECOND FLOOR PLAN - UNIT A  
A 102B SECOND FLOOR PLAN - UNIT B  
A 102C SECOND FLOOR PLAN - UNIT C  
A 102D SECOND FLOOR PLAN - UNIT D  
A 103 ROOF PLAN  
A 111 CANOPY AND DUMPSTER ENCLOSURE  
A 201 FIRST FLOOR REFLECTED CEILING PLAN  
A 201A FIRST FLOOR REFLECTED CEILING PLAN - UNIT A  
A 201B FIRST FLOOR REFLECTED CEILING PLAN - UNIT B  
A 201C FIRST FLOOR REFLECTED CEILING PLAN - UNIT C  
A 201D FIRST FLOOR REFLECTED CEILING PLAN - UNIT D  
A 202 SECOND FLOOR REFLECTED CEILING PLAN  
A 202A SECOND FLOOR REFLECTED CEILING PLAN - UNIT A  
A 202B SECOND FLOOR REFLECTED CEILING PLAN - UNIT B  
A 202C SECOND FLOOR REFLECTED CEILING PLAN - UNIT C  
A 202D SECOND FLOOR REFLECTED CEILING PLAN - UNIT D  
A 221 ENLARGED REFLECTED CEILING PLANS - LEARNING COMMONS  
A 222 ENLARGED REFLECTED CEILING PLANS - FLEX STUDIOS AND MUSIC ROOM  
A 301 EXTERIOR ELEVATIONS  
A 302 EXTERIOR ELEVATIONS - WEST  
A 303 EXTERIOR ELEVATIONS - SOUTH  
A 304 EXTERIOR ELEVATIONS - EAST  
A 305 EXTERIOR ELEVATIONS - NORTH  
A 306 ENLARGED EXTERIOR ELEVATIONS  
A 311 BUILDING SECTIONS  
A 312 BUILDING SECTIONS  
A 313 BUILDING SECTIONS

A 321 WALL SECTIONS  
A 322 WALL SECTIONS  
A 323 WALL SECTIONS  
A 401 ENLARGED PLANS, TYPICAL MOUNTING HEIGHTS, BARRIER-FREE MOUNTING HEIGHTS AND ACCESSORY MATRIX  
A 421 ENLARGED STAIR AND ELEVATOR PLANS AND SECTIONS  
A 422 ENLARGED STAIR PLANS AND SECTIONS  
A 423 ENLARGED GATHERING STAIR PLANS AND SECTIONS  
A 431 ENLARGED NEST PLANS, DETAILS AND ELEVATIONS  
A 432 ENLARGED NEST ELEVATIONS AND DETAILS  
A 511 FIRST FLOOR DOOR SCHEDULE  
A 512 SECOND FLOOR DOOR SCHEDULE  
A 521 DOOR TYPES AND FRAME ELEVATIONS  
A 522 FRAME ELEVATIONS  
A 523 HEAD AND JAMB DETAILS  
A 524 HEAD AND JAMB DETAILS  
A 801 SLIDING DOORS - ALT. No. 4 AND 5  
A 901 EXTERIOR 3D VIEWS

INTERIORS GENERAL  
IG 001 MATERIAL SELECTION SCHEDULE  
IG 002 VISUAL DISPLAY BOARD SCHEDULES & TYPICAL INTERIOR DETAILS  
IG 003 TYPICAL DETAILS - FLOOR TRANSITIONS, TILE TRIMS, WAINSCOT AND RESILIENT COVE

INTERIORS  
I 101A FIRST FLOOR FINISH PLAN - UNIT A  
I 101B FIRST FLOOR FINISH PLAN - UNIT B  
I 101C FIRST FLOOR FINISH PLAN - UNIT C  
I 101D FIRST FLOOR FINISH PLAN - UNIT D  
I 102A SECOND FLOOR FINISH PLAN - UNIT A  
I 102B SECOND FLOOR FINISH PLAN - UNIT B  
I 102C SECOND FLOOR FINISH PLAN - UNIT C  
I 102D SECOND FLOOR FINISH PLAN - UNIT D  
I 201 PATTERN PLAN - POLISHED CONCRETE  
I 202 PATTERN PLAN - GYMNASIUM FLOOR MARKING PLAN, DETAILS AND NOTES  
I 203 PATTERN PLAN - MUSIC CARPET TILE INSTALLATION  
I 204 PATTERN PLAN - FLEX STUDIOS  
I 205 PATTERN PLAN - LIBRARY CARPET TILE INSTALLATION  
I 206 PATTERN PLAN - COMMONS CARPET TILE INSTALLATION  
I 207 PATTERN PLAN - LIBRARY BULKHEAD PAINT INSTALLATION  
I 221 PATTERN ELEVATIONS  
I 222 PATTERN ELEVATIONS  
I 223 PATTERN ELEVATIONS  
I 224 PATTERN ELEVATIONS  
I 225 PATTERN ELEVATIONS  
I 226 PATTERN ELEVATIONS  
I 227 PATTERN ELEVATIONS  
I 228 PATTERN ELEVATIONS  
I 301 INTERIOR ELEVATIONS  
I 302 INTERIOR ELEVATIONS  
I 303 INTERIOR ELEVATIONS  
I 304 INTERIOR ELEVATIONS  
I 305 INTERIOR ELEVATIONS  
I 306 INTERIOR ELEVATIONS  
I 307 INTERIOR ELEVATIONS  
I 308 INTERIOR ELEVATIONS  
I 321 ENLARGED ELEVATIONS AND DETAILS - HEART  
I 322 ENLARGED ELEVATIONS AND DETAILS - HEART  
I 401 ENLARGED FINISH PLANS - TOILET ROOMS  
I 402 ENLARGED FINISH PLANS - TOILET ROOMS  
I 403 ENLARGED FINISH PLANS - TOILET ROOMS  
I 421 ENLARGED FINISH PLANS AND DETAILS - CUBBIES  
I 422 ENLARGED FINISH PLANS AND DETAILS - CUBBIES  
I 423 ENLARGED FINISH PLANS AND DETAILS - CUBBY BOOKCASES  
I 424 ENLARGED FINISH PLANS AND DETAILS - PASSAGEWAY BENCHES  
I 501 ENLARGED MILLWORK PLANS AND DETAILS - RECEPTION  
I 502 ENLARGED MILLWORK PLANS AND DETAILS - LIBRARY  
I 503 ENLARGED MILLWORK PLANS AND DETAILS - LIBRARY  
I 801 ALTERNATE 4 FINISH PLANS AND ELEVATIONS  
I 802 ALTERNATE 5 FINISH PLANS AND ELEVATIONS

FOOD SERVICE  
FSE-1 FOOD SERVICE EQUIPMENT FLOOR PLAN  
FSE-2 FOOD SERVICE ELECTRICAL FLOOR PLAN  
FSE-3 FOOD SERVICE PLUMBING FLOOR PLAN  
FSE-4 FOOD SERVICE REFRIGERATION FLOOR PLAN  
FSE-5 FOOD SERVICE VENTILATION FLOOR PLAN

MECHANICAL & PLUMBING GENERAL  
MP 001 MECHANICAL & PLUMBING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES

MECHANICAL SITE  
MS 101 MECHANICAL SITE PLAN

FIRE PROTECTION  
FP 101 FIRST FLOOR FIRE PROTECTION PLAN  
FP 102 SECOND FLOOR FIRE PROTECTION PLAN  
FP 501 FIRE PROTECTION DETAILS

PLUMBING  
P 000 FOUNDATION PLUMBING PLAN - OVERALL  
P 000A FOUNDATION PLUMBING PLAN - UNIT A  
P 000B FOUNDATION PLUMBING PLAN - UNIT B  
P 000C FOUNDATION PLUMBING PLAN - UNIT C  
P 000D FOUNDATION PLUMBING PLAN - UNIT D  
P 101 FIRST FLOOR PLUMBING PLAN - OVERALL  
P 101A FIRST FLOOR PLUMBING PLAN - UNIT A  
P 101B FIRST FLOOR PLUMBING PLAN - UNIT B  
P 101C FIRST FLOOR PLUMBING PLAN - UNIT C  
P 101D FIRST FLOOR PLUMBING PLAN - UNIT D  
P 102 SECOND FLOOR PLUMBING PLAN - OVERALL  
P 102A SECOND FLOOR PLUMBING PLAN - UNIT A  
P 102B SECOND FLOOR PLUMBING PLAN - UNIT B  
P 102C SECOND FLOOR PLUMBING PLAN - UNIT C  
P 102D SECOND FLOOR PLUMBING PLAN - UNIT D  
P 301 ENLARGED PLUMBING PLANS  
P 302 ENLARGED PLUMBING PLANS  
P 501 PLUMBING SCHEDULES AND DETAILS

MECHANICAL  
MZ 101 FIRST FLOOR AHU ZONE PLAN  
MZ 102 SECOND FLOOR AHU ZONE PLAN  
M 101 FIRST FLOOR SHEET METAL PLAN - OVERALL  
M 101A FIRST FLOOR SHEET METAL PLAN - UNIT A  
M 101B FIRST FLOOR SHEET METAL PLAN - UNIT B  
M 101C FIRST FLOOR SHEET METAL PLAN - UNIT C  
M 101D FIRST FLOOR SHEET METAL PLAN - UNIT D  
M 102 SECOND FLOOR SHEET METAL PLAN - OVERALL  
M 102A SECOND FLOOR SHEET METAL PLAN - UNIT A  
M 102B SECOND FLOOR SHEET METAL PLAN - UNIT B  
M 102C SECOND FLOOR SHEET METAL PLAN - UNIT C  
M 102D SECOND FLOOR SHEET METAL PLAN - UNIT D  
M 150 ROOF MECHANICAL PLAN - OVERALL  
M 150A ROOF MECHANICAL PLAN - UNIT A  
M 150B ROOF MECHANICAL PLAN - UNIT B  
M 150C ROOF MECHANICAL PLAN - UNIT C  
M 150D ROOF MECHANICAL PLAN - UNIT D  
M 201 FIRST FLOOR HVAC PIPING PLAN - OVERALL  
M 201A FIRST FLOOR HVAC PIPING PLAN - UNIT A  
M 201B FIRST FLOOR HVAC PIPING PLAN - UNIT B  
M 201C FIRST FLOOR HVAC PIPING PLAN - UNIT C  
M 201D FIRST FLOOR HVAC PIPING PLAN - UNIT D  
M 202 SECOND FLOOR HVAC PIPING PLAN - OVERALL  
M 202A SECOND FLOOR HVAC PIPING PLAN - UNIT A  
M 202B SECOND FLOOR HVAC PIPING PLAN - UNIT B  
M 202C SECOND FLOOR HVAC PIPING PLAN - UNIT C  
M 202D SECOND FLOOR HVAC PIPING PLAN - UNIT D  
M 301 ENLARGED MECHANICAL PLANS  
M 302 ENLARGED MECHANICAL PLANS  
M 303 ENLARGED MECHANICAL PLANS  
M 304 ENLARGED MECHANICAL PLANS  
M 310 MECHANICAL SECTIONS  
M 401 MECHANICAL SCHEMATICS  
M 501 MECHANICAL SCHEDULES  
M 502 MECHANICAL SCHEDULES  
M 503 MECHANICAL DETAILS  
M 504 MECHANICAL DETAILS  
M 505 MECHANICAL DETAILS  
M 601 TEMPERATURE CONTROLS  
M 602 TEMPERATURE CONTROLS  
M 603 TEMPERATURE CONTROLS  
M 604 TEMPERATURE CONTROLS  
M 801 ALTERNATE FIRST FLOOR HVAC PIPING PLAN  
M 802 ALTERNATE SECOND FLOOR HVAC PIPING PLAN  
M 803 ALTERNATE MECHANICAL SCHEDULES, DETAILS, AND CONTROLS

GENERAL ELECTRICAL DETAILS  
E 001 ELECTRICAL SYMBOLS AND GENERAL NOTES

ELECTRICAL SITE  
ES 101 ELECTRICAL SITE PLAN

ELECTRICAL  
E 101 FIRST FLOOR OVERALL POWER PLAN  
E 101A FIRST FLOOR POWER PLAN - UNIT A  
E 101B FIRST FLOOR POWER PLAN - UNIT B  
E 101C FIRST FLOOR POWER PLAN - UNIT C  
E 101D FIRST FLOOR POWER PLAN - UNIT D  
E 102 SECOND FLOOR OVERALL POWER PLAN  
E 102A SECOND FLOOR POWER PLAN - UNIT A  
E 102B SECOND FLOOR POWER PLAN - UNIT B  
E 102C SECOND FLOOR POWER PLAN - UNIT C  
E 102D SECOND FLOOR POWER PLAN - UNIT D  
E 150 ROOF POWER PLAN  
E 201A FIRST FLOOR LIGHTING PLAN - UNIT A  
E 201B FIRST FLOOR LIGHTING PLAN - UNIT B  
E 201C FIRST FLOOR LIGHTING PLAN - UNIT C  
E 201D FIRST FLOOR LIGHTING PLAN - UNIT D  
E 202A SECOND FLOOR LIGHTING PLAN - UNIT A  
E 202B SECOND FLOOR LIGHTING PLAN - UNIT B  
E 202C SECOND FLOOR LIGHTING PLAN - UNIT C  
E 202D SECOND FLOOR LIGHTING PLAN - UNIT D  
E 401 ELECTRICAL ONE LINE  
E 402 ELECTRICAL CONNECTION SCHEDULES  
E 410 POWER DETAILS  
E 420 LIGHTING SCHEDULE AND DETAILS  
E 501 ELECTRICAL PANEL LOAD SHEETS  
E 502 ELECTRICAL PANEL LOAD SHEETS  
E 503 ELECTRICAL PANEL LOAD SHEETS  
E 504 ELECTRICAL PANEL LOAD SHEETS  
E 801 SLIDING DOORS - ALT. No. 4 AND 5

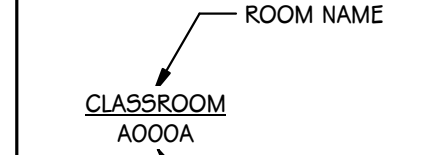
TECHNOLOGY GENERAL  
T 001 TECHNOLOGY SYMBOLS AND GENERAL NOTES

TECHNOLOGY SITE  
TS 101 TECHNOLOGY SITE PLAN

TECHNOLOGY  
T 101 FIRST FLOOR TECHNOLOGY PLAN  
T 101A FIRST FLOOR TECHNOLOGY PLAN - UNIT A  
T 101B FIRST FLOOR TECHNOLOGY PLAN - UNIT B  
T 101C FIRST FLOOR TECHNOLOGY PLAN - UNIT C  
T 101D FIRST FLOOR TECHNOLOGY PLAN - UNIT D  
T 102 SECOND FLOOR TECHNOLOGY PLAN  
T 102A SECOND FLOOR TECHNOLOGY PLAN - UNIT A  
T 102B SECOND FLOOR TECHNOLOGY PLAN - UNIT B  
T 102C SECOND FLOOR TECHNOLOGY PLAN - UNIT C  
T 102D SECOND FLOOR TECHNOLOGY PLAN - UNIT D  
T 401 TECHNOLOGY DETAILS  
T 402 M1 ROOM 165 DETAILS  
T 403 I2A ROOM 216 DETAILS  
T 404 TECHNOLOGY DETAILS  
T 405 CLOCK, BELL, PAGING DETAILS  
T 421 A/V DETAILS  
T 422 A/V DETAILS  
T 441 SECURITY DETAILS  
T 442 SECURITY DETAILS  
T 443 SECURITY DETAILS  
T 801 ALTERNATE PLANS

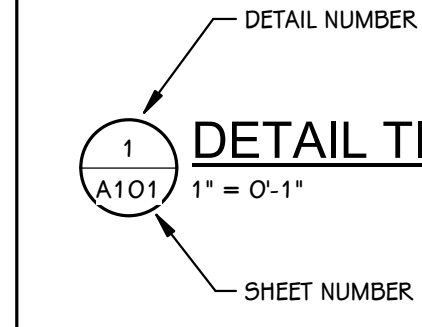
TYPICAL SYMBOLS & REFERENCES

ROOM IDENTIFICATION TAG

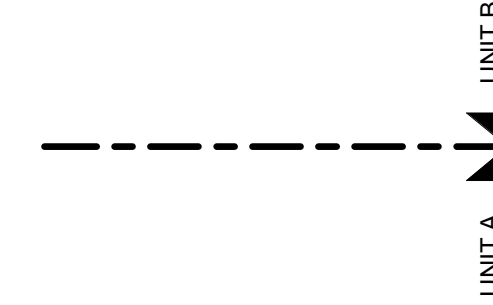


NOTE: ROOM NAMES AND NUMBERS ON PLANS ARE FOR CONSTRUCTION PURPOSES ONLY. COORDINATE WITH OWNER REGARDING PROPOSED NUMBERS FOR ALL SIGNAGE, SCHEDULE AND PANEL DESIGNATIONS.

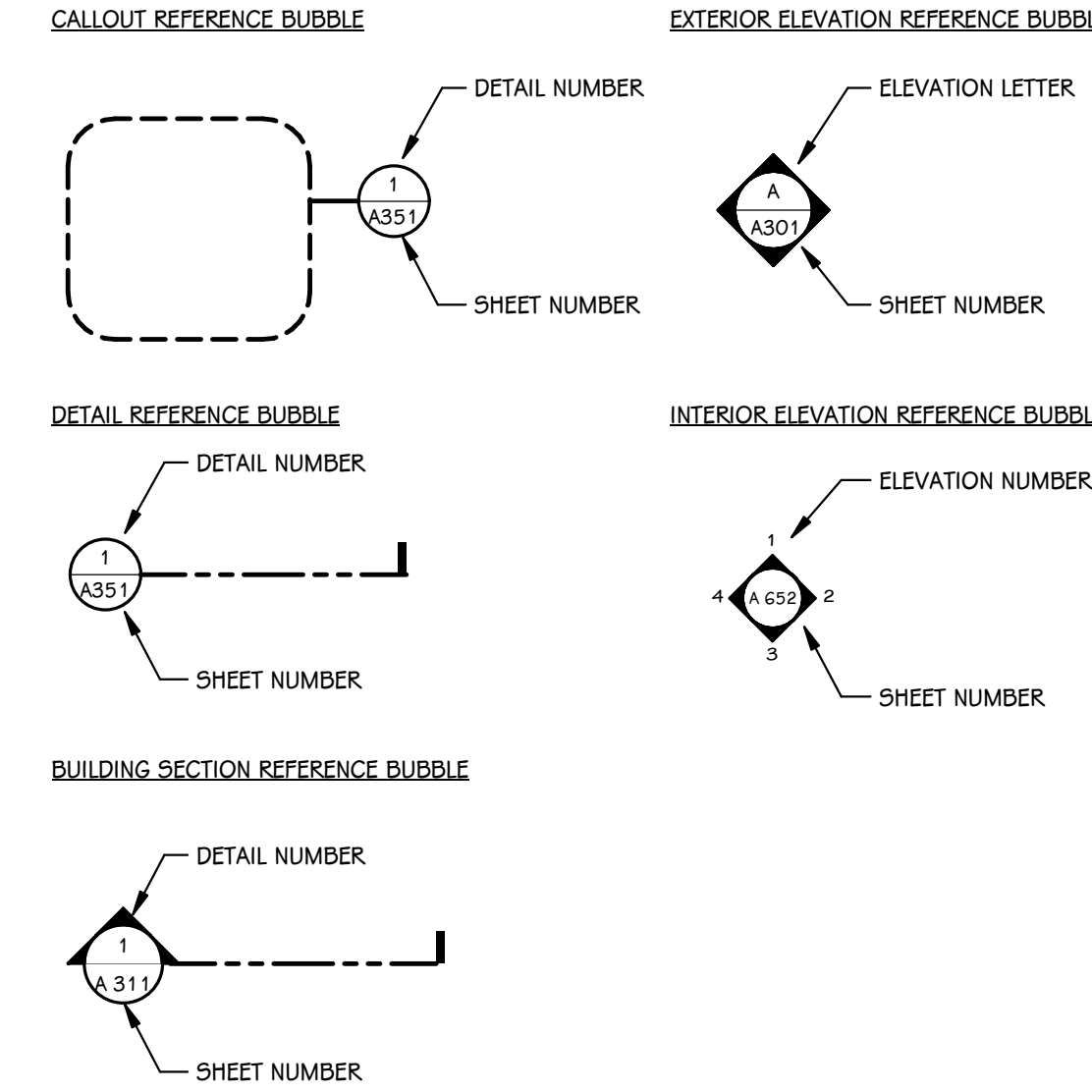
DETAIL TITLE



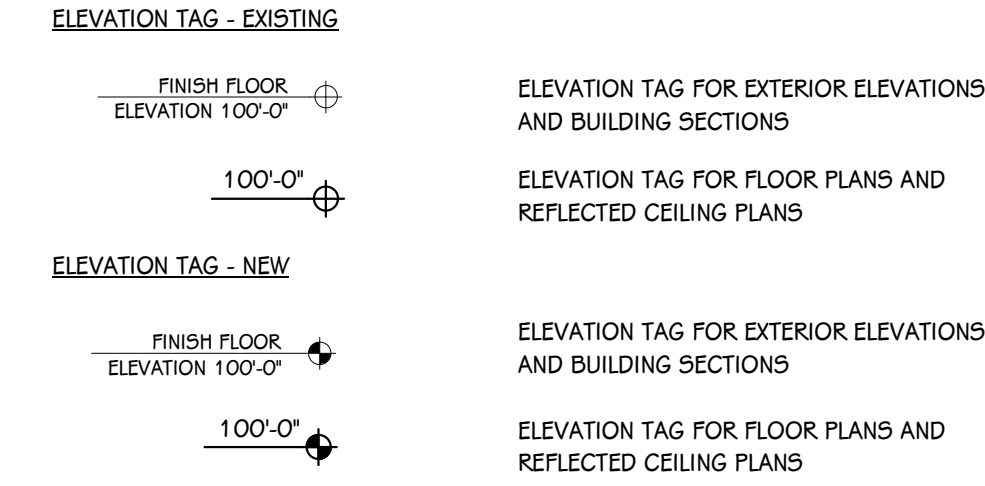
UNIT MATCHLINES



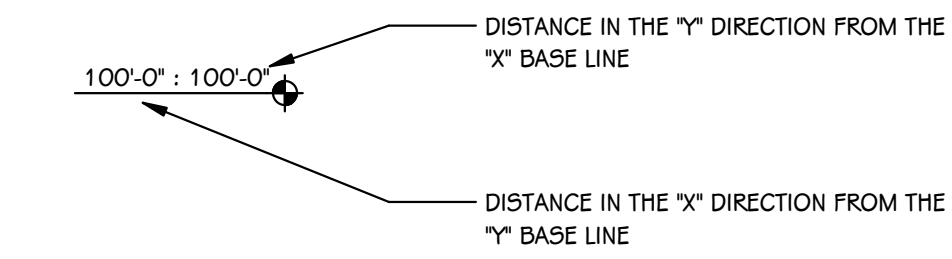
TYPICAL NOTATION SYMBOLS



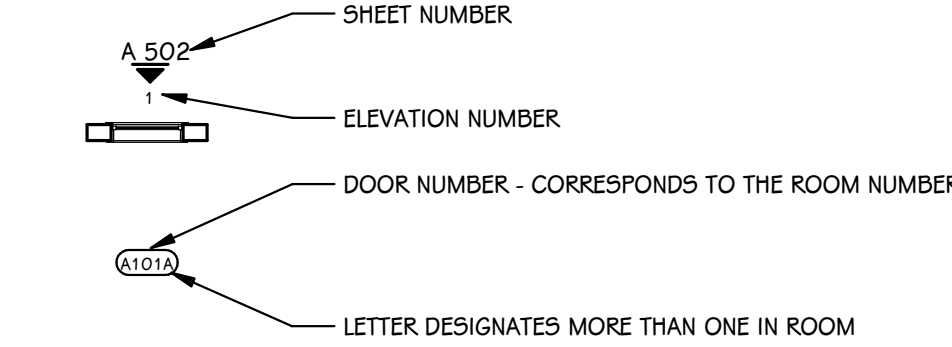
ELEVATION AND SECTION REFERENCE TOOLS



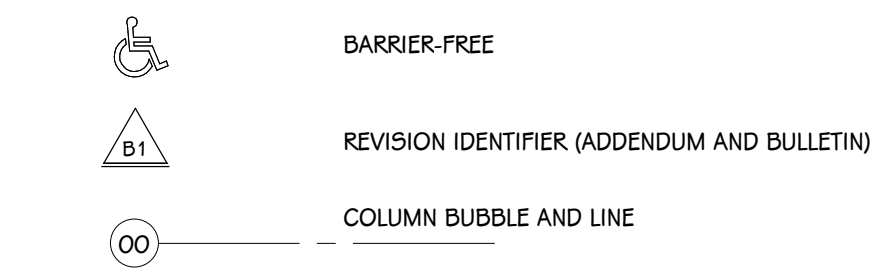
WORKING POINT LAYOUT TAG



BORROWED LIGHT AND DOOR IDENTIFICATION



SYMBOLS



GENERAL NOTES - ARCHITECTURAL

1. THE OWNER RESERVES THE RIGHT TO REMOVE ANY ITEM FROM THE PROJECT PRIOR TO COMMENCEMENT OF CONTRACTED DEMOLITION WORK.
2. ALL EXISTING CONDITIONS SHOULD BE FIELD VERIFIED BEFORE WORK BEGINS.
3. DIMENSIONS GIVEN ARE ACTUAL AND ARE TO THE FACE OF MASONRY UNITS OR TO THE FACE OF STUD FRAMING, UNLESS NOTED OTHERWISE.
4. DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. FOR CONDITIONS NOT SHOWN, USE DETAILS CLOSEST TO CONDITION IN QUESTION.
5. EXTEND ALL INTERIOR WALL PARTITIONS FROM FLOOR TO STRUCTUREDECK ABOVE UNLESS NOTED OR DETAILED OTHERWISE.
6. WITHIN BUILDING INTERIOR PROVIDE BULLNOSE BLOCK IN CMU WALL ASSEMBLIES AT ALL EXPOSED OUTSIDE CORNERS, INCLUDING WINDOW AND DOOR JAMBS, UNLESS NOTED OR DETAILED OTHERWISE. PROVIDE SQUARE OUTSIDE CORNERS AT ALL LOCATIONS FINISHED WITH WALL TILE. REFER TO FINISH PLANS (AG00 SHEETS) FOR LOCATIONS.
7. STUD WALLS SPANNING OVER 12'-0" IN HEIGHT SHALL BE A MINIMUM OF 20 GAGE.
8. STUD WALL SUPPORTING WALL CABINETS SHALL BE A MINIMUM OF 20 GAGE.
9. DOORS ARE TO BE 4" FROM CORNER OF ROOM, UNLESS NOTED OR DIMENSIONED OTHERWISE.
10. FIRESTOP ALL INTERCONNECTIONS BETWEEN VERTICAL AND HORIZONTAL SPACES AND CONCEALED WALL SPACES AT CEILING, FLOOR AND ROOF LEVELS.
11. FIRESEAL ALL PENETRATIONS, SUCH AS, PIPES, DUCTS, CONDUITS, ETC. THROUGH FIRE AND/OR SMOKE RATED ASSEMBLIES.
12. FOR CONTROL JOINT (C.J.) LOCATIONS REFER TO EXTERIOR ELEVATIONS AND/OR FLOOR PLANS.
13. PAINT ALL ELECTRICAL PANEL COVERS AND ACCESS PANELS TO MATCH ADJACENT FINISHES. USING OIL-BASED PAINT, NOT LATEX WALL PAINT.
14. PROVIDE WOOD BLOCKING IN WALLS THAT REQUIRE WALL MOUNTED EQUIPMENT OR ACCESSORIES. COORDINATE WITH EQUIPMENT OR ACCESSORY MANUFACTURER.
15. PROVIDE ALL ASSOCIATED CURBS FOR ROOF TOP EQUIPMENT AND MECHANICAL ROOF TOP UNITS. LARGE VOIDS BELOW THE AIR HANDLING UNITS SHALL BE FILLED WITH INSULATION AS SPECIFIED FOR NOISE CONTROL.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
TYPICAL SYMBOLS, GENERAL NOTES  
AND DRAWING INDEX

Portage, Michigan

SHEET NUMBER  
G 002  
DATE  
JUNE 30, 2023  
21-237-20

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
INTERIOR PARTITION TYPES & DEVICE  
ALIGNMENT GUIDELINES

DATE  
JUNE 30, 2023

SHEET NUMBER  
G 003  
21-237.20

**GENERAL PARTITION NOTES**

- NOT ALL WALL TYPES MAY BE USED ON PROJECT.
- REFER TO CODE COMPLIANCE PLANS FOR LOCATIONS OF SMOKE AND FIRE-RATED PARTITIONS.
- ALL PARTITIONS EXTEND TO BOTTOM OF STRUCTURE, UNLESS NOTED OTHERWISE.
- LINE OF STRUCTURE/DECK AS SHOWN AT THE HEAD CONDITION OF EACH PARTITION TYPE IS DIAGRAMMATIC ONLY AND DOES NOT INDICATE EXACT CONSTRUCTION CONDITIONS. TERMINATE RATED PARTITIONS AT UNDERSIDE OF STRUCTURAL DECK TO MAINTAIN RATING. PROVIDE APPROPRIATE FRAMING AND GYPSUM BOARD TO OFFSET AROUND STRUCTURE OR OTHER OBSTRUCTIONS, SUCH AS PIPING OR DUCTWORK.
- PARTITIONS MAY TERMINATE AT STRUCTURAL MEMBERS WITH A RATING GREATER THAN OR EQUAL THE PARTITION, PROVIDED THAT RATING IS CONTINUOUS TO STRUCTURAL DECK ABOVE.
- NON-RATED PARTITIONS THAT EXTEND TO STRUCTURE SHALL TERMINATE AT UNDERSIDE OF STRUCTURAL DECK TO MAINTAIN A CONTINUOUS PLANE OF GYPSUM BOARD AS A NOISE, SMOKE OR OTHER TYPE OF BARRIER.
- ALL PARTITIONS EXTENDING TO STRUCTURE ABOVE SHALL TERMINATE WITH DEFLECTION TRACK - SEE TYPICAL DETAILS ON THIS SHEET.
- ALL GYPSUM BOARD PARTITIONS NOT EXTENDING TO THE STRUCTURE MUST BE BRACED.
- UL DESIGN NUMBERS REFER TO THE FIRE RESISTANCE DIRECTORY; UNDERWRITERS LABORATORY, LATEST EDITION.
- MISCELLANEOUS NON-RATED CHASES TO BE 5/8" GYPSUM BOARD ON 3 5/8" METAL STUD FRAMING AT 16" O.C., UNLESS NOTED OTHERWISE.
- MISCELLANEOUS FURRING AROUND COLUMNS TO BE 5/8" GYPSUM BOARD ON 1 1/2" STUDS, UNLESS NOTED OTHERWISE.
- FIRE-RATED PARTITIONS TO HAVE FIRE-STOPPING SEALANTS AT HEAD, SILL, JUNCTURE WITH DISSIMILAR MATERIALS, ETC. AND AROUND ALL PENETRATIONS AND OPENINGS.
- CONSTRUCT ALL PARTITIONS WITH SOUND ATTENUATION BATTS WITH THE FOLLOWING SOUND BATT THICKNESS: 2 1/2" OR LESS METAL STUD - 1 1/2" THICKNESS, 3 5/8" OR LARGER METAL STUD - 3" THICKNESS. UNLESS NOTED OTHERWISE.

**METAL STUD/FURRING, CH STUD AND WOOD STUD KEY**

METAL STUD/FURRING	
DESIGNATION	SIZE
A	GYPSUM BOARD DIRECT APPLIED TO CMU
B	7/8"
C	1 1/2"
D	5/8"
E	2 1/2"
F	3 1/2"
G	3 5/8"
H	4"
J	5 1/2"
K	6"
L	8"
M	10"
N	12"
P	(OPEN)
Q	(OPEN)

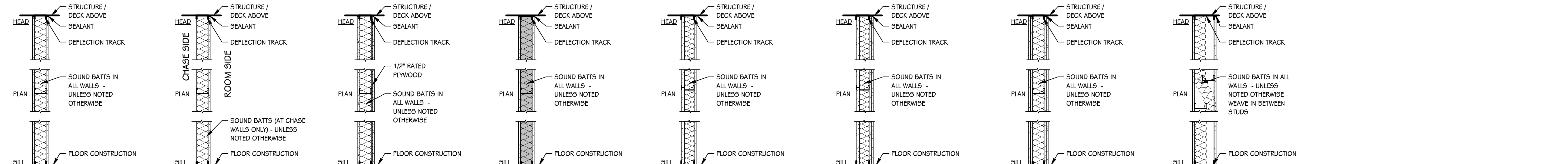
CH STUD	
DESIGNATION	SIZE
R	2 1/2"
S	4"
T	6"

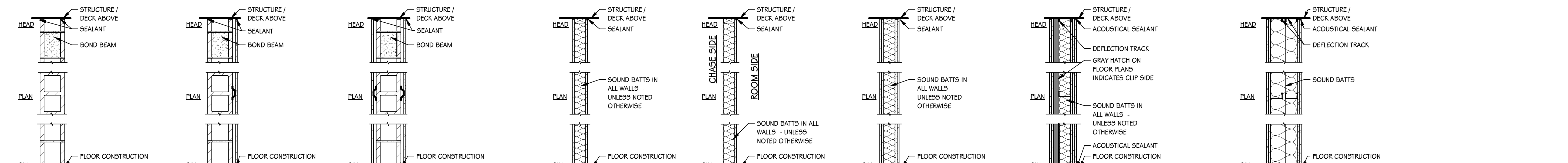
WOOD STUD	
DESIGNATION	SIZE
U	2x4"
V	2x6"
W	2x8"

PARTITION TYPE TAG (REFER TO FLOOR PLANS)



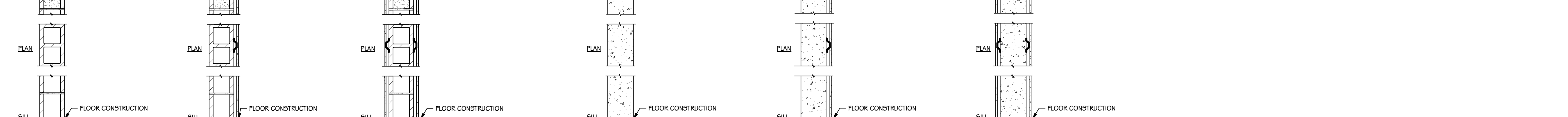
11 METAL STUDS AT 16" O.C. WITH 5/8" GYPSUM BOARD BOTH SIDES (1 HOUR FIRE) U.L. ASSEMBLY U465 WHERE NOTED ON PLANS  
 12 METAL STUDS AT 16" O.C. WITH 5/8" GYPSUM BOARD ON ROOM SIDE - BRACE WALL AT 4'-0" O.C. MAXIMUM.  
 13 METAL STUDS AT 16" O.C. WITH 1/2" RATED PLYWOOD ONE SIDE AND 5/8" GYPSUM BOARD ON BOTH SIDES.  
 14 METAL CH STUDS AT 16" O.C. WITH 5/8" TYPE "X" GYPSUM BOARD BOTH SIDES TO DECK.  
 15 METAL CH STUDS AT 16" O.C. WITH 5/8" TYPE "X" GYPSUM BOARD ON ROOM SIDE AND 1" TYPE "X" GYPSUM BOARD PANEL ON CHASE SIDE.  
 16 METAL CH STUDS AT 16" O.C. WITH (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON ROOM SIDE AND 1" TYPE "X" GYPSUM BOARD PANEL ON CHASE SIDE.  
 17 6" TOP AND BOTTOM TRACK WITH 3 5/8" METAL STUD FRAMING AT 16" O.C. (OFFSET) WITH 5/8" GYPSUM BOARD BOTH SIDES



14 METAL STUD CHASE WALL OR FURRING  
 15 METAL STUD WALL WITH PLYWOOD BACKING  
 16 STRUCTURAL METAL STUD WALL  
 17 METAL STUD CHASE WALL (1 HOUR FIRE) U.L. ASSEMBLY U415  
 18 METAL STUD CHASE WALL (2 HOUR FIRE) U.L. ASSEMBLY U438  
 19 METAL STUD WALL (2 HOUR FIRE) U.L. ASSEMBLY U425  
 20 METAL STUD SOUND WALL

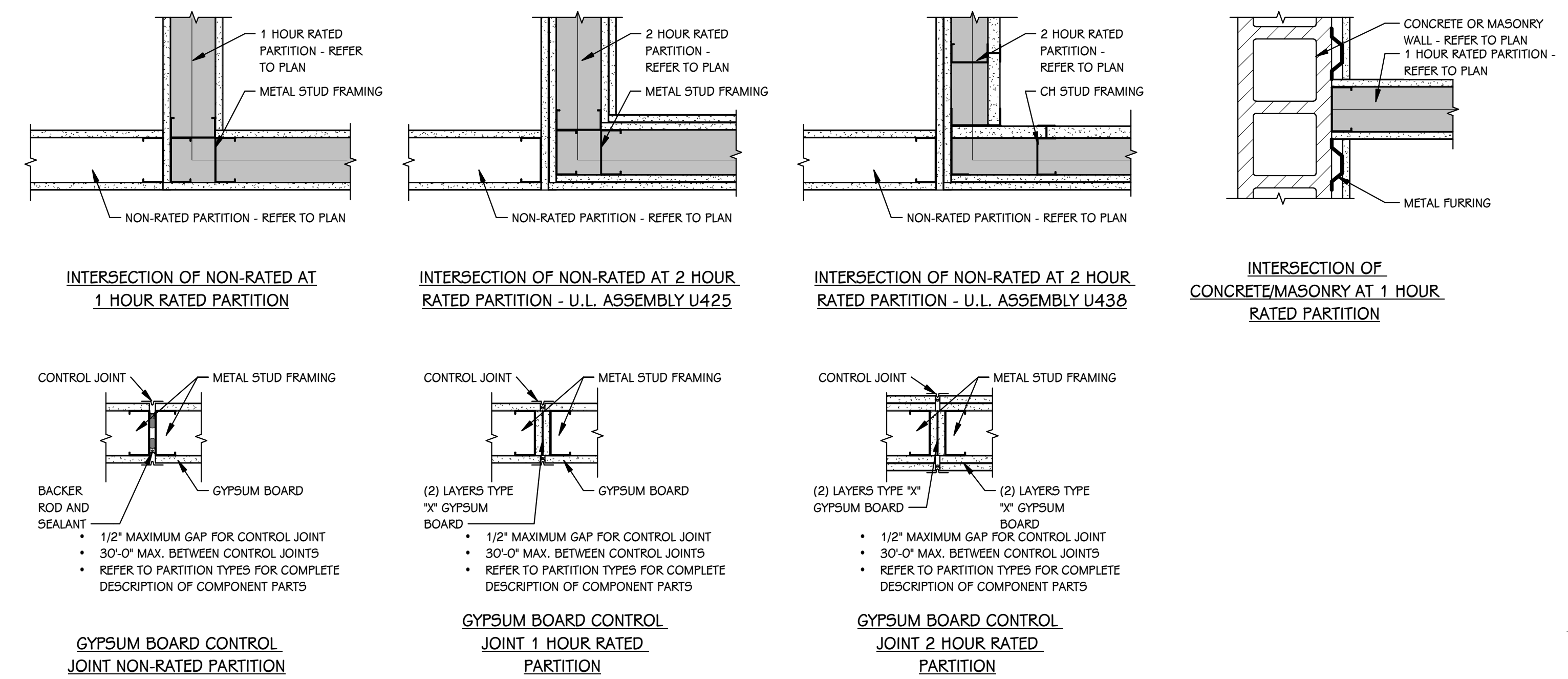
21 4" CONCRETE MASONRY UNITS  
 22 6" CONCRETE MASONRY UNITS  
 23 8" CONCRETE MASONRY UNITS  
 24 10" CONCRETE MASONRY UNITS  
 25 12" CONCRETE MASONRY UNITS  
 26 4" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 27 6" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 28 8" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 29 10" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 30 12" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 31 4" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 32 6" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 33 8" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 34 10" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 35 12" CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 36 WOOD STUDS AT 16" O.C. WITH 5/8" GYPSUM BOARD BOTH SIDES; (1 HOUR FIRE) U.L. ASSEMBLY U305 WHERE NOTED ON PLANS  
 37 WOOD STUDS AT 16" O.C. WITH 5/8" GYPSUM BOARD ON ROOM SIDE - BRACE WALL AT 4'-0" O.C. MAXIMUM.  
 38 WOOD STUDS AT 16" O.C. WITH (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD BOTH SIDES  
 39 METAL STUDS @ 16" O.C. WITH (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ATTACHED TO RSIC-1 RESILIENT CLIPS ONE SIDE, AND (3) LAYERS 5/8" TYPE "X" GYPSUM BOARD ATTACHED TO STUD OTHER SIDE, WITH 6" SOUND BATTS IN CAVITY

40 4" CMU WALL U.L. ASSEMBLY - U905 (1 HOUR AND 2 HOUR)  
 41 CMU WALL WITH FURRING  
 42 CMU WALL WITH FURRING BOTH SIDES  
 43 WOOD STUD WALL  
 44 WOOD STUD CHASE WALL  
 45 WOOD STUD WALL (2 HOUR FIRE) U.L. ASSEMBLY U301  
 46 METAL STUD SOUND WALL (STC 60+)  
 47 METAL STUD SOUND WALL (STC 60+)

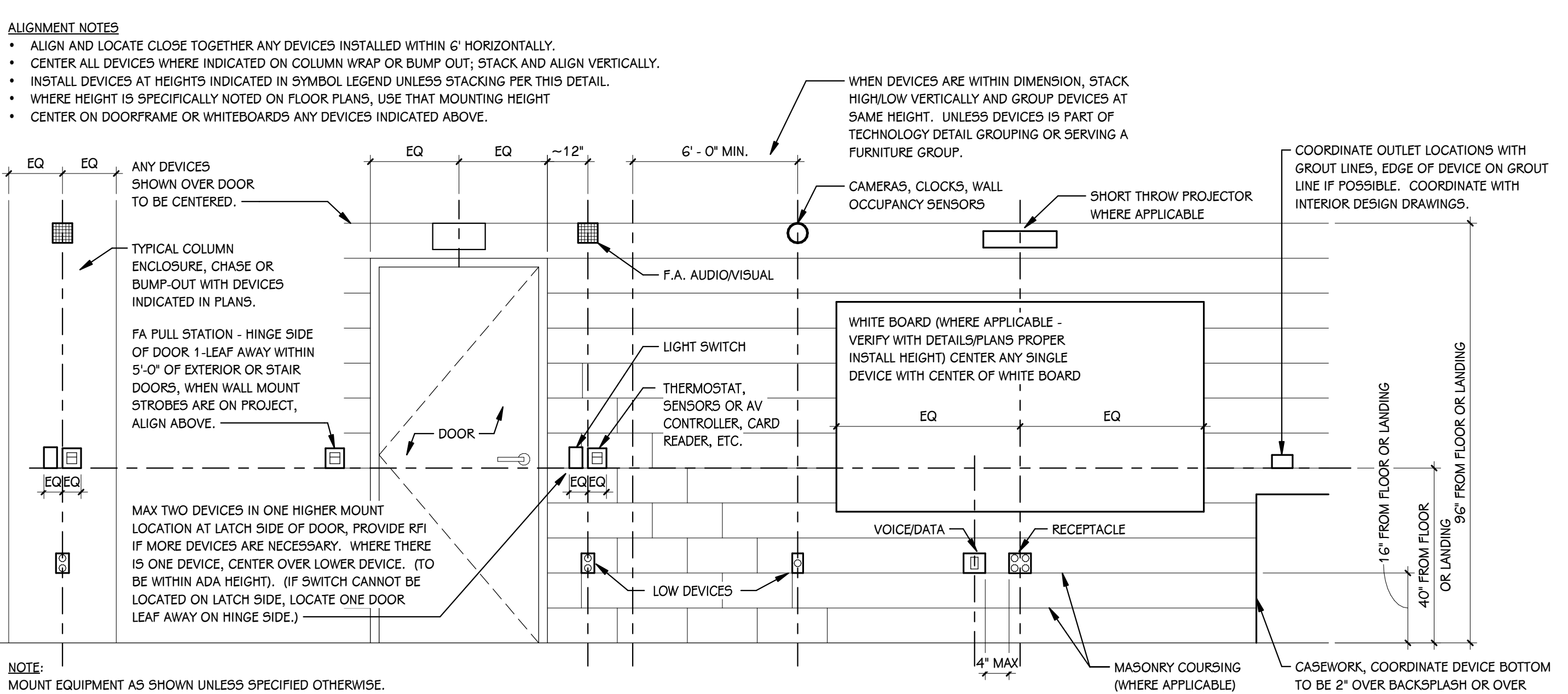


48 4" DECORATIVE CONCRETE MASONRY UNITS  
 49 6" DECORATIVE CONCRETE MASONRY UNITS  
 50 8" DECORATIVE CONCRETE MASONRY UNITS  
 51 10" DECORATIVE CONCRETE MASONRY UNITS  
 52 12" DECORATIVE CONCRETE MASONRY UNITS  
 53 4" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 54 6" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 55 8" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 56 10" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 57 12" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 58 4" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 59 6" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 60 8" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 61 10" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 62 12" DECORATIVE CONCRETE MASONRY UNITS WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES  
 63 CAST-IN-PLACE CONCRETE, REFER TO STRUCTURAL FOR SIZE  
 64 CAST-IN-PLACE CONCRETE, REFER TO STRUCTURAL FOR SIZE, WITH METAL FURRING AND 5/8" GYPSUM BOARD  
 65 CAST-IN-PLACE CONCRETE, REFER TO STRUCTURAL FOR SIZE, WITH METAL FURRING AND 5/8" GYPSUM BOARD - BOTH SIDES

66 4" DCMU WALL U.L. ASSEMBLY - U905 (1 HOUR AND 2 HOUR)  
 67 DCMU WALL WITH FURRING  
 68 DCMU WALL WITH FURRING BOTH SIDES  
 69 CAST-IN-PLACE CONCRETE WALL  
 70 CAST-IN-PLACE CONCRETE WALL WITH FURRING  
 71 CAST-IN-PLACE CONCRETE WALL WITH FURRING BOTH SIDES



INTERSECTION OF NON-RATED AT 1 HOUR RATED PARTITION  
 INTERSECTION OF NON-RATED AT 2 HOUR RATED PARTITION - U.L. ASSEMBLY U425  
 INTERSECTION OF NON-RATED AT 2 HOUR RATED PARTITION - U.L. ASSEMBLY U438  
 INTERSECTION OF CONCRETE/MASONRY AT 1 HOUR RATED PARTITION  
 GYPSUM BOARD CONTROL JOINT NON-RATED PARTITION  
 GYPSUM BOARD CONTROL JOINT 1 HOUR RATED PARTITION  
 GYPSUM BOARD CONTROL JOINT 2 HOUR RATED PARTITION



NOTE: MOUNT EQUIPMENT AS SHOWN UNLESS SPECIFIED OTHERWISE.  
**DEVICE ALIGNMENT GUIDELINES**  
 NOT TO SCALE

**NFPA 101 – 2012 Life Safety Code**

Section 6.1.3: Occupancy classification for all Classrooms, Library, Art Room, Music, Gymnasium, and Cafeteria to be Educational.

Section 6.1.1.11: Occupancy classification for all Offices, Instructional Support, and Staff Work rooms to be Business.

Section 6.1.1.13: Occupancy classification for all Receiving and Storage Rooms to be Storage.

Section 6.1.1.4.2.2: The building shall be considered as Mixed Occupancy.

Section 6.1.1.4.3.2: The building shall comply with the most restrictive requirements of the occupancies involved.

Section 7.1.3.2.1.(1): Where an exit connects three or fewer stories, the exit separation shall have a minimum 1 hour fire resistance rating.

Section 7.1.3.2.1.(10): Penetrations into, and openings through, an exit enclosure shall be limited to duct and piping penetrations serving the exit enclosure.

Section 7.2.1.4.1: Any door in a means of egress shall be of the side-hinged or pivot swinging type.

Section 7.2.2.5.2.1: Where nonrated walls enclose the exterior of a stairway, and the walls are exposed by other parts of the building at an angle of less than 180 degrees, the building enclosure walls within 10 ft horizontally of the non rated wall shall be constructed as required for stairway enclosures.

Table 7.3.1.2: Occupant Load Factors

Educational (Classrooms):	20 net
Business Areas:	100 gross
Gymnasium (Unconcentrated):	15 net
Cafeteria (Unconcentrated):	15 net
Kitchen (Commercial):	100 gross

Section 7.3.1.5: Where means of egress from a story above and a story below converge, the capacity of the means of egress from the point of convergence shall be not less than the sum of the required capacity of the two means of egress.

Table 7.3.3.1: Egress Capacity Factors

Stairways = 0.3 inches per occupant  
All Others = 0.2 inches per occupant

Section 7.4.1.1.1: The number of means of egress from any story or portion thereof shall be not less than two.

Section 7.4.1.1.(1): A single means of egress shall be permitted where permitted in Chapters 11 through 43.

Section 7.4.1.2.(1): The number of means of egress from any story or portion thereof with Occupant load more than 500 but not more than 1000 shall be not less than three.

Section 7.4.1.2.(2): The number of means of egress from any story or portion thereof with Occupant load more than 1000 shall be not less than four.

Section 7.5.1.3.3: In Buildings protected throughout by an automatic sprinkler system, the minimum separation distance between two exits shall be not less than one-third the length of the maximum overall diagonal dimension of the building.

Section 8.3.2.1.1: Fire resistance-rated glazing shall be tested in accordance with ASTM E 119.

Section 8.3.4.2: The fire protection rating for opening protectives in fire barriers shall be in accordance with Table 8.3.4.2.

Table 8.3.4.2: Vertical shaft walls, including stairways, with a one hour rating shall have opening protectives as follows:

Fire Door Assemblies: 1 hr with glazing marking of D-H-60 or D-H-W-60.  
Slide Light / Transom: 1 hr with glazing marking of D-H-W-60.

Section 8.3.3.5: Fire protection-rated glazing shall be permitted in fire barriers having a required fire resistance rating of 1 hour or less, and shall be of an approved type with the appropriate fire protection rating for the location in which the barriers are installed.

Section 8.6.2: Openings through floors shall be enclosed with fire barrier walls, shall be continuous from floor to floor, or floor to roof, and shall be protected as appropriate for the fire resistance rating of the barrier.

Section 14.1.3.2.1: Spaces subject to assembly shall comply with 12.1.3.2, which provides that where gymnasium egress leads through corridors also serving as egress for other parts of the building, the egress capacity shall be sufficient to allow simultaneous egress from gymnasium and classroom sections.

Section 14.1.6: Refer to Michigan Building Code for minimum height and area construction requirements.

Section 14.2.3.2: Exit access corridors in education occupancy shall have not less than 6 feet of clear width.

Section 14.2.5.2: In buildings protected throughout by an automatic sprinkler system, no dead-end corridor shall exceed 50 feet.

Section 14.2.6.3: In educational occupancies protected throughout by an automatic sprinkler system, the travel distance shall not exceed 250 feet.

Section 14.2.5.3.1: In buildings protected throughout by an automatic sprinkler system, the common path of travel shall not exceed 100 feet.

Section 14.3.5.1: Educational occupancy buildings exceeding 12,000 sf shall be protected throughout by an automatic sprinkler system.

Section 14.3.6.(2): In buildings protected throughout by an automatic sprinkler system, Corridor walls shall not be rated, provided that the walls form a smoke partition in accordance with section 6.4.

Section 14.3.6.(5): In buildings protected throughout by an automatic sprinkler system, Lavatory to Corridor walls shall not be rated, provided that the wall separating the lavatory from other rooms form a smoke partition in accordance with section 6.4.

Section 14.3.7.2.(2): In educational buildings protected throughout by an automatic sprinkler system, the requirements for smoke compartments shall not apply.

**Michigan Building Code – 2015 Edition**

Section 303.1.3: A room or space used for assembly purposes that is associated with a Group E occupancy is not considered a separate occupancy.

Section 304.1: Occupancy classification for all Offices, Instructional Support, and Staff Work rooms to be Business, Group B.

Section 305.1: Occupancy classification for all Classrooms, Library, Art Room, Music, Gymnasium, and Cafeteria to be Educational, Group E.

Section 311.2: Occupancy classification for all Receiving and Storage Rooms to be Moderate-hazard storage, Group S-1.

Section 404.2: The floor of the atrium shall not be used for other than low fire hazard uses and only approved materials and decorations in accordance with the International Fire Code shall be used in the atrium space.

Section 404.6: Atrium spaces shall be separated from adjacent by a 1-hour fire barrier constructed in accordance with Section 707 or a horizontal assembly constructed in accordance with Section 711.

Section 409.9.2: Exit access travel distance at the level of exit discharge. Where the path of egress travel is through an atrium space, exit access travel distance at the level of exit discharge shall be determined in accordance with Section 1017.

Section 409.9.3: Exit access travel distance at other than the level of exit discharge. Where the path of egress travel is not at the level of exit discharge from the atrium, that portion of the total permitted exit access travel distance that occurs within the atrium shall not be greater than 200 feet.

Section 404.10: A maximum of 50 percent of interior exit stairways are permitted to egress through an atrium on the level of exit discharge in accordance with Section 1028.

Section 504.2: In mixed occupancy buildings, no individual occupancy shall exceed the height and number of story limits specified in Tables 504.3 and 504.4.

Table 504.3: Allowable Height: Occupancy B, Type II-B-SM: 75 feet  
Occupancy E, Type II-B-SM: 75 feet  
Occupancy S-1, Type II-B-SM: 75 feet

Table 504.4: Allowable Stories: Occupancy B, Type II-B-SM: 4 stories  
Occupancy E, Type II-B-SM: 3 stories  
Occupancy S-1, Type II-B-SM: 3 stories

Table 506.2: Tabular Area Factor: Occupancy B, Type II-B-SM: 69,000 sf  
Occupancy E, Type II-B-SM: 43,500 sf  
Occupancy S-1, Type II-B-SM: 52,500 sf

Section 506.2.4: Allowable area for a mixed-occupancy, multistory building shall be based on the most restrictive allowances for the occupancy groups under consideration. (Section 508.3.2). Occupancy Type E is most restrictive – Use Equation 5-2 to calculate allowable area.

Equation 5-2: Allowable Area = [Tabular Area Factor + (Tabular Area Factor for Non-Sprinklered Building x Frontage Increase Factor) x Number of Stories.

- Calculated Allowable Area = 108,750 sf
- Actual Building Area = 68,141 sf

Individual stories may not exceed allowable area when value for number of stories is equal to 1.

- Maximum individual story = 54,375 sf
- Actual largest individual story = 42,026 sf

Section 506.3.3: Allowable Frontage Increase Factor shall be in accordance with Equation 5-5.

Equation 5-5: Frontage Increase Factor = [Building perimeter fronting a 20 ft open space / Entire Building perimeter - 0.25] x width of open space / 30

- Calculated Frontage Increase = 75%

Section 508.3: The building shall be considered as Nonseparated Occupancies.

Section 508.3.2: The allowable building area and height shall be based on the most restrictive allowances for the included Occupancy Groups.

Section 508.3.3: No separation is required between Nonseparated occupancies.

Section 509.2: Incidental Uses shall be included in the building occupancies which they are located.

Section 509.3: Incidental Uses shall not exceed 10% of the area of the story on which they are located.

Section 509.4.2: Incidental Uses shall be protected by automatic sprinkler system, and separated from remainder of building construction by smoke barriers.

Section 602.2: Table 601 - Construction Type II-B (Sprinkled - Multi Story) Construction in which building elements listed in Table 601 are of non-combustible material.

Section 707.1: Fire Barriers required elsewhere in this code shall comply with Section 707.

Section 707.5: Fire Barriers shall extend from the top of the foundation or floor assembly below to the underside of the floor or roof deck above and shall be securely attached thereto. Such Fire Barriers shall be continuous through concealed space, such as the space above a suspended ceiling.

Section 707.6: Openings in a Fire Barrier shall be protected in accordance with Section 716. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum areas of any single opening shall not exceed 156 square feet.

Section 707.7: Penetrations of Fire Barriers shall comply with Section 714.

Section 707.8: Joints made in or between Fire Barriers, and joints made at the intersection of fire barriers with underside of a fire-resistance-rated floor or roof shall comply with Section 715.

Section 707.10: Penetrations in a Fire Barrier by ducts and air transfer openings shall comply with Section 717.

Section 709.1: Vertical and Horizontal Smoke Barriers shall comply with Section 709.

Section 709.4: Smoke Barriers shall form an effective membrane continuous from top of foundation or floor assembly below to the underside of the floor or roof deck above, including continuity through concealed spaces, such as those found above suspended ceilings.

Section 709.5: Openings in Smoke Barriers shall be protected in accordance with Section 716.

Section 709.6: Penetrations of Smoke Barriers shall comply with Section 714.

Section 709.7: Joints in or between Smoke Barriers shall comply with Section 715.

Section 709.8: Penetrations in a Smoke Barrier by Ducts and Air Transfer Openings shall comply with Section 717.

Section 710.1: Smoke Partitions shall comply with Section 710.

Section 710.4: Smoke Partitions shall extend from the top of foundation or floor below to the underside of the floor or roof deck above.

Section 710.6: The space around penetrating items shall be filled with approved material to limit the free passage of smoke.

Section 710.7: Joints shall be filled with an approved material to limit the free passage of smoke.

Section 710.8: The space around a duct penetrating a smoke partition shall be filled with an approved material to limit the free passage of smoke. Air transfer openings in smoke partitions shall be provided with a smoke damper.

Section 713.2: Shaft enclosures shall be constructed as fire barriers in accordance with Sect 707.

Section 713.4: Shaft enclosures shall have a fire resistance rating of not less than 1 hour where connecting less than four stories. Section 714 - Fire Barrier Penetrations

Section 714: The provisions of this section shall govern the materials and methods of construction used to protect Penetrations of Fire Barriers and Smoke Barriers.

Section 715: The provisions of this section shall govern the materials and methods of construction used to protect Joints of Fire Barriers and Smoke Barriers.

Section 716: The provisions of this section shall govern the materials and methods of construction used to protect Openings in Fire Barriers and Smoke Barriers.

Section 717: The provisions of this section shall govern the protection of duct penetrations and air transfer openings in Fire Barriers and Smoke Barriers.

Table 1004.1.2: Occupant Load Factors

Educational (Classrooms):	20 net
Business Areas:	100 gross
Gymnasium (Unconcentrated):	15 net
Cafeteria (Unconcentrated):	15 net
Platform (Unconcentrated):	15 net
Kitchen (Commercial):	200 gross

**Michigan Building Code – 2015 Edition (Continued)**

Section 1004.6: Where a building contains multiple occupancies, the means of egress requirements shall apply to each portion of the building based on the occupancy of that space.

Where multiple occupancies utilize the same means of egress system, those egress components shall meet the more stringent requirements of all occupancies served.

Section 1005.3: Egress Capacity Factors

1005.3.1 Exception 1: Stairways = 0.2 inches per occupant  
1005.3.2 Exception 2: All Others = 0.15 inches per occupant

Section 1005.5: Means of Egress shall be configured such that the loss of any one exit shall not reduce the available capacity or width to less than 50% of the required capacity.

Section 1005.6: Where the means of egress from stories above and below converge, the capacity of the means of egress from the point of convergence shall be not less than the sum of the required capacities.

Section 1006.2.1: Two exits shall be provided from any space when the design occupant load or common path of travel exceeds Table 1006.2.1

Table 1006.2.1: Maximum Common Path of Travel shall not exceed 75 feet. (Occupancy Type E is most stringent)

Table 1006.3.1: Each story shall have access to the minimum number of exits as follows:

Provide 2 exits for occupant load between 1 to 500.  
Provide 3 exits for occupant load between 501 and 1000.  
Provide 4 exits for occupant load more than 1000.

Section 1007.1.1: Exception 2 - Where two exits or exit access doorways are required from any portion of the exit access and the building is protected with an automatic sprinkler system, the exits or exit access doorways shall be placed a distance apart equal to not less than one-third of the length of the maximum overall diagonal dimension.

Table 1017.2: Exit Access Travel Distance shall not exceed 250 feet. (Occupancy Type E is most stringent)

Section 1017.3: Exit Access Travel Distance shall be measured from the most remote point within a story along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit.

Section 1019.3: Exit access stairways shall be enclosed with a shaft enclosure in accordance with section 713.

Table 1020.1: A fire resistance rating is not required for corridors when the building is protected by an automatic sprinkler system.

Table 1020.2: Corridor width in Group E with occupant load of 100 or more shall be 72 inches.

Section 1020.4: Exception 2 - The length of dead end corridors shall not exceed 50 feet when the building is protected by an automatic sprinkler system.

**2018 MICHIGAN PLUMBING CODE**

Use Group: E

**OCCUPANTS**

Students: 450  
Staff: 50  
Total Occupants: 500 (250 male + 250 female)

FIXTURE TYPE	REQUIRED	PROVIDED
Water Closets	1 per 50 male = 5	2 men
	1 per 50 female = 5	4 women 30 unsex
Lavatories	1 per 50 male = 5	3 men
	1 per 50 female = 5	3 women 31 unsex
Drinking Fountains	1 per 100 occupants = 5	10 total
Service Sinks	1 total	3 total

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ISSUED FOR: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

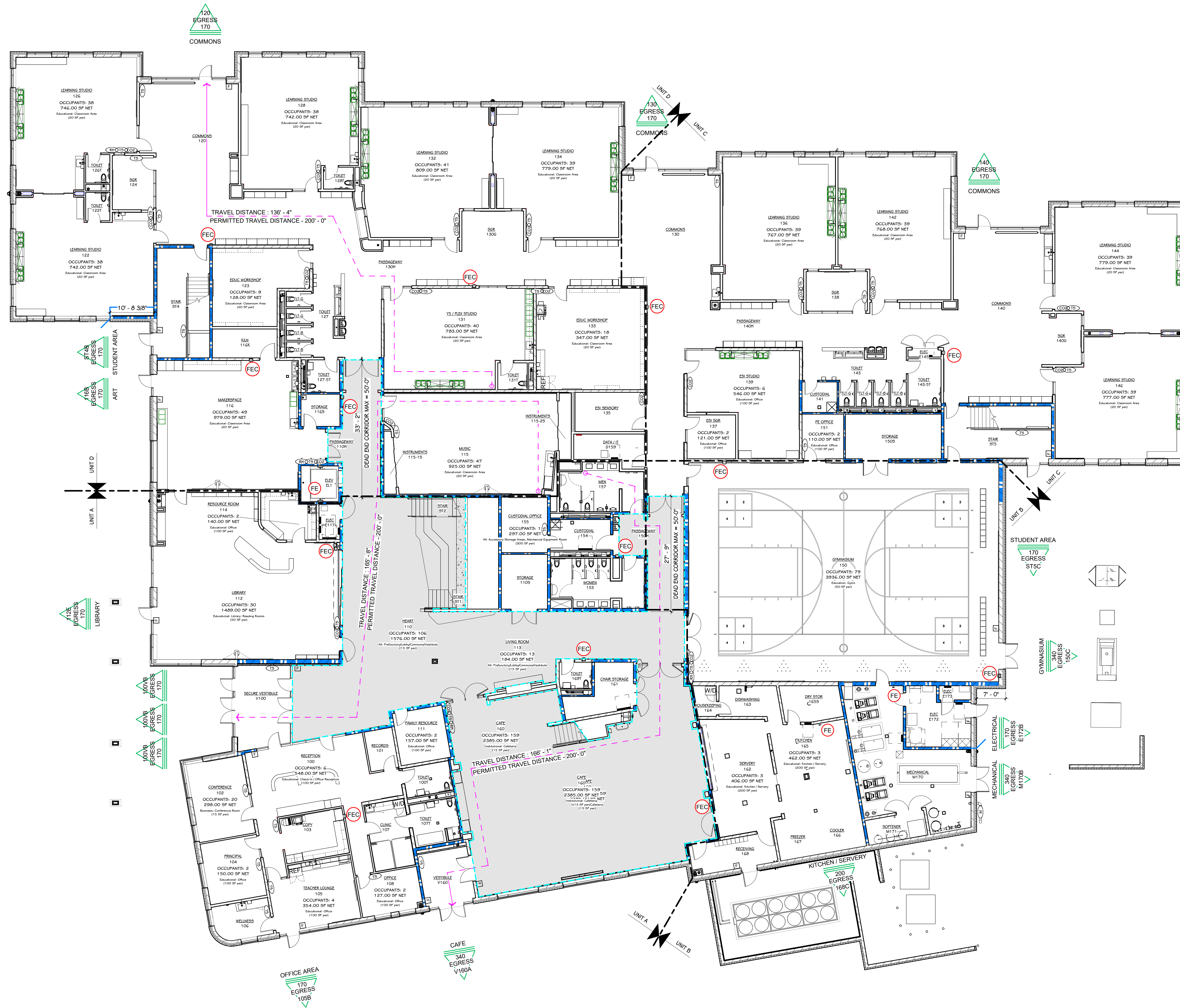
Portage, Michigan

SHEET TITLE  
CODE COMPLIANCE NOTES

SHEET NUMBER  
G 100

DATE  
JUNE 30, 2023

21-237.20



**FIRST FLOOR CODE COMPLIANCE OVERALL PLAN**  
3/32" = 1'-0"

**CODE COMPLIANCE KEY**

**EGRESS SYMBOLS**

- EGRESS EXIT NUMBER FROM ROOM OR SPACE
- MAXIMUM NUMBER OF OCCUPANTS PERMITTED BY EGRESS WIDTH
- ROOM OR SPACE EGRESS IS FROM
- EXISTING TRAVEL DISTANCE TO EGRESS DOOR
- DIRECTION OF EGRESS
- PERMITTED TRAVEL DISTANCE - 100'-0"
- PERMITTED TRAVEL DISTANCE - 200'-0"
- PERMITTED MAXIMUM TRAVEL DISTANCE PER CONDITION

**FIRE SAFETY SYMBOLS**

- EXISTING FIRE EXTINGUISHER
- EXISTING FIRE EXTINGUISHER CABINET
- FIRE EXTINGUISHER
- FIRE EXTINGUISHER CABINET
- AUTOMATED EXTERNAL DEFLIBRILLATOR (AED) RECESSED CABINET

**SMOKE EVACUATION AREAS**

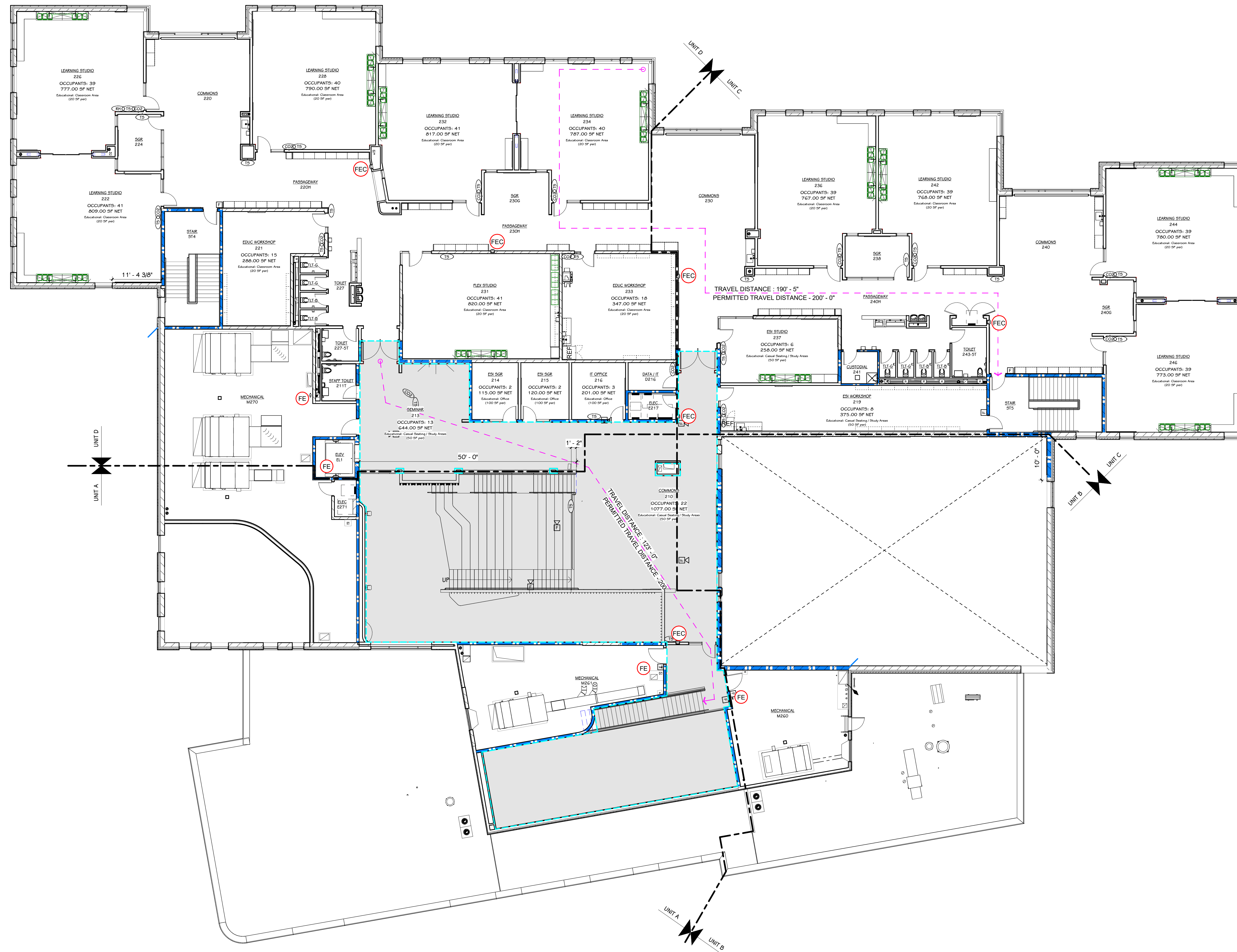
- ATRIUM

**FIRE-RATING KEY**

DESIGNATION	PARTITION RATING	PRIORITY
[Green Hatched Box]	3 HOUR	1
[Red Hatched Box]	2 HOUR FIRE/SMOKE	2
[Red Hatched Box]	2 HOUR	3
[Blue Hatched Box]	1 HOUR FIRE/SMOKE	4
[Blue Hatched Box]	1 HOUR	5
[White Box]	SMOKE RESISTANT	6

- ALL PENETRATIONS THROUGH A FIRE OR SMOKE RATED PARTITION SHOULD BE SEALED WITH AN APPROVED U.L. RATED PRODUCT.
- THE TOPS OF ALL FIRE RATED PARTITIONS SHALL BE SEALED TO THE CONTINUOUS STRUCTURE ABOVE WITH A U.L. RATED SYSTEM OR ASSEMBLY.
- WOOD BLOCKING IN FIRE-RATED PARTITIONS SHALL BE NON-COMBUSTIBLE TREATED WOOD.
- REFER TO SPECIFICATION U.L. RATING INFORMATION.
- FIRE RATED WALLS ENDING INTO AN ACOUSTICAL DECK MUST HAVE THE FLUTES FILLED, REFER TO TOP OF WALL DETAIL AT ACOUSTIC DECK SHOWN ON THIS SHEET.
- FOR MASONRY WALLS THE MASON SHALL FILL VOIDS AND FIRE SPRAY WITH UL LISTED MATERIAL.
- FOR STUD WALLS USE FIRE SAFING AND FIRE CAULK.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING



SECOND FLOOR CODE COMPLIANCE OVERALL PLAN  
3/32" = 1'-0"

**CODE COMPLIANCE KEY**

**EGRESS SYMBOLS**

- EGRESS EXIT NUMBER FROM ROOM OR SPACE
- MAXIMUM NUMBER OF OCCUPANTS PERMITTED BY EGRESS WIDTH
- ROOM OR SPACE EGRESS IS FROM
- EXISTING TRAVEL DISTANCE TO EGRESS DOOR
- DIRECTION OF EGRESS
- PERMITTED TRAVEL DISTANCE - 100'-0"
- PERMITTED TRAVEL DISTANCE - 200'-0"
- PERMITTED MAXIMUM TRAVEL DISTANCE PER CONDITION

**FIRE SAFETY SYMBOLS**

- EXISTING FIRE EXTINGUISHER
- EXISTING FIRE EXTINGUISHER CABINET
- FIRE EXTINGUISHER
- FIRE EXTINGUISHER CABINET
- AUTOMATED EXTERNAL DEFLIBRILLATOR (AED) RECESSED CABINET

**SMOKE EVACUATION AREAS**

- ATRIUM

**FIRE-RATING KEY**

DESIGNATION	PARTITION RATING	PRIORITY
[Green Hatched Box]	3 HOUR	1
[Red Hatched Box]	2 HOUR FIRE/SMOKE	2
[Red Hatched Box]	2 HOUR	3
[Blue Hatched Box]	1 HOUR FIRE/SMOKE	4
[Blue Hatched Box]	1 HOUR	5
[White Box]	SMOKE RESISTANT	6

- ALL PENETRATIONS THROUGH A FIRE OR SMOKE RATED PARTITION SHOULD BE SEALED WITH AN APPROVED U.L. RATED PRODUCT.
- THE TOPS OF ALL FIRE RATED PARTITIONS SHALL BE SEALED TO THE CONTINUOUS STRUCTURE ABOVE WITH A U.L. RATED SYSTEM OR ASSEMBLY.
- WOOD BLOCKING IN FIRE-RATED PARTITIONS SHALL BE NON-COMBUSTIBLE TREATED WOOD.
- REFER TO SPECIFICATION U.L. RATING INFORMATION.
- FIRE-RATED WALLS ENDING INTO AN ACOUSTICAL DECK MUST HAVE THE FLUTES FILLED, REFER TO TOP OF WALL DETAIL AT ACOUSTIC DECK SHOWN ON THIS SHEET.
- FOR MASONRY WALLS THE MASON SHALL FILL VOIDS AND FIRE SPRAY WITH UL LISTED MATERIAL.
- FOR STUD WALLS USE FIRE SAFING AND FIRE CAULK.

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TOPOGRAPHIC / BOUNDARY SURVEY

BENCHMARK DATA

NAVD 88 AS DERIVED FROM GPS OBSERVATIONS UTILIZING VRS CONUS 18
BM #1 EL= 904.86' (NAVD 88)
MAG NAIL IN TOP OF 6"X6" WOOD POST, LOCATED 104' EAST OF NORTHEAST CORNER OF 'HAVERHILL ELEMENTARY SCHOOL' & 89' SOUTHEAST OF NORTHEAST CORNER OF PARKING LOT.

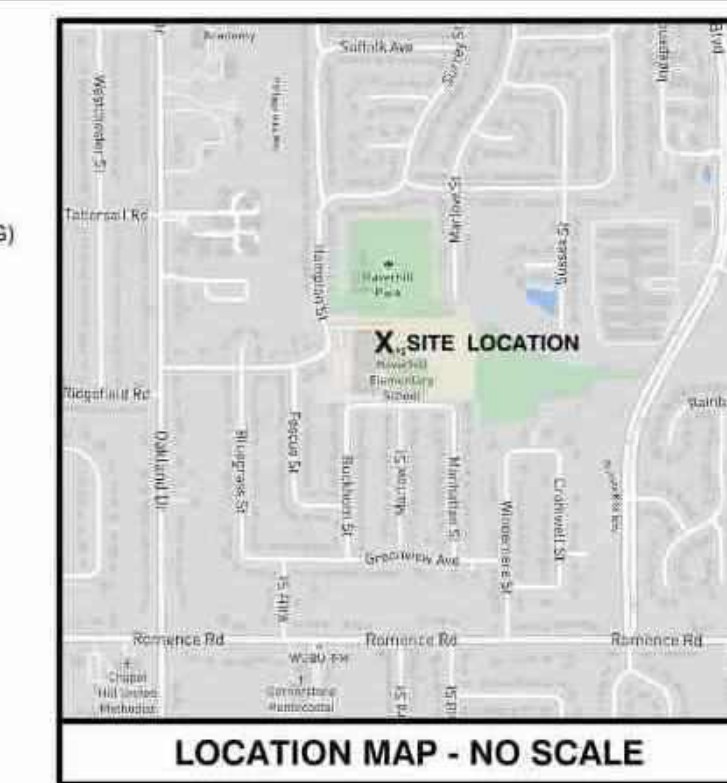
Table with 3 columns: POINT NUMBER, NORTHING (ASSUMED), EASTING (ASSUMED), ELEVATION (NAVD 88)

SCHEDULE "A" LEGAL DESCRIPTION FROM: TRANSMISSION TITLE AGENCY OF MICHIGAN FILE NO.: 384179LKS (EFFECTIVE DATE: APRIL 18, 2022)

A PARCEL OF LAND LOCATED IN SECTIONS 8 AND 9 OF TOWN 3 SOUTH, RANGE 11 WEST, PORTAGE TOWNSHIP, KALAMAZOO COUNTY, MICHIGAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS BEGINNING AT THE NORTHEAST CORNER OF THE PLAT OF 'PORTAGE PRAIRIE' AS RECORDED IN LIBER 25 OF PLATS, ON PAGE 26, IN THE OFFICE OF THE REGISTER OF DEEDS FOR KALAMAZOO COUNTY, MICHIGAN; THENCE SOUTH 89 DEGREES 01 DEGREES EAST 347.00 FEET ALONG THE NORTH LINE OF THE SOUTH 3/4 OF THE EAST 1/2 OF THE SOUTHWEST 1/4 OF SAID SECTION 8 TO THE EAST LINE OF SAID SECTION 9; THENCE SOUTH 89 DEGREES 44 MINUTES 10 SECONDS EAST 862.56 FEET ALONG THE NORTH LINE OF THE SOUTH 3/4 OF THE WEST 1/2 OF THE SOUTHWEST 1/4 OF SAID SECTION 9 TO THE EAST LINE OF THE WEST 1/2 OF THE WEST 1/2 OF THE SOUTHWEST 1/4 OF SAID SECTION 9; THENCE SOUTH 90 DEGREES WEST 995.27 FEET TO THE EASTERLY LINE OF SAID PLAT OF PORTAGE PRAIRIE; THENCE NORTH 0 DEGREES 05 MINUTES EAST 108.14 FEET ALONG THE EASTERLY LINE OF SAID PLAT; THENCE NORTH 73 DEGREES 35 MINUTES EAST 80.00 FEET ALONG THE EASTERLY LINE OF SAID PLAT; THENCE NORTH 10 DEGREES 44 MINUTES 35 SECONDS WEST 136.52 FEET ALONG THE EASTERLY LINE OF SAID PLAT; THENCE NORTH 10 DEGREES 16 MINUTES WEST 87.76 FEET ALONG THE EASTERLY LINE OF SAID PLAT; THENCE NORTHWESTERLY 58.58 FEET ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 35.69 FEET AND A CHORD BEARING NORTH 19 DEGREES 56 MINUTES 10 SECONDS EAST 52.50 FEET; THENCE NORTHWESTERLY 149.65 FEET ALONG THE ARC OF A CURVE TO THE RIGHT HAVING A RADIUS OF 302.00 FEET AND A CHORD BEARING NORTH 13 DEGREES 12 MINUTES 45 SECONDS WEST 148.12 FEET TO THE PLACE OF BEGINNING.

SCHEDULE B-I MATTERS CONCERNING THE PROPERTY FROM: TRANSMISSION TITLE AGENCY OF MICHIGAN FILE NO.: 384179LKS (EFFECTIVE DATE: APRIL 18, 2022)

- 11 EASEMENTS WHICH ARE RECITED IN INSTRUMENT RECORDED IN LIBER 780, PAGE 79, (SHOWN ON DRAWING)
12 HIGHWAY EASEMENT RELEASE AS RECORDED IN LIBER 783, PAGE 378, (SHOWN ON DRAWING)
13 WATER MAIN EASEMENT AS RECORDED IN LIBER 787, PAGE 504, (SHOWN ON DRAWING)
14 GENERAL EASEMENT AND RIGHT OF WAY GRANT AS RECORDED IN LIBER 717, PAGE 504, (SHOWN ON DRAWING)
15 GENERAL EASEMENT AND RIGHT OF WAY GRANT AS RECORDED IN LIBER 1021, PAGE 77, RE-RECORDED IN LIBER 1062, PAGE 1173, (SHOWN ON DRAWING)
16 EASEMENT AGREEMENT AS RECORDED IN LIBER 1152, PAGE 220, (SHOWN ON DRAWING)



DRIESENKA & ASSOCIATES, INC. Engineering Surveying Testing
Holland, MI 616-396-0255
Grand Rapids, MI 616-419-3000
Kalamazoo, MI 269-544-1455
Lansing, MI 517-889-6210
Ypsilanti, MI 734-368-9483

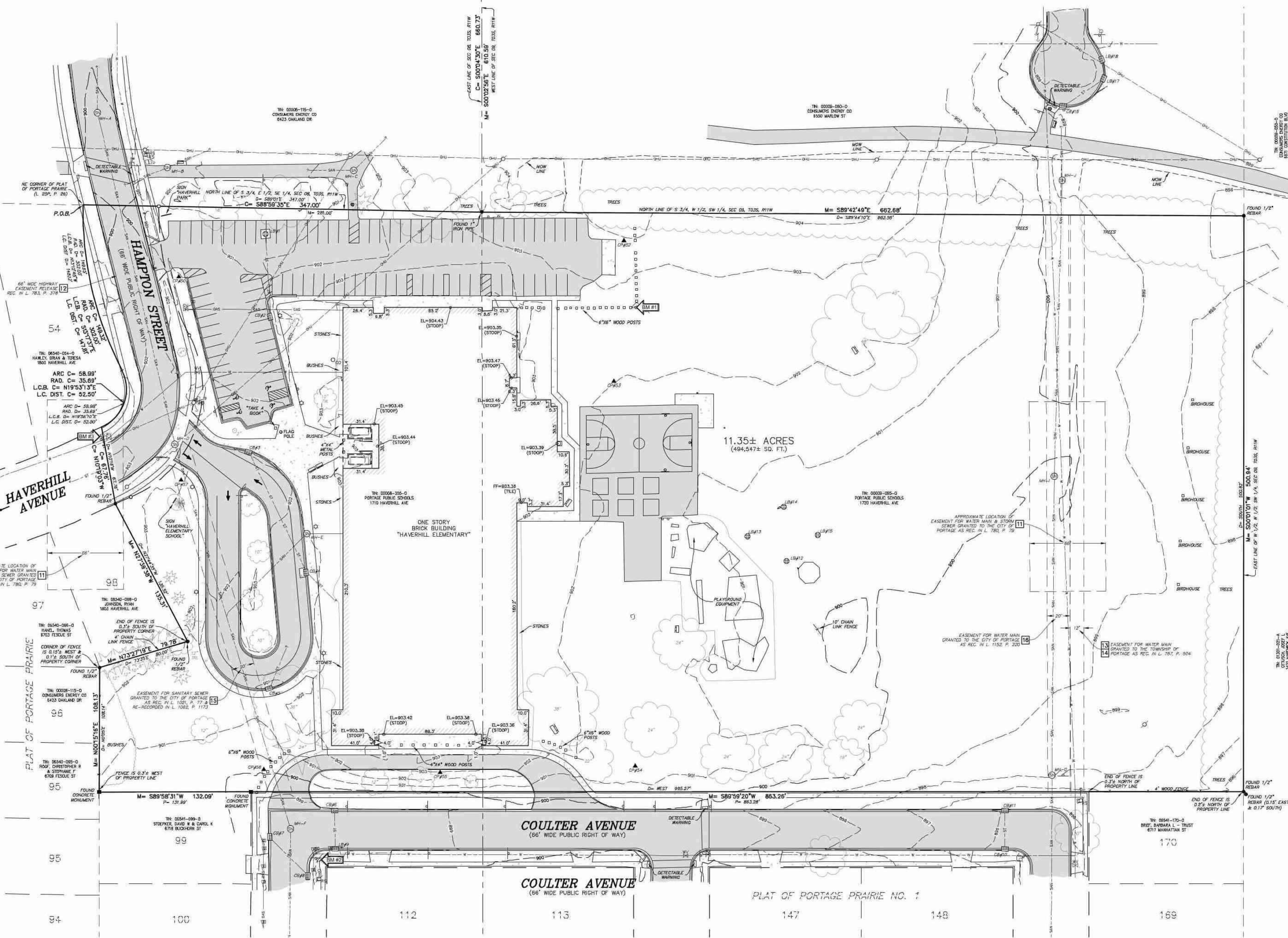


Table with 2 columns: STORM STRUCTURE DATA and SANITARY STRUCTURE DATA. Lists various pipe sizes, materials, and elevations for storm and sanitary systems.

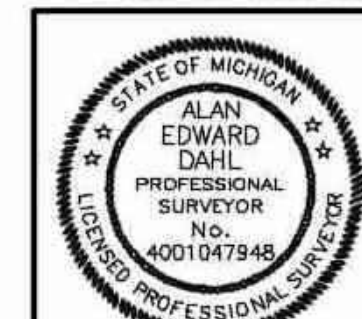
LEGEND: Symbols for various survey markers including benchmarks, monuments, iron pins, chiseled nails, control points, plates, described and measured records, storm sewer manholes, catch basins, roof drains, sanitary sewer manholes, cleanouts, well heads, fire department connections, sprinkler control valves, sprinkler heads, valve/water/gas, gas meters, utility risers, utility poles, light poles, guy anchors, transformers, hand-hole/electric, electric meters, ground mounted lights, signs, soil boring, bollard posts, posts, underground communication line markers, underground electric line markers, gates, fence lines, overhead utilities, underground electric communications, telephone, fiber optic, gas line, existing water line, existing storm sewer, existing sanitary sewer.

HAVERHILL ELEMENTARY SCHOOL
1710 & 1720 HAVERHILL AVENUE, PORTAGE, MI 49024
SECTION 08, T03S, R11W, CITY OF PORTAGE, KALAMAZOO CO.
FOR:
PORTAGE PUBLIC SCHOOLS
8107 MUSTANG DRIVE, PORTAGE, MI 49002



- SURVEYOR'S NOTES
1. UTILITIES SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL FIELD MEASUREMENTS AND AVAILABLE RECORDS. THIS MAP IS NOT TO BE INTERPRETED AS SHOWING EXACT LOCATIONS OR SHOWING ALL UTILITIES IN THE AREA.
2. NOTE TO CONTRACTORS: THREE WORKING DAYS BEFORE YOU DIG - CALL MISS DIG AT 811.
3. CONTOUR INTERVAL = 1 FOOT.
4. THE FIELD WORK WAS COMPLETED ON MAY 10, 2022.

MISS DIG INFORMATION
MISS DIG SURVEY TICKET # 2022041203028 REV. 000 (INCLUDES INFORMATION RECEIVED THROUGH 06-03-2022)
- AT&T TELEPHONE - 04/13/2022 (MAPS RECEIVED)
- CHARTER COMMUNICATIONS CABLE TV - 04/15/2022 (MAPS RECEIVED)
- CHARTER COMMUNICATIONS FIBER OPTICS - 04/15/2022 (MAPS RECEIVED)
- CONSUMERS ENERGY ELECTRIC - 04/24/2022 (MAPS RECEIVED)
- CONSUMERS ENERGY GAS - 04/21/2022 (E-MAIL RECEIVED - AWAITING ADDITIONAL INFORMATION)
- PORTAGE FIBER OPTICS - 05/27/2022 (MAPS RECEIVED)
- PORTAGE CITY POTABLE WATER - 05/27/2022 (MAPS RECEIVED)
- PORTAGE CITY SANITARY SEWER - 05/27/2022 (MAPS RECEIVED)
- PORTAGE CITY STORM SEWER - 05/27/2022 (MAPS RECEIVED)
- PORTAGE CITY TRAFFIC - 05/27/2022 (MAPS RECEIVED)
- ZAYO BANDWIDTH/MIDWEST, LLC FIBER OPTICS - 05/06/2022 (NO RESPONSE)

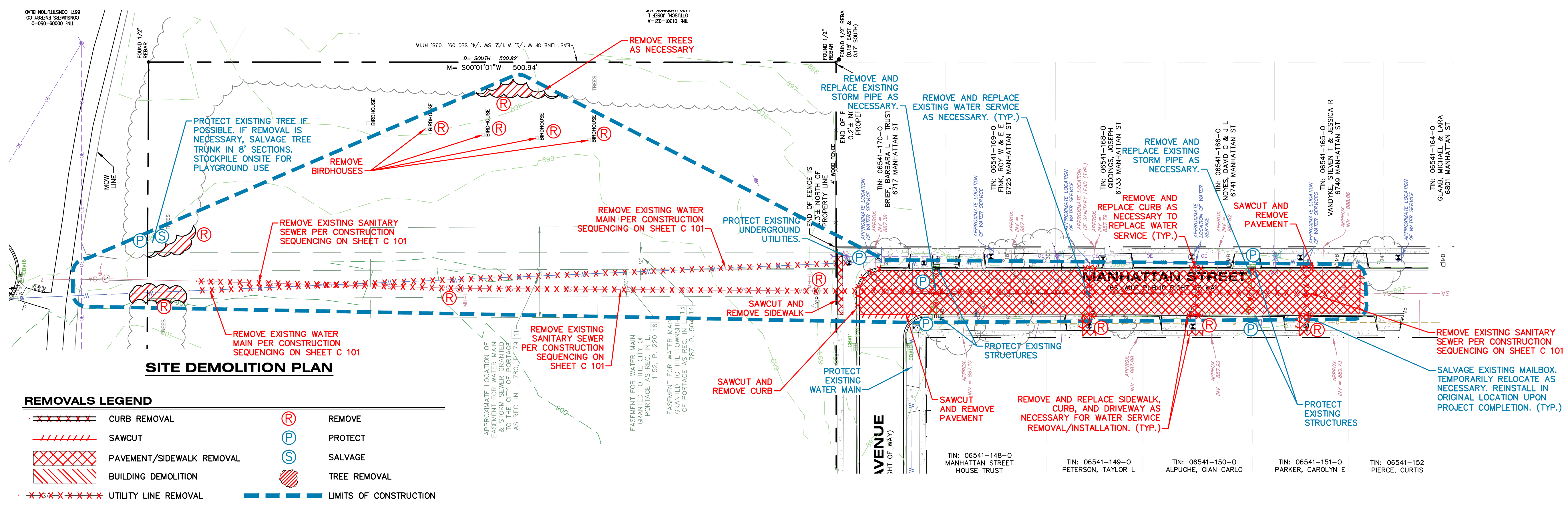
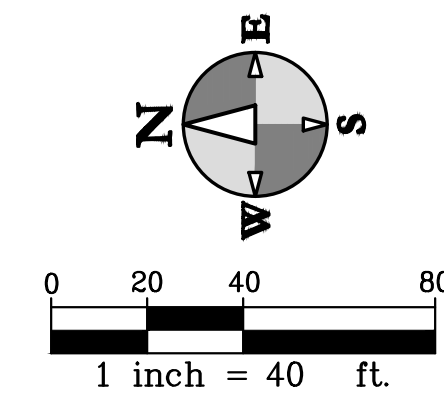


Alan E. Dahl
Alan Edward Dahl
P.S. No. 400197948

REVISIONS table with columns for revision number, description, and date. Includes TOPOGRAPHIC & BOUNDARY SURVEY and SHEET # V-101 1 of 1.

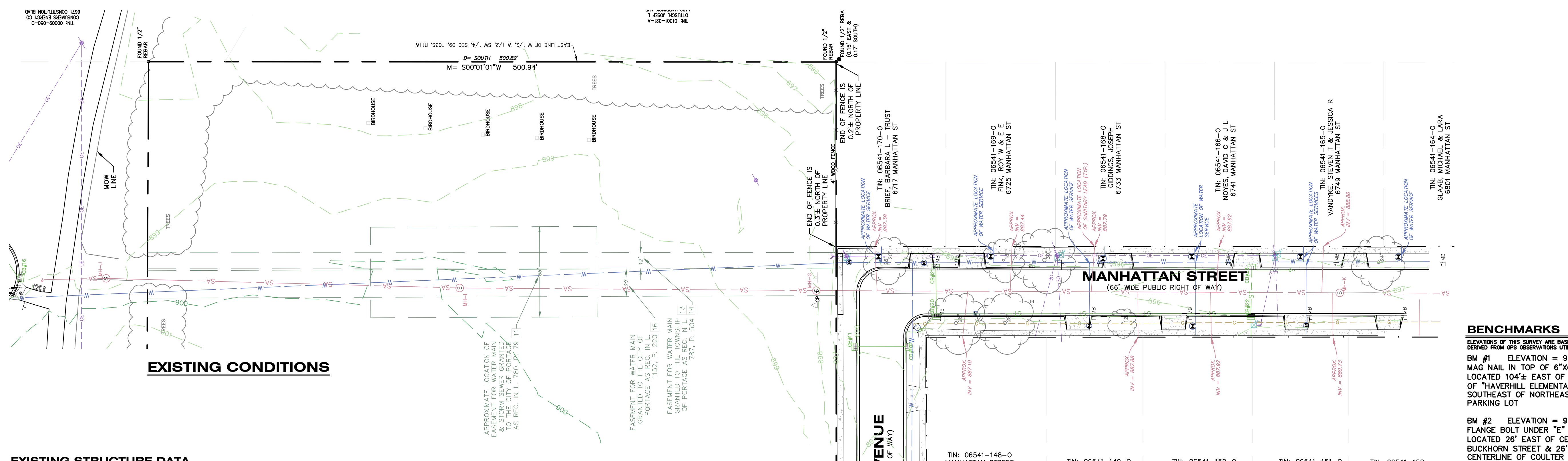
PROJECT TITLE: HAVERHILL ELEMENTARY SCHOOL BID PACKAGE 6: CONSTRUCTION
OWNER: PORTAGE PUBLIC SCHOOLS
Portage, Michigan
DATE: JUNE 30, 2023
SHEET NUMBER: TS 001
1-237.20

TowerPinkster
Architecture - Engineering - Interiors
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**REMOVALS LEGEND**

	CURB REMOVAL		REMOVE
	SAWCUT		PROTECT
	PAVEMENT/SIDEWALK REMOVAL		SALVAGE
	BUILDING DEMOLITION		TREE REMOVAL
	UTILITY LINE REMOVAL		LIMITS OF CONSTRUCTION



**EXISTING STRUCTURE DATA**

STM LB #1 - 6" CONCRETE RIM = 900.26 INV (S) 12" CONC = 895.36 SUMP = 891.81	STM CB #6 - 2" BLOCK RIM = 895.52 INV (S) 12" CONC = 895.22 SUMP = 895.07	STM CB #11 - 2" CONCRETE RIM = 895.83 INV (S) 12" CONC = 892.63 SUMP = 892.45	STM CB #16 - 4" CONCRETE RIM = 897.96 INV (NE) 8" CONC = 893.66 INV (S) 12" CONC = 891.75 SUMP = 893.66	STM CB #20 - 4" BLOCK RIM = 895.10 INV (NW) 12" CONC = 891.70 INV (W) 15" CONC = 890.16 INV (S) 12" CONC = 891.70± SEDIMENT = 899.81	STM CB #23 - 5" BLOCK RIM = 895.14 INV (S) 12" CONC = 886.72 INV (W) 12" CONC = 886.57 WATER = 892.29 SEDIMENT = 892.14	SAN MH D - 4" CONCRETE RIM = 902.86 INV (N) 12" CONC = 885.48 INV (S) 12" CONC = 885.53	SAN MH I RIM = 899.56 INV (N) 10" PVC = 881.01 INV (S) 10" PVC = 881.96	STM CB #2 - 4" CONCRETE RIM = 901.18 INV (N) 12" CONC = 897.28 SUMP = 893.13	STM CB #7 - 2" BLOCK RIM = 898.10 INV (SE) 12" CONC = 894.85 SUMP = 894.70	STM LB #12 - 6" CONCRETE RIM = 900.04 INV (SW) 12" CPP = 893.78 INV (N) 12" CPP = 893.48 SUMP = 881.56	STM LB #17 - 6" CONCRETE RIM = 898.36 INV (SW) 12" CPP = 893.78 INV (N) 12" CPP = 893.48 SUMP = 881.56	STM CB #21 - 4" BLOCK RIM = 895.14 INV (N) 12" CONC = 892.29 INV (S) 12" CONC = 886.57 WATER = 892.29 SEDIMENT = 892.14	SAN MH A RIM = 900.32 INV (N) 12" CONC = 886.72 INV (S) 12" CONC = 886.57	SAN MH J RIM = 898.48 INV (N) 10" PVC = 881.63 INV (S) 10" PVC = 881.56	STM CB #3 - 4" CONCRETE RIM = 901.92 INV (SE) 12" CONC = 895.47 SUMP = 893.72	STM CB #8 - 4" CONCRETE RIM = 898.31 INV (NW) 12" CONC = 894.71 SUMP = 894.51	STM LB #13 - 6" CONCRETE RIM = 900.14 INV (NW) 12" CONC = 894.71 TOP OF WATER = 892.44 SUMP = 891.44	STM LB #18 - 4" CONCRETE RIM = 895.14 INV (S) 12" CPP = 894.67 SUMP = 890.02	STM CB #22 - 5" BLOCK RIM = 896.13 INV (N) 12" CONC = 890.73± INV (E) 15" CONC = 890.38± WATER = 890.36 SEDIMENT = 890.23	SAN MH B - 6" CONCRETE RIM = 901.60 INV (WSW) 8" PVC = 892.30 INV (ENC) 8" PVC = 892.30	SAN MH F - 6" CONCRETE RIM = 898.68 INV (S) 12" CONC = 884.08 INV (N) 12" CONC = 884.18	SAN MH K RIM = 896.81 INV (N) 10" CLAY = 878.86 INV (S) 10" CLAY = 878.76	STM CB #4 - 6" CONCRETE RIM = 901.32 INV (SE) 18" CONC = 895.07 INV (N) 12" CONC = 895.32 SUMP = 894.82	STM LB #9 - 4" CONCRETE RIM = 898.42 INV (N) 12" CONC = 844.82 SUMP = 844.82	STM LB #14 - 6" CONCRETE RIM = 900.13 INV (N) 12" CONC = 891.63 TOP OF WATER = 886.63 SUMP = 885.63	STM MH #19 - 6" CONCRETE RIM = 903.23 INV (N) 12" PVC = 891.63 SUMP = 891.63	SAN MH C - 4" CONCRETE RIM = 898.22 INV (S) 10" CONC = 880.37 INV (N) 10" CONC = 880.42	SAN MH G RIM = 896.81 INV (N) 10" CLAY = 878.86 INV (S) 10" CLAY = 878.76	STM CB #5 - 2" CONCRETE RIM = 899.68 INV (NNE) 8" PVC = 895.31 SUMP = 894.11	STM CB #10 - 4" CONCRETE RIM = 899.68 INV (N) 12" CONC = 892.03 SUMP = 891.88	STM LB #15 - 6" CONCRETE RIM = 900.39 INV (NNE) 8" PVC = 895.31 SUMP = 894.54	STM LB #5 - 6" CONCRETE RIM = 900.39 INV (NNE) 8" PVC = 895.31 SUMP = 894.54
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**BENCHMARKS**

LOCATIONS OF THIS SURVEY LINE BASED ON NAVD 88 AS DERIVED FROM GPS OBSERVATIONS UTILIZING VES CONUS 18

BM #1 ELEVATION = 904.66 (NAVD '88)  
MAG NAIL IN TOP OF 6"x6" WOOD POST,  
LOCATED 104'± EAST OF NORTHEAST CORNER OF  
"HAVERHILL ELEMENTARY SCHOOL" & 88'±  
SOUTHEAST OF NORTHEAST CORNER OF  
PARKING LOT

BM #2 ELEVATION = 900.73 (NAVD '88)  
FLANGE BOLT UNDER "E" ON HYDRANT,  
LOCATED 28'± EAST OF CENTERLINE OF  
BUCKHORN STREET & 26'± SOUTH OF  
CENTERLINE OF COULTER AVENUE.

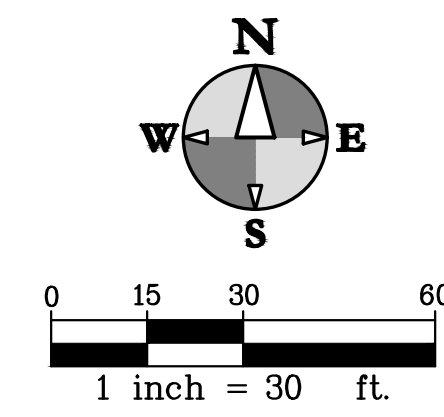
BM #3 ELEVATION = 905.01 (NAVD '88)  
FLANGE BOLT UNDER "E" ON HYDRANT,  
LOCATED 84'± NORTHWEST OF "HAVERHILL  
ELEMENTARY" SIGN & 25'± NORTH OF  
CENTERLINE OF HAMPTON STREET.



ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA.

FIELD WORK PERFORMED BY:  
DRIESENGA & ASSOCIATES, LLC





BULLETIN #	DATE
BULLETIN 4	JUNE 29, 2023
BULLETIN 3	MAY 23, 2023
BULLETIN 2	MAY 8, 2023
BULLETIN 1	MARCH 16, 2023

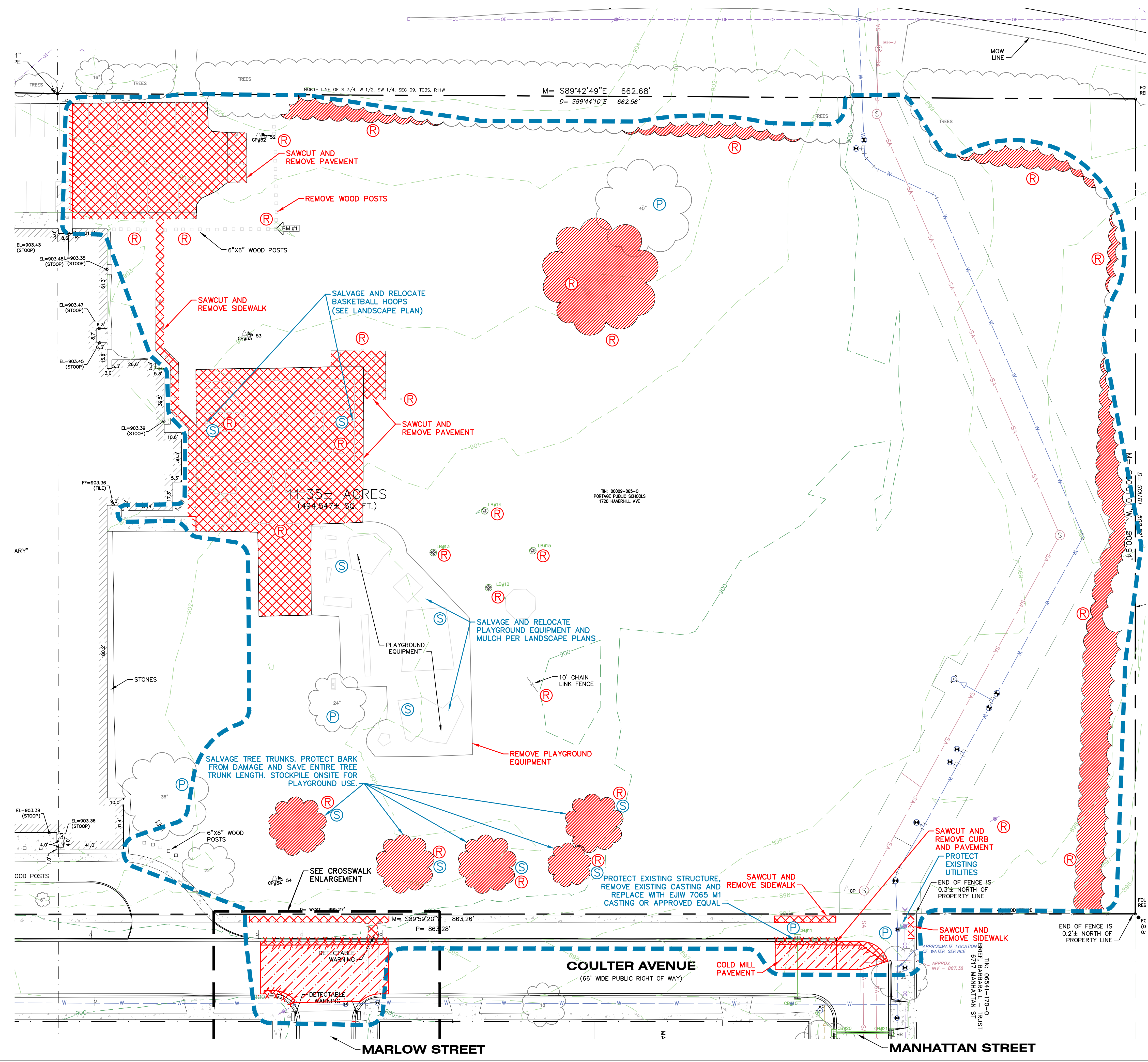
PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

SHEET TITLE  
**SITE DEMOLITION PLAN - EAST**

Portage, Michigan

DATE  
**JUNE 30, 2023**  
 SHEET NUMBER  
**CD 101**  
 21-237.20

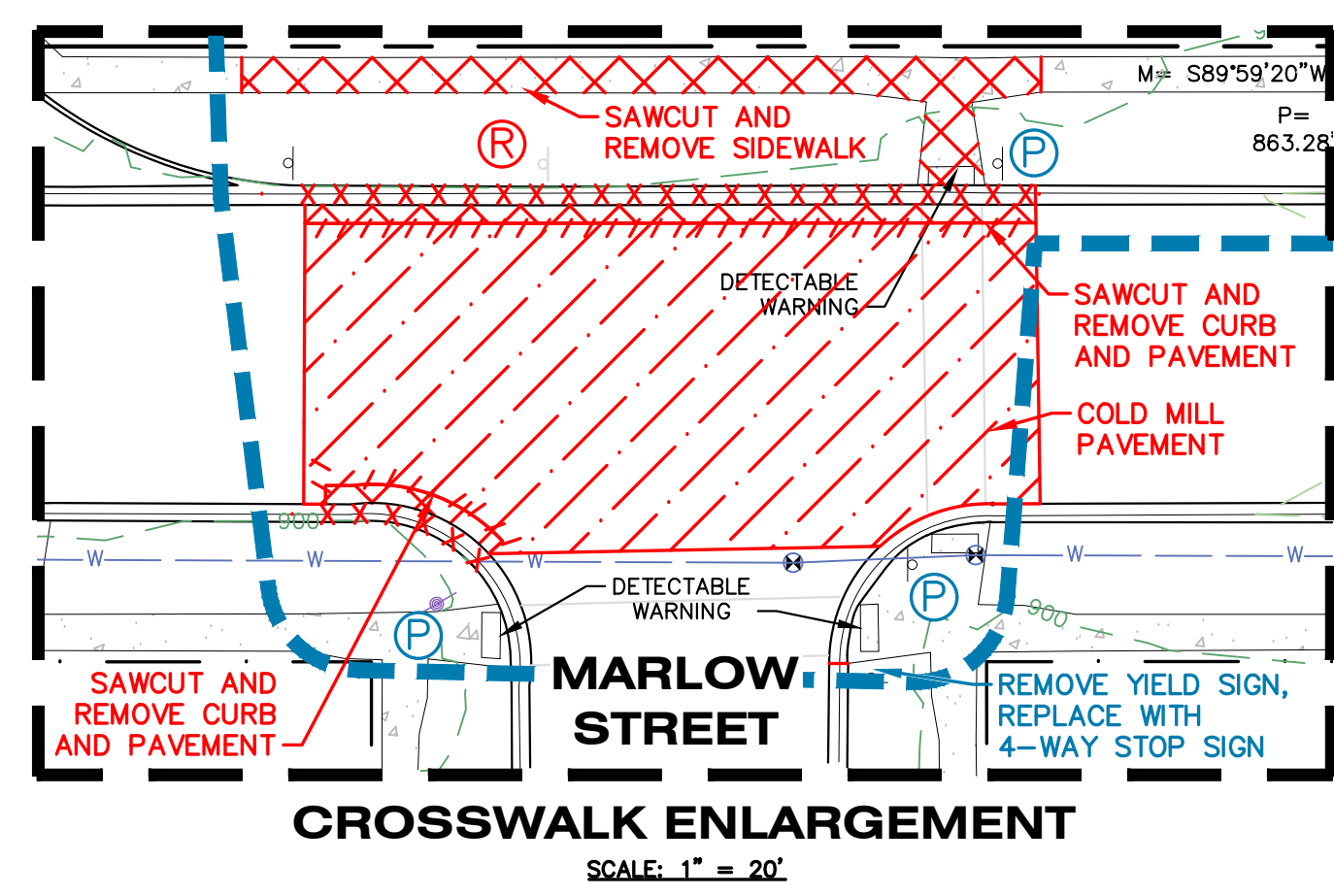


**REMOVAL NOTES**

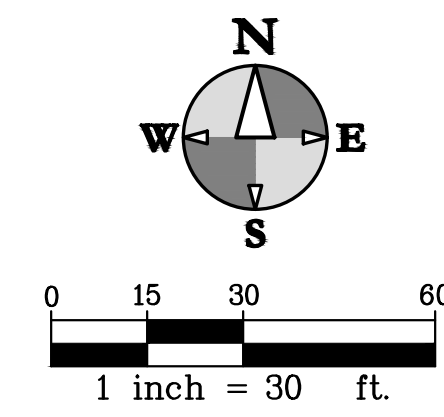
- REVIEW ALL THE REMOVALS AND PROTECTION WITH OWNER PRIOR TO COMMENCING CONSTRUCTION. INSTALL TEMPORARY SNOW FENCE AROUND ALL TREES REQUIRING PROTECTION. SNOW FENCE SHALL BE PLACED AT EDGE OF DRIP LINE.
- ALL CURB AND GUTTER REMOVAL AND REPLACEMENT TO EXTEND TO EXISTING JOINT. SAWCUT A MINIMUM OF 2' OF PAVEMENT FROM THE EDGE OF PROPOSED CURB TO PROVIDE ADEQUATE WIDTH FOR PROPER COMPACTION OF PAVEMENT AND ROAD BASE MATERIALS.
- ALL SIDEWALK REMOVAL AND REPLACEMENT TO EXTEND TO EXISTING JOINT.
- ALL REMOVALS SHALL BE TAKEN OFF-SITE AND DISPOSED.
- COMPLY WITH ALL ASPECTS OF THE SOIL EROSION CONTROL PERMIT AS ISSUED BY CITY OF PORTAGE. ALL TEMPORARY CONTROL MEASURES SHALL BE IN PLACE PRIOR TO COMMENCING CONSTRUCTION.
- ALL REMOVALS SHALL BE TO THE LIMITS INDICATED UNLESS OTHERWISE DIRECTED BY THE ENGINEER. UNAUTHORIZED REMOVALS AND SUBSEQUENT REPLACEMENT SHALL BE AT THE CONTRACTOR'S EXPENSE.
- REMOVE, STORE, AND RESET ANY EXISTING SIGNS AS DIRECTED BY THE ENGINEER/OWNER.
- REMOVE ALL TREES TO THE CLEARING LIMITS AS SHOWN. REMOVE ALL EXISTING TREES, STUMPS AND BRUSH FROM THE SITE AS NECESSARY TO CONSTRUCT THE IMPROVEMENTS.
- NO BURNING, BURYING, OR HAULING OUT OF ANY DEBRIS PERMITTED.
- ALL STUMPS SHALL BE REMOVED AT LEAST 1' BELOW FINISHED GRADE ELEVATION.
- REVIEW CLEARING LIMITS WITH OWNER PRIOR TO COMMENCING WORK. PRESERVE TREES WHERE INDICATED.
- IF ANY ERRORS, DISCREPANCIES, OR OMISSIONS BECOME APPARENT, THESE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION OF ANYTHING AFFECTED SO THAT CLARIFICATION OR REDESIGN MAY OCCUR.
- FOR PROTECTION OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL CALL 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

**REMOVALS LEGEND**

- CURB REMOVAL
- SAWCUT
- PAVEMENT/SIDEWALK REMOVAL
- 1.5" COLD MILLING
- TREE REMOVAL REMOVE
- TREE REMOVAL PROTECT
- TREE REMOVAL SALVAGE
- LIMITS OF CONSTRUCTION

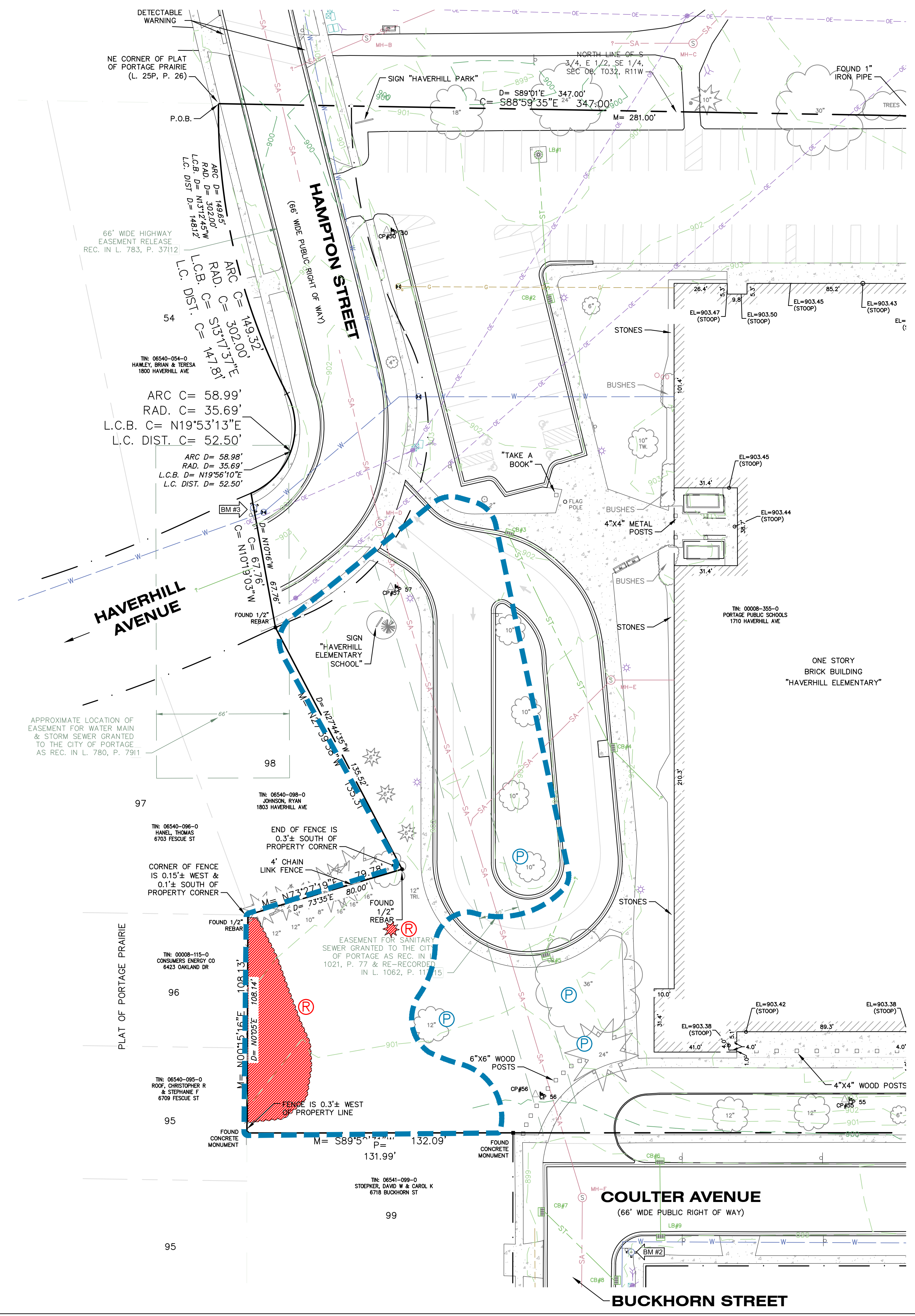


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 FIELD WORK PERFORMED BY:  
 DRIESENGA & ASSOCIATES, LLC



**HS**  
**hurley & stewart**  
 hurley & stewart, llc  
 2800 s. 11th street  
 kalamazoo, michigan 49009  
 269.552.4960 fax 269.552.4961  
 www.hurleystewart.com

COORDINATE CONSTRUCTION WITH PLANS FOR  
 "BID PACKAGE 1: HAVERHILL ELEMENTARY  
 UTILITY RELOCATIONS"



**REMOVAL NOTES**

1. REVIEW ALL THE REMOVALS AND PROTECTION WITH OWNER PRIOR TO COMMENCING CONSTRUCTION. INSTALL TEMPORARY SNOW FENCE AROUND ALL TREES REQUIRING PROTECTION. SNOW FENCE SHALL BE PLACED AT EDGE OF DRIP LINE.
2. ALL CURB AND GUTTER REMOVAL AND REPLACEMENT TO EXTEND TO EXISTING JOINT. SAWCUT A MINIMUM OF 2' OF PAVEMENT FROM THE EDGE OF PROPOSED CURB TO PROVIDE ADEQUATE WIDTH FOR PROPER COMPACTION OF PAVEMENT AND ROAD BASE MATERIALS.
3. ALL SIDEWALK REMOVAL AND REPLACEMENT TO EXTEND TO EXISTING JOINT.
4. ALL REMOVALS SHALL BE TAKEN OFF-SITE AND DISPOSED.
5. COMPLY WITH ALL ASPECTS OF THE SOIL EROSION CONTROL PERMIT AS ISSUED BY CITY OF PORTAGE. ALL TEMPORARY CONTROL MEASURES SHALL BE IN PLACE PRIOR TO COMMENCING CONSTRUCTION.
6. ALL REMOVALS SHALL BE TO THE LIMITS INDICATED UNLESS OTHERWISE DIRECTED BY THE ENGINEER. UNAUTHORIZED REMOVALS AND SUBSEQUENT REPLACEMENT SHALL BE AT THE CONTRACTOR'S EXPENSE.
7. REMOVE, STORE, AND RESET ANY EXISTING SIGNS AS DIRECTED BY THE ENGINEER/OWNER.
8. REMOVE ALL TREES TO THE CLEARING LIMITS AS SHOWN. REMOVE ALL EXISTING TREES, STUMPS AND BRUSH FROM THE SITE AS NECESSARY TO CONSTRUCT THE IMPROVEMENTS.
9. NO BURNING, BURYING, OR HAULING OUT OF ANY DEBRIS PERMITTED.
10. ALL STUMPS SHALL BE REMOVED AT LEAST 1' BELOW FINISHED GRADE ELEVATION.
11. REVIEW CLEARING LIMITS WITH OWNER PRIOR TO COMMENCING WORK. PRESERVE TREES WHERE INDICATED.
12. IF ANY ERRORS, DISCREPANCIES, OR OMISSIONS BECOME APPARENT, THESE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION OF ANYTHING AFFECTED SO THAT CLARIFICATION OR REDESIGN MAY OCCUR.
13. FOR PROTECTION OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL CALL 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THIS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

**REMOVALS LEGEND**

- CURB REMOVAL
- SAWCUT
- PAVEMENT/SIDEWALK REMOVAL
- 1.5" COLD MILLING
- TREE REMOVAL
- REMOVE
- PROTECT
- SALVAGE
- LIMITS OF CONSTRUCTION



ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA.  
 FIELD WORK PERFORMED BY:  
 DRIESENKA & ASSOCIATES, LLC

**PROJECT NOTES**

- ALL EXISTING ELEVATIONS ARE TO BE VERIFIED AND ACCEPTED AS SHOWN PRIOR TO COMMENCEMENT OF WORK.
- VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES, INCLUDING ANY EXISTING SANITARY LEADS, PRIOR TO ORDERING STRUCTURES AND CONSTRUCTION.
- COORDINATE ALL TRAFFIC CONTROL WITH CITY OF PORTAGE.
- YIELD CALCULATIONS AND DENSITY TESTS OF THE HMA MATERIAL PLACED NEED TO BE PROVIDED. EXTRACTION/GRADATION/ANALYSIS ALSO NEEDS TO BE PROVIDED TO CONFIRM THAT THE MATERIAL PLACED MEETS PROJECT SPECIFICATIONS. THE ENGINEER, TESTING FIRM OR BOTH WILL NEED TO BE PRESENT DURING PAVING OPERATIONS.
- CONTRACTOR TO OBTAIN A RIGHT OF WAY PERMIT FROM THE CITY OF PORTAGE. FEE AND BOND ARE REQUIRED.

**REMOVAL NOTES**

- REVIEW ALL THE REMOVALS AND PROTECTION WITH OWNER PRIOR TO COMMENCING CONSTRUCTION. INSTALL TEMPORARY SNOW FENCE AROUND ALL TREES REQUIRING PROTECTION. SNOW FENCE SHALL BE PLACED AT EDGE OF DRIP LINE.
- ALL CURB AND GUTTER REMOVAL AND REPLACEMENT TO EXTEND TO EXISTING JOINT.
- ALL REMOVALS SHALL BE TAKEN OFF-SITE AND DISPOSED.
- COMPLY WITH ALL ASPECTS OF THE SOIL EROSION CONTROL PERMIT AS ISSUED BY CITY OF PORTAGE. ALL TEMPORARY CONTROL MEASURES SHALL BE IN PLACE PRIOR TO COMMENCING CONSTRUCTION.
- ALL REMOVALS SHALL BE TO THE LIMITS INDICATED UNLESS OTHERWISE DIRECTED BY THE ENGINEER. UNAUTHORIZED REMOVALS AND SUBSEQUENT REPLACEMENT SHALL BE AT THE CONTRACTOR'S EXPENSE.
- REMOVE, STORE, AND RESET ANY EXISTING SIGNS AS DIRECTED BY THE ENGINEER/OWNER.
- REMOVE ALL TREES TO THE CLEARING LIMITS AS SHOWN. REMOVE ALL EXISTING TREES, STUMPS AND BRUSH FROM THE SITE AS NECESSARY TO CONSTRUCT THE IMPROVEMENTS.
- NO BURNING, BURYING, OR HAULING OUT OF ANY DEBRIS PERMITTED.
- ALL STUMPS SHALL BE REMOVED AT LEAST 1' BELOW FINISHED GRADE ELEVATION.
- REVIEW CLEARING LIMITS WITH OWNER PRIOR TO COMMENCING WORK. PRESERVE TREES WHERE INDICATED.
- IF ANY ERRORS, DISCREPANCIES, OR OMISSIONS BECOME APPARENT, THESE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION OF ANYTHING AFFECTED SO THAT CLARIFICATION OR REDESIGN MAY OCCUR.
- FOR PROTECTION OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL CALL 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THIS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

**SESC NOTES**

- ALL WORK WILL COMPLY WITH THE PROVISIONS OF THE SOIL EROSION AND SEDIMENTATION CONTROL ACT (PA 451, PART 91 OF 1994 AS AMENDED) ADMINISTERED BY THE CITY OF PORTAGE.
- SITES WITH DISTURBANCE LARGER THAN 5 ACRES NEED TO FOLLOW THE SOIL EROSION AND SEDIMENTATION CONTROL GUIDEBOOK BY THE STATE OF MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET OFFICE OF FACILITIES, DESIGN AND CONSTRUCTION DIVISION.
- AVOID UNNECESSARY DISTURBING OR REMOVING EXISTING VEGETATED TOPSOIL OR EARTH COVER. THESE AREAS ACT AS SEDIMENT FILTERS.
- ALL TEMPORARY SOIL EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL SITE IS ESTABLISHED.
- PROVIDE INSTALL INLET PROTECTION AT ALL STORM SEWER STRUCTURES DURING CONSTRUCTION.
- NO SITE WORK SHALL BEGIN UNTIL THE SILT FENCE AND ACCESS ROAD ARE INSTALLED.
- ALL SOIL PILES SHALL BE SURROUNDED BY SILT FENCE IF ALLOWED TO REMAIN IN PLACE FOR MORE THAN 7 DAYS. TOPSOIL PILES SHALL BE SEEDED IF ALLOWED TO REMAIN IN PLACE FOR MORE THAN 20 DAYS. SPOIL PILES SHALL NOT BE PLACED WITHIN 50' FROM ANY TEMPORARY OR PERMANENT WATERCOURSE.
- THE CONTRACTOR SHALL COMPLY WITH THE WEEKLY RECOMMENDATIONS OF THE CERTIFIED STORM WATER OPERATOR.
- ALL INLETS IN PAVED AREAS SHALL HAVE INLET PROTECTION DURING CONSTRUCTION.
- COORDINATE TOPSOIL STOCKPILE WITH OWNER.
- PLACE TRACK MATS AT THE ENTRANCE OF SITE TO REDUCE MATERIAL TRACKED OFF SITE.
- COORDINATE THE CLEARING LIMITS WITH THE OWNER PRIOR TO COMMENCING WORK.
- PLACE "DO NOT ENTER CONSTRUCTION ZONE" SIGNS AT ALL ENTRY POINTS TO PROJECT.
- PROVIDE SILT SACKS IN EACH CATCH BASIN UNTIL SITE IS STABILIZED.
- ALL SOIL EROSION MEASURES SHALL BE IN PLACE PRIOR TO COMMENCING WORK.
- PLACE SILT FENCES ALONG THE TOE OF TOPSOIL STOCKPILES AND OTHER FILL AREAS. SEED TOPSOIL STOCKPILE AND MAINTAIN SILT FENCES UNTIL SITE IS STABILIZED.
- MAINTAIN A VEGETATIVE BUFFER WHEREVER POSSIBLE.
- CLEAN ADJACENT ROADWAYS WHEN NECESSARY.
- WATER SITE WHEN NECESSARY TO PREVENT AIR BORNE SEDIMENT TRANSFER.
- CONTRACTOR TO COMPLETE AND SUBMIT A SOIL EROSION AND SEDIMENT CONTROL PERMIT APPLICATION TO THE CITY. THE FEE AND BOND ARE REQUIRED.
- CONTRACTOR TO INSTALL A PERMIT BOX ON SITE AND PLACE WEATHER CARD AND LAMINATED 11X17 REDUCTION OF APPROVED SESC PLANS. CONTRACTOR TO PRINT AND LAMINATE THE 11X17 REDUCTION OF THE APPROVED SESC PLANS.

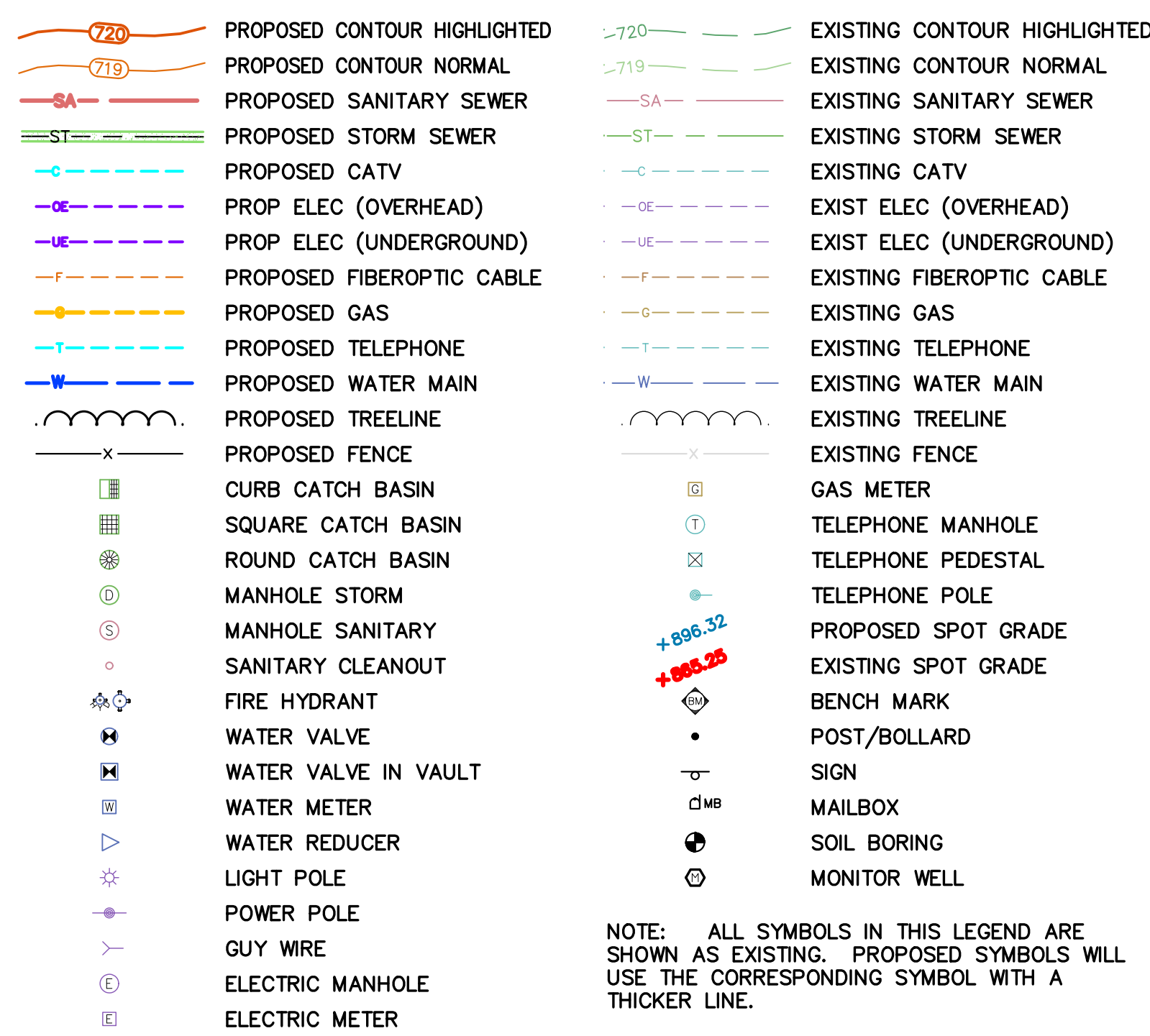
**UTILITY NOTES**

- ALL STRUCTURE CASTINGS TO BE EAST JORDAN IRON WORKS OR APPROVED EQUAL. CASTINGS SHOULD FOLLOW SPEC 207.3.2.6 OF THE CITY OF PORTAGE GENERAL SPECIFICATION MANUAL. EXCEPT COVERS SHALL NOT BE VENTED. ALL CASTINGS TO HAVE CITY OF PORTAGE LOGO. SEE STRUCTURE TABLE FOR SPECIFIC CASTING AT EACH STRUCTURE.
- ALL WATER MAINS AND THEIR APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF PORTAGE SPECIFICATIONS AND AWWA STANDARD C600.
- WATER MAIN FLUSHING SHALL PROVIDE A MINIMUM WATER VELOCITY OF 3.0 FEET PER SECOND IN ACCORDANCE WITH AWWA STANDARD C651.
- ALL WATER MAIN SHALL BE POLY WRAPPED. THE PLY WRAP SHALL CONFORM TO AWWA STANDARD C105.
- ALL SANITARY SEWERS AND THEIR APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CITY OF PORTAGE SPECIFICATIONS.
- ALL STORM SEWER SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF PORTAGE SPECIFICATIONS.
- STORM SEWERS SHALL BE REINFORCED CONCRETE PIPE (RCP), ASTM C76-III, WITH PREMIUM JOINTS INSTALLED PER THE REQUIREMENTS OF THE CITY OF PORTAGE. STORM SEWER SHALL BE TELEVIEWED TO CHECK FOR MISALIGNMENT, INFILTRATION, DEFECTIVE PIPE OR JOINTS, AND DEBRIS. INCLUDE TELEVIEWING STORM SEWER IN SPECIFICATIONS SEE CITY OF PORTAGE 208.2.6.
- THE CONTRACTOR SHALL INSTALL PEDESTRIAN FENCE AROUND ALL EXCAVATIONS TO BE LEFT OPEN OVERNIGHT AS REQUIRED.
- ANY UTILITIES REQUIRING DEWATERING SHALL BE INSTALLED TO THE CITY OF PORTAGE STANDARDS AND INCLUDED IN THE INSTALLATION COSTS. CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING NECESSARY TO CONSTRUCT UTILITIES IN THE DRY.
- IF ANY ERRORS, DISCREPANCIES, OR OMISSIONS BECOME APPARENT, THESE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION OF ANYTHING AFFECTED SO THAT CLARIFICATION OR REDESIGN MAY OCCUR.
- DEWATERING MAY BE REQUIRED TO INSTALL OR REMOVE SOME UTILITIES. REFER TO SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.
- REMOVE ANY ACCUMULATED SEDIMENT FROM ALL STRUCTURES AND REMOVE SILT SACKS ONCE SITE IS ESTABLISHED.
- PROVIDE 18" WATER MAIN SEPARATION WHEN CROSSING OTHER UTILITIES. DEFLECT PER DETAIL ON SHEET C 501.
- CONTRACTOR TO CLEAN THE EXISTING STORM SEWER FROM COULTER TO MANHATTAN AND TO VIDEO THE EXISTING STORM SEWER AFTER THE STORM SEWER HAS BEEN CLEANED. ALL STORM SEWER ALONG THE TRUCKING ROUTE THROUGH COULTER AVENUE, MARLOW STREET, GREENVIEW AVENUE, AND MANHATTAN STREET, AS WELL AS STORM SEWERS IMMEDIATELY DOWNSTREAM OF SAID STORM SEWERS ARE TO BE CLEANED AND VIDEOED AS WELL. TO BE CONSIDERED INCIDENTAL TO THE PROJECT.
- SANITARY AND WATER LEAD LOCATIONS AND ELEVATIONS ARE SHOWN BASED ON CITY LEAD CARDS AND RECORD DATA. THE CONTRACTOR SHALL EXCAVATE ALL LEADS TO LOCATE AND VERIFY THIS INFO PRIOR TO ANY MASS EXCAVATION OR TEMPORARY SEWER CONSTRUCTION. PROVIDE FIELD GATHERED LEAD INFORMATION TO THE ENGINEER FOR DESIGN VERIFICATION.
- NO PORTION OF EXISTING WATER WITH AN EXISTING WATER SERVICE WILL BE ALLOWED TO BE DEPRESSURIZED.
- THE NEW WATER MAIN WILL NEED TO BE PRESSURE TESTED FROM THE NEW CONNECTION POINT VALVE TO NEW CONNECTION POINT VALVE.
- A CORPORATION WILL NEED TO BE INSTALLED ON THE EXISTING WATER MAIN SIDE OF EACH NEW CONNECTION POINT VALVE TO BE USED FOR BLOWING OFF AIR AND FLUSHING THE MAIN WHEN THE EXISTING VALVE IS OPENED TO FILL THE EXISTING MAIN BETWEEN THE EXISTING VALVE AND NEW CONNECTION POINT VALVE. THE CORPORATION WILL BE USED TO COLLECT SAMPLES FOR BACTERIOLOGICAL TESTING AFTER THIS PORTION OF EXISTING MAIN IS FILLED. THE SIZE AND LOCATION OF THE CORPORATION WILL NEED TO BE DOCUMENTED ON THE AS-BUILTS. OR THE EXISTING VALVES WILL REMAIN CLOSED AND THE EXISTING WATER MAIN BETWEEN THE EXISTING VALVE AND NEW CONNECTION POINT VALVE ARE DISINFECTED AND TESTED FOR BACTERIA WITH THE NEW WATER MAIN.

**GRADING NOTES**

- MATCH EXISTING GRADES AROUND PERIMETER WITH SLOPES AS SHOWN. MATCH AT 1 ON 4 IF NOT LABELED.
- THE CONTRACTOR SHALL INSTALL PEDESTRIAN FENCE AROUND ALL EXCAVATIONS TO BE LEFT OPEN OVERNIGHT AS REQUIRED.
- ALL SOIL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO MASS GRADING.
- ALL EXISTING ELEVATIONS ARE TO BE VERIFIED AND ACCEPTED AS SHOWN PRIOR TO COMMENCEMENT OF WORK.
- REMOVE AND REPLACE WITH CONTROLLED FILL ANY AREAS THAT HAVE BEEN SOFTENED BY RAINS, FREEZING, CONSTRUCTION EQUIPMENT, ETC.
- ALL REQUIRED FILL FOR THIS PROJECT SHALL BE SELECTED EXCAVATED MATERIAL FROM THE SITE APPROVED BY THE ENGINEER OR CLASS II GRANULAR MATERIAL FROM BORROW AND SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- ALL GRANULAR FILL UNDER THE INFLUENCE OF THE ROADWAY AND PROCESSED ROAD GRAVEL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY.
- ALL COMPACTION SHALL BE ACCOMPLISHED BY PLACING THE FILL IN 6" LOOSE LIFTS AND MECHANICALLY COMPACTING EACH LIFT TO AT LEAST THE SPECIFIED MINIMUM DRY DENSITY. FIELD DENSITY TESTS SHOULD BE PERFORMED ON EACH LIFT AS NECESSARY TO ENSURE THAT ADEQUATE MOISTURE CONDITIONS AND COMPACTION ARE BEING ACHIEVED.
- SITE CONTRACTOR SHALL REMOVE AND STOCKPILE ALL TOPSOIL AND BLACK ORGANIC SOILS ON-SITE TO BE USED IN THE REGRADING OF LANDSCAPE AREAS. THIS MATERIAL IS NOT TO BE USED FOR FILL OR PAVEMENT SUBBASE. REMOVAL OF ANY EXCESS SOIL OFF-SITE SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- CONTRACTOR RESPONSIBLE FOR VERIFYING EARTHWORK CALCULATIONS PRIOR TO COMMENCING WORK. NO EXTRA EARTHWORK WILL BE PAID FOR ONCE EARTHWORK HAS BEGUN. ANY DISCREPANCIES WITH THE EARTHWORK CALCULATIONS SHALL BE REVIEWED WITH THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.
- IF ANY ERRORS, DISCREPANCIES, OR OMISSIONS BECOME APPARENT, THESE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION OF ANYTHING AFFECTED SO THAT CLARIFICATION OR REDESIGN MAY OCCUR.

**LEGEND**

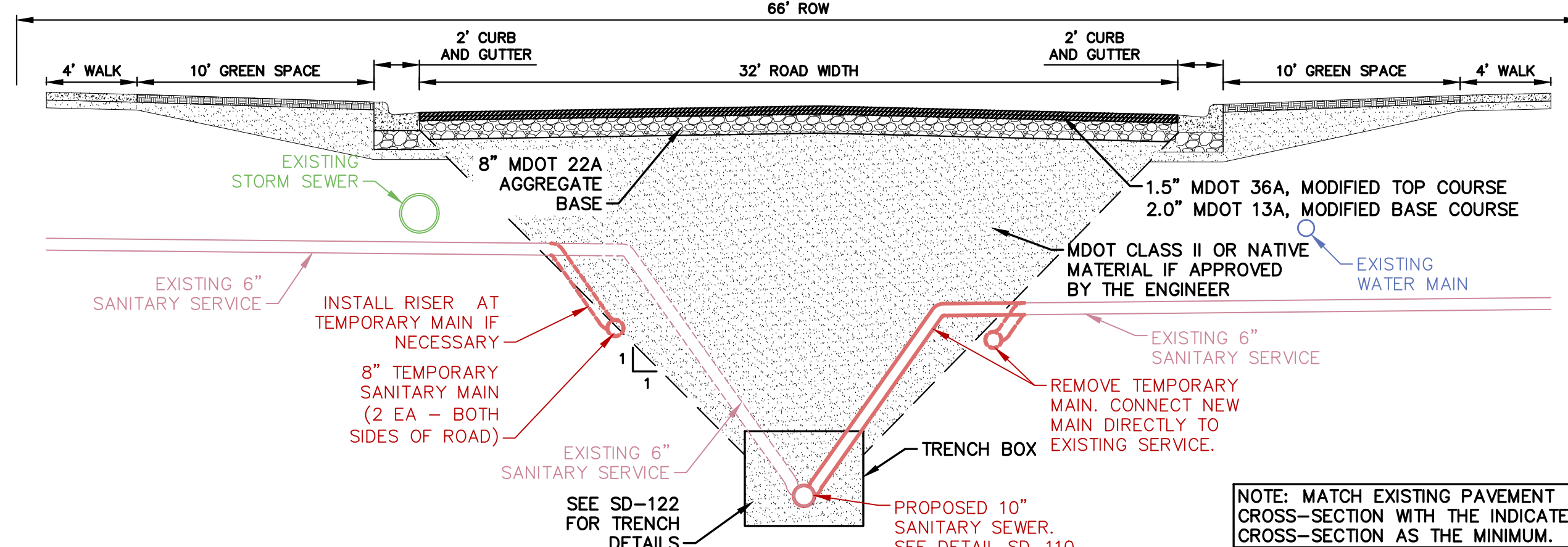


**CITY OF PORTAGE STANDARD DETAILS**

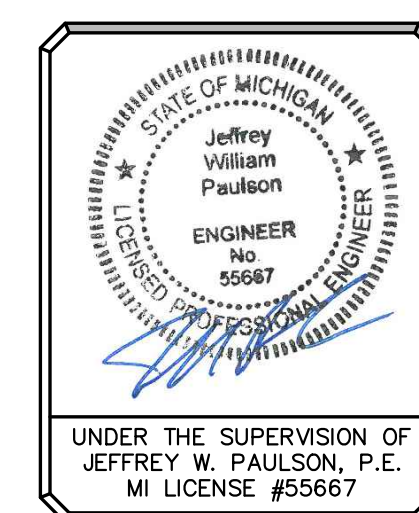
WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON PLANS, THEY ARE TO BE CONSTRUCTED ACCORDING TO THE MDT STANDARD PLAN GIVEN BELOW UNLESS OTHERWISE INDICATED.

STANDARD DESIGN	TITLE
SD-105	STANDARD MANHOLE
SD-106	SANITARY SEWER STANDARD MANHOLE CASTING
SD-108	STANDARD MANHOLE STEP
SD-110	STANDARD HOUSE CONNECTIONS
SD-113	STANDARD CURB
SD-117	RESIDENTIAL DRIVEWAY APPROACH WITH CURBED STREET
SD-122	STANDARD TRENCH DETAIL
SD-144	TYPICAL FIRE HYDRANT ASSEMBLY
SD-154	STANDARD VALVE BOX
SD-164	VALVE EXTENSION STEM
SD-165*	PAVEMENT REPLACEMENT DETAIL
SD-168	STANDARD TRENCH DETAIL FOR DUCTILE IRON WATER MAIN

\* PAVEMENT RESTORATION TO BE IN ACCORDANCE WITH THE REPLACEMENT DETAIL WITH THE FOLLOWING EXCEPTIONS:  
 - WEARING COURSE REPLACEMENT TO EXTEND FROM THE WESTERN CURB AND GUTTER TO THE EASTERN CURB AND GUTTER AND FROM THE MOST NORTHERLY SAW CUT TO THE MOST SOUTHERLY SAW CUT.  
 - THE PAVEMENT RESTORATION CROSS-SECTION IN MANHATTAN ST TO MATCH THE EXISTING PAVEMENT CROSS-SECTION WITH THE PAVEMENT REPLACEMENT CROSS-SECTION FOR A LOCAL ROAD LISTED ON SD-165 INDICATED AS THE MINIMUM CROSS-SECTION.



**MANHATTAN ST TYPICAL SECTION**



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 FIELD WORK PERFORMED BY:  
 DRIESENGA & ASSOCIATES, LLC

**CONSTRUCTION SEQUENCING**

1. INSTALL TEMPORARY TRAFFIC CONTROL MEASURES.
2. INSTALL BYPASS PUMPING FROM EXISTING MH-J TO EXISTING MH-K
3. REMOVE EXISTING PAVEMENT IN MANHATTAN ST. WITHIN PROJECT LIMITS. PROTECT EXISTING ADJACENT CURB AND GUTTER WHERE POSSIBLE. REMOVE CURB AND GUTTER WHERE NECESSARY.
4. INSTALL PROPOSED TEMPORARY SANITARY SEWER MAINS FROM EXISTING MH-K TO THE NORTH.
  - 4.1. CORE TEMPORARY MAINS INTO EXISTING MH-K.
  - 4.2. DISCONNECT EXISTING SERVICES FROM EXISTING MAIN. CONNECT SERVICES TO TEMPORARY MAINS.
  - 4.3. ALL EXISTING SERVICES SHALL BE CONNECTED TO TEMPORARY MAIN BEFORE REMOVING EXISTING MAIN.
  - 4.4. INSTALL WESTERN TEMPORARY MAIN FROM MH-K THROUGH 6726 MANHATTAN ST SERVICE.
  - 4.5. INSTALL EASTERN TEMPORARY MAIN FROM MH-K THROUGH 6717 MANHATTAN ST SERVICE.
  - 4.6. PROTECT EXISTING WATER AND GAS SERVICE LATERALS. REMOVE AND REPLACE CROSSING STORM SEWER AT TWO LOCATIONS PER PLANS.
  - 4.7. EXCAVATED MATERIAL SHALL BE STORED ON SCHOOL PROPERTY TO THE NORTH. MATERIAL CAN BE TRUCKED TO THE SOUTH END OF THE WORK AREA VIA COULTER AVE., MARLOW ST., AND GREENVIEW AVE. AS NEEDED. CONTRACTOR TO BE RESPONSIBLE FOR ALL DAMAGE DONE TO THE STREETS AS A RESULT OF HAULING THE MATERIAL. CONTRACTOR TO VIDEO STREETS PRIOR TO CONSTRUCTION AND PROVIDE A COPY OF THE VIDEO TO THE CITY OF PORTAGE PRIOR TO START OF CONSTRUCTION.
  - 4.8. MATERIAL CAN BE STOCKPILED ON SCHOOL PROPERTY TO BE USED AS BACKFILL PROVIDED IT MEETS THE BACKFILL REQUIREMENTS. RESIDENTS TO BRING CURBSIDE TRASH CANS TO SOUTHERN END OF CONSTRUCTION ZONE FOR PICKUP.
  - 4.9. PROPERLY INSTALL TRENCH BACKFILL TO THE TOP OF AGGREGATE BASE. INSTALL AGGREGATE RAMPS AS NECESSARY TO EXISTING DRIVEWAYS.
5. REMOVE EXISTING AND INSTALL PROPOSED SANITARY SEWER FROM EXISTING MH-K NORTHERLY TO PROPOSED SMH-1.
  - 5.1. INSTALL SERVICE WYES AND RISERS NEAR EXISTING CONNECTIONS. PLUG SERVICES FOR FUTURE CONNECTION.
  - 5.2. PROTECT EXISTING WATER AND GAS SERVICE LATERALS. REPLACE WATER SERVICE WITH CONTINUOUS SECTION OF PIPE (WITHOUT ANY JOINTS) FROM CORP STOP TO CURB STOP. REMOVE AND REPLACE CROSSING STORM SEWER AT TWO LOCATIONS PER PLANS.
  - 5.3. EXCAVATED MATERIAL SHALL BE STORED ON SCHOOL PROPERTY TO THE NORTH. MATERIAL CAN BE TRUCKED TO THE SOUTH END OF THE WORK AREA VIA COULTER AVE., MARLOW ST., AND GREENVIEW AVE. AS NEEDED. CONTRACTOR TO BE RESPONSIBLE FOR ALL DAMAGE DONE TO THE STREETS AS A RESULT OF HAULING THE MATERIAL. CONTRACTOR TO VIDEO STREETS PRIOR TO CONSTRUCTION AND PROVIDE A COPY OF THE VIDEO TO THE CITY OF PORTAGE PRIOR TO START OF CONSTRUCTION.
  - 5.4. INSTALL PROPOSED SMH-1.
  - 5.5. PROPERLY INSTALL TRENCH BACKFILL TO THE TOP OF AGGREGATE BASE. INSTALL AGGREGATE RAMPS AS NECESSARY TO EXISTING DRIVEWAYS.
  - 5.6. AIR TEST PROPOSED MAIN FROM EXISTING MH-K NORTHERLY TO PROPOSED SMH-1 IN ACCORDANCE WITH SECTION 208.2.5 OF THE CITY OF PORTAGE CONTRACT CONDITIONS AND SPECIFICATIONS.
  - 5.7. MANDREL TESTING AND TELEVISION SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 208.2 OF THE CITY OF PORTAGE CONTRACT CONDITIONS AND SPECIFICATIONS.
6. ONCE CONSTRUCTION AND TESTING OF PROPOSED MAIN IS COMPLETED, REMOVE TEMPORARY MAIN AND CONNECTION EXISTING SERVICES TO NEW SANITARY SEWER SERVICES.
  - 6.1. REMOVE TEMPORARY MAINS FROM NORTHERN END TO MH-K.
  - 6.2. PLUG CORES AND CLEAN MH-K.
  - 6.3. HMA SHALL BE PLACED WITHIN 5 DAYS OF REMOVAL OF TEMPORARY MAINS IS COMPLETE.
    - 6.3.1. ALL PAVEMENT REPLACEMENT RESTORATION IN COULTER AVENUE AND MANHATTAN ST SHALL BE IN ACCORDANCE WITH SD-165 WITH THE FOLLOWING EXCEPTIONS: THE REPLACEMENT CROSS-SECTION MUST MATCH THE EX. CROSS-SECTION WITH THE FOLLOWING AS A MINIMUM: 1.5-INCHES MDOT HMA 36A WEARING COURSE, 2-INCHES MDOT HMA 13A LEVELING COURSE, AND 8-INCHES OF MDOT 22A AGGREGATE BASE COURSE UNDER HMA AND CONCRETE CURB AND GUTTER. ALLOW FOR COOLING BETWEEN LIFTS.
  - 6.4. CLEAN ALL STREETS AND STORM SEWERS AFFECTED BY THE PROJECT.
7. REMOVE TEMPORARY TRAFFIC CONTROL MEASURES.
8. RECONFIGURE BYPASS PUMPING TO BE FROM EXISTING MH-J TO PROPOSED SMH-1.
9. INSTALL PROPOSED SANITARY SEWER FROM PROPOSED SMH-1 NORTHERLY TO PROPOSED SMH-3.
  - 9.1. INSTALL SMH-2 AND DOGHOUSE SMH-3.
  - 9.2. AIR TEST, MANDREL TEST, AND TELEVISION IN ACCORDANCE WITH SECTION 208.2 OF THE CITY OF PORTAGE CONTRACT CONDITIONS AND SPECIFICATIONS.
10. REMOVE EXISTING SANITARY SEWER FROM SMH-3 TO EXISTING MH-G.
11. INSTALL WATER MAIN PER PLAN. TEST IN ACCORDANCE WITH SECTION 208.1 OF THE CITY OF PORTAGE CONTRACT CONDITIONS AND SPECIFICATIONS.
12. REMOVE WATER MAIN PER PLAN.

**SOIL EROSION CONTROL MAINTENANCE TASKS AND SCHEDULE**

**DURING CONSTRUCTION**  
TO BE PERFORMED BY CONTRACTOR

TASKS	COMPONENTS	PAVED AREAS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CURBS	SITING DISTURBED AREA	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION	X	X	X	X	X		WEEKLY
REMOVAL OF SEDIMENT ACCUMULATION	X	X	X	X	X		AS NEEDED* AND PRIOR TO TURNOVER
INSPECT FOR FLOATABLES AND DEBRIS	X	X	X	X	X		QUARTERLY
CLEANING FOR FLOATABLES AND DEBRIS	X	X	X	X	X		QUARTERLY AND AT TURNOVER
INSPECTION FOR EROSION						X	WEEKLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES						X	AS NEEDED AND PRIOR TO TURNOVER
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)	X						ANNUALLY AND AT TURNOVER
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED	X				X		AS NEEDED

\* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH

**PERMANENT MAINTENANCE**  
TO BE PERFORMED BY THE DEPARTMENT OF TRANSPORTATION AND UTILITIES

TASKS	COMPONENTS	PAVED AREAS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN CASTINGS	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION			X	X		AS NEEDED*
REMOVAL OF SEDIMENT ACCUMULATION			X	X		AS NEEDED*
INSPECT FOR FLOATABLES AND DEBRIS			X	X	X	AS NEEDED
CLEANING FOR FLOATABLES AND DEBRIS			X	X	X	AS NEEDED
INSPECTION FOR EROSION						AS NEEDED
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES						AS NEEDED
CLEAN DRIVES	X					SEMI-ANNUALLY

\* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH

PRELIMINARY CONSTRUCTION SCHEDULE					
	JUNE	JULY	AUGUST	OCTOBER	NOVEMBER
INSTALL TEMPORARY MEASURES	X				
PERFORM EARTHWORK		X			
INSTALL PERMANENT MEASURES		X			
RESTORATION			X		
SUBSTANTIAL COMPLETION			X	X	
FINAL COMPLETION				X	X

**MAINTENANCE AFTER CONSTRUCTION:**

1. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED BY THE CONTRACTOR ONLY AFTER THE ENTIRE SITE HAS BEEN RESTORED.
2. CITY OF PORTAGE SHALL MAINTAIN STORM DRAINAGE IMPROVEMENTS WITHIN STREET RIGHT OF WAY.
3. THE PROPERTY OWNER SHALL MAINTAIN STORM DRAINAGE IMPROVEMENTS OUTSIDE OF STREET RIGHT OF WAY.



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FIELD WORK PERFORMED BY:  
DRIESENGA & ASSOCIATES, LLC

BULLETIN 3  
BULLETIN 2  
ISSUED FOR  
DATE

MAY 23, 2023  
MAY 6, 2023

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

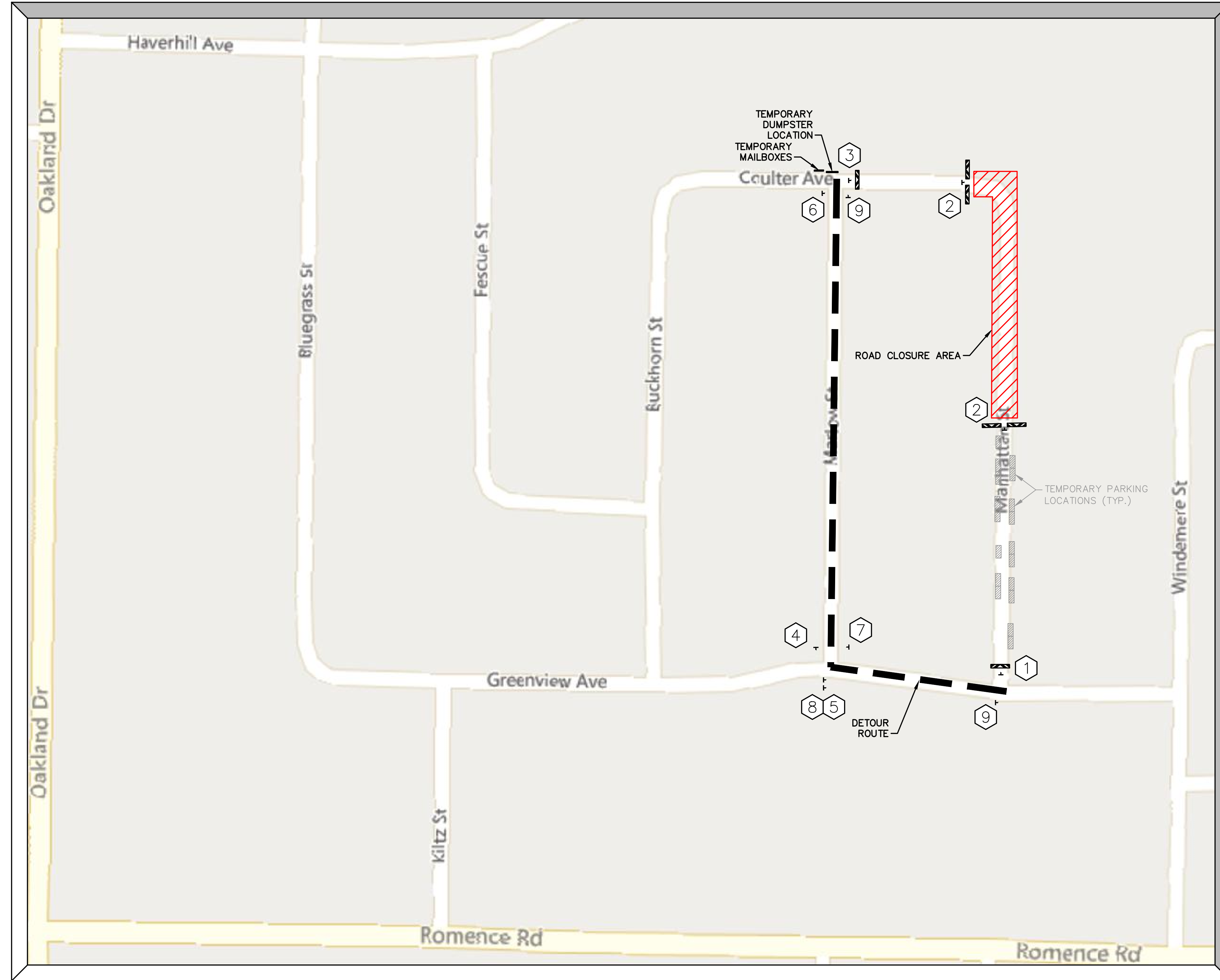
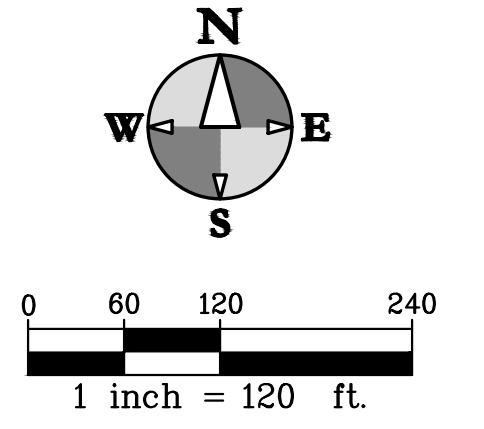
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

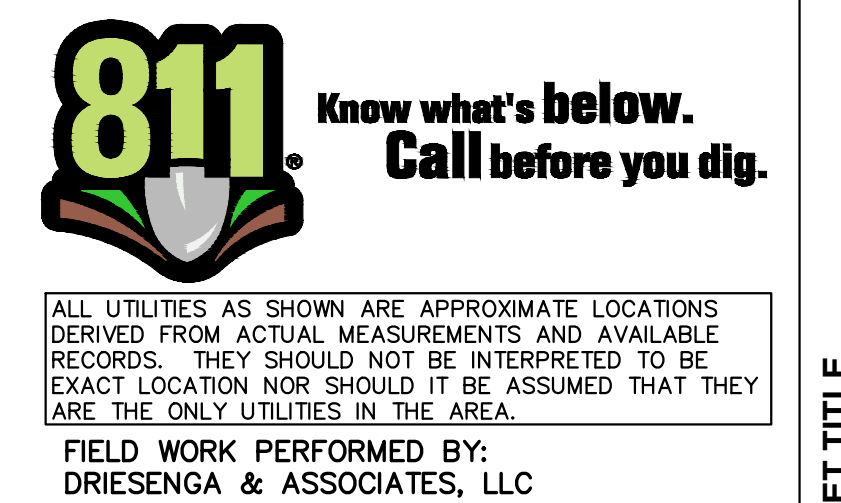
SHEET NUMBER  
PROJECT NOTES

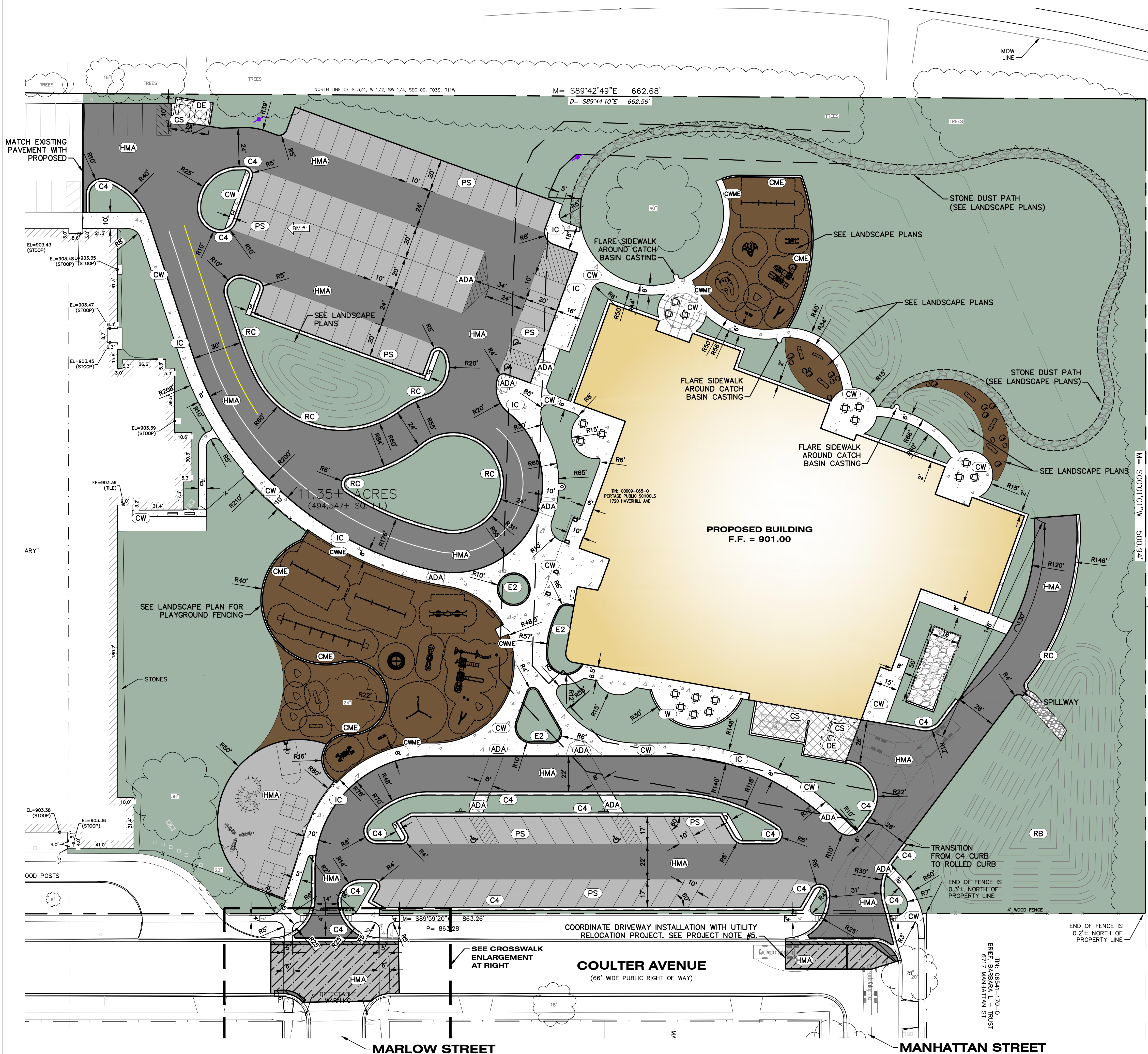
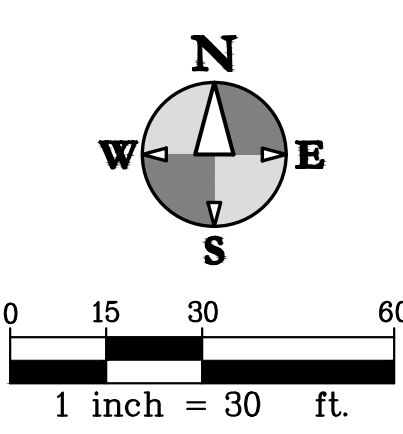
DATE  
JUNE 30, 2022

SHEET NUMBER  
C 101  
21-237.20



 QTY: 1 SIZE: 60"x30" (13 SFT) TOTAL AREA: 13 SFT DESIGNATION R11-4	 QTY: 2 SIZE: 48"x30" (10 SFT) TOTAL AREA: 20 SFT DESIGNATION R11-2	 QTY: 1 SIZE: 48"x30" (10 SFT) TOTAL AREA: 10 SFT DESIGNATION R11-2	 QTY: 1 SIZE: 36"x12" (3 SFT) TOTAL AREA: 9 SFT DESIGNATION W20-12P	 QTY: 1 SIZE: 36"x12" (3 SFT) TOTAL AREA: 6 SFT DESIGNATION W20-12P	 QTY: 1 SIZE: 36"x12" (3 SFT) TOTAL AREA: 6 SFT DESIGNATION W20-12P	 QTY: 1 SIZE: 36"x12" (3 SFT) TOTAL AREA: 6 SFT DESIGNATION W20-12P	 QTY: 1 SIZE: 36"x12" (3 SFT) TOTAL AREA: 6 SFT DESIGNATION W20-12P	 QTY: 2 SIZE: 24"x18" (3 SFT) TOTAL AREA: 6 SFT DESIGNATION M4-8A	 QTY: 8 BARRICADE, HIGH INTENSITY, LIGHTED DESIGNATION TYPE III
 SIZE: 48"x18" (6 SFT) TOTAL AREA: 6 SFT DESIGNATION M4-10L		 SIZE: 48"x18" (6 SFT) TOTAL AREA: 6 SFT DESIGNATION M4-10R	 SIZE: 30"x24" (5 SFT) TOTAL AREA: 15 SFT DESIGNATION M4-9L	 SIZE: 30"x24" (5 SFT) TOTAL AREA: 15 SFT DESIGNATION M4-9L	 SIZE: 30"x24" (5 SFT) TOTAL AREA: 10 SFT DESIGNATION M4-9R	 SIZE: 30"x24" (5 SFT) TOTAL AREA: 10 SFT DESIGNATION M4-9R	 SIZE: 30"x24" (5 SFT) TOTAL AREA: 10 SFT DESIGNATION M4-9R	 SIZE: 30"x24" (5 SFT) TOTAL AREA: 10 SFT DESIGNATION M4-9J	





**LEGEND**

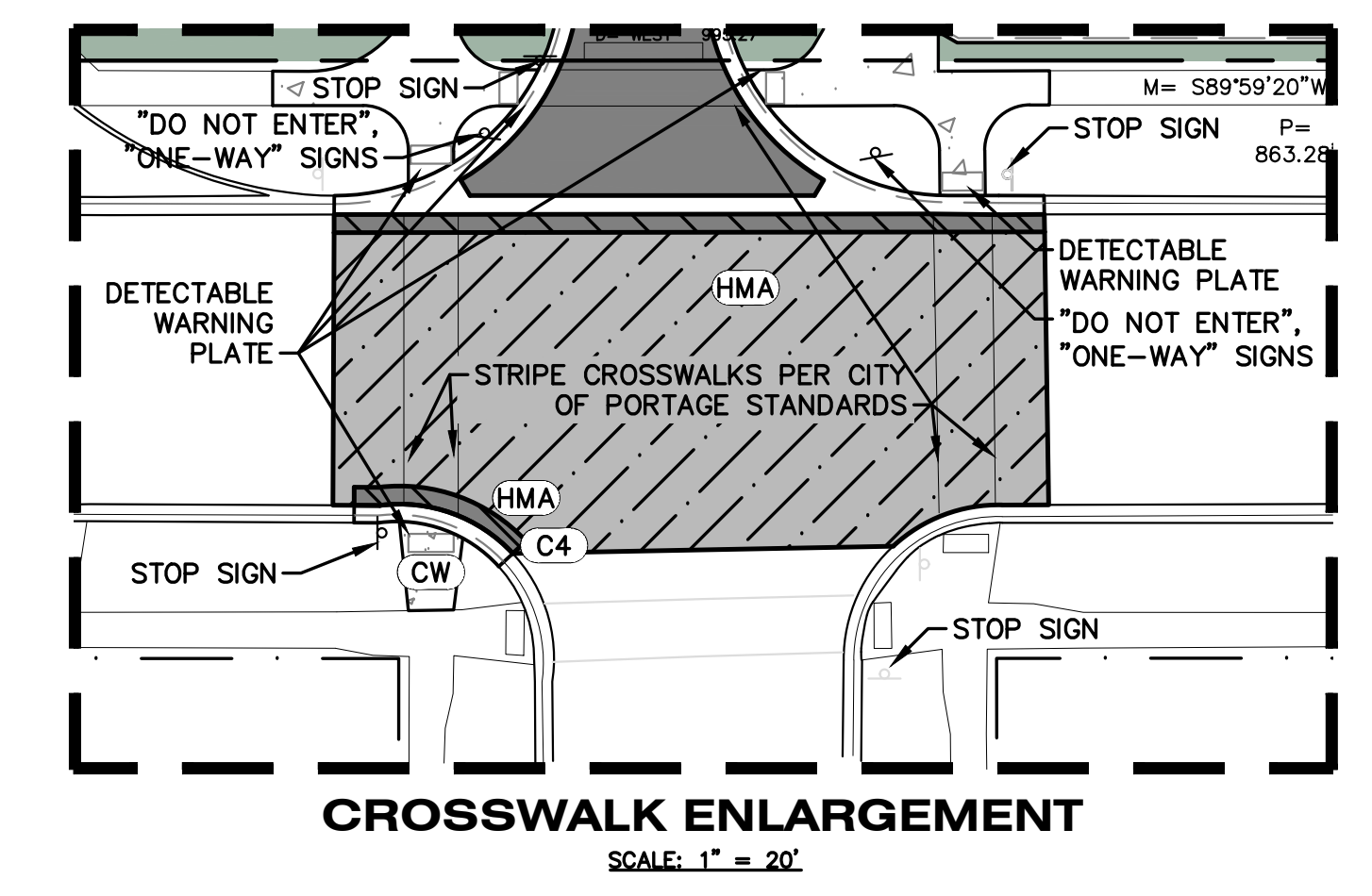
- [Symbol] STANDARD-DUTY HMA PAVEMENT (SEE DETAIL)
- [Symbol] HEAVY-DUTY HMA PAVEMENT (SEE DETAIL)
- [Symbol] CONCRETE PAVEMENT AND SIDEWALK
- [Symbol] HEAVY-DUTY CONCRETE PAVEMENT
- [Symbol] PROPOSED BUILDING
- [Symbol] 1.5" MDOT 36A PAVEMENT REPLACEMENT (SEE NOTE #4)
- [Symbol] FULL DEPTH PAVEMENT REPLACEMENT (SEE NOTE #4)
- [Symbol] PLAYGROUND/MULCH AREA
- [Symbol] CURB AND GUTTER

**SITE LEGEND**

- [Symbol] HMA HMA PAVEMENT (SEE DETAIL)
- [Symbol] C4 C4 CURB AND GUTTER (SEE DETAIL)
- [Symbol] E2 E2 CURB (SEE DETAIL)
- [Symbol] RC ROLLED CURB (SEE DETAIL)
- [Symbol] IC INTEGRAL CURB WALK (SEE DETAIL)
- [Symbol] ADA ADA RAMP (SEE GRADING PLAN)
- [Symbol] CW CONCRETE WALK (SEE DETAIL)
- [Symbol] CME CONCRETE MULCH EDGE (SEE DETAIL)
- [Symbol] CME CONCRETE MULCH WALK EDGE (SEE DETAIL)
- [Symbol] CS CONCRETE SURFACE (SEE DETAIL)
- [Symbol] PS PARKING STRIPING
- [Symbol] DE DUMPSTER ENCLOSURE (SEE LANDSCAPE PLANS)
- [Symbol] W SEATING WALL (SEE LANDSCAPE PLANS)
- [Symbol] RB RETENTION BASIN

**PROJECT NOTES**

1. ALL EXISTING ELEVATIONS ARE TO BE VERIFIED AND ACCEPTED AS SHOWN PRIOR TO COMMENCEMENT OF WORK.
2. VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES, INCLUDING ANY EXISTING SANITARY LEADS, PRIOR TO ORDERING STRUCTURES AND CONSTRUCTION.
3. COORDINATE ALL TRAFFIC CONTROL WITH CITY OF PORTAGE.
4. ALL PAVEMENT REPLACEMENT RESTORATION IN COULTER AVENUE SHALL BE IN ACCORDANCE WITH SD-165 WITH THE FOLLOWING EXCEPTIONS: THE REPLACEMENT CROSS-SECTION MUST MATCH THE EX. CROSS-SECTION WITH THE FOLLOWING AS A MINIMUM: 1.5-INCHES MDOT HMA 36A WEARING COURSE, 2-INCHES MDOT HMA 13A LEVELING COURSE, AND 8-INCHES OF MDOT 22A AGGREGATE BASE COURSE UNDER HMA AND CONCRETE CURB AND GUTTER. ALLOW FOR COOLING BETWEEN LIFTS.
5. COORDINATE PAVEMENT REPLACEMENT IN COULTER AVENUE FOR EASTERN DRIVE WITH UTILITY RELOCATION PROJECT. REPLACE PAVEMENT IN COULTER AVENUE AT THE SAME TIME AS UTILITY RELOCATION PROJECT IF POSSIBLE. IF DONE SEPARATELY, REPLACE WEARING COURSE THROUGH EXTENTS OF CURB AND GUTTER REPLACEMENT TO THE CENTERLINE OF MANHATTAN STREET.
6. YIELD CALCULATIONS AND DENSITY TESTS OF THE HMA MATERIAL PLACED NEED TO BE PROVIDED. EXTRACTION/GRADATION/ANALYSIS ALSO NEEDS TO BE PROVIDED TO CONFIRM THAT THE MATERIAL PLACED MEETS PROJECT SPECIFICATIONS. THE ENGINEER, TESTING FIRM OR BOTH WILL NEED TO BE PRESENT DURING PAVING OPERATIONS.
7. CONTRACTOR TO OBTAIN A RIGHT OF WAY PERMIT FROM THE CITY OF PORTAGE. FEE AND BOND ARE REQUIRED.
8. ALL DIMENSIONS SHOWN ARE TO THE EDGE OF METAL.
9. PROVIDE CURB CUTS/RAMPS AT ALL BARRIER FREE ACCESS POINTS.
10. THE DETECTABLE WARNING PLATES NEED TO BE CAST IRON AND HAVE A BLACK ASPHALT COATING.
11. PAVEMENT MARKINGS AND SIGNAGE SHALL CONFORM TO THE CURRENT MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND MICHIGAN BARRIER FREE CODE.
12. ALL WORK SHALL CONFORM TO ALL LOCAL, STATE AND FEDERAL LAWS, RULES AND REGULATIONS IN FORCE AT THE TIME OF CONSTRUCTION.
13. THE CONTRACTOR SHALL LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND SHALL CONDUCT HIS OPERATIONS IN A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.



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

ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA.

FIELD WORK PERFORMED BY:  
 DRIESEN & ASSOCIATES, LLC

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION

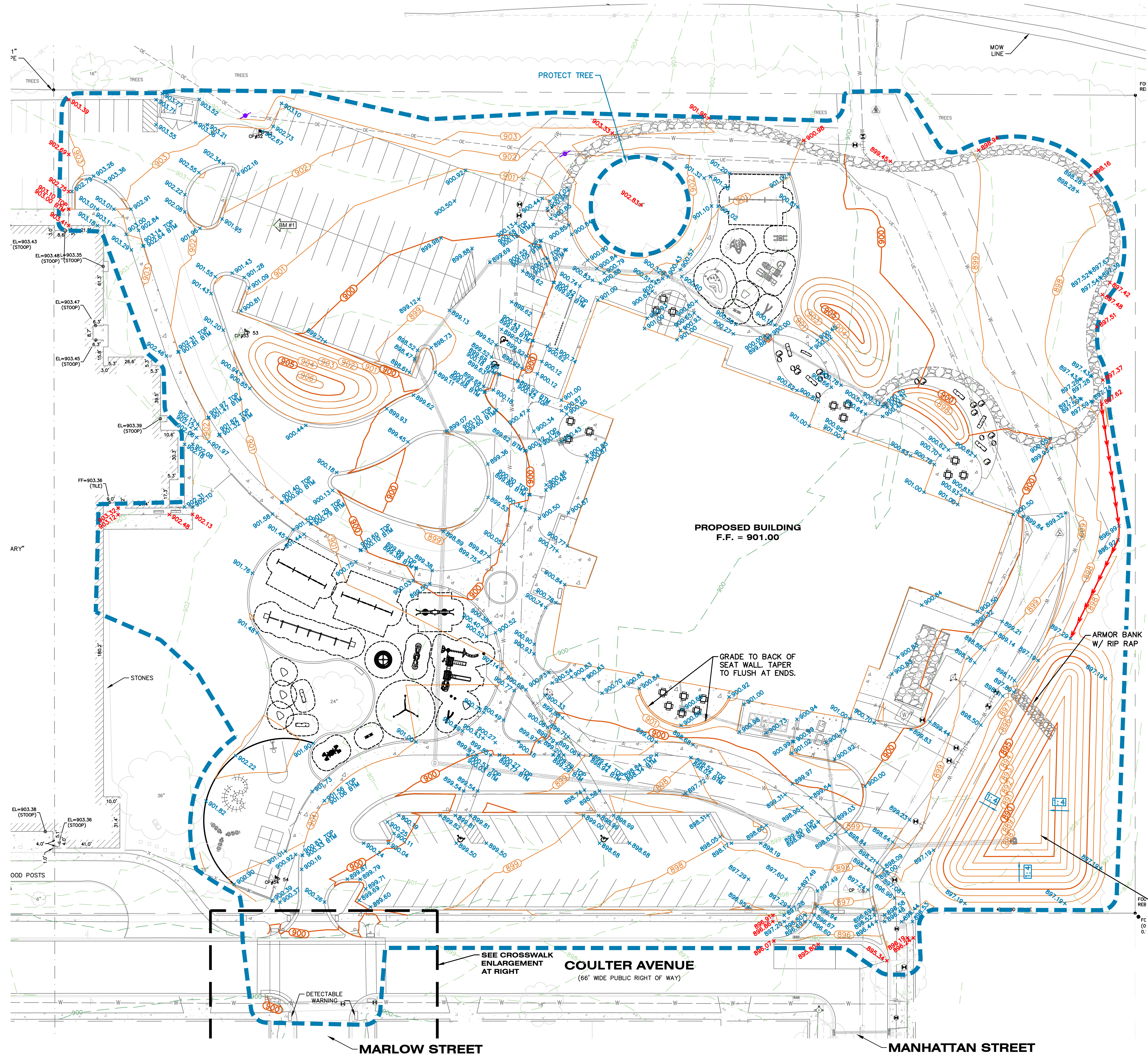
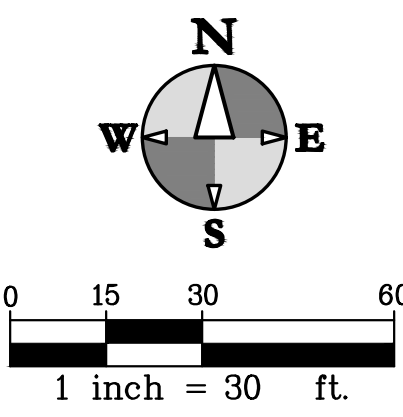
OWNER  
 PORTAGE PUBLIC SCHOOLS  
 Portage, Michigan

SHEET TITLE  
 SITE LAYOUT PLAN

DATE  
 JUNE 30, 2023

SHEET NUMBER  
 C 200

21-237.20

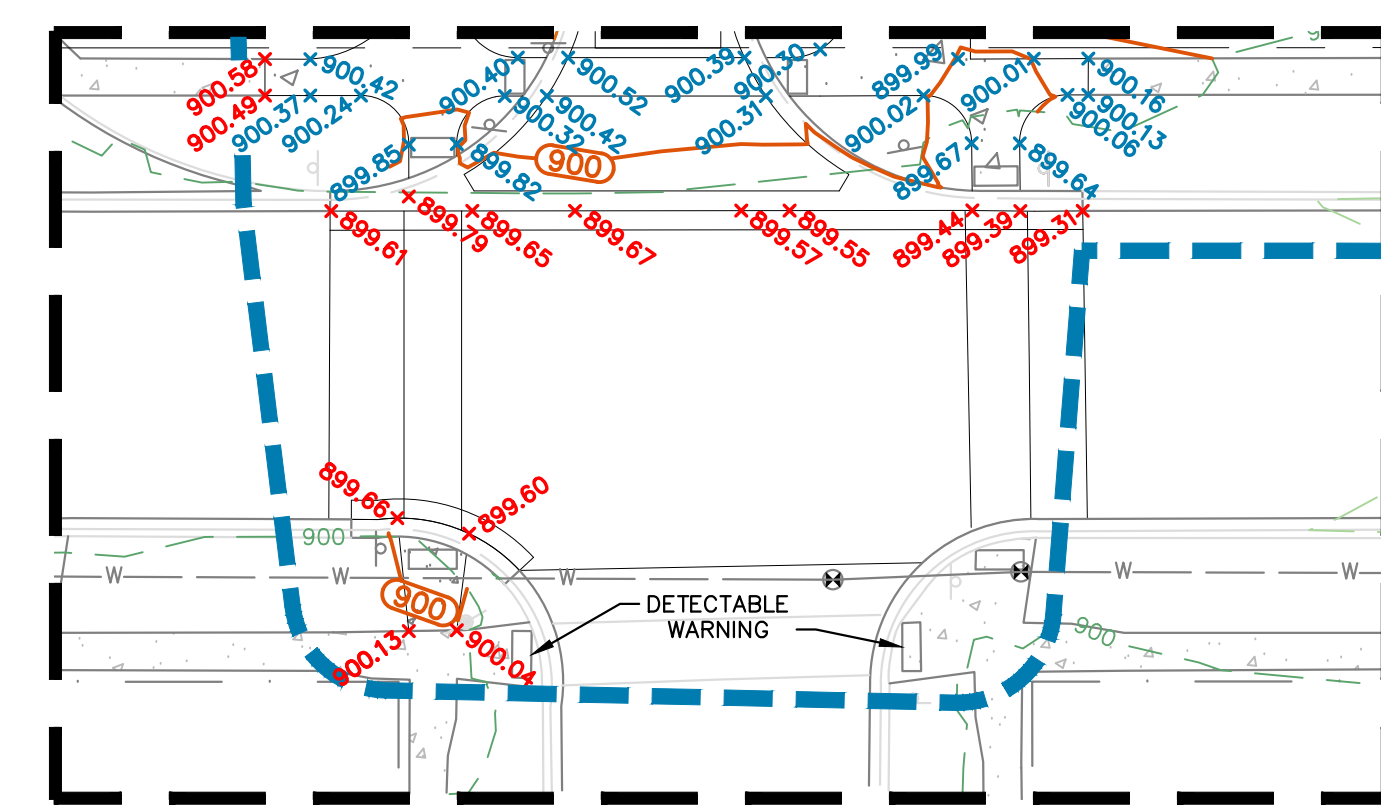


**GRADING NOTES**

1. MATCH EXISTING GRADES AROUND PERIMETER WITH SLOPES AS SHOWN. MATCH AT 1 ON 4 IF NOT LABELED.
2. THE CONTRACTOR SHALL INSTALL PEDESTRIAN FENCE AROUND ALL EXCAVATIONS TO BE LEFT OPEN OVERNIGHT AS REQUIRED.
3. ALL SOIL EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO MASS GRADING.
4. ALL EXISTING ELEVATIONS ARE TO BE VERIFIED AND ACCEPTED AS SHOWN PRIOR TO COMMENCEMENT OF WORK.
5. REMOVE AND REPLACE WITH CONTROLLED FILL ANY AREAS THAT HAVE BEEN SOFTENED BY RAINS, FREEZING, CONSTRUCTION EQUIPMENT, ETC.
6. ALL REQUIRED FILL FOR THIS PROJECT SHALL BE SELECTED EXCAVATED MATERIAL FROM THE SITE APPROVED BY THE ENGINEER OR CLASS II GRANULAR MATERIAL FROM BORROW AND SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
7. ALL GRANULAR FILL UNDER THE INFLUENCE OF THE ROADWAY AND PROCESSED ROAD GRAVEL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY.
8. ALL COMPACTION SHALL BE ACCOMPLISHED BY PLACING THE FILL IN 6" LOOSE LIFTS AND MECHANICALLY COMPACTING EACH LIFT TO AT LEAST THE SPECIFIED MINIMUM DRY DENSITY. FIELD DENSITY TESTS SHOULD BE PERFORMED ON EACH LIFT AS NECESSARY TO ENSURE THAT ADEQUATE MOISTURE CONDITIONS AND COMPACTION ARE BEING ACHIEVED.
9. SITE CONTRACTOR SHALL REMOVE AND STOCKPILE ALL TOPSOIL AND BLACK ORGANIC SOILS ON-SITE TO BE USED IN THE REGRADING OF LANDSCAPE AREAS. THIS MATERIAL IS NOT TO BE USED FOR FILL OR PAVEMENT SUBBASE. REMOVAL OF ANY EXCESS SOIL OFF-SITE SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
10. CONTRACTOR RESPONSIBLE FOR VERIFYING EARTHWORK CALCULATIONS PRIOR TO COMMENCING WORK. NO EXTRA EARTHWORK WILL BE PAID FOR ONCE EARTHWORK HAS BEGUN. ANY DISCREPANCIES WITH THE EARTHWORK CALCULATIONS SHALL BE REVIEWED WITH THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.
11. IF ANY ERRORS, DISCREPANCIES, OR OMISSIONS BECOME APPARENT, THESE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION OF ANYTHING AFFECTED SO THAT CLARIFICATION OR REDESIGN MAY OCCUR.

**GRADING PLAN LEGEND**

- 720 PROPOSED CONTOUR 5-FT
- 719 PROPOSED CONTOUR NORMAL
- 720 EXISTING CONTOUR 5-FT
- 719 EXISTING CONTOUR NORMAL
- PROPOSED GRADED SWALE
- LIMITS OF GRADING
- x 896.32 PROPOSED SPOT GRADE
- x 894.76 TOP AND BOTTOM OF CURB/WALL
- x 895.25 EXISTING SPOT GRADE
- 1:4 2:5 PROPOSED SURFACE SLOPE
- BM #XX BENCH MARK

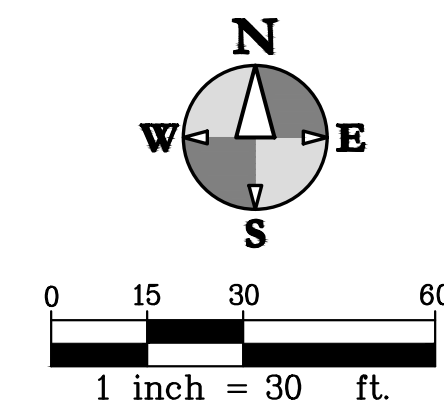


**CROSSWALK ENLARGEMENT**  
 SCALE: 1" = 20'

OVEREXCAVATE THE BOTTOM OF THE BASIN UNTIL WELL-GRADED SAND (SW) IS FOUND. REMOVE CLAYEY SOILS. BACKFILL OVEREXCAVATED AREA WITH WELL-GRADED SAND (SW). LIMIT COMPACTION DURING CONSTRUCTION.



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 FIELD WORK PERFORMED BY:  
 DRIESENKA & ASSOCIATES, LLC



**HS**  
**hurley & stewart**  
 hurley & stewart, llc  
 2800 s. 11th street  
 kalamazoo, michigan 49009  
 269.552.4960 fax 269.552.4961  
 www.hurleystewart.com

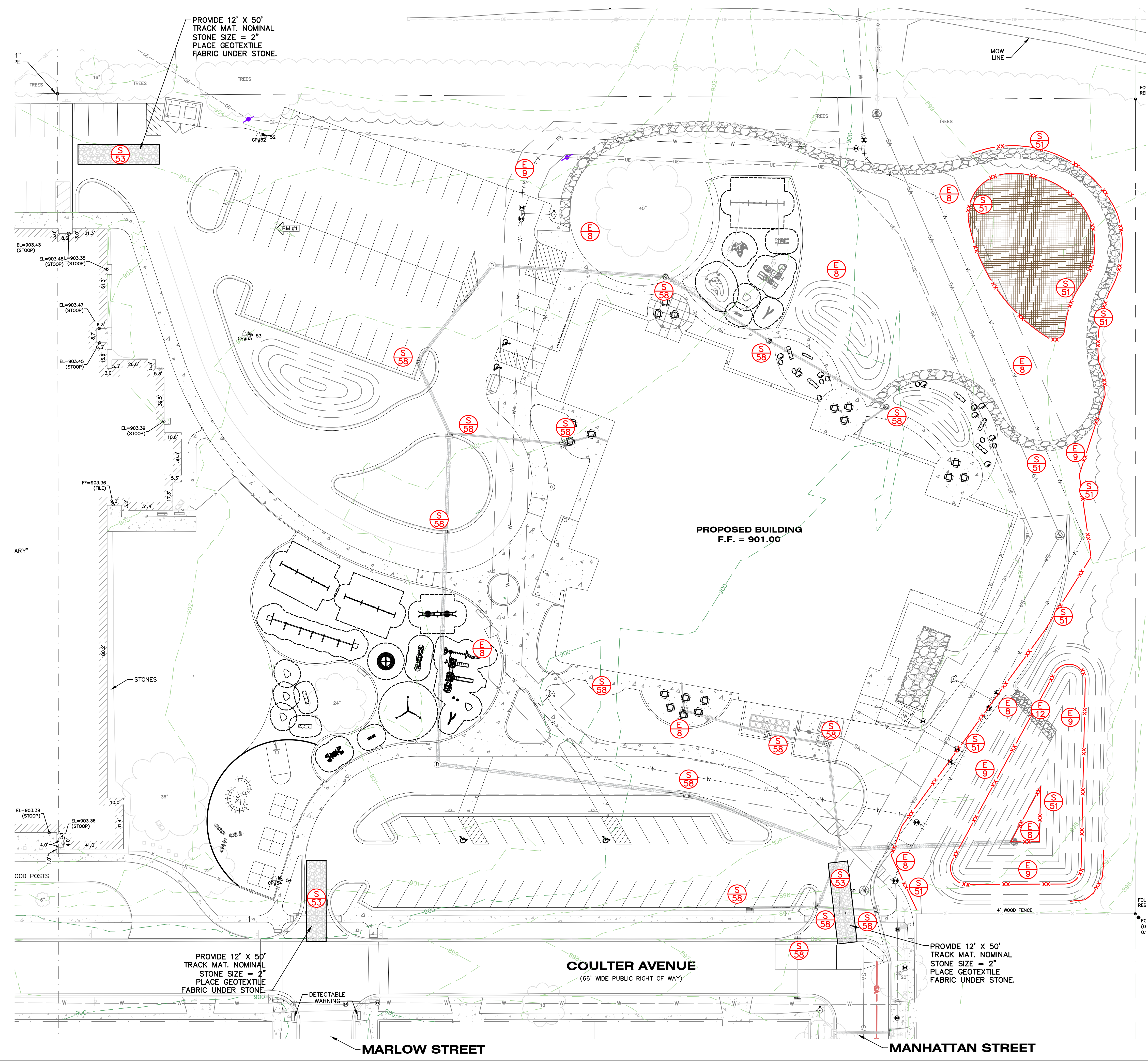
BULLETIN 4 JUNE 29, 2023  
 BULLETIN 2 MAY 8, 2023  
 BULLETIN 1 MARCH 16, 2023  
 ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION

OWNER  
 PORTAGE PUBLIC SCHOOLS  
 Portage, Michigan

SHEET TITLE  
 SITE SESC PLAN

DATE  
 JUNE 30, 2023  
 SHEET NUMBER  
**C 301**  
 21-237.20



**SOIL EROSION AND SEDIMENTATION CONTROL MEASURES**

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
E8	PERMANENT SEEDING		Stabilization method utilized on sites where earth change has been completed (final grading attained).
E9	MULCH BLANKETS		On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.
E12	RIPRAP		Use along shorelines, waterways, or where concentrated flows occur. Slows velocity, reduces sediment load, and reduces erosion.
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.

**SESC PLAN LEGEND**

- PROPOSED SILT FENCE
- SOIL BORING
- BENCH MARK
- SOIL EROSION MEASURE
- SEDIMENT CONTROL MEASURE

PROVIDE 12" X 50" TRACK MAT, NOMINAL STONE SIZE = 2" PLACE GEOTEXTILE FABRIC UNDER STONE.

PROVIDE 12" X 50" TRACK MAT, NOMINAL STONE SIZE = 2" PLACE GEOTEXTILE FABRIC UNDER STONE.

PROVIDE 12" X 50" TRACK MAT, NOMINAL STONE SIZE = 2" PLACE GEOTEXTILE FABRIC UNDER STONE.



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 FIELD WORK PERFORMED BY:  
 DRIESENGA & ASSOCIATES, LLC



**SOIL EROSION CONTROL MAINTENANCE TASKS AND SCHEDULE**

**SESC NOTES**

- ALL WORK WILL COMPLY WITH THE PROVISIONS OF THE SOIL EROSION AND SEDIMENTATION CONTROL ACT (PA 451, PART 91 OF 1994 AS AMENDED) ADMINISTERED BY THE CITY OF PORTAGE.
- SITES WITH DISTURBANCE LARGER THAN 5 ACRES NEED TO FOLLOW THE SOIL EROSION AND SEDIMENTATION CONTROL GUIDEBOOK BY THE STATE OF MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET OFFICE OF FACILITIES, DESIGN AND CONSTRUCTION DIVISION.
- AVOID UNNECESSARY DISTURBING OR REMOVING EXISTING VEGETATED TOPSOIL OR EARTH COVER. THESE AREAS ACT AS SEDIMENT FILTERS.
- ALL TEMPORARY SOIL EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL SITE IS ESTABLISHED.
- PROVIDE INSTALL INLET PROTECTION AT ALL STORM SEWER STRUCTURES DURING CONSTRUCTION.
- NO SITE WORK SHALL BEGIN UNTIL THE SILT FENCE AND ACCESS ROAD ARE INSTALLED.
- ALL SOIL PILES SHALL BE SURROUNDED BY SILT FENCE IF ALLOWED TO REMAIN IN PLACE FOR MORE THAN 7 DAYS. TOPSOIL PILES SHALL BE SEEDED IF ALLOWED TO REMAIN IN PLACE FOR MORE THAN 20 DAYS. SPOIL PILES SHALL NOT BE PLACED WITHIN 50' FROM ANY TEMPORARY OR PERMANENT WATERCOURSE.
- THE CONTRACTOR SHALL COMPLY WITH THE WEEKLY RECOMMENDATIONS OF THE CERTIFIED STORM WATER OPERATOR.
- ALL INLETS IN PAVED AREAS SHALL HAVE INLET PROTECTION DURING CONSTRUCTION.
- COORDINATE TOPSOIL STOCKPILE WITH OWNER.
- PLACE TRACK MATS AT THE ENTRANCE OF SITE TO REDUCE MATERIAL TRACKED OFF SITE.
- COORDINATE THE CLEARING LIMITS WITH THE OWNER PRIOR TO COMMENCING WORK.
- PLACE "DO NOT ENTER CONSTRUCTION ZONE" SIGNS AT ALL ENTRY POINTS TO PROJECT.
- PROVIDE SILT SACKS IN EACH CATCH BASIN UNTIL SITE IS STABILIZED.
- ALL SOIL EROSION MEASURES SHALL BE IN PLACE PRIOR TO COMMENCING WORK.
- PLACE SILT FENCES ALONG THE TOE OF TOPSOIL STOCKPILES AND OTHER FILL AREAS. SEED TOPSOIL STOCKPILE AND MAINTAIN SILT FENCES UNTIL SITE IS STABILIZED.
- MAINTAIN A VEGETATIVE BUFFER WHEREVER POSSIBLE.
- CLEAN ADJACENT ROADWAYS WHEN NECESSARY.
- WATER SITE WHEN NECESSARY TO PREVENT AIR BORNE SEDIMENT TRANSFER.
- CONTRACTOR TO COMPLETE AND SUBMIT A SOIL EROSION AND SEDIMENT CONTROL PERMIT APPLICATION TO THE CITY. THE FEE AND BOND ARE REQUIRED.
- CONTRACTOR TO INSTALL A PERMIT BOX ON SITE AND PLACE WEATHER CARD AND LAMINATED 11X17 REDUCTION OF APPROVED SESC PLANS. CONTRACTOR TO PRINT AND LAMINATE THE 11X17 REDUCTION OF THE APPROVED SESC PLANS.

**DURING CONSTRUCTION**  
 TO BE PERFORMED BY CONTRACTOR

TASKS	COMPONENTS	PAVED AREAS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CASTINGS	SITE DISTURBED AREA	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION	X	X	X	X	X		WEEKLY
REMOVAL OF SEDIMENT ACCUMULATION	X	X				X	AS NEEDED* AND PRIOR TO TURNOVER
INSPECT FOR FLOATABLES AND DEBRIS	X	X	X				QUARTERLY
CLEANING FOR FLOATABLES AND DEBRIS	X	X	X				QUARTERLY AND AT TURNOVER
INSPECTION FOR EROSION						X	WEEKLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES						X	AS NEEDED AND PRIOR TO TURNOVER
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)	X						ANNUALLY AND AT TURNOVER
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED	X					X	AS NEEDED

\* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH

PRELIMINARY CONSTRUCTION SCHEDULE					
	JUNE	JULY	AUGUST	OCTOBER	NOVEMBER
INSTALL TEMPORARY MEASURES	X				
PERFORM EARTHWORK		X			
INSTALL PERMANENT MEASURES		X			
RESTORATION			X		
SUBSTANTIAL COMPLETION			X	X	
FINAL COMPLETION				X	X

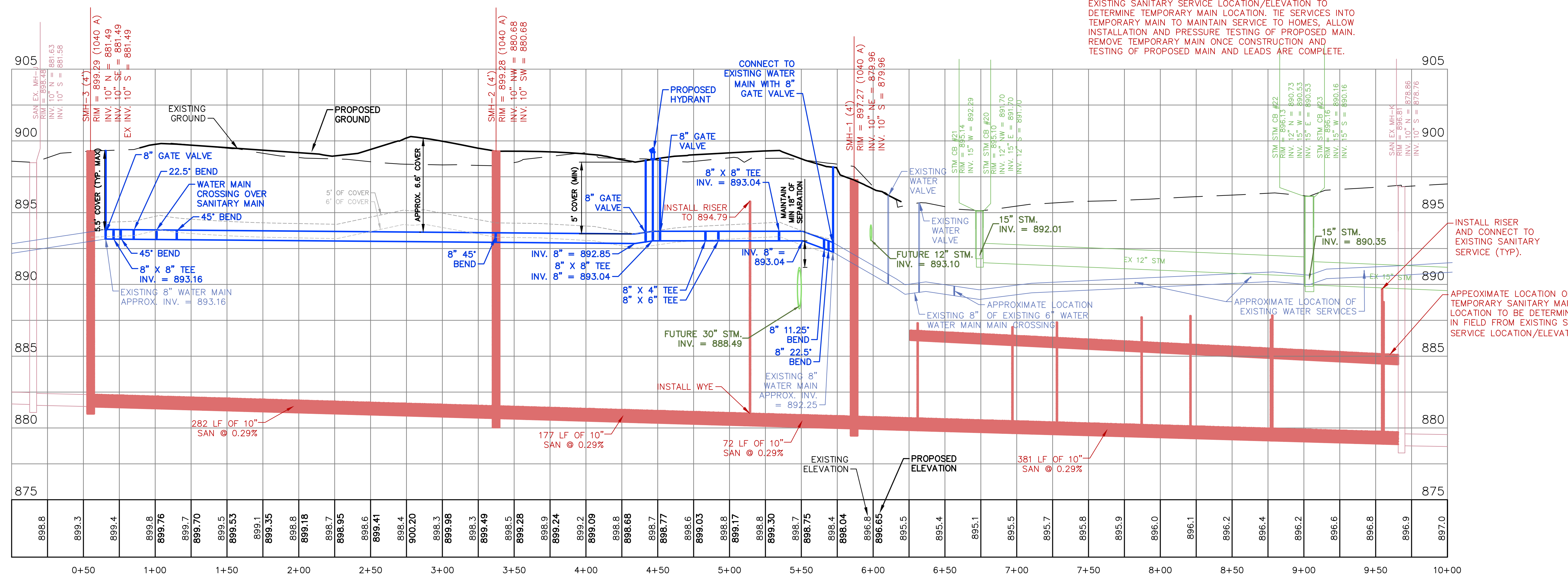
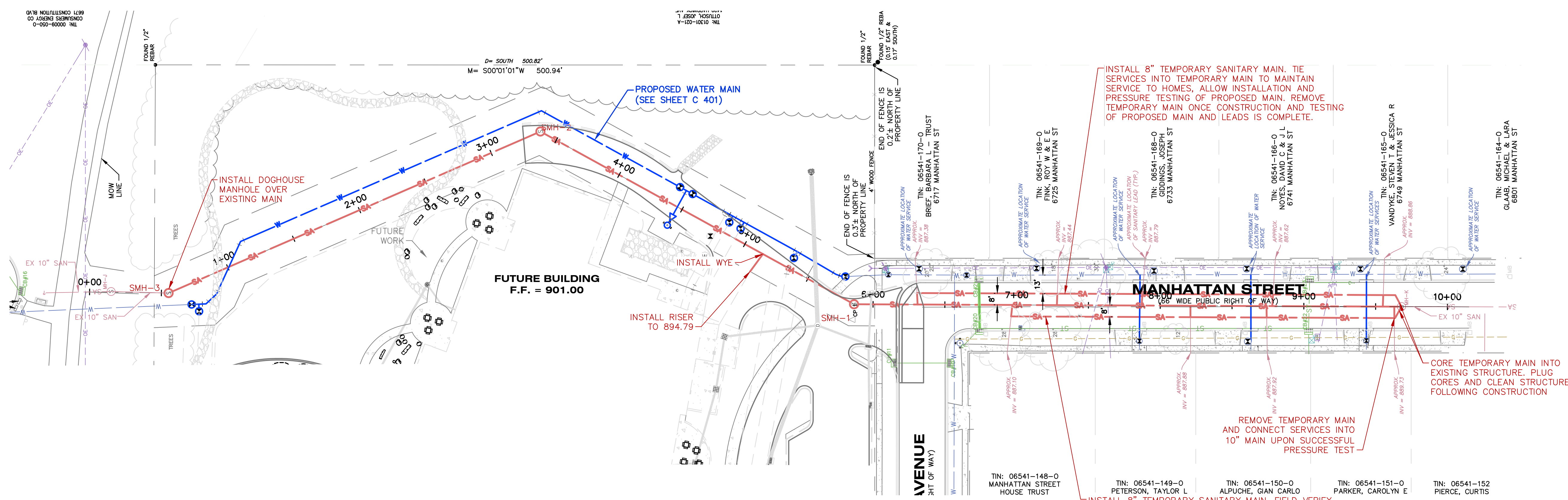
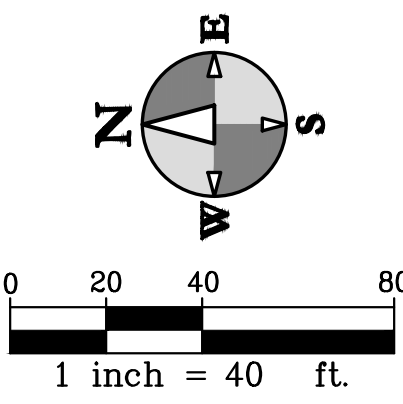
**MAINTENANCE AFTER CONSTRUCTION:**

- TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED BY THE CONTRACTOR ONLY AFTER THE ENTIRE SITE HAS BEEN RESTORED.
- THE PROPERTY OWNER SHALL MAINTAIN STORM DRAINAGE IMPROVEMENTS.
- FUTURE BUILDING AND SITE PHASES SHALL BE COMPLETED UNDER A SEPARATE OR AMENDED SESC PERMIT AND NOT SHOWN HERE.

**PERMANENT MAINTENANCE**  
 TO BE PERFORMED BY THE PROPERTY OWNER

TASKS	COMPONENTS	PAVED AREAS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CASTINGS	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION			X	X		SEMI-ANNUALLY AS NEEDED*
REMOVAL OF SEDIMENT ACCUMULATION			X	X		ANNUALLY AS NEEDED*
INSPECT FOR FLOATABLES AND DEBRIS			X	X	X	ANNUALLY
CLEANING FOR FLOATABLES AND DEBRIS			X	X	X	ANNUALLY
INSPECTION FOR EROSION						ANNUALLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES						AS NEEDED
CLEAN DRIVES AND PARKING LOTS	X					SEMI-ANNUALLY
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)	X					SEMI-ANNUALLY
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION			X			ANNUALLY
OWNER TO HAVE A PROFESSIONAL ENGINEER CARRY OUT EMERGENCY INSPECTIONS UPON IDENTIFICATION OF SEVER PROBLEMS			X	X	X	AS NEEDED

\* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH



**SANITARY AND WATER MAIN PROFILE**  
HORIZONTAL SCALE: 1" = 40'  
VERTICAL SCALE: 1" = 4'

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

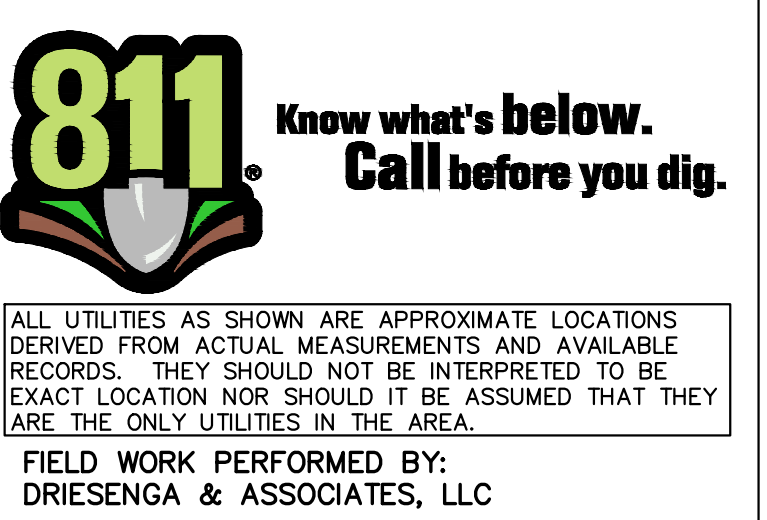
OWNER  
PORTAGE PUBLIC SCHOOLS

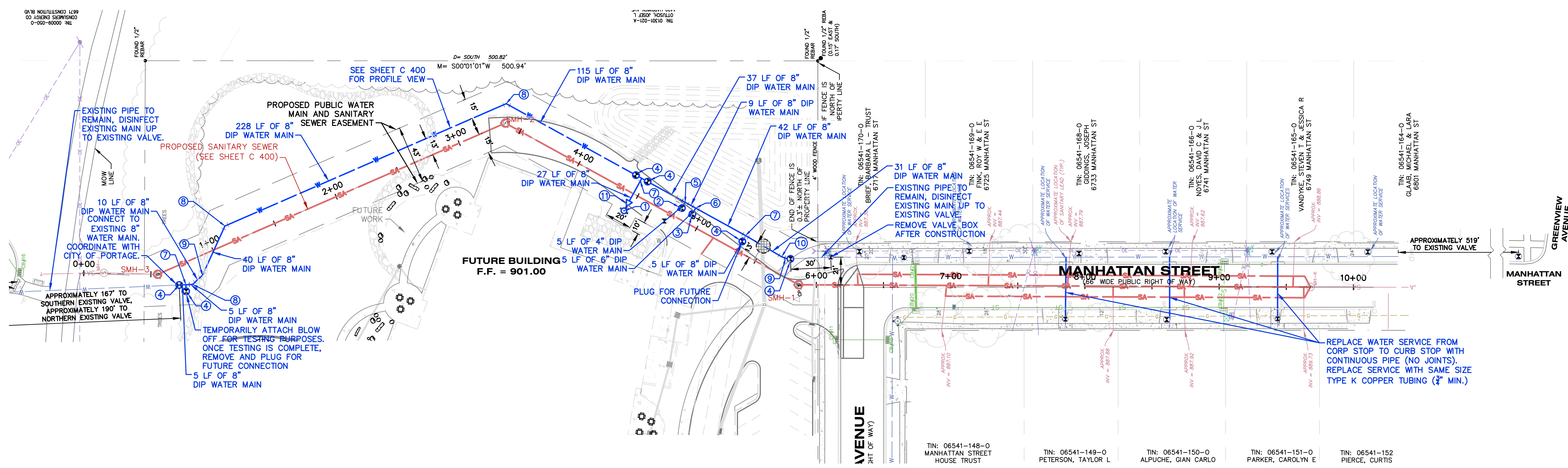
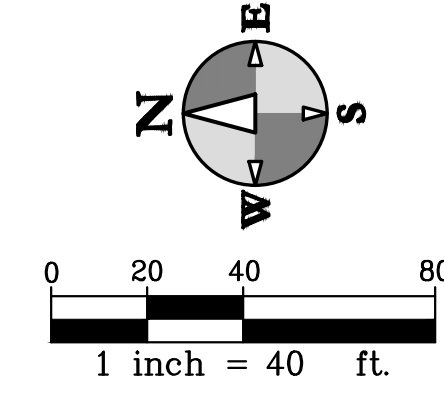
SHEET TITLE  
SANITARY PLAN & PROFILE

Portage, Michigan

DATE  
JUNE 30, 2022

SHEET NUMBER  
C 400  
21-237.20





**WATER MAIN FITTING SCHEDULE**

FITTING NUMBER	DESCRIPTION	TOTAL THIS SHEET
1	FIRE HYDRANT ASSEMBLY W/ 6" VALVE	1
2	4" GATE VALVE AND BOX	1
3	6" GATE VALVE AND BOX	1
4	8" GATE VALVE AND BOX	6
5	8" X 4" TEE	1
6	8" X 6" TEE	1
7	8" X 8" TEE	3
8	8" 45° BEND	3
9	8" 22.5° BEND	2
10	8" 11.25° BEND	1
11	8" X 6" REDUCER	1

**LEGEND**

- DEFLECT WATER MAIN UNDER/OVER PIPE CONFLICT (SEE DETAIL ON SHEET C 501)
- NOTE:  
CONTRACTOR RESPONSIBLE FOR VERIFYING FITTINGS. AMOUNTS DO NOT TAKE INTO CONSIDERATION VERTICAL DEFLECTIONS.

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION

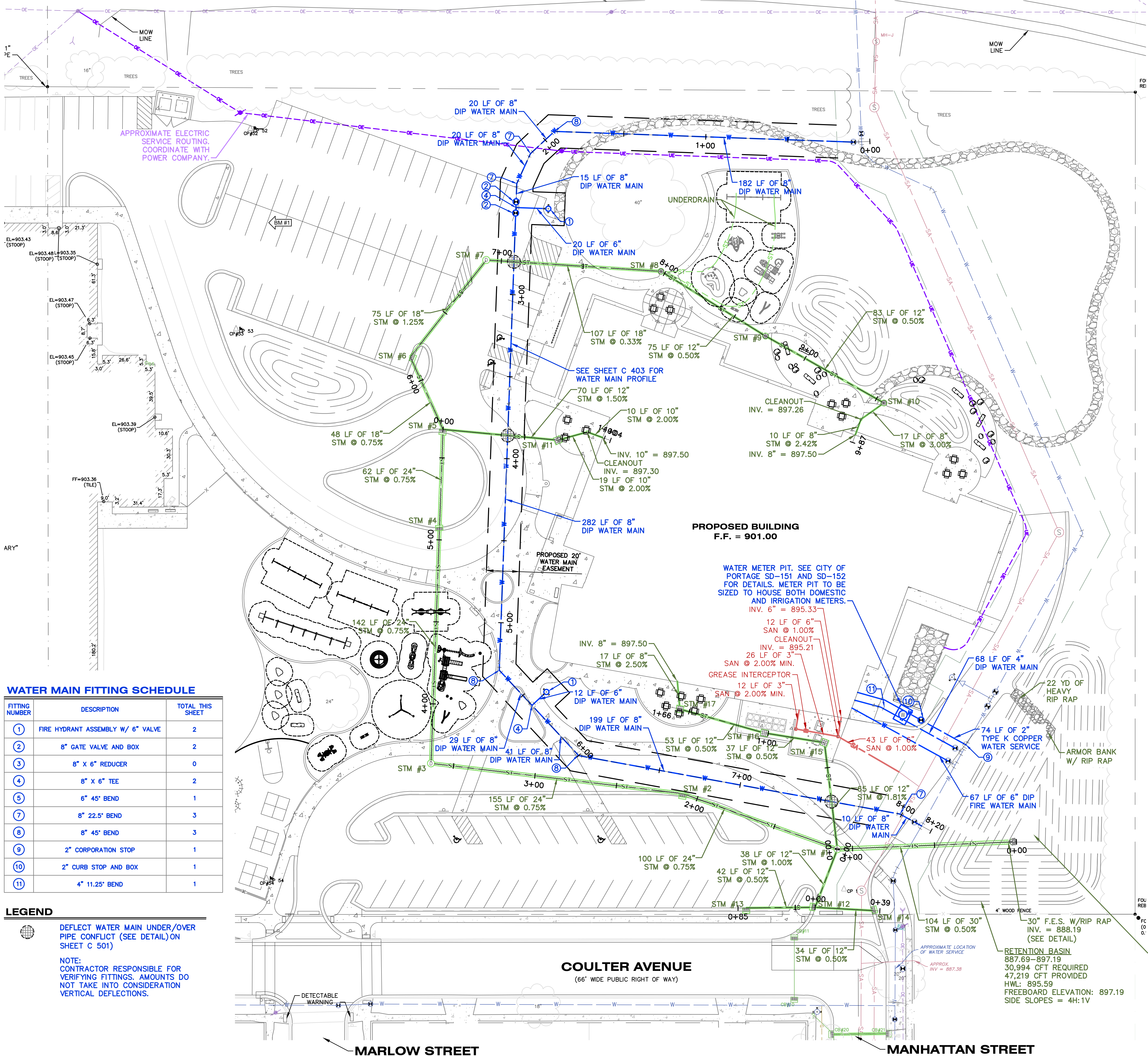
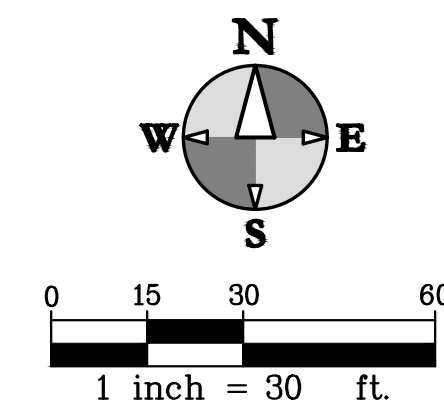
OWNER  
 PORTAGE PUBLIC SCHOOLS  
 Portage, Michigan

SHEET TITLE  
 WATER MAIN PLAN

DATE  
 JUNE 30, 2022  
 SHEET NUMBER  
 C 401  
 21-237.20



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 FIELD WORK PERFORMED BY:  
 DRIESENKA & ASSOCIATES, LLC



STORM SEWER STRUCTURE SCHEDULE					
STR. #	RIM EL.	DIAM.	CASTING	PIPES IN:	PIPES OUT
STM #1	898.62	6"	1040 A	24" W: 890.54 12" S: 892.55 12" N: 895.02	30" E: 888.71
STM #2	897.72	4"	7045 M1	24" W: 891.29	24" E: 891.29
STM #3	900.14	5"	1040 A	24" N: 892.45	24" E: 892.45
STM #4	898.89	4"	7045 M1	24" N: 893.51	24" S: 893.51
STM #5	899.07	4"	7045 M1	18" NW: 893.98 12" E: 895.48	24" S: 893.98
STM #6	898.47	4"	7045 M1	18" NE: 894.34	18" SE: 894.34
STM #7	899.69	4"	1040 A	18" E: 895.45	18" SW: 895.28
STM #8	900.32	4"	1040 O2	12" SE: 895.80	18" W: 895.80
STM #9	899.88	4"	1040 M1	12" SE: 896.18	12" NW: 896.18
STM #10	900.20	2"	1040 O2	8" SW: 896.74	12" NW: 896.59
STM #11	900.43	2"	5105 M1	10" E: 896.93	12" W: 896.53
STM #12	896.94	4"	7045 M1	12" E: 892.93 12" W: 892.93	12" N: 892.93
STM #13	896.95	2"	7045 M1		12" E: 893.14
STM #14	896.69	2"	7045 M1		12" W: 893.10
STM #15	900.75	4"	5105 M1	12" W: 896.20	12" S: 896.20
STM #16	900.73	4"	5105 M1	12" W: 896.39	12" E: 896.39
STM #17	900.66	4"	5105 M1	8" N: 897.07	12" E: 896.66

- UTILITY NOTES**
- ALL STRUCTURE CASTINGS TO BE EAST JORDAN IRON WORKS OR APPROVED EQUAL. CASTINGS SHOULD FOLLOW SPEC 207.3.2.6 OF THE CITY OF PORTAGE GENERAL SPECIFICATION MANUAL, EXCEPT COVERS SHALL NOT BE VENTED. SEE STRUCTURE TABLE FOR SPECIFIC CASTING AT EACH STRUCTURE.
  - ALL WATER MAINS AND THEIR APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF PORTAGE SPECIFICATIONS AND AWWA STANDARD C600.
  - WATER MAIN FLUSHING SHALL PROVIDE A MINIMUM WATER VELOCITY OF 3.0 FEET PER SECOND IN ACCORDANCE WITH AWWA STANDARD C651.
  - ALL WATER MAIN SHALL BE POLY WRAPPED. THE PLY WRAP SHALL CONFORM TO AWWA STANDARD C105.
  - ALL SANITARY SEWERS AND THEIR APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CITY OF PORTAGE SPECIFICATIONS.
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  - THE CONTRACTOR SHALL INSTALL PEDESTRIAN FENCE AROUND ALL EXCAVATIONS TO BE LEFT OPEN OVERNIGHT AS REQUIRED.
  - ANY UTILITIES REQUIRING DEWATERING SHALL BE INSTALLED TO THE CITY OF PORTAGE STANDARDS AND INCLUDED IN THE INSTALLATION COSTS. CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING NECESSARY TO CONSTRUCT UTILITIES IN THE DRY.
  - IF ANY ERRORS, DISCREPANCIES, OR OMISSIONS BECOME APPARENT, THESE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO CONSTRUCTION OF ANYTHING AFFECTED SO THAT CLARIFICATION OR REDESIGN MAY OCCUR.
  - DEWATERING MAY BE REQUIRED TO INSTALL OR REMOVE SOME UTILITIES. REFER TO SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.
  - REMOVE ANY ACCUMULATED SEDIMENT FROM ALL STRUCTURES AND REMOVE SILT SACKS ONCE SITE IS ESTABLISHED.
  - PROVIDE 18" WATER MAIN SEPARATION WHEN CROSSING OTHER UTILITIES. DEFLECT PER DETAIL ON SHEET C 501.

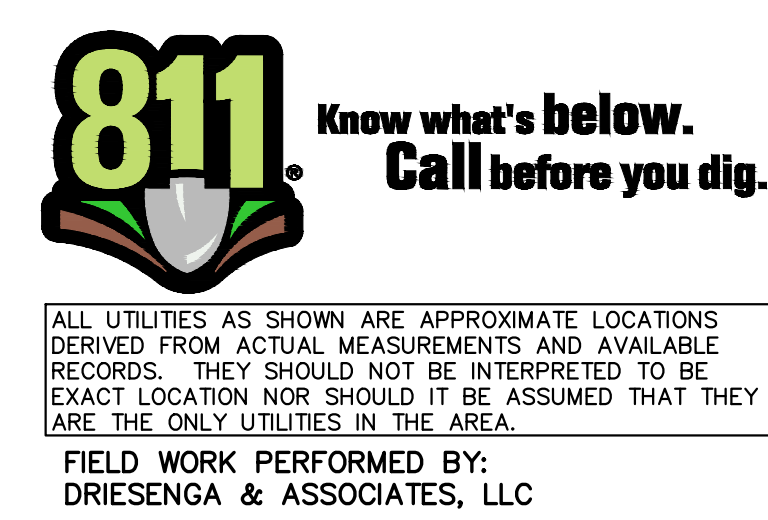
**WATER MAIN FITTING SCHEDULE**

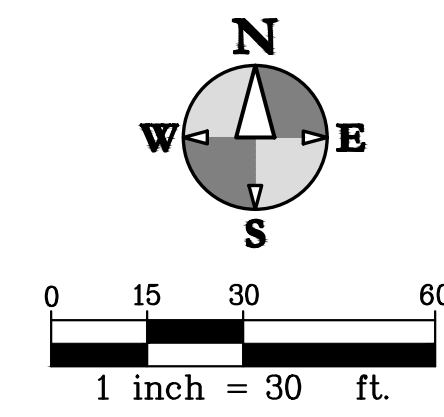
FITTING NUMBER	DESCRIPTION	TOTAL THIS SHEET
1	FIRE HYDRANT ASSEMBLY W/ 6" VALVE	2
2	8" X 6" GATE VALVE AND BOX	2
3	8" X 6" REDUCER	0
4	8" X 6" TEE	2
5	6" 45° BEND	1
7	8" 22.5° BEND	3
8	8" 45° BEND	3
9	2" CORPORATION STOP	1
10	2" CURB STOP AND BOX	1
11	4" 11.25° BEND	1

**LEGEND**

DEFLECT WATER MAIN UNDER/OVER PIPE CONFLICT (SEE DETAIL ON SHEET C 501)

NOTE: CONTRACTOR RESPONSIBLE FOR VERIFYING FITTINGS. AMOUNTS DO NOT TAKE INTO CONSIDERATION VERTICAL DEFLECTIONS.

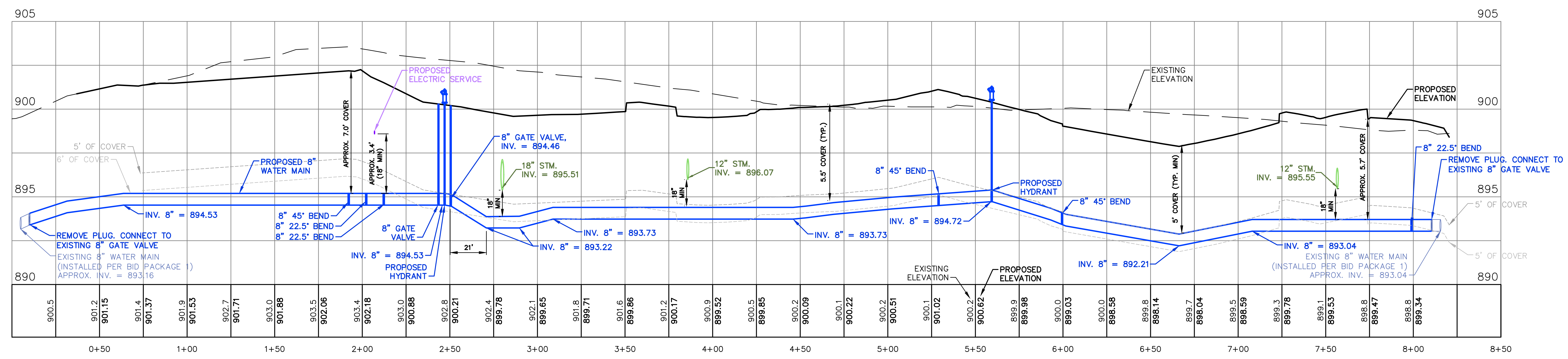




BULLETIN 4	JUNE 29, 2023
BULLETIN 3	MAY 23, 2023
BULLETIN 2	MAY 8, 2023
BULLETIN 1	MARCH 16, 2023
ISSUED FOR	DATE

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**WATER MAIN PROFILE**  
 HORIZONTAL SCALE: 1" = 40'  
 VERTICAL SCALE: 1" = 4'

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**  
 BID PACKAGE 6: CONSTRUCTION

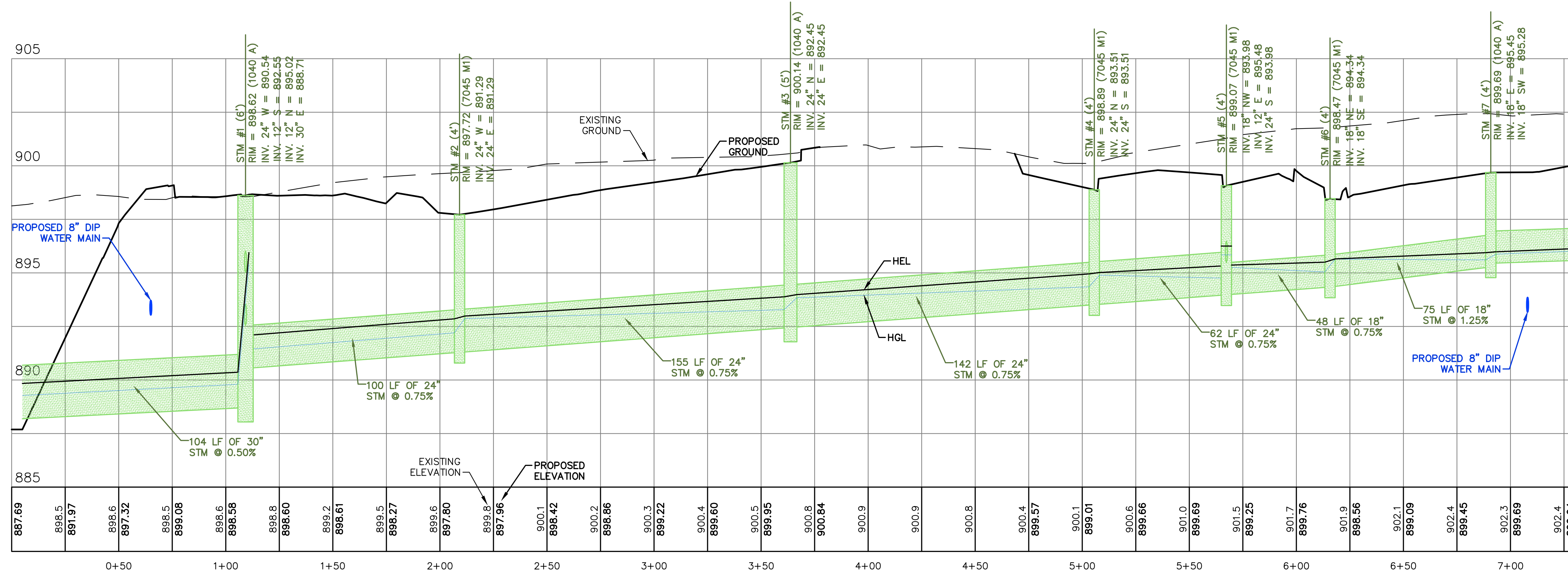
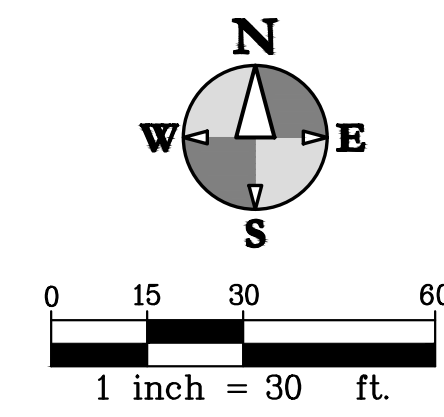
OWNER  
**PORTAGE PUBLIC SCHOOLS**  
 Portage, Michigan

SHEET TITLE  
**SITE WATER MAIN PROFILE**

DATE  
**JUNE 30, 2023**  
 SHEET NUMBER  
**C 403**  
 21-237.20

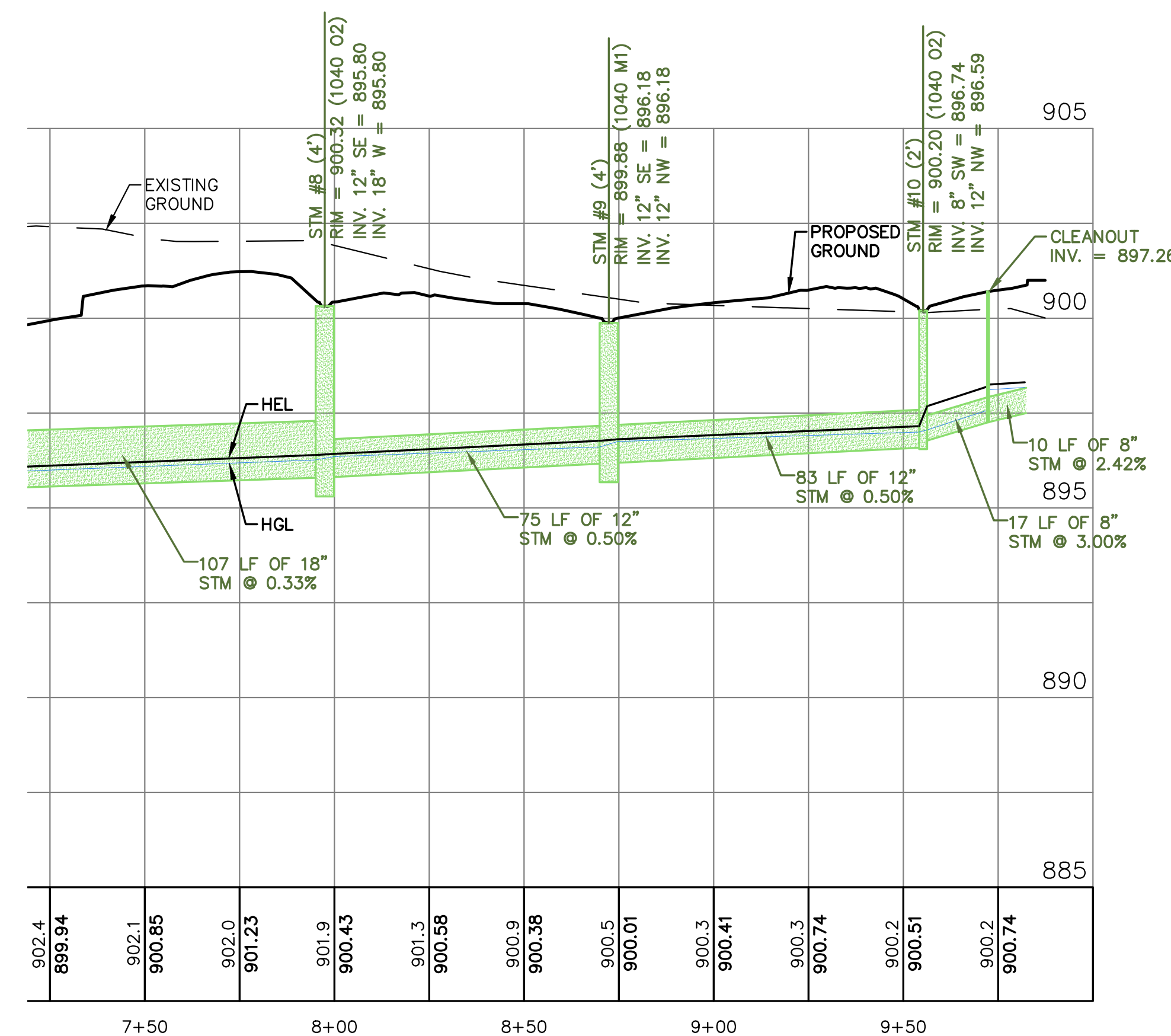


ALL UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS AND AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATION NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THE AREA.  
 FIELD WORK PERFORMED BY:  
 DRIESENKA & ASSOCIATES, LLC

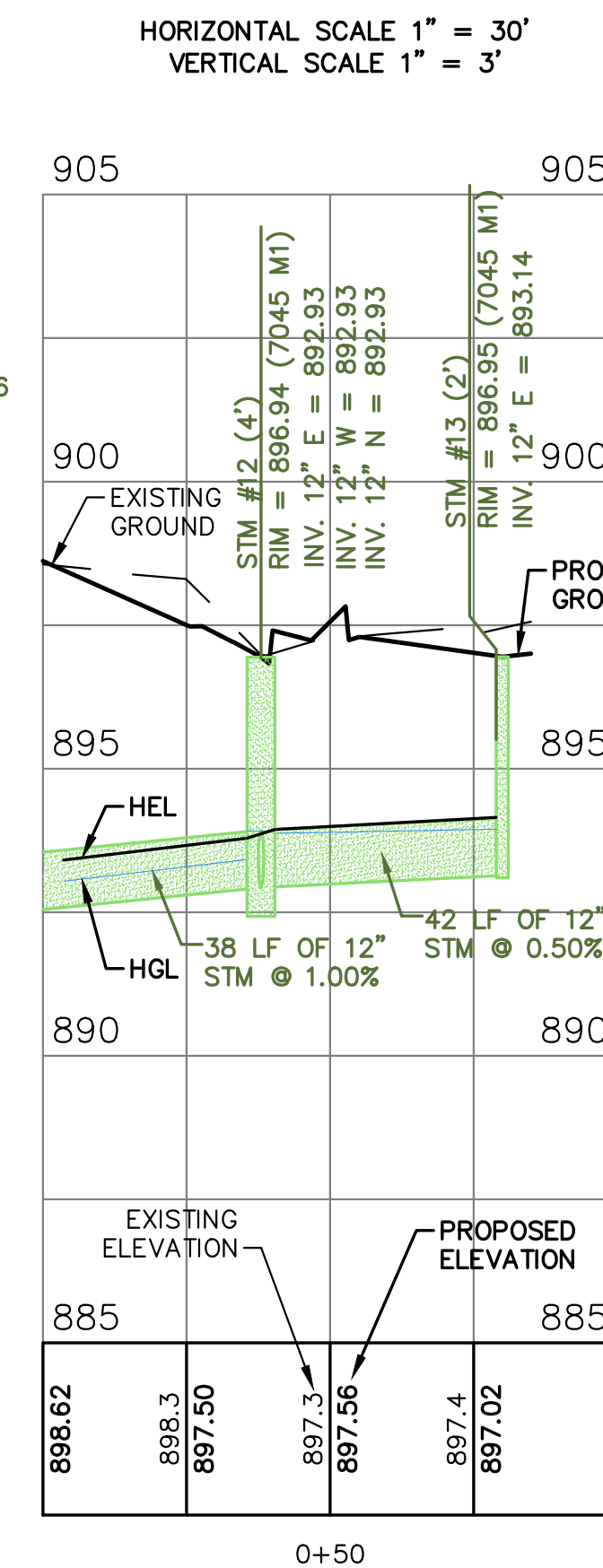


SEE BELOW FOR  
STORM PROFILE 1  
(CONTINUED)

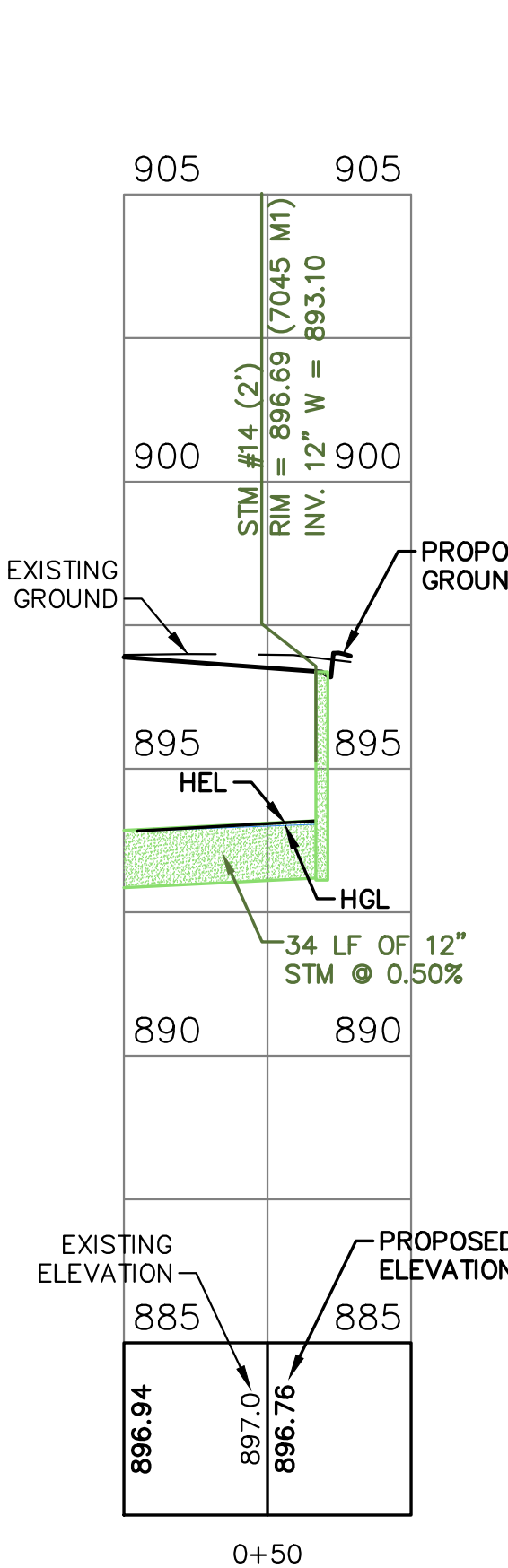
**STORM PROFILE 1**  
HORIZONTAL SCALE 1" = 30'  
VERTICAL SCALE 1" = 3'



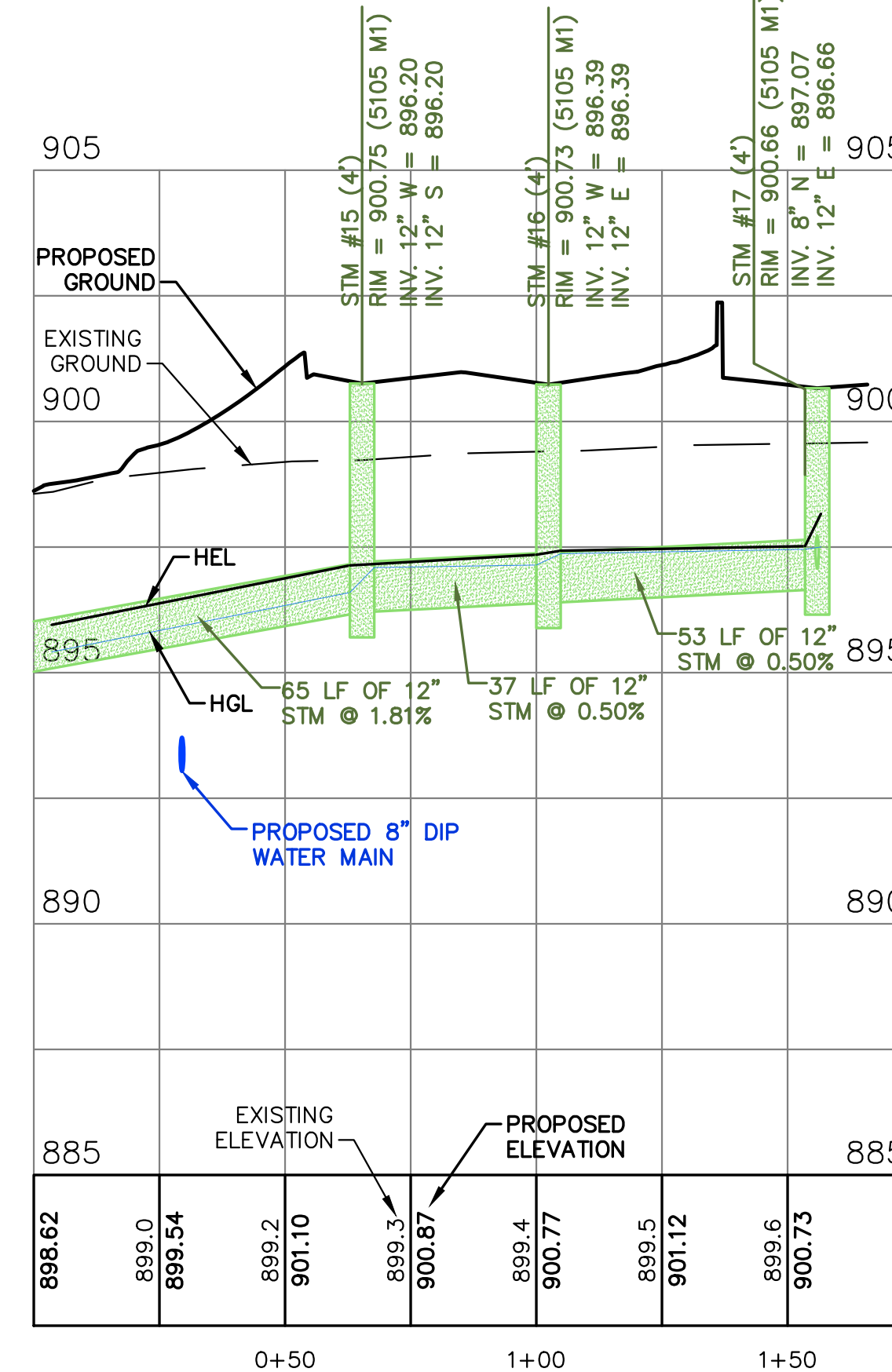
**STORM PROFILE 1 (CONTINUED)**  
HORIZONTAL SCALE 1" = 30'  
VERTICAL SCALE 1" = 3'



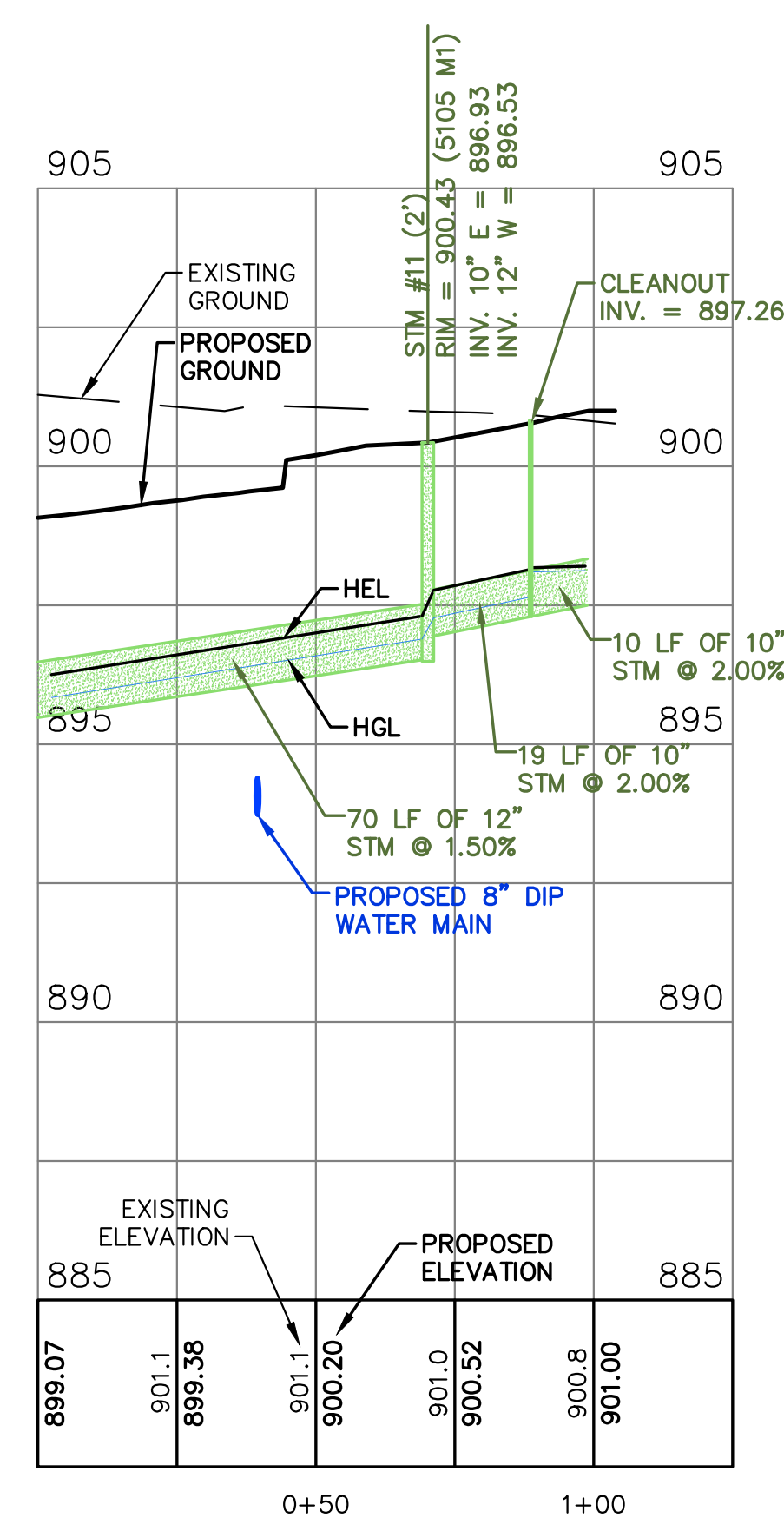
**STORM PROFILE 2**  
HORIZONTAL SCALE 1" = 30'  
VERTICAL SCALE 1" = 3'



**STORM PROFILE 3**  
HORIZONTAL SCALE 1" = 30'  
VERTICAL SCALE 1" = 3'



**STORM PROFILE 4**  
HORIZONTAL SCALE 1" = 30'  
VERTICAL SCALE 1" = 3'



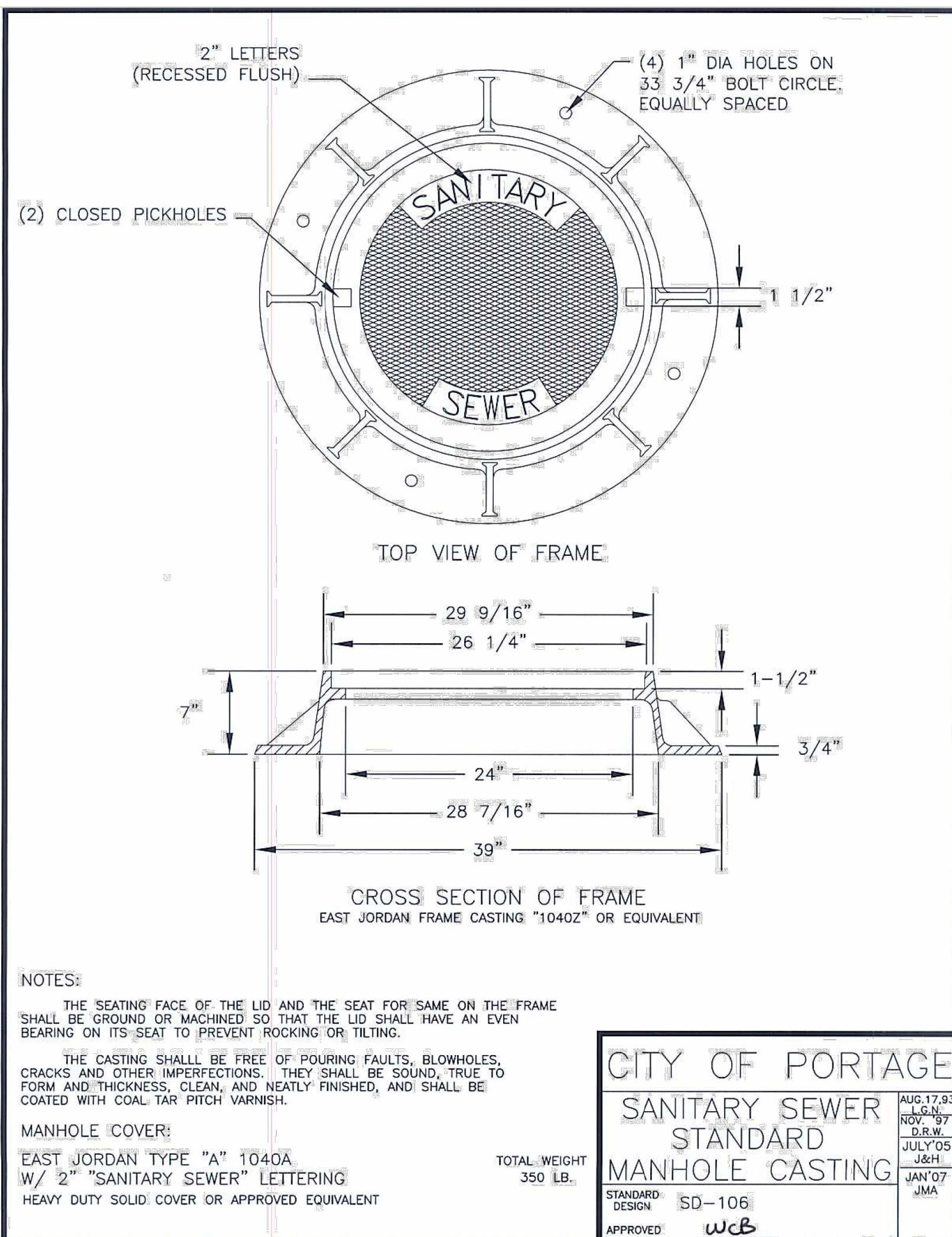
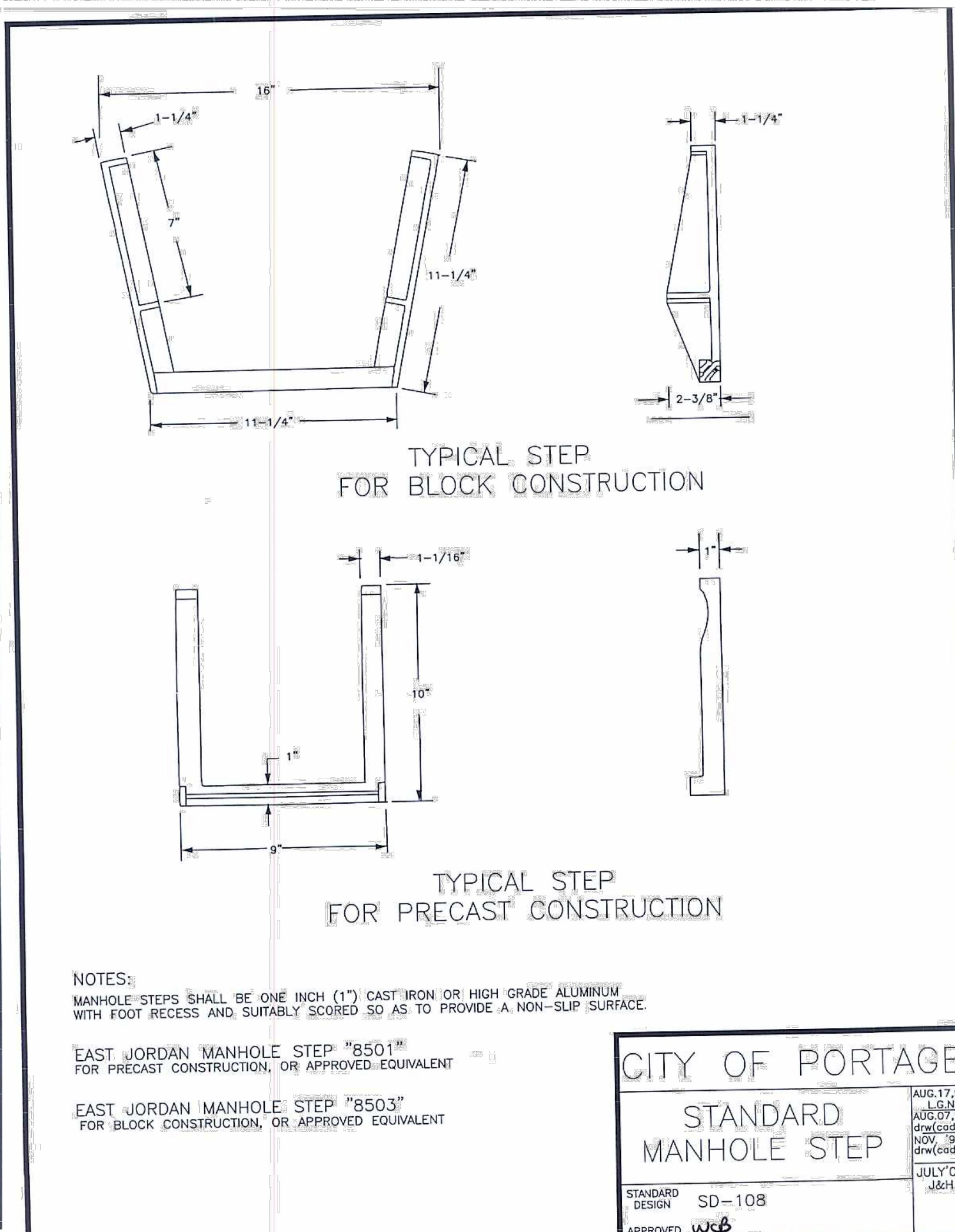
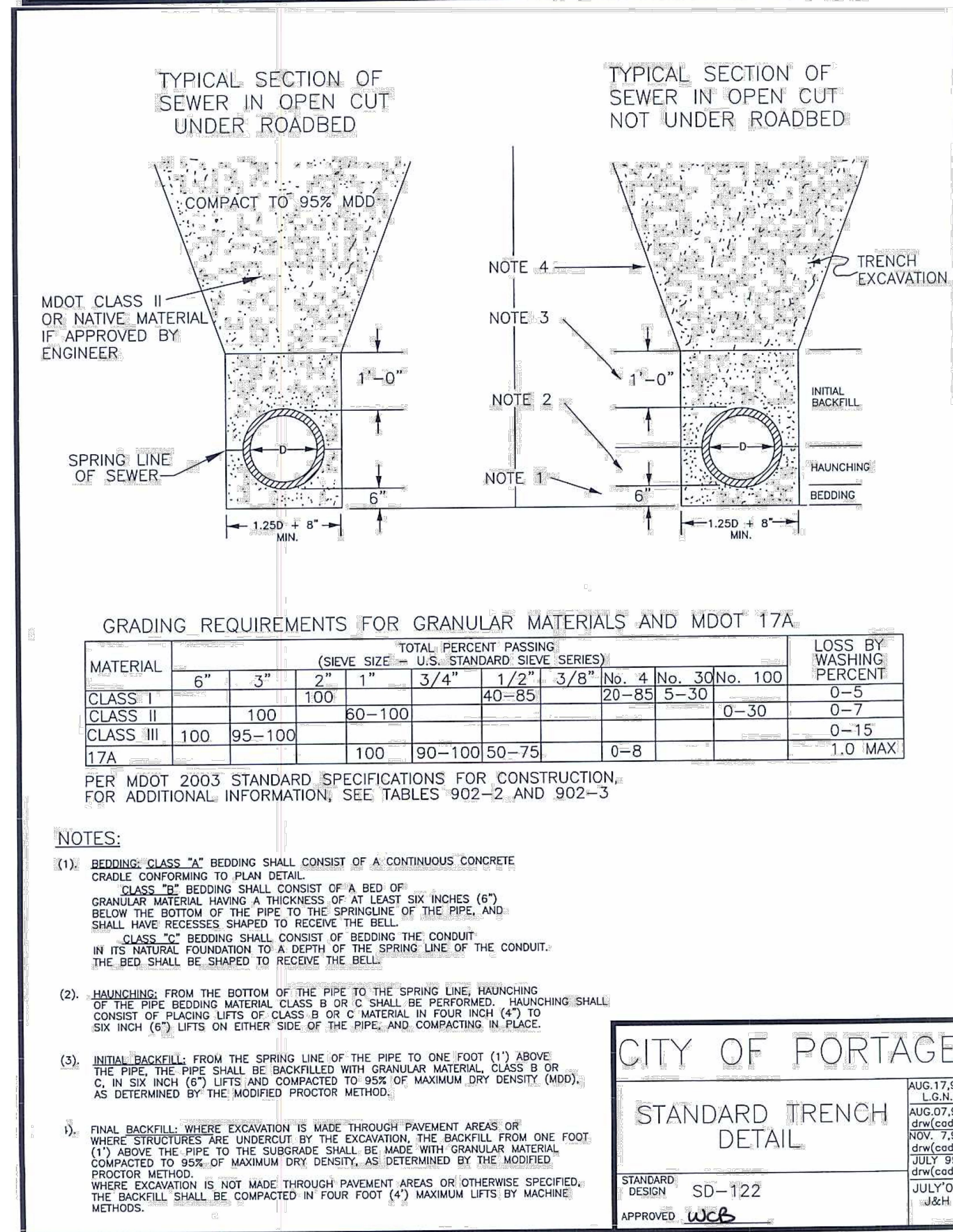
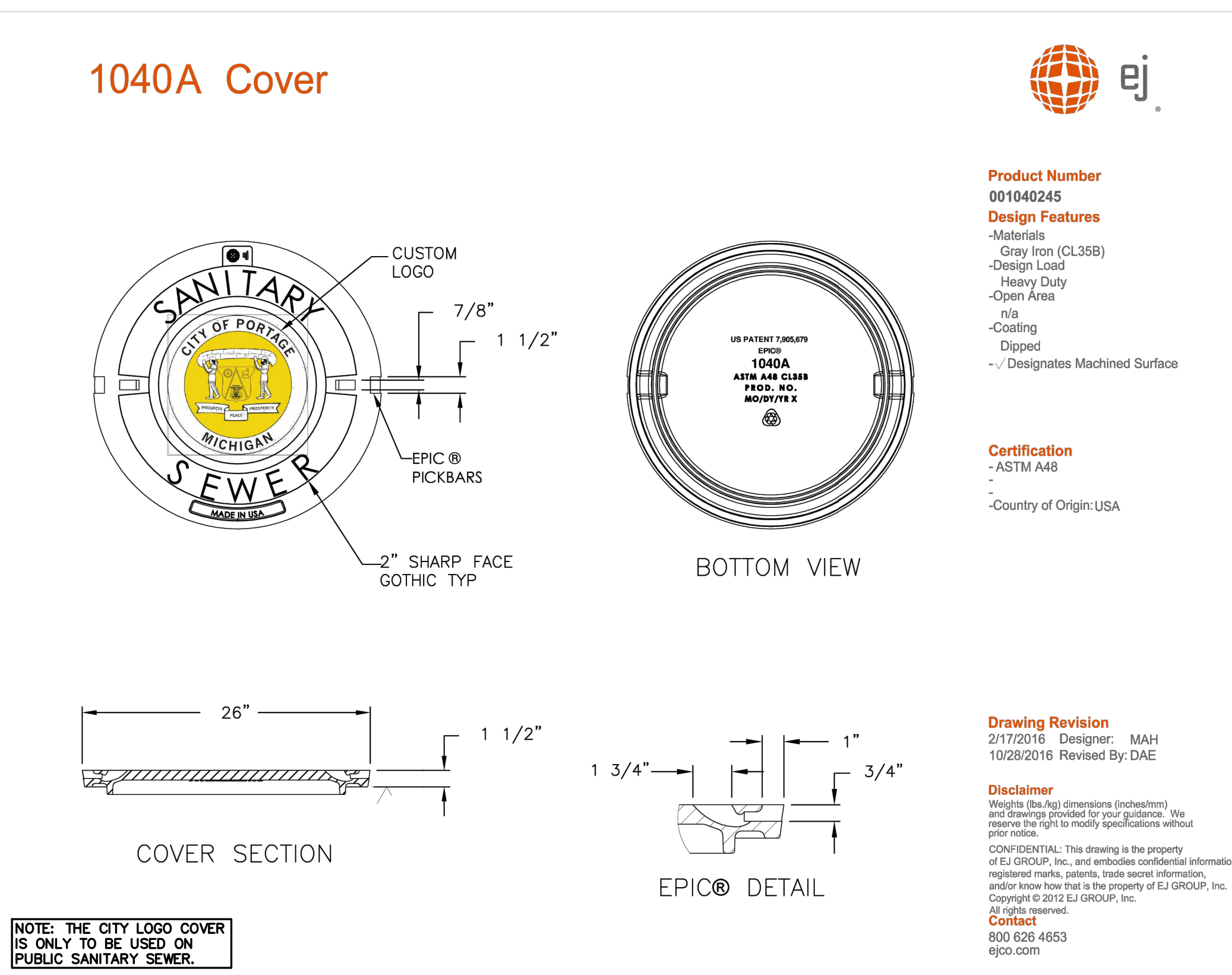
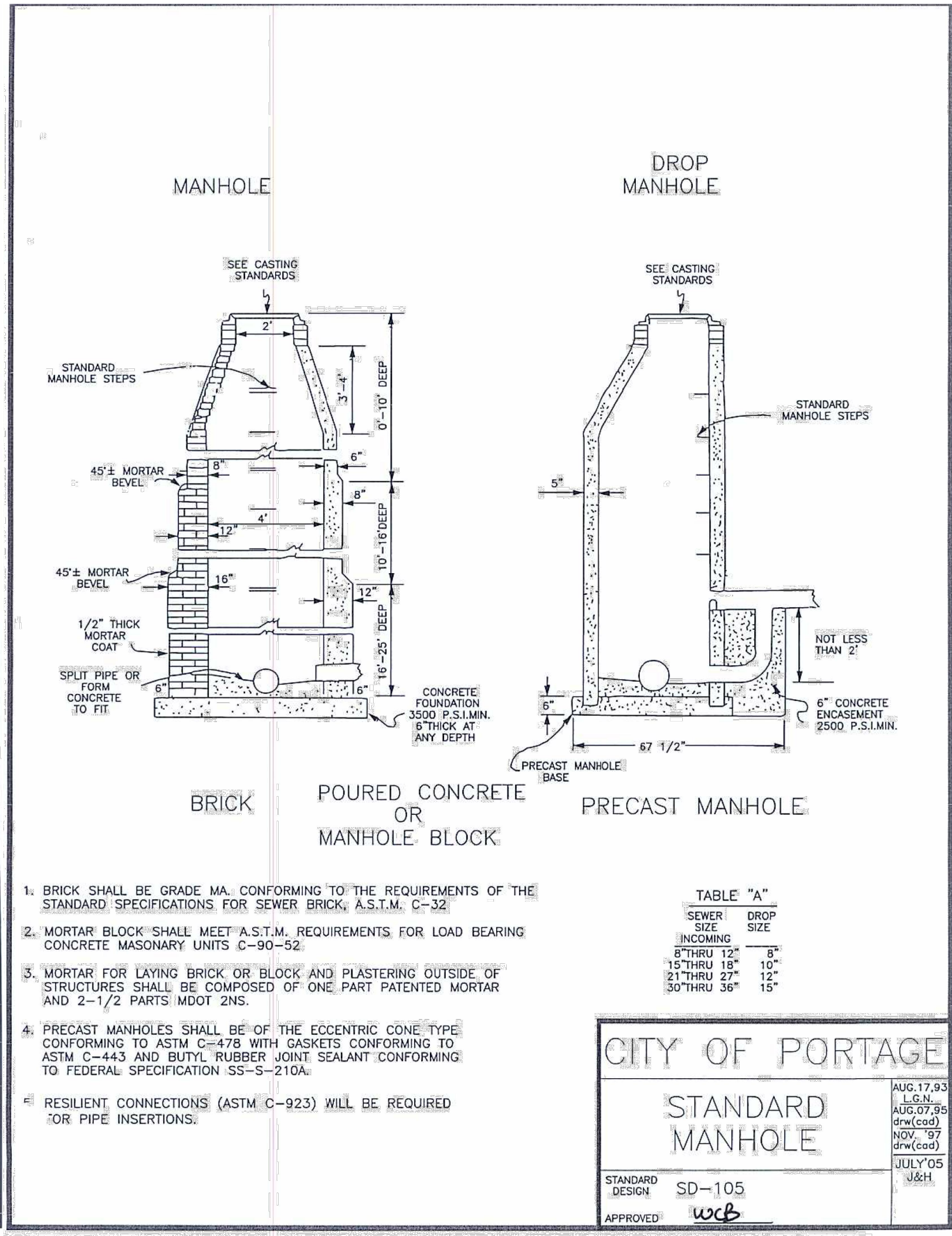
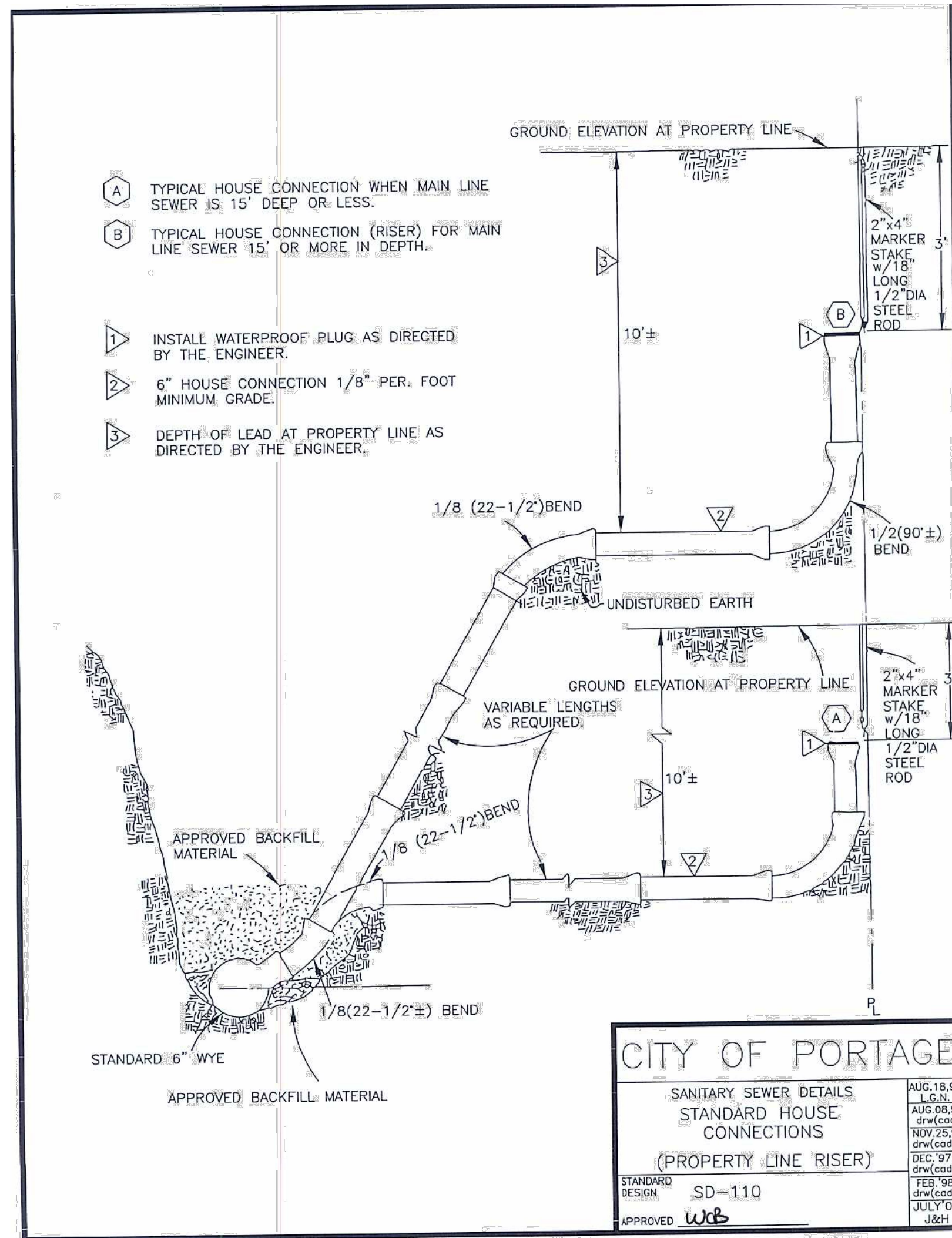
**STORM PROFILE 5**  
HORIZONTAL SCALE 1" = 30'  
VERTICAL SCALE 1" = 3'

**UTILITY NOTES**

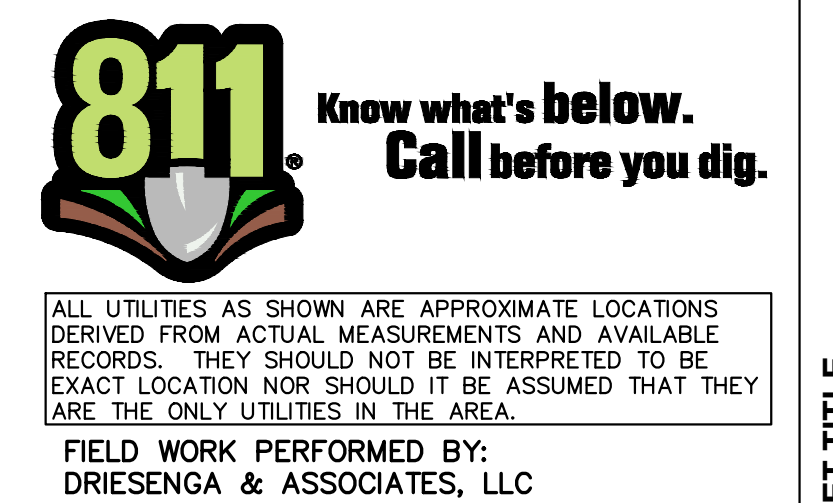
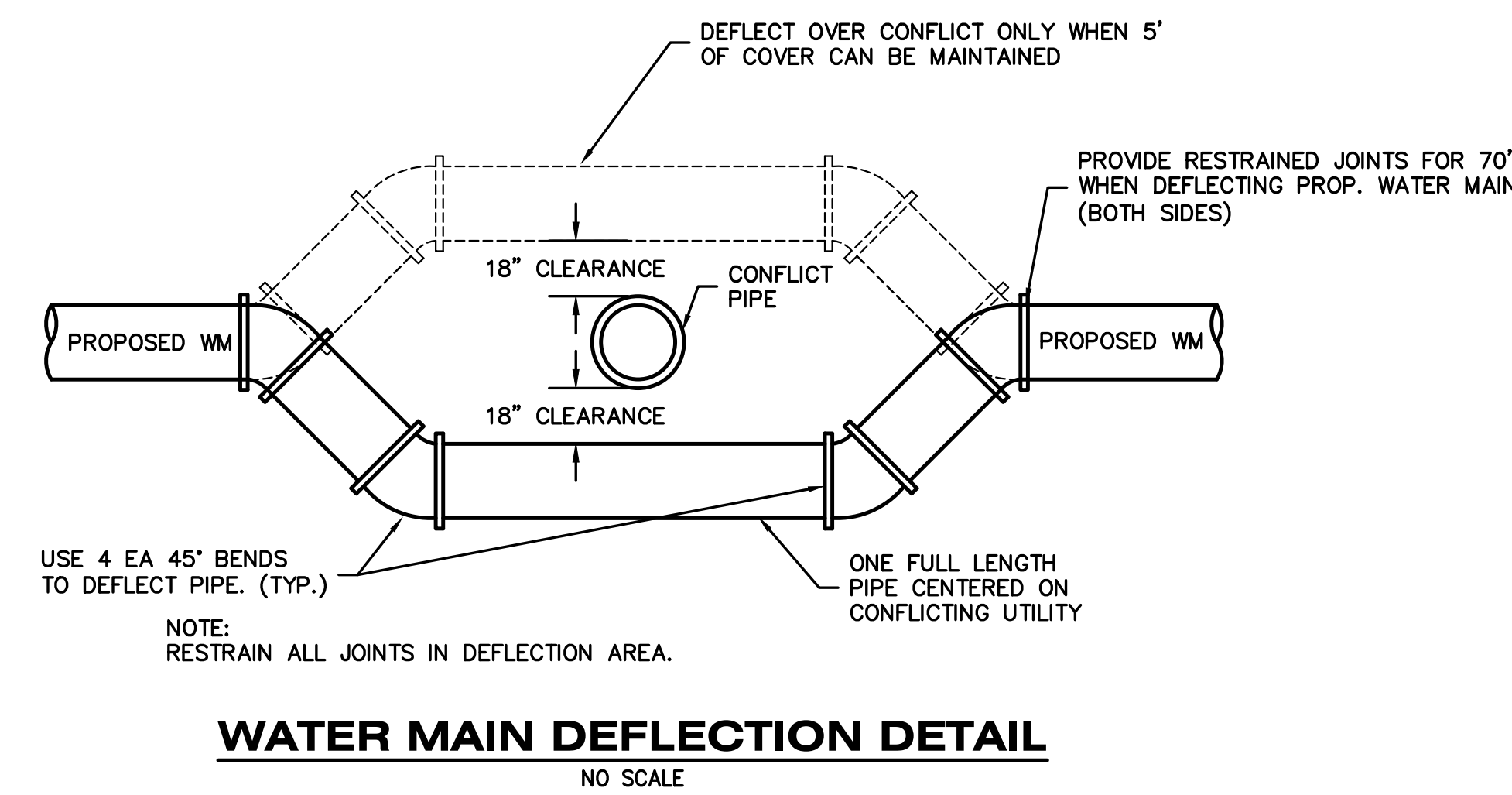
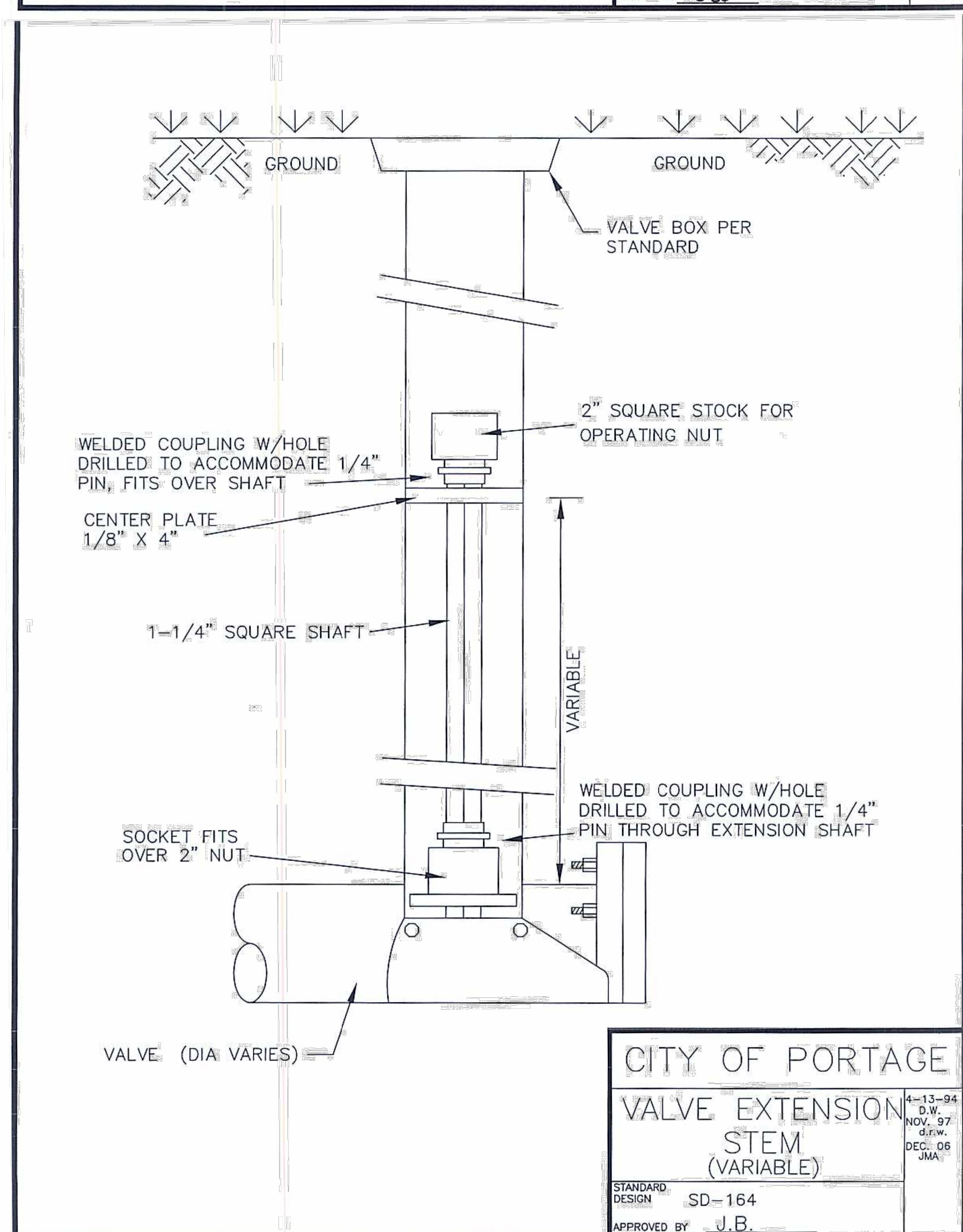
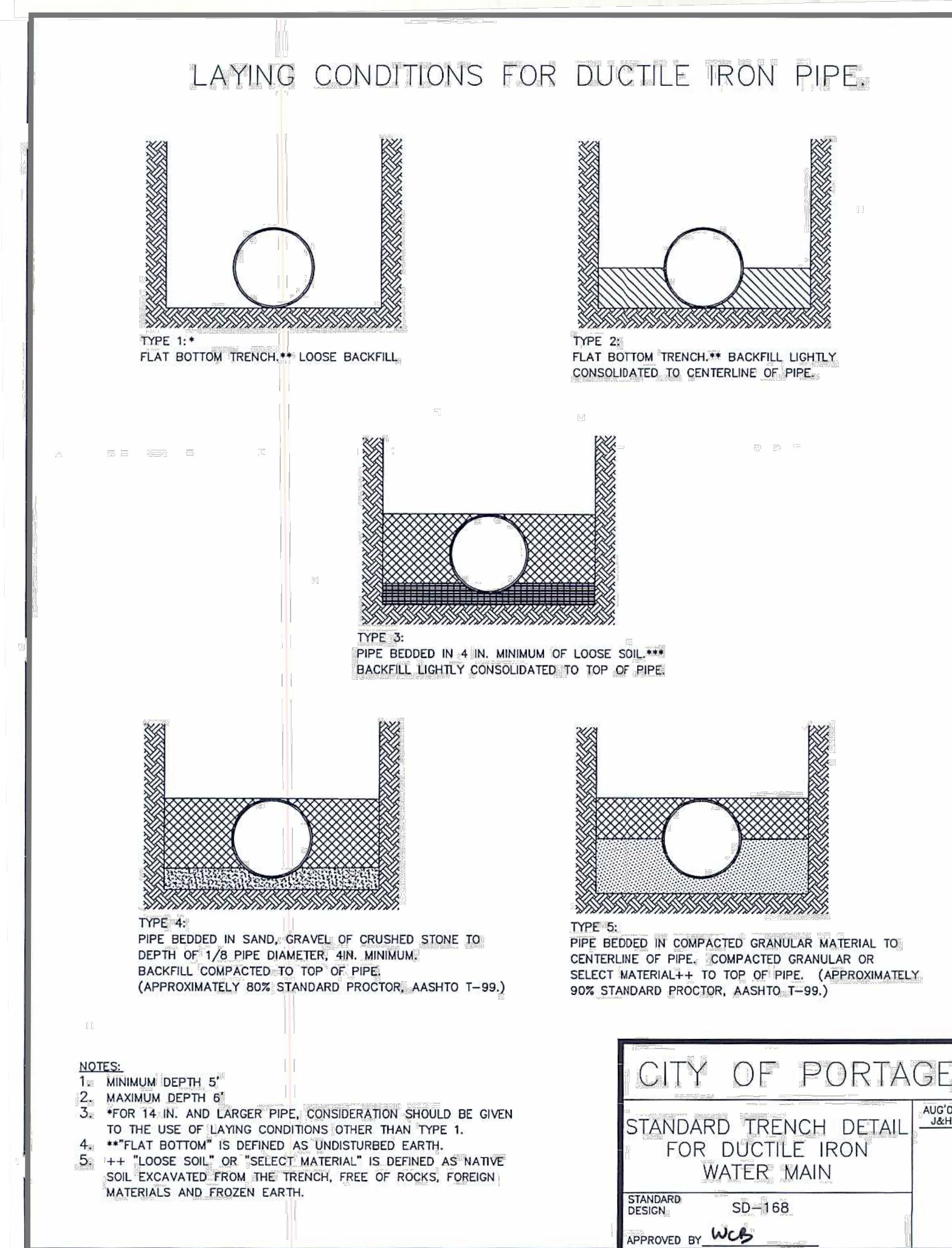
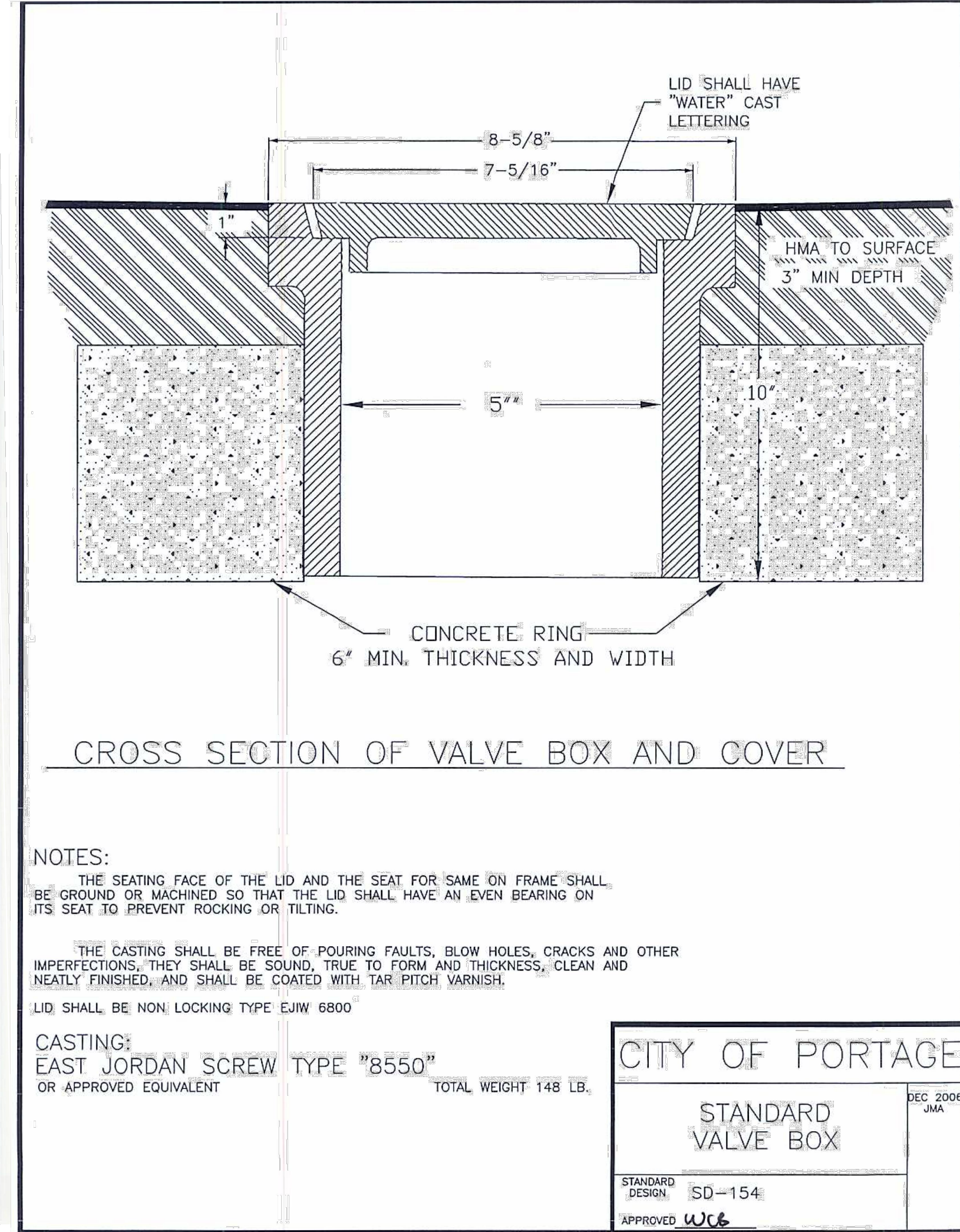
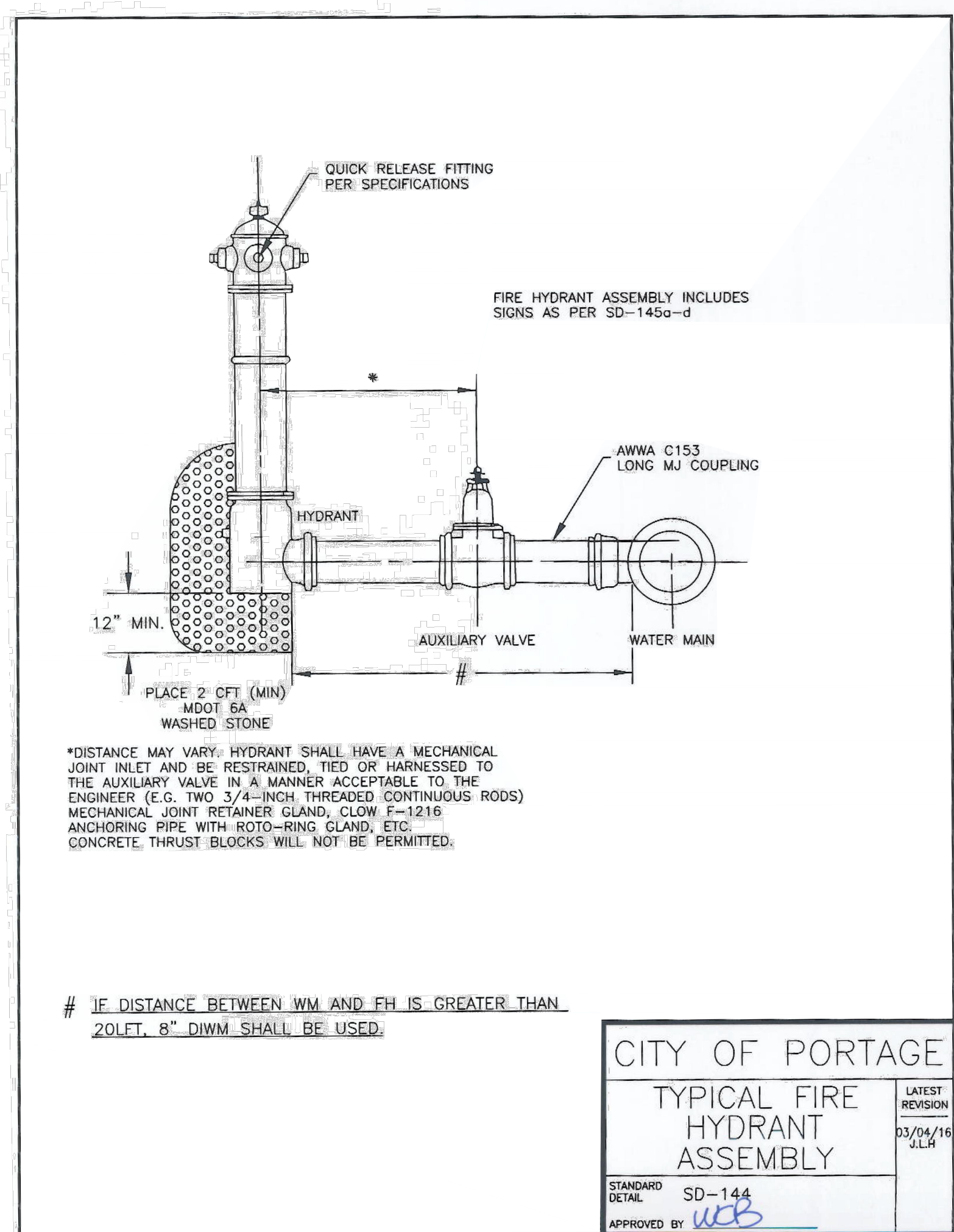
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**811** Know what's below.  
Call before you dig.

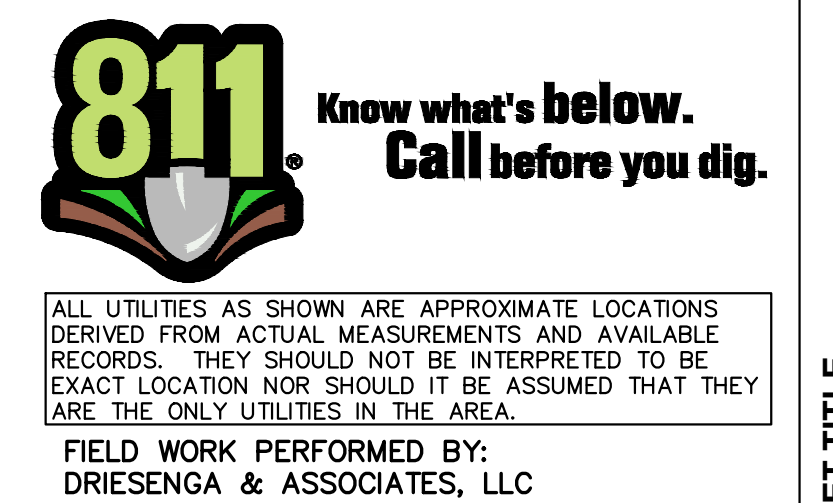
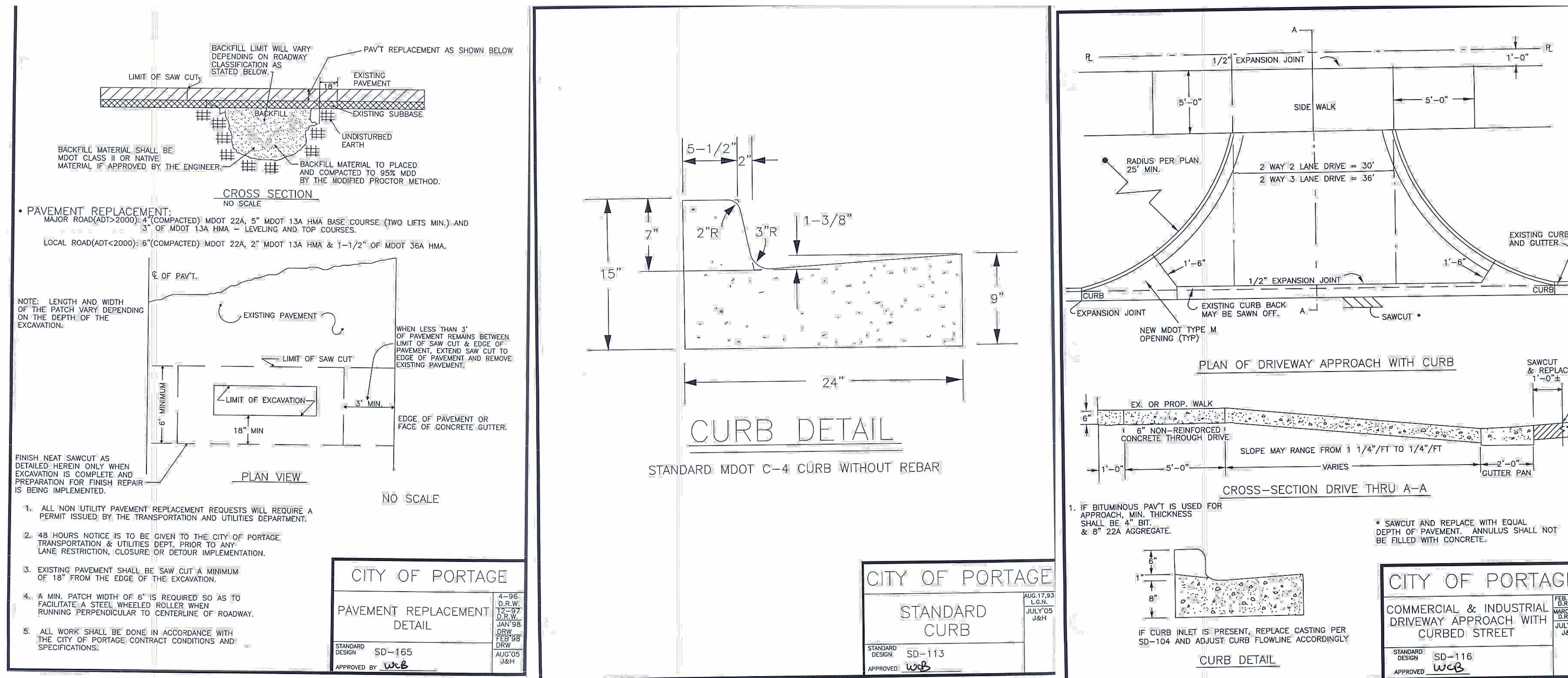
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FIELD WORK PERFORMED BY:  
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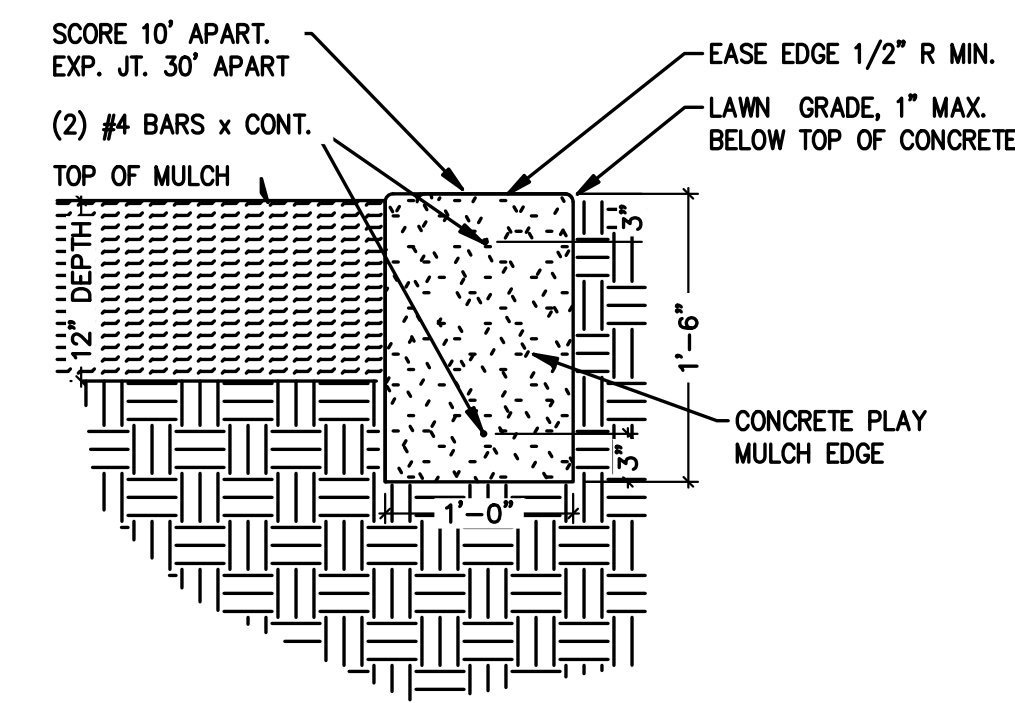


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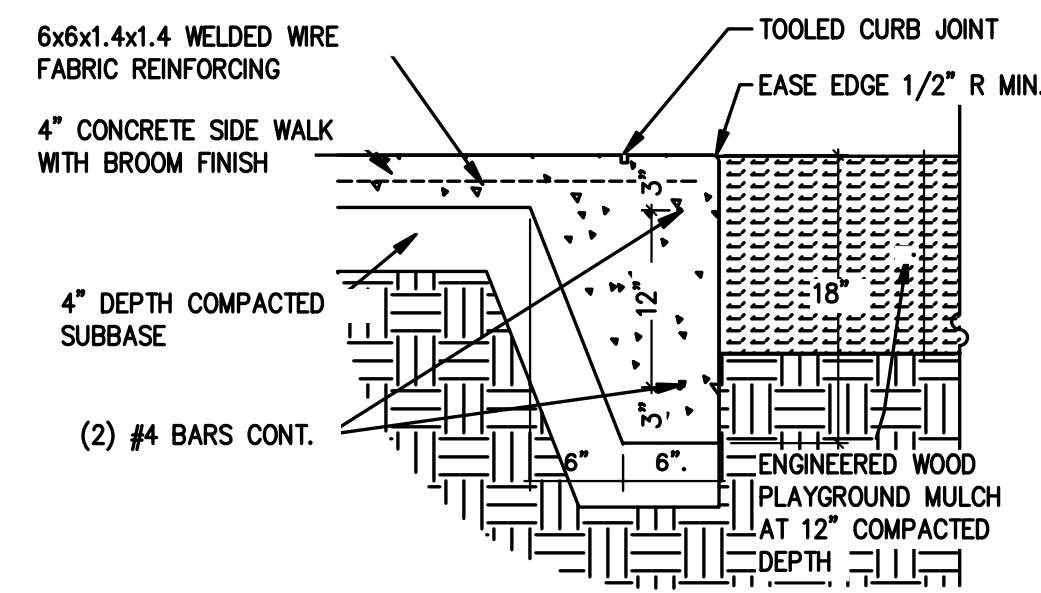




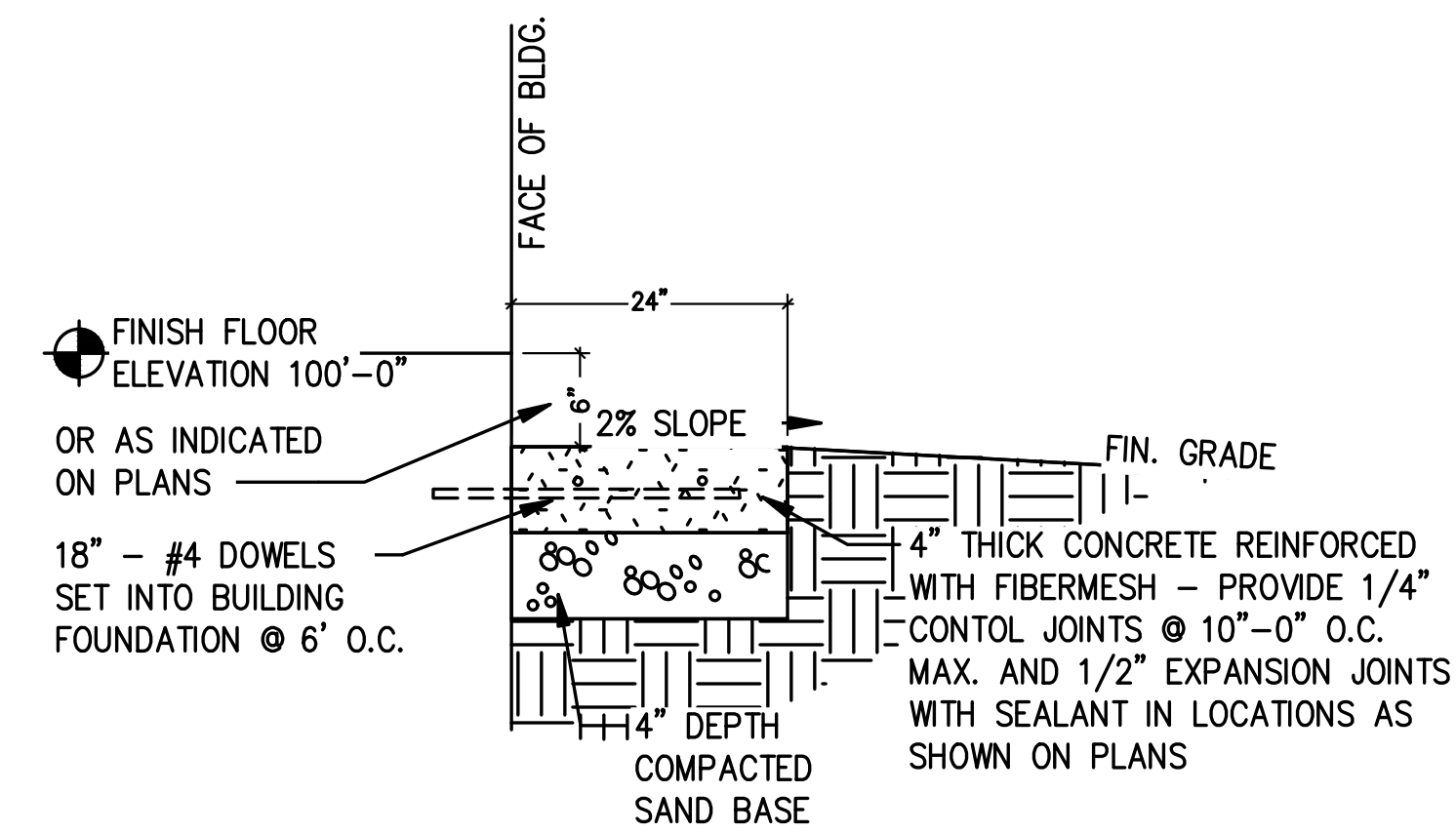




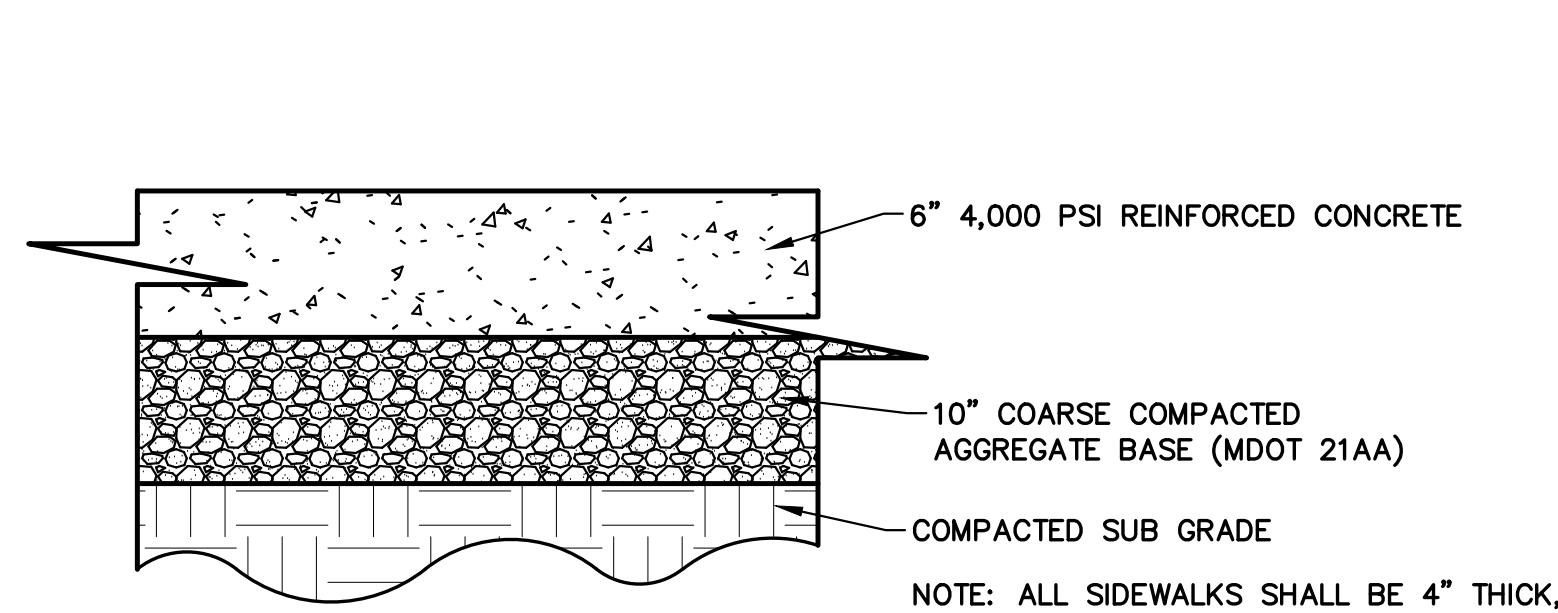
**CONCRETE MULCH EDGE**  
 NOT TO SCALE



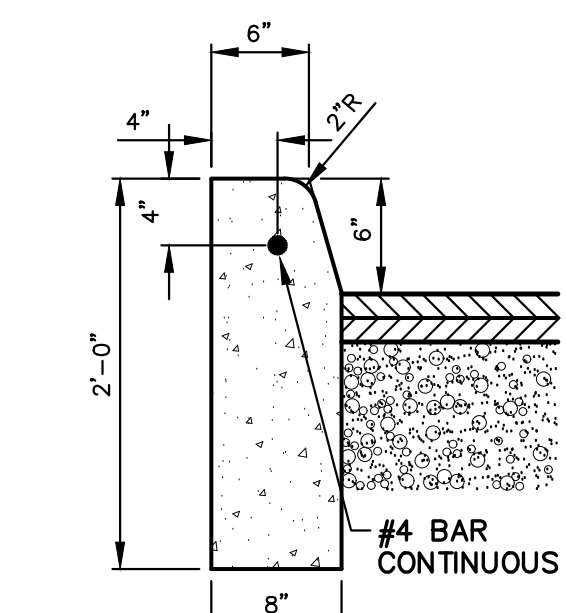
**CONCRETE WALK MULCH EDGE**  
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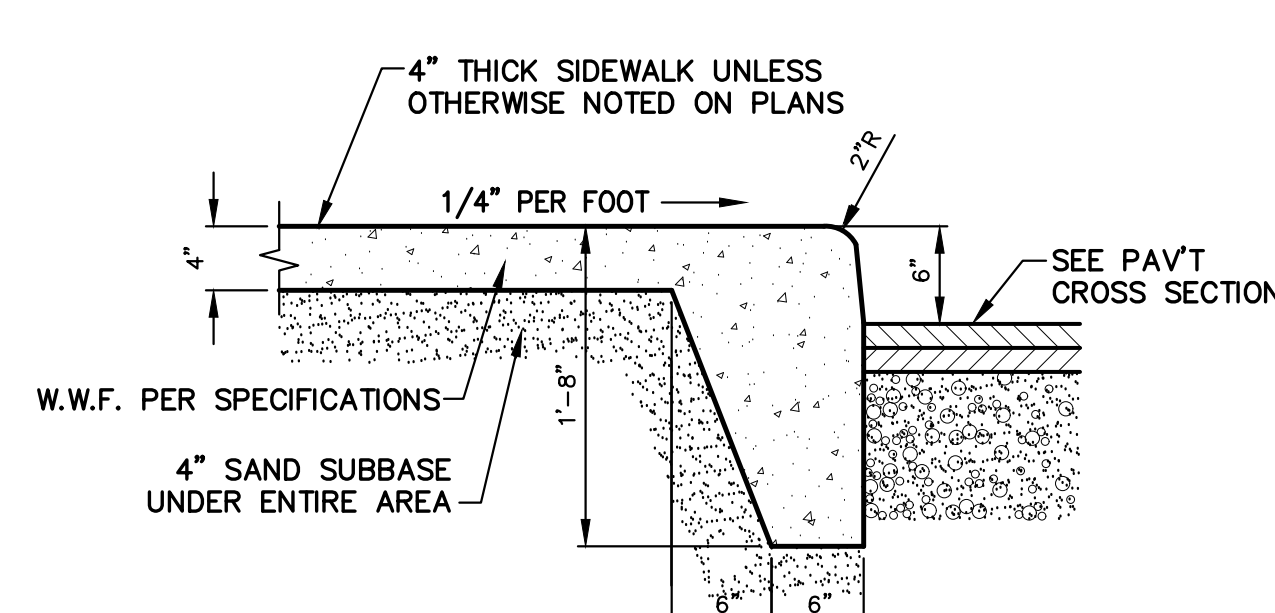
**CONCRETE BLDG MAINTENANCE STRIP**  
 NOT TO SCALE



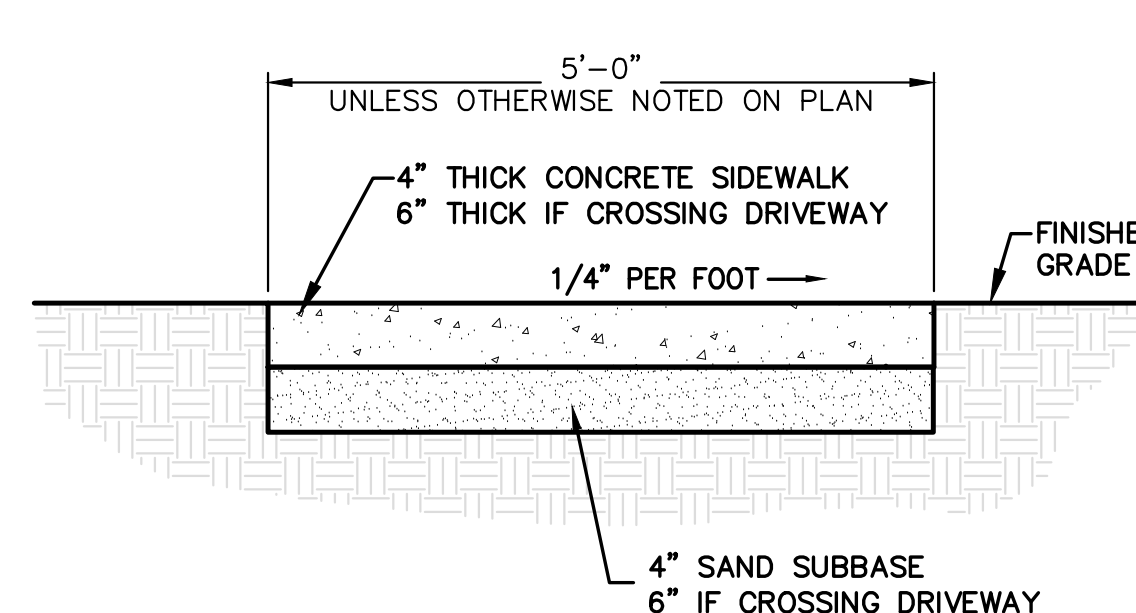
**HEAVY DUTY CONCRETE SECTION**  
 NOT TO SCALE



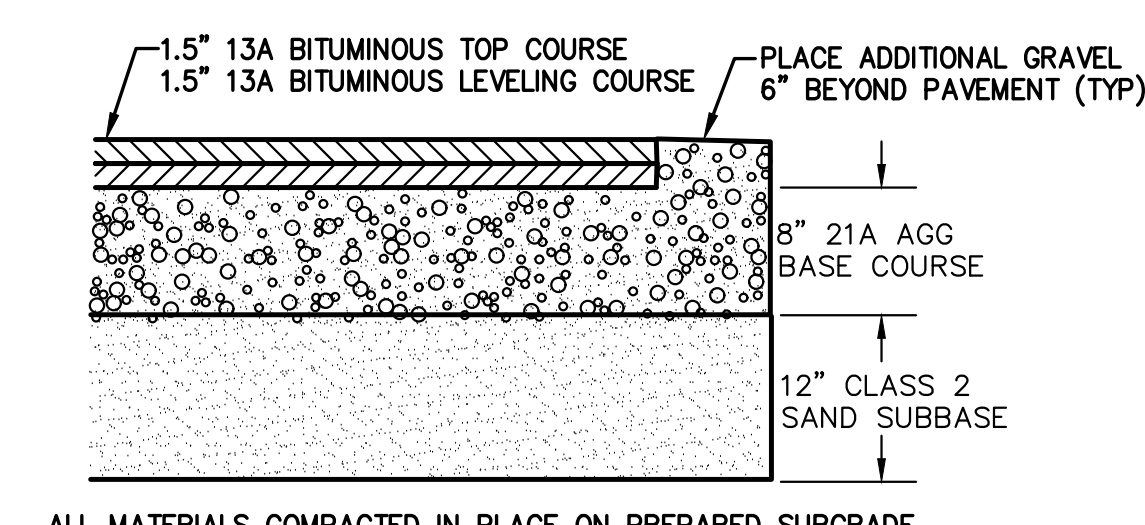
**"E2" CURB DETAIL**  
 NOT TO SCALE



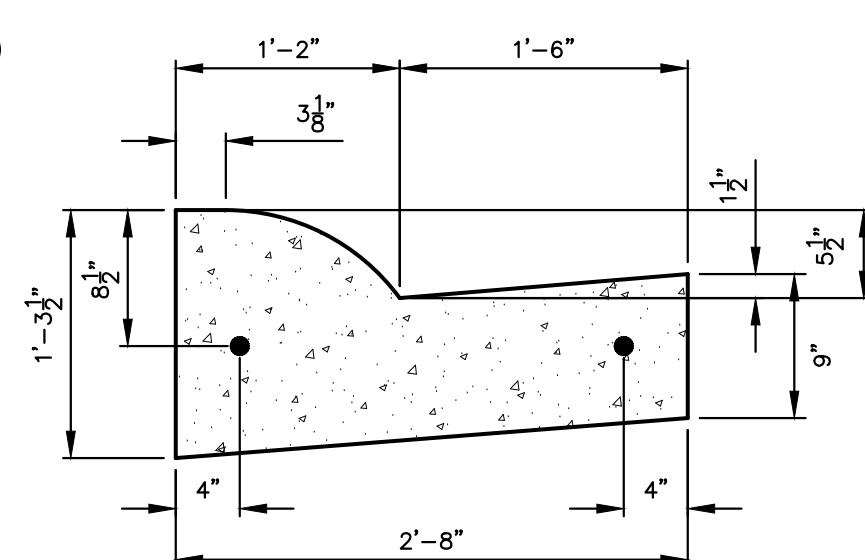
**INTEGRAL SIDEWALK/CURB**  
 NOT TO SCALE



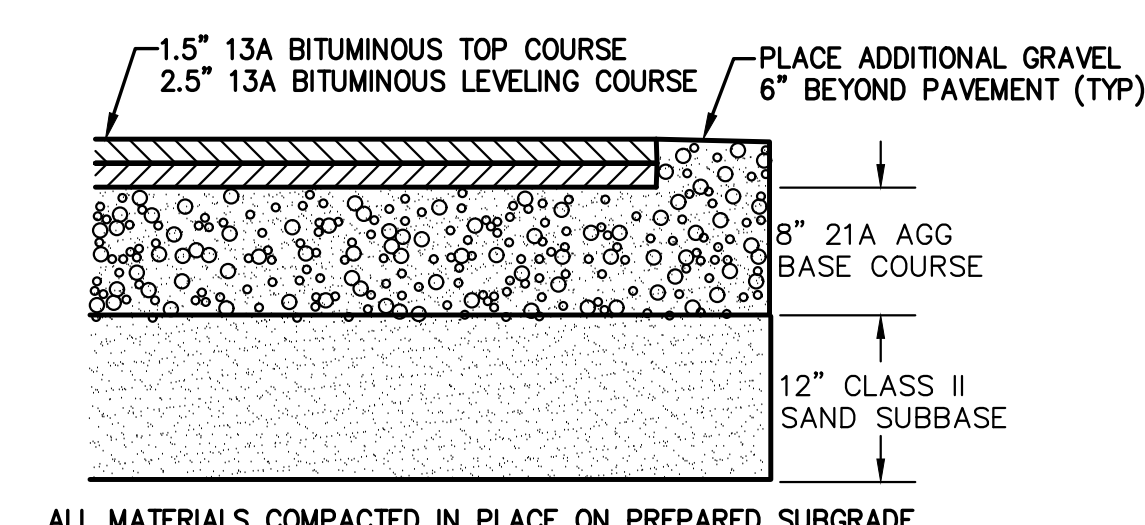
**SIDEWALK DETAIL**  
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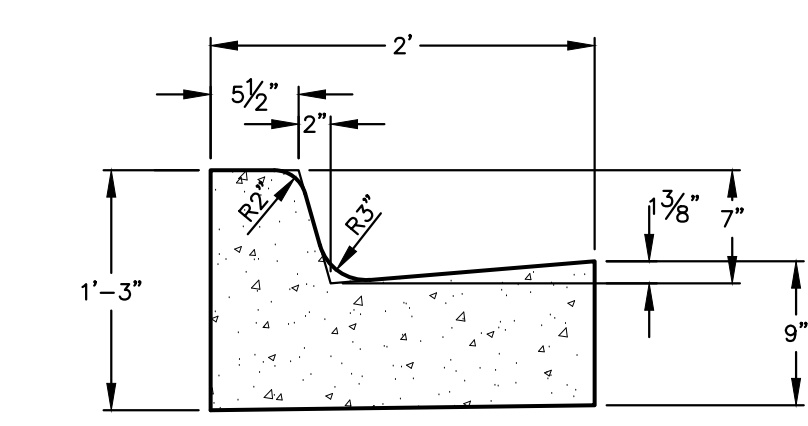
**LIGHT DUTY PAVEMENT SECTION**  
 NOT TO SCALE



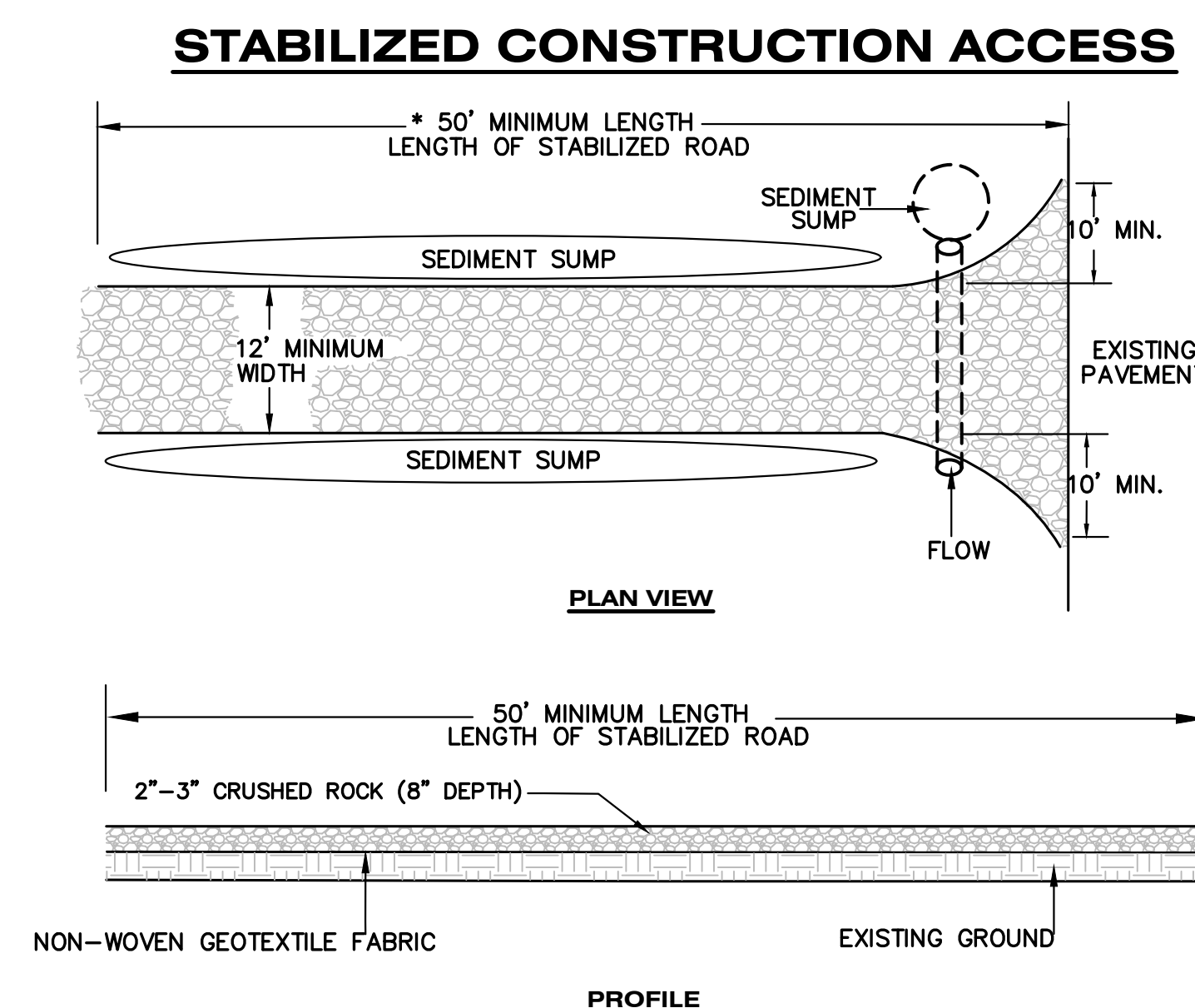
**ROLLED CURB DETAIL**  
 NOT TO SCALE



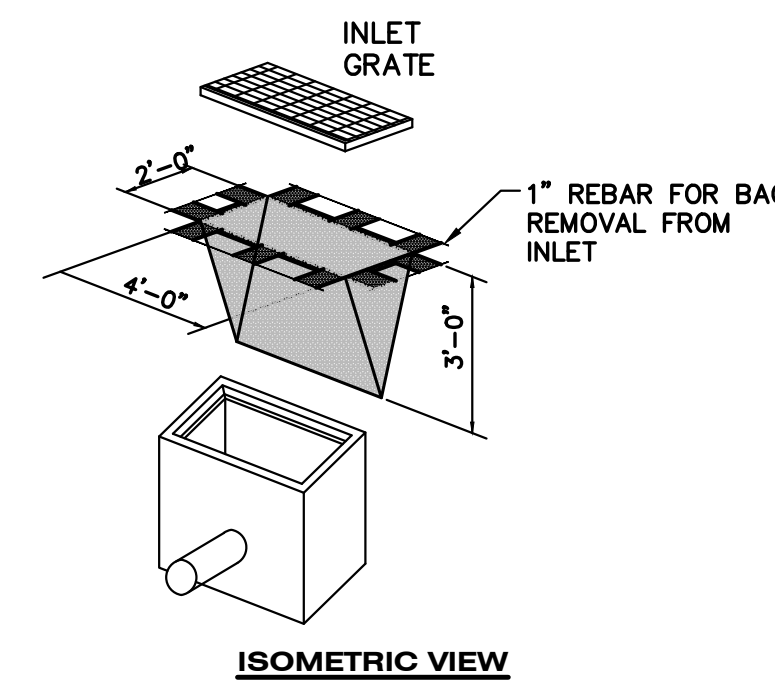
**HEAVY DUTY PAVEMENT SECTION**  
 NOT TO SCALE



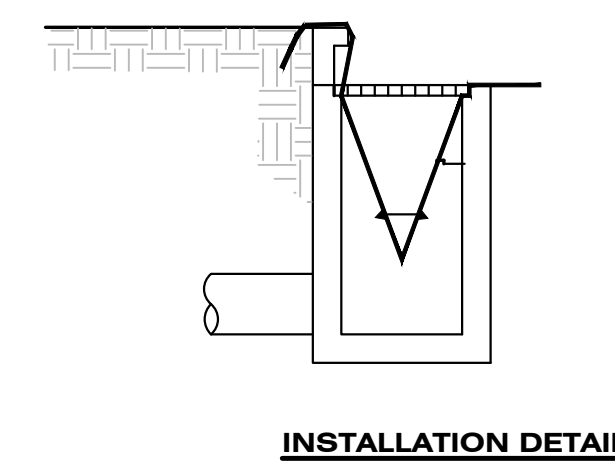
**"C4" CURB DETAIL**  
 NOT TO SCALE



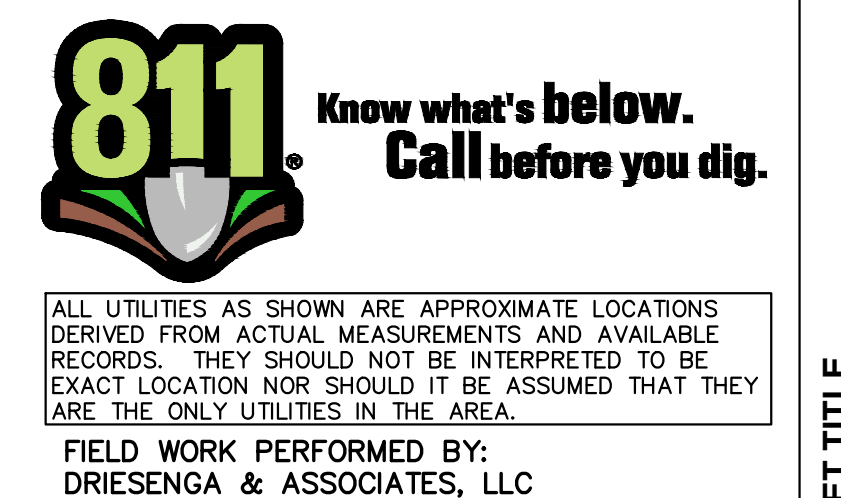
**STABILIZED CONSTRUCTION ACCESS**



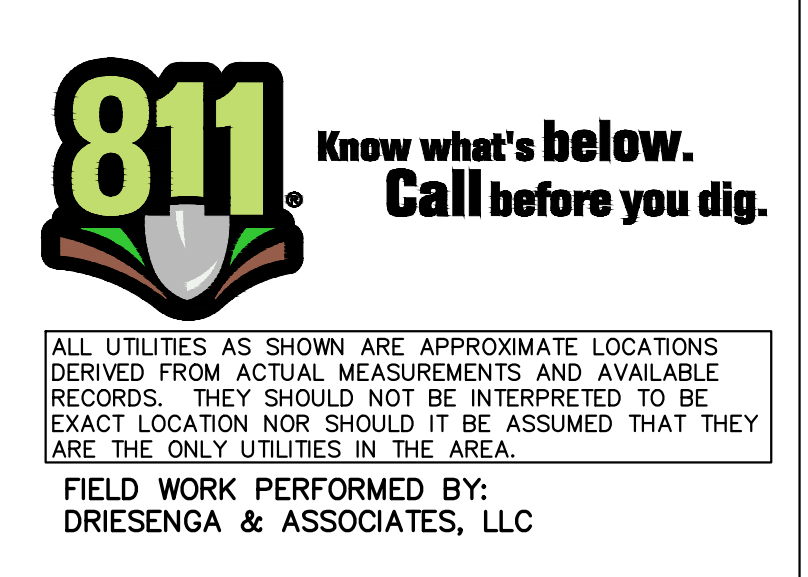
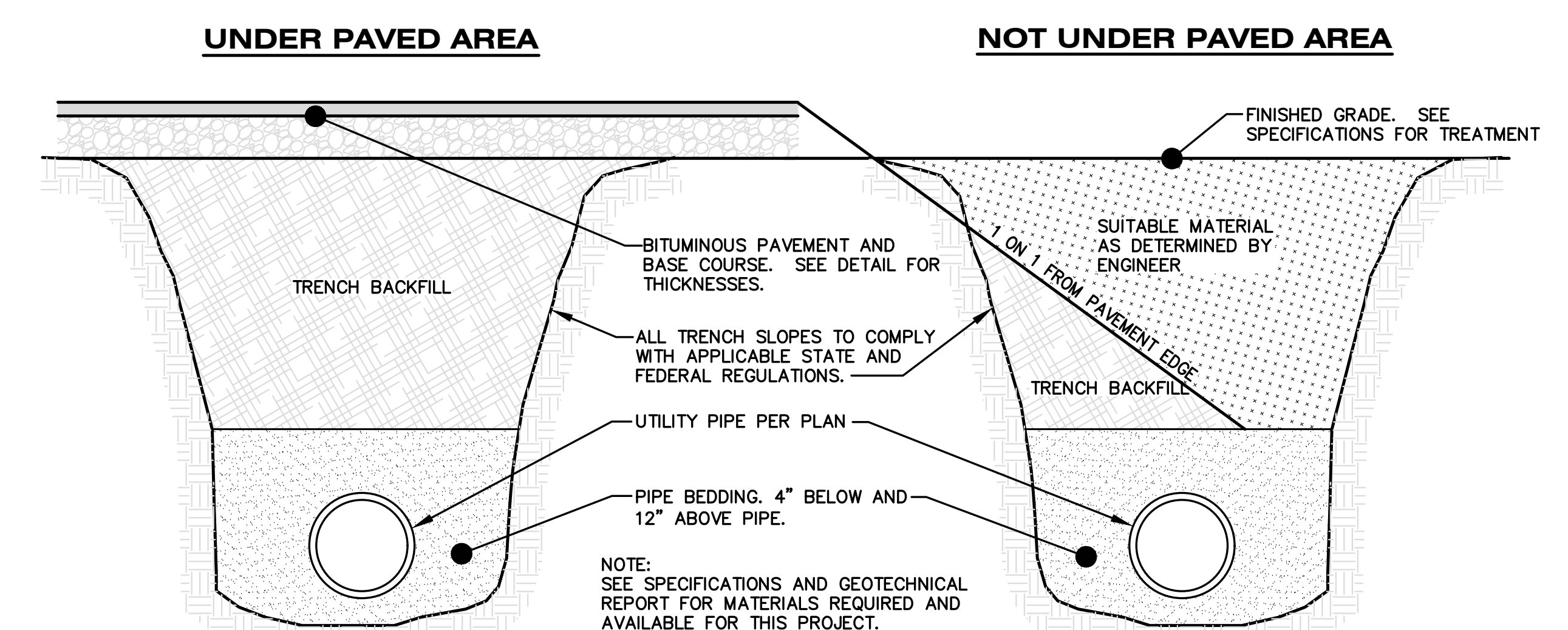
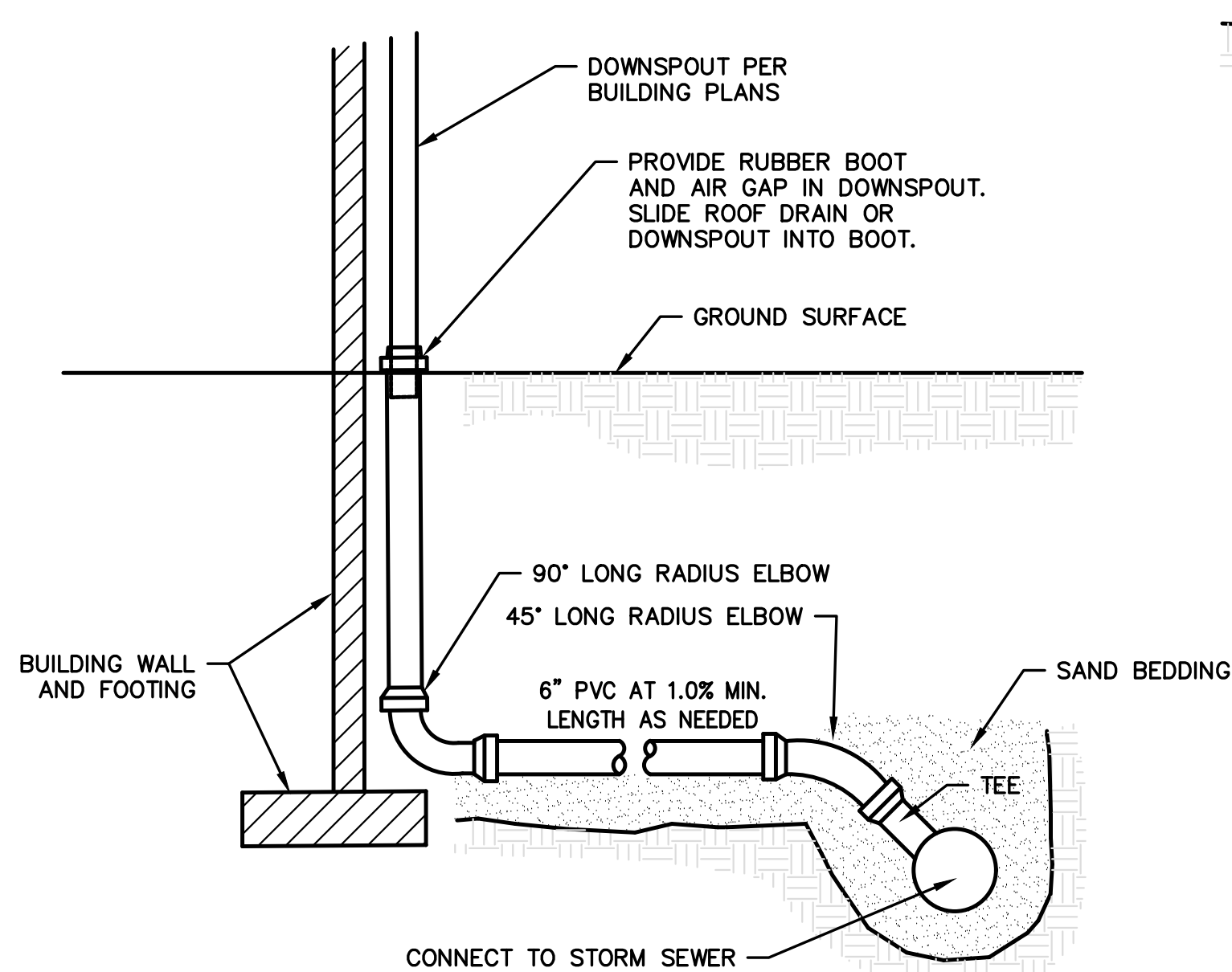
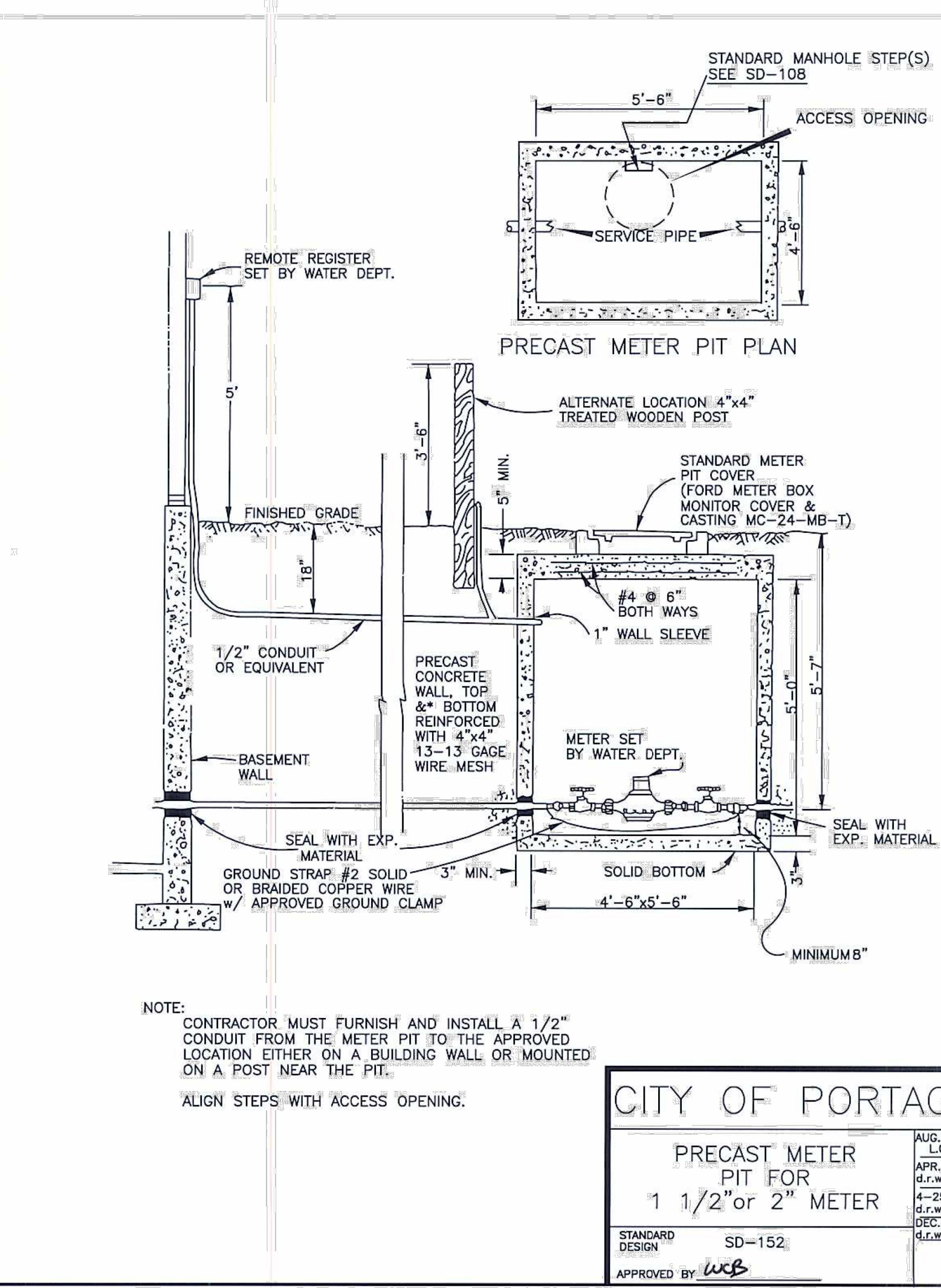
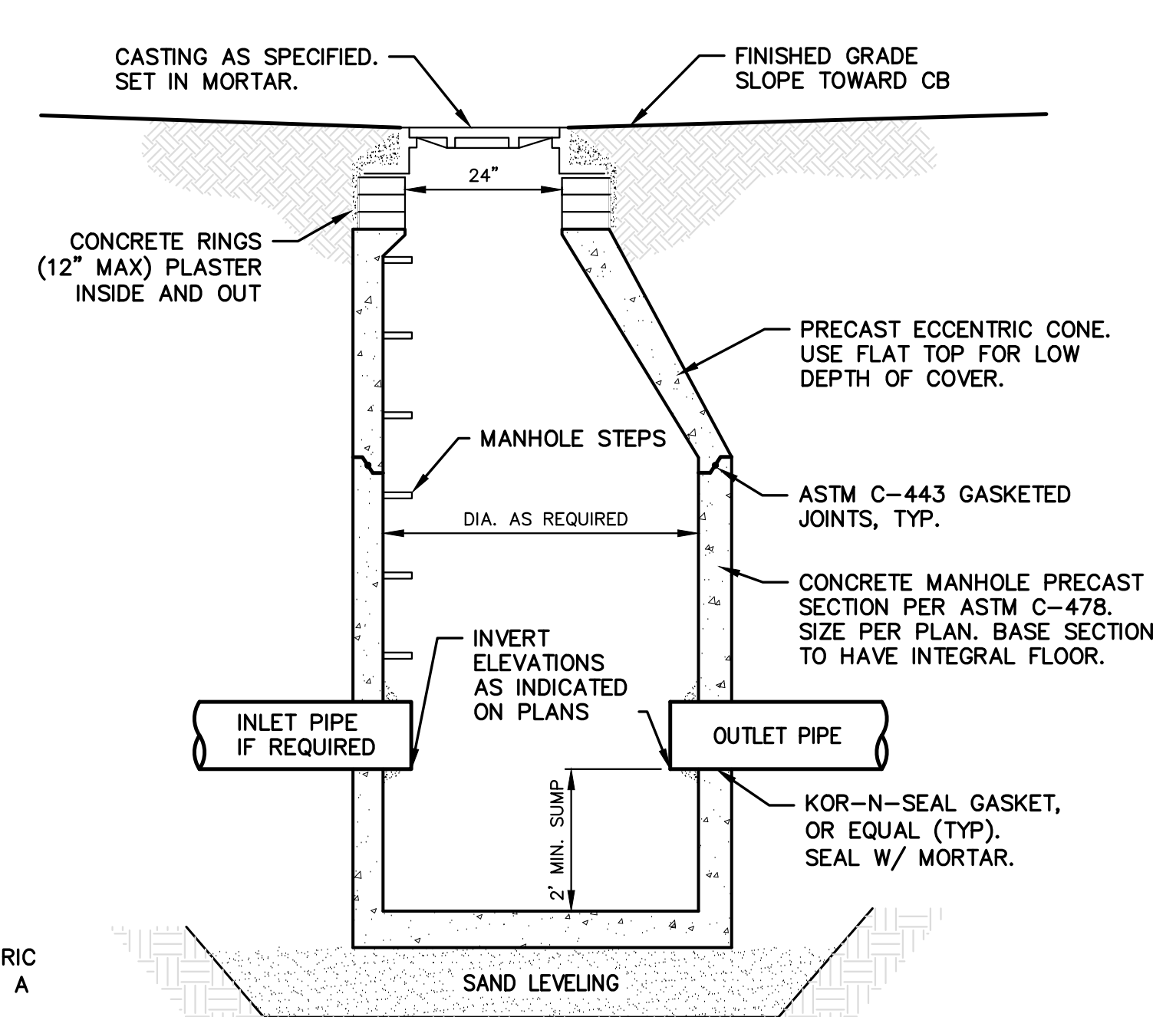
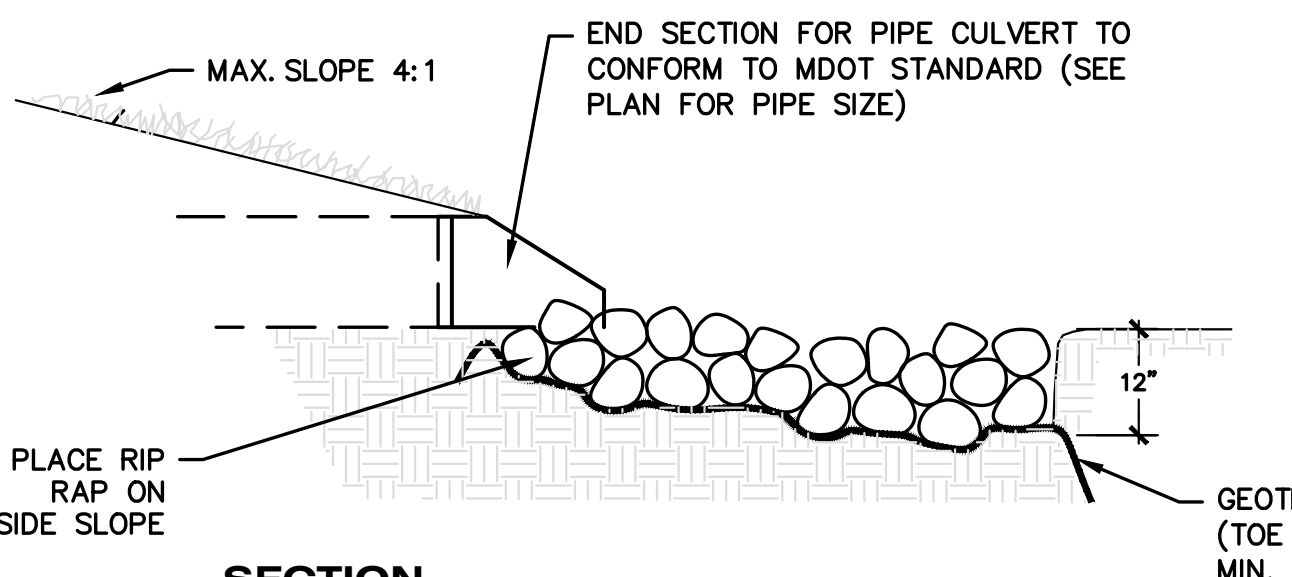
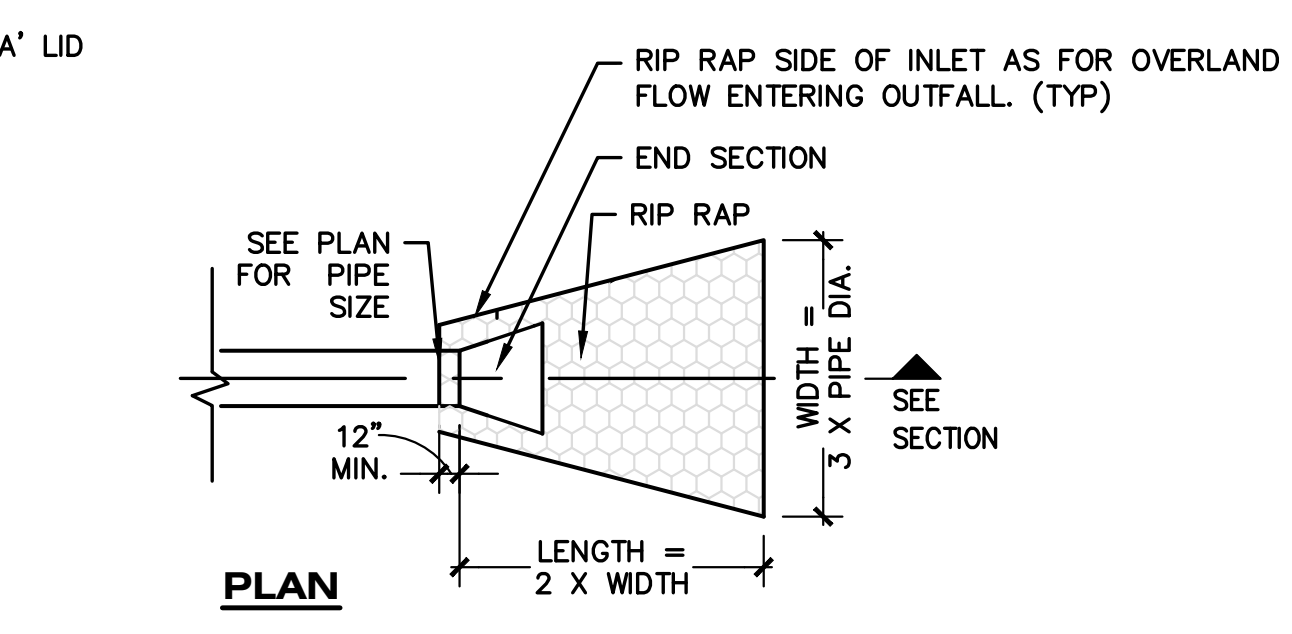
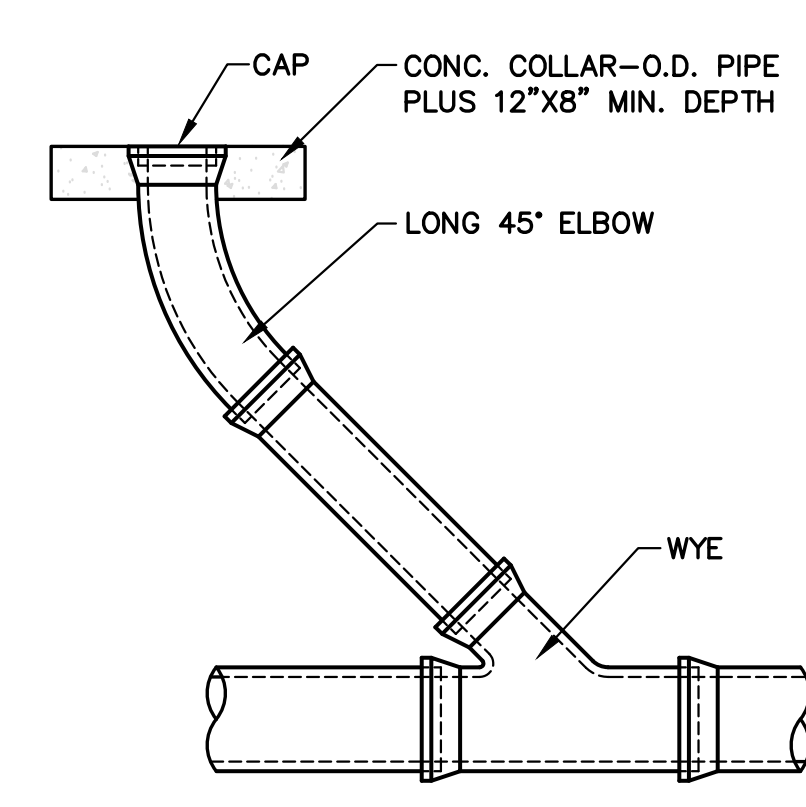
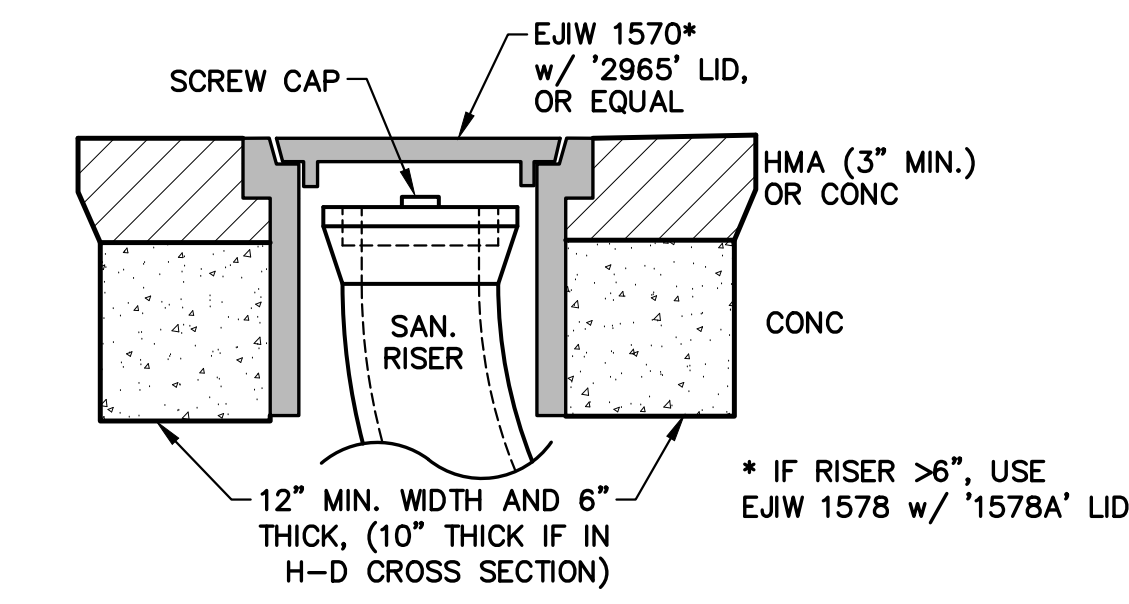
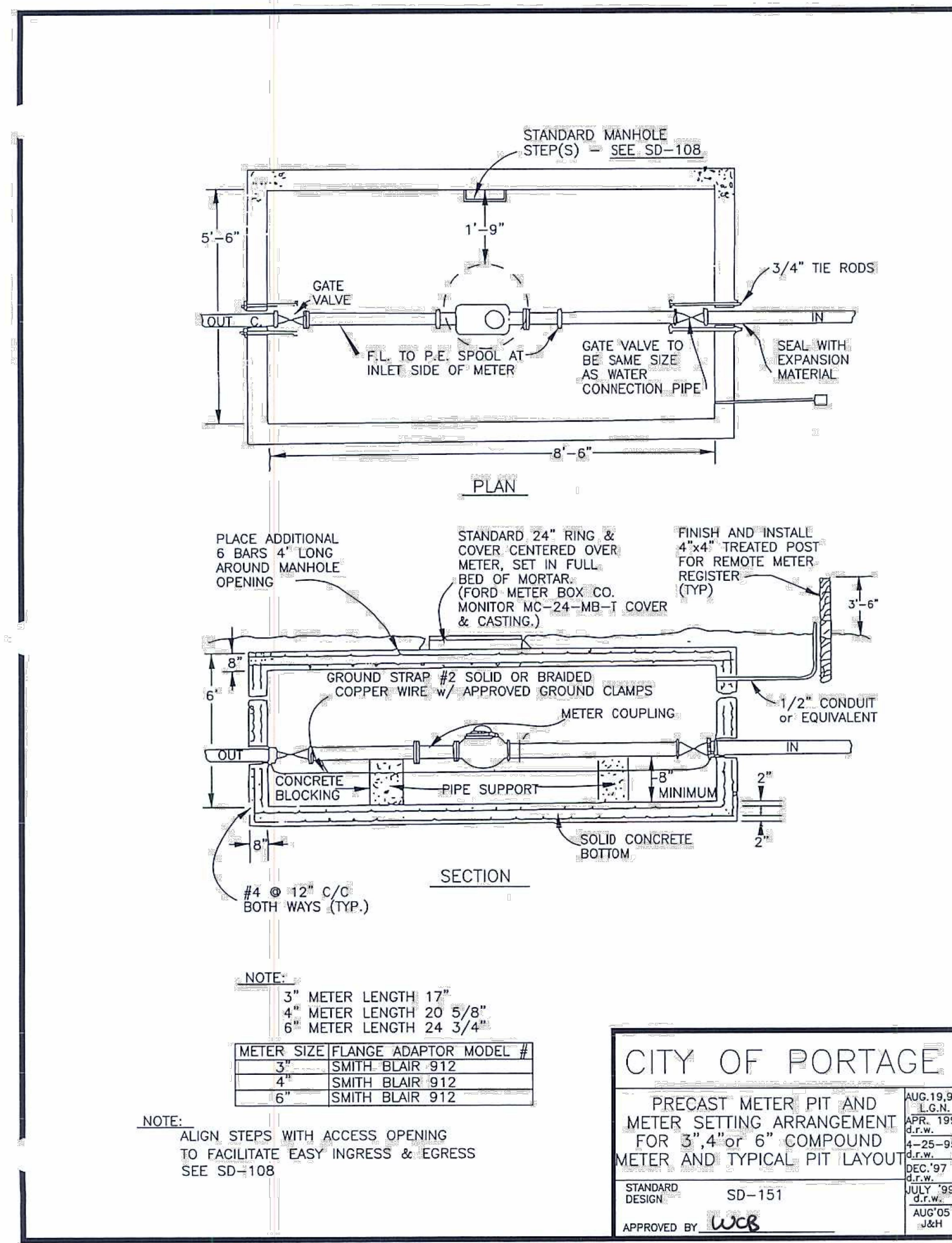
ISOMETRIC VIEW

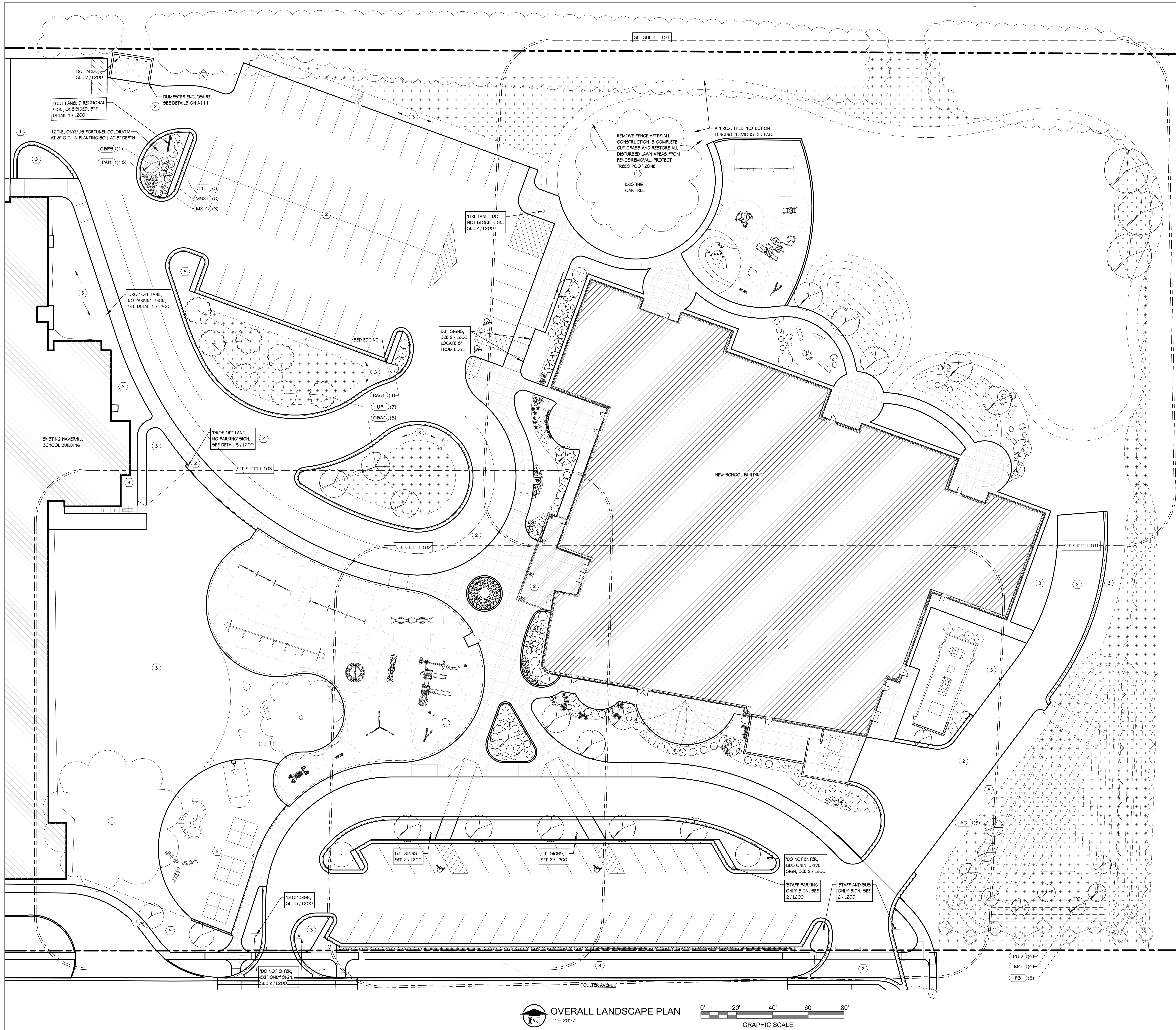


**INLET PROTECTION FABRIC DROP**



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 FIELD WORK PERFORMED BY:  
 DRIESEN & ASSOCIATES, LLC





**LANDSCAPE NOTES**

1. SCARIFY ALL SUBSOILS PRIOR TO PLACING TOPSOILS AND PLANTING SOILS. TEST ALL TOPSOIL PER SPECIFICATIONS.
2. GUY AND STAKE ALL TREES AND MULCH PER DETAILS. INSTALL WATER BAGS ON ALL TREES. REMOVE BAGS AND GUY STAKES AFTER WARRANTY PERIOD.
3. BACKFILL ALL TREES, SHRUB AND PLANT BEDS WITH PLANTING SOIL PER SPECIFICATIONS AND DETAILS.
4. PROVIDE TEMPORARY WATERING SYSTEM AS REQUIRED TO ESTABLISH LAWN PER SPECIFICATIONS.
5. INSTALL SHREDDED BARK MULCH IN ALL PLANT BEDS AT 3" COMPACTED DEPTH OR AS NOTED OR DETAILED.
6. SEE SHEET L200 FOR PLANT SCHEDULE OF ALL PLANTS FOR THE ENTIRE PROJECT.

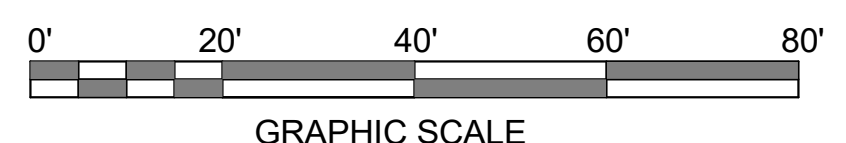
**LEGEND**

- NON-MAINTAIN NATURAL SEED MIX AREAS - SEE SPECS
- ENGINEERED WOOD PLAYGROUND MULCH AT 12" DEPTH, OR AS NOTED. SEE DETAIL AND SEE SPECS

**NEW CONSTRUCTION KEY NOTES**

1. EXISTING PAVEMENT. SEE CIVIL PLANS.
2. NEW PAVEMENT. SEE CIVIL PLANS.
3. AREA TO BE SEEDED PER SPECIFICATIONS. TEST AND PREPARE SOIL PER SPECIFICATIONS.
4. 24" WIDE CONCRETE MAINTENANCE STRIP. SEE CIVIL DETAIL. SCORE 3" O.C.

**OVERALL LANDSCAPE PLAN**  
1" = 20'-0"



SHEET TITLE  
**OVERALL LANDSCAPE PLAN**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

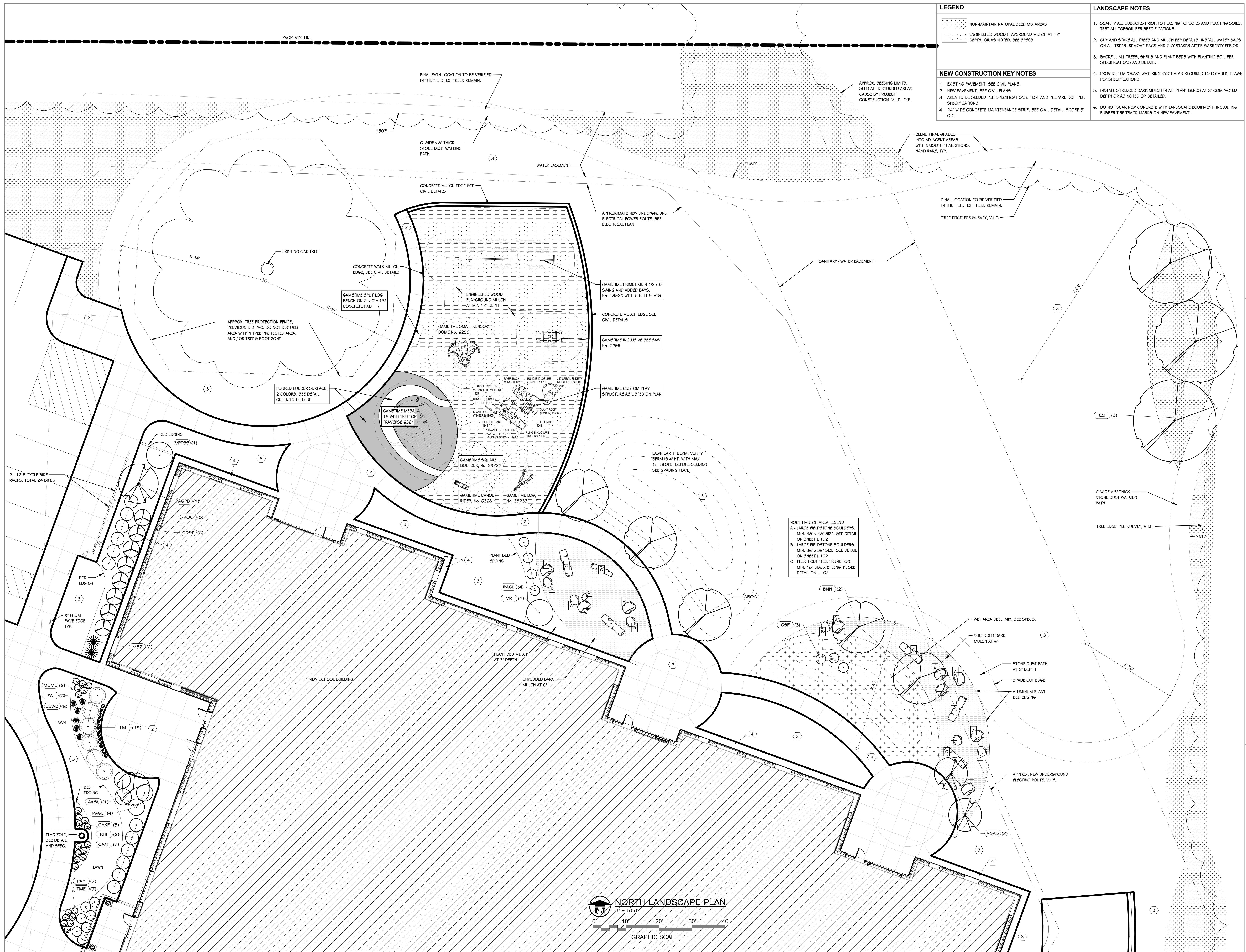
PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

SHEET NUMBER  
**L 001**  
21-237.20

DATE  
**JUNE 30, 2023**

Portage, Michigan

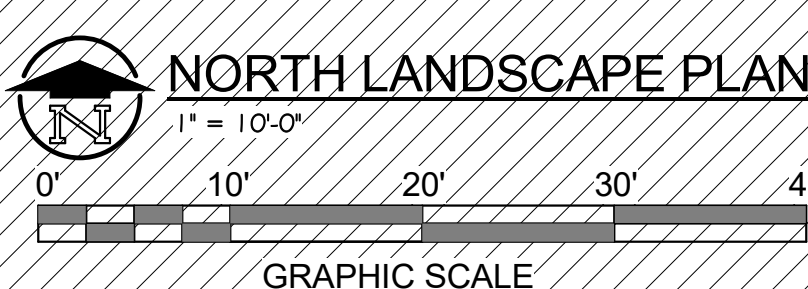


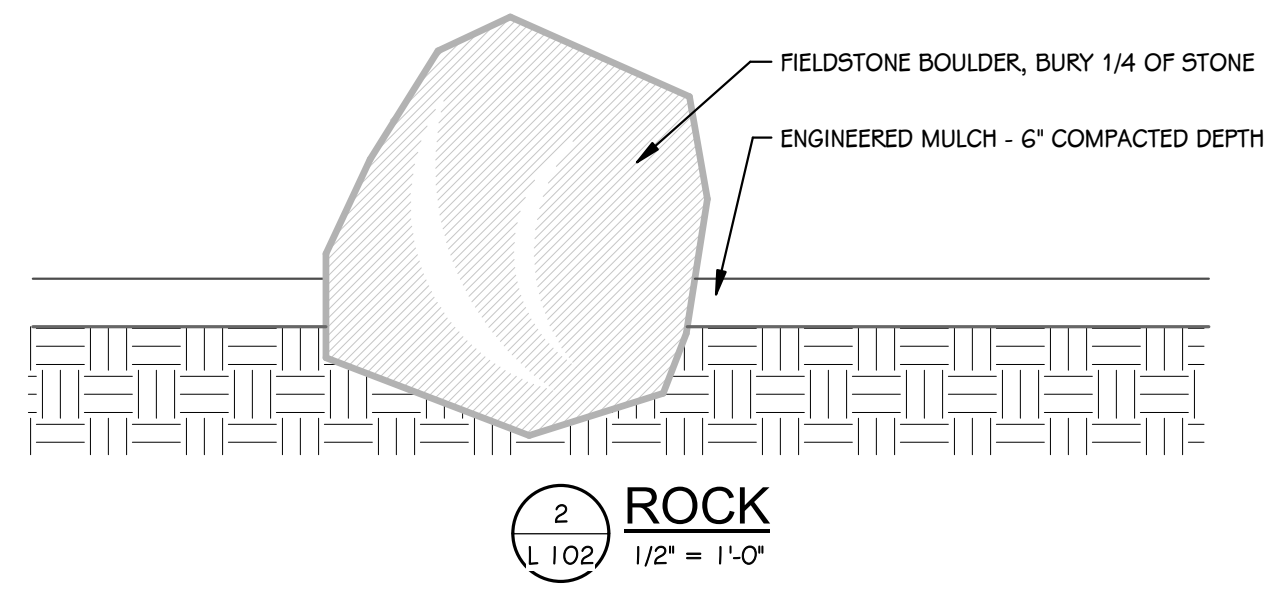
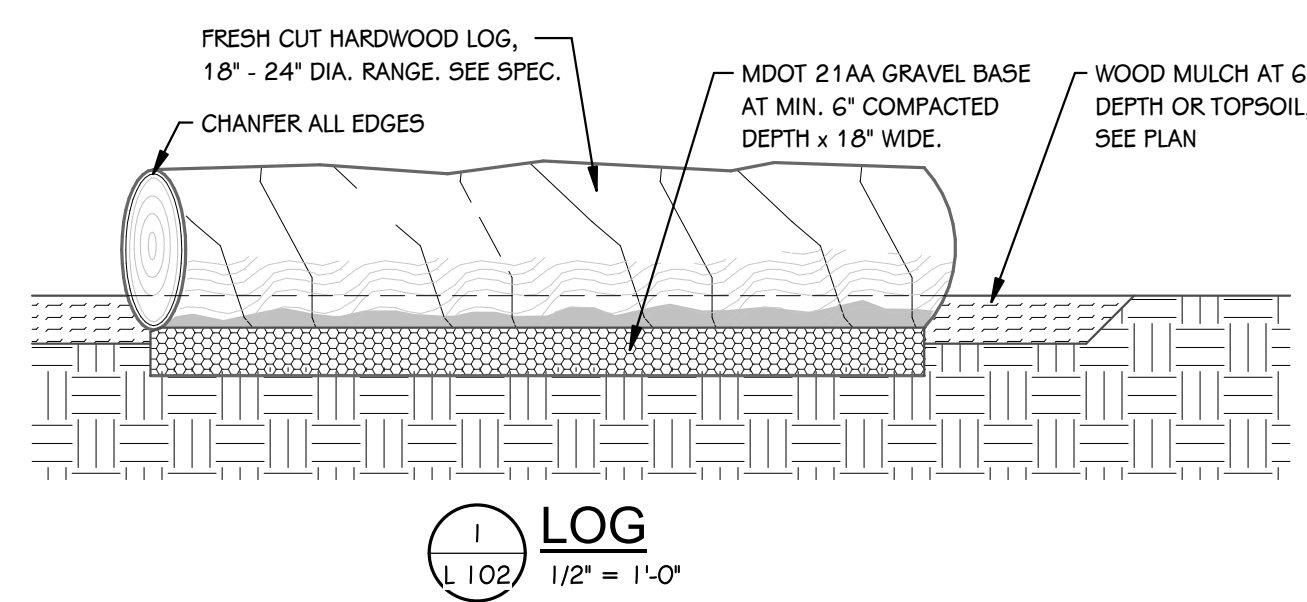
LEGEND	
	NON-MAINTAIN NATURAL SEED MIX AREAS
	ENGINEERED WOOD PLAYGROUND MULCH AT 12\"/>

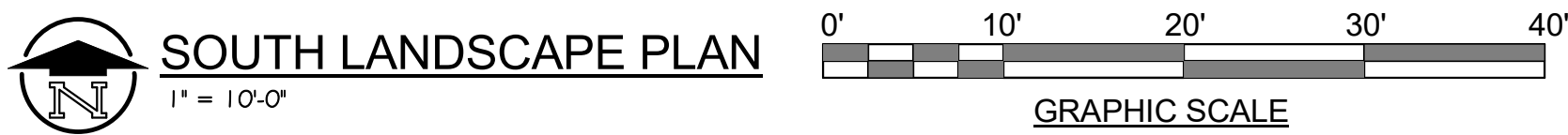
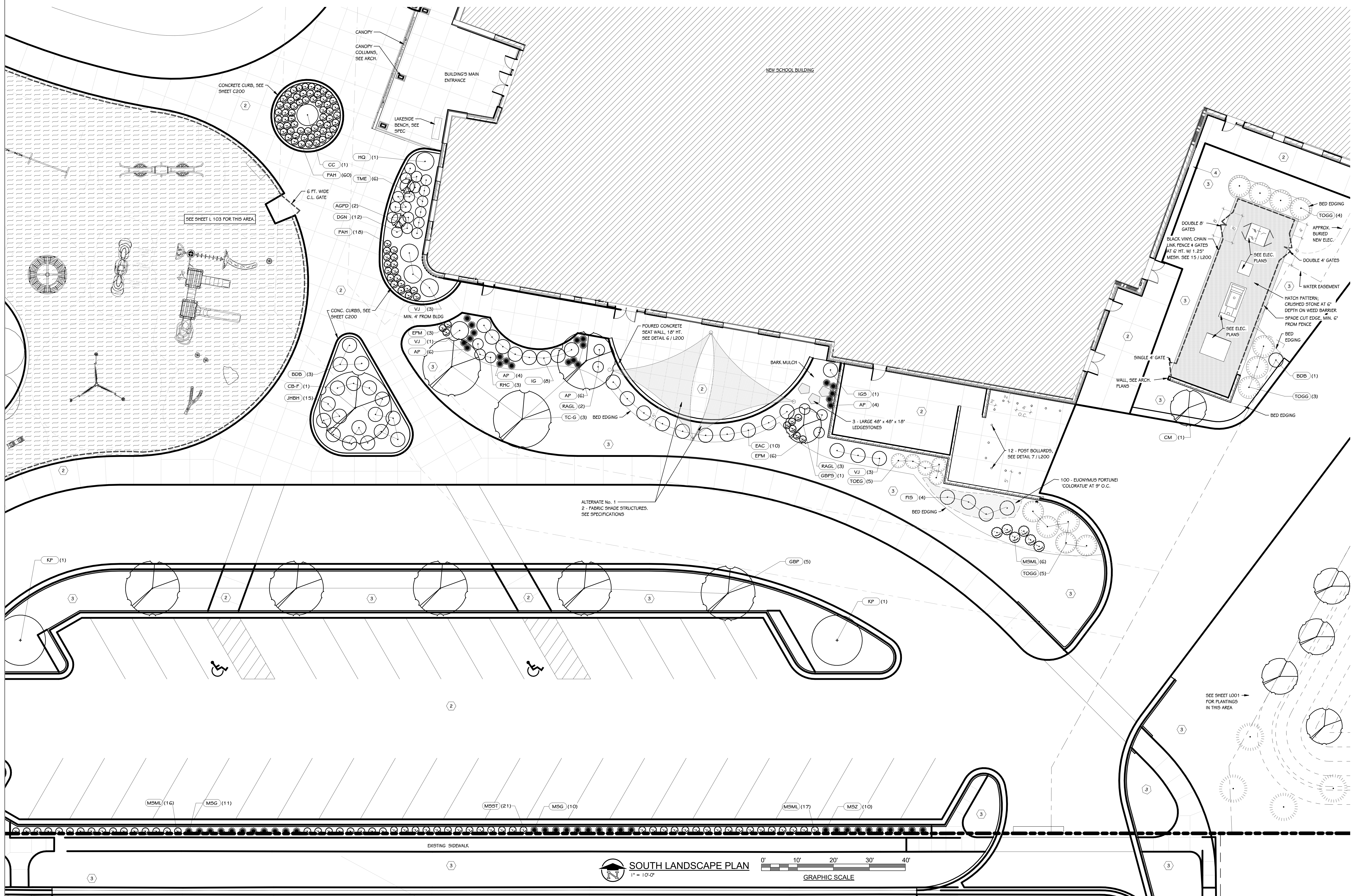
NEW CONSTRUCTION KEY NOTES	
1	EXISTING PAVEMENT. SEE CIVIL PLANS.
2	NEW PAVEMENT. SEE CIVIL PLANS.
3	AREA TO BE SEEDED PER SPECIFICATIONS. TEST AND PREPARE SOIL PER SPECIFICATIONS.
4	24\"/>

LANDSCAPE NOTES	
1.	SCARIFY ALL SUBSOILS PRIOR TO PLACING TOPSOILS AND PLANTING SOILS. TEST ALL TOPSOIL PER SPECIFICATIONS.
2.	GUY AND STAKE ALL TREES AND MULCH PER DETAILS. INSTALL WATER BAGS ON ALL TREES. REMOVE BAGS AND GUY STAKES AFTER WARRANTY PERIOD.
3.	BACKFILL ALL TREES, SHRUB AND PLANT BEDS WITH PLANTING SOIL PER SPECIFICATIONS AND DETAILS.
4.	PROVIDE TEMPORARY WATERING SYSTEM AS REQUIRED TO ESTABLISH LAWN PER SPECIFICATIONS.
5.	INSTALL SHREDDED BARK MULCH IN ALL PLANT BEDS AT 3\"/>
6.	DO NOT SCAR NEW CONCRETE WITH LANDSCAPE EQUIPMENT, INCLUDING RUBBER TIRE TRACK MARKS ON NEW PAVEMENT.





LEGEND	LANDSCAPE NOTES	
NON-MAINTAIN NATURAL SEED MIX AREAS	1. SCARIFY ALL SUBSOILS PRIOR TO PLACING TOPSOILS AND PLANTING SOILS. TEST ALL TOPSOIL PER SPECIFICATIONS. 2. GUY AND STAKE ALL TREES AND MULCH PER DETAILS. INSTALL WATER BAGS ON ALL TREES. REMOVE BAGS AND GUY STAKES AFTER WARRANTY PERIOD. 3. BACKFILL ALL TREES, SHRUB AND PLANT BEDS WITH PLANTING SOIL PER SPECIFICATIONS AND DETAILS. 4. PROVIDE TEMPORARY WATERING SYSTEM AS REQUIRED TO ESTABLISH LAWN PER SPECIFICATIONS. 5. INSTALL SHREDDED BARK MULCH IN ALL PLANT BEDS AT 3\"/>	
ENGINEERED WOOD PLAYGROUND MULCH AT 12\"/>		
NEW CONSTRUCTION KEY NOTES		
1. EXISTING PAVEMENT. SEE CIVIL PLANS.		
2. NEW PAVEMENT. SEE CIVIL PLANS.		
3. AREA TO BE SEEDED PER SPECIFICATIONS. TEST AND PREPARE SOIL PER SPECIFICATIONS.		
4. 24\"/>		



PROJECT TITLE  
**HAVERTHILL ELEMENTARY SCHOOL**  
 OWNER  
**PORTAGE PUBLIC SCHOOLS**  
 Portage, Michigan  
 SHEET NUMBER  
**L 102**  
 DATE  
**JUNE 30, 2023**  
 SHEET TITLE  
**SOUTH LANDSCAPE PLAN**  
 ISSUED FOR  
 DATE  
**21-237.20**



- LANDSCAPE NOTES**
1. SCARIFY ALL SUBSOILS PRIOR TO PLACING TOPSOILS AND PLANTING SOILS. TEST ALL TOPSOIL PER SPECIFICATIONS.
  2. GUY AND STAKE ALL TREES AND MULCH PER DETAILS. INSTALL WATER BAGS ON ALL TREES. REMOVE BAGS AND GUY STAKES AFTER WARRANTY PERIOD.
  3. BACKFILL ALL TREES, SHRUB AND PLANT BEDS WITH PLANTING SOIL PER SPECIFICATIONS AND DETAILS.
  4. PROVIDE TEMPORARY WATERING SYSTEM AS REQUIRED TO ESTABLISH LAWN PER SPECIFICATIONS.
  5. INSTALL SHREDDED BARK MULCH IN ALL PLANT BEDS AT 3" COMPACTED DEPTH OR AS NOTED OR DETAILED.
  6. SEE SHEET L200 FOR PLANT SCHEDULE OF ALL PLANTS FOR THE ENTIRE PROJECT.
- LEGEND**
- NON-MAINTAIN NATURAL SEED MIX AREAS - SEE SPECS
  - ENGINEERED WOOD PLAYGROUND MULCH AT 1 1/2" DEPTH, OR AS NOTED - SEE DETAIL AND SEE SPECS

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

UTILITY LOCATIONS ARE DERIVED FROM ACTUAL MEASUREMENTS OR AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATIONS NOR SHOULD IT BE ASSUMED THAT THEY ARE THE ONLY UTILITIES IN THIS AREA.

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

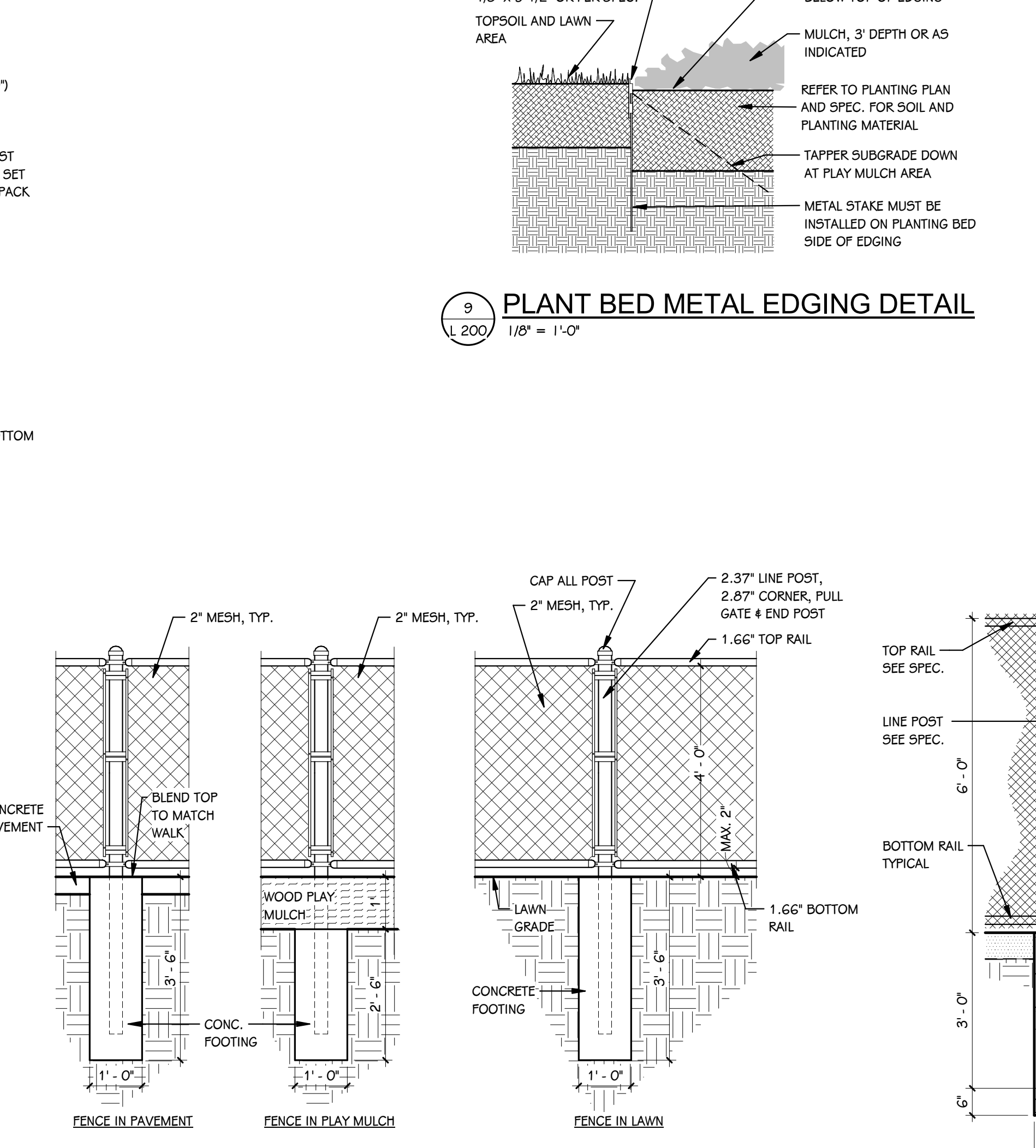
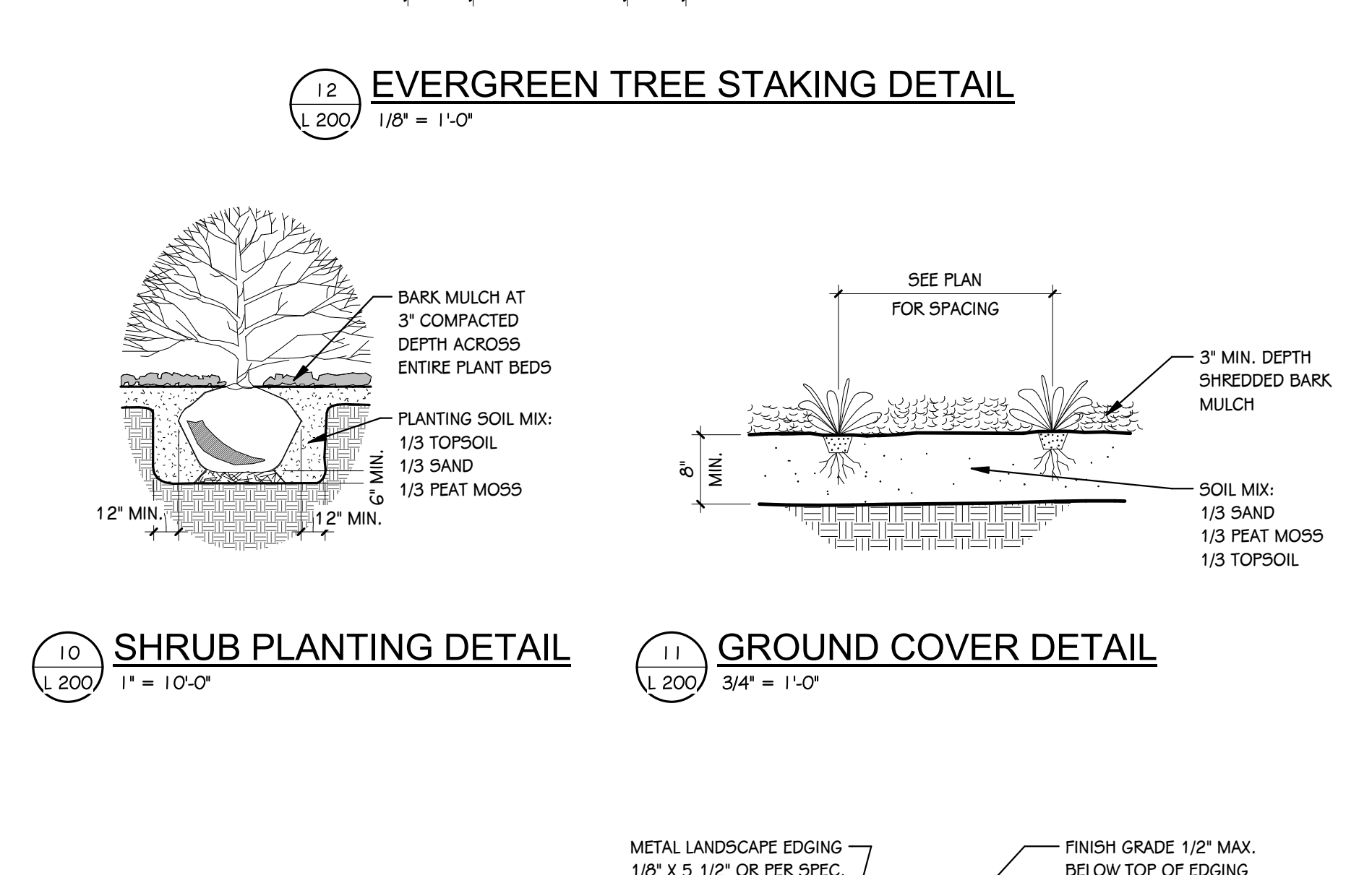
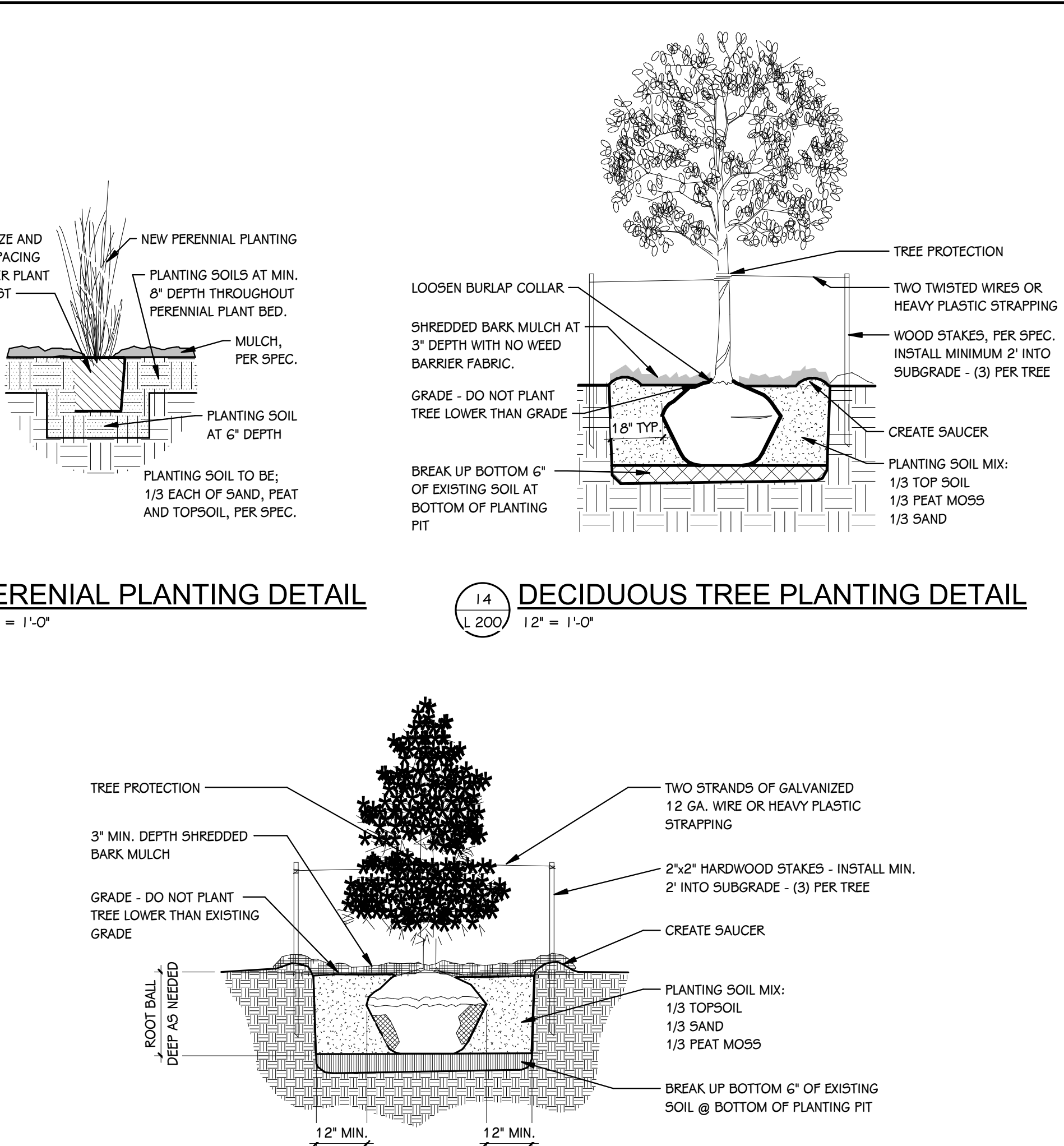
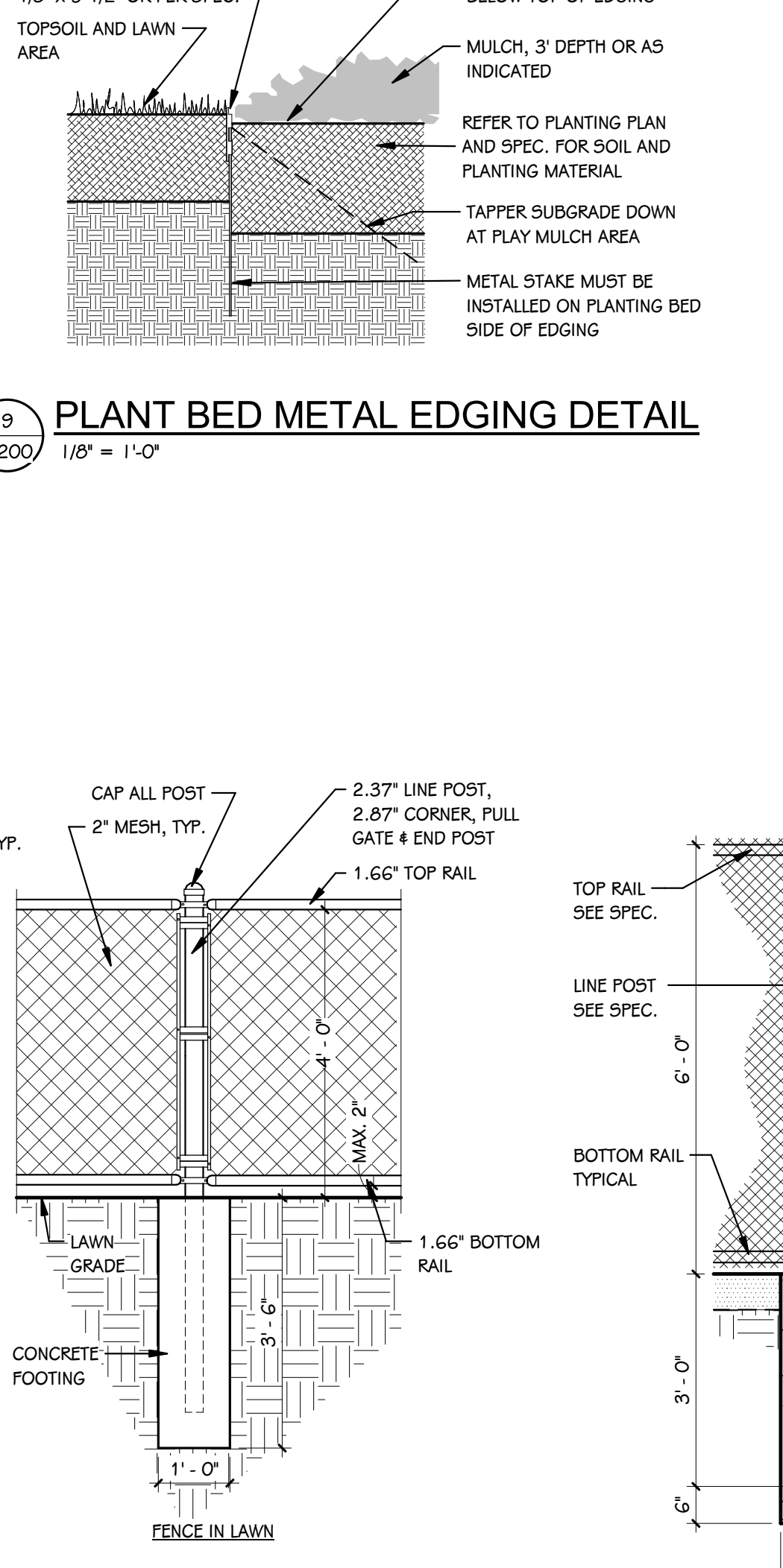
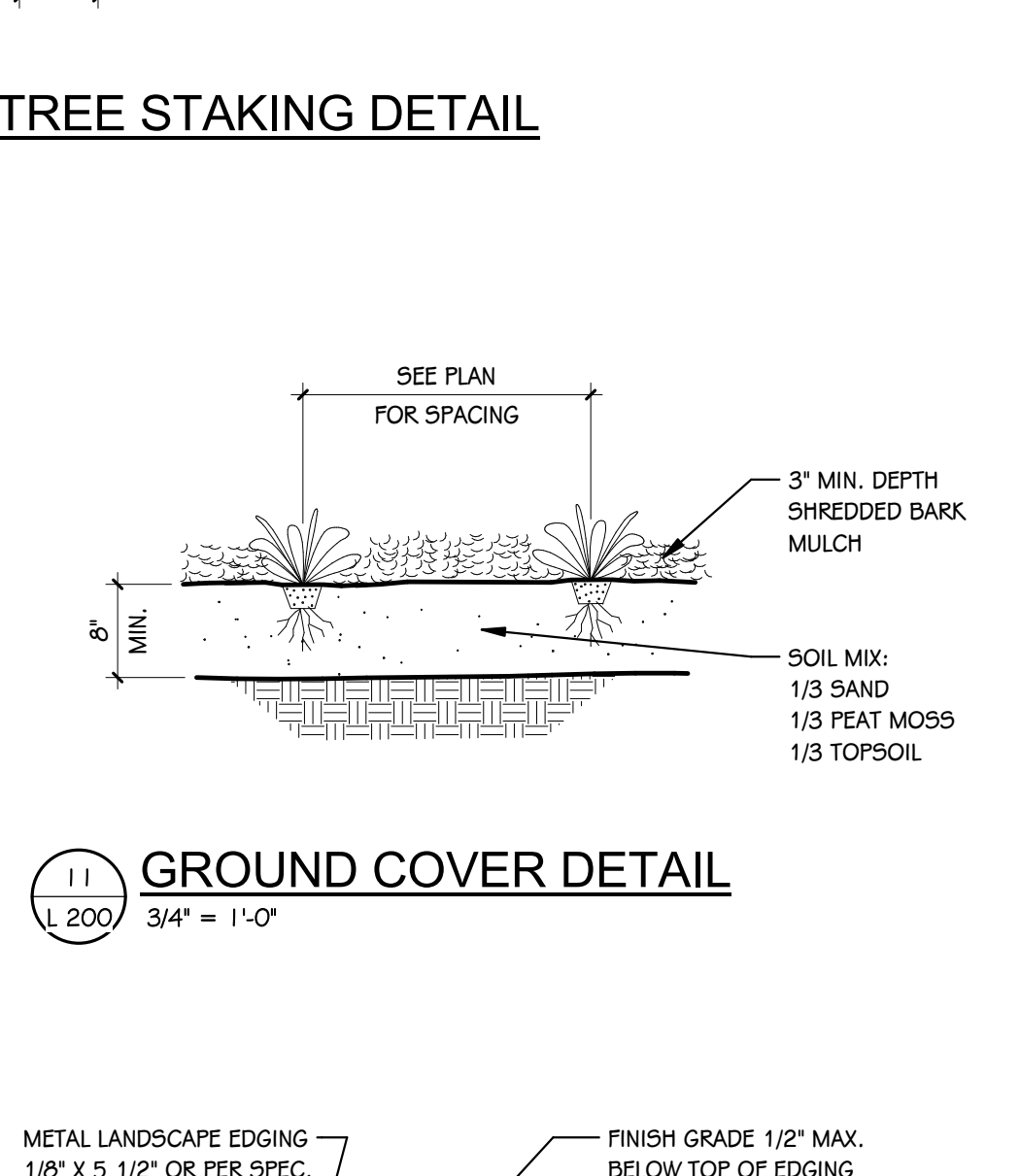
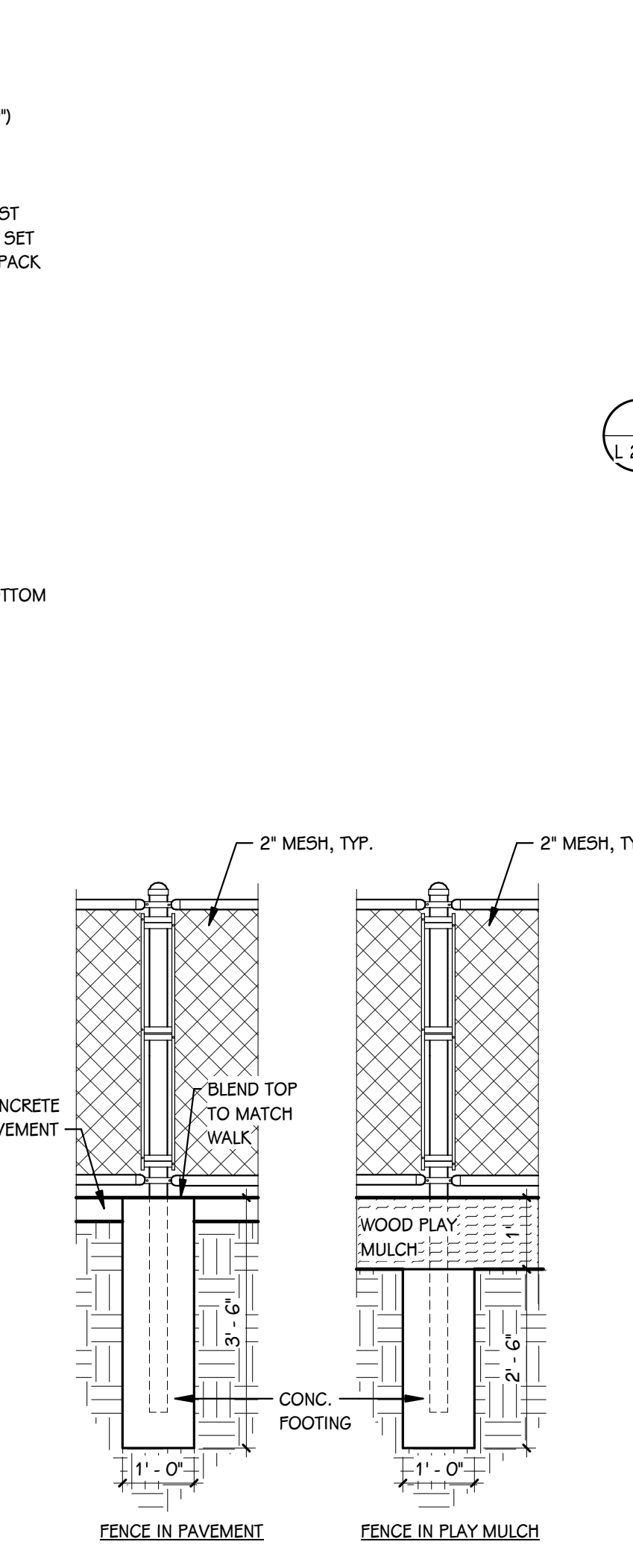
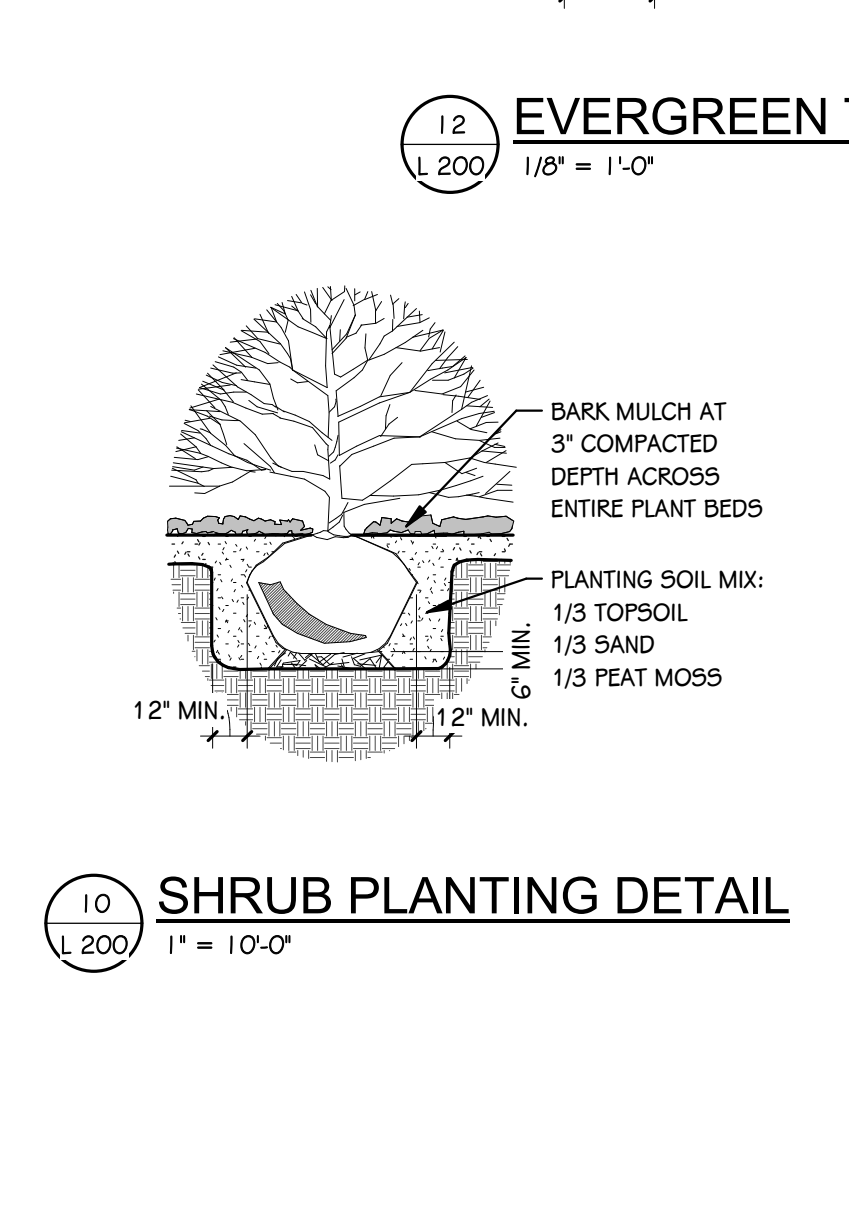
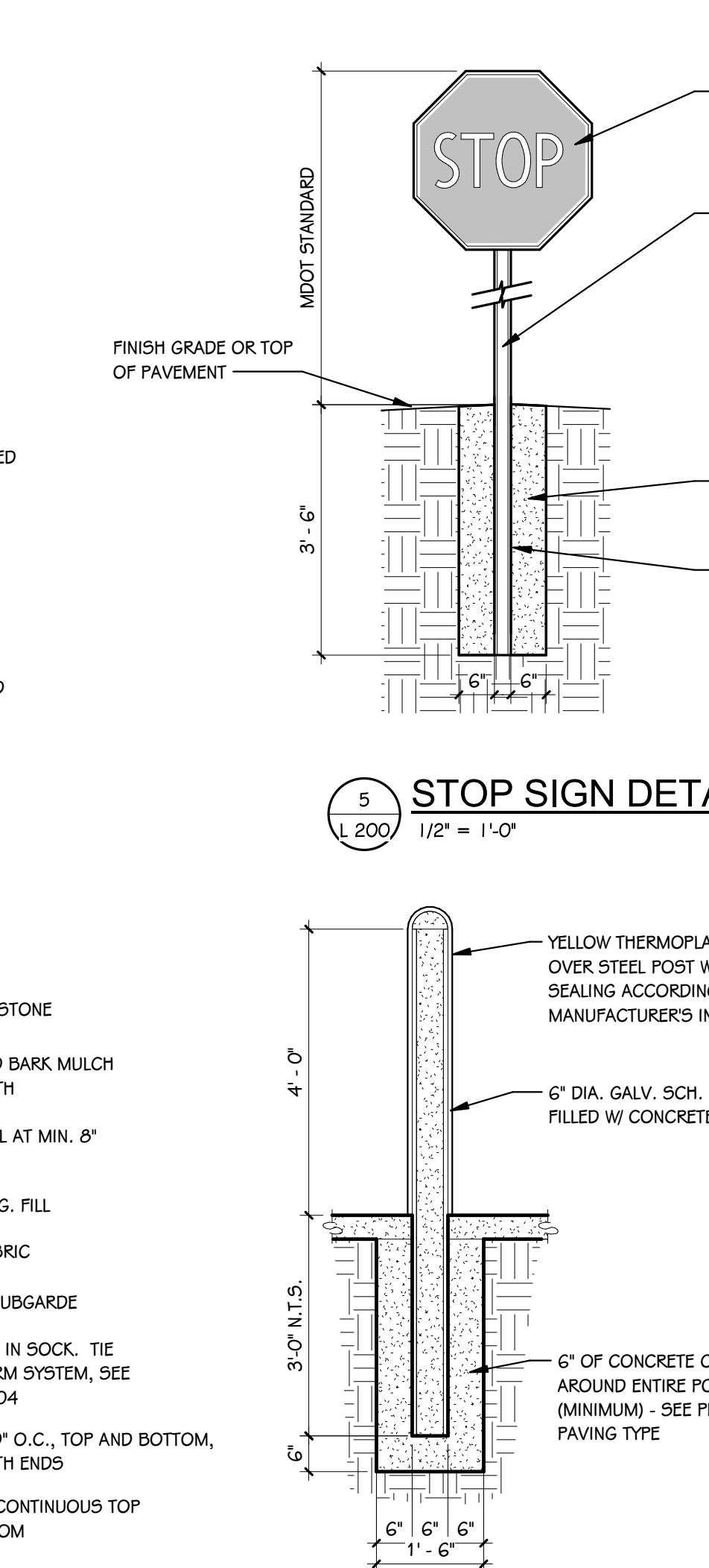
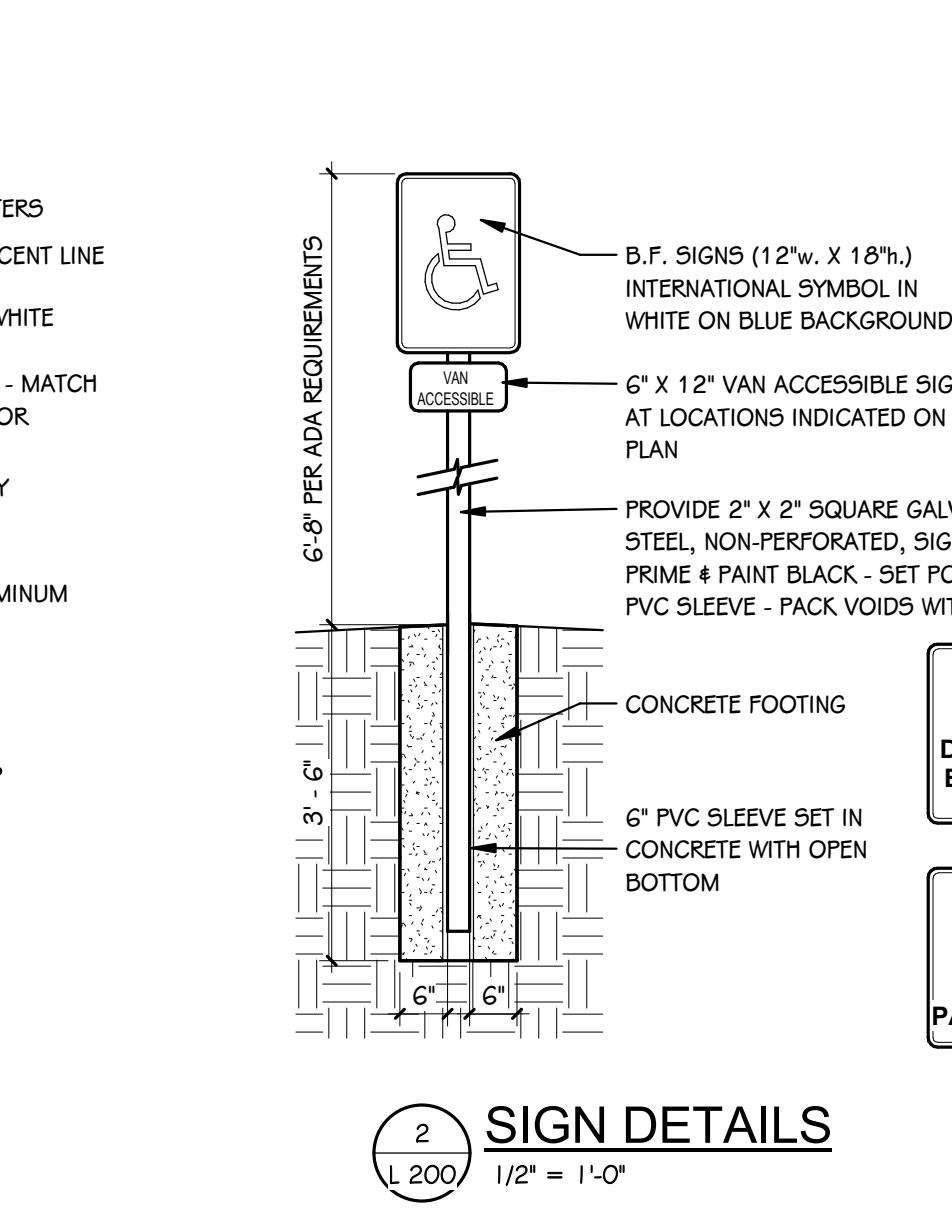
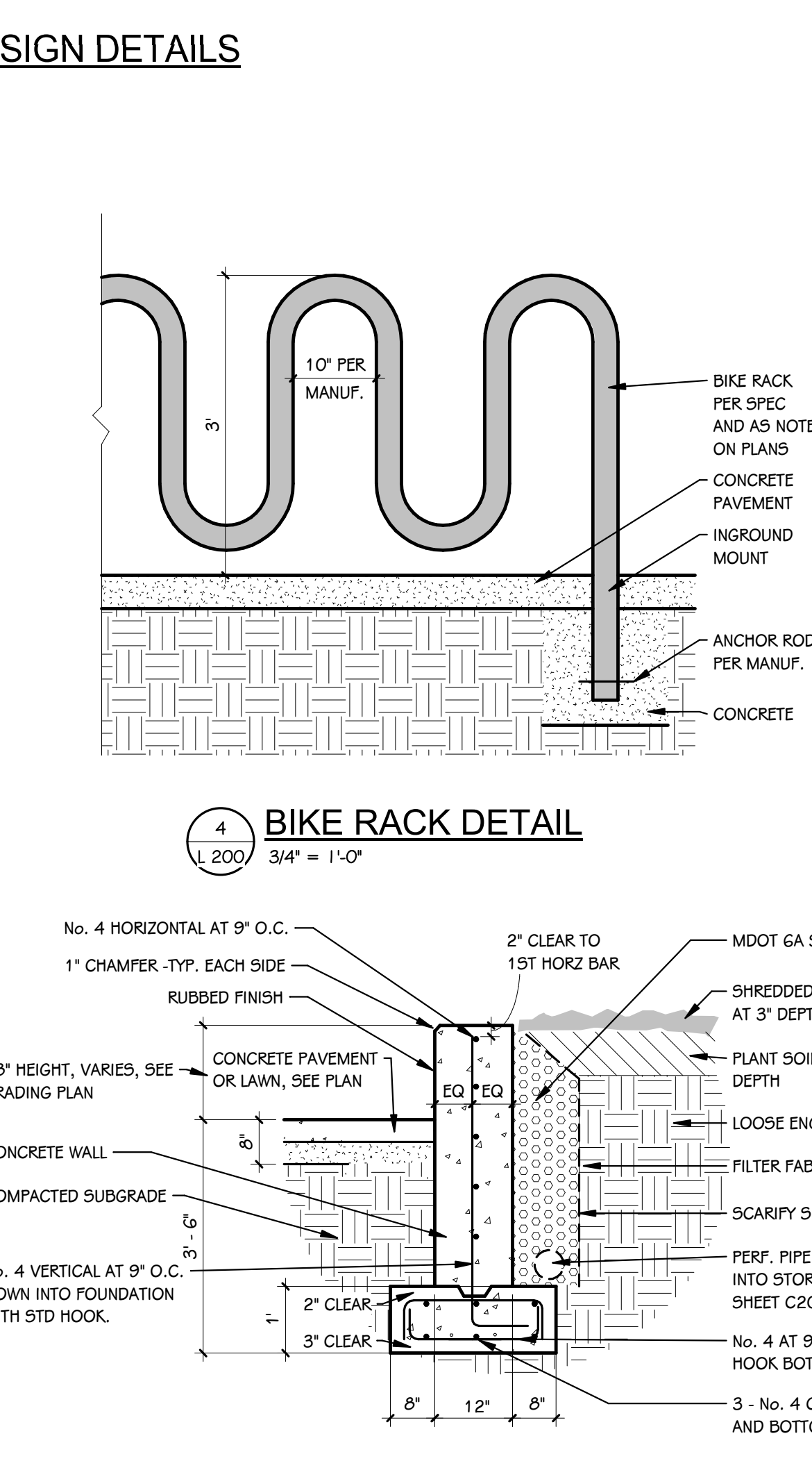
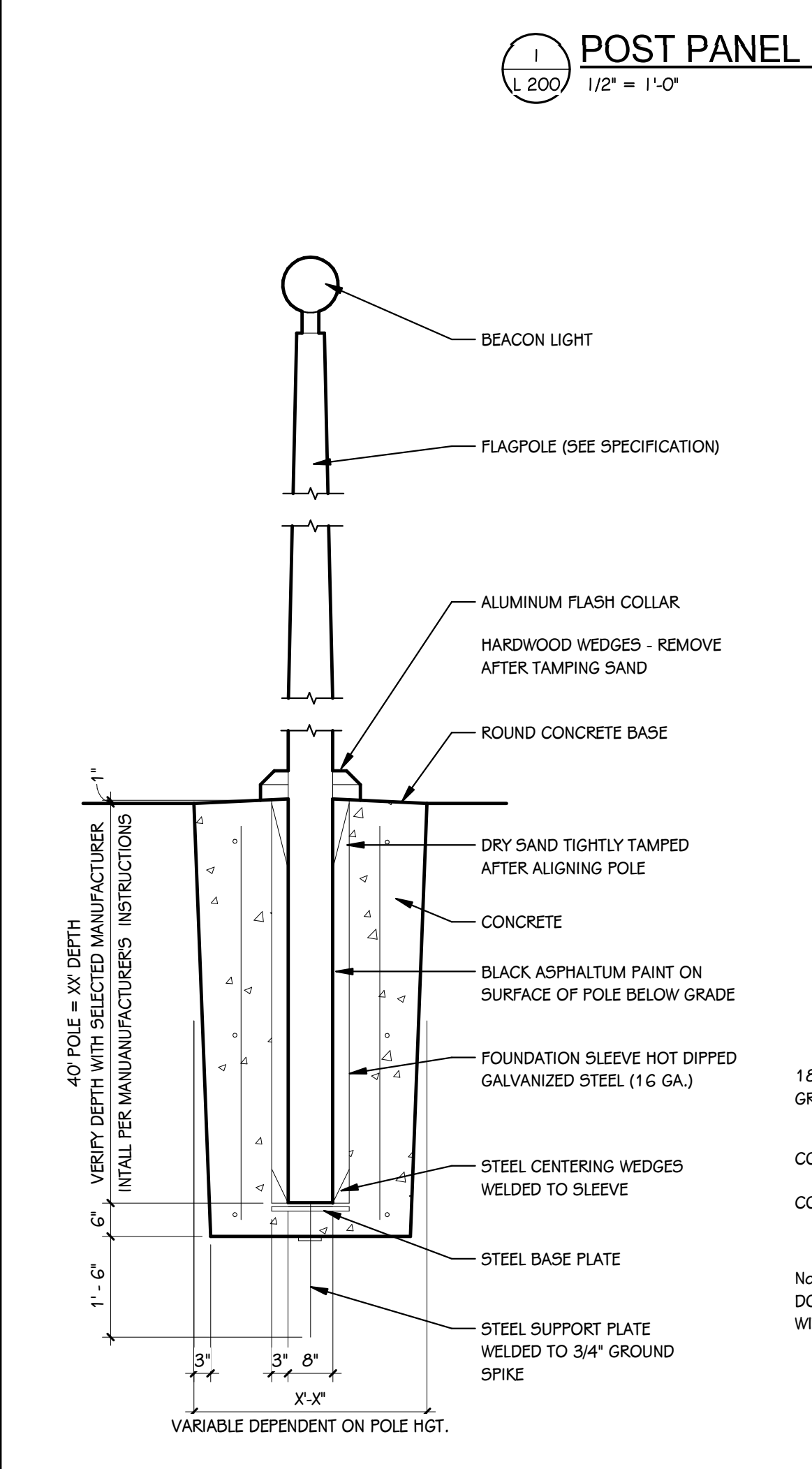
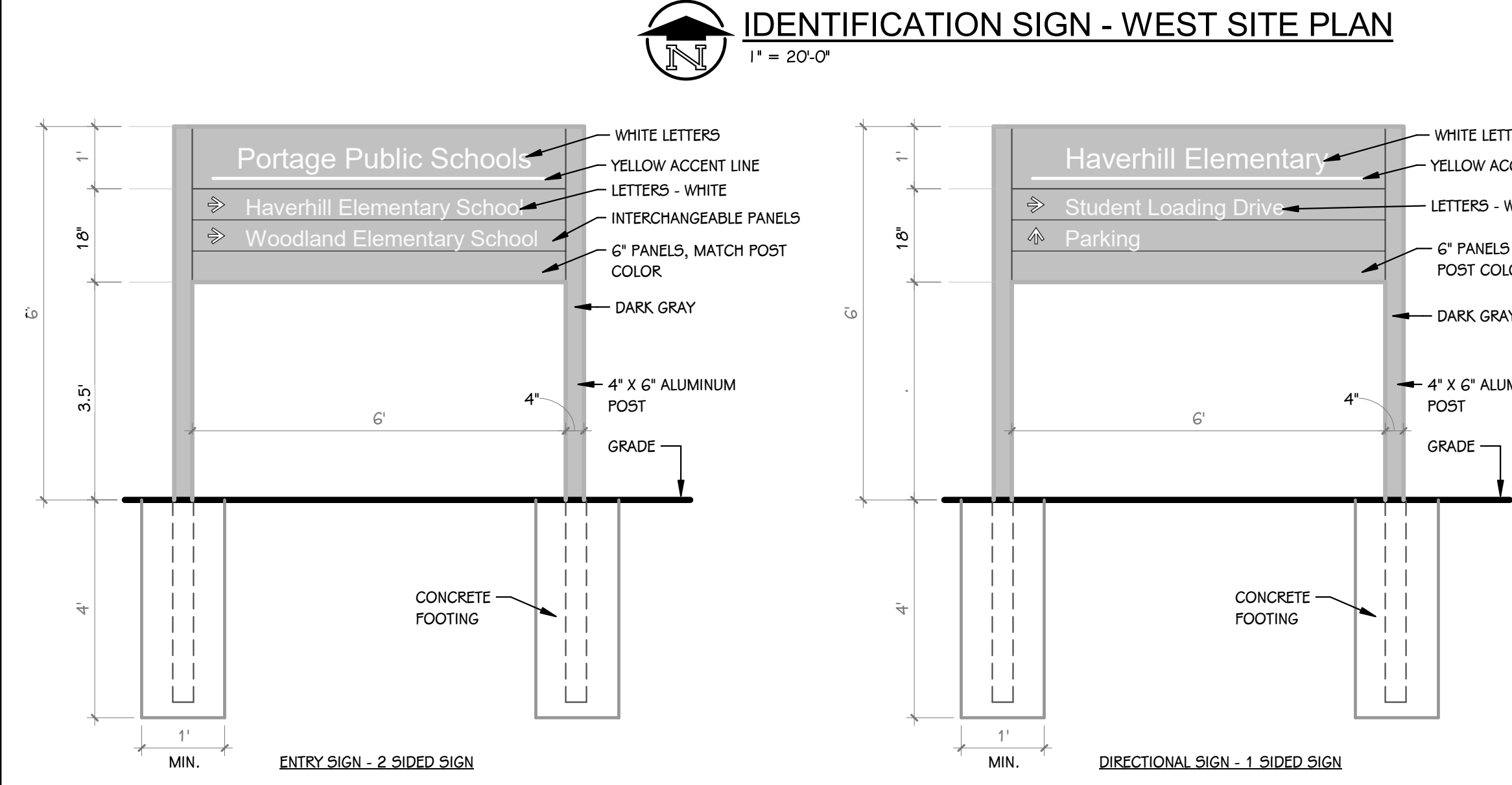
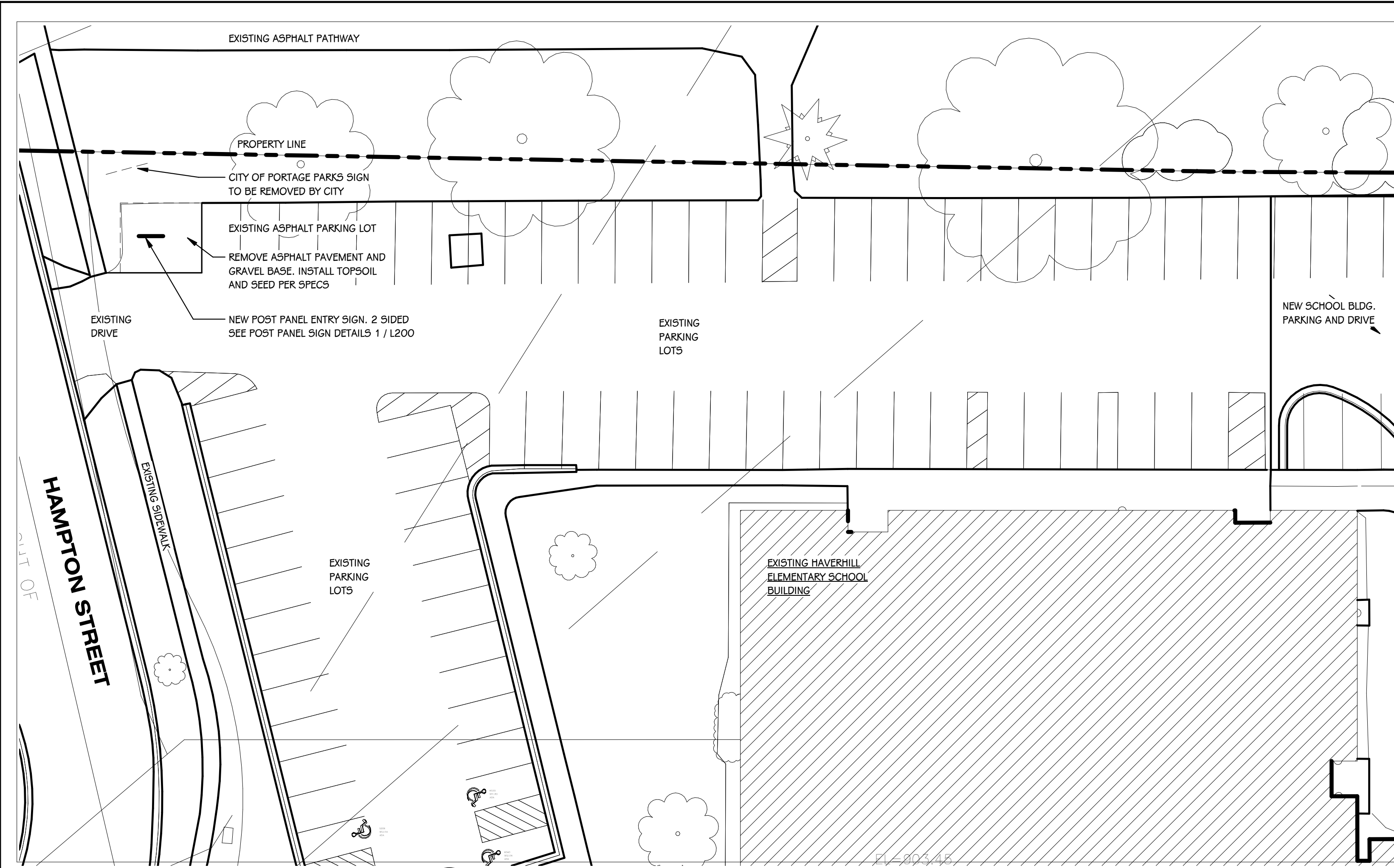
SHEET TITLE  
WEST PLAYGROUND

Portage, Michigan

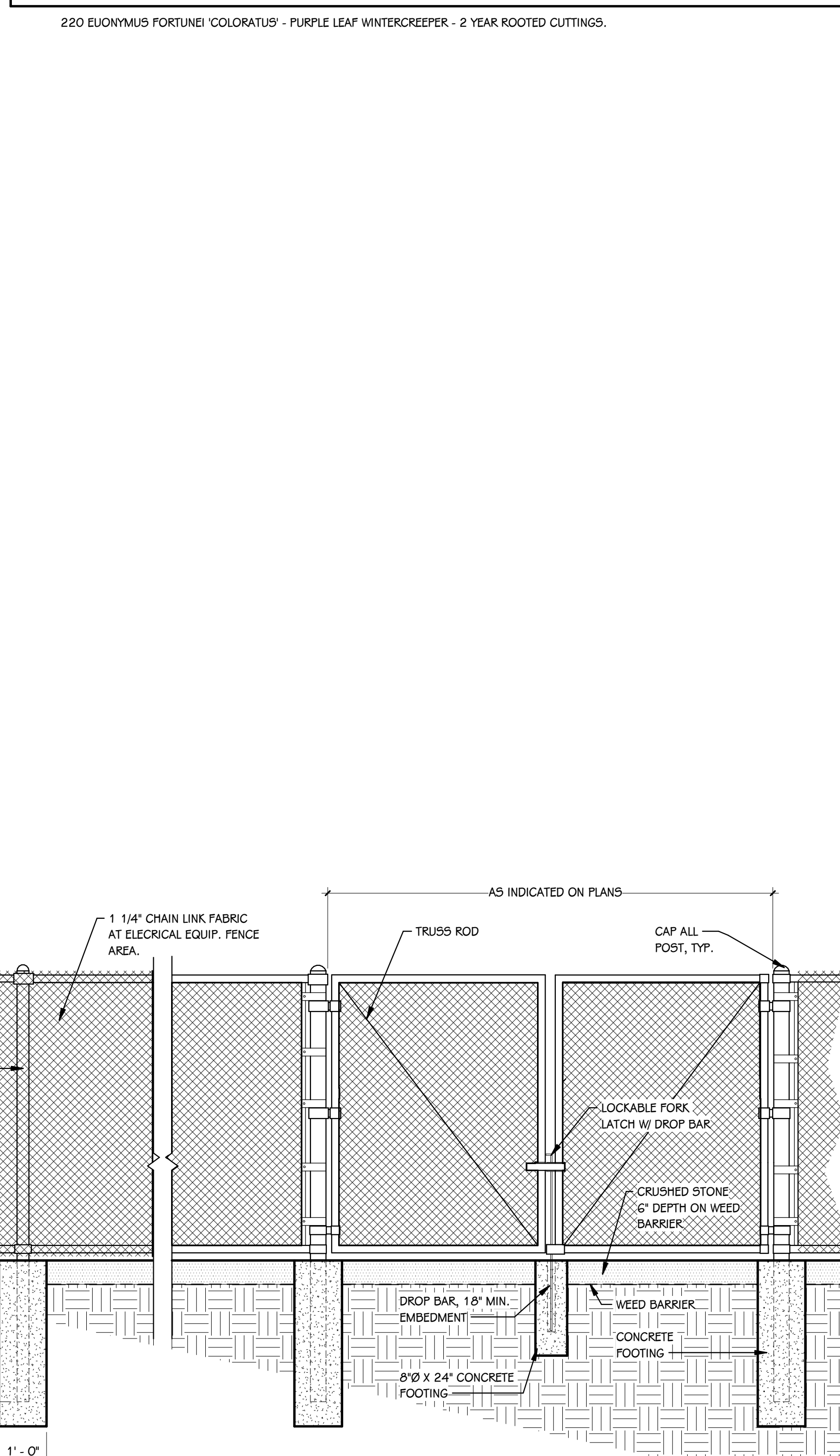
DATE  
JUNE 30, 2023

SHEET NUMBER  
L 103  
21-237.20

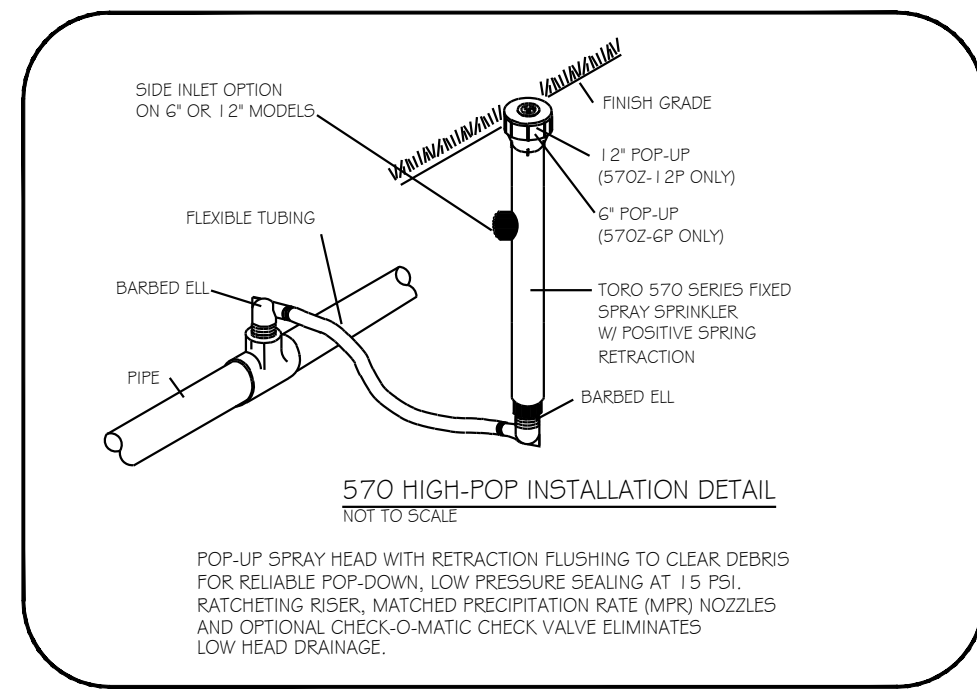
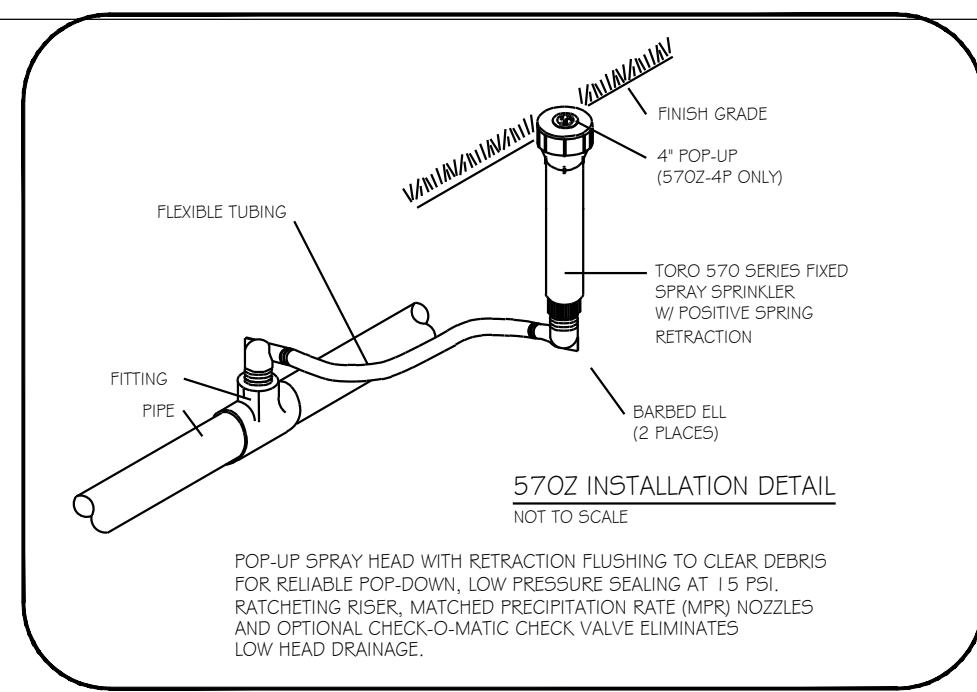
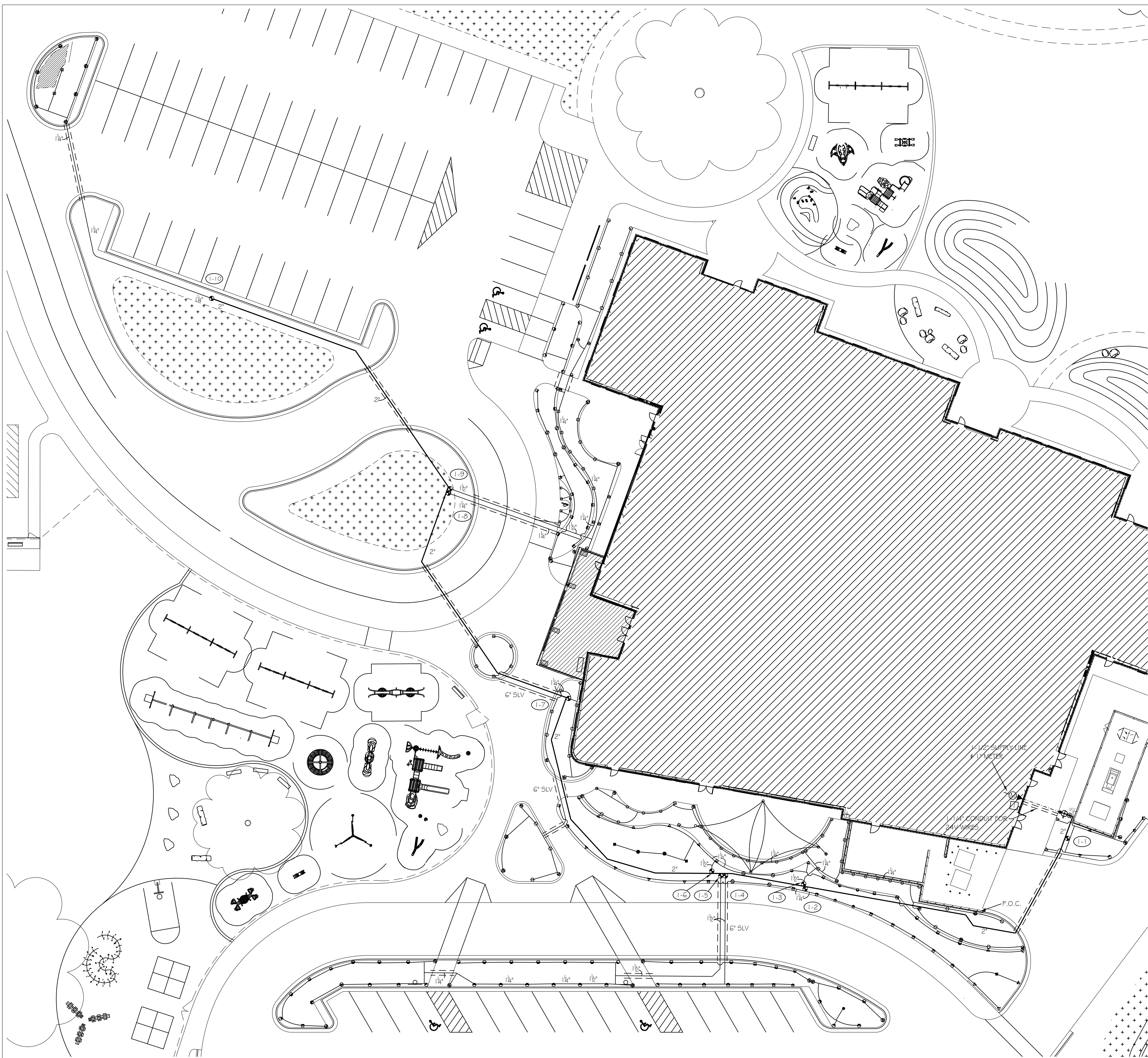
**WEST PLAYGROUND PLAN**  
1" = 10'-0"  
GRAPHIC SCALE



ID	QUANTITY	SCIENTIFIC NAME	COMMON NAME	SIZE	SPACING
AG	3	ACER GINNALA	AMUR MAPLE	2" CALIPER	15'-0" O.C.
AGAB	2	AMERLANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	MULTITRUNK AUTUMN BRILLIANCE SERVICEBERRY	10'-0" HT.	AS SHOWN
AGPD	3	AMERLANCHIER X GRANDIFLORA 'PRINCESS DIANA'	PRINCESS DIANA SERVICEBERRY	10'-0" HT.	10' O.C.
AP	21	AEGOPODIUM FODOGRARIA	BISHOPS WEEED	1 GAL.	1'-0" O.C.
AROG	4	ACER REBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3" CALIPER	30'-0" O.C.
AKFA	1	ACER X FREEMANNI 'ARMSTRONG'	ARMSTRONG MAPLE	3" CALIPER	15'-0" O.C.
BDD	4	BUTTEDIA DAVIDII 'BUTTERFLY HEAVEN'	BUTTERFLY BUSH	24" HT.	3'-0" O.C.
BNH	2	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH MULTI-STEM	10'-0" HT.	30'-0" O.C.
CAKF	12	CALAMAGROSTIS X ACUTIFLORA KARL FOERSTER	'KARL FOERSTER' FEATHER REED	3 GAL.	2'-0" O.C.
CB-F	1	CARPINUS BETULUS 'FASTIGIATA'	NARROW HORNBEAM	3" CALIPER	20'-0" O.C.
CC	1	COTINUS COGGYGRIA 'ROYAL PURPLE'	VENETIAN SUMACH	6'-0"-8'-0" HT.	AS SHOWN
COSF	6	COTONASTER DANMERE 'STRIBES FINDINGS'	LOW COTONASTER	24" SPRD.	4'-0" O.C.
OM	1	CORNUS MAS 'GOLDEN GLORY'	GOLDEN GLORY DOGWOOD	12 FT HT.	AS SHOWN
CS	3	CATALPA SPECIOSA	CATALPA TREE	3" CALIPER	30'-0" O.C.
CSF	3	CORNUS SERICEA 'FARROW'	REDTONG DOGWOOD	24" HT.	4'-0" O.C.
DGN	12	DEUTZIA GRACILIS 'NIKKO'	DWARF DEUTZIA	18" HT.	3'-0" O.C.
EAC	10	EUONYMUS ALATUS 'COMPACTA'	BURNING BUSH	24"-30" HT.	3'-0" O.C.
EFM	9	ECHINACEA PURPUREA 'MAGNUS'	PURPLE CONE FLOWER	3 GAL.	1'-6" O.C.
FL	3	FORSYTHIA X INTERMEDIA 'LYNWOOD'	LYNWOOD FORSYTHIA	24" HT.	4'-0" O.C.
FIS	4	FORSYTHIA X INTERMEDIA 'SPECTABILIS'	SPECTABILIS FORSYTHIA	24" HT.	6'-0" O.C.
GBAG	3	GINGKO BILOBA 'AUTUMN GOLD'	AUTUMN GOLD MIDDENHAIR TREE	3" CALIPER	26'-0" O.C.
GBF	5	GINGKO BILOBA 'THE PRESIDENT'	PRESIDENTIAL GOLD GINGKO	3" CALIPER	40'-0" O.C.
GBFS	2	GINGKO BILOBA 'PRINCETON SENTRY'	NARROW GINGKO TREE	3" CALIPER	30'-0" O.C.
HQ	1	HYDRANGEA QUERCIFOLIA	OAKLEAF HYDRANGEA	24" HT.	5'-0" O.C.
IG	8	ILEX GLABRA	INKBERRY HOLLY	24" HT.	4'-0" O.C.
IGS	1	ILEX GLABRA 'SHAMROCK'	DWARF INKBERRY	24" HT.	4'-0" O.C.
JHBD	15	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	JUNIPERUS CHINENSIS 'PFITZERIANA COMPACTA'	24" SPRD.	5'-0" O.C.
JSWB	6	JUNIPERUS SCOPULORUM 'WICHITA BLUE'	WICHITA BLUE JUNIPER	6'-0"-8'-0" HT.	5'-0" O.C.
KP	2	KOELBUTERA PANICULATA	GOLDEN RAIN TREE	3" CALIPER	AS SHOWN
LM	15	LIRIOPE MUSCARI	LILYTURF	3 GAL.	1'-0" O.C.
MG	6	METASCELOIUS GLYPTOSTROBOIDES	DAWN REDWOOD	8'-0" HT.	20'-0" O.C.
MS-G	3	MISCANTHUS SINENSIS 'GRACILLIMUS'	MAIDEN GRASS	3 GAL.	4'-0" O.C.
MSL	21	MISCANTHUS SINENSIS 'GRACILLIMUS'	MAIDEN GRASS	5 GAL.	3'-0" O.C.
MSML	45	MISCANTHUS SINENSIS 'MORNING LIGHT'	MORNING LIGHT GRASS	3 GAL.	3'-0" O.C.
MSST	27	MISCANTHUS SINENSIS 'STRICTA'	STRIPED ORNAMENTAL GRASS	5 GAL.	4'-0" O.C.
MSZ	12	MISCANTHUS SINENSIS 'ZEBRINUS'	ZEBRA GRASS	5 GAL.	3'-0" O.C.
PA	6	PEROVSKIA ATRIPILICIFOLIA	RUSSIAN SAGE	3 GAL.	3'-0" O.C.
PAH	103	PENSETUM ALPELUCIDROIDES 'HAMELI'	DWARF FOUNTAIN GRASS	3 GAL.	2'-0" O.C.
PGD	6	PICEA GLAUCA DENSATA	BLACK HILLS SPRUCE	6'-0" HT.	15' O.C.
PS	5	PNUS STROBUS	WHITE PINE	6'-0"-8'-0" HT.	15'-0" O.C.
QP	1	QUERCLUS PALUSTRIS	PIN OAK	3" CALIPER	30'-0" O.C.
RAGL	17	RHUS AROMATICA 'GRO LOW'	LOW SPREADING SUMAC	24" SPREAD	5'-0" O.C.
RHC	3	RHODODENDRON 'PJM COMPACTA'	COMPACT PJM RHODODENDRON	24" HT.	3'-0" O.C.
RHP	6	RHODODENDRON HYBRID 'PJM'	PJM RHODODENDRON	24" HT.	4'-0" O.C.
TC-G	3	TILIA TOMENTOSA 'GREEN MOUNTAIN'	GREENSPICE LINDEN	3" CALIPER	24'-0" O.C.
TME	13	TAXIS X MEDIA 'EVERLOW'	LOW YEW	24" SPRD.	3'-0" O.C.
TOEG	5	TILIA OCCIDENTALIS 'EMERALD GREEN'	EMERALD GREEN ARBORVITAE	8'-0" HT.	4'-0" O.C.
TOSG	12	TILIA STANDISHII X PUCATA 'GREEN GIANT'	GREEN GIANT ARBORVITAE	8'-0" HT.	6' O.C.
UP	7	ULMUS 'PATRIOT'	PATRIOT LACEDARK	3" CALIPER	20'-0" O.C.
VJ	7	VIBURNUM X JUDDII	JUDDII VIBURNUM	30" HT.	6'-0" O.C.
VOC	8	VIBURNUM OPULIS 'COMPACTA'	COMPACT EUROPEAN CRANBERRYBUSH	30" HT.	5'-0" O.C.
VPTSS	1	VIBURNUM PLICATUM TOMENTOSUM 'SUMMER SNOWFLAKE'	SUMMER SNOWFLAKE VIBURNUM	30" HT.	8'-0" O.C.
VR	1	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	30" HT.	AS SHOWN







**LEGEND**

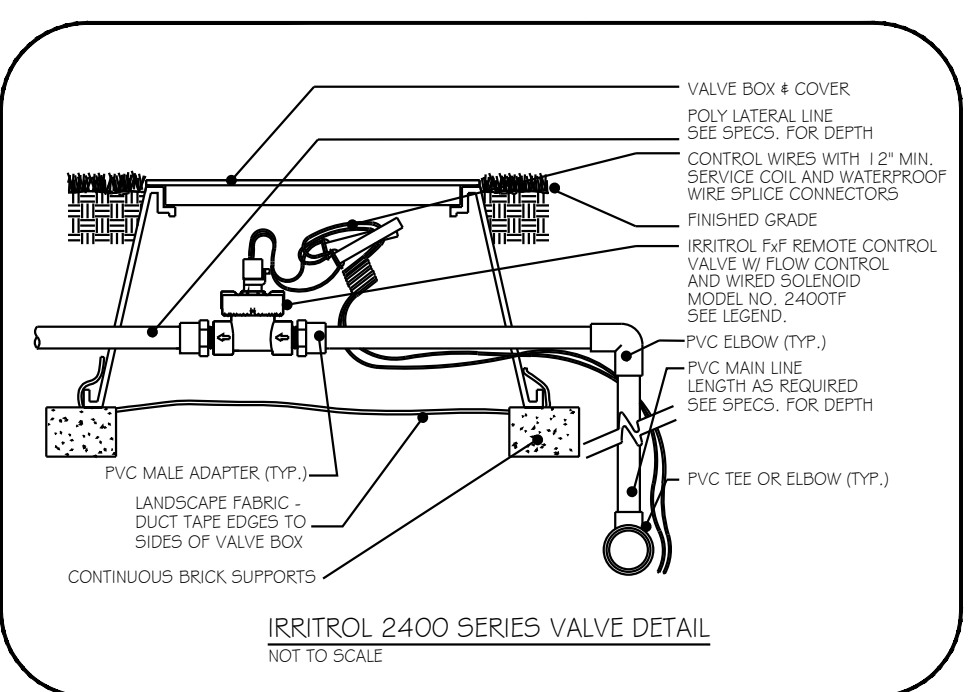
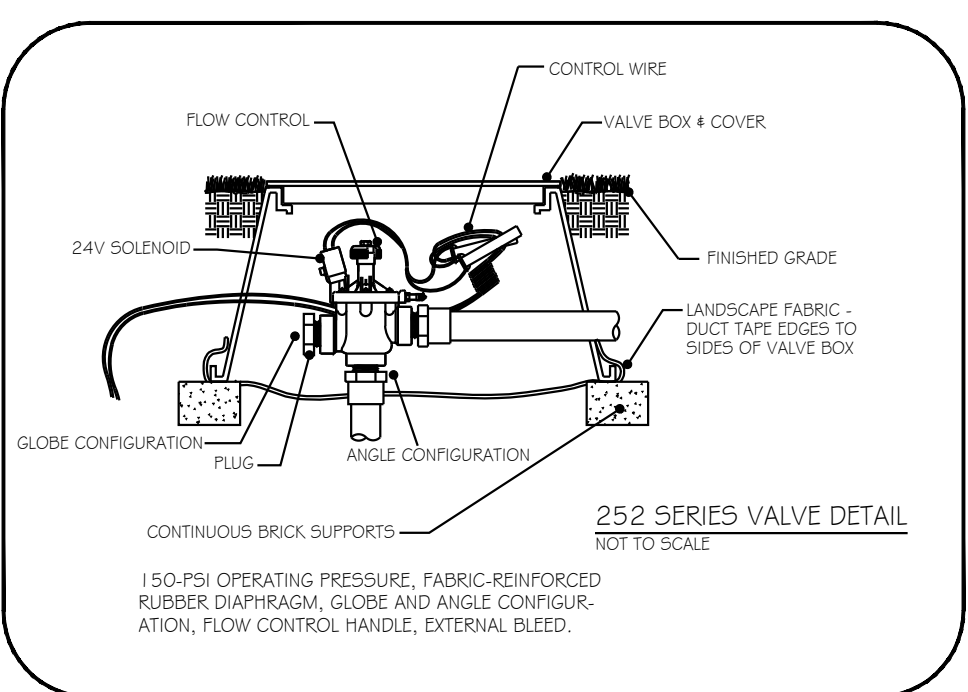
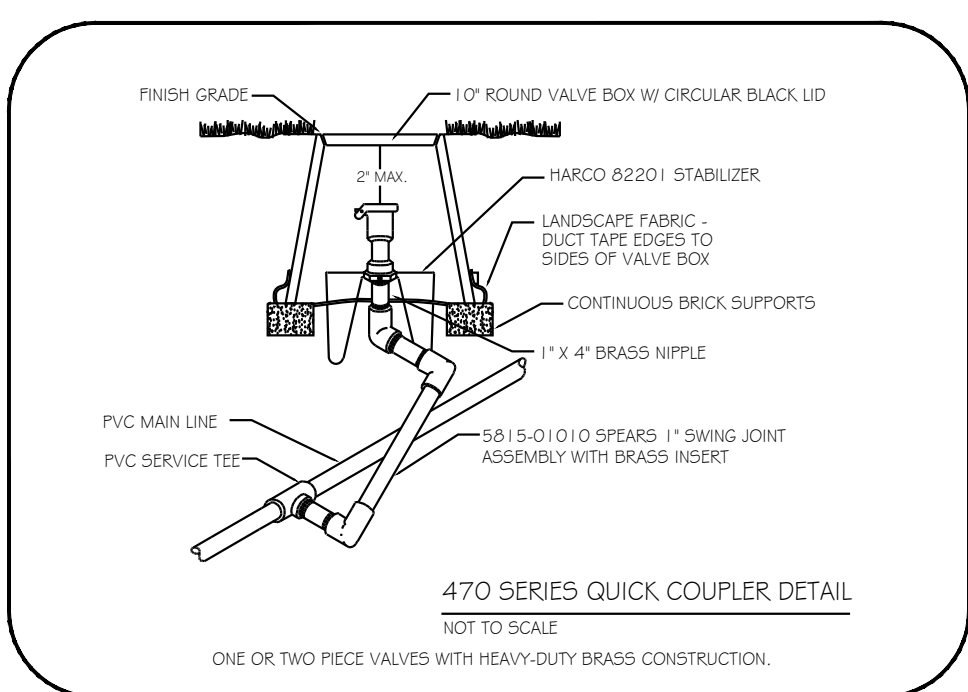
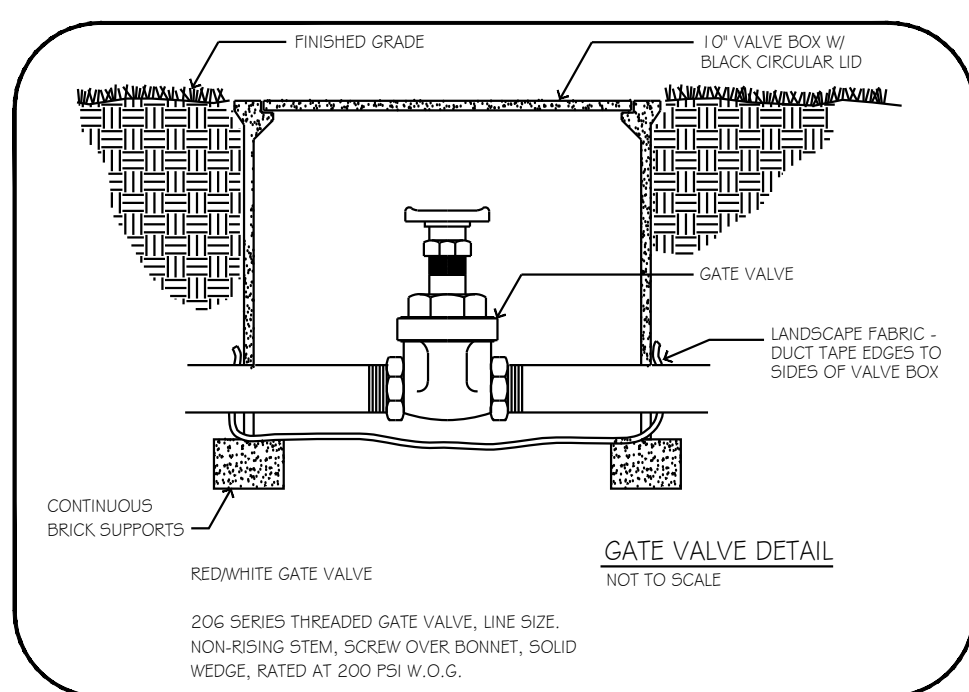
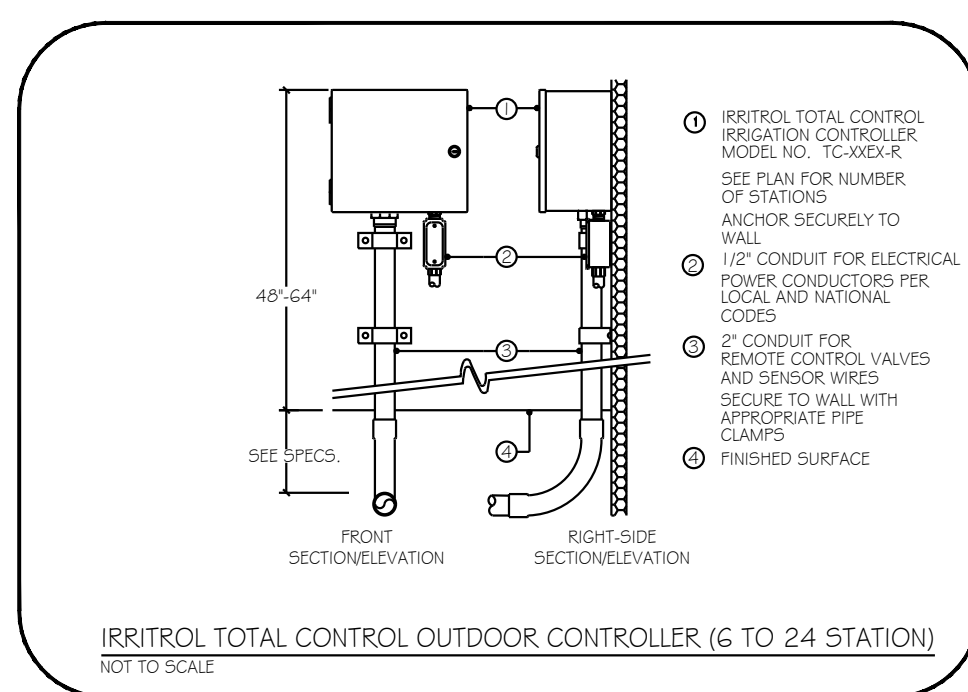
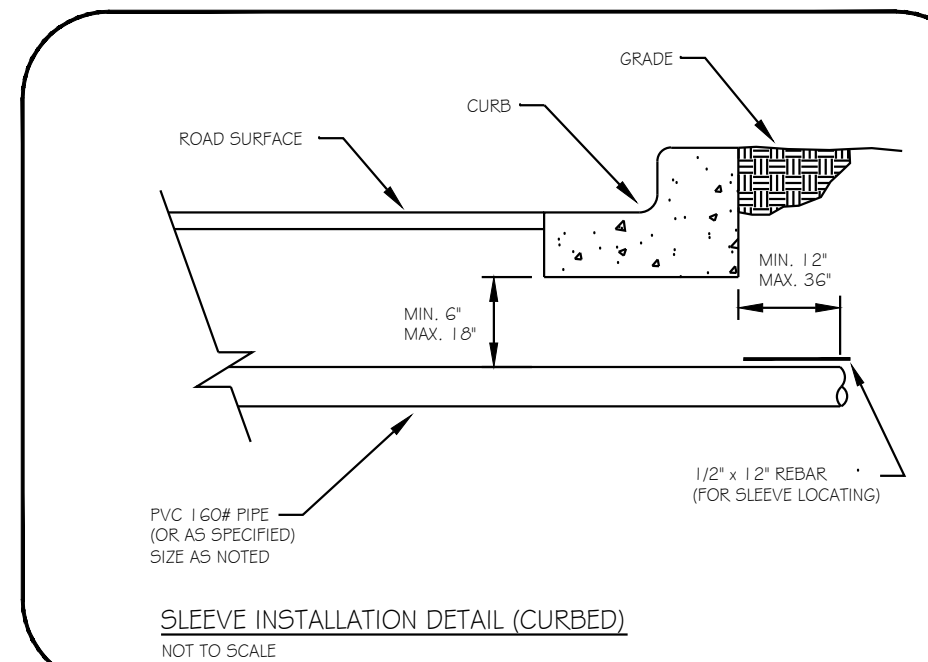
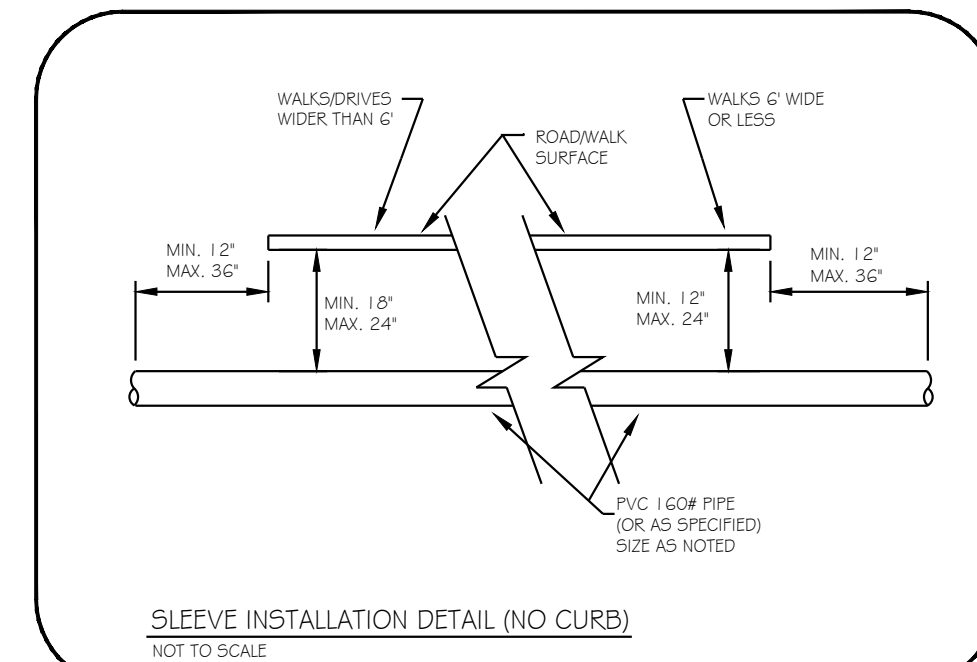
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●●●●●●●	570Z-4P	10-MPR SERIES	TORO FIXED SPRAY POP-UP (4")
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●●●●●●●●●●●●●●	570Z-12P	10-MPR SERIES	TORO FIXED SPRAY POP-UP (12")
●●●●●●●●●●●●●●●	570Z-12P	12-MPR SERIES	TORO FIXED SPRAY POP-UP (12")
●●●●●●●●●●●●●●●●	570Z-12P	15-MPR SERIES	TORO FIXED SPRAY POP-UP (12")
●●●●●●●●●●●●●●●●●	570Z-12P	15-MPR SERIES	TORO FIXED SPRAY POP-UP (12")
●●●●●●●●●●●●●●●●●●	570Z-12P	TVAN-15 NOZZLE	TORO FIXED SPRAY POP-UP (12")
●●●●●●●●●●●●●●●●●●●	570Z-12P	TVAN-12 NOZZLE	TORO FIXED SPRAY POP-UP (12")
●●●●●●●●●●●●●●●●●●●●	570Z-12P	TVAN-15 NOZZLE	TORO 1" QUICK COUPLER VALVE W/ (1) KEY AND HOSE SWIVEL
●●●●●●●●●●●●●●●●●●●●●	474-00		IRRITROL 1" ELECTRIC VALVE
●●●●●●●●●●●●●●●●●●●●●●	2400TF		TORO 1-1/2" ELECTRIC VALVE
●●●●●●●●●●●●●●●●●●●●●●●	252-26-06		TORO 1-1/2" ELECTRIC VALVE
●●●●●●●●●●●●●●●●●●●●●●●●	TC-12EX-R	12 STATION	IRRITROL TOTAL CONTROL CONTROLLER W/RS 1000 RAIN SWITCH
—	SDR 26 CLASS 160 PVC PIPE (ALL PIPE 1-1/2" AND LARGER)		
—	100W POLYETHYLENE PIPE (PE-3408 NSF APPROVED) (ALL PIPE DOWNSTREAM OF VALVE 1-1/4" AND SMALLER)		
—	#14 UL APPROVED 24V RED CONTROL WIRE WITH A #14 UL APPROVED WHITE COMMON WIRE		
●	POINT OF CONNECTION (P.O.C.)		
▶	1-1/2" REDUCED PRESSURE BACKFLOW PREVENTER WITH AIR GAP KIT	PROVIDED AND INSTALLED BY THE PLUMBING CONTRACTOR	
⊕	206 SERIES	REDWHITE 2" ISOLATION VALVE	

- GENERAL NOTES:**
- COORDINATE THIS WORK WITH ALL OTHER TRADES.
  - ALL PLUMBING AND ELECTRICAL SHALL BE INSTALLED ACCORDING TO STATE AND LOCAL CODES.
  - ALL SLEEVES SHALL BE 4" PVC CLASS 160 (UNLESS OTHERWISE SPECIFIED); SLEEVE INSTALLATION SHALL BE THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR.
  - ALL PIPE NOT SIZED DOWNSTREAM OF VALVE IS 1".
  - IRRIGATION CONTRACTORS POINT OF CONNECTION SHALL BE ON 1-1/2" TYPE K COPPER PIPE STUBBED AT THE LOCATION SHOWN ON PLAN. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A MEANS OF WINTERIZATION FOR SUPPLY LINE UPSTREAM OF IRRIGATION CONTRACTORS POINT OF CONNECTION.
  - 115V POWER INTO CONTROLLER SHALL BE SUPPLIED BY ELECTRICAL CONTRACTOR.
  - CONTROLLER AND RAINSWITCH SHALL BE MOUNTED AT LOCATION SHOWN ON PLAN (VERIFY EXACT LOCATION WITH OWNER'S REPRESENTATIVE).
  - IRRIGATION CONTRACTOR SHALL ADJUST THE FLOW CONTROL FEATURE ON ALL ELECTRIC VALVES PER THE MANUFACTURER'S RECOMMENDATIONS TO MAXIMIZE THE VALVES PERFORMANCE AND LONGEVITY.
  - IF SITE PRESSURE IS NOT ADEQUATE, A BOOSTER PUMP AND RELATED EQUIPMENT MAY BE REQUIRED AT ADDITIONAL COST TO OWNER.
  - IRRIGATION PIPE AND EQUIPMENT SHOWN IN PAVED AREAS IS FOR CLARITY ONLY AND SHALL BE INSTALLED WITHIN THE TURF & LANDSCAPE AREAS.
  - PIPE ROUTING IS DIAGRAMMATIC. ALL EQUIPMENT AND PIPE ARE TO BE FIELD ADJUSTED TO TAKE INTO CONSIDERATION ANY OBSTRUCTIONS AND ALL LANDSCAPE.
  - TYPE K COPPER SUPPLY LINE AND 24V CONDUIT SHALL BE INSTALLED BY OTHER THAN THE IRRIGATION CONTRACTOR AND SHALL RUN PARALLEL TO EACH OTHER. ROUTING SHOWN IS DIAGRAMMATIC. 24V CONDUIT SHALL CONTAIN A FULL-STRING FROM CONTROLLER TO TERMINUS OF CONDUIT.

**WATER REQUIREMENTS: 31 GPM @ 39 PSI AT THE P.O.C.**

ZONE NUMBER	VALVE SIZE	GPM	ZONE TYPE
1-1	1"	11	TURF SPRAYS
1-2	1"	23	TURF SPRAYS
1-3	1-1/2"	31	LANDSCAPE SPRAYS
1-4	1"	21	TURF SPRAYS
1-5	1-1/2"	30	TURF SPRAYS
1-6	1"	20	TURF SPRAYS
1-7	1"	20	LANDSCAPE SPRAYS
1-8	1"	16	TURF SPRAYS
1-9	1"	24	LANDSCAPE SPRAYS
1-10	1"	13	LANDSCAPE SPRAYS

CONTROLLER NUMBER: (1-1)  
STATION NUMBER: (1-1)



IRRITROL TOTAL CONTROL OUTDOOR CONTROLLER (6 TO 24 STATION) NOT TO SCALE

206 SERIES THREADED GATE VALVE, LINE SIZE, NON-RISING STEM, SCREW OVER BONNET, SOLID WEDGE, RATED AT 200 PSI @ 60°F. NOT TO SCALE

470 SERIES QUICK COUPLER DETAIL NOT TO SCALE

252 SERIES VALVE DETAIL NOT TO SCALE

IRRITROL 2400 SERIES VALVE DETAIL NOT TO SCALE

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Architecture · Engineering · Interiors  
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PROJECT TITLE: HAVERHILL ELEMENTARY SCHOOL  
OWNER: PORTAGE PUBLIC SCHOOLS  
Portage, Michigan

ISSUED FOR: DATE

SHEET TITLE: IRRIGATION  
SHEET NUMBER: L 300  
DATE: JUNE 30, 2023  
SHEET NUMBER: 21-237.20

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Design By: CUMMINGS, C.I.D.  
Plan #: 23-0306  
Date: 6-23-23  
Revisions:

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GR GENERAL REQUIREMENTS

GR-1 AS USED IN THESE GENERAL NOTES:
DRAWINGS MEANS THE LATEST STRUCTURAL DESIGN DRAWINGS, UON.
SPECIFICATIONS MEANS THE LATEST PROJECT SPECIFICATIONS, UON.
CONTRACT DOCUMENTS IS DEFINED AS THE DESIGN DRAWINGS AND THE SPECIFICATIONS
SER IS DEFINED AS THE STRUCTURAL ENGINEER OF RECORD FOR THE STRUCTURE IN ITS FINAL CONDITION.
DESIGN PROFESSIONALS IS DEFINED AS THE OWNER'S ARCHITECT AND SER.
MEP INCLUDES, BUT IS NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION.
CONTRACTOR IS DEFINED TO INCLUDE ANY OF THE FOLLOWING: GENERAL CONTRACTOR AND THEIR SUBCONTRACTORS, CONSTRUCTION MANAGER AND THEIR SUBCONTRACTORS, STRUCTURAL STEEL FABRICATOR OR STRUCTURAL STEEL ERECTOR.
BASE BUILDING STRUCTURE IS DEFINED AS THE STRUCTURAL FRAME DESIGNED BY THORNTON TOMASETTI.
STRUCTURE IN ITS FINAL CONDITION MEANS ALL STRUCTURAL ELEMENTS SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS ARE INSTALLED AND COMPLETELY CONNECTED AND INSPECTED WITH NO OUTSTANDING NON-COMPLIANCE ISSUES.
DELEGATED DESIGN MEANS A SCOPE OF WORK THAT MEETS PERFORMANCE CRITERIA ESTABLISHED IN THE CONTRACT DOCUMENTS AND IS TO BE COMPLETED BY THE CONTRACTOR'S LICENSED ENGINEER.
SERVICE LEVEL LOADS ARE DEFINED AS NOMINAL OR UNFACTORED LOADS TO BE COMBINED USING ALLOWABLE STRESS LOAD COMBINATIONS
STRENGTH LEVEL LOADS ARE DEFINED AS FACTORED LOADS TO BE COMBINED USING STRENGTH DESIGN LOAD COMBINATIONS
GR-2 THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH THE ARCHITECTURAL, CIVIL, MEP CONTRACT DOCUMENTS, AS WELL AS ANY OTHER APPLICABLE TRADES.
GR-3 THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE UNTIL THE CONSTRUCTION OF THE STRUCTURE REACHES ITS FINAL CONDITION.
GR-4 THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND REMOVAL OF TEMPORARY BRACING AND CONSTRUCTION SUPPORTS, FOR NEW AND EXISTING STRUCTURES, AS NECESSARY TO COMPLETE THE PROJECT. NO PORTION OF THE PROJECT WHILE UNDER CONSTRUCTION IS INTENDED TO BE STABLE IN THE ABSENCE OF THE CONTRACTOR'S TEMPORARY SUPPORTS AND BRACES. CONTRACTOR SHALL RETAIN A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED TO DESIGN TEMPORARY BRACING AND CONSTRUCTION SUPPORTS.
GR-5 LATERAL LOAD RESISTANCE AND STABILITY OF THE STRUCTURE IN ITS FINAL CONDITION IS PROVIDED BY MASONRY WALL AND LATERAL STABILITY OF OTHER ELEMENTS IS PROVIDED THROUGH PRECAST PLANK TOPPING SLAB.
GR-6 THE SPECIFICATIONS ARE AN INTEGRAL PART OF THE CONTRACT DOCUMENTS AND SHALL BE USED IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS.
GR-7 THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS AND COORDINATE WITH THE STRUCTURAL DRAWINGS, ARCHITECTURAL DRAWINGS, DRAWINGS FROM OTHER CONSULTANTS, PROJECT SHOP DRAWINGS AND FIELD CONDITIONS.
GR-8 IN CASES OF CONFLICT BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND OTHER DISCIPLINES OR EXISTING CONDITIONS, CONTRACTOR SHALL NOTIFY THE DESIGN PROFESSIONALS AND OBTAIN CLARIFICATION PRIOR TO BIDDING AND PROCEEDING WITH WORK.
GR-9 APPLY DETAILS, SECTIONS, AND NOTES ON THE DRAWINGS WHERE CONDITIONS ARE SIMILAR TO THOSE INDICATED BY DETAIL, DETAIL TITLE OR NOTE.
GR-10 ONLY USE DIMENSIONS INDICATED ON THE DRAWINGS. DO NOT SCALE DRAWINGS.
GR-11 ASSUME EQUAL SPACING BETWEEN ESTABLISHED DIMENSIONS, IF NOT INDICATED ON DRAWINGS.
GR-12 CENTERLINES OF COLUMNS AND FOUNDATIONS COINCIDE WITH GRID LINE INTERSECTIONS, UON.
GR-13 CENTERLINES OF WALLS COINCIDE WITH CENTERLINES OF FOUNDATIONS, UON.
GR-14 CENTERLINES OF FRAMING MEMBERS COINCIDE WITH COLUMN CENTERLINES, UON.
GR-15 THE CONTRACTOR SHALL PROTECT EXISTING FACILITIES, STRUCTURES AND UTILITIES FROM DAMAGE.
GR-16 THE CONTRACTOR SHALL VERIFY THAT CONSTRUCTION LOADS DO NOT EXCEED THE CAPACITY OF THE STRUCTURE AT THE TIME THE LOAD IS APPLIED.
GR-17 THE CONTRACTOR SHALL COORDINATE THE BOTTOM OF BASE PLATE ELEVATIONS WITH THE AS-BUILT TOP OF SUPPORT ELEVATIONS.
GR-18 THE CONTRACTOR SHALL VERIFY ALL OPENING SIZES AND LOCATIONS WITH OTHER DISCIPLINES. THE DRAWINGS DO NOT SHOW ALL OPENINGS REQUIRED. ADDITIONAL OPENINGS, BLOCKOUTS AND SLEEVES MAY BE REQUIRED BY OTHER DISCIPLINES AND SHALL BE CONSTRUCTED USING THE TYPICAL DETAILS AND/OR THE CRITERIA INDICATED ON THE DRAWINGS. OPENINGS REQUIRED BUT NOT SHOWN ON THE STRUCTURAL DRAWINGS MUST BE APPROVED BY THE SER.
GR-19 ELEVATIONS INDICATED ON STRUCTURAL DRAWINGS ARE BASED ON A PROJECT DATUM INDICATED ON THE CIVIL DRAWINGS.
GR-20 SEE ARCHITECTURAL, CIVIL, AND MEP CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION RELATING TO THE COORDINATION OF STRUCTURAL COMPONENTS INCLUDING, BUT NOT LIMITED TO:

- CIVIL:
PROJECT DATUM
SITING OF BUILDING GRID LINES WITH RESPECT TO CITY BENCHMARKS
SITE PREPARATION
BACKFILLING MATERIALS AND REQUIREMENTS
PAVING AND SITE ELEMENTS OUTSIDE OF BUILDING ENVELOPE
NEW AND EXISTING SITE UTILITIES
ARCHITECTURAL:
PLAN DIMENSIONS AND PROJECT DATUM
SLAB EDGE DIMENSIONS
FINISH ELEVATIONS
WATERPROOFING AND DAMP-PROOFING DETAILS
RAMP GEOMETRY, PITS, SLAB SLOPES AND DEPRESSIONS
EMBEDMENTS, INSERTS, BLOCKOUTS, ETC.
EXACT OPENING SIZES FOR PIPES, DUCTS, ETC.
CONCRETE FINISHES AND TOPPING SLABS
CONCRETE CURBS AND HOUSEKEEPING PADS
FIRE RATINGS
METAL PAN STAIRS AND SUPPORTS
MEP:
PIPE AND DUCT SIZES FOR OPENING AND SLEEVE COORDINATION
FLOOR DRAIN
UNDERFLOOR AND PERIMETER DRAINAGE SYSTEMS
EQUIPMENT CURBS
CONDUITS AND EMBEDMENTS IN WALLS AND SLABS

CD CODES AND DESIGN CRITERIA

CD-1 PERFORM ALL CONSTRUCTION IN CONFORMANCE WITH THE BUILDING AND DESIGN CODES REFERENCED WITHIN THESE DOCUMENTS. THE PROJECT DOCUMENTS REFER TO THE FOLLOWING CODES AND STANDARDS, UON:
MICHIGAN BUILDING CODE 2015 (INTERNATIONAL BUILDING CODE, 2015 EDITION)
STRUCTURAL CONCRETE:
BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
THE AMERICAN CONCRETE INSTITUTE (ACI 318-14)
MASONRY:
BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES
THE AMERICAN CONCRETE INSTITUTE (TMS 402-13)
SPECIFICATION FOR MASONRY STRUCTURES
THE AMERICAN CONCRETE INSTITUTE (TMS 602-13)
STRUCTURAL STEEL:
SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, (AISC 360-10) CONFORMING TO THE PROVISIONS OF LOAD RESISTANCE FACTOR DESIGN, BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC-LRFD)

CD-2 SEE DESIGN LOAD DIAGRAMS ON SHEET S-006 FOR LOCATIONS AND EXTENT OF LIVE LOAD.
CD-3 SEE DESIGN LOAD DIAGRAMS ON SHEET S-006 FOR LOCATIONS AND EXTENT OF SUPERIMPOSED DEAD LOADS.
CD-4 OCCUPANCY OR RISK CATEGORY: III
CD-5 SNOW LOADS (SERVICE LEVEL):
FLAT ROOF SNOW LOAD (P\_f) 23.1 PSF
GROUND SNOW LOAD (P\_g) 30 PSF
SNOW EXPOSURE FACTOR (C\_e) 1.0
SNOW LOAD IMPORTANCE FACTOR (I\_s) 1.1
THERMAL FACTOR (C\_t) 1.0
SNOW DRIFTING PER CODE
SEE DESIGN LOAD DIAGRAMS ON SHEET S-007 FOR LOCATIONS AND EXTENT OF ROOF AND SNOW LOADS.
CD-6 WIND LOAD DESIGN DATA (STRENGTH LEVEL):
MAIN WIND FORCE RESISTING SYSTEM
BASIC WIND SPEED, V 120 MPH
EXPOSURE B
INTERNAL PRESSURE COEFFICIENT +/- 0.18
COMPONENT AND CLADDING DESIGN PRESSURES
REFER TO TABLE ON S 007 FOR COMPONENT AND CLADDING DESIGN PRESSURES

ROOF EFFECTIVE WIND AREA
REFER TO TABLE ON S 007 FOR ROOF DESIGN PRESSURES
CD-7 SEISMIC LOAD DESIGN DATA (STRENGTH LEVEL):
SEISMIC IMPORTANCE FACTOR (I\_s) 1.25
S\_s 0.089 g
S\_1 0.051 g
S\_0.5 0.095 g
S\_0.2 0.061 g
SITE CLASS
SEISMIC DESIGN CATEGORY B
LATERAL SYSTEM DESCRIPTION ORDINARY REINFORCED MASONRY WALLS
SEISMIC RESPONSE COEFFICIENT (C\_s) 0.079
RESPONSE MODIFICATION FACTOR (R) 2
ANALYSIS PROCEDURE DESCRIPTION EQUIVALENT LATERAL FORCE
DESIGN BASE SHEAR 410 KIPS

CD-8 IN CASES WHERE THE CONTRACTOR DETERMINES THAT SUSPENDED OR FLOOR MOUNTED EQUIPMENT LOADS EXIST WHICH EXCEED DESIGN LOADS INDICATED ON CONTRACT DOCUMENTS, CONTRACTOR SHALL SUBMIT LOAD DATA TO DESIGN PROFESSIONALS FOR REVIEW PRIOR TO PROCEEDING WITH WORK.
CD-9 DISTRIBUTE THE MAXIMUM LOAD HUNG FROM ANY STRUCTURAL MEMBER FOR DUCTWORK, PIPING ETC OVER THE MEMBER'S TRIBUTARY AREA IN A WAY THAT THE MEP DESIGN SUPERIMPOSED DEAD LOADS LISTED IN CONTRACT DOCUMENTS ARE NOT EXCEEDED. THE CONTRACTOR SHALL COORDINATE THE LOADS OF ALL TRADES AND PROVIDE ADDITIONAL SUPPORT OR DISTRIBUTION FRAMING AS REQUIRED TO ACHIEVE THE ALLOWABLE LOAD DISTRIBUTION.
CD-10 ELEVATOR GUIDERAIL SUPPORTS, MACHINE ROOMS, PITS, AND PENTHOUSES ARE BASED ON ELEVATOR TYPES INDICATED ON ARCHITECTURAL CONTRACT DOCUMENTS. CONTRACTOR SHALL SUBMIT FOR REVIEW ANY PLANNED CHANGE TO ELEVATORS TO DESIGN PROFESSIONALS PRIOR TO SUBMITTING CORRESPONDING STRUCTURAL SHOP DRAWINGS FOR ACTION.
CD-11 STRUCTURAL COMPONENTS ARE NOT DESIGNED FOR VIBRATING EQUIPMENT. MOUNT VIBRATING EQUIPMENT ON VIBRATION ISOLATORS.
CD-12 SERVICEABILITY
LIVE LOAD DEFLECTION IS LESS THAN L/360
LIVE LOAD DEFLECTION FOR ELEMENTS SUPPORTING CMU OR BRICK IS LESS THAN L/600
LONG-TERM TOTAL DEFLECTION IS LESS THAN L/240
LATERAL DRIFT DUE TO WIND LOADS IS LESS THAN OR EQUAL TO H/400

CD-13 CONNECTIONS OF SYSTEMS DESIGNED BY CONTRACTOR'S ENGINEER SUCH AS, BUT NOT LIMITED TO, CLADDING, STAIRS, ELEVATORS, ESCALATORS, PRECAST, AND MEP LOADS ARE ASSUMED TO IMPOSE VERTICAL AND/OR HORIZONTAL LOADS ON THE BASE BUILDING STRUCTURAL MEMBERS WITHOUT GENERATING TORSION IN THE SUPPORTING STRUCTURAL MEMBERS. CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING ALL SUPPLEMENTARY BRACING MEMBERS AS REQUIRED TO PREVENT TORSION ON THE BASE BUILDING STRUCTURE.
CD-14 FOR FIRE RATING AND FIREPROOFING ASSEMBLY EVALUATIONS, CONSIDER THE FOLLOWING ASSEMBLIES RESTRAINED: COMPOSITE WIDE-FLANGE STEEL FRAMING, INTERIOR BAYS OF CONTINUOUS CAST-IN-PLACE CONCRETE CONSTRUCTION. CONSIDER ALL OTHER ASSEMBLIES UNRESTRAINED.
CD-15 THERE HAVE BEEN NO LOAD RESTRICTION FACTORS APPLIED TO THE STRUCTURAL DESIGN FOR THE PURPOSES OF SELECTING FIREPROOFING ASSEMBLIES.

DI DELEGATED DESIGN ITEMS
DI-1 THE CONTRACTOR SHALL EMPLOY OR RETAIN A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THIS PROJECT IS LOCATED TO DESIGN AND DETAIL DELEGATED DESIGN ITEMS TO MEET THE PERFORMANCE AND DESIGN CRITERIA ESTABLISHED AS PART OF THE BASE BUILDING STRUCTURE INDICATED IN THE CONTRACT DOCUMENTS INCLUDING BUT NOT LIMITED TO:
COLD FORMED METAL FRAMING
METAL PAN STAIRS
MEP ACCESS PLATFORMS
STRUCTURAL PRECAST HOLLOWCORE PLANK AND CONNECTIONS
STEEL JOISTS, BRIDGING AND CONNECTIONS

SU SUBMITTALS

SU-1 THE CONTRACTOR SHALL PROVIDE THE REQUIRED SUBMITTALS FOR STRUCTURAL REVIEW AS OUTLINED IN THE SPECIFICATIONS. THIS INCLUDES BOTH ITEMS FULLY DESIGNED ON THE CONTRACT DOCUMENTS AND ITEMS LISTED AS DELEGATED DESIGN. ITEMS INCLUDE BUT ARE NOT LIMITED TO:
031000 S CALC CONCRETE FORMWORK
032000 S CONCRETE REINFORCEMENT AND EMBEDDED ASSEMBLIES
033000 S CAST-IN-PLACE CONCRETE
033000 CALC CONCRETE MIX DESIGNS
034100 S CALC PRECAST STRUCTURAL CONCRETE
042200 S CONCRETE MASONRY UNITS
051200 S STRUCTURAL STEEL
052000 S CALC STRUCTURAL STEEL JOISTS
053000 S STEEL DECK
316100 S FOOTINGS
S = SHOP DRAWINGS REQUIRED
CALC = SUPPORTING CALCULATIONS REQUIRED, SEALED AND SIGNED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED
SU-2 SUBMIT LOADS IMPOSED ONTO BASE BUILDING STRUCTURE BY THE FOLLOWING CONTRACTOR DESIGNED SYSTEMS:
PRECAST PLANK CONCRETE AND CONNECTIONS
EXTERIOR CLADDING SYSTEMS
ARCHITECTURAL ORNAMENTATION (FLAGPOLES, BANNERS, MASTS, ETC.)
ELEVATOR REACTIONS
METAL STAIRS
CATWALKS
MEP EQUIPMENT

WHERE CONTRACTOR LOADS IMPOSED DO NOT EXCEED AND/OR CONNECTION CONDITIONS DO NOT DIFFER FROM WHAT IS INDICATED IN THE STRUCTURAL DRAWINGS, SUBMIT FOR RECORD A LETTER SEALED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED STATING THE FOLLOWING:

"THE CONTRACTOR DESIGNED SYSTEM HAS BEEN DESIGNED TO IMPOSE LOADS ON THE BASE BUILDING STRUCTURE THAT ARE WITHIN THE LOAD LIMITS AND AT THE LOCATIONS INDICATED ON THE STRUCTURAL DRAWINGS."

WHERE CONTRACTOR LOADS IMPOSED FOR THE ITEMS LISTED ABOVE EXCEED AND/OR CONNECTION CONDITIONS DIFFER FROM WHAT IS SHOWN IN THE STRUCTURAL DRAWINGS, SUBMIT FOR APPROVAL TO SER LOADS IMPOSED ON THE PRIMARY STRUCTURAL FRAME DUE TO THE DEAD, LIVE, AND WIND/SEISMIC LOADS INDICATED ON THE CONTRACT DOCUMENTS.

SUBMITTAL SHALL LIST THE DESIGN LOADS USED AND BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED. SUBMITTAL SHALL INCLUDE LOCATION, MAGNITUDE AND DIRECTION OF UNFACTORED IMPOSED LOADS, GRAPHICALLY REPRESENTED IN THEIR APPROPRIATE LOCATIONS ON A COPY OF THE CONTRACT DOCUMENT STRUCTURAL FRAMING PLANS OR ELEVATIONS AS APPROPRIATE. DETAIL REFERENCES IN THE CONNECTIONS APPLICABLE AT EACH LOCATION SHALL BE NOTED ON THE SUBMITTAL DRAWINGS.

FOR EXTERIOR WALL ASSEMBLIES, THE LOADS IMPOSED SUBMITTAL SHALL BE COMPREHENSIVE INDICATING THE LOADS IMPOSED ON THE BASE BUILDING STRUCTURE AND SHALL INCLUDE THE REACTIONS BASED ON THE ACTUAL LOADS OF THE ENTIRE ASSEMBLY, INCLUDING BUT NOT LIMITED TO GLAZING, CLADDING, METAL STUD BACKUP, AND MULLIONS.

FOR MEP SYSTEMS, THE LOADS IMPOSED SUBMITTAL SHALL BE COMPREHENSIVE INDICATING THE LOADS IMPOSED ON THE BASE BUILDING STRUCTURE AND SHALL INCLUDE THE REACTIONS BASED ON THE ACTUAL LOADS OF THE ENTIRE MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION SYSTEM, INCLUDING BUT NOT LIMITED TO PIPING, DUCTS, ELECTRICAL RACEWAYS, AND EQUIPMENT WEIGHTS.

A SUBSTITUTION REQUEST MAY BE REQUIRED WHERE CONTRACTOR LOADS IMPOSED EXCEED AND/OR CONNECTION CONDITIONS DIFFER FROM THE BASIS OF DESIGN.

SU-3 THE SER'S REVIEW OF SUBMITTALS SHALL BE FOR GENERAL CONFORMANCE WITH THE DESIGN INTENT. NO WORK SHALL BE STARTED WITHOUT SUCH REVIEW.

FN FOUNDATIONS

FN-1 THE FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL REPORT BY DRIESENGA & ASSOCIATES, INC. DATED JULY 28, 2022.

FN-2 FOUNDATIONS HAVE BEEN DESIGNED BASED ON THE FOLLOWING DESIGN VALUES FROM THE GEOTECHNICAL REPORT (SERVICE LEVEL):

NET ALLOWABLE BEARING CAPACITY: 2,000 PSF (ISOLATED FOOTINGS WITH COLUMN LOADS EXCEEDING 100 KIPS)
2,500 PSF (ISOLATED FOOTINGS OTHERWISE)
2,500 PSF (CONTINUOUS WALL FOOTINGS)

SEE GEOTECHNICAL REPORT FOR ADDITIONAL REQUIREMENTS AND INFORMATION. DESIGN VALUES SHALL BE FIELD VERIFIED BY QUALIFIED GEOTECHNICAL ENGINEER RETAINED BY THE OWNER.

FN-3 THE CONTRACTOR SHALL VERIFY ALL EARTHWORK AND FOUNDATION INSTALLATION/CONSTRUCTION IS IN CONFORMANCE WITH THE RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL REPORT.

FN-4 CONTRACTOR SHALL BE RESPONSIBLE TO ADEQUATELY PROTECT ALL EXCAVATION, WHERE NECESSARY, SHEET AND SHORE THE EXCAVATION WITH ALL REQUIRED TIEBACKS AND BRACING AS DETERMINED BY CONTRACTOR'S ENGINEER.

CM CONCRETE MATERIALS

CM-1 CONCRETE STRENGTH SHALL MEET THE FOLLOWING 28-DAY COMPRESSIVE STRENGTHS (f' c), UON:

FOOTINGS AND PIERS 4,000 PSI
FOUNDATION WALLS, PILASTERS, BUTTRESSES 4,000 PSI
NON-SHRINK GROUT 8,000 PSI
SLAB ON GRADE 4,000 PSI
HOLLOW CORE PRECAST PLANK 5,000 PSI AND HIGHER WHERE NEEDED, SEE PLAN
CONCRETE TOPPING 5,000 PSI AND HIGHER WHERE NEEDED, SEE PLAN

CM-2 PROVIDE NORMALWEIGHT CONCRETE WITH CURED DENSITY OF 145 +/- 5 PCF, AND AGGREGATE CONFORMING TO ASTM C33, UON.

CM-3 THE USE OF CALCIUM CHLORIDE AND OTHER CHLORIDE CONTAINING AGENTS IS PROHIBITED. THE USE OF RECYCLED CONCRETE IS PROHIBITED. PLACEMENT WITHIN AND CONTACT BETWEEN ALUMINUM ITEMS, INCLUDING ALUMINUM CONDUIT, AND CONCRETE IS PROHIBITED.

CM-4 ALL CAST-IN-PLACE CONCRETE WILL EXPERIENCE DIFFERING VARIATIONS OF CRACKING. ANY ELEMENT EXPOSED TO DIRECT WEATHER AND/OR TEMPERATURE VARIATIONS DURING CONSTRUCTION OR IN THE FINAL CONDITION IS TO BE TREATED AND REGULARLY MAINTAINED TO PREVENT PROPAGATION OF CRACKS AND WATER PENETRATION. THE CONTRACTOR SHALL DEVELOP A REGULAR MAINTENANCE PROGRAM AND SUBMIT IT TO THE OWNER.

RE CONCRETE REINFORCEMENT

RE-1 ALL CONCRETE SHALL INCLUDE REINFORCEMENT. IF REINFORCEMENT IS NOT SPECIFICALLY INDICATED ON THE DRAWINGS VERIFY WITH THE SER.

RE-2 REINFORCEMENT SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES UON:

DEFORMED BARS: ASTM A615 GRADE 60
WELDABLE DEFORMED BARS: ASTM A706
EPOXY COATED DEFORMED BARS: ASTM A615 / A775
WELDED WIRE REINFORCEMENT ASTM A1064
EPOXY COATED WELDED WIRE REINFORCEMENT ASTM A1064 / A884

RE-3 DETAIL REINFORCEMENT BASED ON THE PROJECT REQUIREMENTS, ACI-318 AND ACI-315, UON.

RE-4 WHERE A 90-DEG, 135 -DEG OR 180-DEG HOOK IS GRAPHICALLY INDICATED, PROVIDE CORRESPONDING ACI STANDARD HOOKS UON.

RE-5 DOWELS SHALL MATCH SIZE AND SPACING OF MAIN REINFORCEMENT UON.

RE-6 REINFORCEMENT SHALL HAVE CONCRETE PROTECTION (CLEAR COVER) PER ACI 318 UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

RE-7 LAP REINFORCEMENT ONLY AT LOCATIONS AS SPECIFICALLY DETAILED ON THE DRAWINGS EXCEPT REINFORCEMENT MARKED AS CONTINUOUS CAN BE SPLICED AT LOCATIONS DETERMINED BY CONTRACTOR USING TENSION LAP SPLICES (LTS), SEE LAP SPLICE AND EMBEDMENT SCHEDULE.

RE-8 UNLESS OTHERWISE NOTED ALL LAP SPLICES ARE TO BE TENSION LAP SPLICES PER LAP SPLICE AND EMBEDMENT SCHEDULE.

RE-9 LAP WELDED WIRE REINFORCEMENT TWO PANEL SPACINGS, UON.

CJ CONCRETE CONSTRUCTION AND CONTRACTION JOINTS

CJ-1 PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE WITH ACI-318. SUBMIT SHOP DRAWINGS SHOWING PROPOSED CONSTRUCTION JOINT LOCATIONS, DETAILS AND THE PLACEMENT SEQUENCE FOR THE SER'S APPROVAL PRIOR TO PROCEEDING WITH WORK.

CJ-2 UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS, HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE PERMITTED IN FOOTINGS, PILE CAPS, MAT FOUNDATIONS, GRADE BEAMS, BEAMS, UPTURNED BEAMS, SLABS, AND WALLS WITHOUT PRIOR WRITTEN APPROVAL FROM THE SER BEFORE CONSTRUCTION.

CJ-3 PLACE VERTICAL CONSTRUCTION JOINTS TO PROVIDE A 60 FT MAXIMUM LENGTH OF CONCRETE PLACEMENT AND LOCATE AS FOLLOWS:
A. FOUNDATION WALLS: MINIMUM OF 9 FT FROM ANY WALL INTERSECTION, PILASTER, PIER, OR WALL OPENING

CJ-4 PROVIDE CONTINUOUS WATERSTOPS AT ALL CONSTRUCTION JOINTS EXPOSED TO SOIL OR WATER, AS DESCRIBED IN THE SPECIFICATIONS AND WHERE INDICATED IN THE ARCHITECTURAL DOCUMENTS.

CJ-5 UNLESS OTHERWISE INDICATED ON DRAWINGS, PROVIDE CONTRACTION JOINTS IN CONCRETE SLAB ON GRADE AT COLUMN CENTERLINES AND BETWEEN COLUMN CENTERLINES AT A SPACING NOT TO EXCEED 36 X THE SLAB THICKNESS. REFER TO TYPICAL CONCRETE SLAB ON GRADE DETAIL FOR ADDITIONAL INFORMATION.

SP STRUCTURAL PRECAST CONCRETE

SP-1 TYPICAL DETAILS INDICATE GENERAL CRITERIA FOR DESIGN AND DETAILING OF PRECAST CONCRETE. PROVIDE DESIGNS THAT MEET INDICATED CRITERIA AND LISTED CODES AND STANDARDS.

SP-2 PROVIDE CONNECTIONS BETWEEN ADJACENT PRECAST UNITS TO TRANSMIT 1000 POUNDS PER LINEAR FOOT OF DIAPHRAGM LOADS.

SP-3 PROVIDE CAMBER TO LIMIT DEFLECTION SUCH THAT NO POINT OF THE DEFLECTED STRUCTURE EXCEEDS THE PLANK SPAN OVER 360 BELOW THE STATED ELEVATION. CAMBER DESIGN SHALL INCLUDE EFFECTS OF LONG-TERM DEFLECTION, SHRINKAGE, CREEP, AND MAXIMUM ALLOWABLE CONSTRUCTION TOLERANCES.

SP-4 DO NOT USE POWER-DRIVEN ANCHORS OR ANCHORS WHICH REQUIRE DRILLING INTO PRESTRESSED UNITS. SUBMIT PROPOSED ANCHOR PROCEDURES FOR PRECAST UNITS TO THE DESIGN PROFESSIONALS AND PRECAST SUPPLIER FOR REVIEW.

MA MASONRY

MA-1 LOAD BEARING, NON-LOAD BEARING, AND BACKUP WALL CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO THE FOLLOWING MATERIAL STANDARDS:

CONCRETE MASONRY UNITS: ASTM C90, NORMALWEIGHT (135 PCF) (MINIMUM NET AREA COMPRESSIVE STRENGTH 2000 PSI FOR USE WITH TYPE S OR M MORTAR OR 2650 PSI FOR USE WITH TYPE N MORTAR) ASTM C270, TYPE S, M OR N
MORTAR: MORTAR USAGE (UON ON DRAWINGS): USE TYPE S OR M MORTAR WHEN MASONRY IS IN DIRECT CONTACT WITH SOIL; USE TYPE S MORTAR FOR ALL EXTERIOR AND INTERIOR LOAD-BEARING WALLS; USE TYPE N MORTAR FOR ALL EXTERIOR AND INTERIOR NON-LOAD-BEARING WALLS
ASTM C476
REINFORCEMENT: ASTM A615, GRADE 60
JOINT REINFORCEMENT: ASTM A951, TRUSS OR LADDER TYPE
EXTERIOR JT REINF: GALVANIZE PER ASTM A153
INTERIOR JT REINF: TYPICAL
RELATIVE HUMIDITY >75% GALVANIZE PER ASTM A641
ADHESIVE ANCHORS: HILTI HIT-HY 270

MA-2 THE MINIMUM COMPRESSIVE STRENGTH OF THE MASONRY (f' m) SHALL BE 2,000 PSI, UON ON DRAWINGS, DETERMINED BY THE UNIT STRENGTH METHOD IN ACCORDANCE WITH THE ABOVE REFERENCED SPECIFICATIONS.

MA-3 CALCIUM CHLORIDE SHALL NOT BE USED IN MORTAR OR GROUT.

MA-4 LAY MASONRY UNITS IN RUNNING BOND UON WITH UNITS DESIGNED TO ALIGN WITH WEBS IN EACH COURSE.

MA-5 ALL CELLS WITH REINFORCEMENT SHALL BE GROUTED SOLID. ALL CELLS WHERE MASONRY IS IN CONTACT WITH SOIL SHALL BE GROUTED SOLID.

MA-6 GROUT MINIMUM OF ONE (1) CELL WITH REINFORCEMENT AT EACH SIDE OF ALL OPENINGS. SEE DRAWINGS FOR ADDITIONAL REINFORCEMENT REQUIREMENTS.

MA-7 VENEER MASONRY TIE SYSTEM TO BE COORDINATED WITH THE MANUFACTURER AND COMPONENT AND CLADDING WIND LOADING REQUIREMENTS OF IBC/MBC

SS STRUCTURAL STEEL

SS-1 STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS UNLESS OTHERWISE NOTED ON THE CONTRACT DOCUMENTS:

ASTM A6 ROLLED W SHAPES AND CHANNELS: ASTM A572 OR A992, MINIMUM YIELD STRENGTH 50 KSI
ASTM A36, MINIMUM YIELD STRENGTH 36 KSI
ASTM A500 GRADE C, MINIMUM YIELD STRENGTH 46 KSI
FOR ROUND AND 50 KSI FOR RECTANGULAR HSS
MISCELLANEOUS ANGLES:
HOLLOW STRUCTURAL SECTIONS: ASTM A572 OR A529, MINIMUM YIELD STRENGTH 50 KSI UON
ASTM F1554 GRADE 55 WITH WELDABILITY SUPPLEMENT S1
ASTM A108, GRADE 1010 THROUGH 1020 HEADED STUD TYPE, COLD-FINISHED CARBON STEEL, AWS D1.1, TYPE B 3/4" DIAMETER UON
MINIMUM TENSILE STRENGTH 70 KSI

PLATES: ASTM A572 OR A529, MINIMUM YIELD STRENGTH 50 KSI

SS-2 CONNECTION MATERIAL SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS OR AS NEEDED FOR CONNECTION DESIGN:

ANGLES: ASTM A572 OR A529, MINIMUM YIELD STRENGTH 50 KSI UON
WTS: ASTM A572 OR A992, MINIMUM YIELD STRENGTH 50 KSI
PLATES: ASTM A572 OR A529, MINIMUM YIELD STRENGTH 50 KSI UON
BOLTS: ASTM F1554 GRADE 55 WITH WELDABILITY SUPPLEMENT S1
ASTM A108, GRADE 1010 THROUGH 1020 HEADED STUD TYPE, COLD-FINISHED CARBON STEEL, AWS D1.1, TYPE B 3/4" DIAMETER UON
MINIMUM TENSILE STRENGTH 70 KSI
NUTS: ASTM A563
WASHERS: ASTM F436
ANCHOR RODS: ASTM F1554 GRADE 55 WITH WELDABILITY SUPPLEMENT S1
HEADED STUDS: ASTM A108, GRADE 1010 THROUGH 1020 HEADED STUD TYPE, COLD-FINISHED CARBON STEEL, AWS D1.1, TYPE B 3/4" DIAMETER UON
MINIMUM TENSILE STRENGTH 70 KSI

SS-3 WHERE NO CAMBER IS INDICATED, FABRICATE BEAMS SO THAT ANY NATURAL CAMBER IS UPWARD AFTER ERECTION.

SS-4 SPLICES SHALL BE ALLOWED ONLY AT LOCATIONS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS UNLESS APPROVED OTHERWISE BY THE SER IN WRITING.

SS-5 FOR STEEL MEMBERS AND EMBEDMENTS EXPOSED TO WEATHER, PROVIDE HOT-DIPPED GALVANIZED FINISH OR APPROVED ZINC RICH EXTERIOR COATING SYSTEM.

SS-6 PROVIDE HOLES IN ALL STEEL AS REQUIRED TO PREVENT ANY ACCUMULATION OF WATER. ALL PENETRATIONS THROUGH MAIN MEMBERS SHALL NOT EXCEED 1/8" DIA. AND SHALL BE GROUND SMOOTH. THESE DRAINS MUST BE KEPT CLEAN AND OPEN.

SS-7 SHOW ALL COPES, HOLES, OPENINGS AND MODIFICATIONS REQUIRED IN STRUCTURAL STEEL MEMBERS FOR ERECTION OR THE WORK OF OTHER TRADES ON THE SHOP DRAWINGS FOR APPROVAL BY THE DESIGN PROFESSIONALS.

SS-8 FIELD MODIFICATION OF STRUCTURAL STEEL IS PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL OF THE DESIGN PROFESSIONALS.

ISSUED FOR DATE

PROJECT TITLE
HAVERHILL ELEMENTARY SCHOOL

OWNER
PORTAGE PUBLIC SCHOOLS

SHEET TITLE
GENERAL NOTES 1

Portage, Michigan

DATE
JUNE 30, 2023

SHEET NUMBER
S 001
21-237.25

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**SC STRUCTURAL STEEL CONNECTIONS**

SC-1 ALL STEEL DETAILS AND CONNECTIONS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS", AISC-LOAD AND RESISTANCE FACTOR DESIGN.

SC-2 ALL CONNECTIONS, UNLESS INDICATED AS BEING COMPLETELY DESIGNED ON THE STRUCTURAL DRAWINGS, SHALL BE DESIGNED AND DETAILED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED. THE DESIGN AND DETAILING SHALL COMPLY WITH ALL APPLICABLE CODES AND SPECIFICATION SECTIONS.

SC-3 UNLESS INDICATED AS BEING COMPLETELY DESIGNED, DETAILS ON DRAWINGS INDICATE GENERAL CRITERIA FOR DESIGN AND DETAILING OF CONNECTIONS AND ARE NOT INTENDED TO CONVEY COMPLETE CONNECTOR SIZES, PLATE SIZES, WELD SIZES, NUMBER OF BOLTS, OR ANY OTHER SPECIFIC INFORMATION THAT IS OBTAINED THROUGH DESIGNING OF AN INDIVIDUAL CONNECTION FOR A GIVEN SET OF LOADS. DETAILS DO NOT SHOW ERECTION AIDS. PROVIDE ERECTION AIDS AS REQUIRED AND REMOVE THEM AFTER WORK IS COMPLETE.

SC-4 SUBMIT CONNECTIONS NOT SPECIFICALLY INDICATED AS COMPLETELY DESIGNED ON THE DRAWINGS TO THE SER FOR REVIEW PRIOR TO REVIEW OF SHOP DRAWINGS. FOR BIDDING PURPOSES, WHERE NO MOMENT IS INDICATED ON DRAWINGS PROVIDE FULL MOMENT CAPACITY OF MEMBER (9 Fy Z) AND WHERE NO VERTICAL SHEAR IS INDICATED ON DRAWINGS PROVIDE FULL SHEAR CAPACITY (.54 Fy d tw).

SC-5 ALTERNATE CONNECTIONS TO THOSE SHOWN ON DRAWINGS WILL BE CONSIDERED AS A SUBSTITUTION REQUEST. SEE PROJECT SPECIFICATIONS.

SC-6 FOR CONNECTION DESIGN AND DETAILING, SET CONNECTION WORK POINT AT INTERSECTION OF MEMBER CENTERLINES, UON.

SC-7 DESIGN ALL CONNECTIONS FOR FORCES INDICATED ON THE DRAWINGS. CONNECTION DESIGN FORCES INDICATED ON THE DRAWINGS ARE FACTORED PER LRFD DESIGN BASIS UON.

SC-8 USE NO MORE THAN TWO BOLT DIAMETERS, ALL BOLTS OF THE SAME DIAMETER SHALL BE OF THE SAME GRADE, SKIP ONE SIZE BETWEEN DIAMETERS. BOLTS FOR THIS PROJECT SHALL BE:

3/4" DIAMETER F3125 GRADE A325 OR F1852 OR 1" DIAMETER F3125 GRADE A490 OR F2280

SC-9 BEAM CONNECTION DESIGN NOTES:

SEE PLANS AND ELEVATIONS FOR BEAM REACTIONS AND MOMENTS.

DEVELOP THE LARGER OF THE BEAM SHEAR REACTION SHOWN ON PLANS OR ELEVATIONS. IF NO SHEAR REACTIONS ARE SHOWN ON PLANS OR ELEVATIONS THEN ALLOW FOR SHEAR CONNECTION WITH FULL SHEAR CAPACITY (.54 Fy d tw).

DEVELOP THE LARGER OF THE MOMENT SHOWN ON PLANS OR ELEVATIONS. IF NO MOMENT REACTIONS ARE SHOWN ON PLANS OR ELEVATIONS THEN ALLOW FOR MOMENT CONNECTION THAT DEVELOPS THE FULL BEAM SECTION MOMENT CAPACITY (.9FyZ).

DEVELOP THE LARGER OF THE AXIAL FORCE DENOTED AS P OR TF SHOWN ON PLANS OR ELEVATIONS. SEE STEEL BEAM LEGEND.

ALL BEAM REACTIONS, AXIAL FORCES AND MOMENTS SHOWN ACT CONCURRENTLY. UON, BEAM REACTIONS ACT IN GRAVITY DIRECTION WHILE AXIAL FORCES AND MOMENTS ARE TO BE CONSIDERED REVERSIBLE.

WHERE NO AXIAL FORCE IS SHOWN, ALL BEAM CONNECTIONS SHALL BE DESIGNED FOR A MINIMUM AXIAL FORCE EQUAL TO 5% OF THE FACTORED DEAD LOAD PLUS LIVE LOAD VERTICAL BEAM SHEAR. FOR THE PURPOSES OF DESIGNING FOR THIS MINIMUM AXIAL FORCE, THE VERTICAL BEAM SHEAR AND CORRESPONDING MINIMUM AXIAL FORCE NEED NOT BE CONSIDERED TO ACT CONCURRENTLY AND BEARING BOLTS IN CONNECTIONS WITH SHORT SLOTTED HOLES PARALLEL TO THE AXIAL FORCE ARE PERMITTED. SHEAR CONNECTIONS INDICATED AS COMPLETELY DESIGNED IN THESE DRAWINGS HAVE BEEN DESIGNED TO MEET THESE MINIMUM AXIAL FORCE REQUIREMENTS.

EXCEPT WHERE "SNUG TIGHT" INSTALLATION IS SPECIFICALLY PERMITTED ON DRAWINGS OR "SLIP CRITICAL" DETAILING IS REQUIRED, ALL HIGH STRENGTH BOLTS SHALL BE INSTALLED AS FULL PRETENSIONED BOLTS.

AT A MINIMUM ALL BOLTED MOMENT AND AXIAL CONNECTION SHALL HAVE PRETENSIONED BOLTS IN STANDARD HOLES.

BOLTED MOMENT CONNECTIONS AT CANTILEVERS AND BACKSPANS SHALL USE SLIP CRITICAL BOLTS.

DO NOT USE OVERSIZED OR SLOTTED HOLES FOR ANY CONNECTIONS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS OR APPROVED IN WRITING BY THE SER.

SC-10 ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF THE STRUCTURAL WELDING CODE, ANSII/AWS D1.1, LATEST EDITION. ALL WELD SIZES SHALL BE THE LARGER OF THE SIZE REQUIRED BY CONNECTION FORCES, THE MINIMUM SIZE PER ANSII/AWS D1.1, OR 3/16 INCH MINIMUM FILLET WELD UON. ANY WELD SIZES SHOWN ON THE DESIGN DRAWINGS ARE CONSIDERED EFFECTIVE WELD SIZES AND SHALL BE INCREASED IN ACCORDANCE WITH AWS AS REQUIRED BY GAPS OR SKEWS BETWEEN COMPONENTS.

SC-11 USE RUNOFF TABS AT ALL BEVEL AND COMPLETE JOINT PENETRATION WELDS. REMOVE RUNOFF TABS BY NEAT CUTS AFTER WELD IS COMPLETED. GRIND SMOOTH WHERE REQUIRED BY DETAIL.

SC-12 WHERE REQUIRED BY DETAIL REMOVE WELD BACK UP BARS AND GRIND SMOOTH AFTER WELD IS COMPLETED.

SC-13 DESIGN, DETAIL, FURNISH AND INSTALL STIFFENERS, CONTINUITY PLATES, DOUBLER PLATES, OR OTHER NECESSARY ADDITIONAL LOCAL STRENGTHENING MEASURES AS REQUIRED. MEMBER SIZES INDICATED ON THE DRAWINGS ARE BASED ON MEMBER BEHAVIOR AWAY FROM CONNECTIONS.

**SJ OPEN WEB STEEL JOISTS AND JOIST GIRDERS**

SJ-1 DESIGN, MANUFACTURE, AND ERECT JOISTS AND BRIDGING IN ACCORDANCE WITH THE "STANDARD SPECIFICATION FOR OPEN WEB JOISTS" OF THE STEEL JOIST INSTITUTE (SJI), CURRENT EDITION, AS A MINIMUM.

SJ-2 JOISTS AND JOIST GIRDERS SHALL BE DESIGNED AND PROVIDED BY CONTRACTOR PER THE SJI SPECIFICATIONS AS INDICATED ON THE DRAWINGS. SEE DRAWINGS FOR JOIST SPACING, LOAD CRITERIA, AND DEPTH LIMITATIONS.

SJ-3 BRIDGING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR PER THE SJI SPECIFICATIONS.

SJ-4 BEFORE STEEL DECK IS PLACED, ATTACH ALL BRIDGING TO THE JOISTS AND ANCHOR ALL BRIDGING TERMINATING AT WALLS OR BEAMS TO THE WALLS OR BEAMS. WELD OR BOLT ALL BRIDGING CONNECTIONS TO STEEL JOISTS AND BEAMS.

SJ-5 DESIGN AND DETAIL STEEL JOISTS AND JOIST CONNECTIONS TO CARRY THE MOST SEVERE COMBINATION OF DIAPHRAGM FORCES, KICKER FORCES, GRAVITY LOADS, SNOW LOADS, AND WIND UPLIFT FORCES SHOWN ON THE DRAWINGS. IT IS NOT ACCEPTABLE TO DESIGN JOISTS FOR SJI STANDARD LOADS IN LIEU OF THE LOADS SHOWN ON THE DRAWINGS. IN ADDITION TO THE LOADS SHOWN ON THE DRAWINGS, JOISTS SHALL BE DESIGNED FOR:

- A. A MINIMUM NET UPLIFT FORCE OF 16 PSF (STRENGTH LEVEL), UON
- B. ADDITIONAL SERVICE POINT LOAD AT ANY PANEL POINT OF 300 LBS FOR K-SERIES JOISTS AND 700 LBS FOR LH AND DLH-SERIES JOISTS

SJ-6 DESIGN JOISTS TO LIMIT DEFLECTION UNDER TOTAL LOAD TO SPAN LENGTH DIVIDED BY 240, UON. DESIGN JOISTS TO LIMIT DEFLECTION UNDER LIVE LOAD TO SPAN LENGTH DIVIDED BY 360, UON.

SJ-7 CAMBER JOISTS PER SJI STANDARDS, UON.

SJ-8 PROVIDE DOUBLE ANGLE TOP AND BOTTOM CHORDS.

SJ-9 HANGING AND POINT BEARING LOADS AT JOISTS SHALL ONLY BE PERMITTED AS INDICATED ON THE DRAWINGS. DESIGN JOIST FOR HANGING AND POINT BEARING LOADS AT ANY ADJACENT PANEL POINT. COORDINATE HANGING AND POINT BEARING LOADS WITH ARCHITECTURAL AND MEP DRAWINGS.

SJ-10 EXTEND BOTTOM CHORDS OF JOISTS AND JOIST GIRDERS AT COLUMNS, SEE JOIST DETAILS FOR ADDITIONAL INFORMATION. COORDINATE BOTTOM CHORD EXTENSIONS WITH ARCHITECTURAL DRAWINGS.

SJ-11 AT EDGE CONDITIONS EXTEND JOIST TOP CHORDS BEYOND SUPPORTING BEAMS TO PERIMETER ANGLE OR BENT PLATE, UON.

SJ-12 JOIST SERIES, SEAT, AND SUPPORT INFORMATION SHOWN ON THE DRAWINGS IS A MINIMUM. JOIST DESIGN ENGINEER TO REVIEW ALL SJI REQUIREMENTS AND NOTIFY ENGINEER OF RECORD IF SELECTED SYSTEM DIFFERS FROM CONTRACT DOCUMENTS PRIOR TO FABRICATION OF JOISTS. CONTRACTOR IS RESPONSIBLE FOR COORDINATION BETWEEN SELECTED JOIST SYSTEM AND OTHER TRADES.

**SD STEEL DECK GENERAL REQUIREMENTS**

SD-1 THE MANUFACTURE AND ERECTION OF STEEL DECK AND ITS ANCHORAGE SHALL, AT A MINIMUM, BE IN ACCORDANCE WITH "DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS AND ROOF DECKS" OF THE STEEL DECK INSTITUTE (SDI), CURRENT EDITION AND "SPECIFICATIONS FOR DESIGN OF LIGHT GAGE COLD FORMED STEEL STRUCTURAL MEMBERS" AS PUBLISHED BY THE AMERICAN IRON AND STEEL INSTITUTE (AISI), CURRENT EDITION.

SD-2 CONFIGURE ALL STEEL DECK USING THREE SPAN CONTINUOUS LAYOUTS WHEREVER POSSIBLE.

SD-3 CONFIGURE ALL STEEL DECK AS SHOWN ON THE DRAWINGS.

**RD STEEL ROOF DECK**

RD-1 STEEL ROOF DECK SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES:

ASTM A653-HOT-DIPPED GALVANIZED CONFORMING TO ASTM A924 G60

ROOF DECK SHALL BE HOT-DIP GALVANIZED, UON

FABRICATE STEEL DECK UNITS AND ACCESSORIES FROM STEEL SHEET CONFORMING TO ASTM A653 STRUCTURAL QUALITY GRADE 50, WITH A MINIMUM YIELD STRENGTH OF 50 KSI.

RD-2 PROVIDE STEEL ROOF DECK WITH DEPTH AND MINIMUM GAGE INDICATED ON DRAWINGS. PROVIDE ANCHORAGE TO SUPPORTING MEMBERS AS INDICATED ON DRAWINGS.

RD-3 ROOF DECK AND ITS ANCHORAGE TO SUPPORTING MEMBERS SHALL MEET THE FOLLOWING MINIMUM FASTENING REQUIREMENTS:

- A. AT ENDS OF UNITS AND AT ALL INTERMEDIATE SUPPORTS: BY PUDDLE WELDS NOT LESS THAN 5/8 INCH DIAMETER SPACED NOT MORE THAN 12 INCHES ON CENTER MAX.
- B. SIDE LAPS OF ADJACENT UNITS SHALL BE FASTENED BY SIDE SEAM WELDING OR SIDELAP SCREWS SPACED AT 24 INCHES ON CENTER MAX. ARC SEAM WELDS SHALL BE A MINIMUM OF 1-1/2 INCH BY 1/2 INCH.

RD-4 NO LOADS SHALL BE HUNG DIRECTLY FROM STEEL ROOF DECK WITHOUT PRIOR WRITTEN APPROVAL OF THE DECK SUPPLIER AND REVIEW BY THE SER.

RD-5 CHECKING CONTRACTOR SHALL COORDINATE DECK OPENING SIZES AND LOCATIONS FROM ARCHITECTURAL AND MEP CONTRACT DOCUMENTS. PROVIDE HEADER MEMBERS OR REINFORCEMENT AS REQUIRED BY TYPICAL DETAILS EVEN IF NOT SHOWN ON THE PLANS, AND SUBMIT PROPOSED OPENINGS THROUGH SLAB/DECK FOR REVIEW BY THE DESIGN PROFESSIONALS.

**AC ARCHITECTURAL CLADDING**

AC-1 TYPICAL DETAILS INDICATE GENERAL CRITERIA FOR ASSUMED CONNECTIONS OF ARCHITECTURAL CLADDING TO BASE BUILDING STRUCTURE. PROVIDE DESIGNS THAT MEET INDICATED CRITERIA AND CONFORM TO LISTED CODES AND STANDARDS. REFER TO SUBMITTALS SECTION IN THESE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.

**PA POST-INSTALLED ANCHORS**

PA-1 ADHESIVE ANCHOR SYSTEMS USED FOR DESIGN:

SEISMIC DESIGN CATEGORY A - F

ADHESIVE: HILTI HIT-HY 200 V3

THREADED ROD: HILTI HAS OR THREADED ROD: HILTI HIT-Z

OVERHEAD AND/OR CONSTANT TENSION ADHESIVE ANCHOR INSTALLATIONS NOT SHOWN ON THE DRAWINGS SHALL NOT BE PERMITTED UNLESS EACH CONDITION IS REVIEWED AND APPROVED IN WRITING BY THE SER.

PA-2 PROOF TESTING OF ADHESIVE ANCHORS SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. UNLESS NOTED OTHERWISE, ADHESIVE ANCHOR PROOF TENSION LOADS SHALL BE PER THE ADHESIVE ANCHOR PROOF SCHEDULES.

PA-3 FIELD DRILLED EXPANSION ANCHOR SYSTEMS USED FOR DESIGN:

HILTI KWIK BOLT T22

PA-4 PROOF TESTING OF EXPANSION ANCHORS SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. UNLESS NOTED OTHERWISE, EXPANSION ANCHOR PROOF TORQUE LOADS SHALL BE PER THE EXPANSION ANCHOR PROOF SCHEDULES.

PA-5 FIELD DRILLED THREADED SCREW ANCHOR SYSTEMS USED FOR DESIGN:

HILTI KH-EZ

PA-6 ALTERNATIVE SYSTEM EQUIVALENT TO OR EXCEEDING THE PROPERTIES OF THE SYSTEMS ABOVE WILL BE CONSIDERED AS A SUBSTITUTION REQUEST. SEE PROJECT SPECIFICATIONS.

PA-7 ANCHORS ARE TO BE MINIMUM 3/4" DIAMETER WITH A MINIMUM EMBEDMENT OF 6", UON.

PA-8 INSTALL ANCHORS TO MEET THE REQUIREMENTS INDICATED IN THE CONTRACT DOCUMENTS AND THE CURRENT MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS (MPI).

PA-9 LOCATE, BY NON-DESTRUCTIVE MEANS, AND AVOID ALL EXISTING REINFORCEMENT PRIOR TO INSTALLATION OF ANCHORS. IF EXISTING REINFORCING LAYOUT PROHIBITS THE INSTALLATION OF ANCHORS AS INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DESIGN PROFESSIONALS.

PA-10 INSTALL ANCHORS IN SOLID MASONRY OR IN HOLLOW MASONRY THAT HAS BEEN GROUTED SOLID AT LEAST ONE COURSE ABOVE TO ONE COURSE BELOW THE ANCHOR, UON.

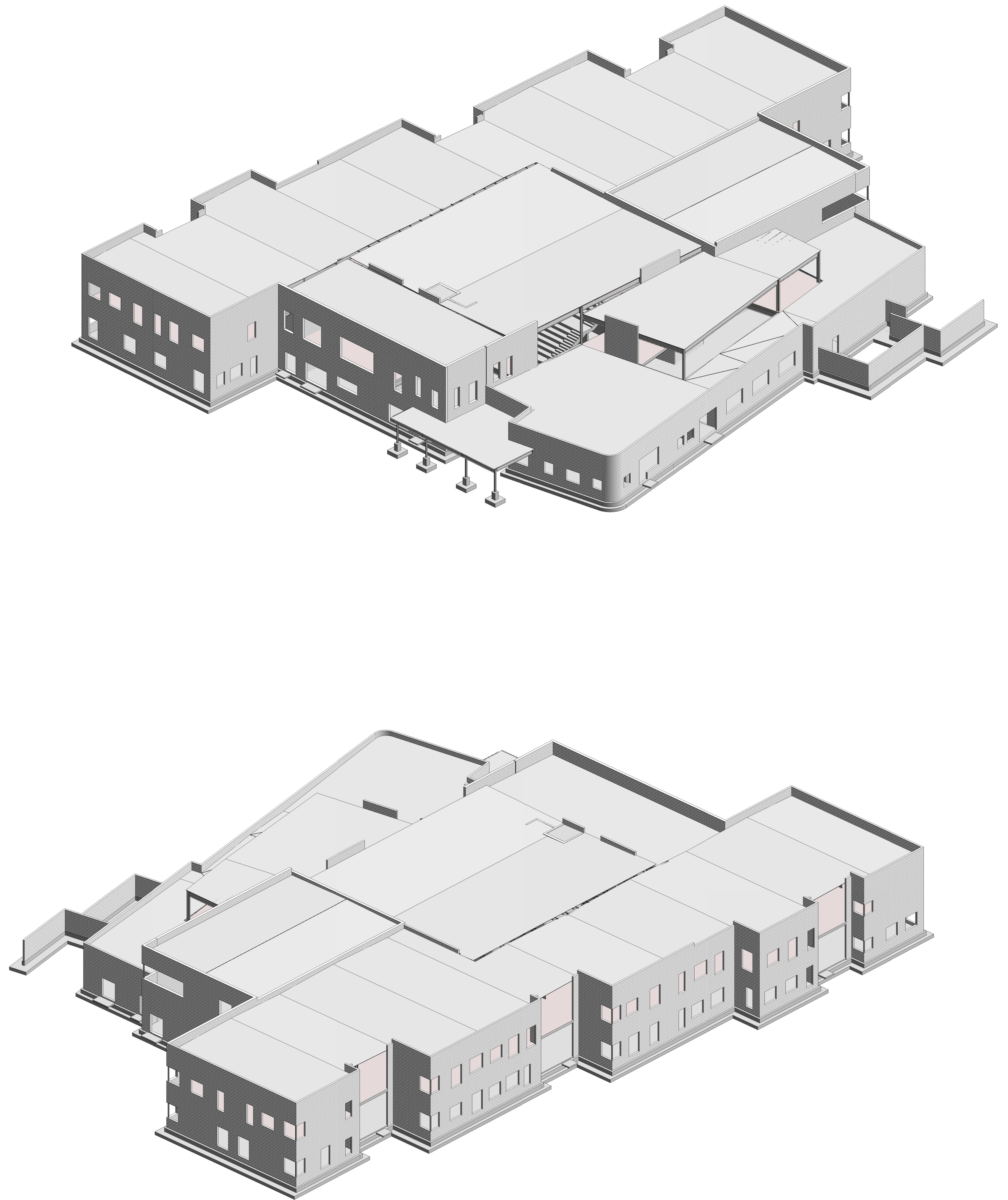
PA-11 SEE PROJECT SPECIFICATIONS FOR POST-INSTALLED ANCHOR INSPECTION REQUIREMENTS.

**BN BID NOTES**

BN-1 DRAWINGS HAVE BEEN ISSUED FOR PROCUREMENT OF BELOW GRADE FOUNDATION ELEMENTS ONLY. CONTRACTOR TO COORDINATE DELINEATION OF SCOPE.

BN-2 PRICING TO BE PROVIDED BASED ON QUANTITIES AND DESIGN INFORMATION SHOWN IN DRAWINGS. FINAL COORDINATION OF CMU DOWEL LOCATIONS AND AND OTHER EMBEDDED ELEMENTS TO BE ISSUED WITH 100% CONTRACT DOCUMENTS.

BN-3 SOG IS NOT INCLUDED IN THIS PACKAGE AND WILL BE INCLUDED IN SUPERSTRUCTURE PACKAGE.



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ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
GENERAL NOTES II

DATE  
JUNE 30, 2023

SHEET NUMBER  
S 002  
21-237.25

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION				
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
1. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	—	X	ACI 318 CH. 20, 25.2, 25.3, 26.6.1-26.6.3	1908.4
2. REINFORCING BAR WELDING:				
A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A705.	—	X	AWS D1.4 ACI 318: 26.6.4	—
B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"; AND		X		
C. INSPECT ALL OTHER WELDS.	X			
3. INSPECT ANCHORS CAST IN CONCRETE	—	X	ACI 318: 17.8.2	—
4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS <sup>(b)</sup>				
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	X		ACI 318: 17.8.2.4	—
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.		X	ACI 318: 17.8.2	—
5. VERIFYING USE OF REQUIRED DESIGN MIX.	—	X	ACI 318: CH. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X	—	ASTM C172 ASTM C31, ACI 318: 26.4, 26.12	1908.10
7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	—	ACI 318: 26.5	1908.6, 1908.7, 1908.3
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	—	X	ACI 318: 26.5.3-26.5.5	1908.9
9. INSPECT PRESTRESSED CONCRETE FOR:				
A. APPLICATION OF PRESTRESSING FORCES; AND	X	—	ACI 318: 26.10	—
B. GROUTING OF BONDED PRESTRESSING TENDONS	X	—		
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	—	X	ACI 318: CH 26.8	—
11. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	—	X	ACI 318: 26.11.2	—
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	—	X	ACI 318: 26.11.1.2 <sup>(b)</sup>	—

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION				
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD	IBC REFERENCE
1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS:				
A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	—	X	AISC 360, SECTION A3.3 AND APPLICABLE ASTM MATERIAL STANDARDS	—
B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	—	X		
2. INSPECTION OF HIGH-STRENGTH BOLTING:				
A. SNUG-TIGHT JOINTS.	—	X	AISC 360, SECTION M2.5	—
B. SLIP-CRITICAL CONNECTIONS.	X	X		
C. PRETENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OF-NUT WITH MATCHMARKING, TWIST-OFF BOLT OR DIRECT TENSION INDICATOR METHODS OF INSTALLATION.	X	—		
3. MATERIAL VERIFICATION OF STRUCTURAL STEEL AND COLD-FORMED STEEL DECK:				
A. FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS TO CONFORM TO AISC 360.	—	X	AISC 360, SECTION A3.1H	2203.1
B. FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	—	X	APPLICABLE ASTM MATERIAL STANDARDS	—
C. MANUFACTURER'S CERTIFIED MILL TEST REPORTS.	—	—	ASTM A 6 OR ASTM A 568	—
4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS:				
A. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS.	—	—	AISC 360, SECTION A3.5 AND APPLICABLE AWS A5 DOCUMENTS	—
B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	—	X	—	—
5. INSPECTION OF WELDING:				
A. STRUCTURAL STEEL AND COLD-FORMED STEEL DECK:				
1. COMPLETE AND PARTIAL PENETRATION GROOVE WELDS.	X	—	AWS D1.1	1705.2.1
2. MULTIPASS FILLET WELDS.	X	—		
3. SINGLE-PASS FILLET WELDS > 5/16"	X	—		
4. PLUG AND SLOT WELDS.	X	—		
5. SINGLE-PASS FILLET WELDS ≤ 5/16"	—	X		
6. FLOOR AND ROOF DECK WELDS.	—	X	AWS D1.3	—
B. REINFORCING STEEL:				
1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706.	—	X	AWS D1.4, ACI 318: 3.5.2	—
2. REINFORCING STEEL-RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALLS AND SHEAR REINFORCEMENT.	X	—		
3. SHEAR REINFORCEMENT.	X	—		
4. OTHER REINFORCING STEEL.	—	X		
6. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS:				
DETAILS SUCH AS BRACING AND STIFFENING.	—	X	—	1705.2.1
B. MEMBER LOCATIONS.	—	X	—	
C. APPLICATION OF JOINT DETAILS AT EACH CONNECTION.	—	X	—	

REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOISTS GIRDERS				
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD <sup>(a)</sup>	
1. INSTALLATION OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS				
A. END CONNECTIONS - WELDING OR BOLTED	—	X	SJI SPECIFICATIONS LISTED IN SECTION 2207.1.	
B. BRIDGING - HORIZONTAL OR DIAGONAL	—			
1. STANDARD BRIDGING	—	X	SJI SPECIFICATIONS LISTED IN SECTION 2207.1.	
2. BRIDGING THAT DIFFERS FROM THE SJI SPECIFICATIONS LISTED IN SECTION 2207.1.		X		

<sup>(a)</sup> WHERE APPLICABLE, SEE ALSO SECTION 1705.12, SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE.

LEVEL B REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION				
INSPECTION TASK	FREQUENCY <sup>(a)</sup>		REFERENCE FOR CRITERIA	
	CONTINUOUS	PERIODIC	TMS 402/ACI 530 /ASCE 5	TMS 602/ACI 530.1 /ASCE 6
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS.	—	X	—	ART. 1.5
2. AS MASONRY CONSTRUCTION BEGINS, THE FOLLOWING ARE IN COMPLIANCE:				
A. PROPORTIONS OF SITE-PREPARED MORTAR	—	X	—	ART. 2.1, 2.6A
B. CONSTRUCTION OF MORTAR JOINTS	—	X	—	ART. 3.3B
C. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES	—	X	—	ART. 2.4B, 2.4H
D. LOCATION OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES	—	X	—	ART. 3.4, 3.6A
E. PRESTRESSING TECHNIQUE	—	X	—	ART. 3.6B
F. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY	X <sup>(b)</sup>	X <sup>(c)</sup>	—	ART. 2.1C
3. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:				
A. GROUT SPACE	—	X	—	ART. 3.2D, 3.2F
B. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES	—	X	SEC. 1.16	ART. 2.4, 3.4
C. PLACEMENT OF REINFORCEMENT, CONNECTORS, PRESTRESSING TENDONS AND ANCHORAGES	—	X	SEC. 1.16	ART. 3.2E, 3.4, 3.6A
D. PROPORTION OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS	—	X	—	ART. 2.6B, 2.4G, 1.B
E. CONSTRUCTION OF MORTAR JOINTS	—	X	—	ART. 3.3B
4. VERIFY DURING CONSTRUCTION:				
A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS	—	X	—	ART. 3.3F
B. TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION.	—	X	SEC. 1.16.4.3, 1.17.1	—
C. WELDING OF REINFORCEMENT	X	—	SEC. 2.1.7.7.2, 3.3.3.4(c), 8.3.3.4 (b)	—
D. PREPARATION, CONSTRUCTION AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F (4.4°C)) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C)).	—	X	—	ART. 1.8C, 1.8D
E. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE.	X	—	—	ART. 3.6B
F. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS IS IN COMPLIANCE	X	—	—	ART.3.5, 3.6C
G. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS	X <sup>(b)</sup>	X <sup>(c)</sup>	—	ART. 3.3B.8
5. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	—	X	—	ART. 1.4B.2.A.3, 1.4B.2.B.3, 1.4B.2.C.3, 1.4B.3, 1.4B.4

(a) FREQUENCY REFERS TO THE FREQUENCY OF INSPECTION, WHICH MAY BE CONTINUOUS DURING THE TASK LISTED OR PERIODICALLY DURING THE LISTED TASK, AS DEFINED IN THE TABLE.  
 (b) REQUIRED FOR THE FIRST 5000 SQUARE FEET (465 SQUARE METERS) OF AAC MASONRY.  
 (c) REQUIRED AFTER THE FIRST 5000 SQUARE FEET (465 SQUARE METERS) OF AAC MASONRY.

REQUIRED VERIFICATION AND INSPECTION OF SOILS		
VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	—	X
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	—	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	—	X
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	—
5. PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	—	X

REQUIRED VERIFICATION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL			
VERIFICATION AND INSPECTION TASK	CONTINUOUS	PERIODIC	REFERENCED STANDARD
1. MATERIAL VERIFICATION OF COLD-FORMED STEEL DECK:			
A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	—	X	APPLICABLE ASTM MATERIAL STANDARDS
B. MANUFACTURER'S CERTIFIED TEST REPORTS	—	X	
2. INSPECTION OF WELDING:			
A. COLD-FORMED STEEL DECK:			
1. FLOOR AND ROOF DECK WELDS	—	X	AWS D1.3
B. REINFORCING STEEL:			
1. VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A706	—	X	AWS D1.4, ACI 318: 3.5.2
2. REINFORCING STEEL RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE AND SHEAR REINFORCEMENT	X	—	
3. SHEAR REINFORCEMENT	X	—	
4. OTHER REINFORCING STEEL	—	X	

**SI SPECIAL INSPECTIONS AND STRUCTURAL TESTING**

- SI-1)** SPECIAL INSPECTIONS SHALL BE PERFORMED BY A SPECIAL INSPECTOR PER IBC SECTIONS 1704 AND 1705. THE SPECIAL INSPECTOR SHALL BE EMPLOYED BY THE OWNER AND NOT BY THE CONTRACTOR OR ANY OTHER PERSON RESPONSIBLE FOR THE WORK.
- SI-2)** THE SPECIAL INSPECTOR SHALL BE A QUALIFIED (LICENSED) PERSON WHO SHALL PROVIDE WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING HIS OR HER COMPETENCE AND RELEVANT TRAINING OR EXPERIENCE TO THE SATISFACTION OF THE BUILDING OFFICIAL. EXPERIENCE SHALL BE FOR SPECIAL INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
- SI-3)** THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY PER IBC SECTION 1704.4 TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK WHEN RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND FORCE OR SEISMIC FORCE RESISTING SYSTEM. THE STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTION.
- SI-4)** THE FOLLOWING WORK REQUIRES STRUCTURAL TESTS. FOR SPECIFIC REQUIREMENTS OF STRUCTURAL TESTS, SEE THE SPECIFICATIONS AND GENERAL NOTES.
- CONCRETE REINFORCEMENT
  - CAST-IN-PLACE CONCRETE
  - SHOTCRETE
  - POST-INSTALLED ANCHORS
  - GROUTED DOWELS
  - CONCRETE UNIT MASONRY
  - STRUCTURAL STEEL MATERIALS AND FABRICATION
  - WELDING: STRUCTURAL STEEL AND REINFORCING STEEL
  - STEEL DECKING
  - COLD FORMED METAL FRAMING
- SI-5)** THE FOLLOWING ITEMS SHALL RECEIVE SPECIAL INSPECTION BY A CERTIFIED SPECIAL INSPECTOR IN ACCORDANCE WITH IBC 1704 AND 1705.

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 SPECIAL INSPECTIONS AND  
 STRUCTURAL TESTING

SHEET NUMBER  
**S 003**  
 DATE  
 JUNE 30, 2023  
 21-237.25

ADHESIVE ANCHOR PROOF LOAD SCHEDULE				
A615 GR 60 REINFORCEMENT IN NORMAL WEIGHT CONCRETE (3000 PSI MIN)				
BAR SIZE	EMBEDMENT (IN)	TENSION TEST VALUE (LBS)		
		HILTI HIT-HY 200	HILTI HIT-RE 500-SD	SIMPSON SET-XP
#4	4	6010	6150	5690
#5	5	9940	9330	7640
#6	6	13660	12860	9770
#7	7	15750	13550	12250
#8	8	20670	16540	15430
#9	9	26270	19580	NA
#10	10	32500	22060	24100

EXPANSION ANCHOR PROOF LOAD SCHEDULE		
ANCHORS IN NORMAL WEIGHT CONCRETE (3000 PSI MINIMUM)		
ANCHOR DIAMETER (IN)	TORQUE TEST VALUE (FT-LBS)	
	HILTI KWIK BOLT TZ	SIMPSON STRONG-BOLT 2
3/8	25	30
1/2	40	60
5/8	60	90
3/4	110	150

EXPANSION ANCHOR PROOF LOAD SCHEDULE		
ANCHORS IN LIGHTWEIGHT CONCRETE (3000 PSI MINIMUM)		
ANCHOR DIAMETER (IN)	TORQUE TEST VALUE (FT-LBS)	
	HILTI KWIK BOLT TZ	SIMPSON STRONG-BOLT 2
3/8	25	30
1/2	40	60
5/8	60	90
3/4	NA	150

**TORQUE PROOF LOAD NOTES:**

- SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING PROOF TESTING OF EXPANSION ANCHORS.

ADHESIVE ANCHOR PROOF LOAD SCHEDULE				
A193 B7 THREADED ROD IN NORMAL WEIGHT CONCRETE (3000 PSI MIN)				
THREADED ROD DIAMETER (IN)	EMBEDMENT (IN)	TENSION TEST VALUE (LBS)		
		HILTI HIT-HY 200	HILTI HIT-RE 500-SD	SIMPSON SET-XP
3/8	3	3360	3510	3620
1/2	4	6010	6150	5690
5/8	5	9440	9330	7640
3/4	6	7120	12860	9770
7/8	7	15750	13620	12250
1	8	20670	16440	15430
1-1/4	10	32500	22060	24100

**TENSION PROOF LOAD NOTES:**

- PROOF TESTING OF REINFORCEMENT FOR CONCRETE HOUSEKEEPING PADS IS NOT REQUIRED.
- SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING PROOF TESTING OF ADHESIVE ANCHORS.

**1 ANCHOR PROOF LOAD SCHEDULES**

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
ADDL	ADDITIONAL	LL	LIVE LOAD
ADJ	ADJACENT	LLH	LONG LEG HORIZONTAL
ALT	ALTERNATE	LLV	LONG LEG VERTICAL
APPRX	APPROXIMATE	LONG	LONGITUDINAL
ARCH	ARCHITECT OR ARCHITECTURAL	LP	LOW POINT
B/	BOTTOM OF	LW	LIGHTWEIGHT
B/B	BACK TO BACK	LWC	LIGHTWEIGHT CONCRETE
BAL	BALANCE	M	MOMENT
BLDG	BUILDING	MATL	MATERIAL
BLK	BLOCK	MAX	MAXIMUM
BLKG	BLOCKING	MC	MOMENT CONNECTION(S)
BM	BEAM	MECH	MECHANICAL
BOT	BOTTOM	MEP	MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION
BRDG	BRIDGING	MEZZ	MEZZANINE
BRG	BEARING	MFR	MANUFACTURER
BTWN	BETWEEN	MID	MIDDLE
C	COMPRESSION	MIN	MINIMUM
C/C	CENTER TO CENTER	MISC	MISCELLANEOUS
CIP	CAST-IN-PLACE	NIC	NOT IN CONTRACT
CJP	COMPLETE JOINT PENETRATION	NO	NUMBER
CL	CENTER LINE	NOM	NOMINAL
CLR	CLEAR OR CLEARANCE	NS	NEAR SIDE
CMU	CONCRETE MASONRY UNIT	NTS	NOT TO SCALE
COL	COLUMN	NW	NORMAL WEIGHT
COMP	COMPRESSION	NWC	NORMALWEIGHT CONCRETE
CONC	CONCRETE	OC	ON CENTER
CONN	CONNECTION(S)	OD	OUTSIDE DIAMETER
CONST	CONSTRUCTION	OF	OUTSIDE FACE
CONT	CONTINUOUS	OH	OPPOSITE HAND
db	REINFORCING BAR DIAMETER	OPNG(S)	OPENING(S)
DBL	DOUBLE	OPP	OPPOSITE
DCW	DEMAND CRITICAL WELD	OSL	OUTSTANDING LEG
DEG	DEGREE(S)	PC	PIECE
DET	DETAIL	PCY	POUNDS PER CUBIC YARD
DIA	DIAMETER	PERP	PERPENDICULAR
DIAG	DIAGONAL	PG	PLATE GIRDER
DIM(S)	DIMENSION(S)	PJP	PARTIAL JOINT PENETRATION
DL	DEAD LOAD	PL	PLATE
DWG(S)	DRAWING(S)	PRC	PRECAST
DWL	DOWEL(S)	PRLL	PARALLEL
EA	EACH	PSF	POUNDS PER SQUARE FOOT
ECC	ECCENTRICITY	PSI	POUNDS PER SQUARE INCH
EE	EACH END	PT	POINT OR POST-TENSION(ED) OR (ING)
EF	EACH FACE	RAD	RADIUS
EL	ELEVATION	REF	REFERENCE
ELEC	ELECTRICAL	REINF	REINFORCE(D) (ING) OR (MENT)
ENGR	ENGINEER	REQD	REQUIRED
EOD	EDGE OF DECK	S&T	SHRINKAGE AND TEMPERATURE
EOS	EDGE OF SLAB	SCHED	SCHEDULE(D)
EQ	EQUAL	SDL	SUPERIMPOSED DEAD LOAD
EQUIP	EQUIPMENT	SECT	SECTION
EW	EACH WAY	SER	STRUCTURAL ENGINEER OF RECORD
EXP	EXPANSION	SF	SQUARE FOOT (FEET)
EXST	EXISTING	SFRS	SEISMIC FORCE RESISTING SYSTEM
EXT	EXTERIOR	SHT	SHEET
F/F	FACE TO FACE	SIM	SIMILAR
FIN	FINISH(ED)	SOG	SLAB ON GRADE
FLR	FLOOR	SP	SPACE
FND	FOUNDATION	SPEC(S)	SPECIFICATION(S)
FP	FIREPROOF(ING)	STD	STANDARD
FS	FAR SIDE	STL	STEEL
FTG	FOOTING	STR	STRUCTURE
GA	GAGE, GAUGE	STRCTL	STRUCTURAL
GALV	GALVANIZED	SYM	SYMMETRICAL
GB	GRADE BEAM	T	TENSION
GEN	GENERAL	T&B	TOP AND BOTTOM
GR	GRADE	T/	TOP OF
HK	HOOK	TEMP	TEMPERATURE OR TEMPORARY
HORIZ	HORIZONTAL	TEN	TENSION
HP	HIGH POINT	THK	THICK OR THICKNESS
HT	HEIGHT	TYP	TYPICAL
ID	INSIDE DIAMETER	UON	UNLESS OTHERWISE NOTED
IF	INSIDE FACE	V	SHEAR
INFO	INFORMATION	VERT	VERTICAL
INT	INTERIOR	VIF	VERIFY IN FIELD
INTRM	INTERMEDIATE	W/	WITH
JST(S)	JOIST(S)	W/O	WITHOUT
JT	JOINT	WD	WOOD
K	KIPS (1,000 POUNDS)	WP	WORK POINT
KLF	KIP PER LINEAR FOOT	WPGF	WATERPROOFING
KSF	KIP PER SQUARE FOOT	WS	WATERSTOP
		WWR	WELDED WIRE REINFORCEMENT

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
SCHEDULES, LEGENDS, AND ABBREVIATIONS

Portage, Michigan

DATE  
JUNE 30, 2023

SHEET NUMBER  
S 004  
21-237.25

SLAB/SLAB-ON-GRADE REINFORCEMENT LAP SPLICE LENGTH SCHEDULE (INCHES)								SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)						COMPRESSION (LCS)
		f <sub>c</sub> = 3 KSI	f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	
#4	5.500	22	19	17	16	14	14	
#5	5.375	32	28	25	23	21	20	
#6	5.250	43	37	34	31	28	27	
#7	5.125	69	60	54	49	46	43	
#8	5.000	86	74	67	61	56	53	

DEVELOPMENT LENGTH SCHEDULE (INCHES)																						SEE NOTE 5								
BAR SIZE	MINIMUM BAR SPACING (INCHES) (MAX(1", db) + db) NOTE 2	TENSION												COMPRESSION																
		NOTED AS Ld ON DRAWINGS						NOTED AS Ldh ON DRAWINGS						NOTED AS Ldc ON DRAWINGS																
		f <sub>c</sub> (PSI)						f <sub>c</sub> (PSI)						f <sub>c</sub> (PSI)																
#4	1.500	22	19	17	16	15	14	13	12	12	12	11	10	9	8	8	7	6	6	6	11	10	9	9	9	9	9	9	9	9
#5	1.625	28	24	22	20	18	17	16	15	15	14	12	11	10	9	8	8	7	6	6	11	10	9	9	9	9	9	9	9	9
#6	1.750	33	29	26	24	22	21	19	18	18	18	17	15	13	12	11	11	10	9	9	17	15	14	14	14	14	14	14	14	14
#7	1.875	48	42	38	34	32	30	28	27	27	27	20	17	15	14	13	12	11	11	11	20	17	16	16	16	16	16	16	16	16
#8	2.000	55	48	43	39	36	34	32	30	30	30	22	19	17	16	15	14	13	12	12	22	19	18	18	18	18	18	18	18	18
#9	2.375	62	54	48	44	41	38	36	34	34	34	25	22	20	18	17	16	15	14	14	25	22	21	21	21	21	21	21	21	21
#10	2.625	70	61	54	50	46	43	41	39	39	39	28	25	22	20	19	18	17	16	16	28	25	23	23	23	23	23	23	23	23
#11	2.875	78	67	60	55	51	48	45	43	43	43	31	27	24	22	21	19	18	17	17	31	27	26	26	26	26	26	26	26	26

- DEVELOPMENT LENGTH SCHEDULE NOTES:
- WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE DEVELOPMENT LENGTH, MULTIPLY L<sub>d</sub> BY 1.3.
  - WHERE STIRRUPS OR TIES ARE NOT PRESENT THROUGHOUT L<sub>d</sub>, MINIMUM BAR SPACING MUST BE INCREASED TO [MAX(1", db) + 2db] FOR SCHEDULED VALUES TO BE APPLICABLE.

COLUMN REINFORCEMENT LAP SPLICE LENGTH SCHEDULE (INCHES)				SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)	COMPRESSION (LCS)	
		f <sub>c</sub> = 4 KSI		
#5	2.125	28	19	
#6	2.250	37	23	
#7	2.375	54	27	
#8	2.500	62	30	
#9	2.875	70	34	
#10	3.250	79	39	
#11	3.625	87	43	

FOOTING/MAT REINFORCEMENT LAP SPLICE LENGTH SCHEDULE (INCHES)																SEE NOTE 5	
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION LAP (LTS)														COMPRESSION (LCS)	
		f <sub>c</sub> = 4 KSI		f <sub>c</sub> = 5 KSI		f <sub>c</sub> = 6 KSI		f <sub>c</sub> = 7 KSI		f <sub>c</sub> = 8 KSI		f <sub>c</sub> = 9 KSI		f <sub>c</sub> = 10 KSI			
		TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER	TOP BARS	OTHER		
#4	5.500	20	15	18	14	16	13	15	12	14	12	13	12	13	12	13	12
#5	5.375	25	19	22	17	20	16	19	14	18	14	17	13	16	12	15	12
#6	5.250	29	23	26	20	24	19	22	17	21	16	20	15	19	15	19	15
#7	5.125	43	33	38	29	35	27	32	25	30	23	29	22	27	21	27	21
#8	5.000	49	37	44	34	40	31	37	28	35	27	33	25	31	24	31	24
#9	4.875	63	49	57	44	52	40	48	37	45	35	42	33	40	31	40	31
#10	4.750	82	63	74	57	67	52	62	48	58	45	55	42	52	40	52	40
#11	4.625	104	80	93	72	85	65	79	61	74	57	69	54	66	51	66	51

FOUNDATION WALL REINFORCEMENT - VERTICAL INSIDE BARS LAP SPLICE LENGTH SCHEDULE (INCHES)											SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)
		f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	f <sub>c</sub> = 9 KSI	f <sub>c</sub> = 10 KSI	f <sub>c</sub> = 11 KSI	f <sub>c</sub> = 12 KSI	
#4	5.500	15	14	13	12	12	12	12	12	12	15
#5	5.375	23	20	18	17	16	15	14	14	14	19
#6	5.250	31	28	25	23	22	21	20	20	20	23
#7	5.125	50	45	41	38	35	33	32	32	32	27
#8	5.000	62	56	51	47	44	42	39	39	39	30
#9	4.875	76	68	62	57	54	51	48	48	48	34
#10	4.750	92	82	75	69	65	61	58	58	58	39
#11	4.625	108	97	89	82	77	72	69	69	69	43

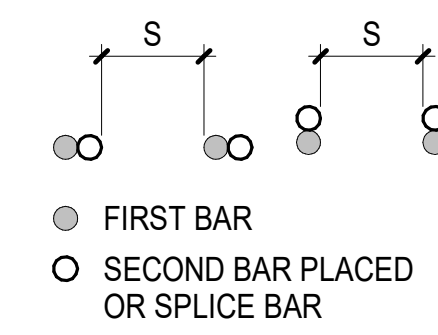
FOUNDATION WALL REINFORCEMENT - HORIZONTAL INSIDE BARS LAP SPLICE LENGTH SCHEDULE (INCHES)											SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)
		f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	f <sub>c</sub> = 9 KSI	f <sub>c</sub> = 10 KSI	f <sub>c</sub> = 11 KSI	f <sub>c</sub> = 12 KSI	
#4	5.500	20	18	16	15	14	13	13	13	13	15
#5	5.375	25	22	20	19	18	17	16	16	16	19
#6	5.250	29	26	24	22	21	20	19	19	19	23
#7	5.125	48	43	39	36	34	32	31	31	31	27
#8	5.000	61	54	50	46	43	41	39	39	39	30
#9	4.875	75	67	61	57	53	50	47	47	47	34
#10	4.750	91	82	75	69	65	61	58	58	58	39
#11	4.625	109	97	89	82	77	73	69	69	69	43

FOUNDATION WALL REINFORCEMENT - VERTICAL OUTSIDE BARS LAP SPLICE LENGTH SCHEDULE (INCHES)											SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)								COMPRESSION (LCS)	
		f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	f <sub>c</sub> = 9 KSI	f <sub>c</sub> = 10 KSI	f <sub>c</sub> = 11 KSI		f <sub>c</sub> = 12 KSI
#4	5.500	15	14	13	12	12	12	12	12	15	
#5	5.375	19	17	16	14	14	13	12	12	19	
#6	5.250	23	20	19	17	16	15	15	15	23	
#7	5.125	33	29	27	25	23	22	21	21	27	
#8	5.000	37	34	31	28	27	25	24	24	30	
#9	4.875	49	44	40	37	35	33	31	31	34	
#10	4.750	63	57	52	48	45	42	40	40	39	
#11	4.625	80	72	65	61	57	54	51	51	43	

FOUNDATION WALL REINFORCEMENT - HORIZONTAL OUTSIDE BARS LAP SPLICE LENGTH SCHEDULE (INCHES)											SEE NOTE 5
BAR SIZE	MINIMUM BAR SPACING (INCHES)	TENSION (LTS)									COMPRESSION (LCS)
		f <sub>c</sub> = 4 KSI	f <sub>c</sub> = 5 KSI	f <sub>c</sub> = 6 KSI	f <sub>c</sub> = 7 KSI	f <sub>c</sub> = 8 KSI	f <sub>c</sub> = 9 KSI	f <sub>c</sub> = 10 KSI	f <sub>c</sub> = 11 KSI	f <sub>c</sub> = 12 KSI	
#4	5.500	20	18	16	15	14	13	13	13	15	
#5	5.375	25	22	20	19	18	17	16	16	19	
#6	5.250	29	26	24	22	21	20	19	19	23	
#7	5.125	43	38	35	32	30	29	27	27	27	
#8	5.000	49	44	40	37	35	33	31	31	30	
#9	4.875	63	57	52	48	45	42	40	40	34	
#10	4.750	82	74	67	62	58	55	52	52	39	
#11	4.625	104	93	85	79	74	69	66	66	43	

LAP SPLICE NOTES:

- TABULATED VALUES ARE PER ACI 318-11 REQUIREMENTS FOR NORMALWEIGHT CONCRETE. THE VALUES ON THIS SHEET DO NOT APPLY TO LIGHTWEIGHT CONCRETE.
- SEE TYPICAL DETAILS FOR CLEAR COVER.
- MINIMUM BAR SPACING DIAGRAM - "S"



- WHERE ACTUAL CONDITIONS DIFFER FROM THE CLEAR COVER SHOWN ON THE TYPICAL DETAILS OR DIFFER FROM PROVIDED SCHEDULED BAR SIZE MINIMUM SPACING AND/OR f<sub>c</sub>, LENGTHS SHALL BE ADJUSTED ONLY WITH THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.
- TABULATED VALUES ARE FOR NON-EPOXY COATED GRADE 60 REINFORCEMENT IN NORMALWEIGHT CONCRETE.

FOR EPOXY COATED REINFORCEMENT:  
 MULTIPLY L<sub>d</sub> BY 1.5  
 MULTIPLY L<sub>dh</sub> BY 1.2  
 L<sub>dc</sub> IS NOT AFFECTED  
 MULTIPLY LTS BY 1.3 FOR "TOP BARS"  
 MULTIPLY LTS BY 1.5 FOR ALL OTHER REINFORCEMENT

FOR GRADE 75 REINFORCEMENT:  
 MULTIPLY L<sub>d</sub>, L<sub>dh</sub>, L<sub>dc</sub> AND LTS BY 1.25  
 MULTIPLY L<sub>cs</sub> BY 1.45

- WHERE BARS OF DIFFERENT SIZES ARE LAP SPICED IN TENSION, THE TENSION LAP SPLICE LENGTH (LTS) SHALL BE THE LARGER OF THE TENSION DEVELOPMENT LENGTH (L<sub>d</sub>) OF THE LARGER BAR AND THE TENSION LAP SPLICE LENGTH OF THE SMALLER BAR.
- WHERE BARS OF DIFFERENT SIZES ARE LAP SPICED IN COMPRESSION, THE COMPRESSION LAP LENGTH (LCS) SHALL BE THE LARGER OF THE COMPRESSION DEVELOPMENT LENGTH (L<sub>dc</sub>) OF THE LARGER BAR OR THE COMPRESSION LAP SPLICE LENGTH OF THE SMALLER BAR.
- "TOP BARS" ARE DEFINED AS HORIZONTAL REINFORCEMENT PLACED SUCH THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE DEVELOPMENT LENGTH OR SPLICE  
 "OTHER BARS" ARE ALL BARS FOR WHICH THIS DOES NOT APPLY

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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

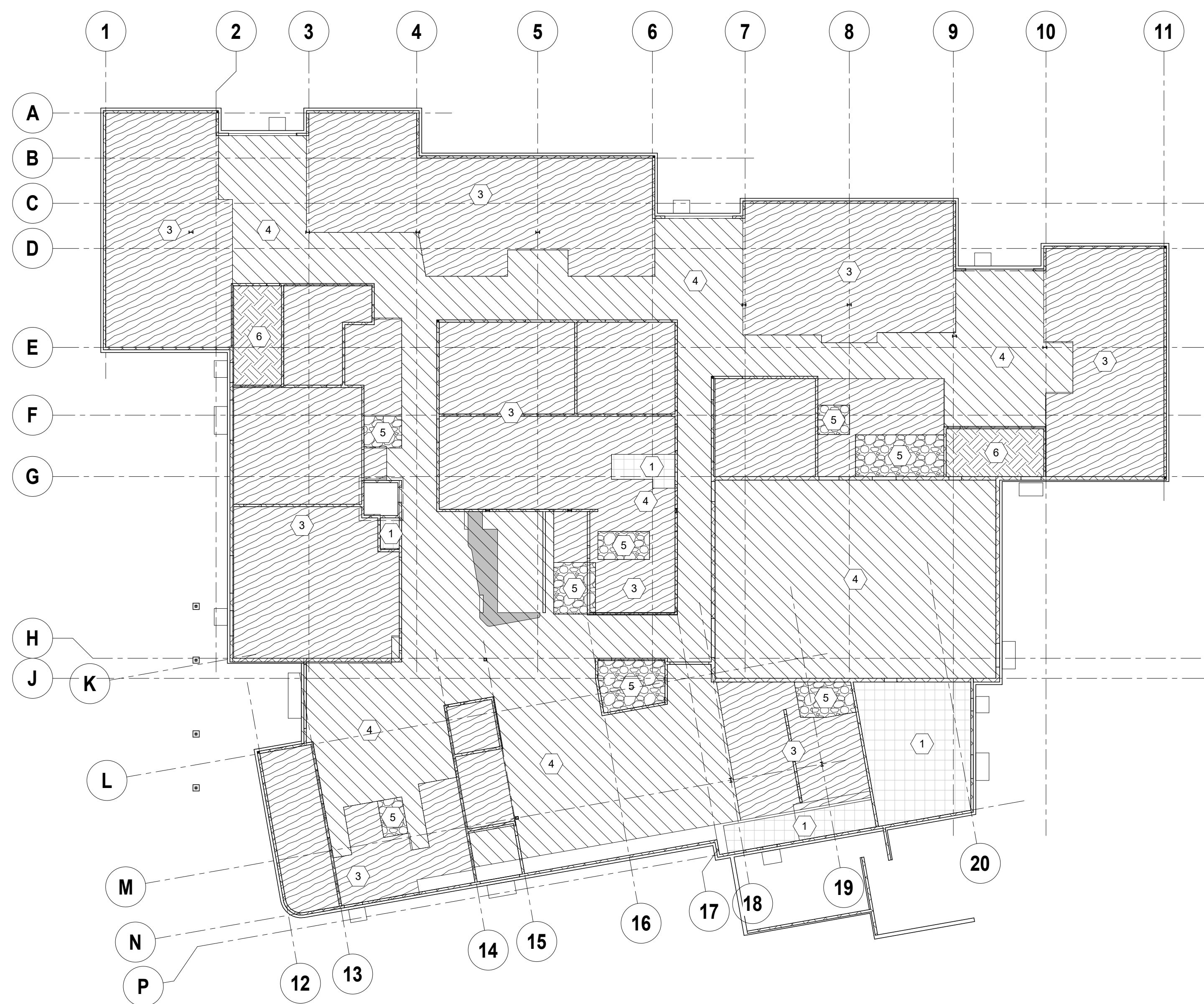
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PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
LAP SPLICE SCHEDULES

Portage, Michigan

DATE  
JUNE 30, 2023

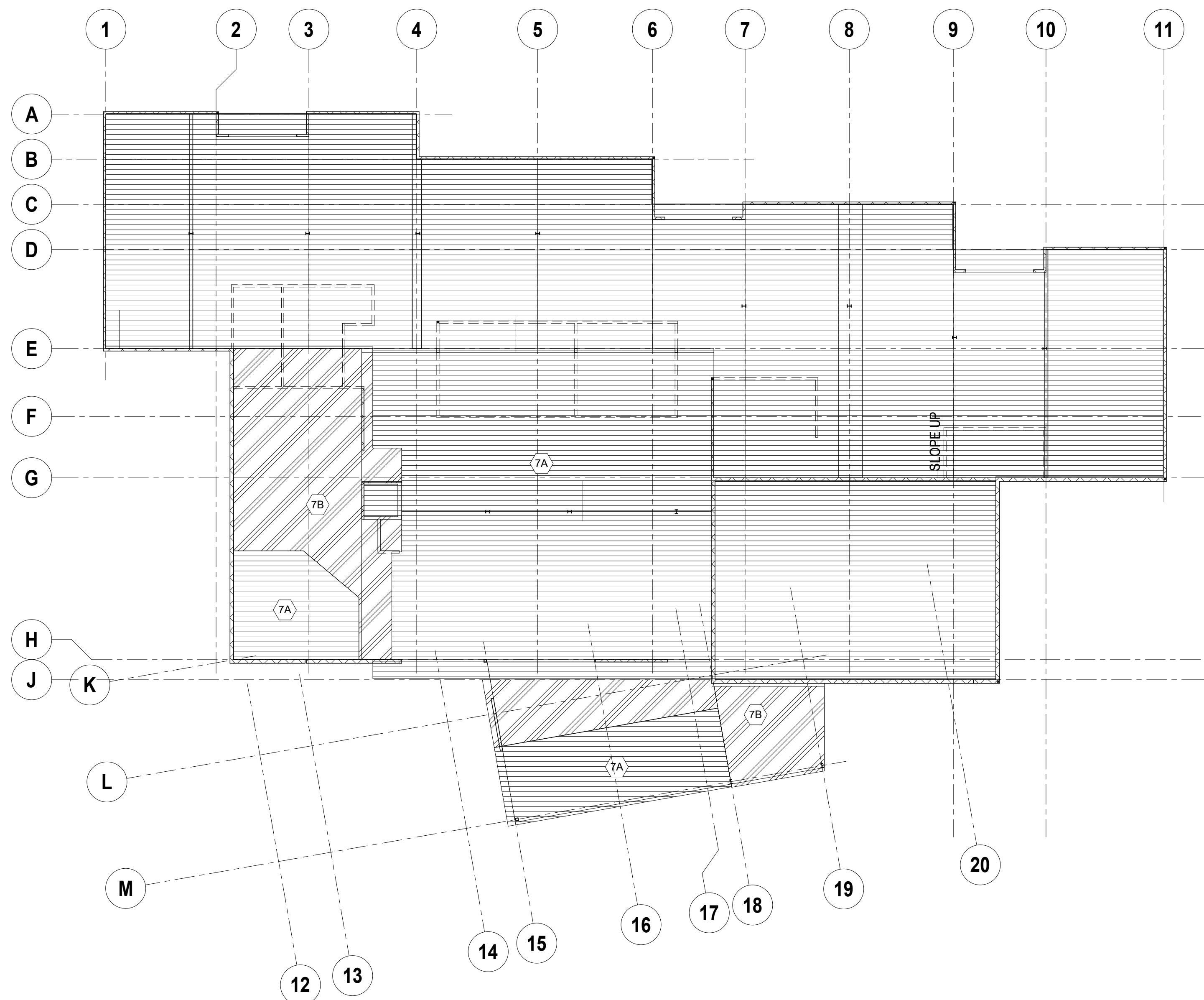
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S 005  
21-237.25



**1 FIRST FLOOR LOADING PLAN**  
 3/64" = 1'-0"



**2 SECOND FLOOR LOADING PLAN**  
 3/64" = 1'-0"



**3 ROOF LOADING PLAN**  
 3/64" = 1'-0"

LOAD SCHEDULE			
MARK	LOCATION	LIVE LOAD (PSF)	SUPERIMPOSED DEAD LOAD (PSF)
1	MECHANICAL/ELECTRICAL	150	60 (L02 ONLY) (4" TOPPING + CMEP)
2	SECOND FLOOR CORRIDORS	80	65 (4" TOPPING + CMEP + FINISH)
3	STUDIO/WORKSHOP/OFFICE/RR	40 + 15 PARTITION	5 (L01) (FINISH) 65 (L02) (4" TOPPING + CMEP + FINISH)
4	LOBBY/ASSEMBLY/GYMNASIUM (FIRST FLOOR)	100	5 (FINISH)
5	LIGHT STORAGE	125	5 (L01) (FINISH) 65 (L02) (4" TOPPING + CMEP + FINISH)
6	STAIRS	100	0 (L01) 50 (L02) (4" TOPPING)
7A	ROOF	20	20 (CMEP + ROOFING)
7B	ROOF (ABOVE MECHANICAL SPACE)	20	35 (CMEP ABOVE MECHANICAL + ROOFING)

NOTE: ALL LOADS ARE SERVICE LEVEL

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 HAVERHILL ELEMENTARY SCHOOL

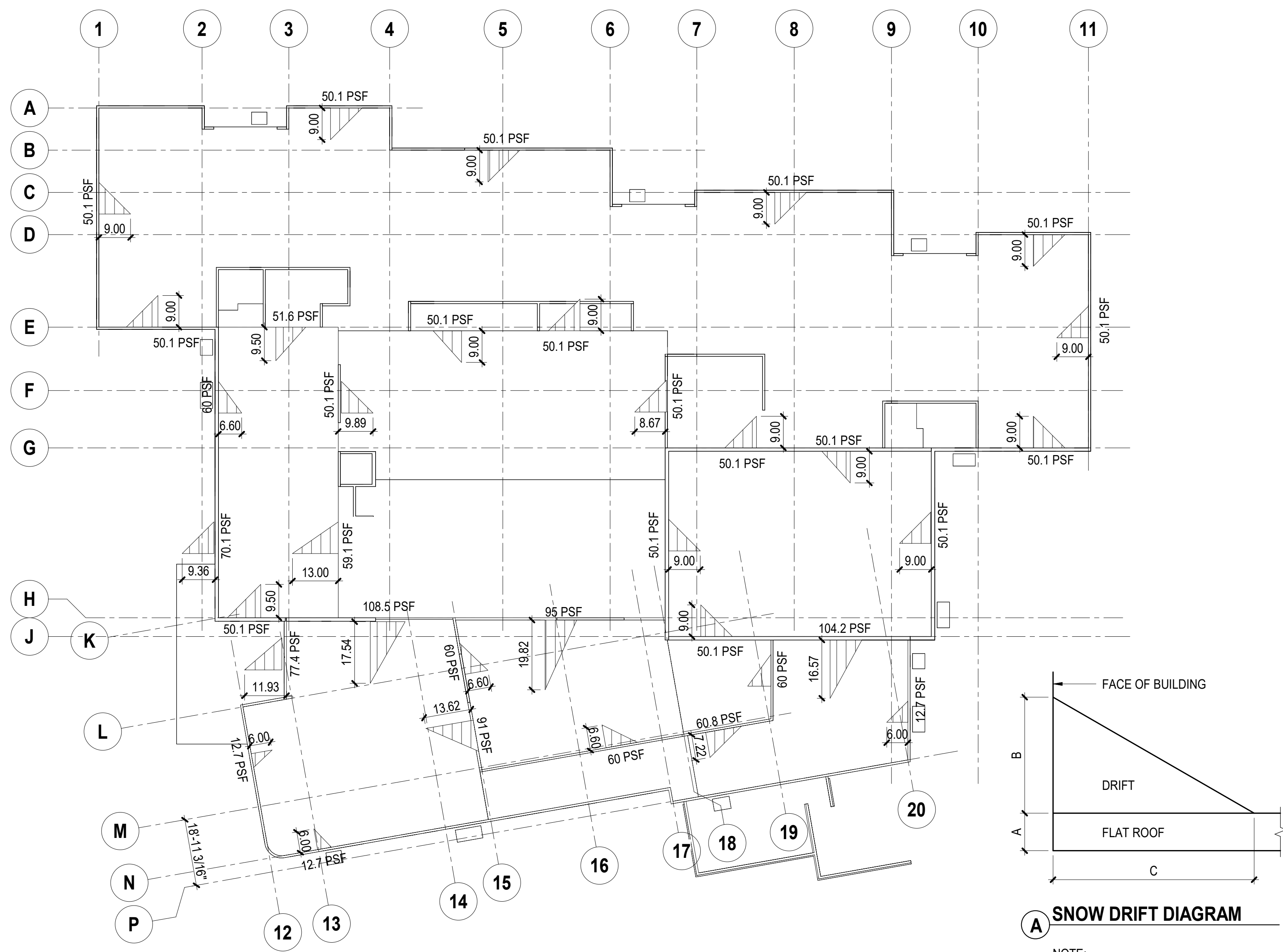
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 PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
 LOADING DIAGRAMS

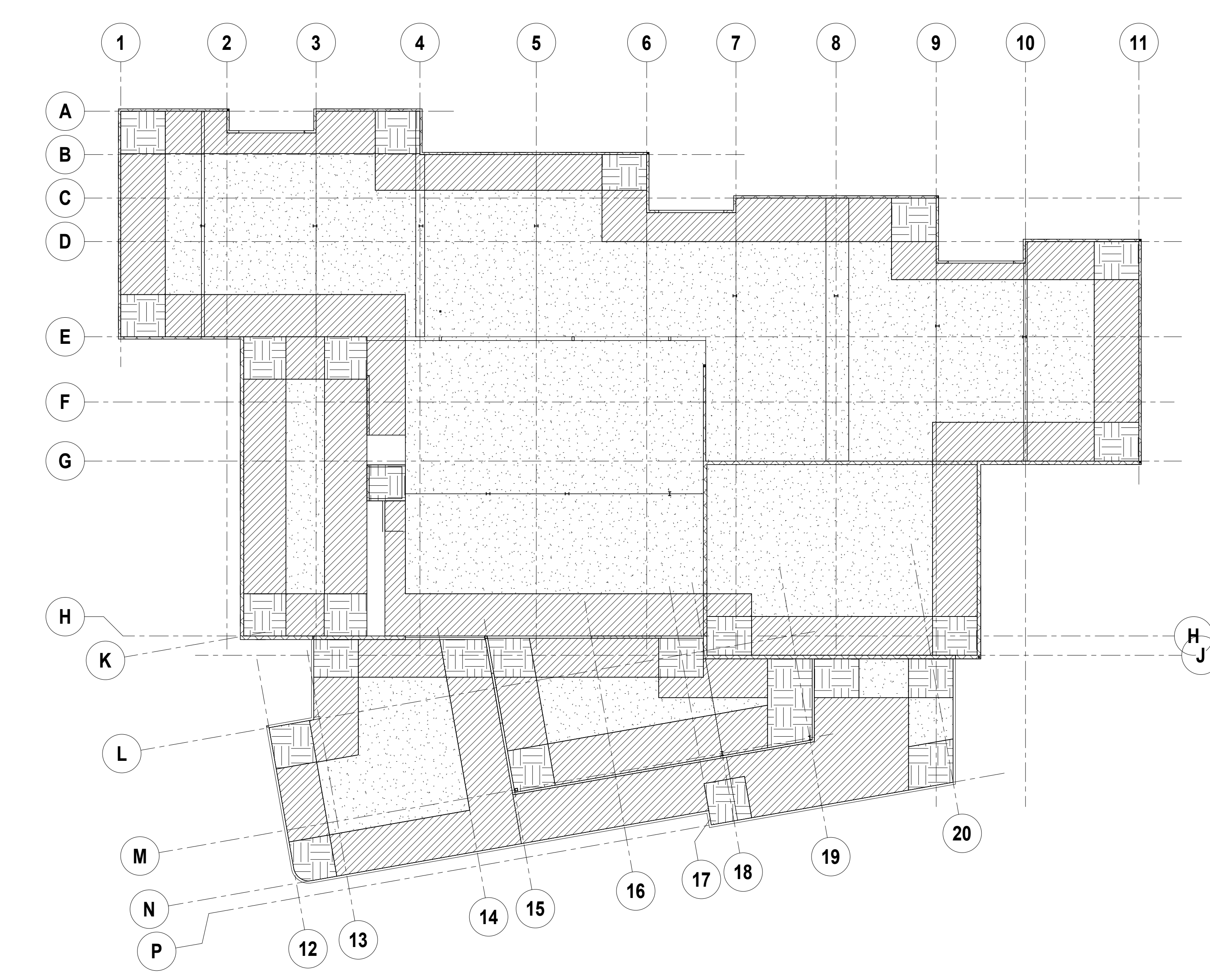
Portage, Michigan

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 006**  
 21-237.25



**1 ROOF DRIFT LOADING PLAN**  
 3/64" = 1'-0"



**2 ROOF UPLIFT LOADING DIAGRAM**  
 3/64" = 1'-0"

**COMPONENT AND CLADDING WIND PRESSURES**

EFFECTIVE WIND AREA (ft <sup>2</sup> )	ROOF ZONE PRESSURES (PSF)						WALL ZONE PRESSURES (PSF)					
	ZONE 1'		ZONE 1		ZONE 2		ZONE 3		ZONE 4		ZONE 5	
	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE
10	N/A	N/A	16.0	-25.88	16.0	-43.43	16.0	-65.36	23.69	-25.66	23.69	-31.59
20	N/A	N/A	16.0	-25.22	16.0	-38.81	16.0	-54.14	22.64	-24.61	22.64	-29.49
50	N/A	N/A	16.0	-24.35	16.0	-32.70	16.0	-39.30	21.25	-23.23	21.25	-26.71
100	N/A	N/A	16.0	-23.69	16.0	-28.08	16.0	-28.08	20.20	-22.18	20.20	-24.61
500	N/A	N/A	16.0	-23.69	16.0	-28.08	16.0	-28.08	17.77	-19.74	17.77	-19.74
1000	N/A	N/A	16.0	-23.69	16.0	-28.08	16.0	-28.08	17.77	-19.74	17.77	-19.74

**NOTES:**

- EDGE AND CORNER ZONE DIMENSION, a = 11'-9"
- OVERHANG PRESSURES ARE DERIVED BY ADDING LOCAL ZONE 2/3 NEGATIVE PRESSURES WITH ZONE 4/5 POSITIVE PRESSURES

**WIND PRESSURE TABLE**

WIND ZONE	ZONE SYMBOL	NET UPLIFT PRESSURE
ZONE 1	[Symbol]	15 PSF
ZONE 2	[Symbol]	35 PSF
ZONE 3	[Symbol]	55 PSF

**NOTES:**

- ZONE 2 PRESSURES TO BE APPLIED WITHIN AN AREA AT THE EDGE OF THE ROOF EQUAL TO TEN PERCENT OF THE WIDTH OF THE STRUCTURE PARALLEL TO THE WIND DIRECTION BEING CONSIDERED
- ZONE 3 PRESSURES TO BE APPLIED WHERE ZONE 2 PRESSURE ZONES INTERSECT AT BUILDING CORNERS
- PRESSURES PROVIDED FOR DESIGN OF ROOF DECK AND JOISTS BY CONTRACTOR
- NET UPLIFT PRESSURE IS STRENGTH LEVEL LOADING AND INCLUDES RESISTING DOWNWARD CONTRIBUTION FROM GRAVITY DEAD LOAD

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 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

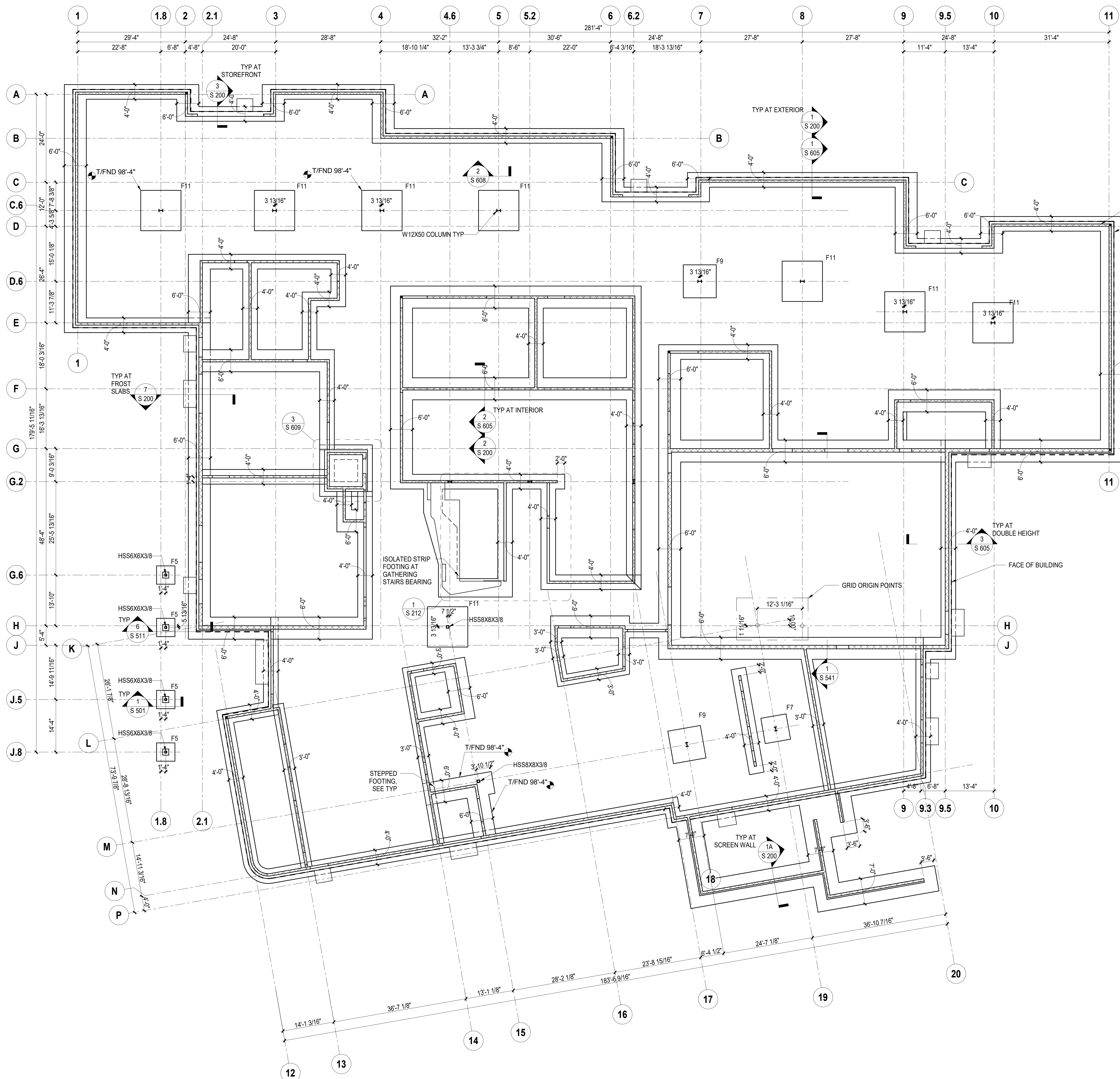
SHEET TITLE  
 LOADING DIAGRAMS - ROOF SNOW AND WIND

Portage, Michigan

DATE  
 JUNE 30, 2023

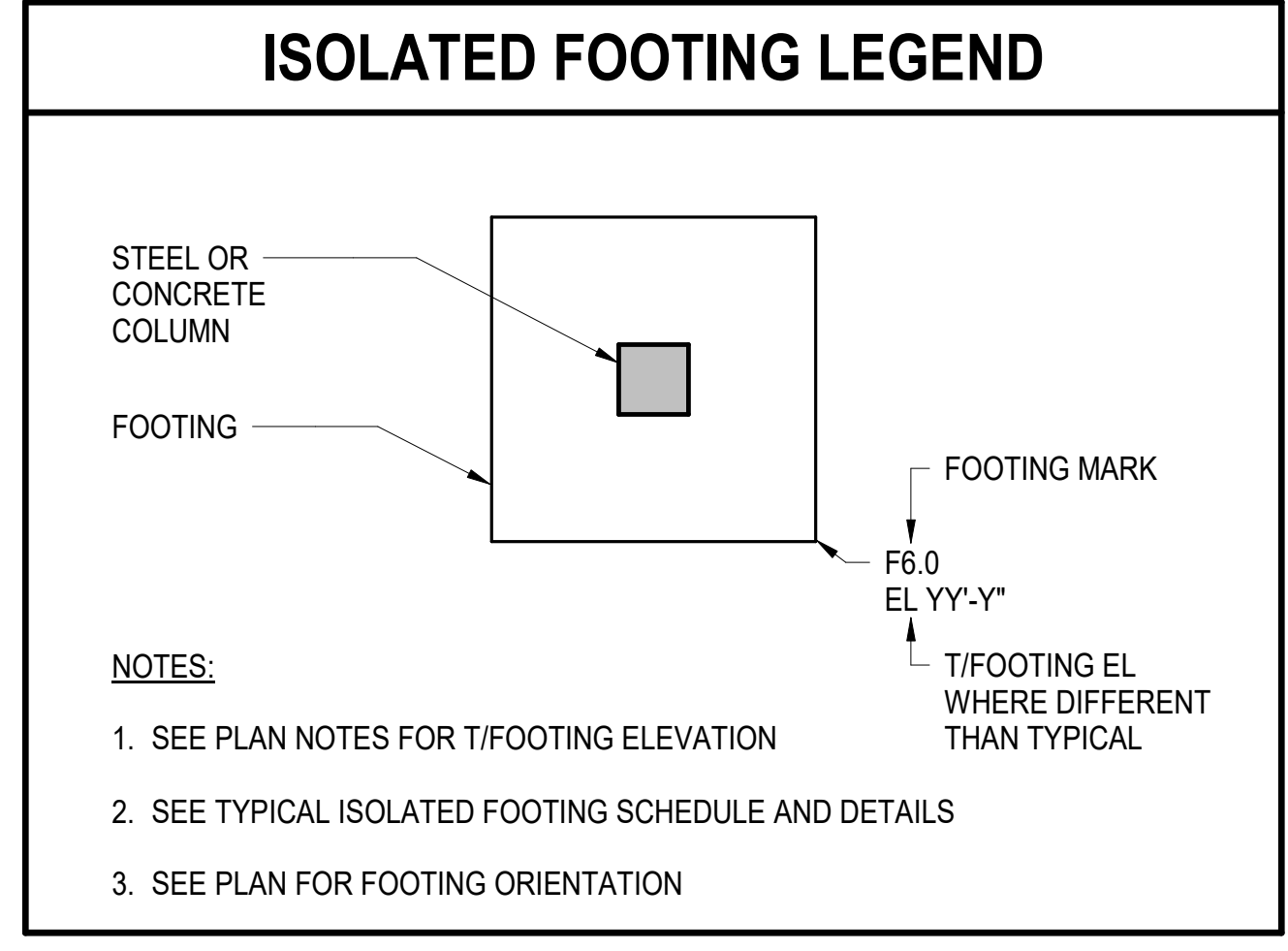
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 21-237.25





CMU WALL  
 FOUNDATION WALL  
 CONTINUOUS PERIMETER FOOTING

TYP AT DOUBLE HEIGHT  
 FACE OF BUILDING



- PLAN NOTES:**
- TOP OF EXTERIOR FOOTING EL 97'-9", UON  
 TOP OF INTERIOR FOOTING EL 98'-8", UON
  - TOP OF CONCRETE FOUNDATION WALL EL 100'-0", UON
  - SEE GENERAL NOTES FOR CONCRETE COMPRESSIVE STRENGTH
  - FOR ADDITIONAL INFORMATION, REFER TO THE FOLLOWING DRAWINGS:  
 DRAWING LIST, GENERAL NOTES, AND LOADING DIAGRAMS S0 SERIES DRAWINGS  
 TYPICAL FOUNDATION DETAILS S2 SERIES DRAWINGS  
 STEEL SUPERSTRUCTURE SCHEDULES AND DETAILS S5 SERIES DRAWINGS  
 MASONRY DETAILS S6 SERIES DRAWINGS
  - REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF NONSTRUCTURAL CMU WALLS AND PARTITIONS. SEE ARCH FOR DOOR, WINDOW, AND OTHER PENETRATIONS. PROVIDE 6 / S 210 AT ALL NONSTRUCTURAL CMU WALL LOCATIONS.
  - ALL CMU WALLS SHOWN IN STRUCTURAL DRAWINGS ARE TO BE CONSIDERED LOAD-BEARING CMU WALLS AS DETAILED IN THE STRUCTURAL DRAWINGS. WALLS NOT INDICATED ON STRUCTURAL DRAWINGS SHALL BE OF THE WALL TYPE SPECIFIED IN THE ARCHITECTURAL DRAWINGS. ANY CMU WALLS SHOWN IN THE ARCHITECTURAL PLANS AND NOT INDICATED IN THE STRUCTURAL DRAWINGS AND SHALL BE DETAILED AS CMU-4 TYPE. NONSTRUCTURAL CMU WALLS ARE NOT PERMITTED ON SECOND LEVEL FRAMING UON ON PLAN. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN STRUCTURAL AND ARCHITECTURAL DRAWINGS.

**1 FOUNDATION PLAN**  
 3/32" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
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SHEET TITLE  
 FOUNDATION PLAN

Portage, Michigan

DATE  
 JUNE 30, 2023  
 SHEET NUMBER  
**S 100**  
 21-237.25



- PLAN NOTES:**
- TOP OF SLAB EL 100'-0", UON
  - INDICATES CHANGE IN T/SLAB ELEVATION
  - INDICATES 5" SLAB ON GRADE OVER COMPACTED GRANULAR FILL REINFORCE WITH #4@12" OC EACH WAY AT 1/3 SLAB DEPTH FROM TOP SURFACE, PER 1 / S 210 SEE GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS
  - PROVIDE SAW CUT JOINTS IN SLAB AS SHOWN ON PLAN. ALIGN CUTS WITH GRIDLINES OR STEPS AS SHOWN, OTHERWISE SPACE EQUALLY. MAXIMUM DISTANCE BETWEEN JOINT NOT TO EXCEED 15'-0".
  - SEE GENERAL NOTES FOR CONCRETE COMPRESSIVE STRENGTH
  - FOR ADDITIONAL INFORMATION, REFER TO THE FOLLOWING DRAWINGS:  
 DRAWING LIST, GENERAL NOTES, AND LOADING DIAGRAMS S0 SERIES DRAWINGS  
 TYPICAL FOUNDATION AND SLAB ON GRADE DETAILS S2 SERIES DRAWINGS  
 STEEL SUPERSTRUCTURE SCHEDULES AND DETAILS S5 SERIES DRAWINGS  
 MASONRY DETAILS S6 SERIES DRAWINGS
  - REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF NONSTRUCTURAL CMU WALLS AND PARTITIONS. PROVIDE 6 / S 210 AT ALL NONSTRUCTURAL CMU WALL LOCATIONS.
  - REFER TO S 111 FOR LOCATIONS OF ALL STRUCTURAL CMU WALLS. ALL CMU WALLS SHOWN IN STRUCTURAL DRAWINGS ARE TO BE CONSIDERED LOAD-BEARING CMU WALLS AS DETAILED IN THE STRUCTURAL DRAWINGS. WALLS NOT INDICATED ON STRUCTURAL DRAWINGS SHALL BE OF THE WALL TYPE SPECIFIED IN THE ARCHITECTURAL DRAWINGS. ANY CMU WALLS SHOWN IN THE ARCHITECTURAL PLANS AND NOT INDICATED IN THE STRUCTURAL DRAWINGS AND SHALL BE DETAILED AS CMU-4 TYPE. NON-LOAD-BEARING CMU WALLS ARE NOT PERMITTED ON SECOND LEVEL FRAMING UON ON PLAN. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN STRUCTURAL AND ARCHITECTURAL DRAWINGS.

**1 FIRST FLOOR PLAN**  
 3/32" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

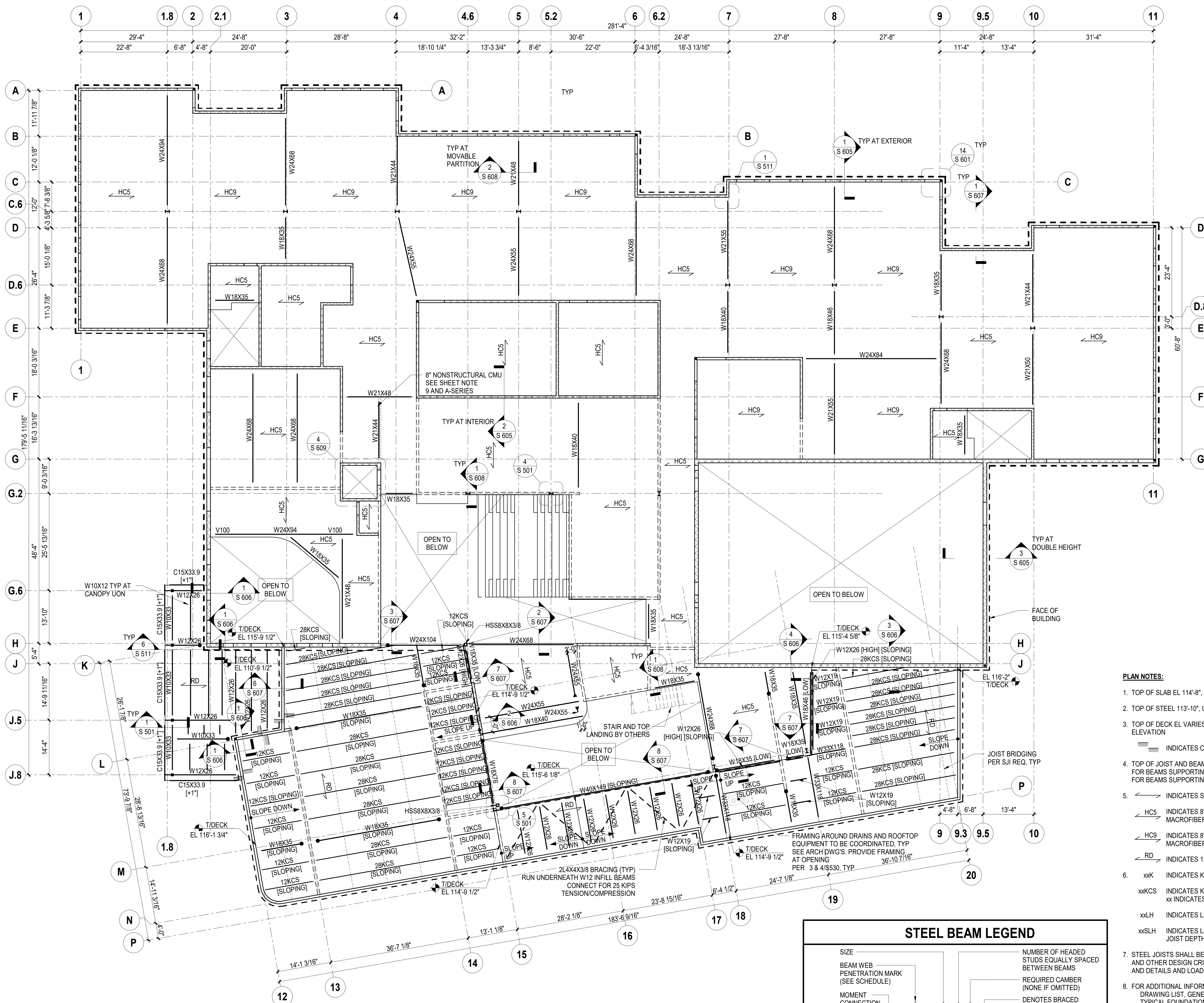
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 PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
 FIRST FLOOR SLAB ON GRADE PLAN

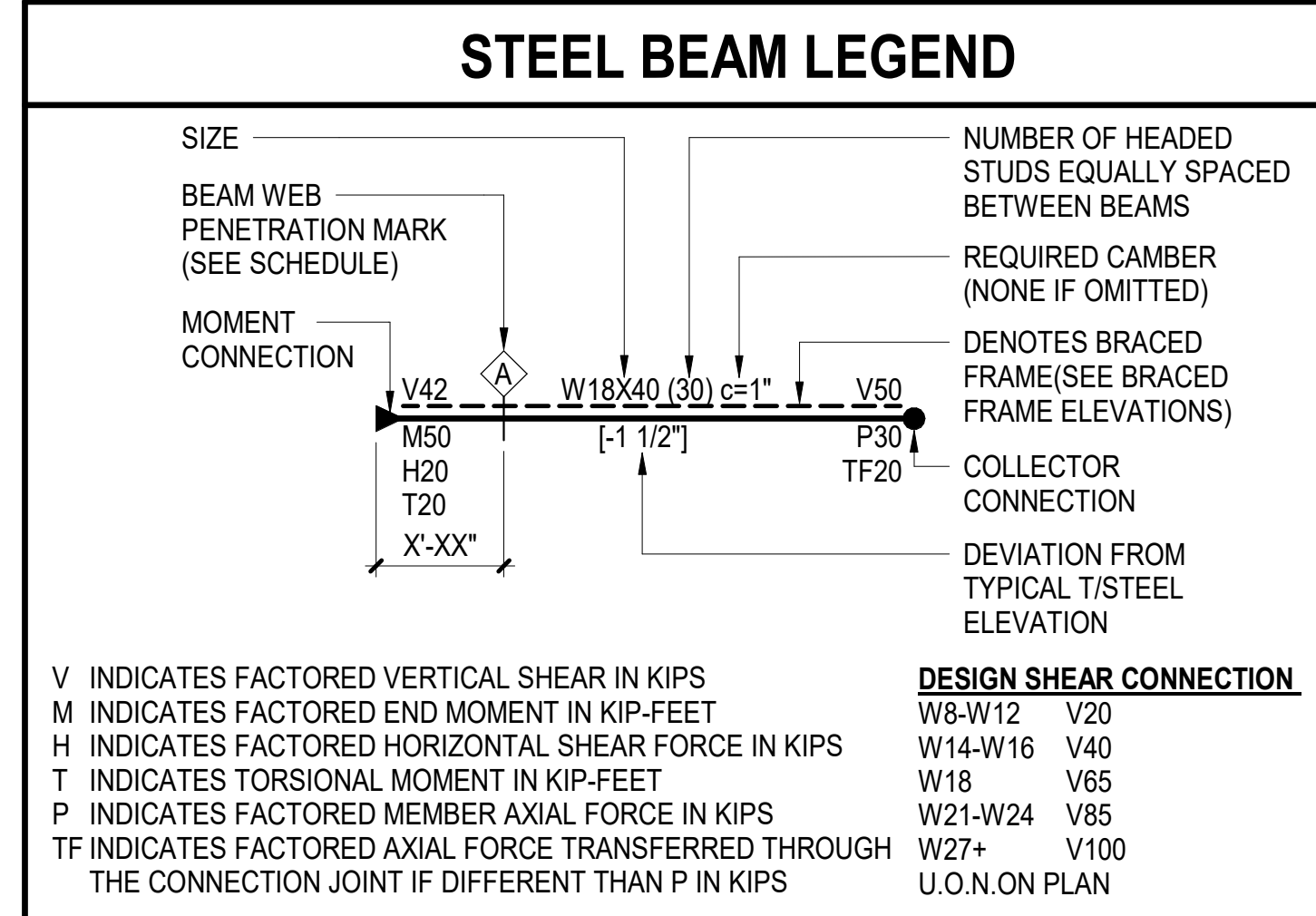
Portage, Michigan

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 101**  
 21-237.25



- PLAN NOTES:**
- TOP OF SLAB EL 114'-8"; UON
  - TOP OF STEEL 113'-10"; UON
  - TOP OF DECK EL VARIES, SEE PLAN. DECK AND STEEL FRAMING SLOPE BETWEEN POINTS OF UNEQUAL ELEVATION  
 — INDICATES CHANGE IN B/DECK ELEVATION
  - TOP OF JOIST AND BEAM EL = BOTTOM OF DECK ELEVATION, UNO  
 FOR BEAMS SUPPORTING K- AND KCS-SERIES JOISTS T/BEAM EL = B/DECK EL MINUS 2 1/2" UNO  
 FOR BEAMS SUPPORTING LH- AND SLH-SERIES JOISTS T/BEAM EL = B/DECK EL MINUS 5" UNO
  - INDICATES SLAB/DECK SPAN DIRECTION  
 HC5 INDICATES 8" NWC (5KS) HOLLOWCORE SLAB WITH 4" NWC TOPPING, PROVIDE SYNTHETIC MACROFIBERS AT 4 PCY IN TOPPING  
 HC9 INDICATES 8" NWC (9KS) HOLLOWCORE SLAB WITH 4" NWC TOPPING, PROVIDE SYNTHETIC MACROFIBERS AT 4 PCY IN TOPPING  
 RD INDICATES 1 1/2" GALVANIZED ROOF DECK TYPE B, 18 GA MIN
  - xxK INDICATES K-SERIES STEEL JOIST, xx INDICATES JOIST DEPTH, SEE NOTE 7  
 xxKCS INDICATES KCS-SERIES STEEL JOIST DESIGNED FOR CONSTANT MOMENT AND SHEAR, xx INDICATES JOIST DEPTH, SEE NOTE 7  
 xxLH INDICATES LH-SERIES STEEL JOIST, xx INDICATES JOIST DEPTH, SEE NOTE 7  
 xxSLH INDICATES LH-SERIES DOUBLE-PITCHED TOP CHORD STEEL JOIST, xx INDICATES MAXIMUM JOIST DEPTH, SEE NOTE 7 AND 1/S 541
  - STEEL JOISTS SHALL BE DESIGNED BY CONTRACTOR BASED ON LOADING, MEMBER DEPTH SEAT DEPTH, AND OTHER DESIGN CRITERIA INDICATED ON THE STRUCTURAL DOCUMENTS. REFER TO JOIST SCHEDULE AND DETAILS AND LOADING DIAGRAMS.
  - FOR ADDITIONAL INFORMATION, REFER TO THE FOLLOWING DRAWINGS:  
 DRAWING LIST, GENERAL NOTES, AND LOADING DIAGRAMS  
 TYPICAL FOUNDATION DETAILS  
 STEEL SUPERSTRUCTURE SCHEDULES AND DETAILS  
 MASONRY DETAILS  
 S0 SERIES DRAWINGS  
 S2 SERIES DRAWINGS  
 S5 SERIES DRAWINGS  
 S6 SERIES DRAWINGS
  - REFER TO S 112 FOR LOCATIONS OF ALL STRUCTURAL CMU WALLS. ALL CMU WALLS SHOWN IN STRUCTURAL DRAWINGS ARE TO BE CONSIDERED LOAD-BEARING CMU WALLS AS DETAILED IN THE STRUCTURAL DRAWINGS. WALLS NOT INDICATED ON STRUCTURAL DRAWINGS SHALL BE OF THE WALL TYPE SPECIFIED IN THE ARCHITECTURAL DRAWINGS. ANY CMU WALLS SHOWN IN THE ARCHITECTURAL PLANS AND NOT INDICATED IN THE STRUCTURAL DRAWINGS AND SHALL BE DETAILED AS CMU-4 TYPE. NON-LOAD-BEARING CMU WALLS ARE PERMITTED ON SECOND LEVEL FRAMING UON ON PLAN. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN STRUCTURAL AND ARCHITECTURAL DRAWINGS.
  - ALL STEEL EXPOSED TO WEATHER, INCLUDING CANOPY FRAMING AND V-COLUMNS SHALL BE HOT DIP GALVANIZED.



**1 SECOND FLOOR FRAMING PLAN**  
 3/32" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
 SECOND FLOOR FRAMING PLAN

Portage, Michigan

DATE  
 JUNE 30, 2023  
 SHEET NUMBER  
 S 102  
 21-237.25

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

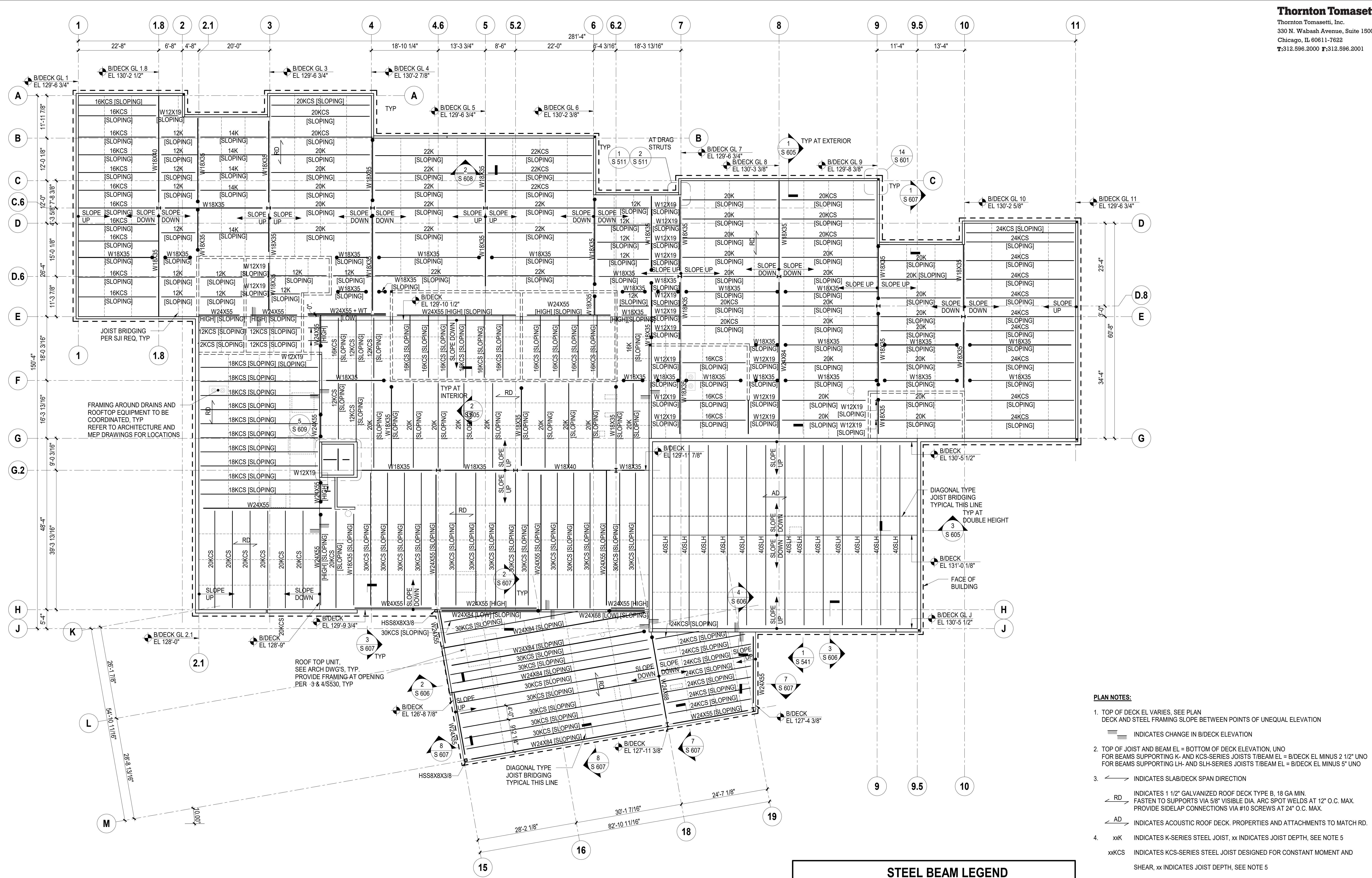
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SHEET TITLE  
 ROOF FRAMING PLAN

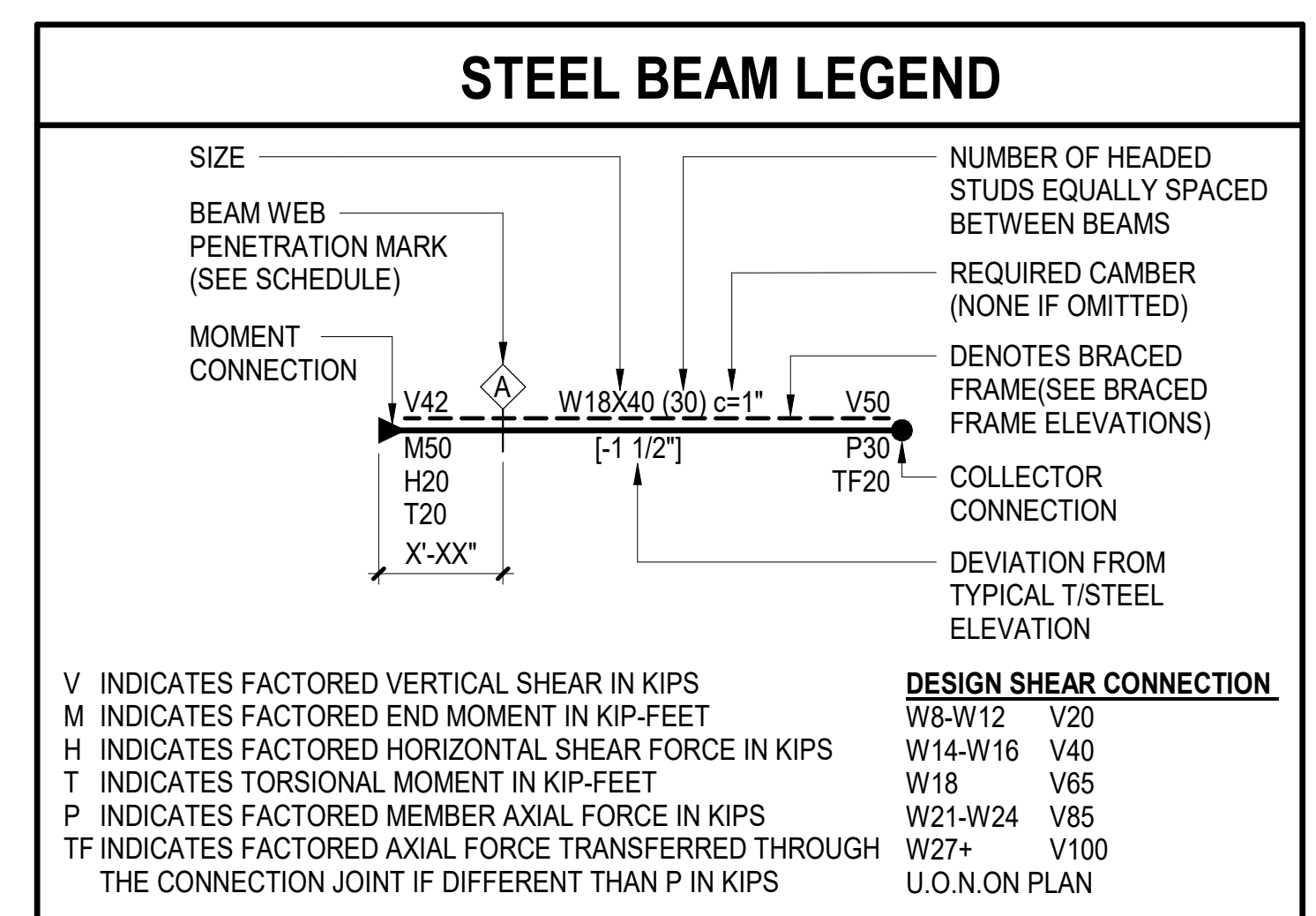
Portage, Michigan

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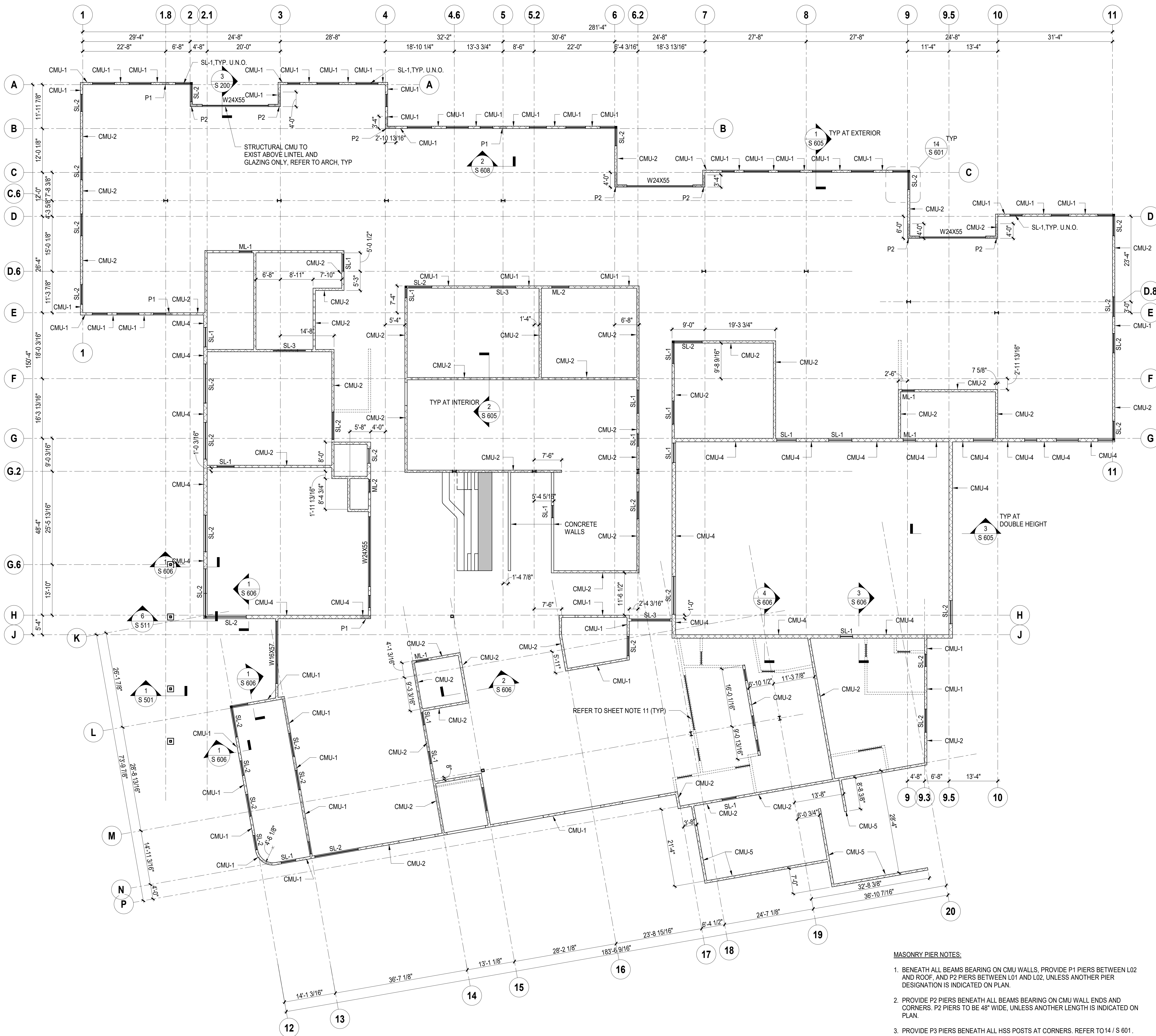
SHEET NUMBER  
**S 103**  
 21-237.25



- PLAN NOTES:**
- TOP OF DECK EL VARIES. SEE PLAN DECK AND STEEL FRAMING SLOPE BETWEEN POINTS OF UNEQUAL ELEVATION  
 ■■■ INDICATES CHANGE IN B/DECK ELEVATION
  - TOP OF JOIST AND BEAM EL = BOTTOM OF DECK ELEVATION. UNO FOR BEAMS SUPPORTING K- AND KCS-SERIES JOISTS T/BEAM EL = B/DECK EL MINUS 2 1/2" UNO FOR BEAMS SUPPORTING LH- AND SLH-SERIES JOISTS T/BEAM EL = B/DECK EL MINUS 5" UNO
  - INDICATES SLAB/DECK SPAN DIRECTION  
 RD INDICATES 1 1/2" GALVANIZED ROOF DECK TYPE B, 18 GA MIN. FASTEN TO SUPPORTS VIA 5/8" VISIBLE DIA. ARC SPOT WELDS AT 12" O.C. MAX. PROVIDE SIDELAP CONNECTIONS VIA #10 SCREWS AT 24" O.C. MAX.  
 AD INDICATES ACOUSTIC ROOF DECK. PROPERTIES AND ATTACHMENTS TO MATCH RD.
  - xxK INDICATES K-SERIES STEEL JOIST, xx INDICATES JOIST DEPTH. SEE NOTE 5  
 xxKCS INDICATES KCS-SERIES STEEL JOIST DESIGNATED FOR CONSTANT MOMENT AND SHEAR, xx INDICATES JOIST DEPTH. SEE NOTE 5  
 xxLH INDICATES LH-SERIES STEEL JOIST, xx INDICATES JOIST DEPTH. SEE NOTE 5  
 xxSLH INDICATES LH-SERIES DOUBLE-PITCHED TOP CHORD STEEL JOIST, xx INDICATES MAXIMUM JOIST DEPTH. SEE NOTE 5 AND 1 / S 541
  - STEEL JOISTS SHALL BE DESIGNED BY CONTRACTOR BASED ON LOADING, MEMBER DEPTH SEAT DEPTH, AND OTHER DESIGN CRITERIA INDICATED ON THE STRUCTURAL DOCUMENTS. REFER TO JOIST SCHEDULE AND DETAILS AND LOADING DIAGRAMS.
  - FOR ADDITIONAL INFORMATION, REFER TO THE FOLLOWING DRAWINGS:  
 DRAWING LIST, GENERAL NOTES, AND LOADING DIAGRAMS S0 SERIES DRAWINGS  
 TYPICAL FOUNDATION DETAILS S2 SERIES DRAWINGS  
 STEEL SUPERSTRUCTURE SCHEDULES AND DETAILS S5 SERIES DRAWINGS  
 MASONRY DETAILS S6 SERIES DRAWINGS
  - ALL CMU WALLS SHOWN IN STRUCTURAL DRAWINGS ARE TO BE CONSIDERED LOAD-BEARING CMU WALLS AS DETAILED IN THE STRUCTURAL DRAWINGS. WALLS NOT INDICATED ON STRUCTURAL DRAWINGS SHALL BE OF THE WALL TYPE SPECIFIED IN THE ARCHITECTURAL DRAWINGS. ANY CMU WALLS SHOWN IN THE ARCHITECTURAL PLANS AND NOT INDICATED IN THE STRUCTURAL DRAWINGS AND SHALL BE DETAILED AS PER CMU-4 TYPE, NON-LOAD-BEARING CMU WALLS ARE NOT PERMITTED ON SECOND LEVEL FRAMING UNON ON PLAN. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN STRUCTURAL AND ARCHITECTURAL DRAWINGS.



**1 ROOF FRAMING PLAN**  
 3/32" = 1'-0"



**CMU WALL LINTELS:**

- SEE ARCHITECTURAL DRAWINGS FOR CMU WALL OPENING DIMENSIONS.
- ML-xx INDICATES MASONRY LINTEL  
 SL-xx INDICATES STEEL LINTEL  
 # - INDICATES EXTENSION OF LINTEL TO MATCH EXTENT OF OPENING BELOW - SEE DETAIL 4 / S 600
- ALL LINTELS TO BE SL-1, U.O.N. ON PLAN
- PROVIDE STEEL BEAM LINTELS AS INDICATED ON THIS DRAWING  
 SL-1 INDICATES W8X10  
 SL-2 INDICATES W16X26  
 SL-3 INDICATES W16X36
- PROVIDE LINTELS AT ALL WALL OPENINGS AND RECESSES, INCLUDING MECHANICAL OPENINGS AND PENETRATIONS, CABINETS RECESSED INTO THE WALL, ETC.
- SEE ARCHITECTURAL AND MEP DRAWINGS AND OTHER PROJECT DOCUMENTS FOR ADDITIONAL WALL OPENINGS AND PENETRATIONS NOT SHOWN ON THIS DRAWING. THIS DRAWING DOES NOT SHOW ALL THE OPENINGS THAT ARE REQUIRED.
- SEE ARCHITECTURAL DRAWINGS FOR BRICK VENEER AND VENEER OPENINGS.

**PLAN NOTES:**

- SEE ARCH FOR CMU WALL DIMENSIONS INCLUDING ENDS OF WALL AND EDGES OF WALL AT CMU OPENINGS.
- CMU-X INDICATES CMU WALL TYPE.  
 DCMU-X INDICATES DCMU WALL TYPE. REFER TO ARCHITECTURAL DRAWINGS FOR NON-STRUCTURAL DCMU APPLICATION.  
 P-X INDICATES PIER, TYPE PER 8 / S 600
- WCJ INDICATES WALL CONTROL JOINT. ASSUME WCJ @ 25'-0" MAX.
- WCJ DIMENSIONS SHOWN ARE NOMINAL. ADJUST AS NECESSARY FOR ACTUAL MASONRY UNIT SIZES BUT NOT MORE THAN 2" AND SO THAT NO REMAINING PIER IS LESS THAN 2'-6" IN WIDTH.
- WCJ DIMENSIONS FROM OPENING ARE FROM END OF CMU, NOT FROM FACE BRICK
- ANY WALL SEGMENTS OF 3'-0" OR LESS SHALL BE WALL TYPE CMU-1.
- WALL ENDS SUPPORTING SPANDRELS SHALL BE WALL TYPE CMU-1 FOR A LENGTH OF 4'-6" FROM END OF WALL. PROVIDE AN ADDITIONAL #5 VERTICAL BAR FULL HEIGHT IN THE CELLS DIRECTLY BELOW THE BEARING OF THE SPANDREL BEAM FRAMING IN.
- PROVIDE WALL TYPE CMU-2 ABOVE OPENINGS
- SEE LEVEL ABOVE FOR LOCATION OF WCJ AND MATCH.
- SEE SHEET S 600 FOR CMU WALL TYPE SCHEDULE
- ALL CMU WALLS SHOWN IN STRUCTURAL DRAWINGS ARE TO BE CONSIDERED LOAD-BEARING CMU WALLS AS DETAILED IN THE STRUCTURAL DRAWINGS. WALLS NOT INDICATED ON STRUCTURAL DRAWINGS SHALL BE OF THE WALL TYPE SPECIFIED IN THE ARCHITECTURAL DRAWINGS. ANY CMU WALLS SHOWN IN THE ARCHITECTURAL PLANS AND NOT INDICATED IN THE STRUCTURAL DRAWINGS AND SHALL BE DETAILED AS CMU-4 TYPE. NON-LOAD-BEARING CMU WALLS ARE NOT PERMITTED ON SECOND LEVEL FRAMING UPON PLAN. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES BETWEEN STRUCTURAL AND ARCHITECTURAL DRAWINGS.

**MASONRY PIER NOTES:**

- BENEATH ALL BEAMS BEARING ON CMU WALLS, PROVIDE P1 PIERS BETWEEN L02 AND ROOF, AND P2 PIERS BETWEEN L01 AND L02, UNLESS ANOTHER PIER DESIGNATION IS INDICATED ON PLAN.
- PROVIDE P2 PIERS BENEATH ALL BEAMS BEARING ON CMU WALL ENDS AND CORNERS. P2 PIERS TO BE 48" WIDE, UNLESS ANOTHER LENGTH IS INDICATED ON PLAN.
- PROVIDE P3 PIERS BENEATH ALL HSS POSTS AT CORNERS. REFER TO 14 / S 601.
- PROVIDE (2) #5 MIN. WITH FULLY GROUTED FIRST CELL ON EITHER SIDE OF ALL MASONRY WALL OPENINGS, UNLESS ANOTHER PIER DESIGNATION IS INDICATED ON PLAN.

**1 FIRST FLOOR CMU PLAN**

3/32" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

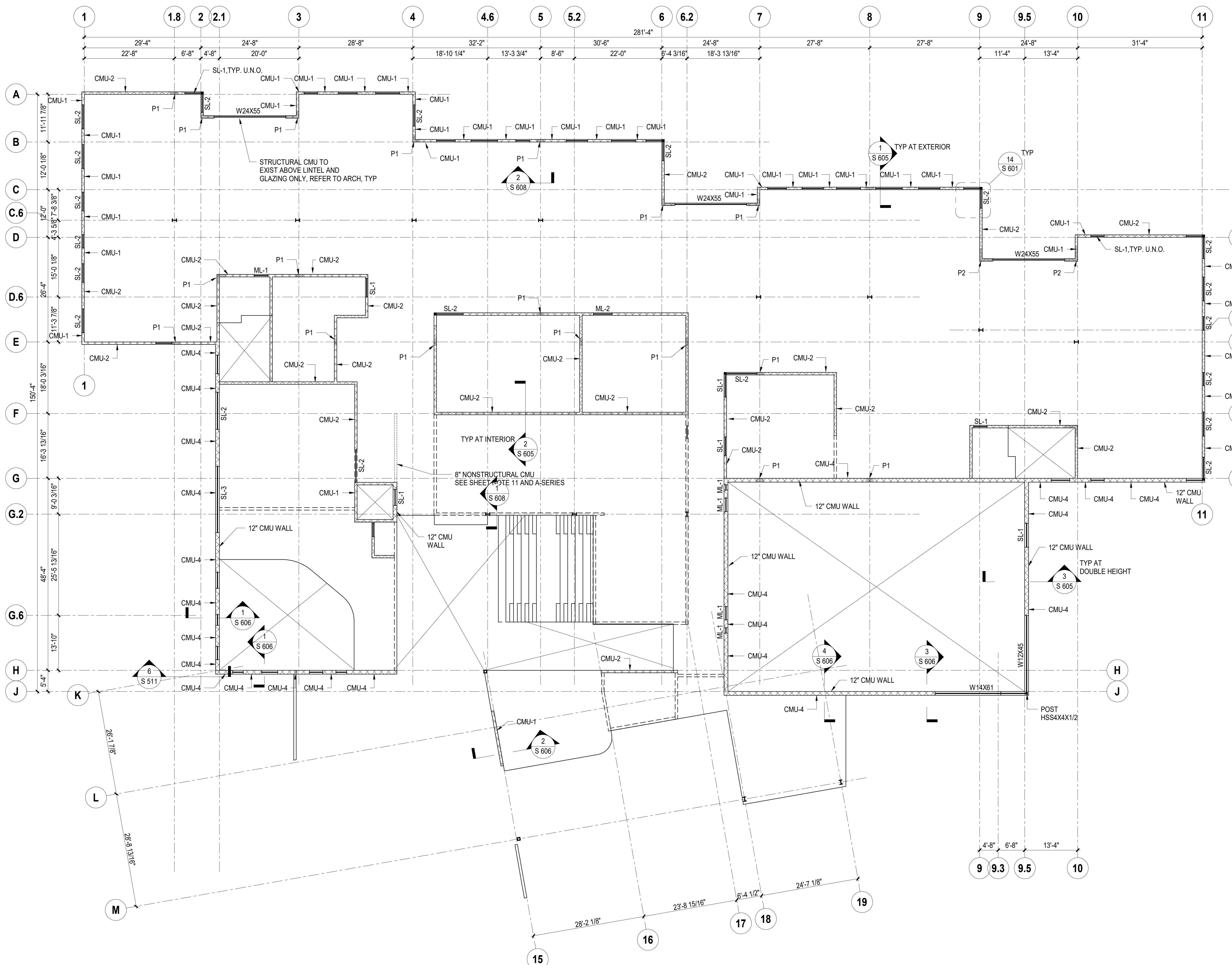
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SHEET TITLE  
 FIRST FLOOR CMU PLAN

Portage, Michigan

DATE  
 JUNE 30, 2023

SHEET NUMBER  
 S 111  
 21-237.25



- CMU WALL LINTELS:**
- SEE ARCHITECTURAL DRAWINGS FOR CMU WALL OPENING DIMENSIONS.
  - ML-xx INDICATES MASONRY LINTEL  
SL-xx INDICATES STEEL LINTEL  
# - INDICATES EXTENSION OF LINTEL TO MATCH EXTENT OF OPENING BELOW - SEE DETAIL 4 / S 600
  - ALL LINTELS TO BE SL-1, U.O.N. ON PLAN
  - PROVIDE STEEL BEAM LINTELS AS INDICATED ON THIS DRAWING  
SL-1 INDICATES W8X10  
SL-2 INDICATES W16X26  
SL-3 INDICATES W16X36
  - PROVIDE LINTELS AT ALL WALL OPENINGS AND RECESSES, INCLUDING MECHANICAL OPENINGS AND PENETRATIONS, CABINETS RECESSED INTO THE WALL, ETC.
  - SEE ARCHITECTURAL AND MEP DRAWINGS AND OTHER PROJECT DOCUMENTS FOR ADDITIONAL WALL OPENINGS AND PENETRATIONS NOT SHOWN ON THIS DRAWING. THIS DRAWING DOES NOT SHOW ALL THE OPENINGS THAT ARE REQUIRED.
  - SEE ARCHITECTURAL DRAWINGS FOR BRICK VENEER AND VENEER OPENINGS.

- PLAN NOTES:**
- SEE ARCH FOR CMU WALL DIMENSIONS INCLUDING ENDS OF WALL AND EDGES OF WALL AT CMU OPENINGS.
  - CMU-X INDICATES CMU WALL TYPE.  
DCMU-X INDICATES DCMU WALL TYPE. REFER TO ARCHITECTURAL DRAWINGS FOR NON-STRUCTURAL DCMU APPLICATION.  
P-X INDICATES PIER, TYPE PER 8 / S 600
  - WCJ INDICATES WALL CONTROL JOINT. ASSUME WCJ @ 25'-0" MAX.
  - WCJ DIMENSIONS SHOWN ARE NOMINAL. ADJUST AS NECESSARY FOR ACTUAL MASONRY UNIT SIZES BUT NOT MORE THAN 2" AND SO THAT NO REMAINING PIER IS LESS THAN 2'-6" IN WIDTH.
  - WCJ DIMENSIONS FROM OPENING ARE FROM END OF CMU, NOT FROM FACE BRICK
  - ANY WALL SEGMENTS OF 3'-0" OR LESS SHALL BE WALL TYPE CMU-1.
  - WALL ENDS SUPPORTING SPANDRELS SHALL BE WALL TYPE CMU-1 FOR A LENGTH OF 4'-6" FROM END OF WALL. PROVIDE AN ADDITIONAL #5 VERTICAL BAR FULL HEIGHT IN THE CELLS DIRECTLY BELOW THE BEARING OF THE SPANDREL BEAM FRAMING IN.
  - PROVIDE WALL TYPE CMU-2 ABOVE OPENINGS
  - SEE LEVEL ABOVE FOR LOCATION OF WCJ AND MATCH.
  - SEE SHEET S 600 FOR CMU WALL TYPE SCHEDULE

- MASONRY PIER NOTES:**
- BENEATH ALL BEAMS BEARING ON CMU WALLS, PROVIDE P1 PIERS BETWEEN L02 AND ROOF, AND P2 PIERS BETWEEN L01 AND L02, UNLESS ANOTHER PIER DESIGNATION IS INDICATED ON PLAN.
  - PROVIDE P2 PIERS BENEATH ALL BEAMS BEARING ON CMU WALL ENDS AND CORNERS. P2 PIERS TO BE 48" WIDE, UNLESS ANOTHER LENGTH IS INDICATED ON PLAN.
  - PROVIDE P3 PIERS BENEATH ALL HSS POSTS AT CORNERS. REFER TO 14 / S 601.
  - PROVIDE (2) #5 MIN. WITH FULLY GROUTED FIRST CELL ON EITHER SIDE OF ALL MASONRY WALL OPENINGS, UNLESS ANOTHER PIER DESIGNATION IS INDICATED ON PLAN.

**1 SECOND FLOOR CMU PLAN**  
 3/32" = 1'-0"

ISSUED FOR DATE

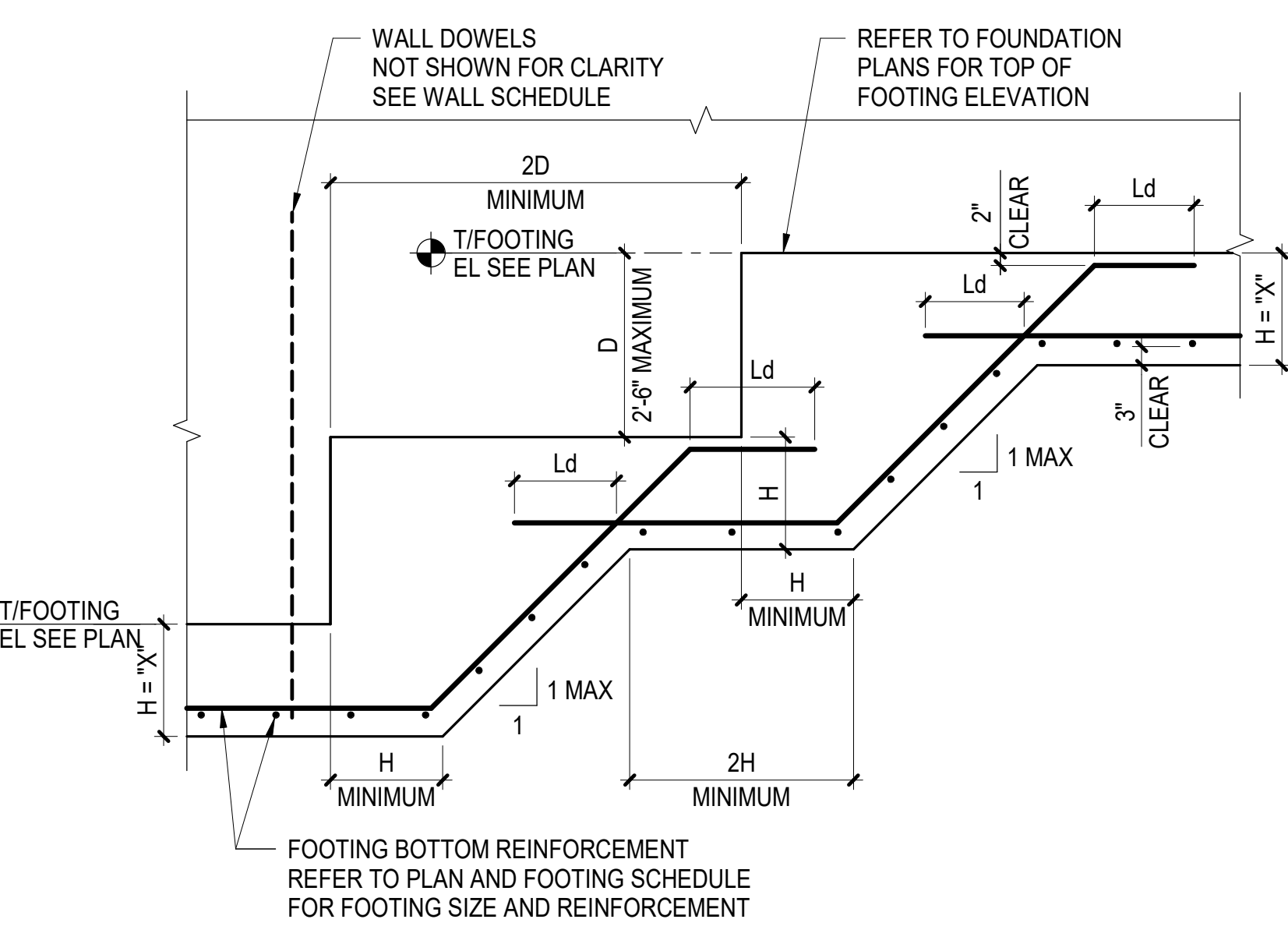
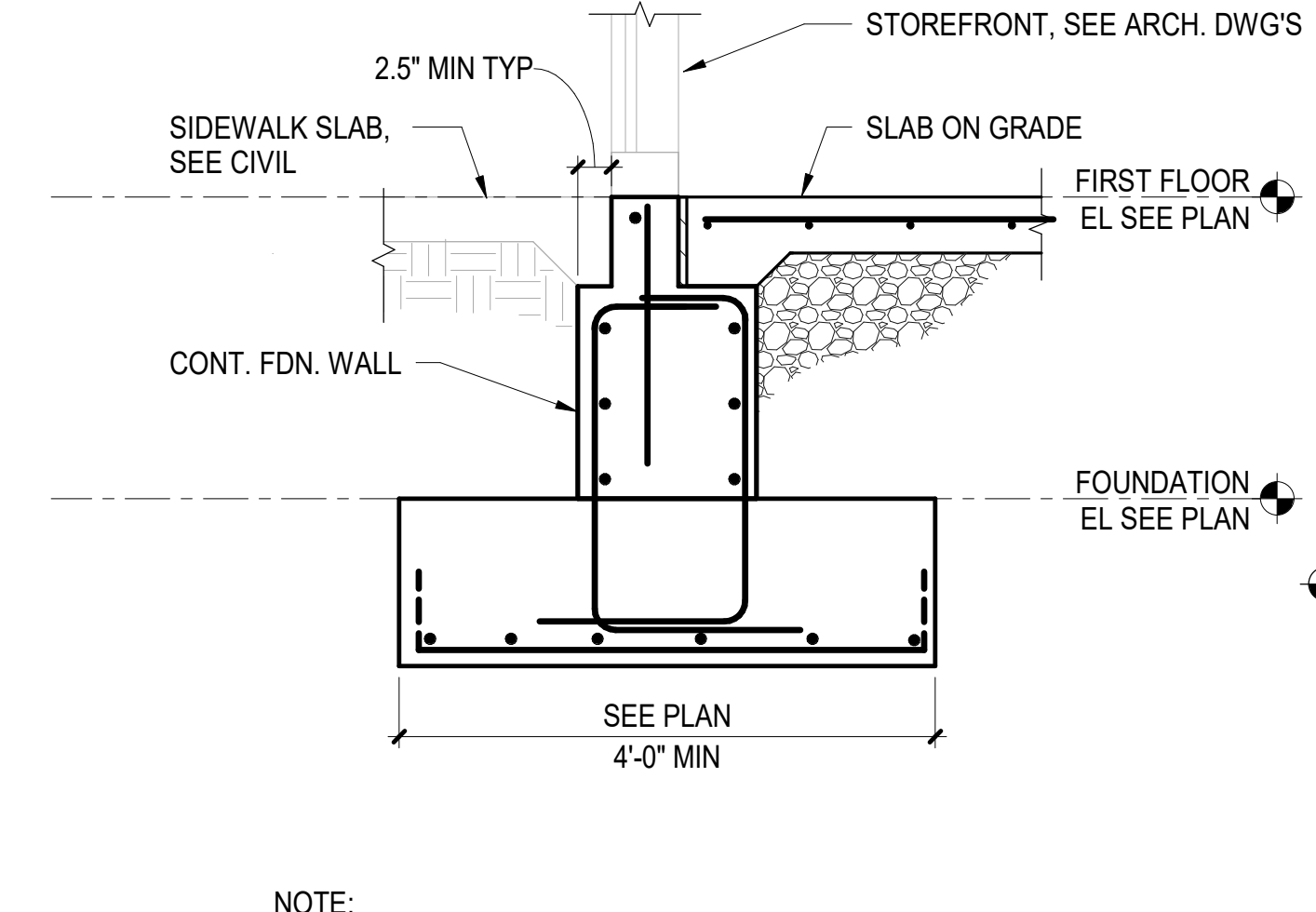
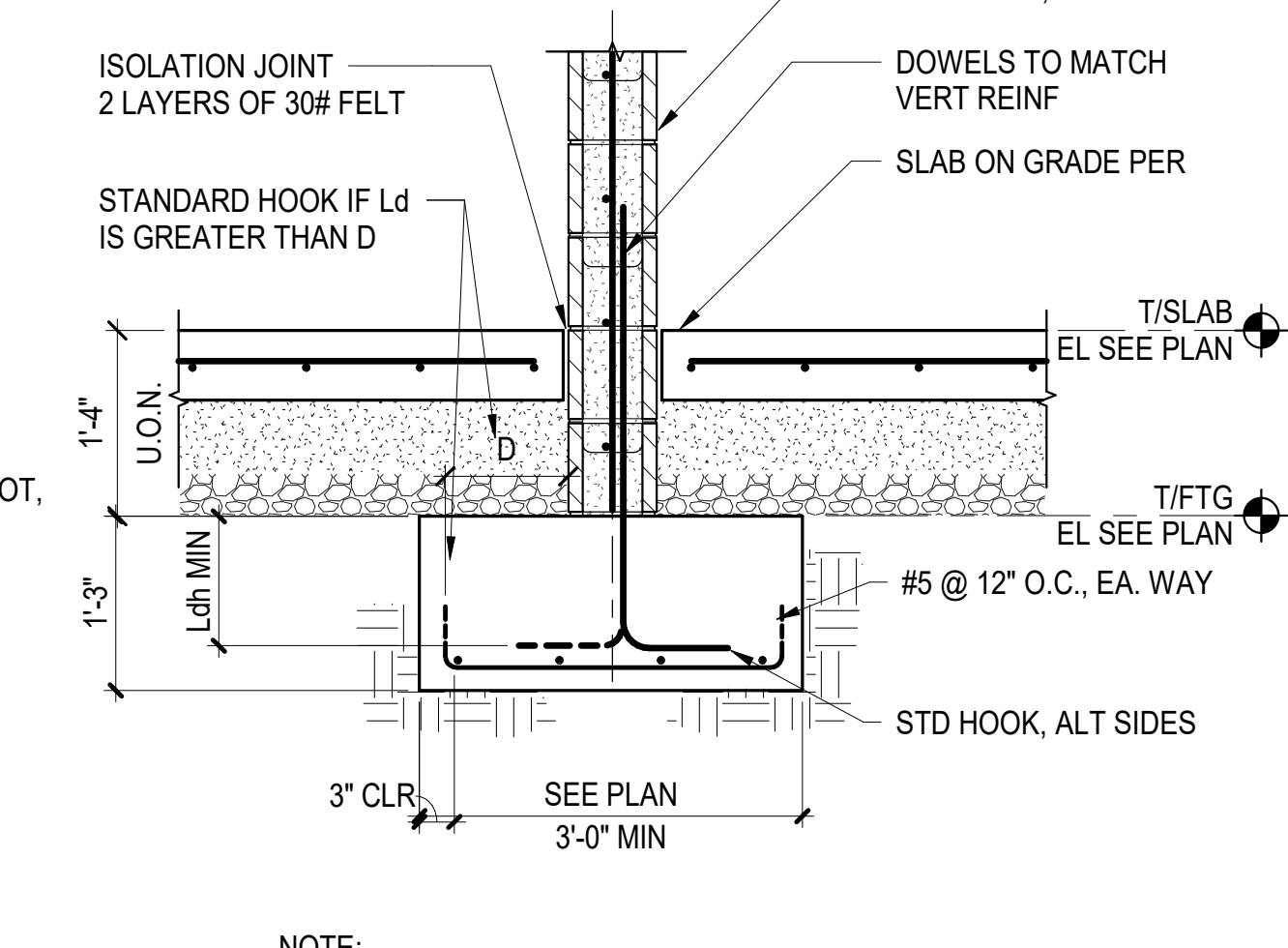
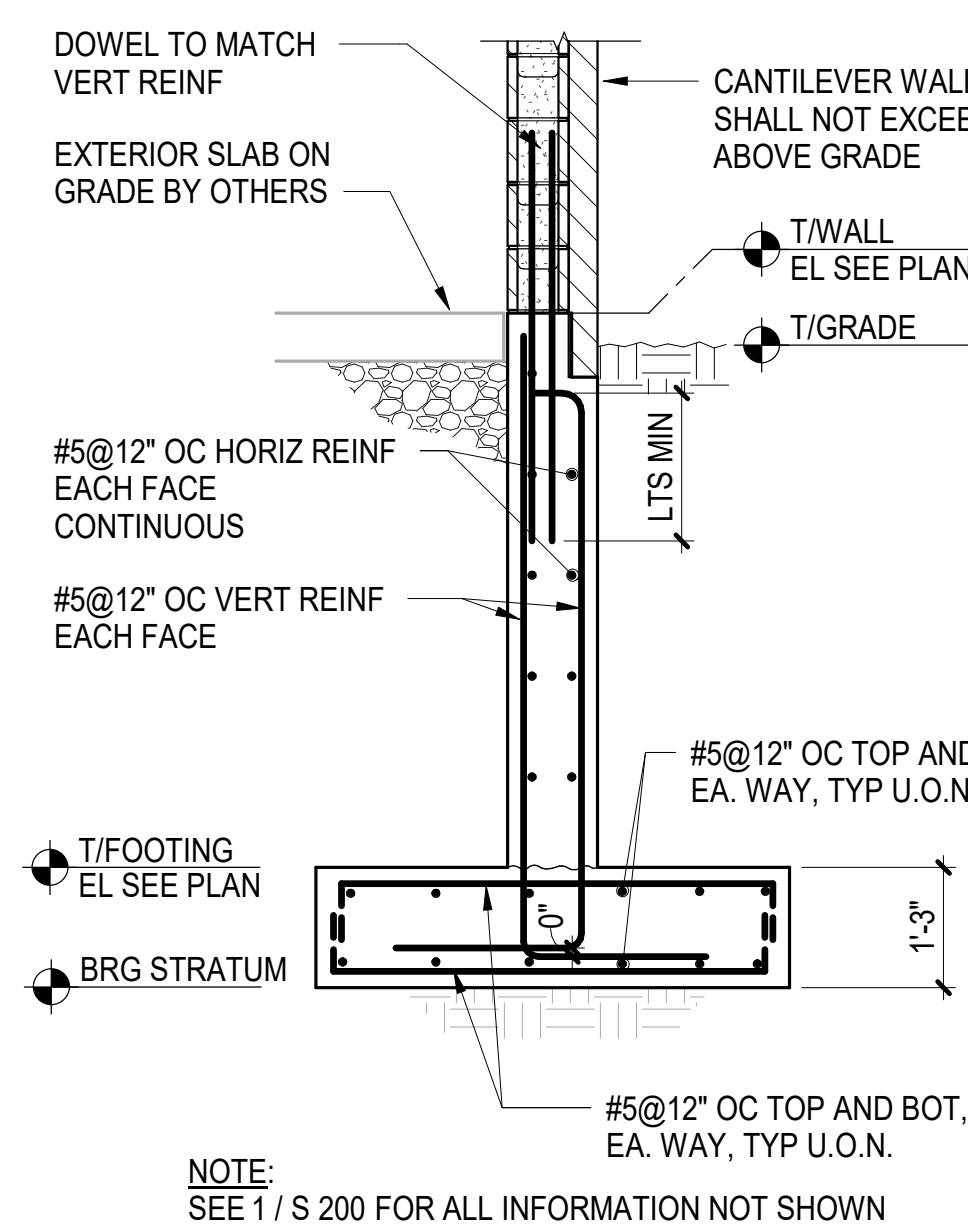
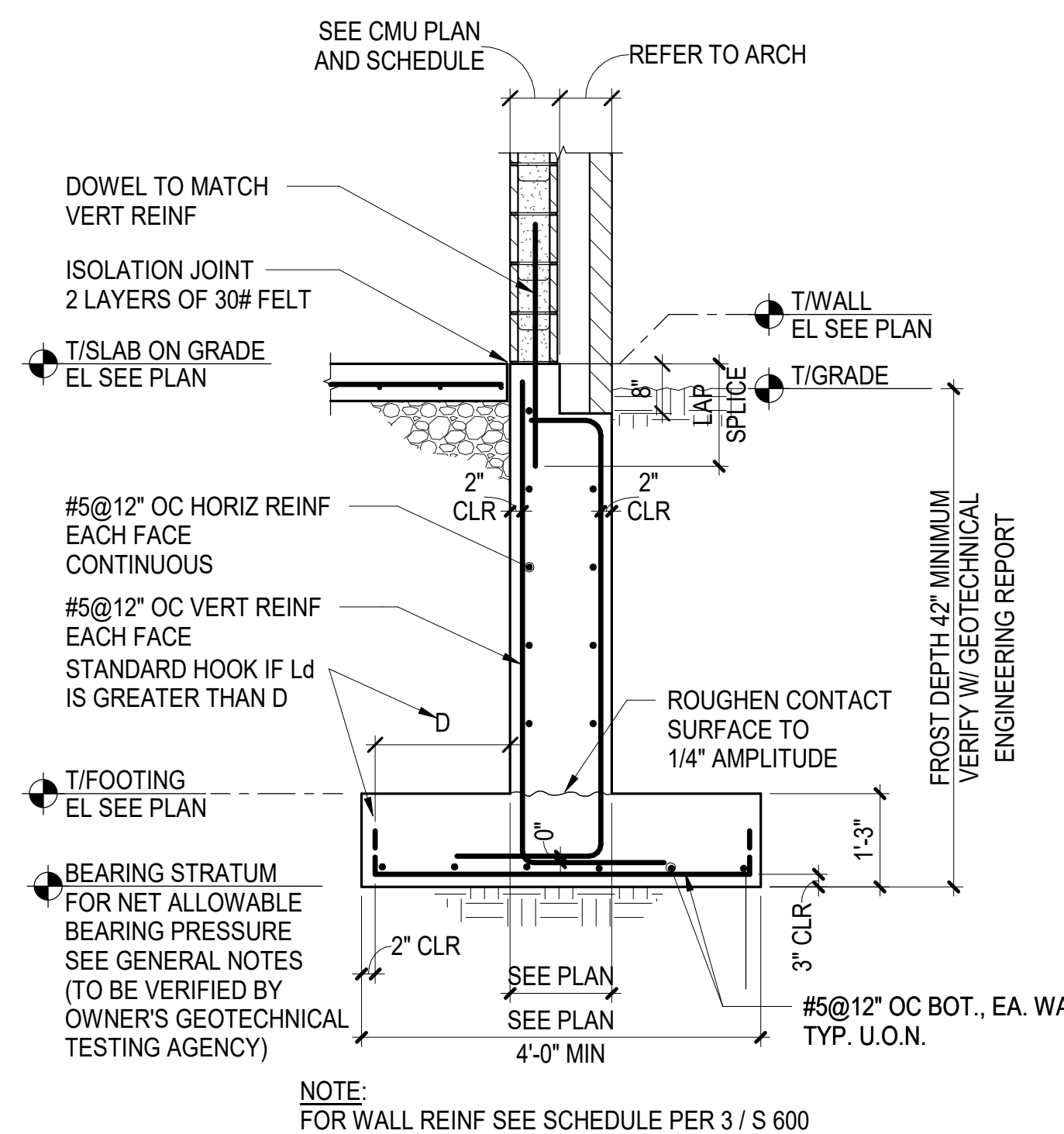
PROJECT TITLE  
**HAVERRILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**SECOND FLOOR CMU PLAN**

DATE  
**JUNE 30, 2023**  
 SHEET NUMBER  
**S 112**  
 21-237.25



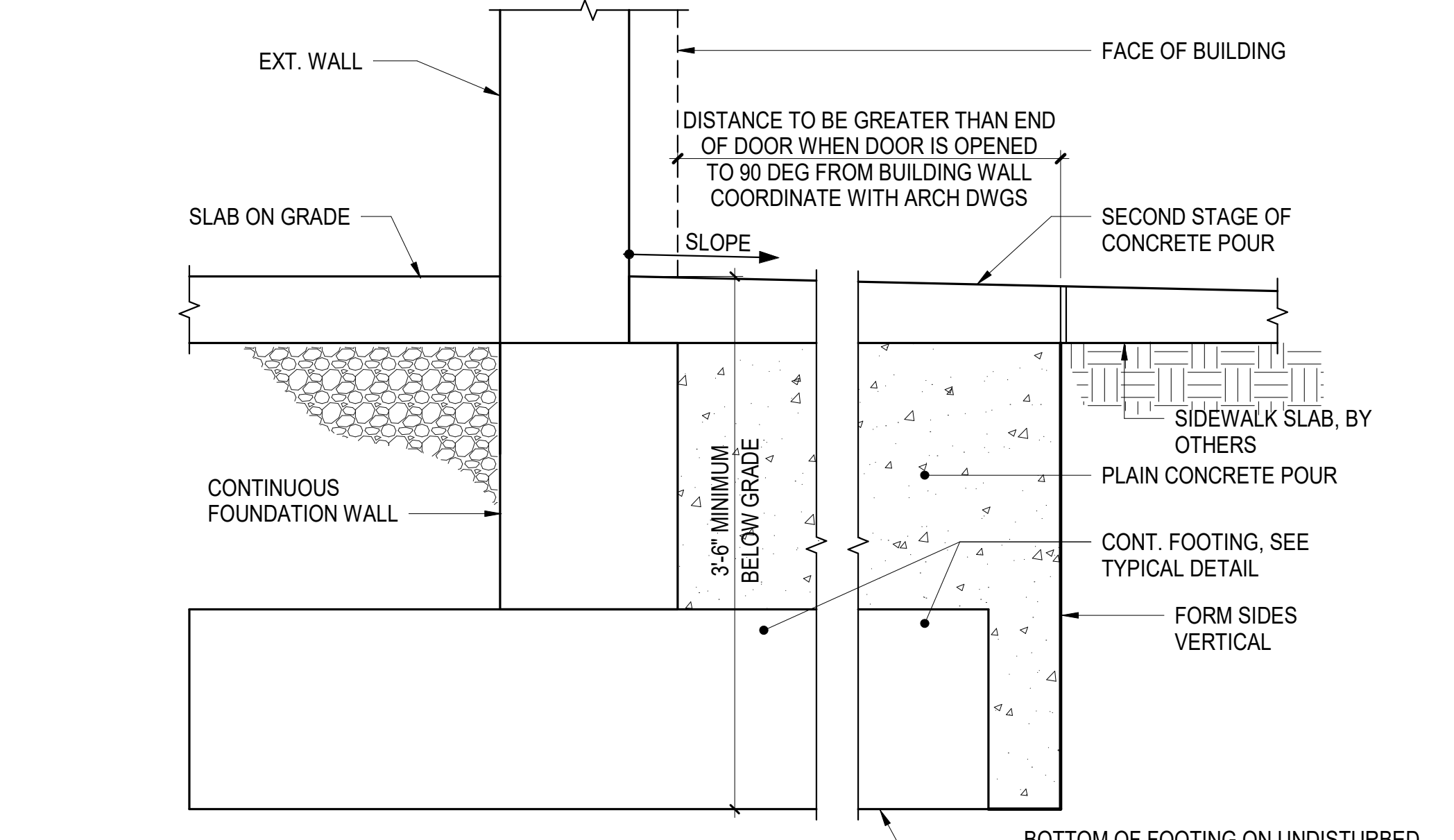
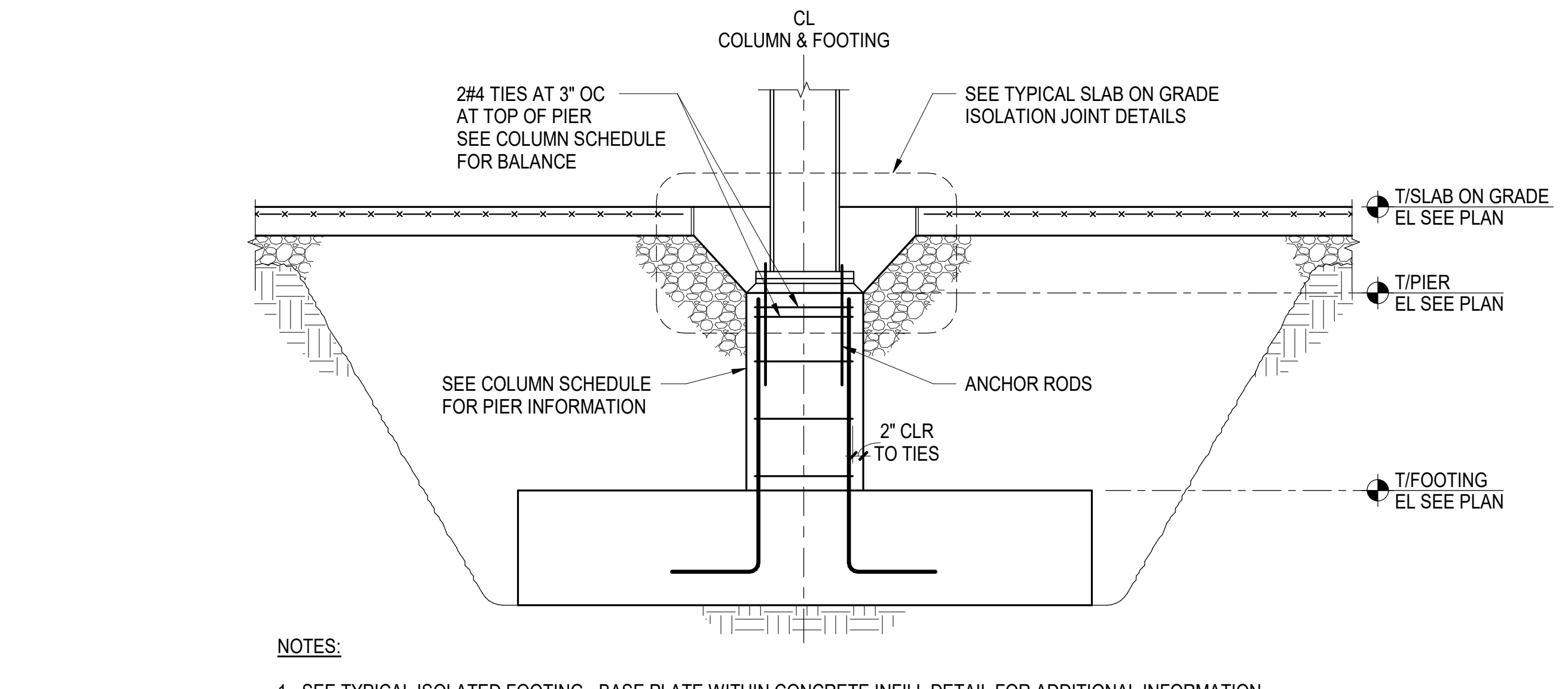
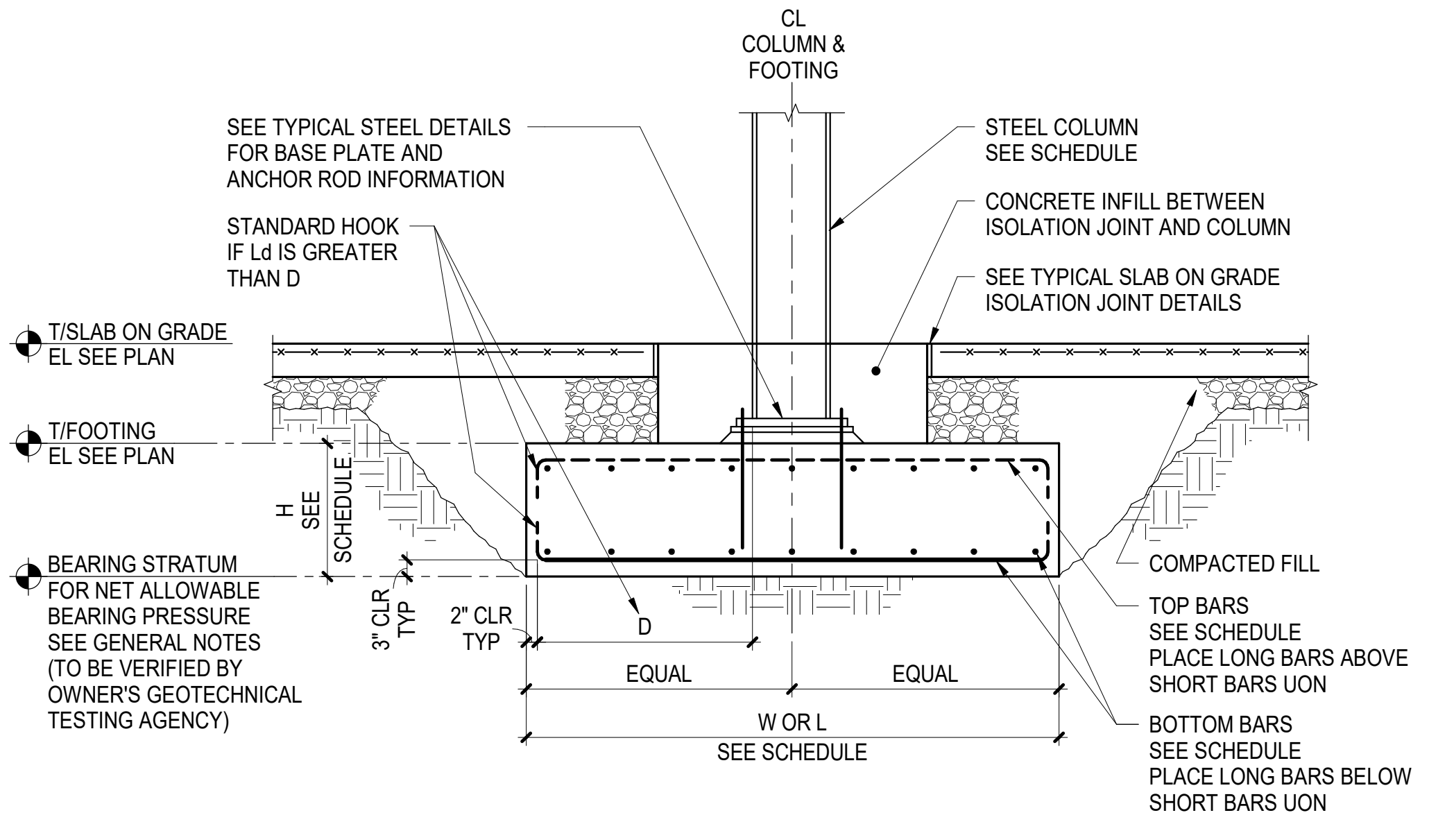
**1** TYPICAL CONTINUOUS FOOTING AT FROST WALL  
 NOT TO SCALE

**1A** TYPICAL CONTINUOUS FOOTING AT SCREEN WALL  
 NOT TO SCALE

**2** INTERIOR CMU WALL FOOTING  
 3/4" = 1'-0"

**3** STOREFRONT SECTION  
 3/4" = 1'-0"

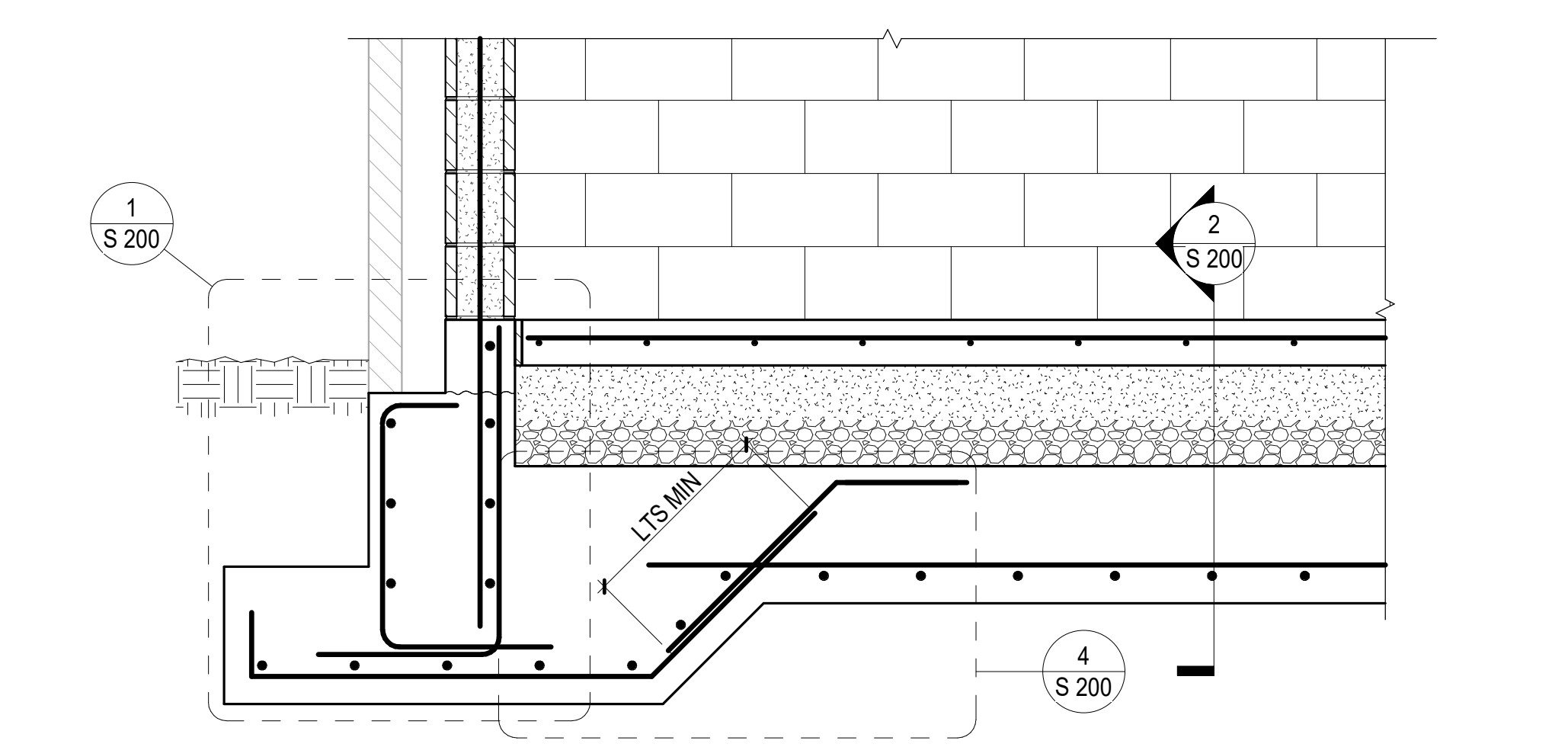
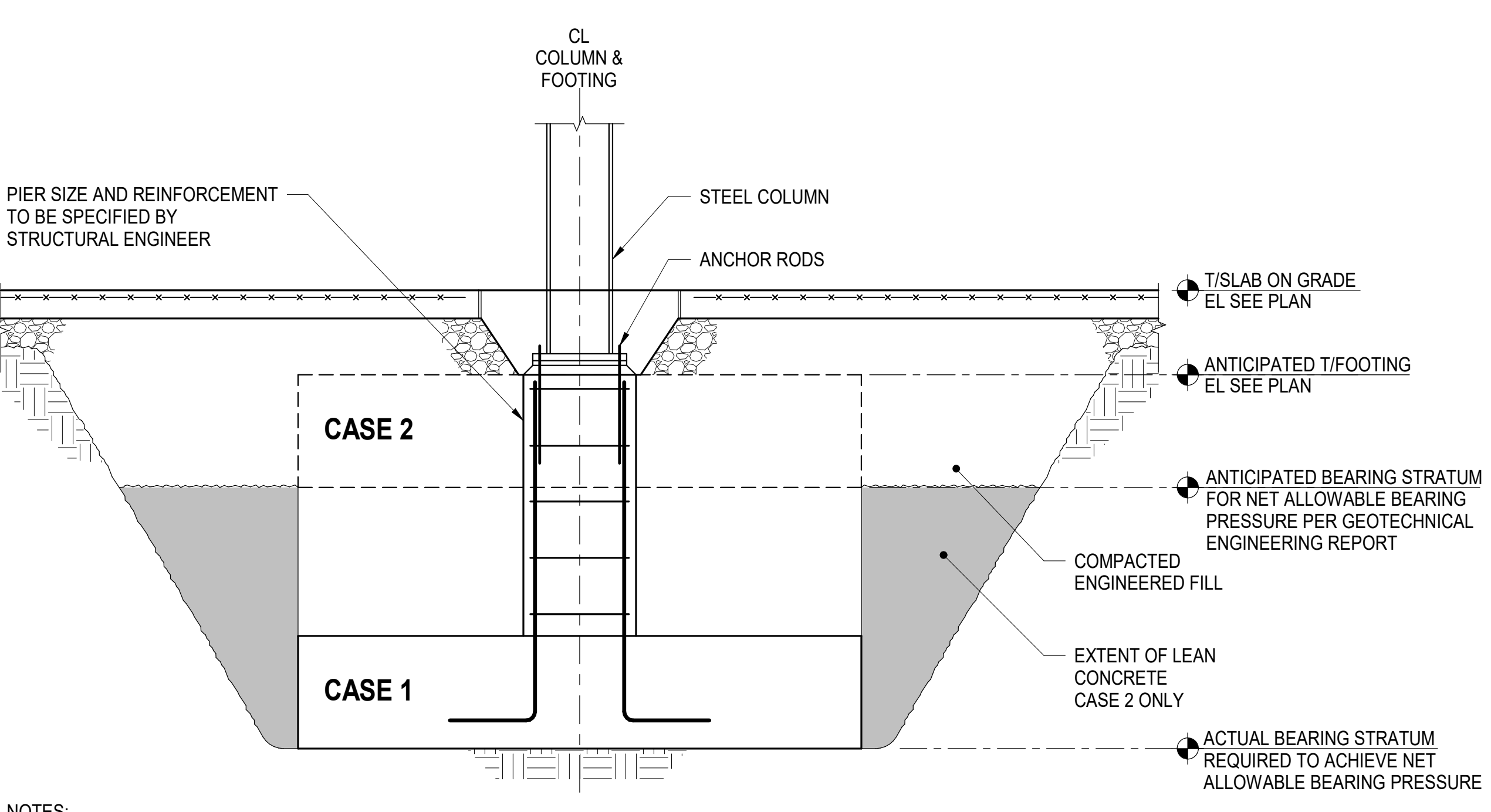
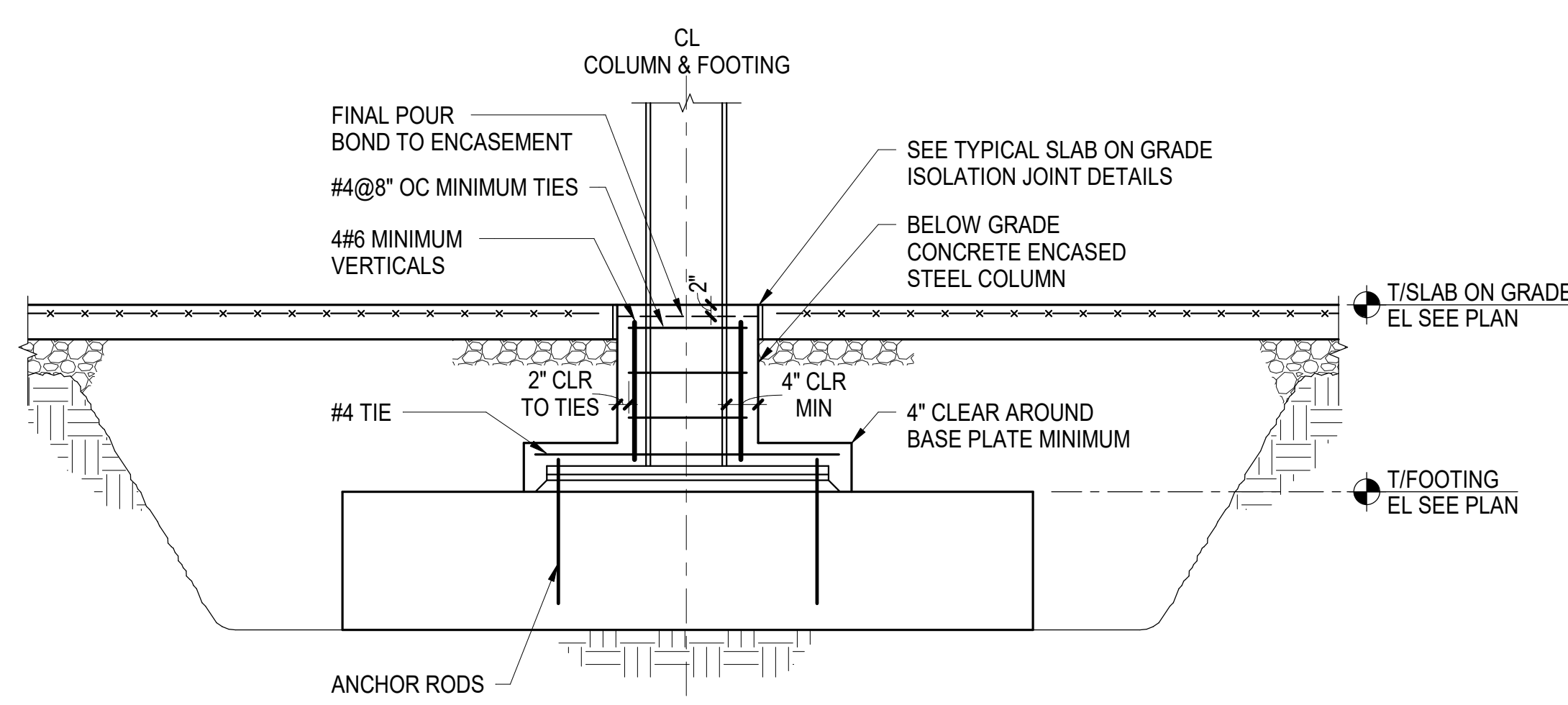
**4** TYPICAL STEPPED WALL FOOTING DETAIL  
 NOT TO SCALE



**5** TYPICAL ISOLATED FOOTING - BASE PLATE WITHIN CONCRETE INFILL  
 NOT TO SCALE

**6** TYPICAL PIER ON ISOLATED FOOTING  
 NOT TO SCALE

**7** TYPICAL FROST PROTECTION AT EXTERIOR ENTRY WITH OUTSWING DOORS  
 1" = 1'-0"



**8** TYPICAL ISOLATED FOOTING - CONCRETE ENCASED COLUMN AND BASE PLATE  
 NOT TO SCALE

**NOTES:**

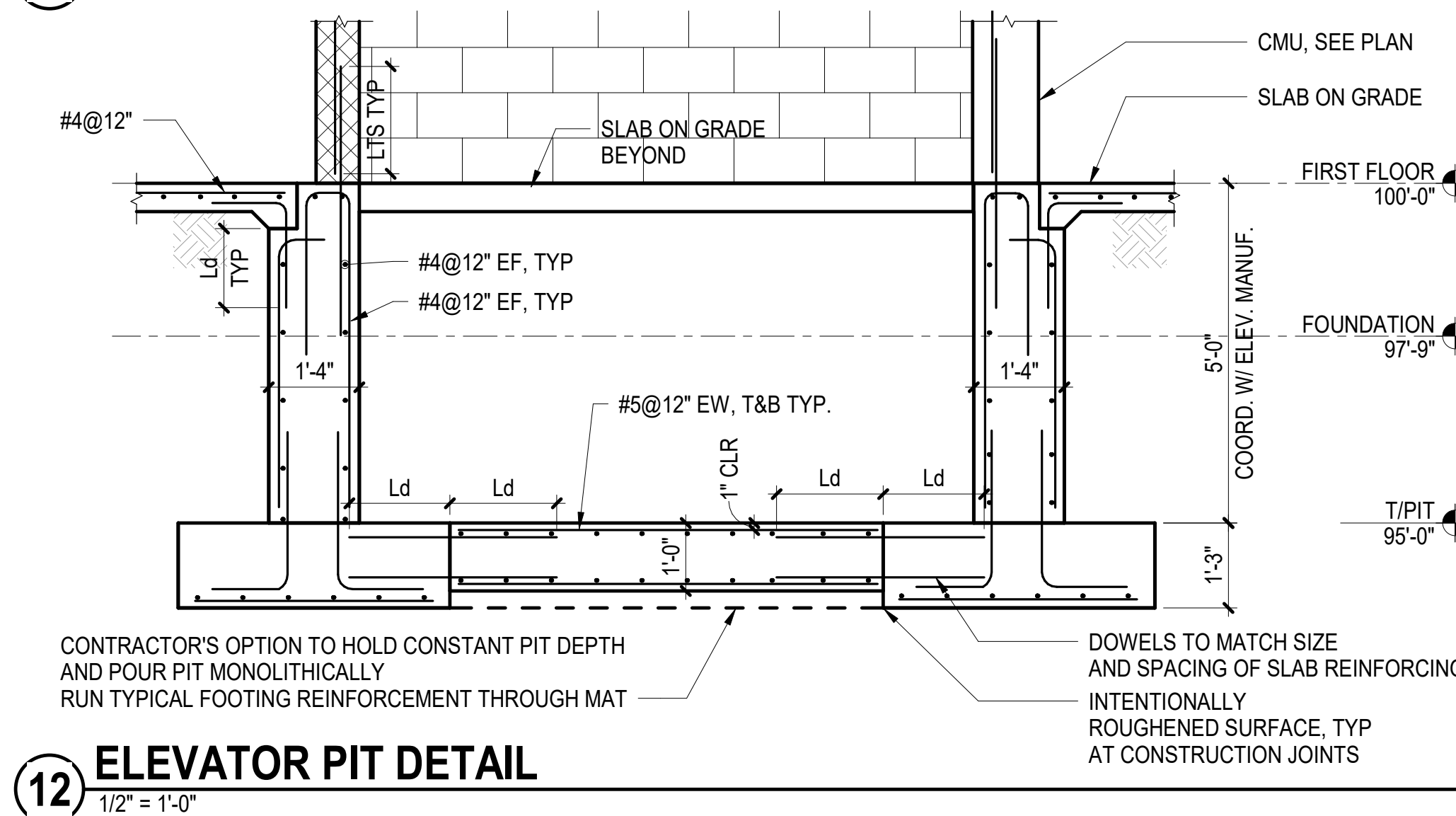
- THIS DETAIL SHALL NOT BE USED WITHOUT PRIOR WRITTEN APPROVAL FROM THE SER
- THESE FOOTING INSTALLATION PROCEDURES ARE TO BE FOLLOWED IN THE EVENT THAT ANTICIPATED NET ALLOWABLE BEARING PRESSURE CANNOT BE OBTAINED AT THE ANTICIPATED STRUTUM
  - CASE 1: PLACE FOOTING AT ACTUAL BEARING STRUTUM. INSTALL PIER TO ANTICIPATED TOP OF FOOTING ELEVATION
  - CASE 2: AT CONTRACTOR'S OPTION, POUR LEAN CONCRETE (F<sub>c</sub>=2000 PSI MINIMUM) TO THE ANTICIPATED BOTTOM OF FOOTING ELEVATION AND CAST FOOTING ON TOP OF LEAN CONCRETE
- SEE TYPICAL ISOLATED FOOTING DETAILS FOR ADDITIONAL INFORMATION

**11** TYPICAL INTERIOR/EXTERIOR FOOTING INTERFACE  
 3/4" = 1'-0"

ISOLATED FOOTING SCHEDULE <small>f<sub>c</sub> = SEE GENERAL NOTES</small>						
MARK	SIZE			REINFORCEMENT		REMARKS
	L	W	H	BOTTOM BARS	TOP BARS	
F5	5'-0"	5'-0"	1'-6"	5#6 EA WAY	-	-
F7	7'-0"	7'-0"	1'-6"	7#6 EA WAY	-	-
F9	9'-0"	9'-0"	1'-6"	9#6 EA WAY	-	-
F11	11'-0"	11'-0"	2'-0"	13#6 EA WAY	-	-

**9** ISOLATED FOOTING SCHEDULE  
 NOT TO SCALE

**10** TYPICAL FOOTING DETAIL WHERE OVER-EXCAVATION IS REQUIRED DUE TO UNANTICIPATED SOIL CONDITIONS - STEEL COLUMN  
 NOT TO SCALE



**12** ELEVATOR PIT DETAIL  
 1/2" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

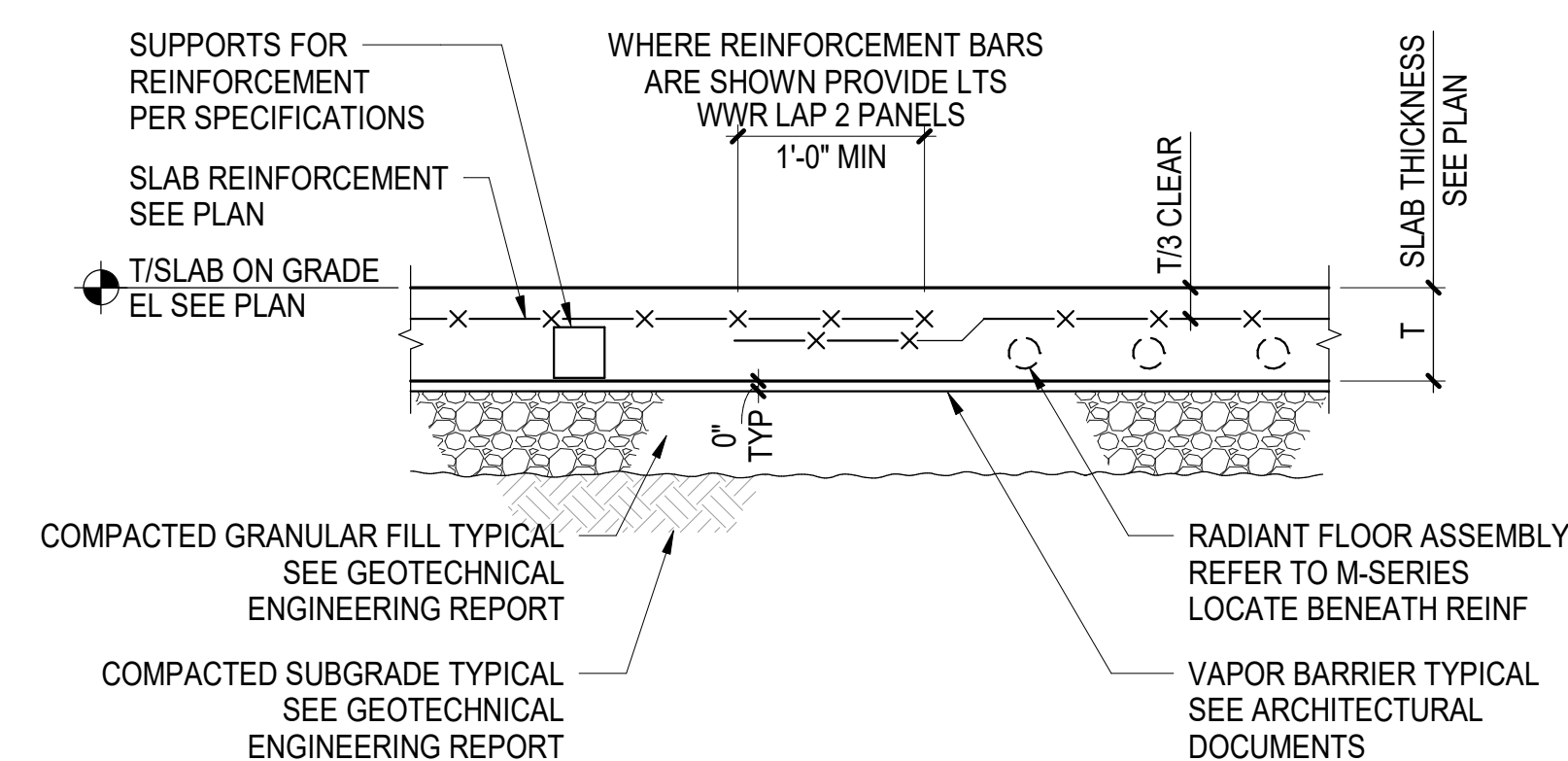
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

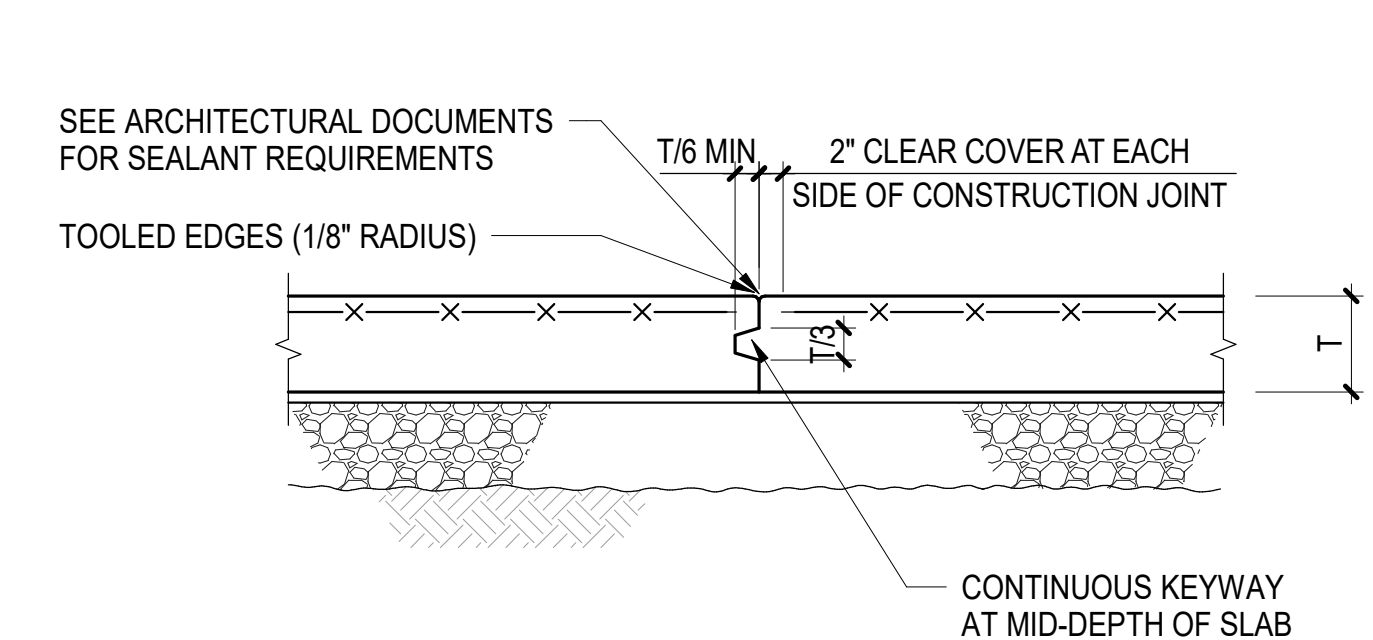
SHEET NUMBER  
 TYPICAL FOOTING DETAILS

DATE  
 JUNE 30, 2023

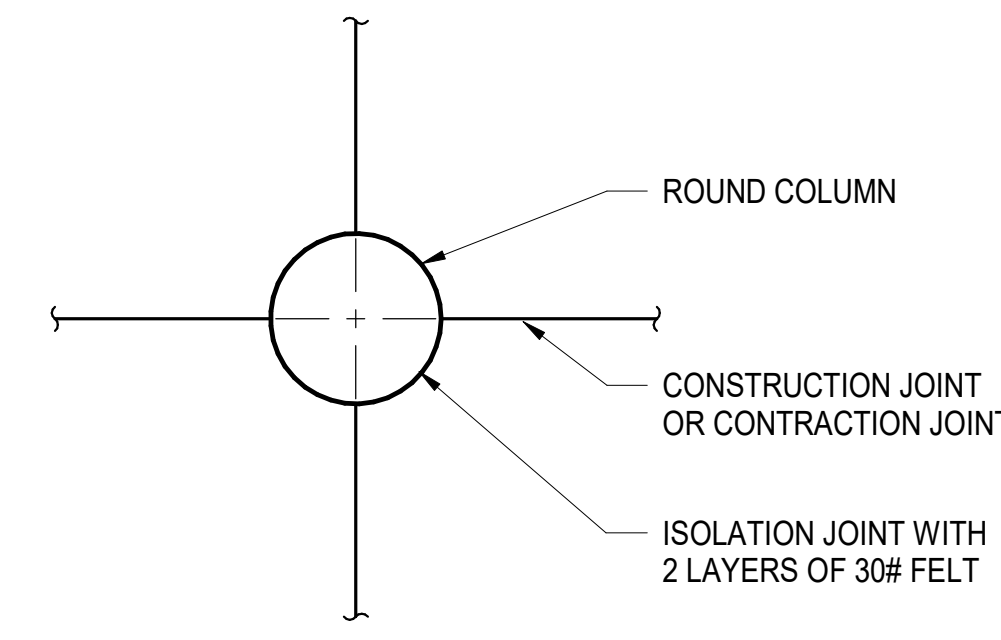
S 200  
 21-237.25



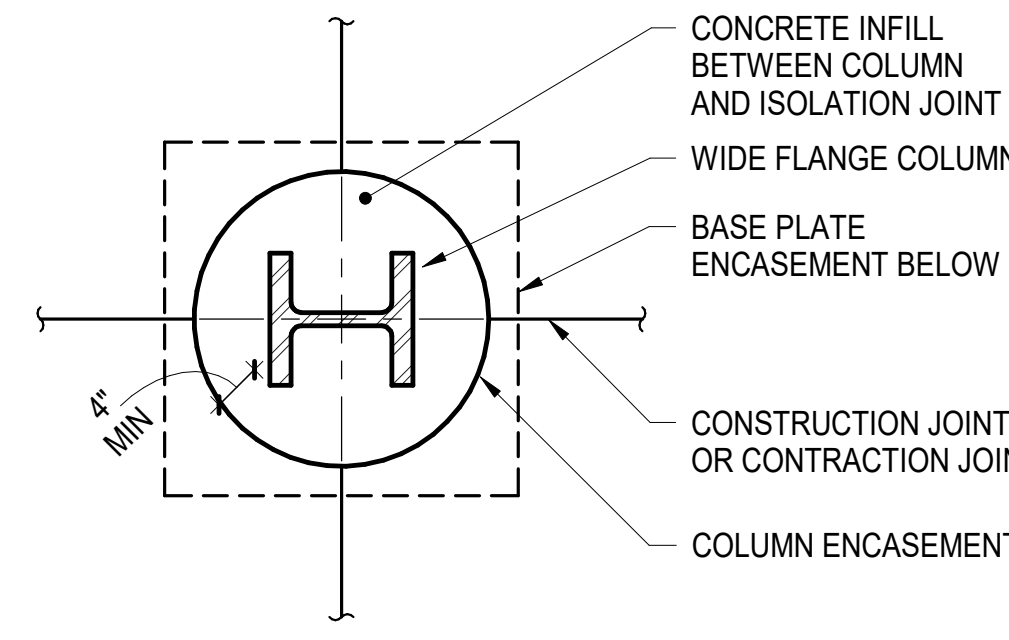
**A SLAB ON GRADE**



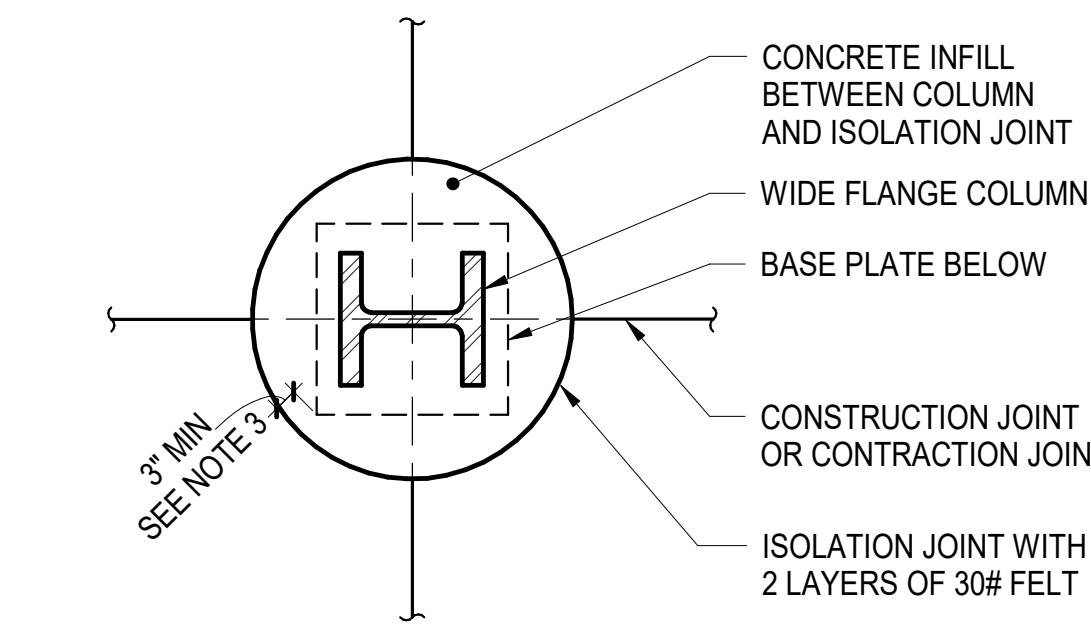
**B CONSTRUCTION JOINT / CONTRACTION JOINT**



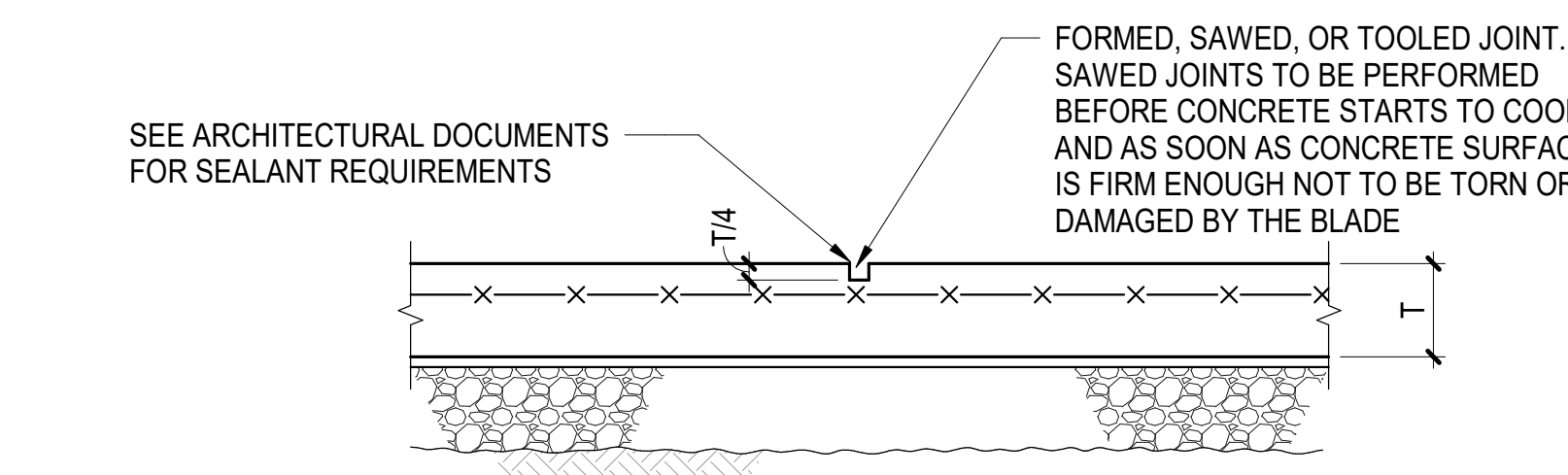
**A ROUND COLUMN**



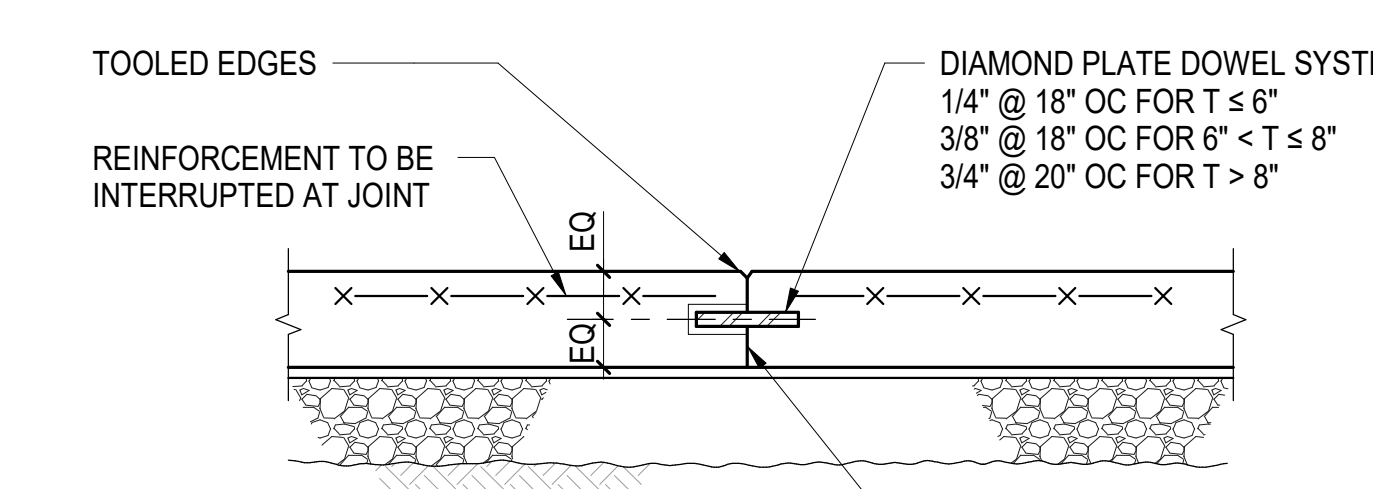
**B CONCRETE ENCASE COLUMN AND BASE PLATE WHERE INDICATED ON PLAN**



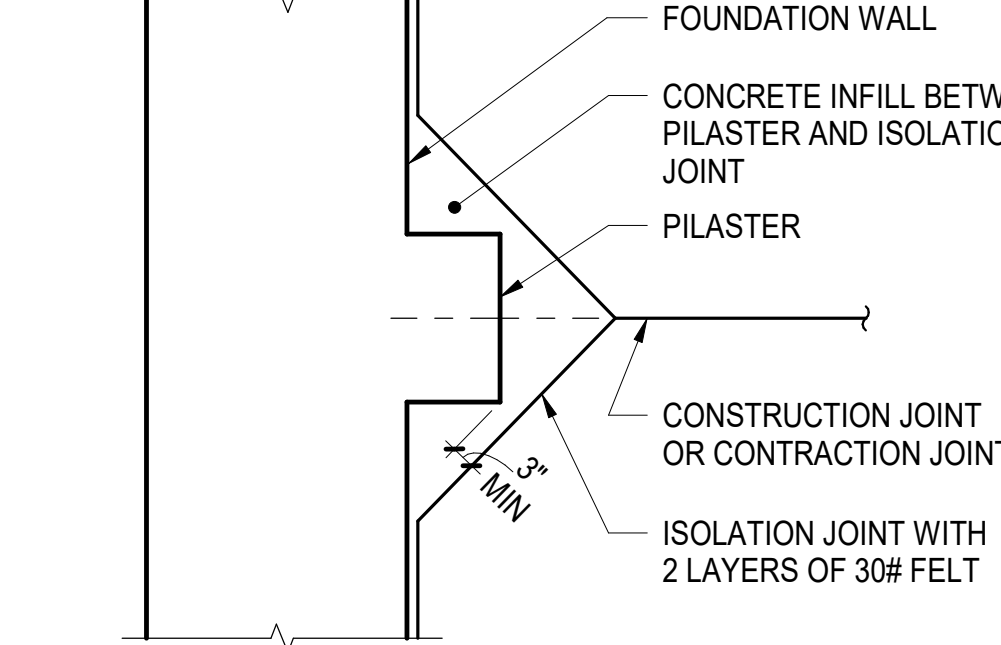
**C TYPICAL BASE PLATE WITHIN CONCRETE INFILL (ROUND ISOLATION JOINT OPTION)**



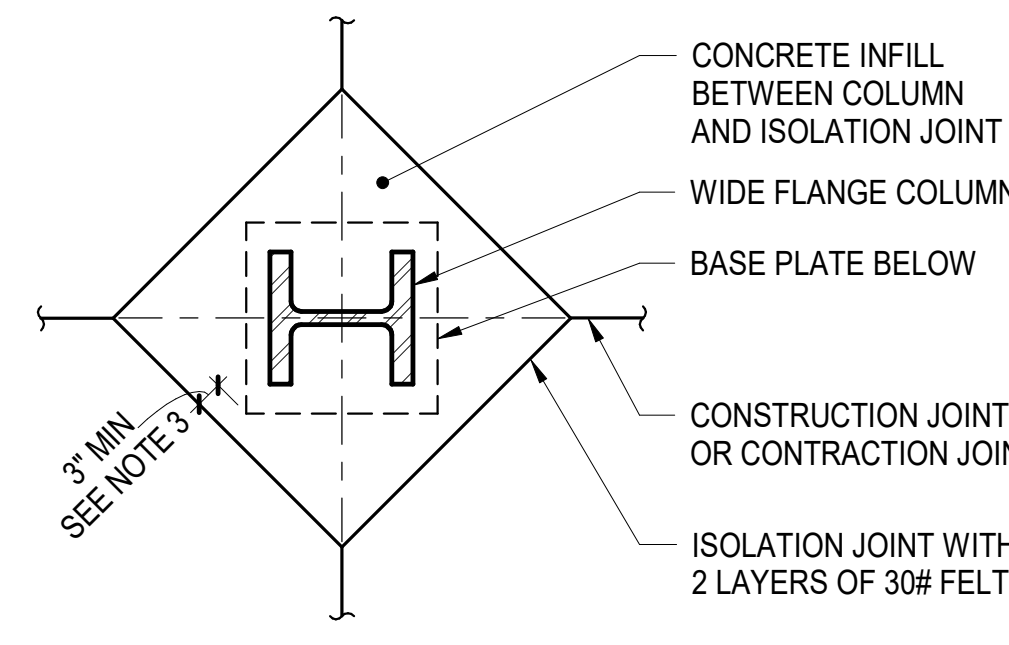
**C CONTRACTION JOINT**



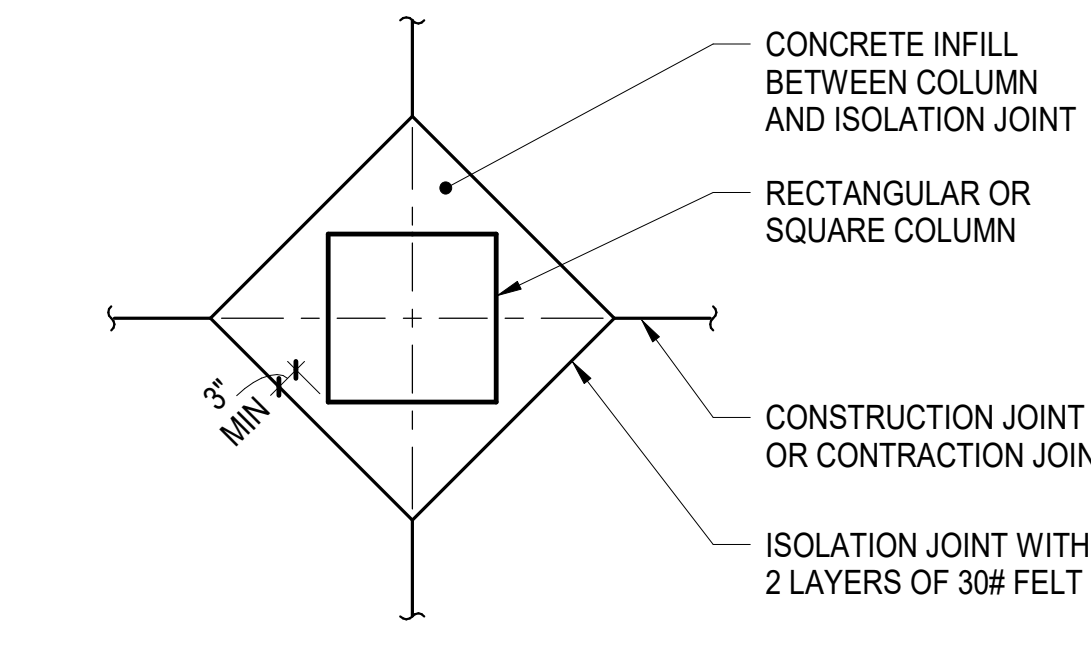
**D DOWELED CONSTRUCTION JOINT (WHERE INDICATED ON PLAN)**



**D PILASTER**



**E TYPICAL BASE PLATE WITHIN CONCRETE INFILL UNLESS OTHERWISE NOTED**

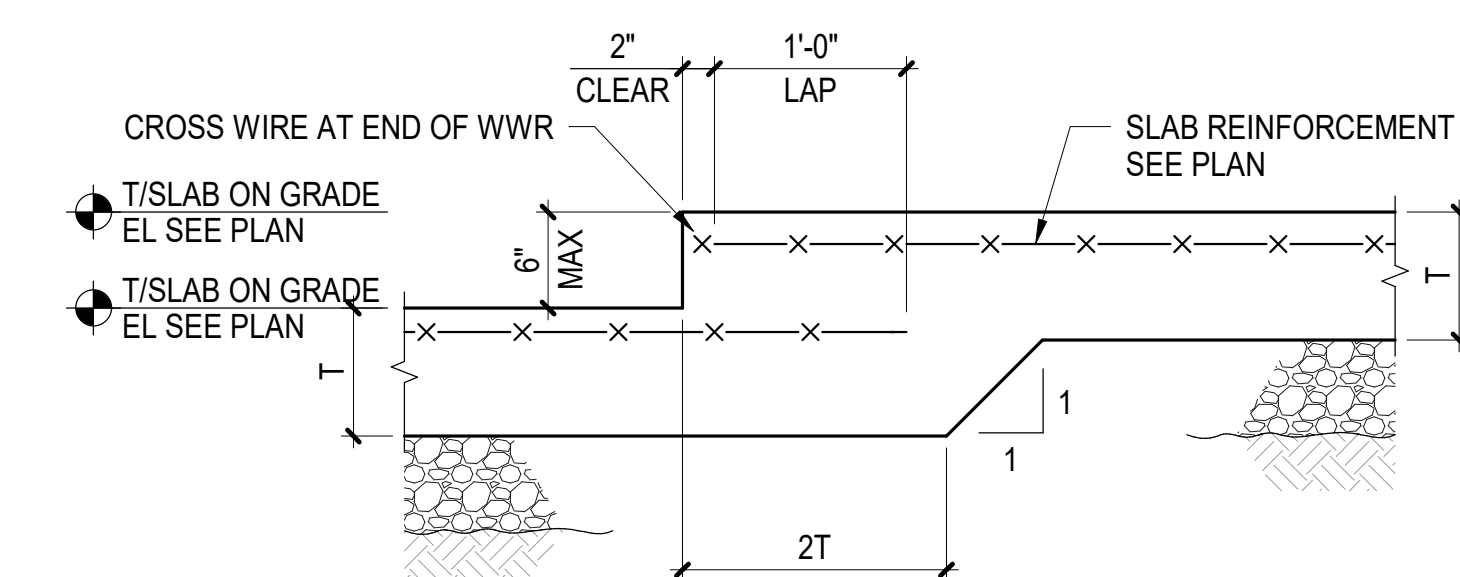


**F RECTANGULAR OR SQUARE COLUMN**

**NOTES:**  
 1. WHERE NOT INDICATED ON DRAWINGS PROVIDE JOINTS AT COLUMN CENTERLINES AND BETWEEN COLUMN CENTERLINES WITH SPACING OF JOINTS NOT TO EXCEED 36 TIMES THE SLAB THICKNESS (T-INCHES)

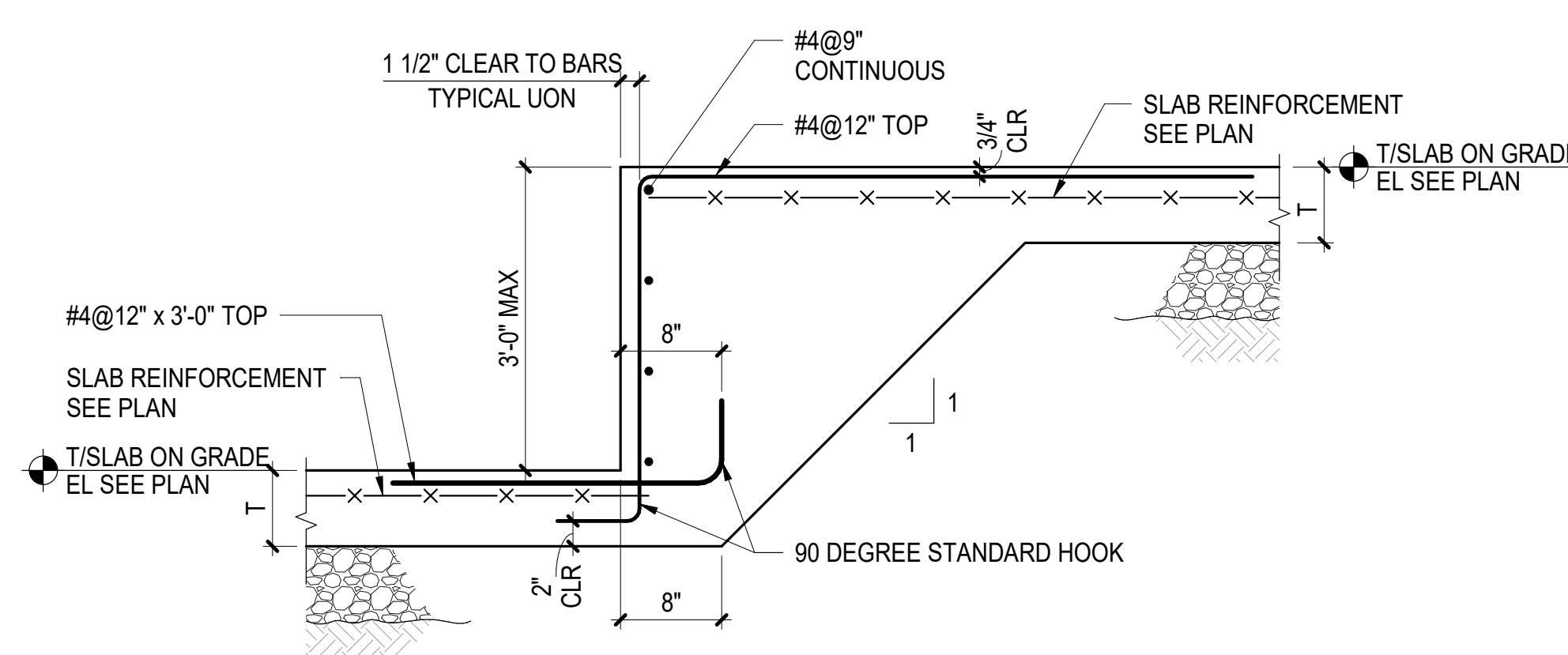
**NOTES:**  
 1. SEE TYPICAL SLAB ON GRADE DETAILS FOR JOINT SPACING REQUIREMENTS  
 2. CONCRETE INFILL BETWEEN COLUMN AND ISOLATION JOINT TO BE POURED AFTER ALL THE SLABS SUPPORTED BY THE COLUMN HAVE BEEN POURED  
 3. PROVIDE ADDITIONAL CLEARANCE AS REQUIRED TO ENSURE 3" MINIMUM CONCRETE COVER OVER BASE PLATE AND ANCHOR RODS BELOW.

**1 TYPICAL SLAB ON GRADE DETAILS**  
NOT TO SCALE



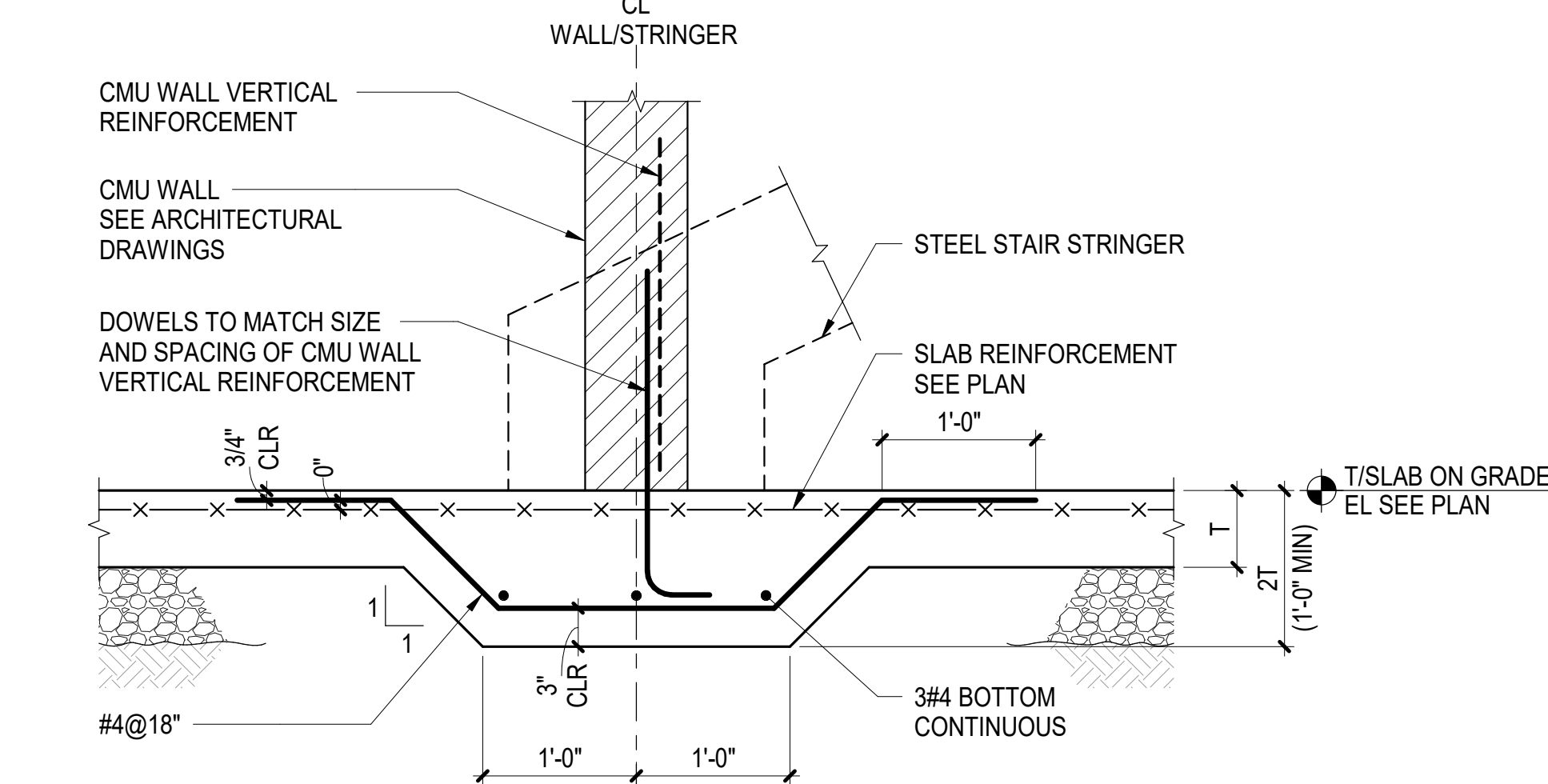
**NOTES:**  
 1. SEE TYPICAL SLAB ON GRADE DETAILS FOR ADDITIONAL INFORMATION

**2 TYPICAL ISOLATION JOINT DETAILS AT SLAB ON GRADE**  
NOT TO SCALE



**NOTES:**  
 1. SEE TYPICAL SLAB ON GRADE DETAILS FOR ADDITIONAL INFORMATION

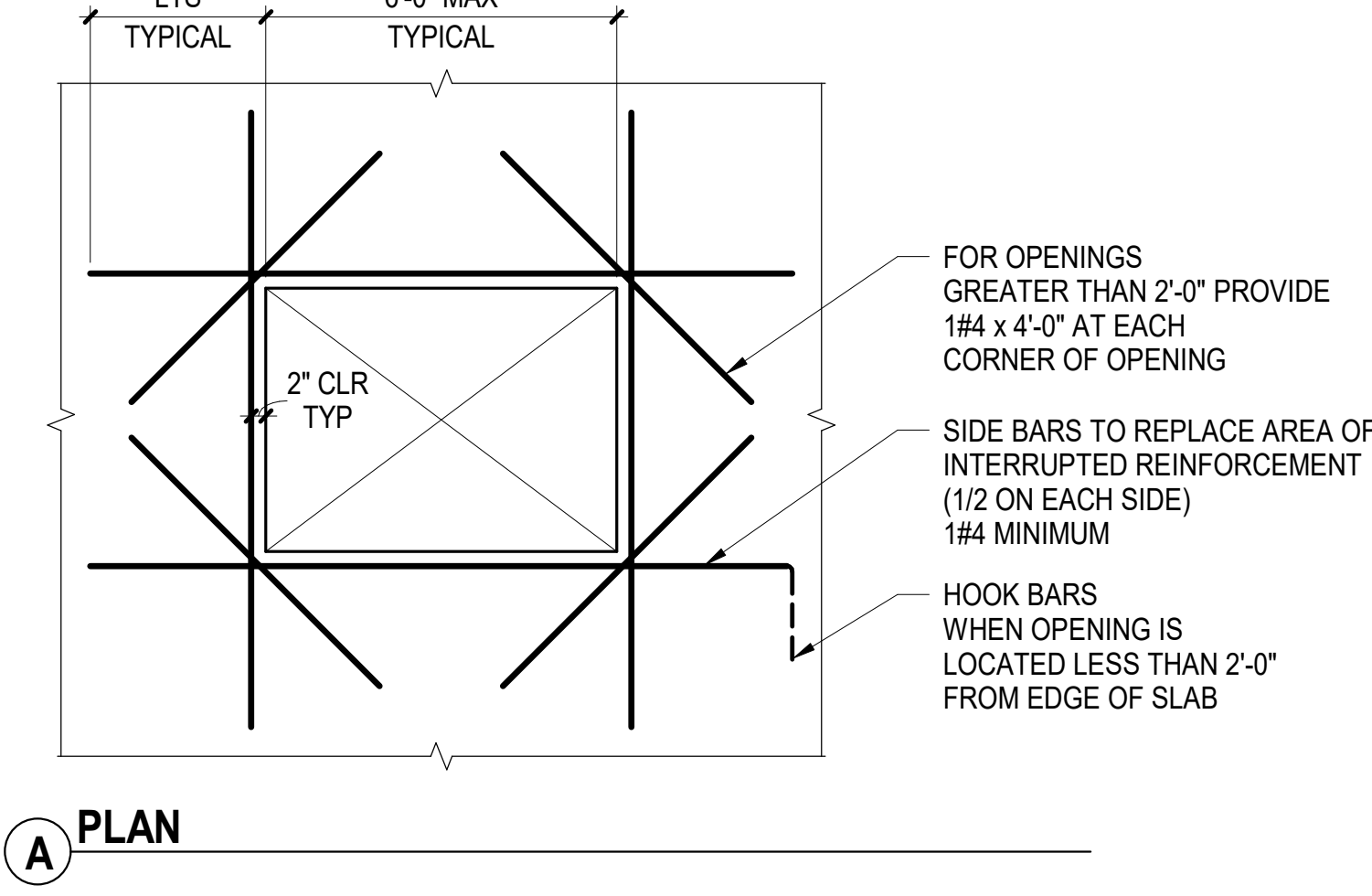
**3 TYPICAL SLAB ON GRADE STEP 6" MAXIMUM**  
NOT TO SCALE



**NOTES:**  
 1. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF WALLS AND STAIRS  
 2. SEE TYPICAL SLAB ON GRADE DETAILS FOR MORE INFORMATION

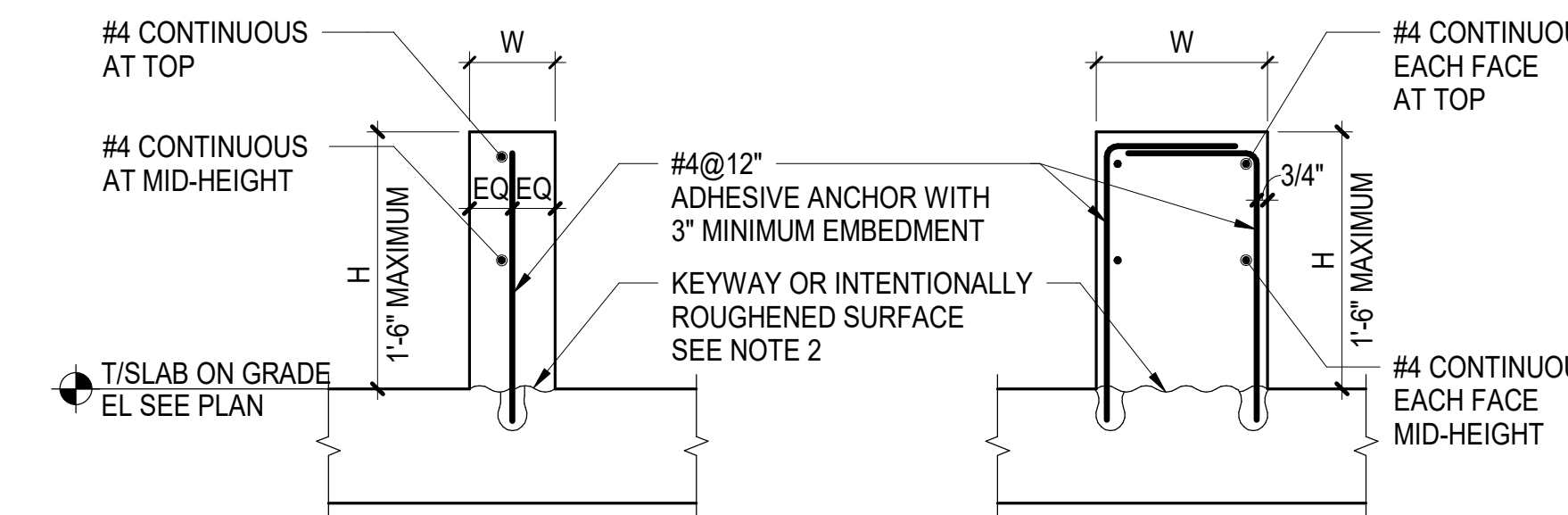
**6 TYPICAL THICKENED SLAB ON GRADE AT NON-BEARING CMU WALL OR STAIR STRINGER**  
NOT TO SCALE

**4 TYPICAL SLAB ON GRADE STEP OVER 6" TO 3'-0"**  
NOT TO SCALE



**NOTES:**  
 1. FOR SIZE OF OPENINGS SEE ARCHITECTURAL DRAWINGS  
 2. ADDITIONAL REINFORCEMENT IS NOT REQUIRED AT OPENINGS THAT DO NOT INTERRUPT THE TYPICAL REINFORCEMENT

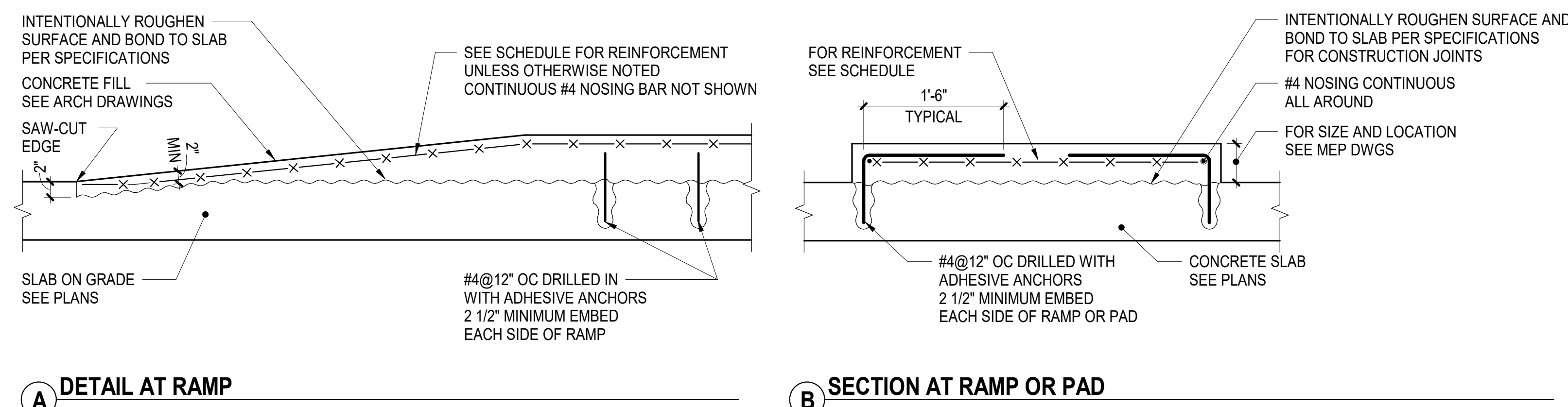
**7 TYPICAL SLAB ON GRADE DETAIL OF ADDITIONAL REINFORCEMENT AT ANY OPENINGS OR AT STEP GREATER THAN 6" UP TO 3'-0"**  
NOT TO SCALE



**A NARROW CURB - 4" ≤ W ≤ 8"**      **B WIDE CURB - W ≥ 8"**

**NOTES:**  
 1. FOR SIZE AND LOCATION SEE ARCHITECTURAL, MEP, OR STRUCTURAL DRAWINGS  
 2. ROUGHEN SURFACE OF SLAB TO 1/4" AMPLITUDE, CLEAN THOROUGHLY AND APPLY BONDING AGENT IMMEDIATELY BEFORE CASTING CURB  
 3. THIS DETAIL IS APPLICABLE AT CURBS FOR NON-STRUCTURAL ELEMENTS SUCH AS SKYLIGHTS, INTERIOR PARTITIONS, AND INTERIOR RAILINGS  
 4. SEE ARCHITECTURAL DRAWINGS FOR EMBEDDED PLATES AND BLOCKOUTS REPLACE REINFORCEMENT INTERRUPTED BY BLOCKOUTS  
 5. CORING AND/OR CUTTING OF REINFORCEMENT IS NOT PERMITTED USE EMBED PLATES FOR ATTACHMENT TO CURBS

**5 TYPICAL CURB DETAILS AT INTERIOR**  
NOT TO SCALE



**A DETAIL AT RAMP**

**B SECTION AT RAMP OR PAD**

**NOTES:**  
 1. THIS DETAIL IS NOT APPLICABLE TO GENERAL RAISED SLAB AREA HIGHER THAN 4" OTHER THAN MECHANICAL PADS AND HOUSEKEEPING PADS

THICKNESS	REINFORCEMENT
≤ 3"	WWR 6x6 - W2.9xW2.9
≤ 4"	WWR 6x6 - W4.0xW4.0
≤ 6"	#4 @ 12" TOP EACH WAY
≤ 12"	#4 @ 12" TOP & BOTTOM EACH WAY

**8 TYPICAL DETAIL OF CONCRETE FILL HOUSEKEEPING PAD / MECHANICAL PAD / RAMP**  
NOT TO SCALE

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

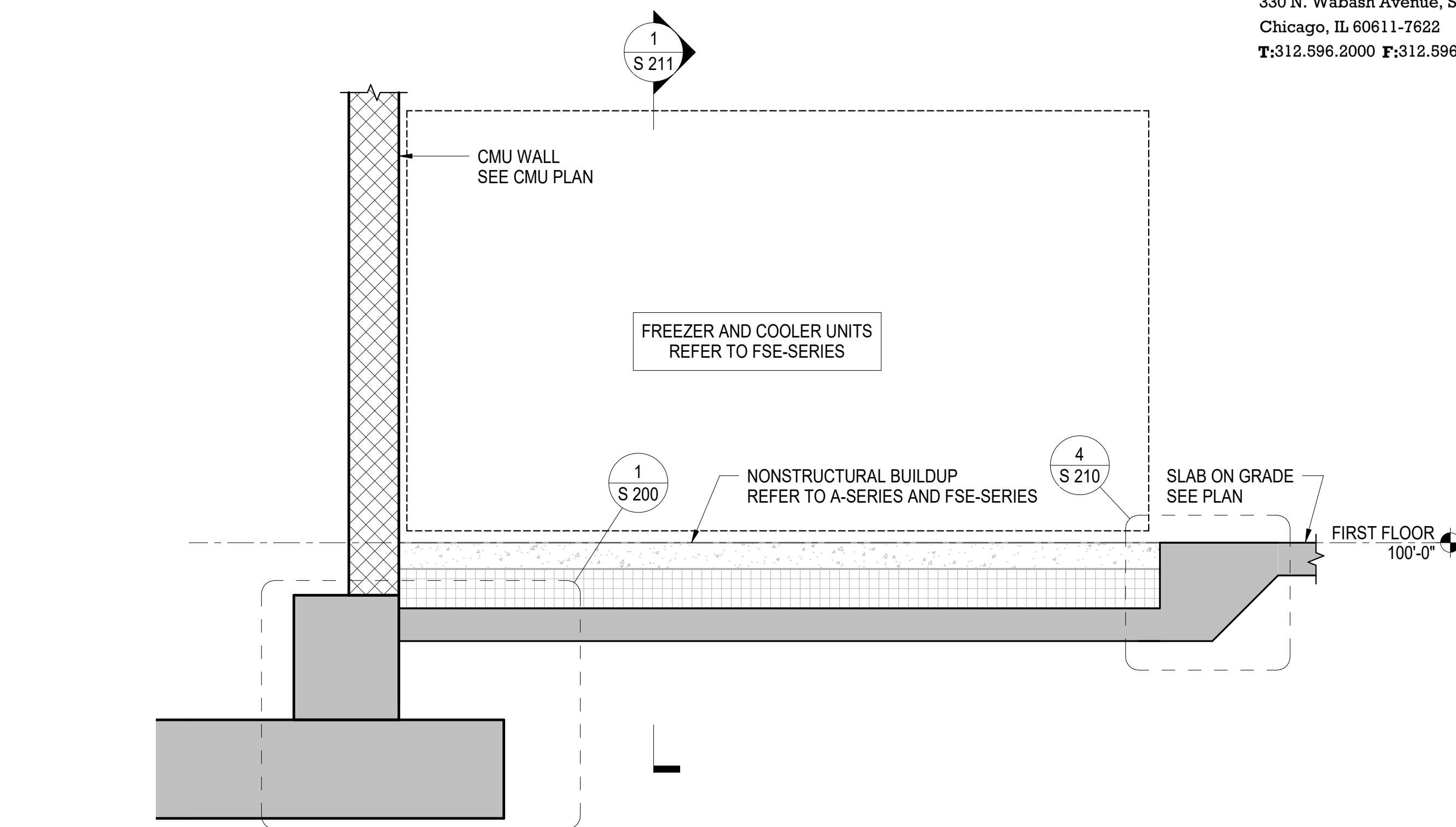
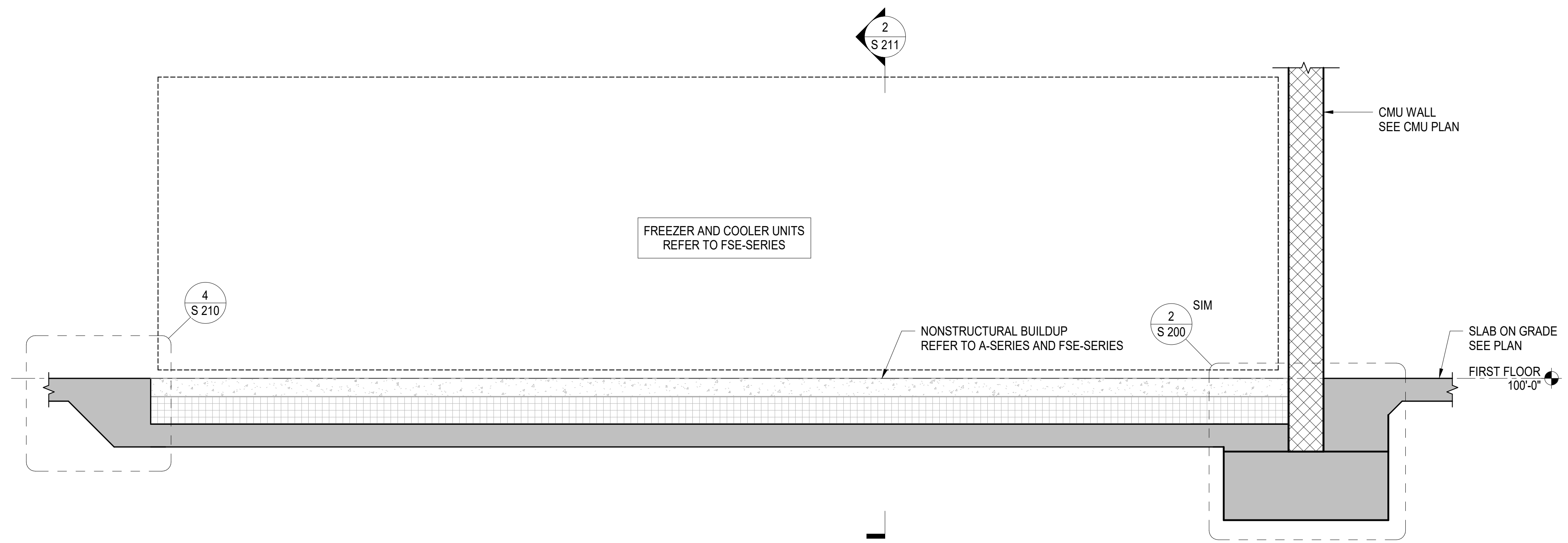
Portage, Michigan

SHEET TITLE  
 TYPICAL SLAB ON GRADE DETAILS

DATE  
 JUNE 30, 2023

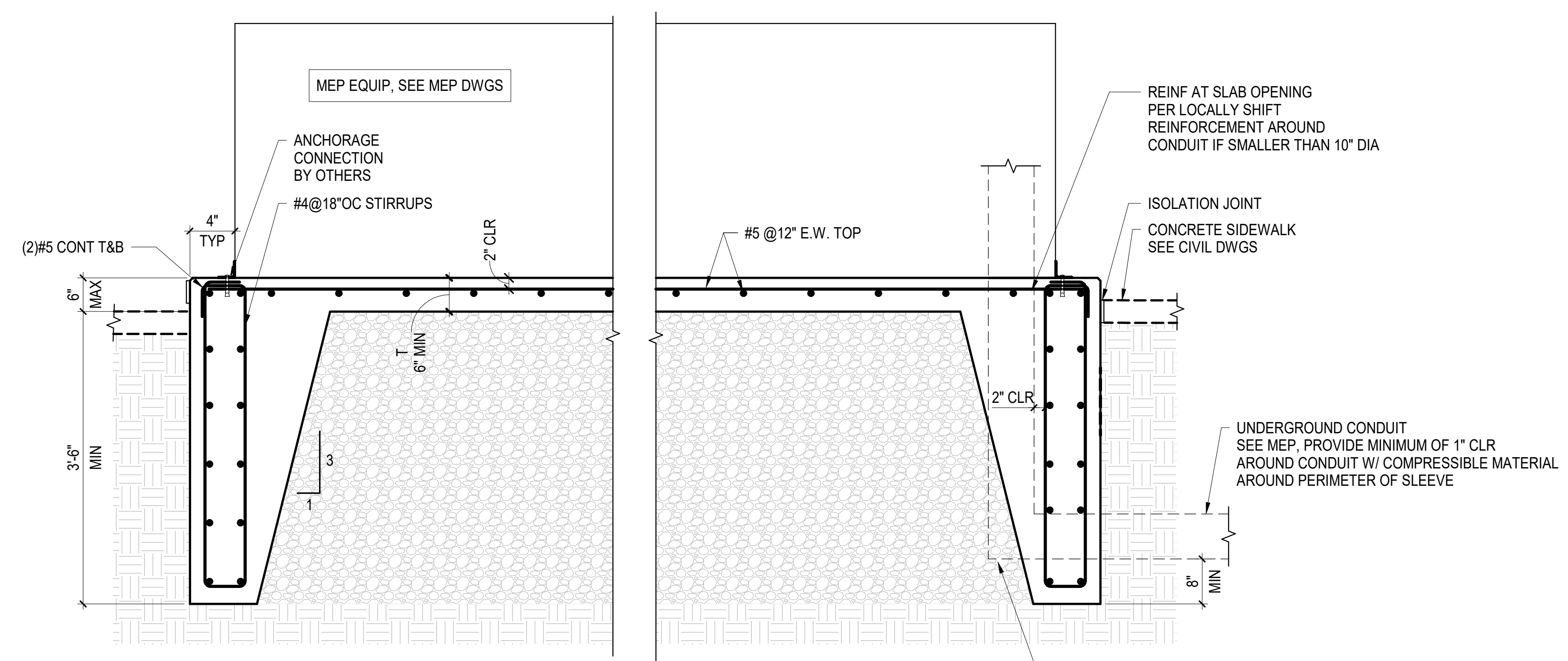
SHEET NUMBER  
 S 210  
 21-237.25





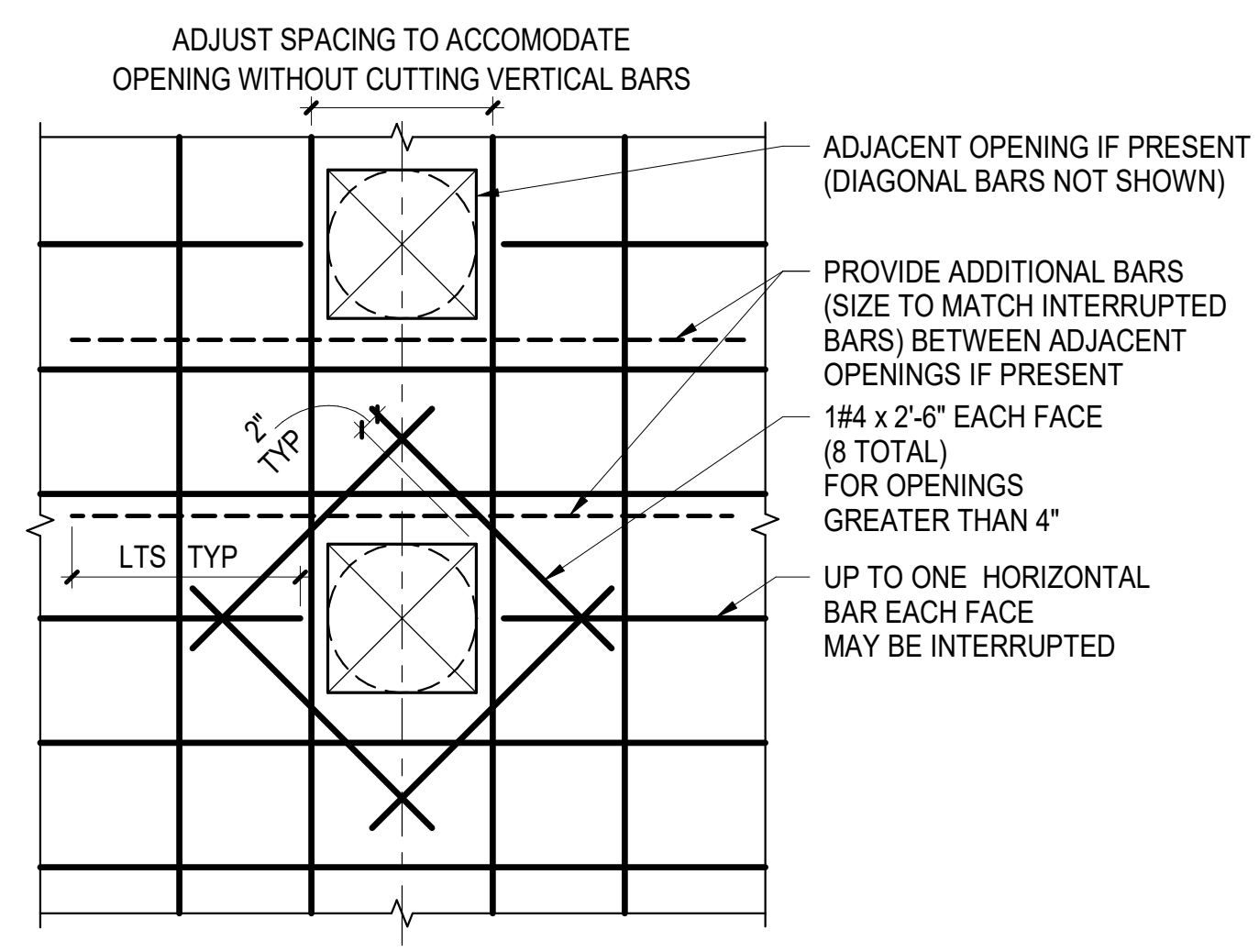
**1 SECTION AT FREEZER/COOLER**  
 3/4" = 1'-0"

**2 SECTION AT FREEZER/COOLER**  
 3/4" = 1'-0"



**NOTE:**  
 6" SLAB THICKNESS IS A MINIMUM. AT GCs OPTION PAD MAY BE THICKENED, AS REQD. TO ACCOUNT FOR GRADE CHANGE WHILE MAINTAINING FLAT BOTTOM SURFACE.

**3 GENERATOR PAD DETAIL**  
 3/4" = 1'-0"



**NOTES:**  
 1. MINIMUM CLEAR DISTANCE BETWEEN OPENINGS IS 2 TIMES MAXIMUM OPENING SIZE  
 2. FOR OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS, CONTRACTOR TO SUBMIT LOCATIONS AND SPACING TO STRUCTURAL ENGINEER FOR WRITTEN APPROVAL

**4 TYPICAL WALL OPENING DETAILS**  
 NOT TO SCALE

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

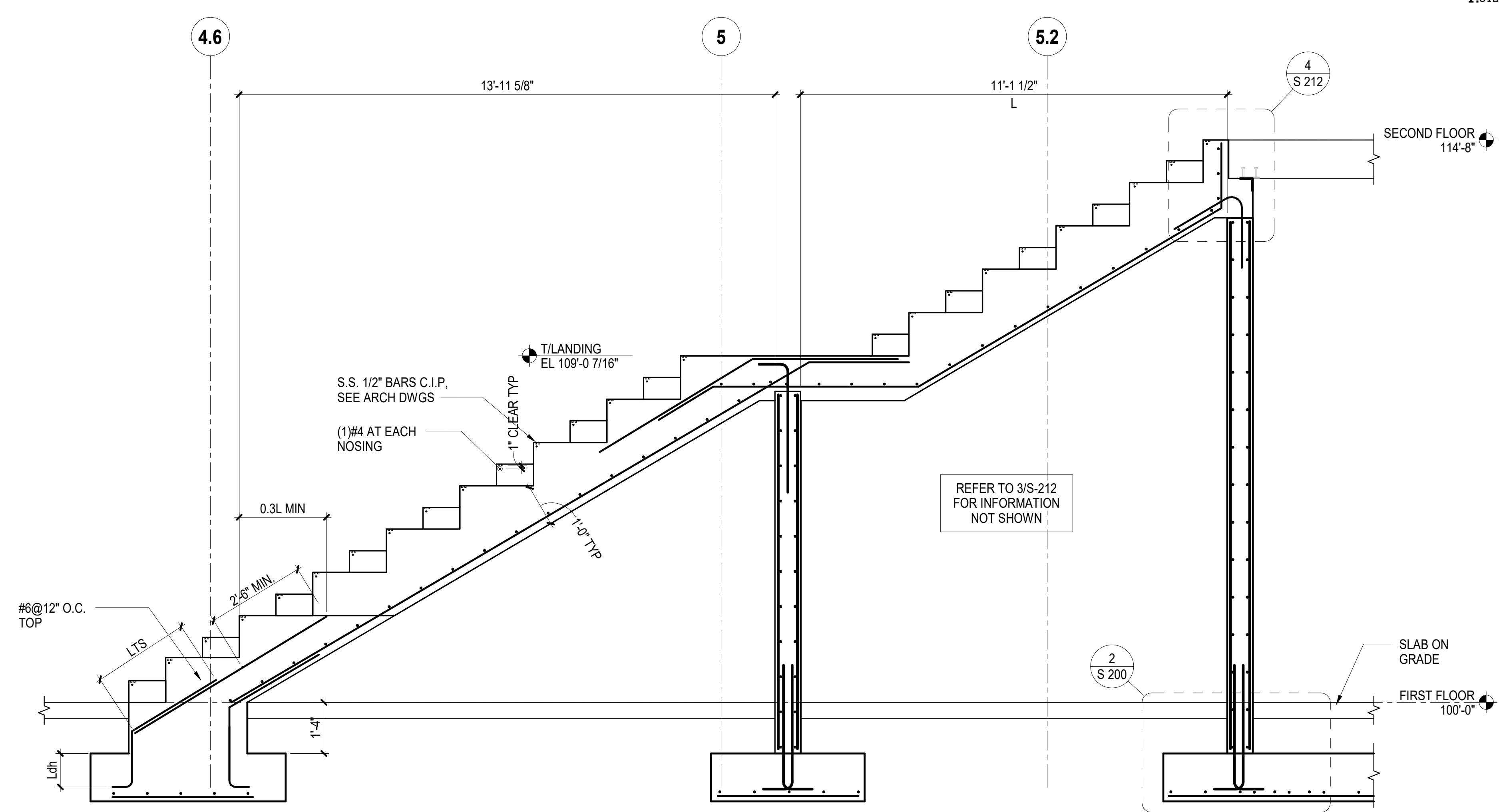
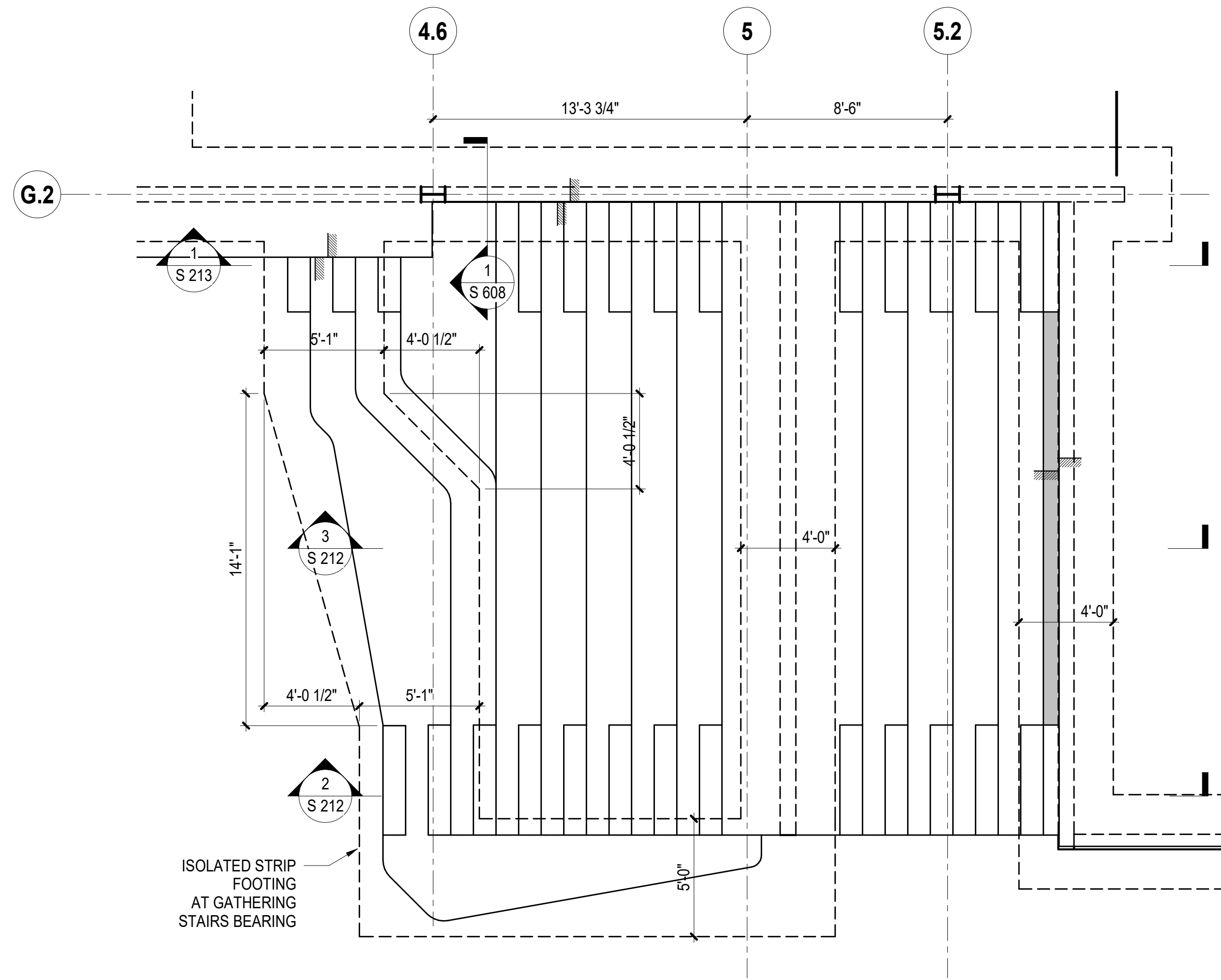
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 TYPICAL SLAB ON GRADE DETAILS

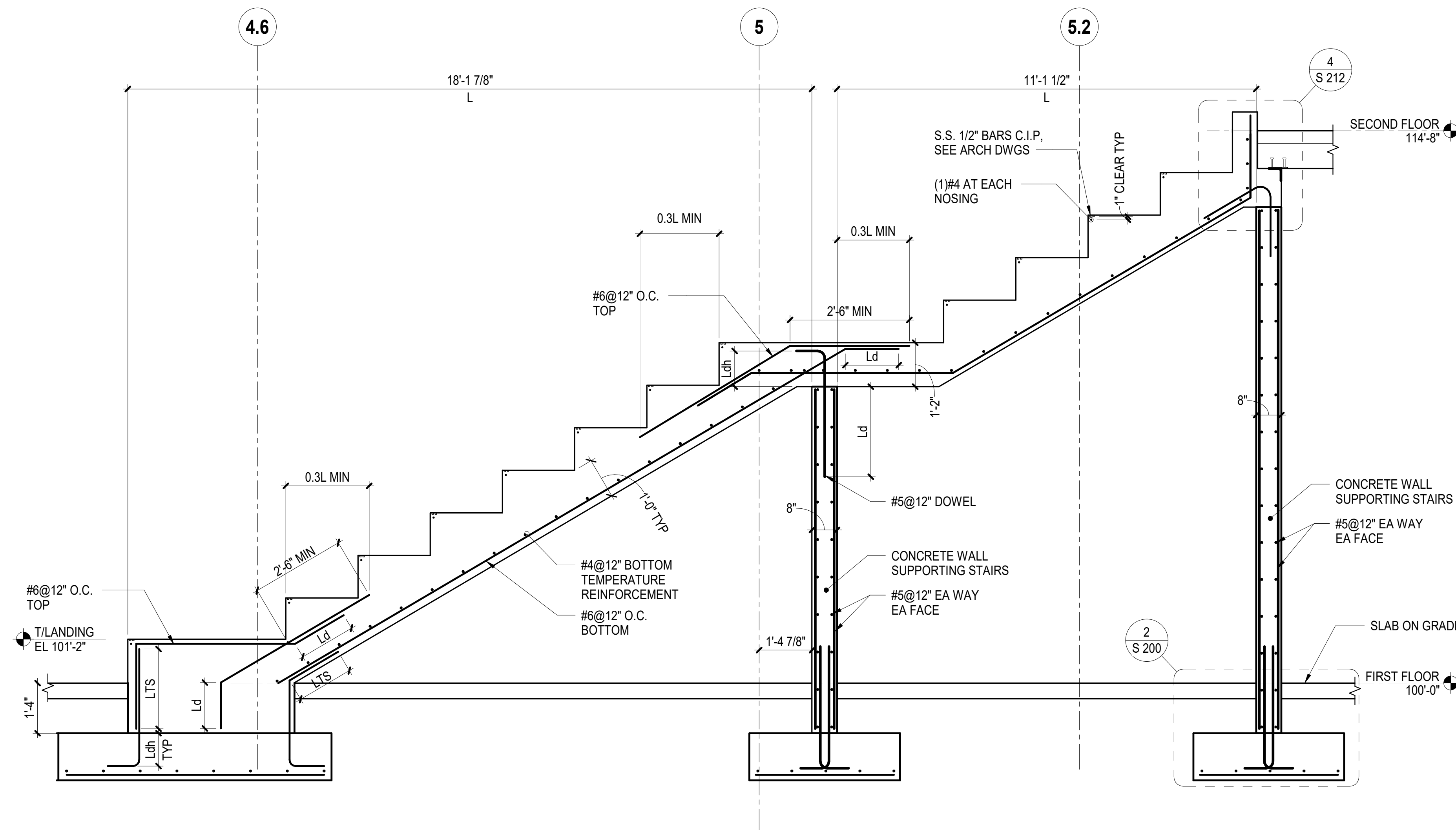
DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 211**  
 21-237.25

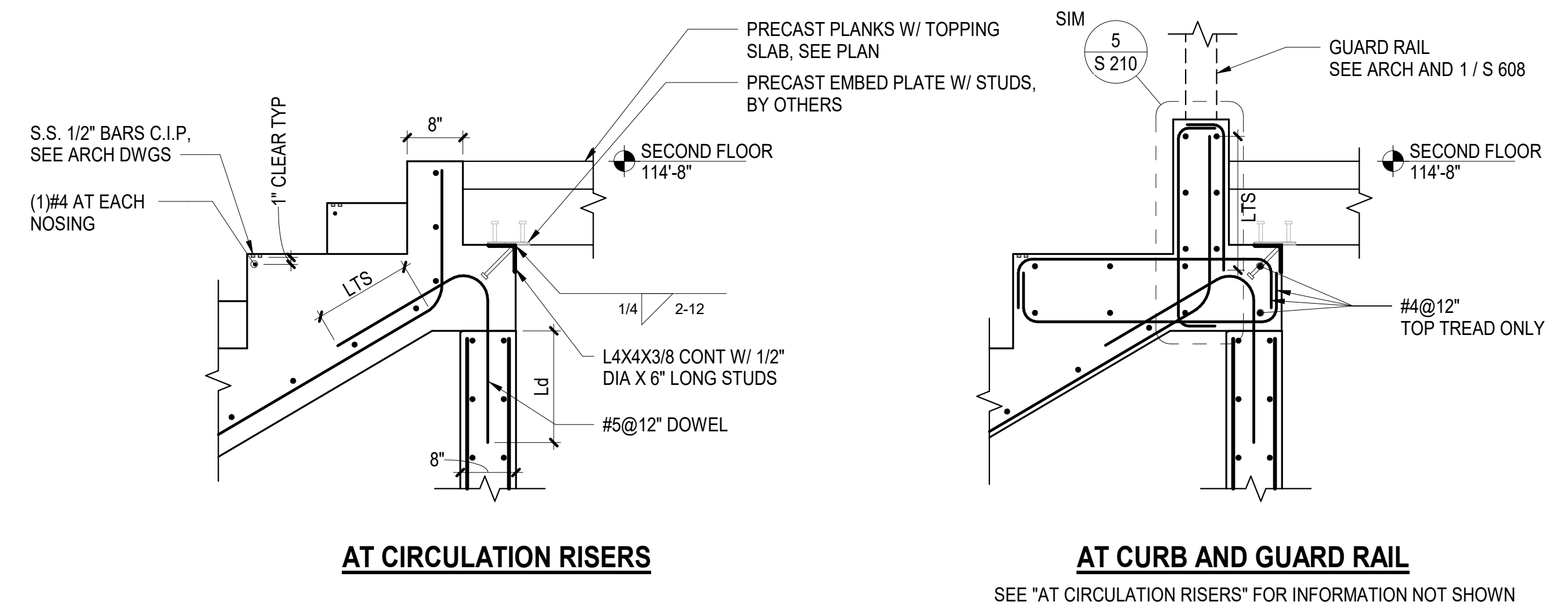


**1** GATHERING STAIR PARTIAL PLAN  
 1/4" = 1'-0"

**2** GATHERING STAIR SECTION  
 1/2" = 1'-0"



**3** GATHERING STAIR SECTION  
 1/2" = 1'-0"



**4** DETAIL AT TOP OF GATHERING STAIR  
 3/4" = 1'-0"

ISSUED FOR DATE

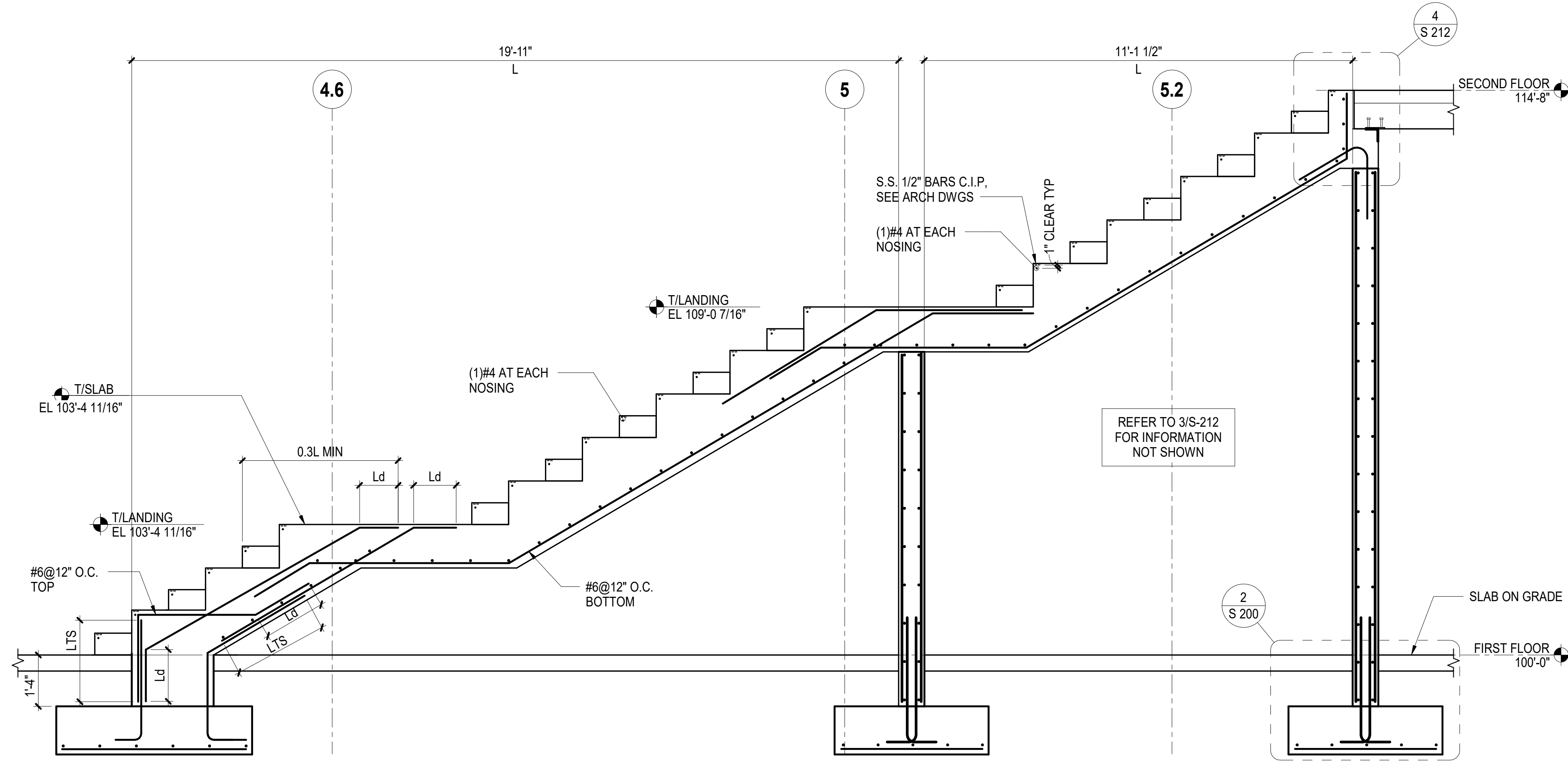
PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
 GATHERING STAIR PARTIAL PLAN,  
 SECTIONS, AND SCHEDULE

Portage, Michigan

SHEET NUMBER  
**S 212**  
 DATE  
 JUNE 30, 2023  
 21-237.25



**1 GATHERING STAIR SECTION**  
 1/2" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

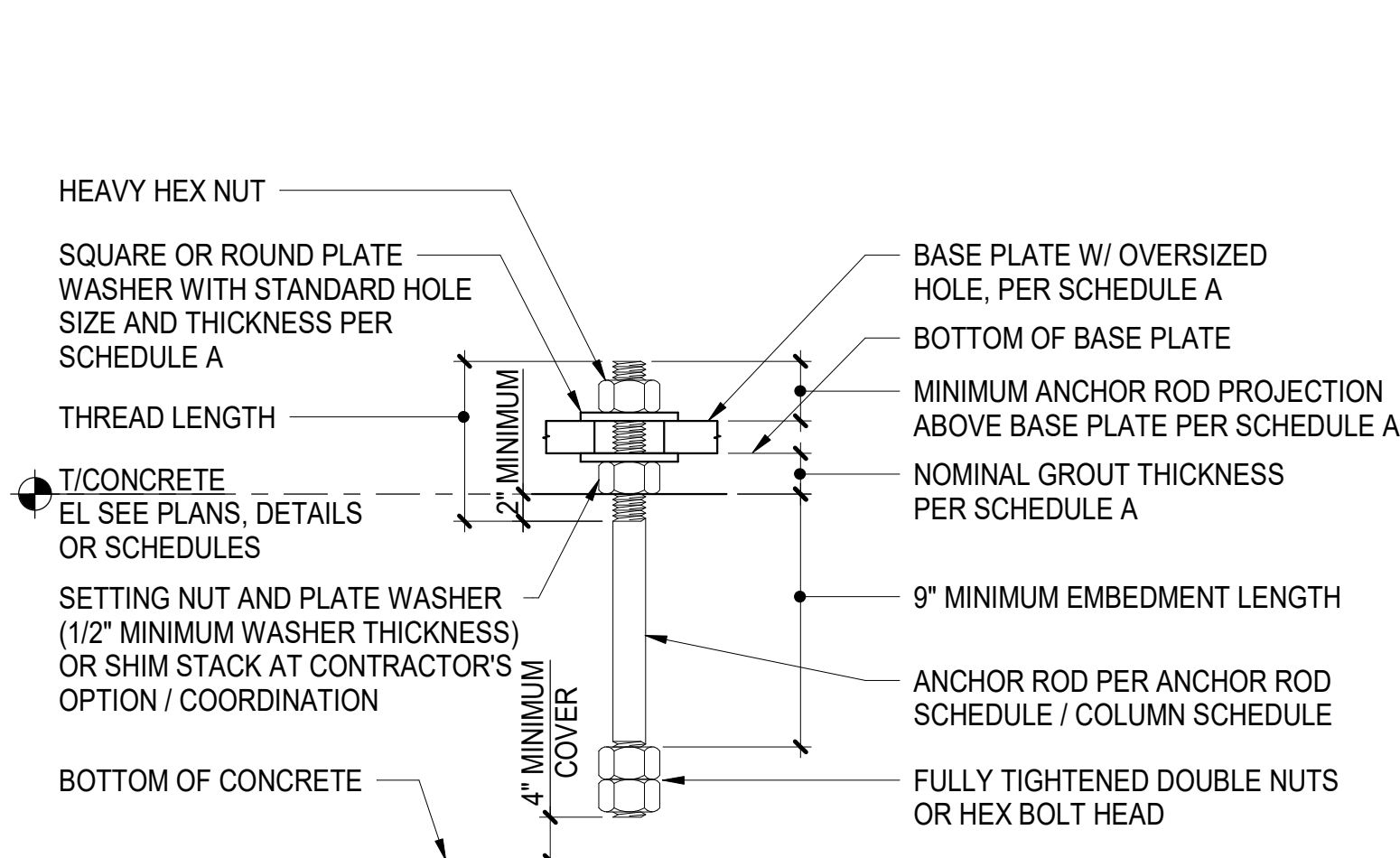
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

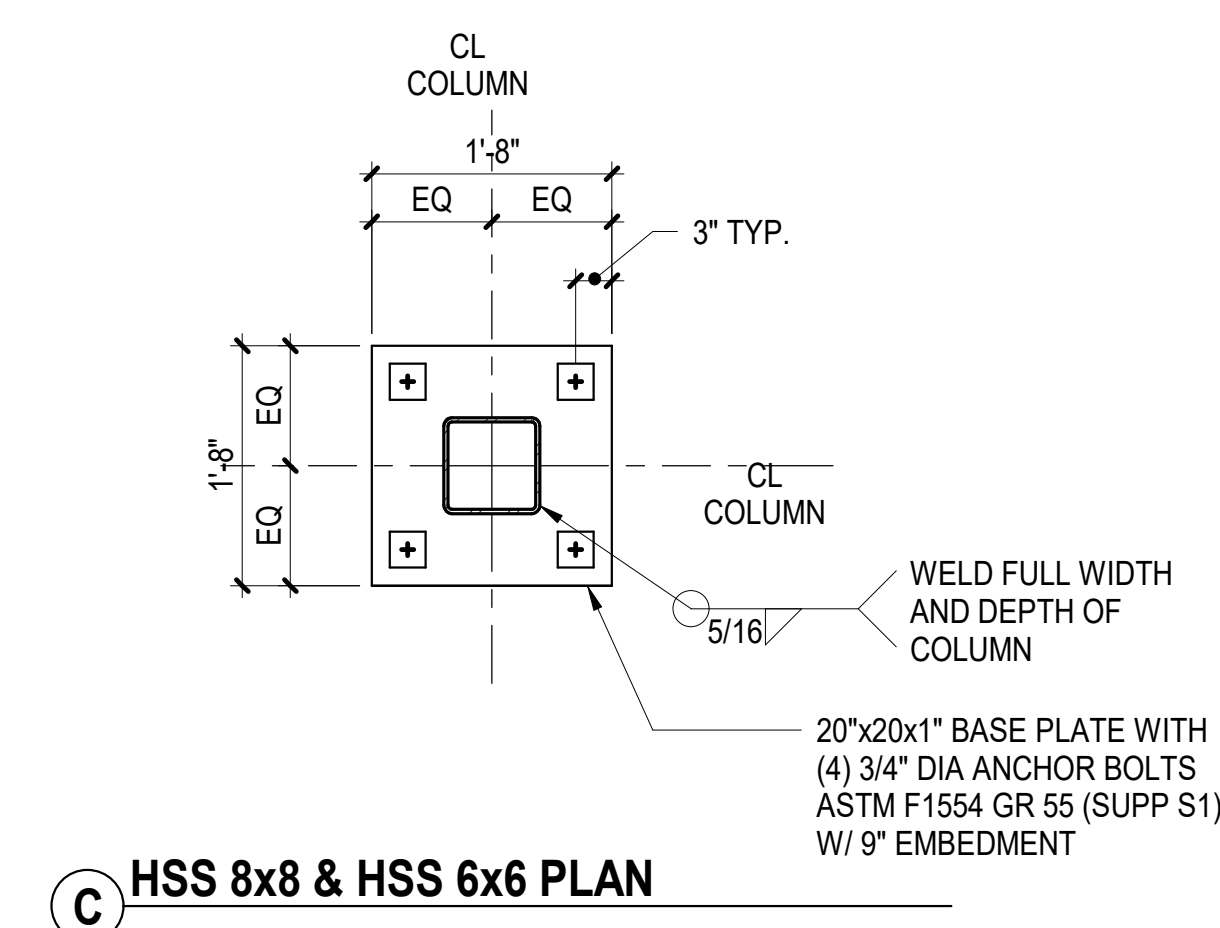
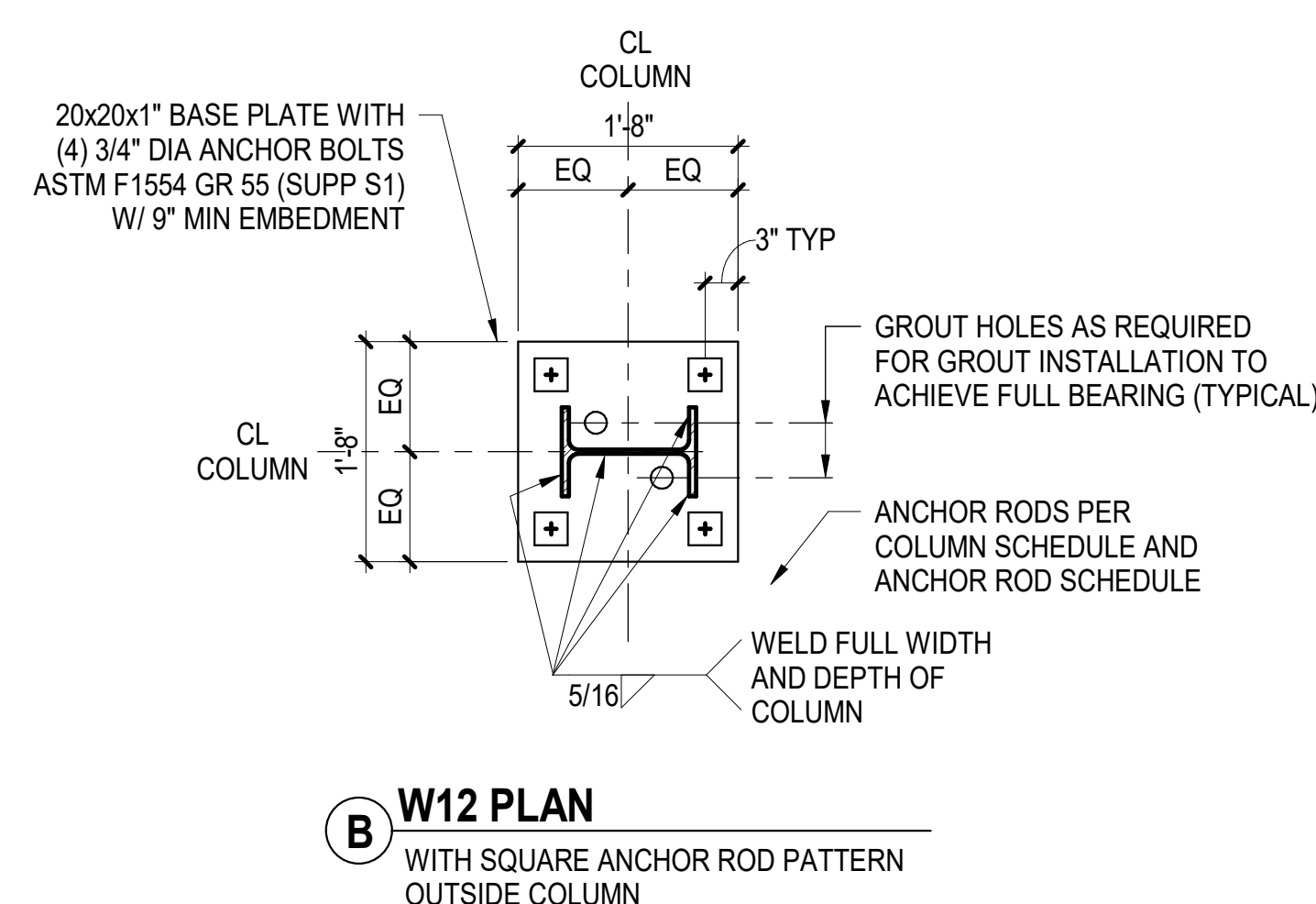
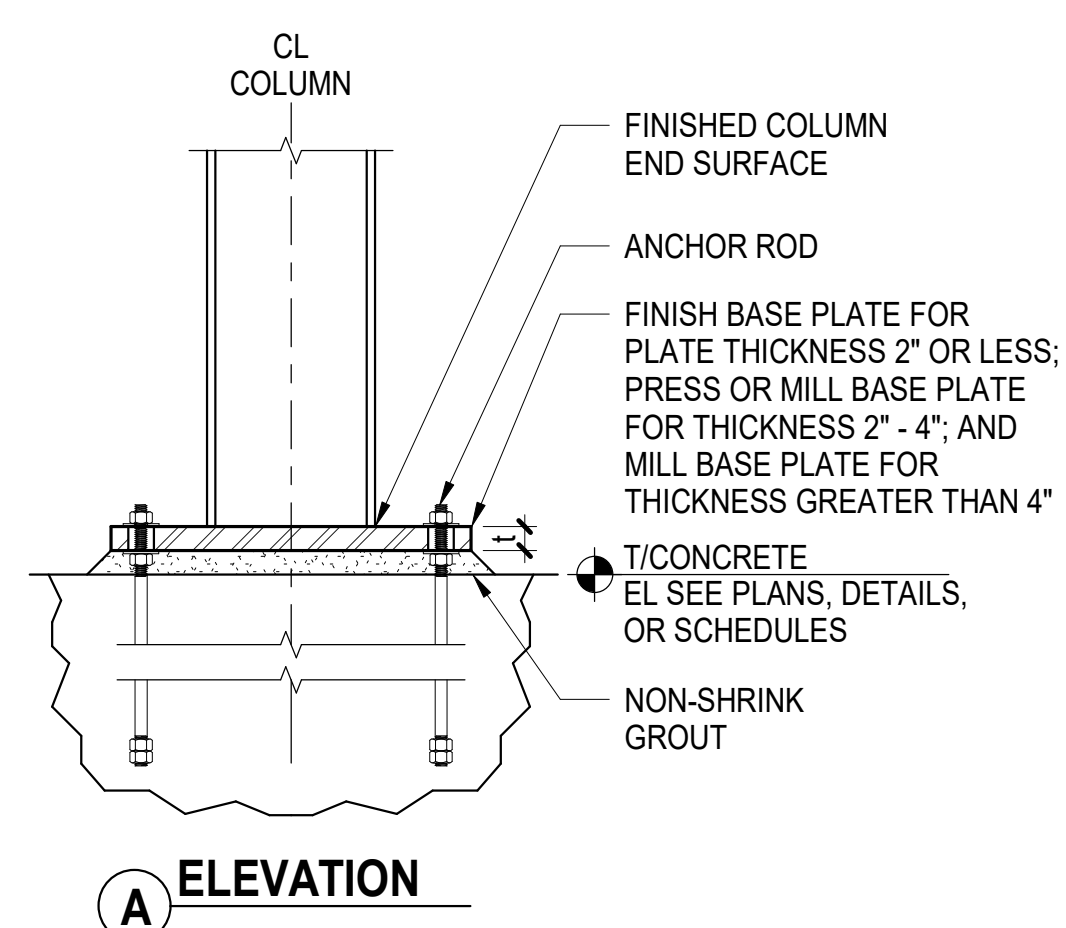
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 GATHERING STAIR SECTION

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 213**  
 21-237.25



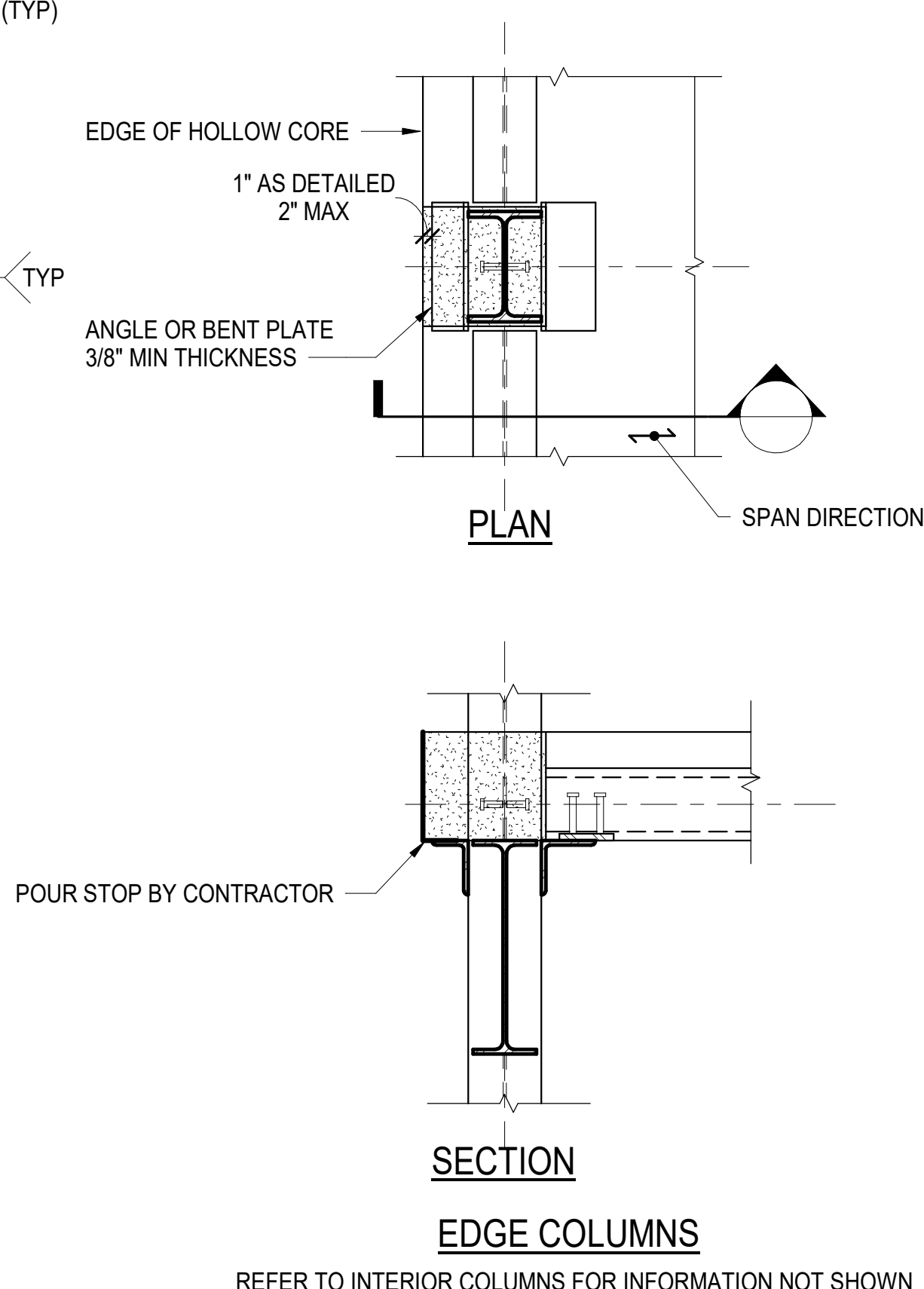
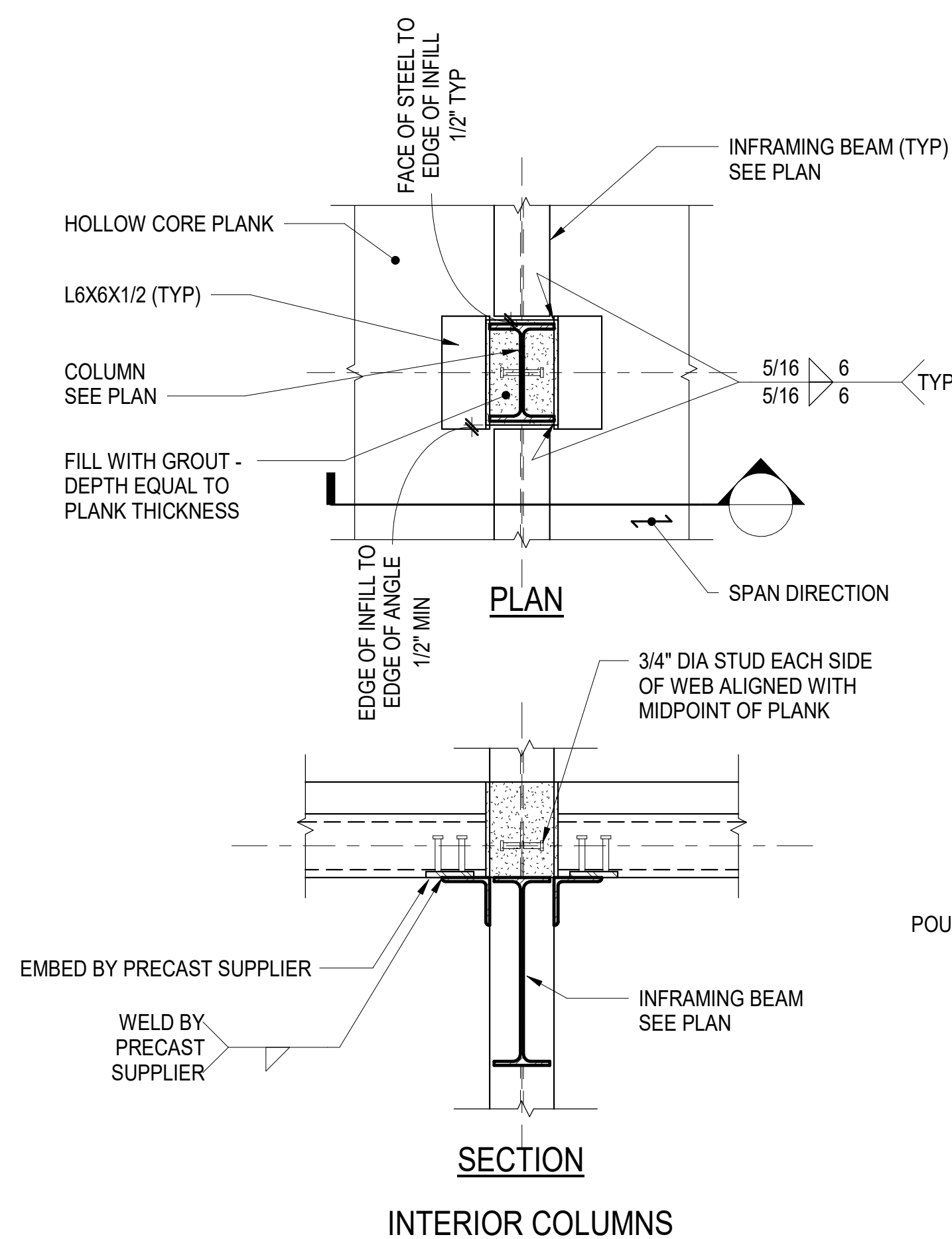
SCHEDULE A					
ANCHOR ROD DIAMETER	BASE PL HOLE DIA	MIN WASHER SIZE	MIN WASHER t	MIN PROJ ABOVE BASE PL	NOMINAL GROUT THICKNESS
3/4"	1-5/16"	2"	1/4"	3"	2"



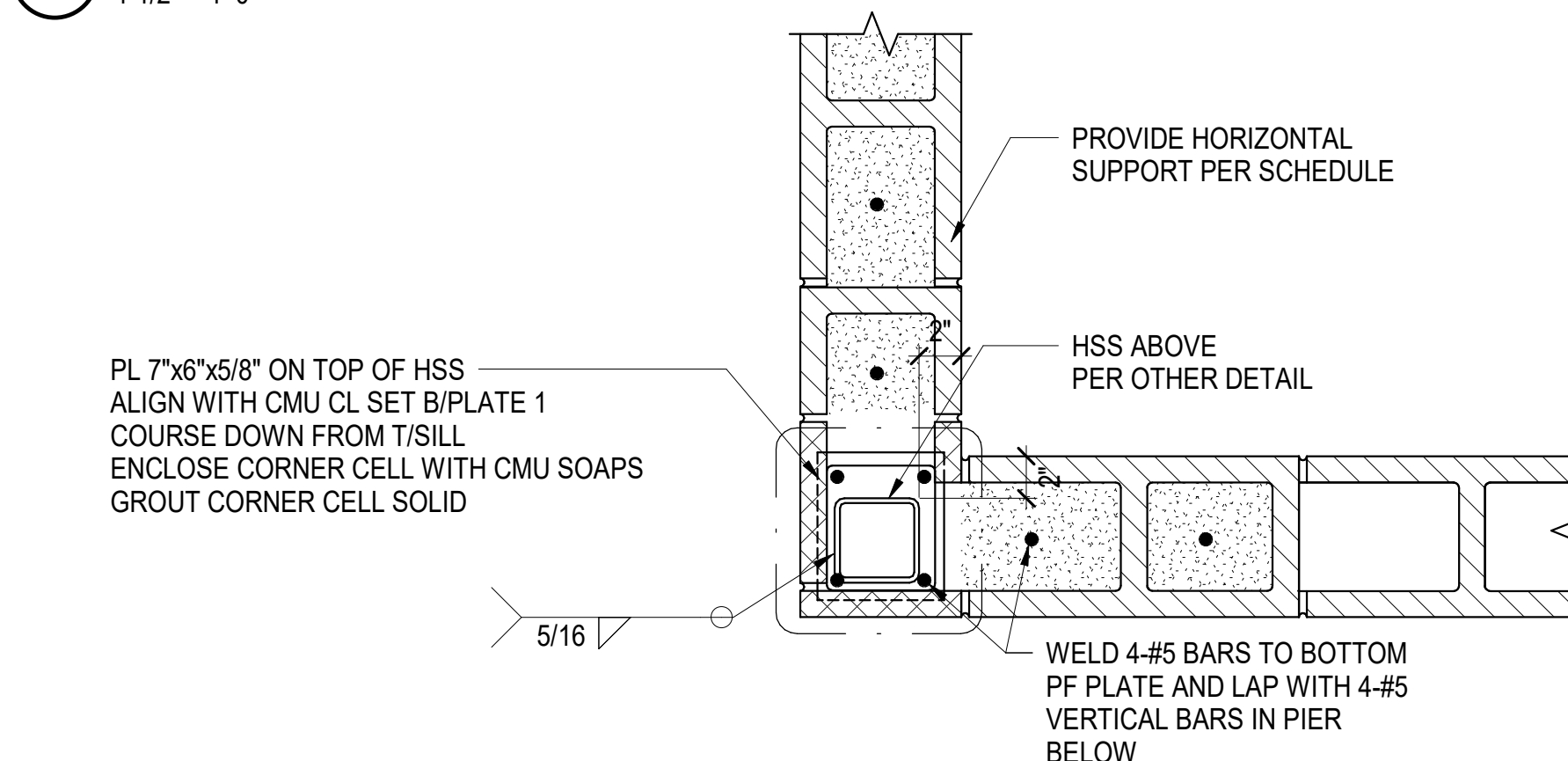
- NOTES:**
- BASE PLATE THICKNESS SHOWN IS A MINIMUM DIMENSION AFTER ALL MILLING IS COMPLETED
  - COLUMN STABILITY DURING ERECTION IS RESPONSIBILITY OF CONTRACTOR
  - SEE ANCHOR ROD SCHEDULE AND TYPICAL ANCHOR ROD DETAIL FOR ADDITIONAL INFORMATION
  - ANCHOR ROD CONFIGURATION IS TO USE SQUARE PATTERN OUTSIDE COLUMN. IF SPECIFIED BASE PLATE SIZE DOES NOT PERMIT OUTSIDE PLACEMENT, USE SQUARE PATTERN INSIDE COLUMN. USE RECTANGULAR ANCHOR ROD CONFIGURATION WHERE NOTED.

**1 TYPICAL ANCHOR ROD DETAIL**  
 NOT TO SCALE

**2 TYPICAL BASE PLATE DETAIL**  
 NOT TO SCALE



**4 LINTELS AT CORNER SUPPORTED BY TUBE POST**  
 1 1/2" = 1'-0"



**5 SILL AT CORNER WITH TUBE POST**  
 1 1/2" = 1'-0"

**3 INFILL, SLAB SUPPORT, AND LATERAL BRACING AT COLUMNS**  
 3/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

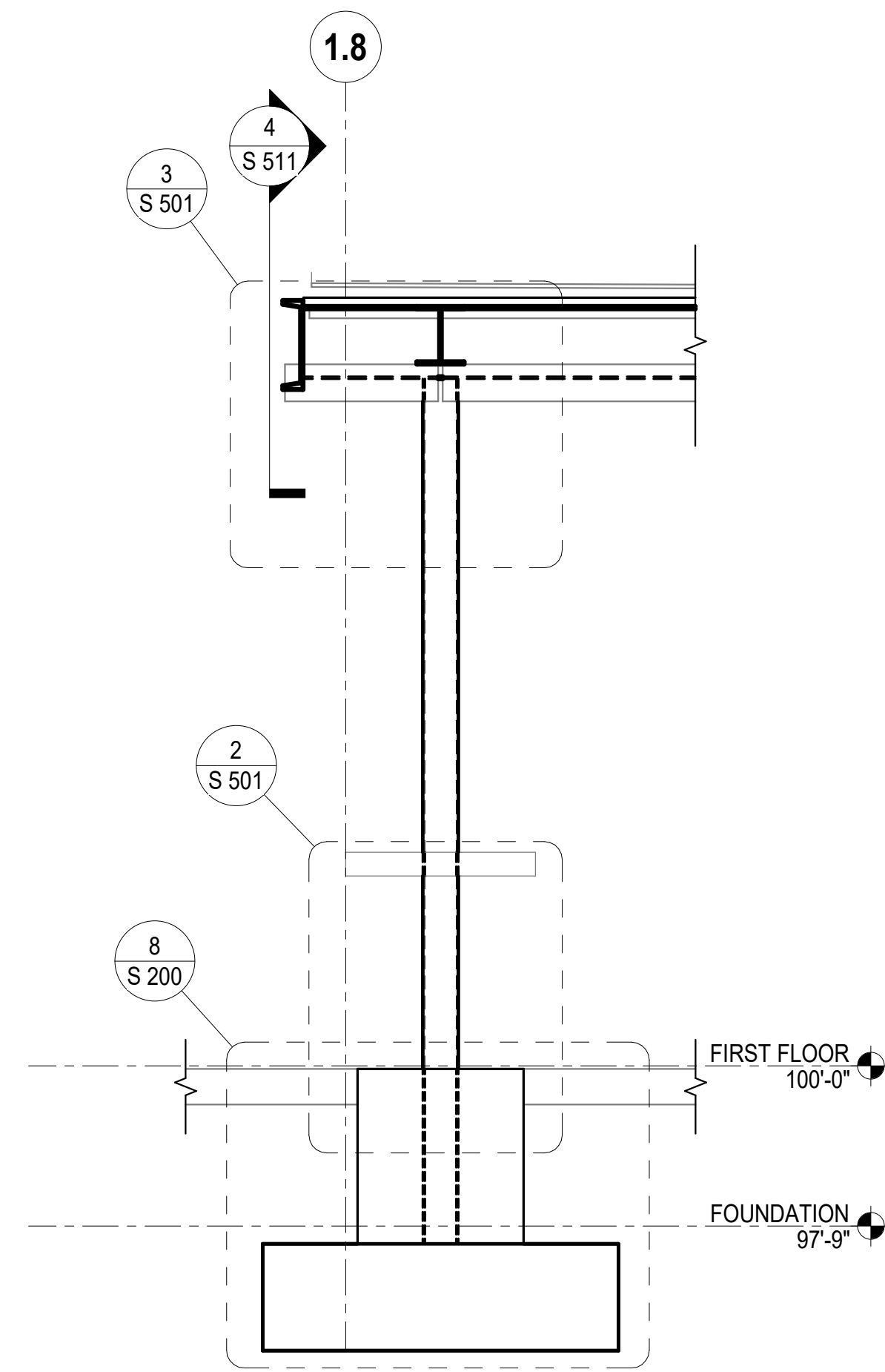
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

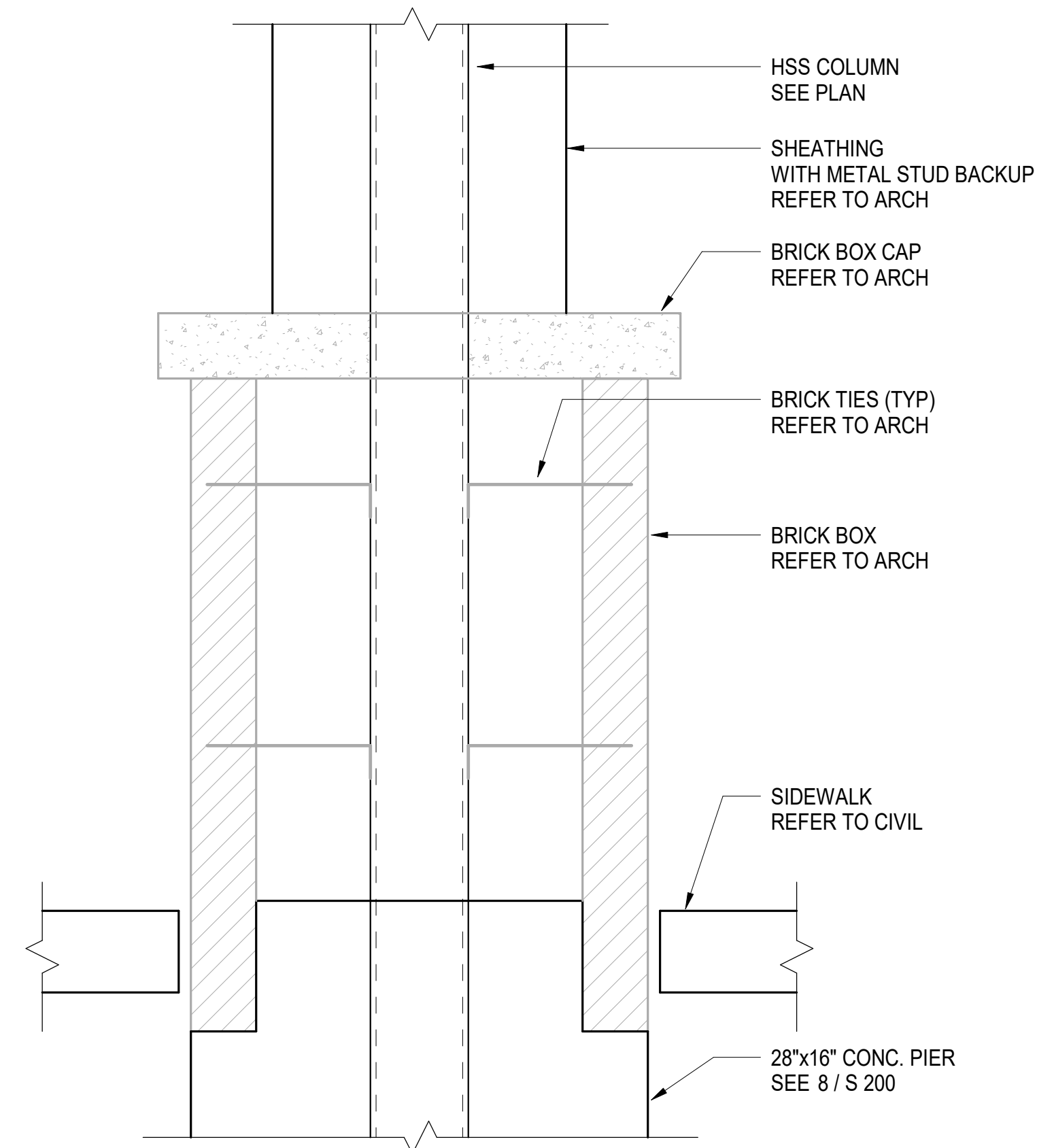
SHEET TITLE  
 TYPICAL STEEL COLUMN DETAILS

DATE  
 JUNE 30, 2023

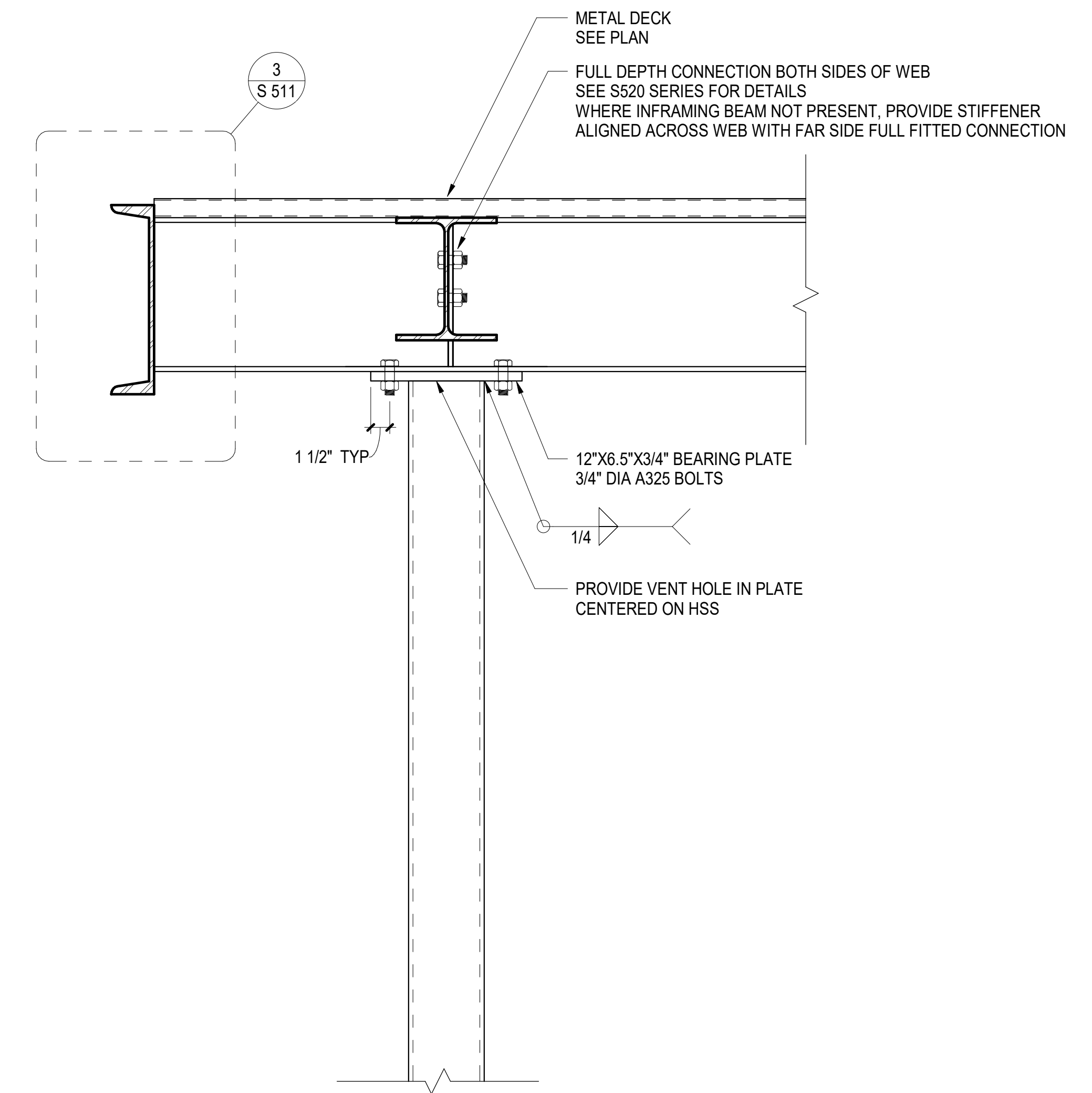
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**S 500**  
 21-237.25



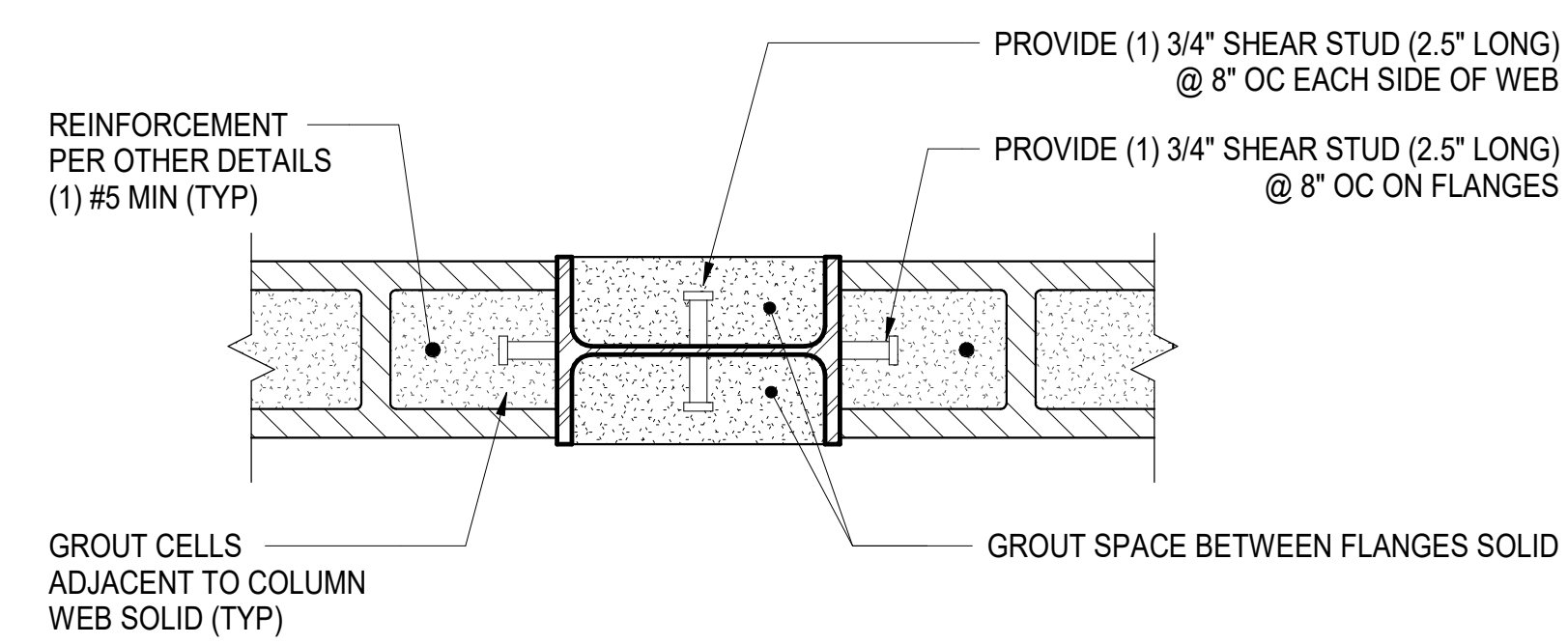
**1 HSS POST AT CANOPY**  
 1/2" = 1'-0"



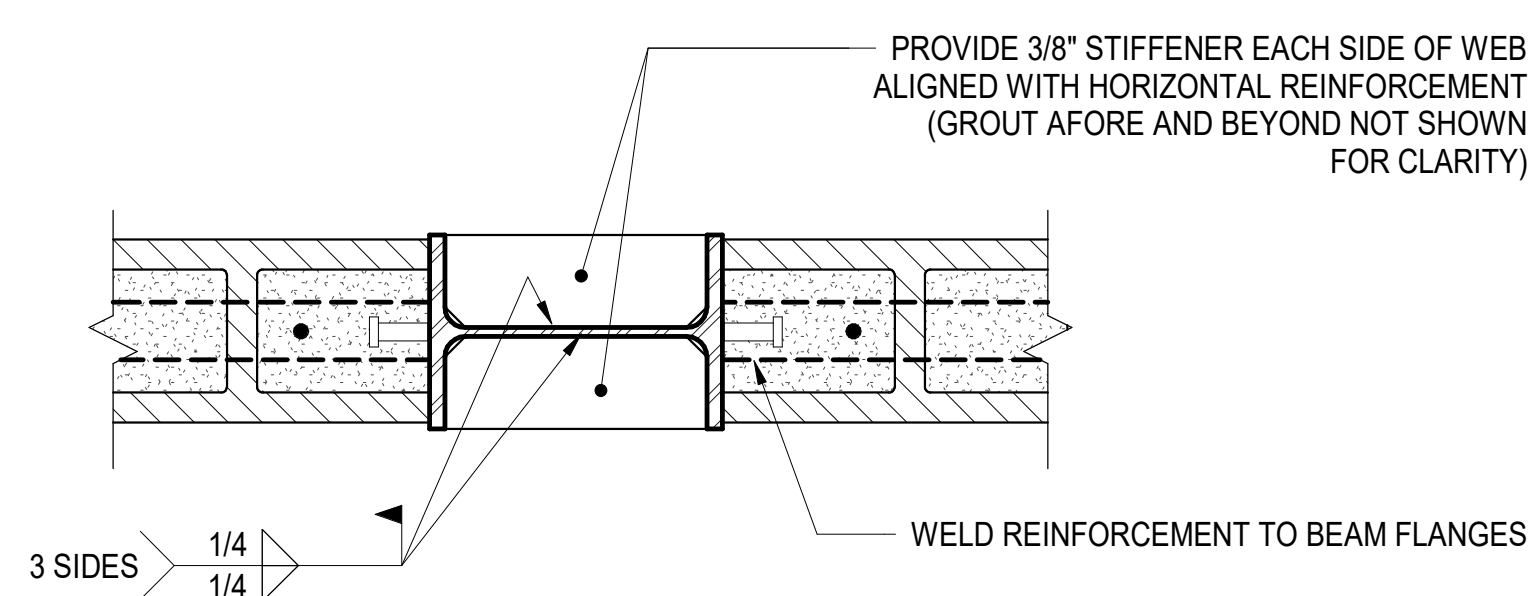
**2 DETAIL AT CANOPY COLUMN BASE AND VENEER BOX**  
 1/2" = 1'-0"



**3 DETAIL AT CANOPY COLUMN TOP CONNECTION**  
 1/2" = 1'-0"

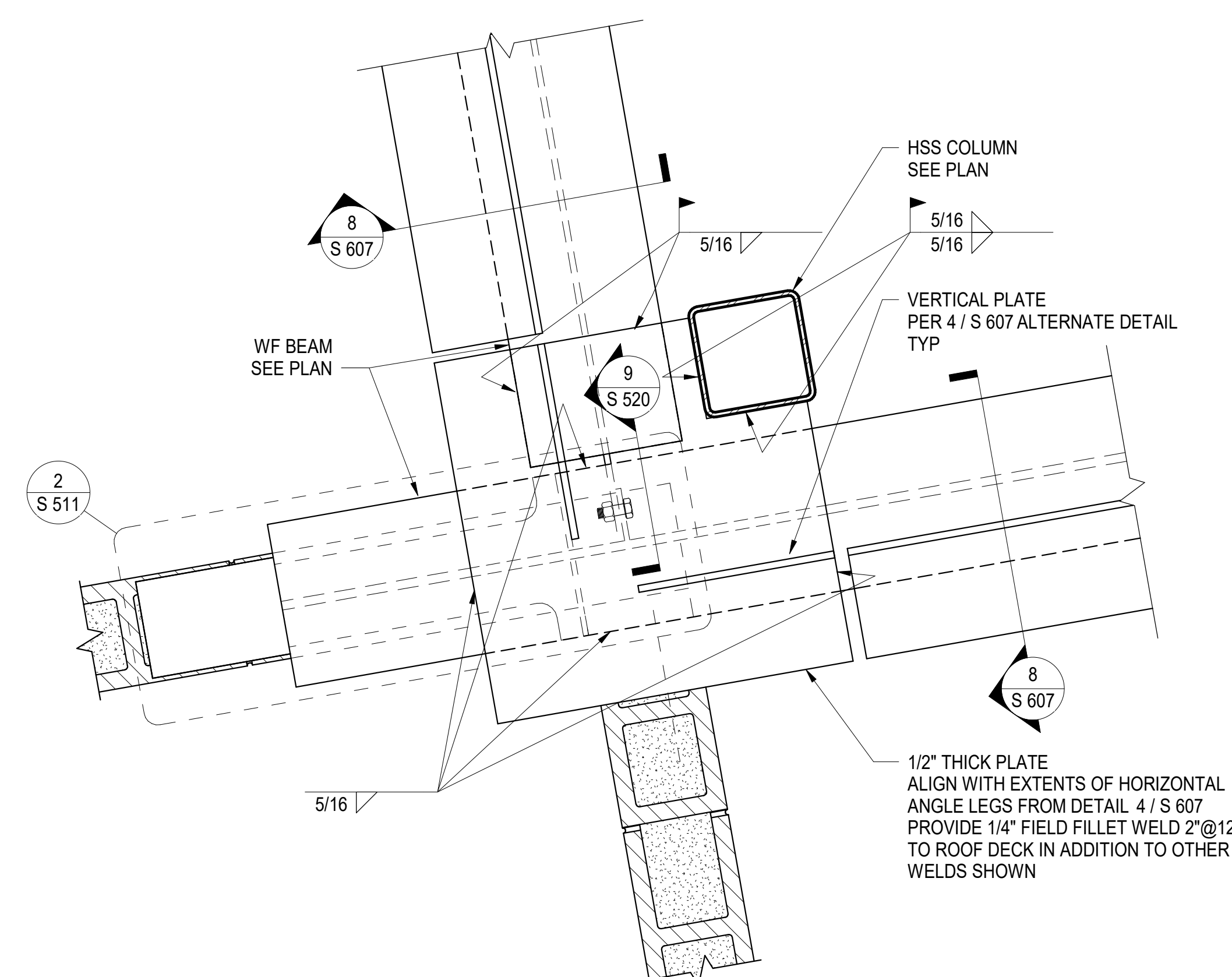


**TYPICAL CONDITION**



**AT HORIZONTAL REINFORCEMENT (#3 AND GREATER)**  
 SEE "TYPICAL CONDITION" FOR INFORMATION NOT SHOWN

**4 COLUMN EMBEDDED WITHIN CMU WALL**  
 1/2" = 1'-0"



**5 DETAIL AT OFFSET HSS POST**  
 1/2" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

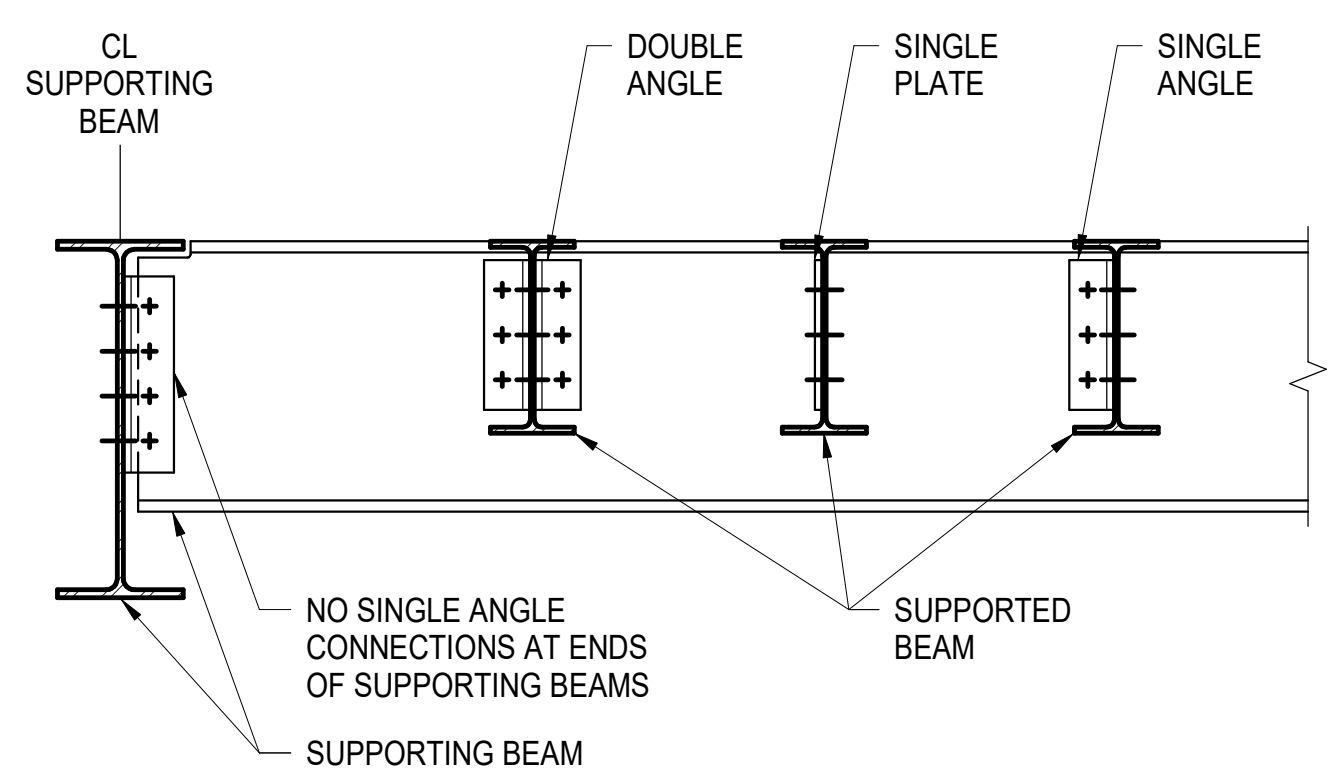
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 STEEL COLUMN DETAILS

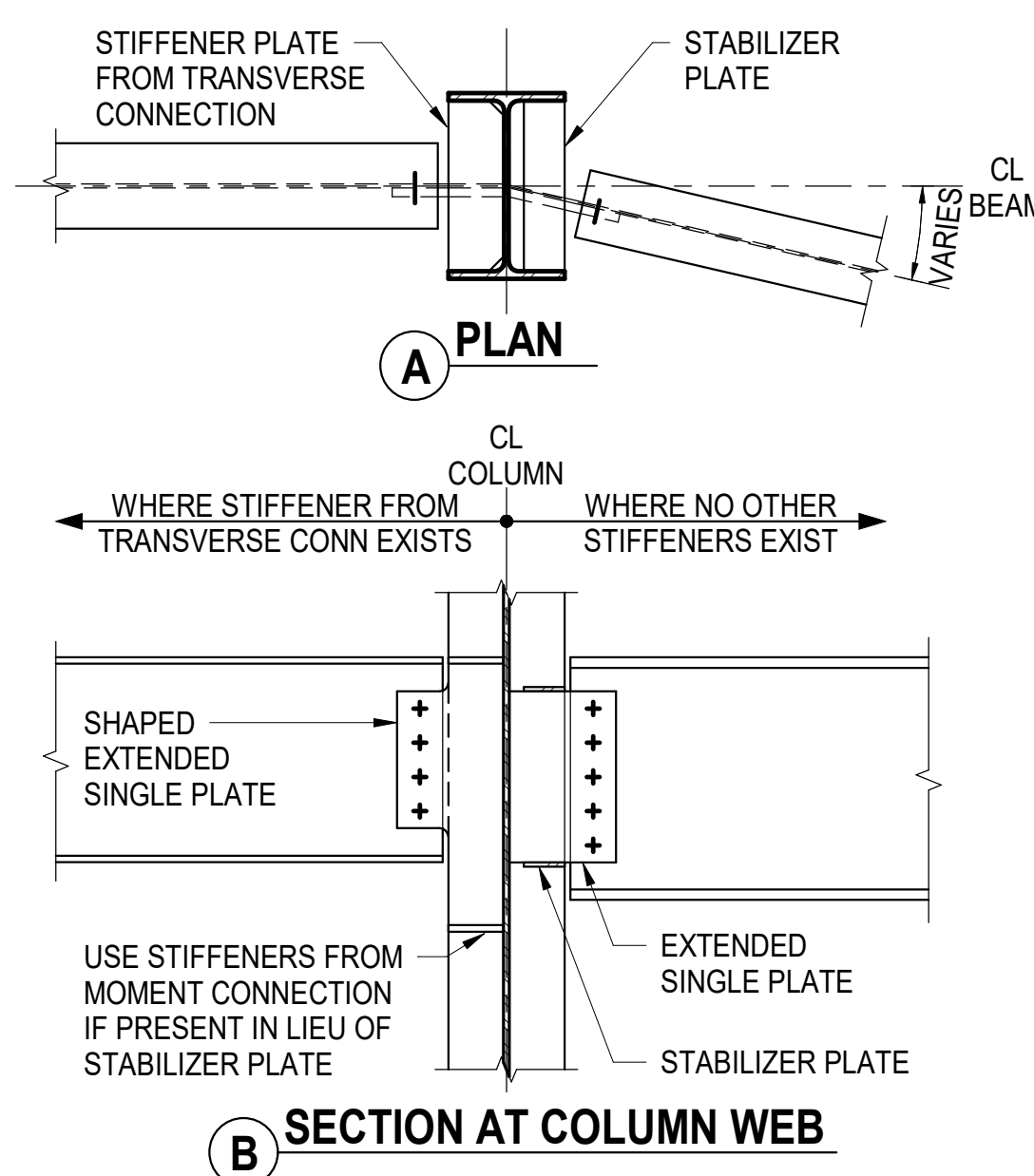
DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 501**  
 21-237.25



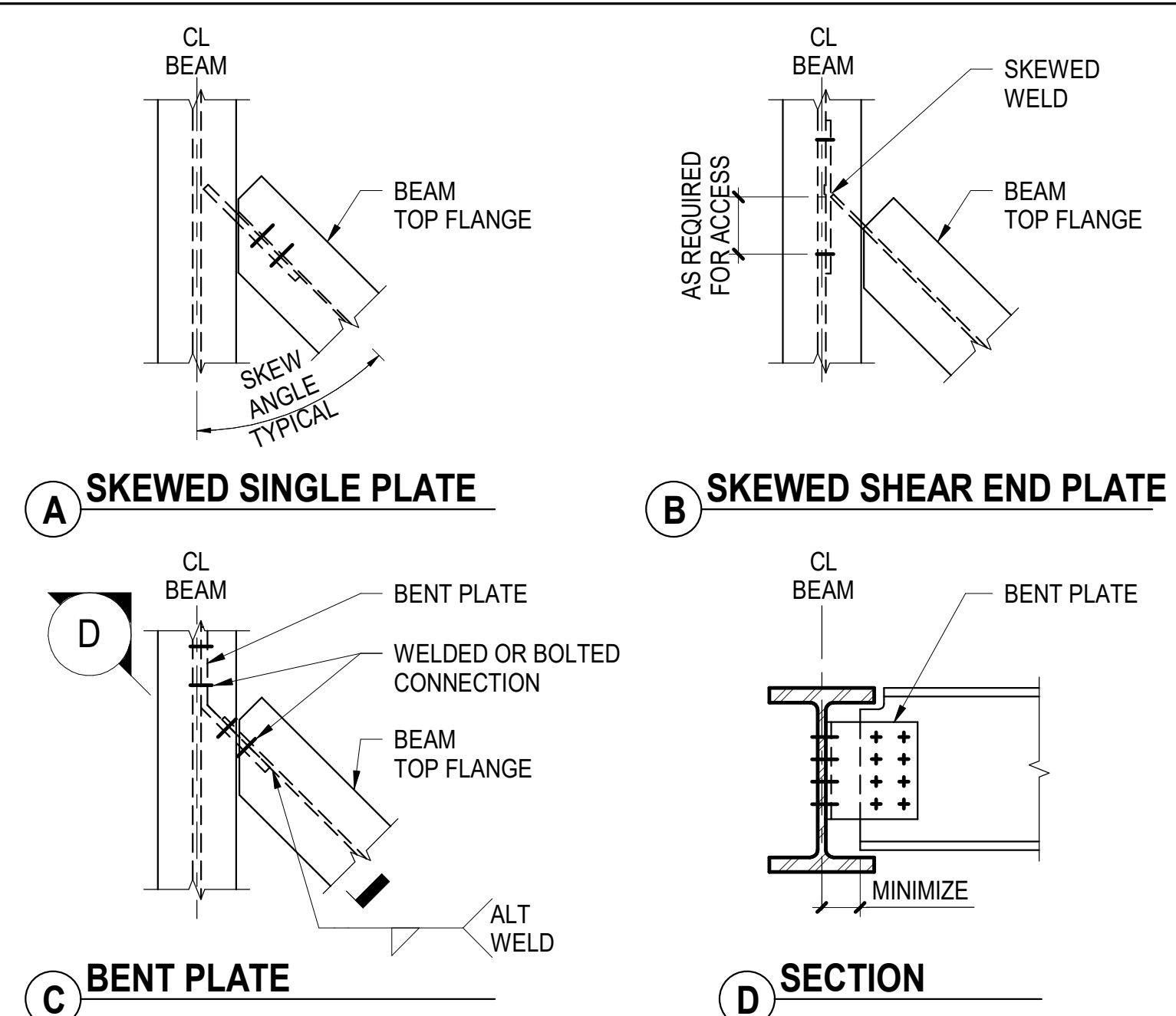
- NOTES:**
- SUPPORTED BEAMS PRIMARILY SUPPORT DISTRIBUTED LOADS FROM SLABS OR DECKING
  - SUPPORTING BEAMS SUPPORT SIGNIFICANT POINT LOADS FROM ONE OR MORE SUPPORTED BEAMS OR FROM COLUMNS BEING TRANSFERRED. SUPPORTING BEAMS MAY BE SUPPORTED BY COLUMNS OR BY OTHER SUPPORTING BEAMS
  - FOR SHEAR CONNECTIONS AT SUPPORTED BEAM ENDS, DOUBLE ANGLE, SINGLE PLATE OR SINGLE ANGLE MAY BE USED UNLESS OTHERWISE NOTED
  - SEE TYPICAL STEEL BEAM SHEAR CONNECTIONS FOR INFORMATION NOT SHOWN

**1 TYPICAL BEAM TO BEAM SHEAR CONNECTION (3 TYPES)**  
 NOT TO SCALE



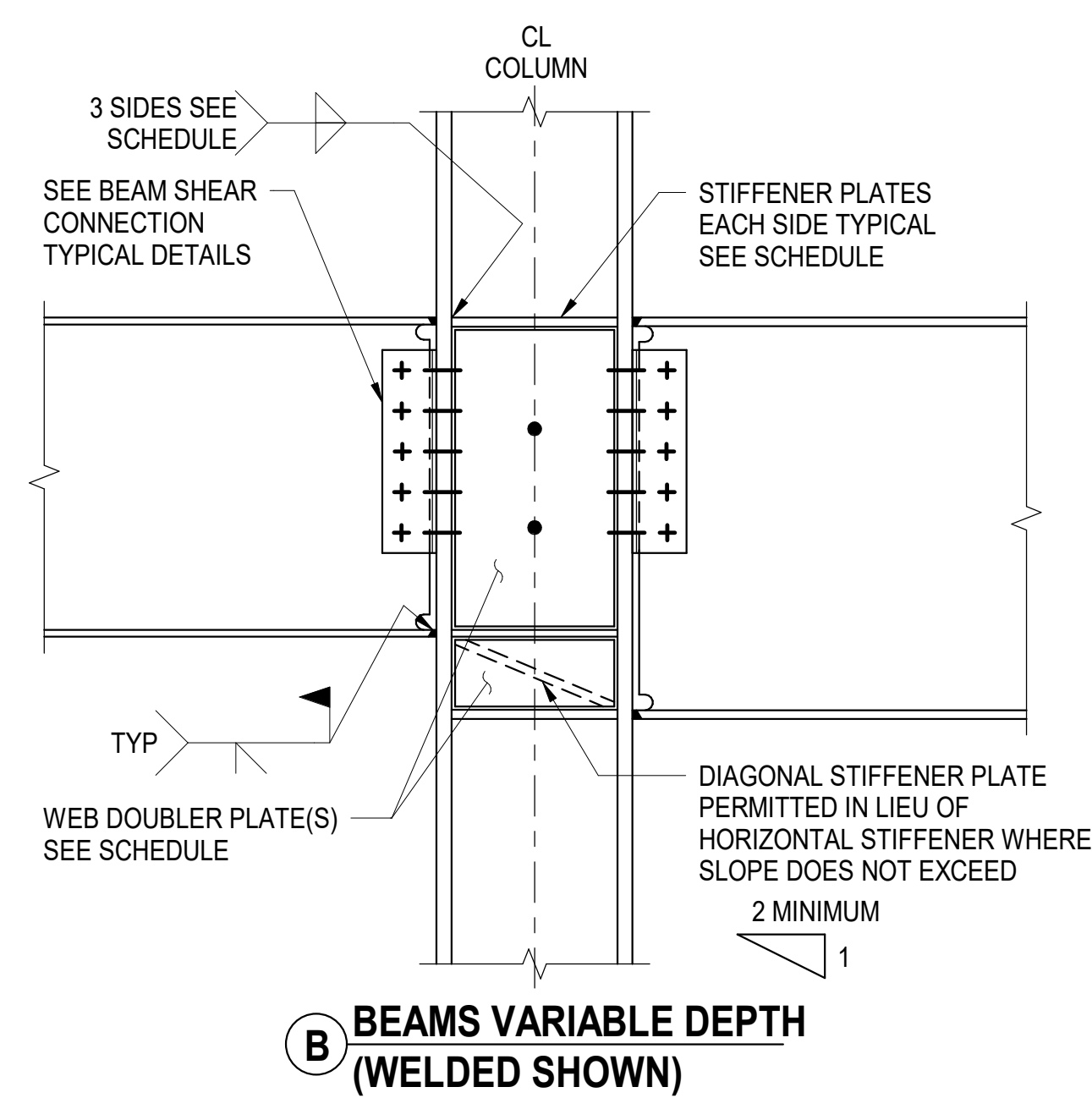
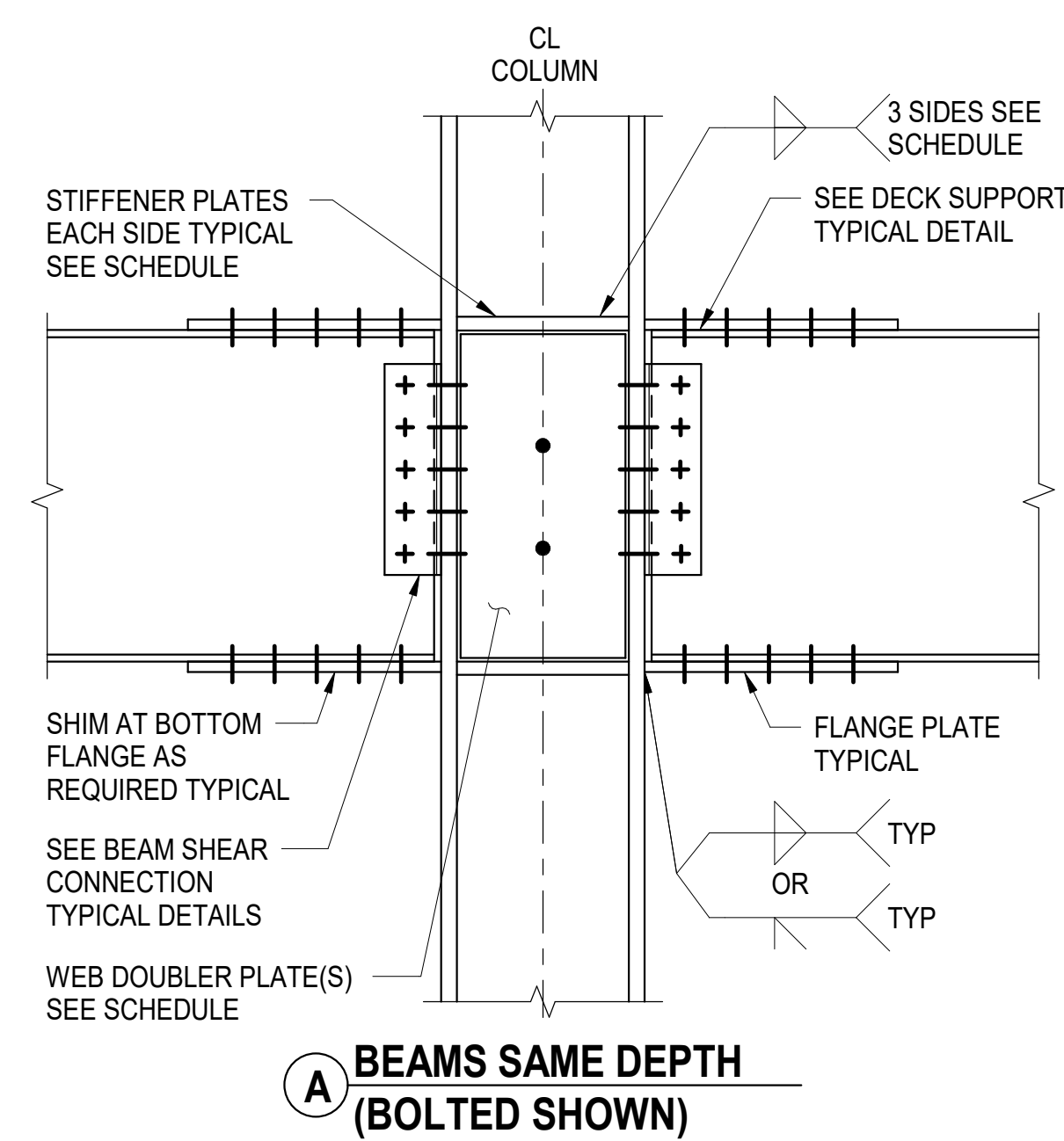
- NOTES:**
- SEE TYPICAL STEEL BEAM SHEAR CONNECTIONS FOR INFORMATION NOT SHOWN

**2 TYPICAL EXTENDED SINGLE PLATE BEAM TO COLUMN WEB SHEAR CONNECTION**  
 NOT TO SCALE



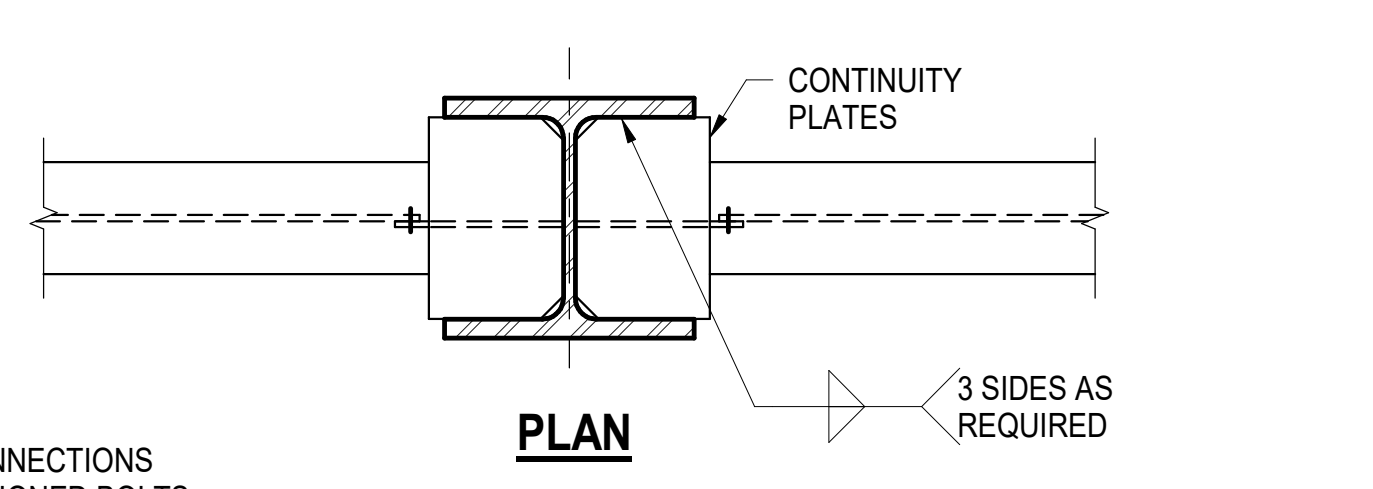
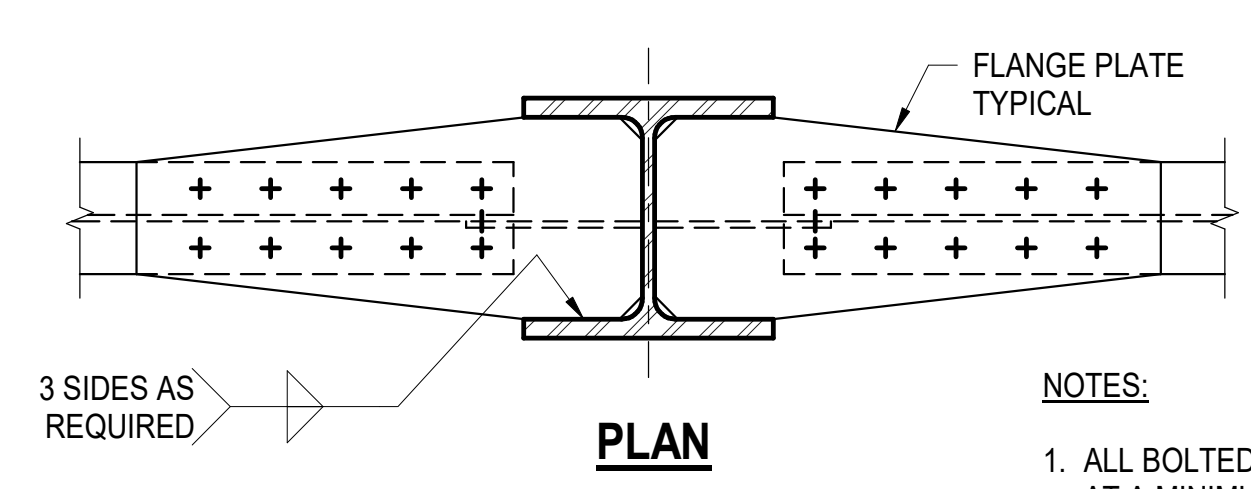
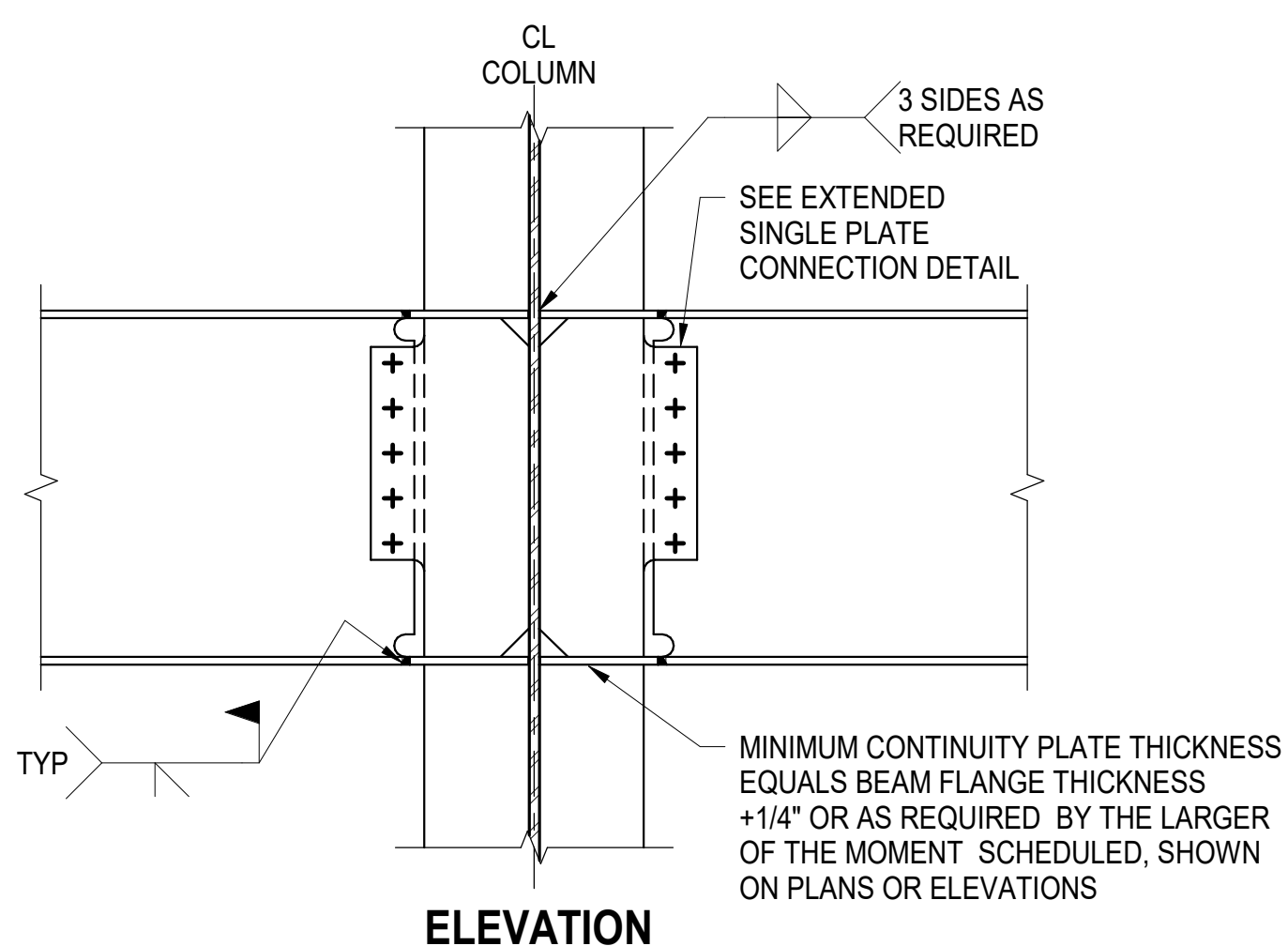
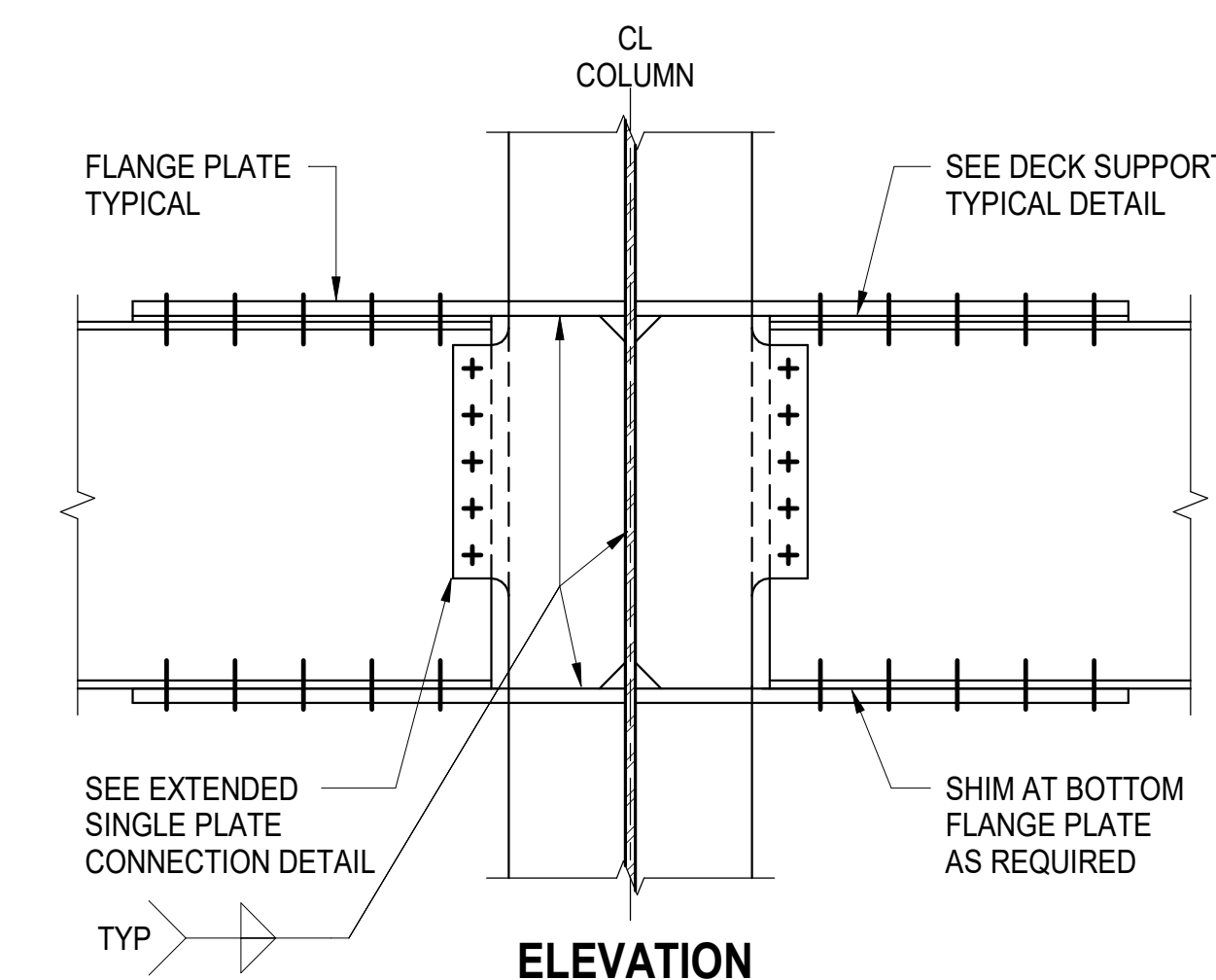
- NOTES:**
- SEE TYPICAL STEEL BEAM SHEAR CONNECTIONS FOR ADDITIONAL INFORMATION FOR DETAIL A.
  - DETAILS B AND C ARE CONCEPTUAL (NOT COMPLETELY DESIGNED) AND ARE INTENDED FOR FRAMING CONDITIONS OUTSIDE THE LIMITS OF COMPLETELY DESIGNED TYPICAL STEEL BEAM SHEAR CONNECTIONS IN THESE DRAWINGS

**3 TYPICAL SKEWED BEAM SHEAR CONNECTION**  
 NOT TO SCALE



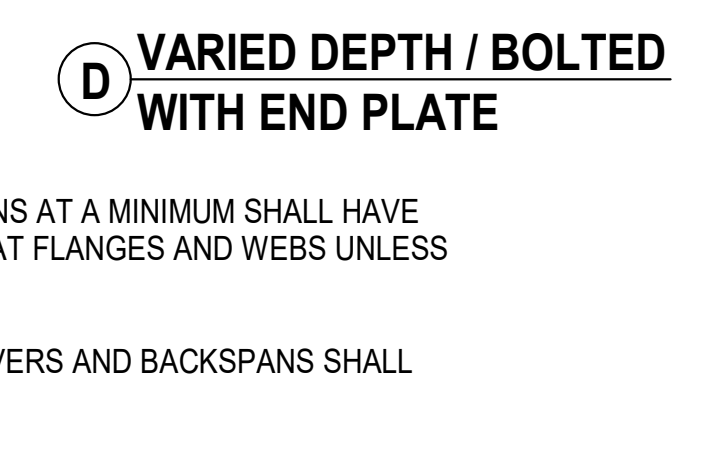
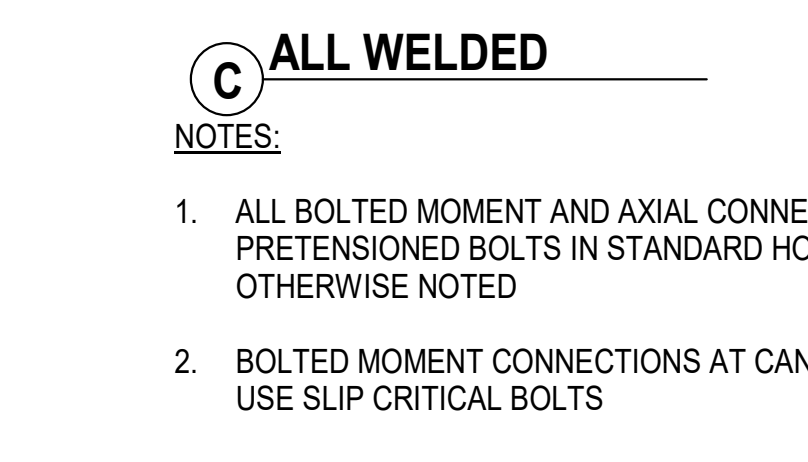
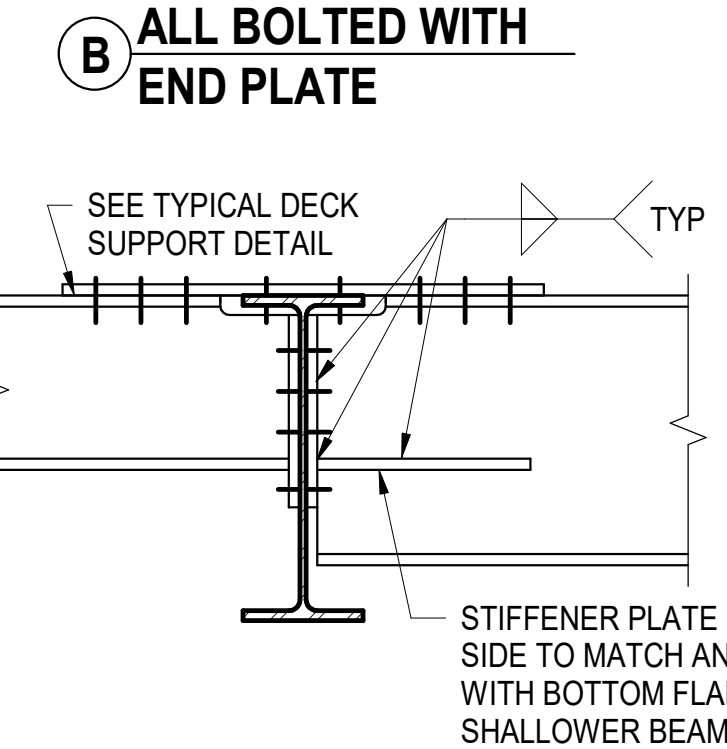
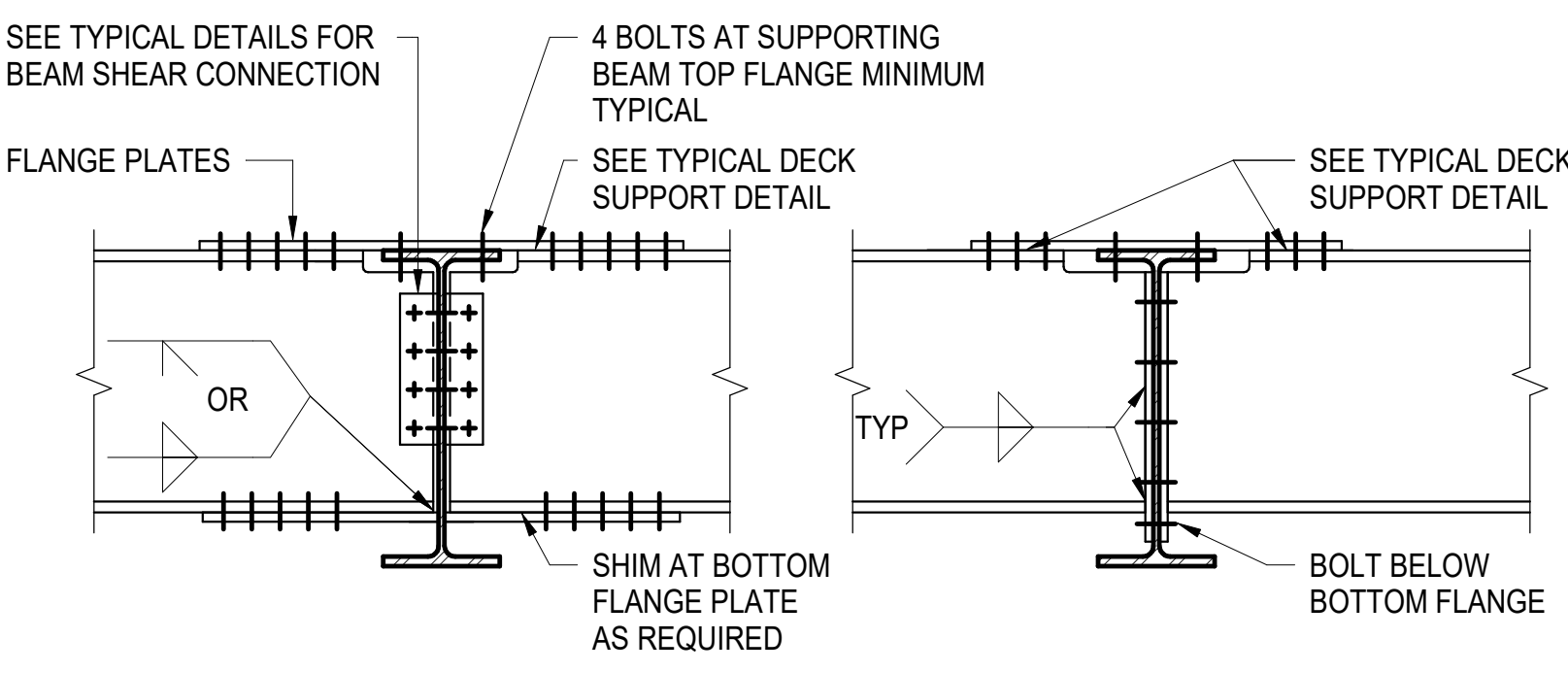
- NOTES:**
- ALL BOLTED MOMENT AND AXIAL CONNECTIONS AT A MINIMUM SHALL HAVE PRETENSIONED BOLTS IN STANDARD HOLES AT FLANGES AND WEBS UNLESS OTHERWISE NOTED
  - BOLTED MOMENT CONNECTIONS AT CANTILEVERS AND BACKSPANS SHALL USE SLIP CRITICAL BOLTS
  - AT CONTRACTOR'S OPTION, WEB DOUBLER PLATES CAN TERMINATE OUTSIDE STIFFENER PLATE. CONTRACTOR'S ENGINEER MUST FULLY DESIGN THE CONNECTION

**4 TYPICAL BEAM TO COLUMN FLANGE MOMENT CONNECTION - BOLTED/WELDED**  
 NOT TO SCALE



- NOTES:**
- ALL BOLTED MOMENT AND AXIAL CONNECTIONS AT A MINIMUM SHALL HAVE PRETENSIONED BOLTS IN STANDARD HOLES AT FLANGES AND WEBS UNLESS OTHERWISE NOTED
  - BOLTED MOMENT CONNECTIONS AT CANTILEVERS AND BACKSPANS SHALL USE SLIP CRITICAL BOLTS

**5 TYPICAL BEAM TO COLUMN WEB MOMENT CONNECTION - BOLTED / WELDED**  
 NOT TO SCALE



- NOTES:**
- ALL BOLTED MOMENT AND AXIAL CONNECTIONS AT A MINIMUM SHALL HAVE PRETENSIONED BOLTS IN STANDARD HOLES AT FLANGES AND WEBS UNLESS OTHERWISE NOTED
  - BOLTED MOMENT CONNECTIONS AT CANTILEVERS AND BACKSPANS SHALL USE SLIP CRITICAL BOLTS

**6 TYPICAL BEAM TO BEAM MOMENT CONNECTION**  
 NOT TO SCALE

ISSUED FOR DATE

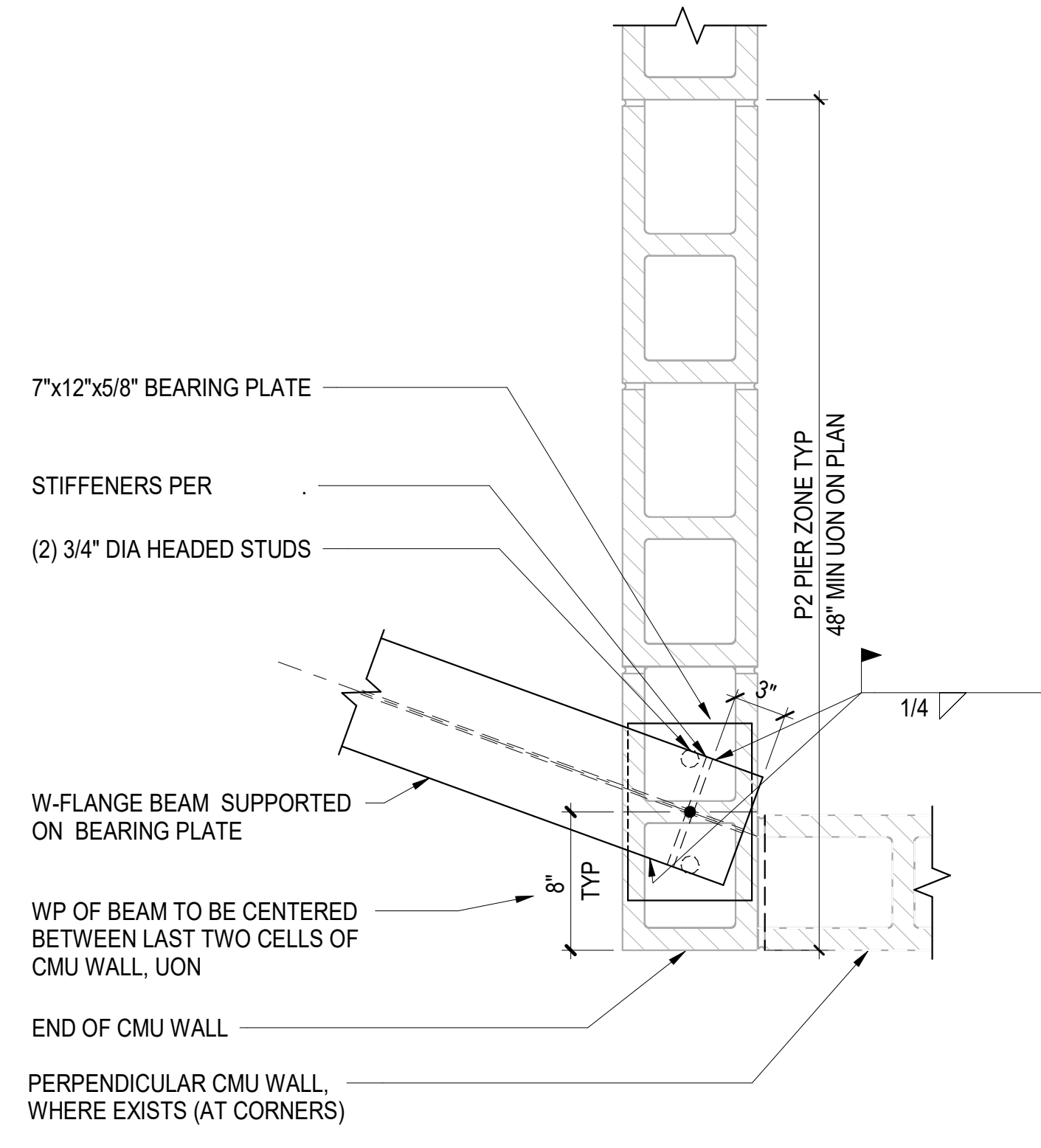
PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

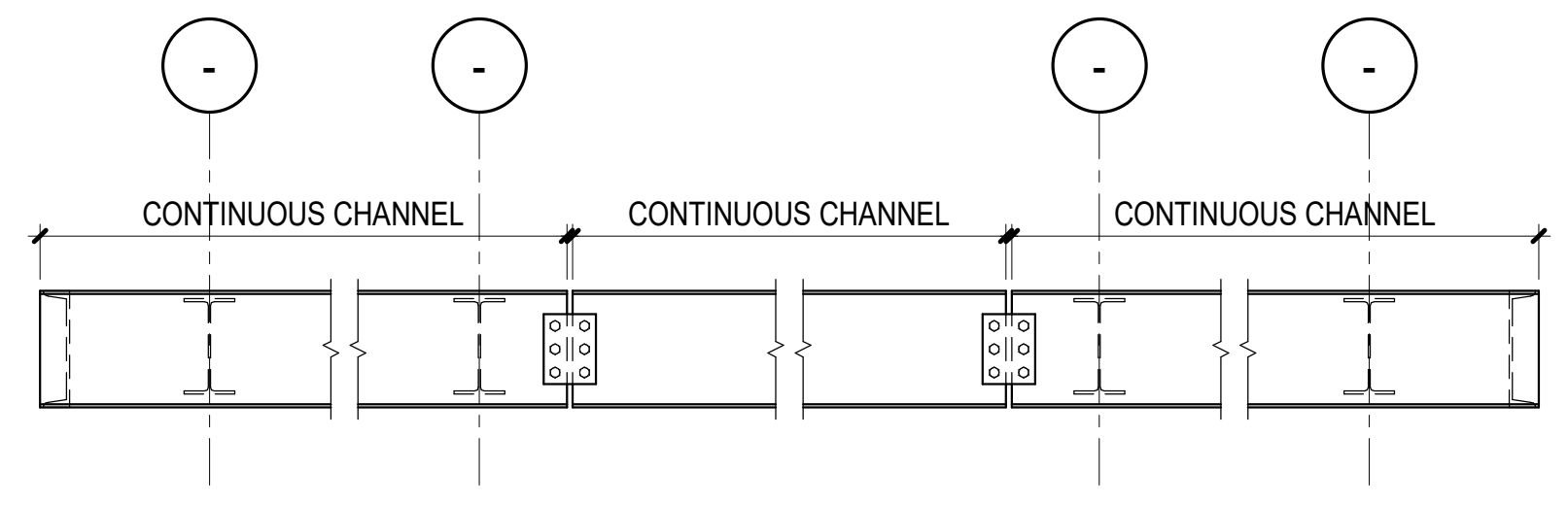
Portage, Michigan

SHEET TITLE  
 TYPICAL STEEL BEAM DETAILS

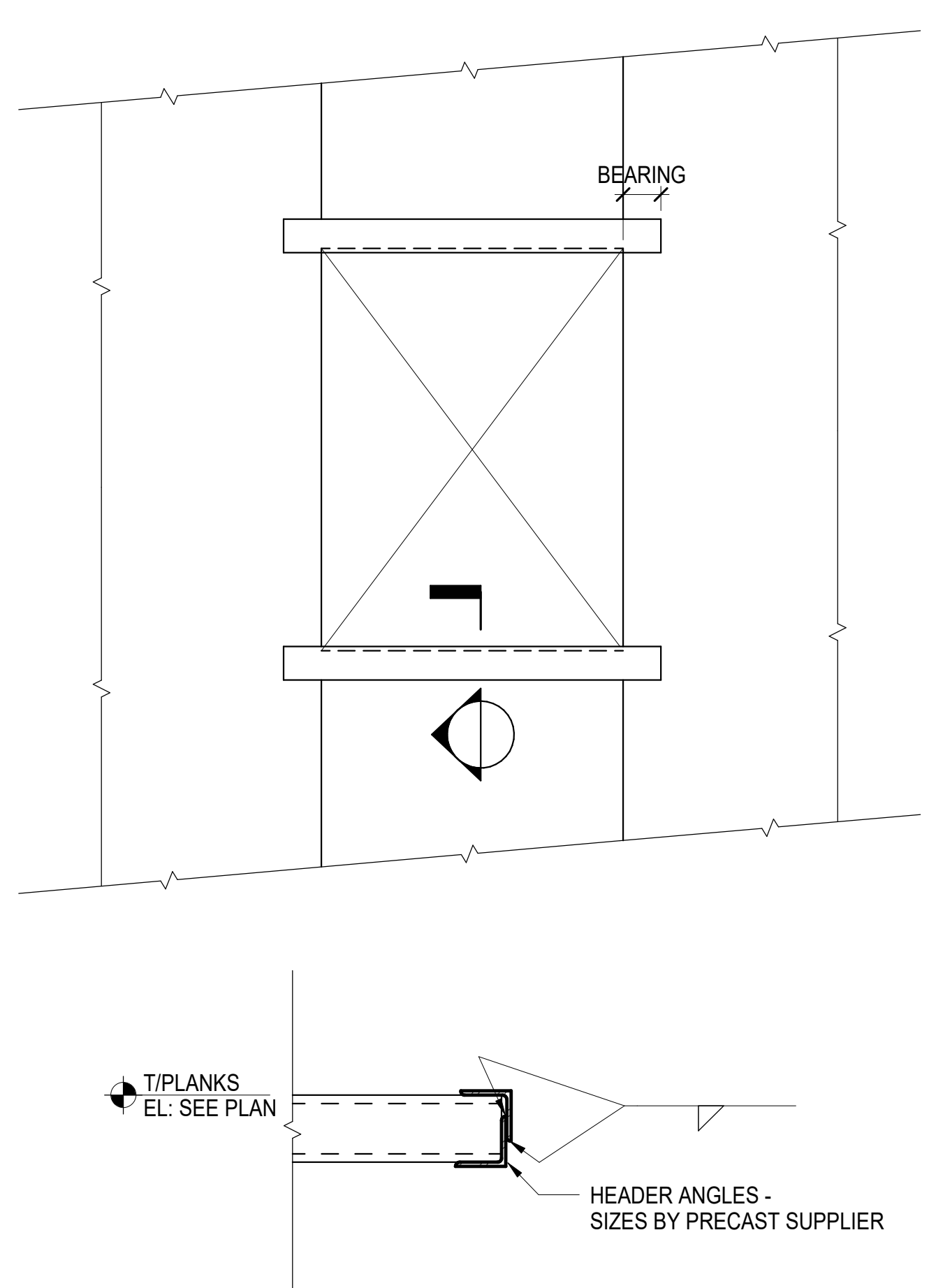
SHEET NUMBER  
**S 510**  
 DATE  
 JUNE 30, 2023  
 21-237.25



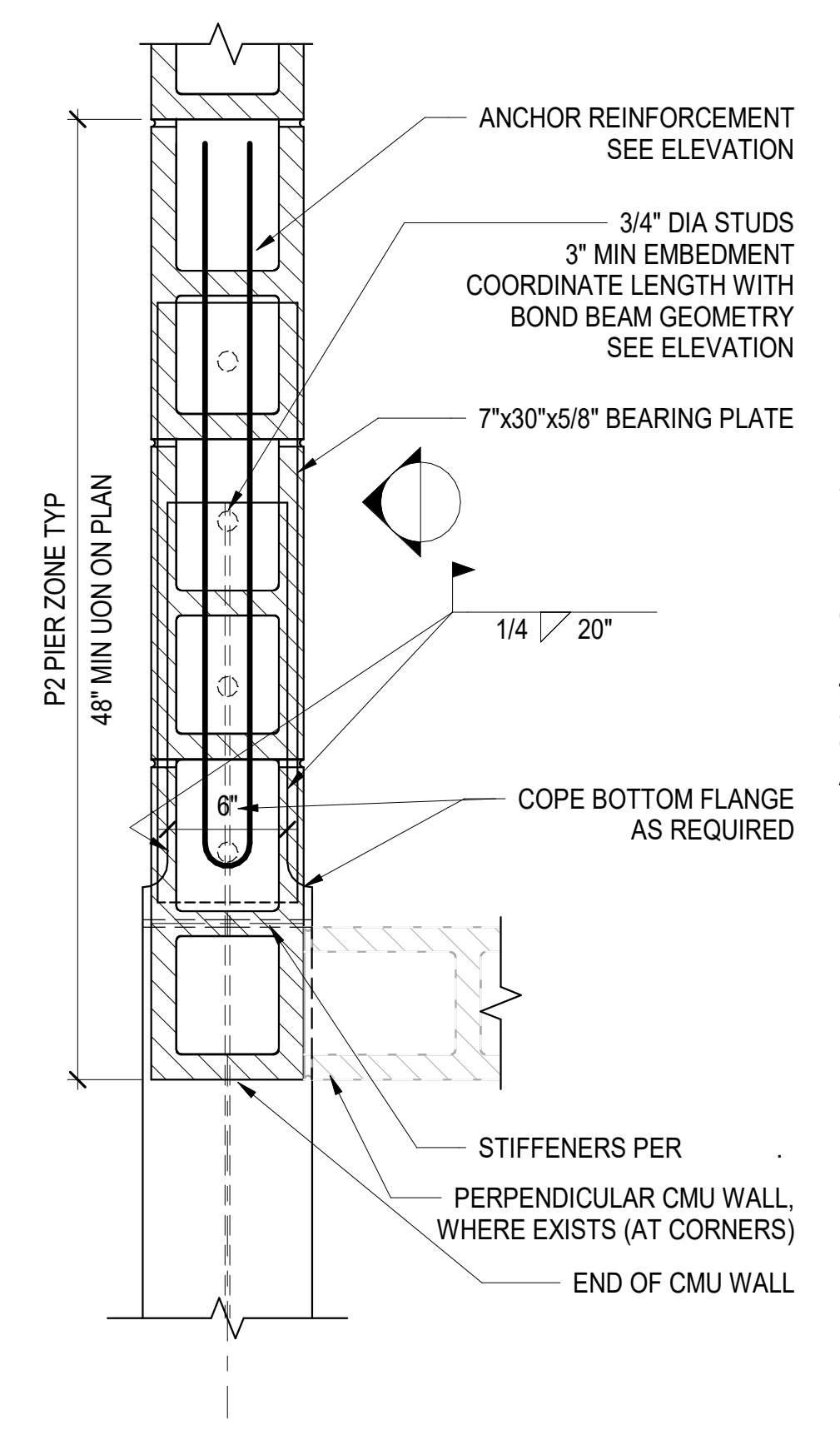
**1 STEEL BEAM SUPPORTED BY END/CORNER OF CMU WALL**  
 1 1/2" = 1'-0"



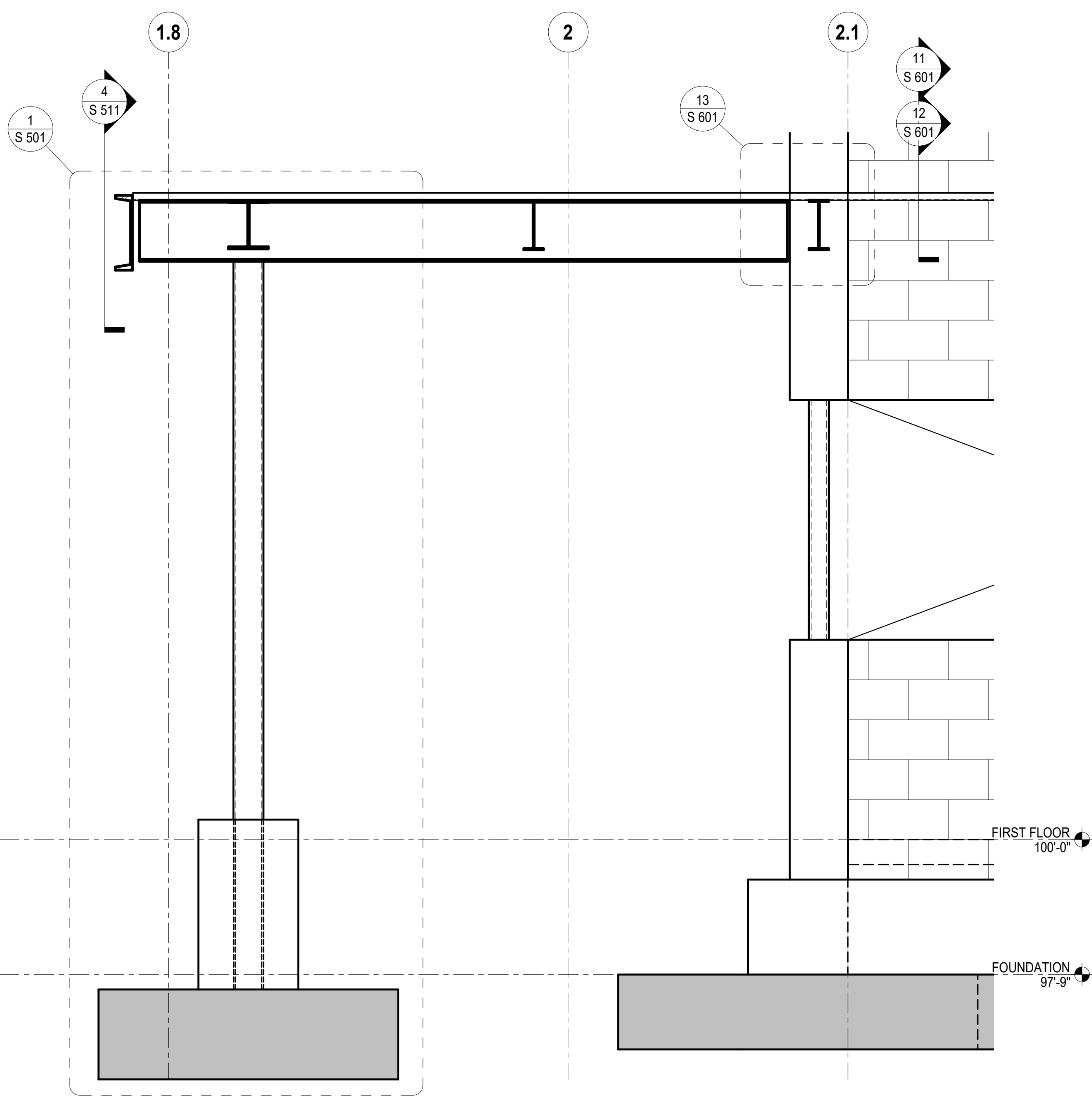
**4 CANOPY SPANDREL SPLICING SCHEME**  
 1/2" = 1'-0"



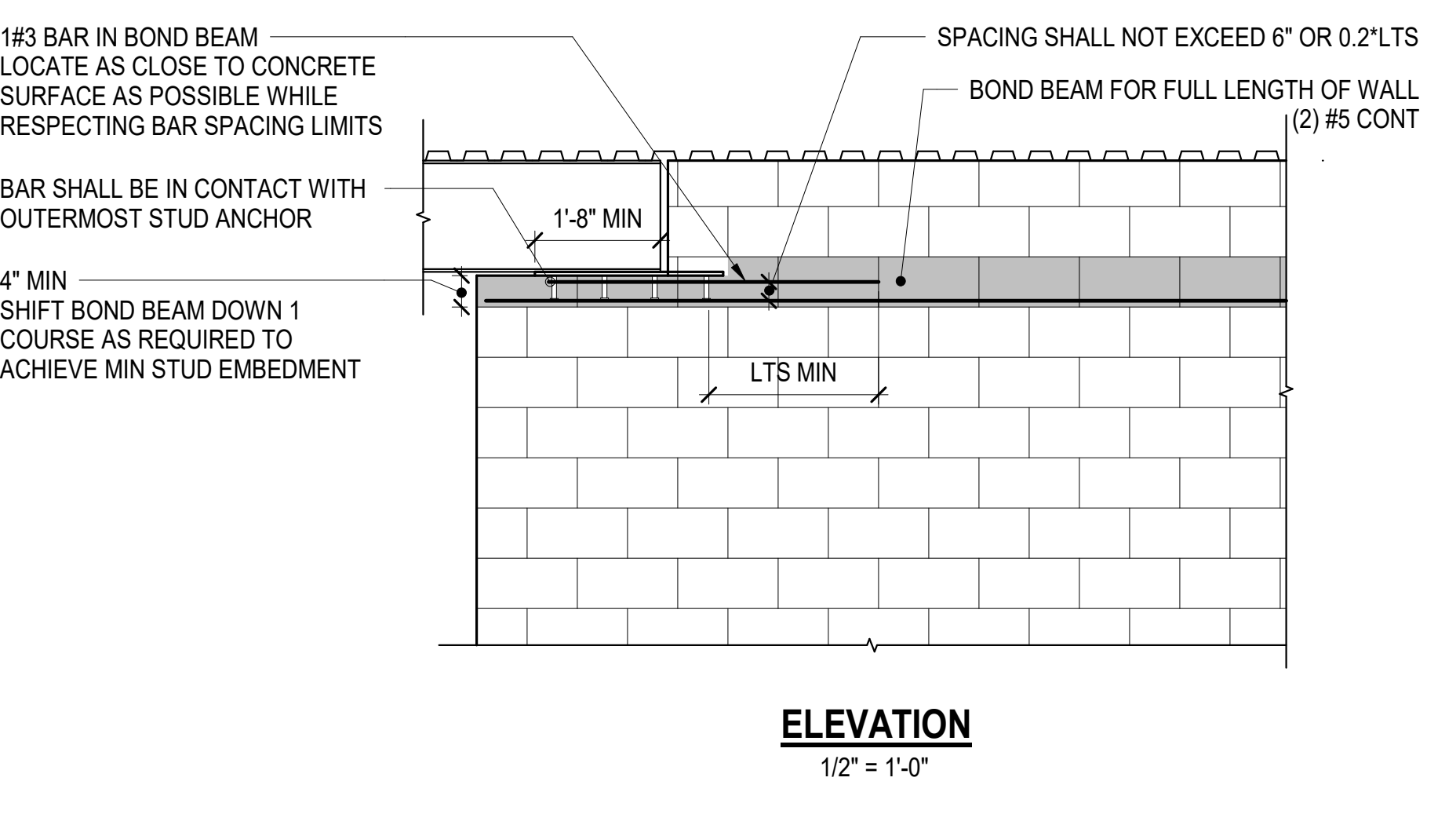
**5 HOLLOW CORE AT OPENING**  
 3/4" = 1'-0"



**2 STEEL DRAG STRUT CONNECTION TO CMU WALL**  
 1 1/2" = 1'-0"

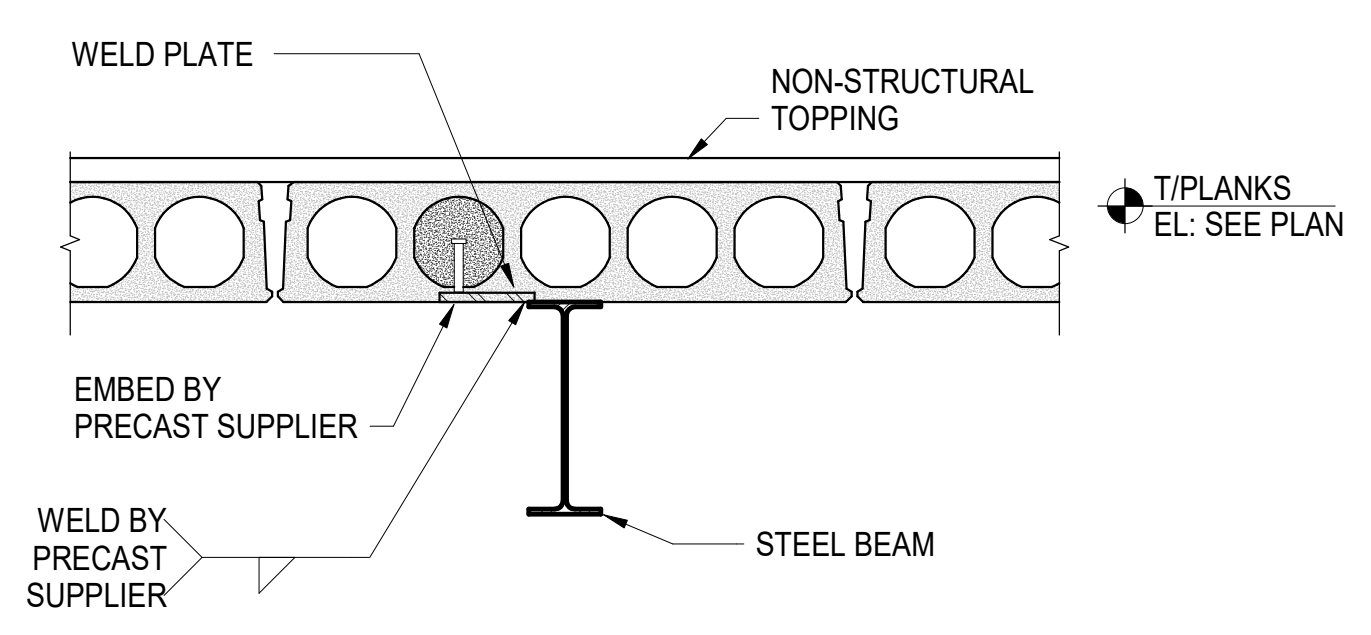


**6 CANOPY SECTION**  
 3/4" = 1'-0"

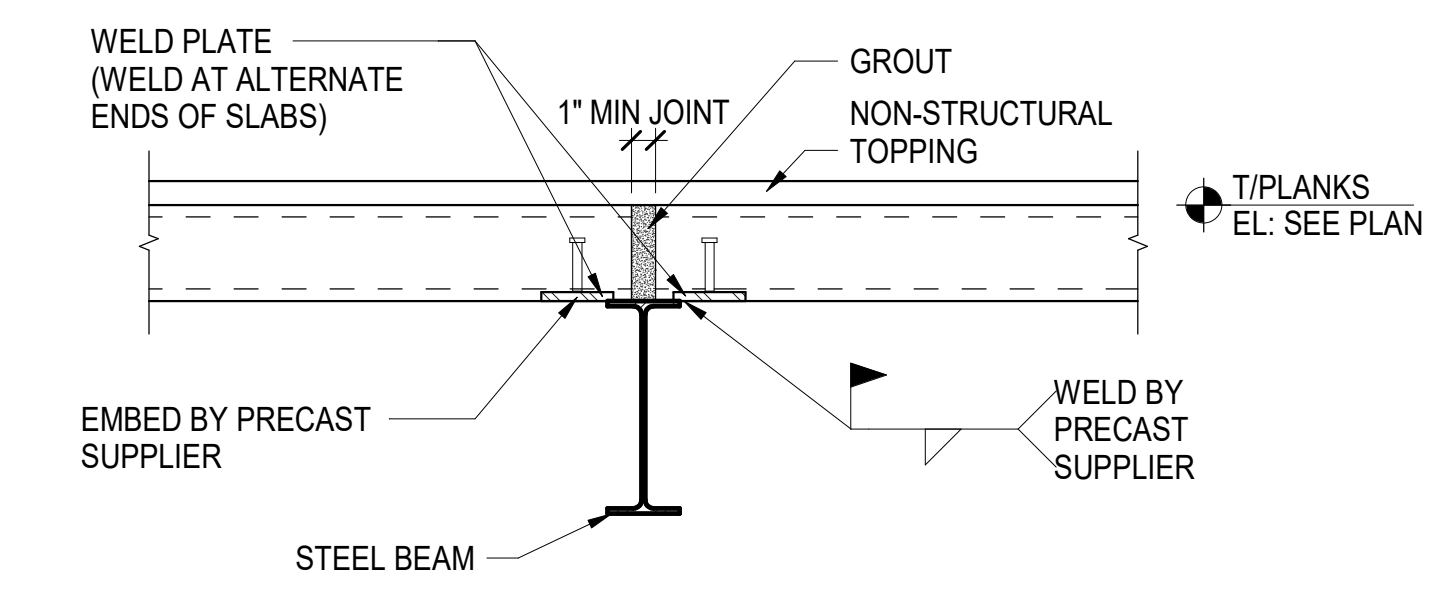


**ELEVATION**  
 1/2" = 1'-0"

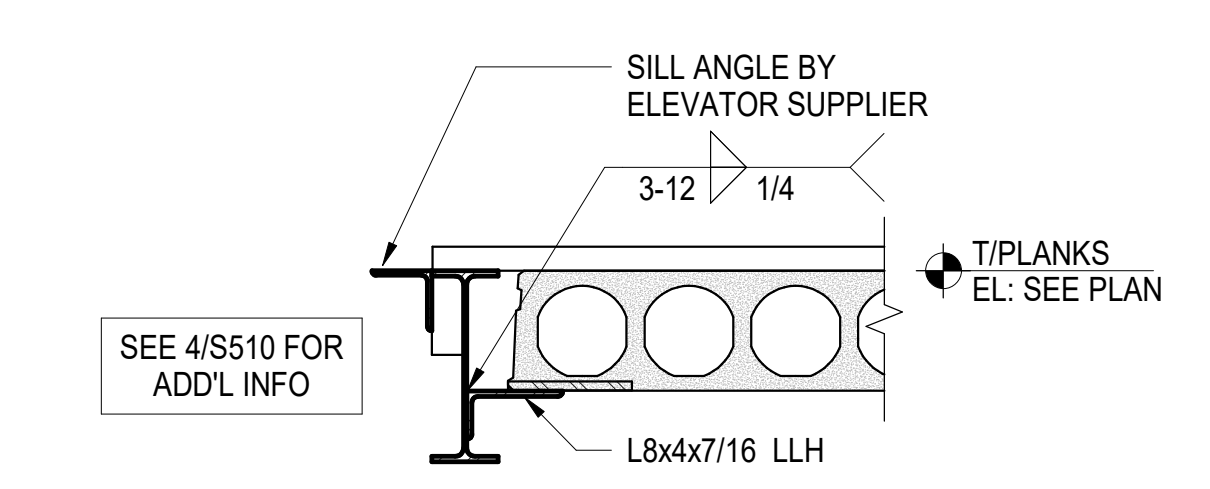
**3 SECTION AT CANOPY SPANDREL CHANNEL**  
 1" = 1'-0"



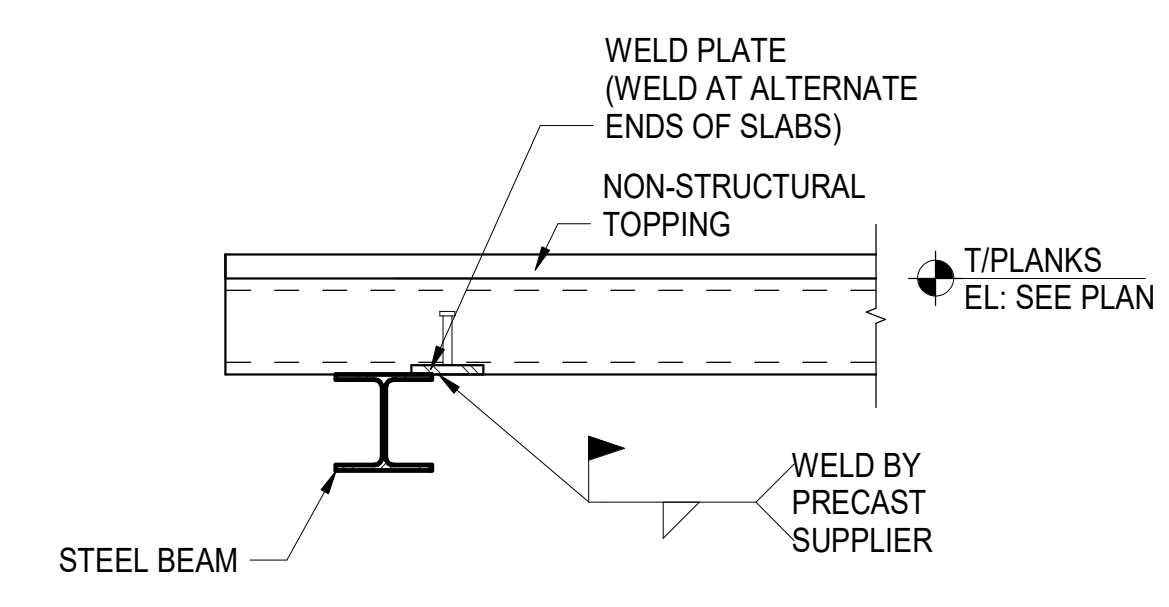
**7 TYPICAL PLANK BEARING ON BEAM DETAIL, SPAN PARALLEL**  
 3/4" = 1'-0"



**8 TYPICAL PLANK BEARING ON BEAM DETAIL, SPAN PERPENDICULAR**  
 3/4" = 1'-0"



**9 ELEVATOR SILL DETAIL**  
 3/4" = 1'-0"



**10 TYPICAL PLAN BEARING ON EDGE BEAM DETAIL**  
 3/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
 STEEL BEAM DETAILS

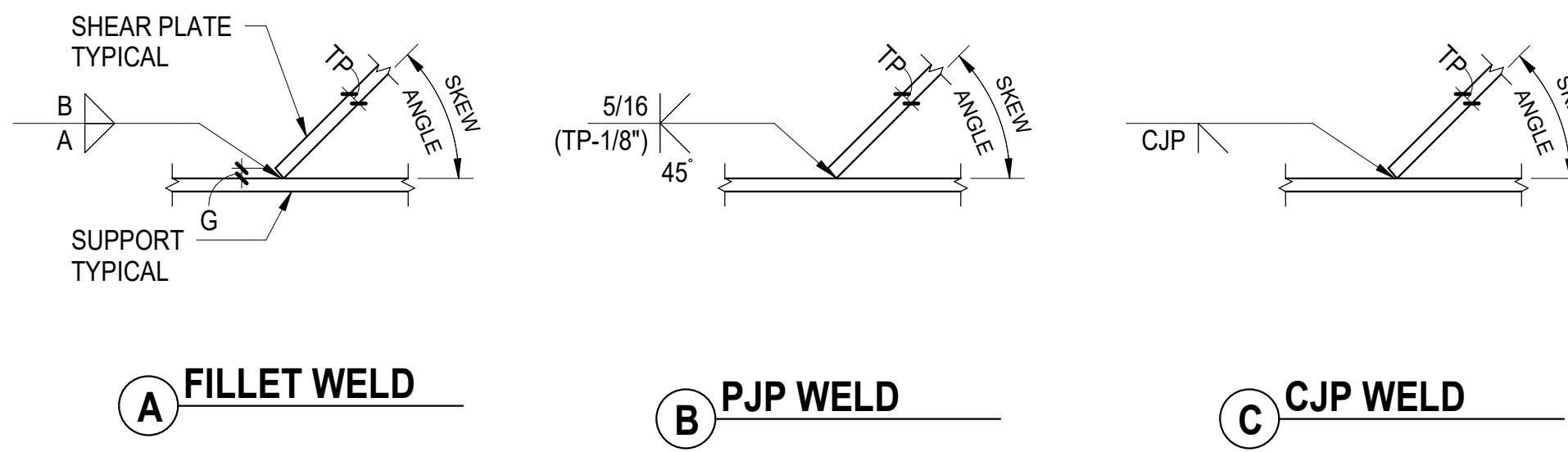
Portage, Michigan

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 511**  
 21-237.25

**NOTES:**

- ALL SHEAR CONNECTIONS PROVIDED ON THIS SHEET ARE COMPLETELY DESIGNED. THE DESIGN OF CONNECTIONS FOR FORCES OTHER THAN SHEAR, SUCH AS MOMENT AND DRAG CONNECTIONS, ARE THE RESPONSIBILITY OF THE CONTRACTOR. REFER TO STRUCTURAL GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
- ALL CONNECTION CAPACITIES PROVIDED IN SCHEDULES ARE STRENGTH LEVEL PER AISC-LOAD AND RESISTANCE FACTOR DESIGN. SELECT CONNECTION CAPACITY BASED ON FACTORED SHEAR REACTIONS SHOWN ON PLAN AND REQUIREMENTS OF DETAILS.
- SINGLE PLATE, SINGLE ANGLE, OR DOUBLE ANGLE SHEAR ONLY CONNECTIONS MAY BE USED AT THE CONTRACTOR'S OPTION UNLESS OTHERWISE NOTED IN THE CONSTRUCTION DOCUMENTS
- ALL CONNECTIONS SHOWN ARE DESIGNED UTILIZING BOLTS INDICATED
- THE FOLLOWING MINIMUM BOLT EDGE DISTANCES AND SPACING SHALL BE USED:  
 HORIZONTAL EDGE DISTANCE = 2 x BOLT DIAMETER  
 VERTICAL EDGE DISTANCE = 1-1/2"  
 SPACING = 3"
- ALL CONNECTIONS SHOWN ARE DESIGNED UTILIZING PLATE MATERIAL CONFORMING TO ASTM A572 OR A529 GRADE 50
- PROVIDE STANDARD HOLES IN BEAM. STANDARD OR HORIZONTAL SHORT SLOTTED HOLES ARE PERMITTED IN THE SINGLE PLATE
- TYPICAL SINGLE PLATE SHEAR CONNECTION DETAILS SHOWN ARE FOR PERPENDICULAR FRAMING CONDITIONS. AT SKEWED FRAMING CONDITIONS, PROVIDE WELDS AS INDICATED IN TYPICAL SKEWED SINGLE PLATE WELD DETAILS.
- AT DRAG CONNECTIONS, PROVIDE ADDITIONAL COLUMN OF BOLTS BEYOND NUMBER REQUIRED PER DETAIL



**SKEWED SINGLE PLATE WELD SCHEDULE**

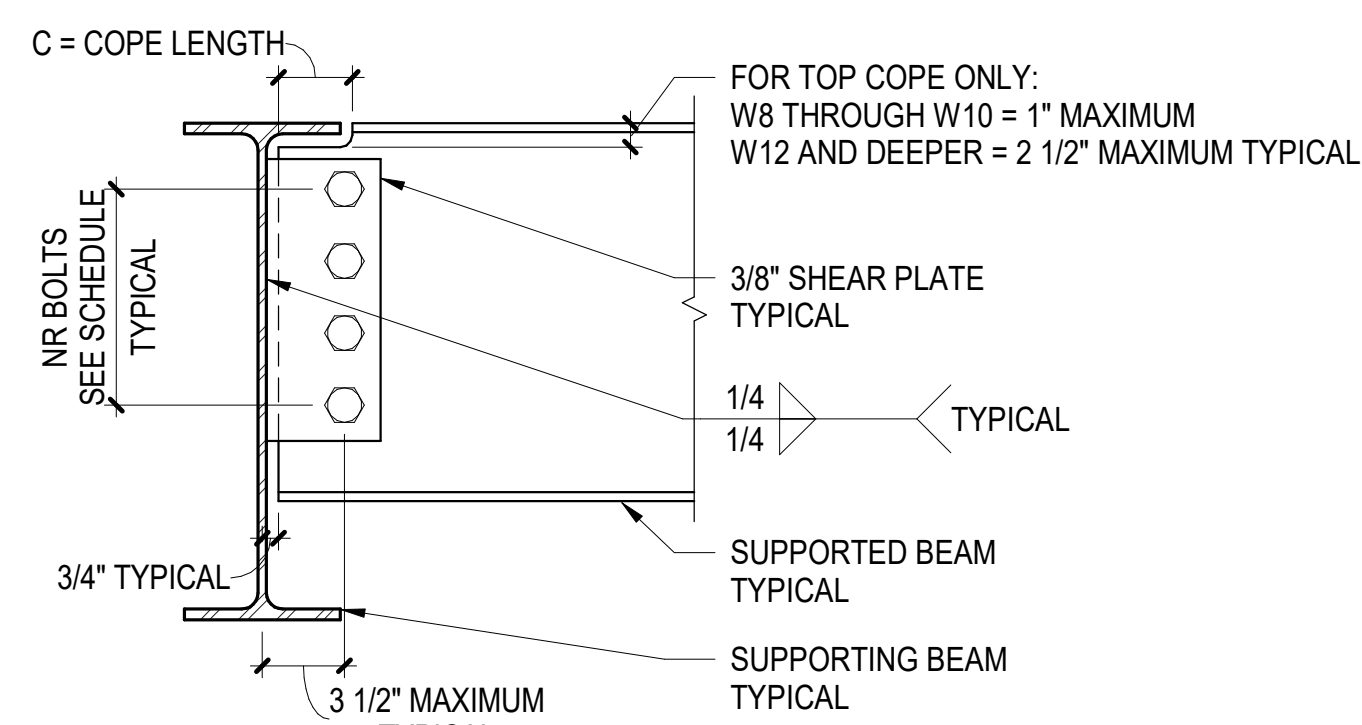
SKEW ANGLE (DEGREES)	WELD A	WELD B
< 30	CJP WELD	
> 30 - 45	PJP WELD	
> 45 - 50	D + 1/8"	(D*1.31) + G
> 50 - 55	D + 1/8"	(D*1.28) + G
> 55 - 60	D + 1/8"	(D*1.25) + G
> 60 - 65	D	(D*1.23) + G
> 65 - 70	D	(D*1.19) + G
> 70 - 75	D	(D*1.16) + G
> 75 - 80	D	(D*1.12) + G
> 80 - 85	D	(D*1.08) + G
> 85 - 90	D	D + G

**NOTES:**

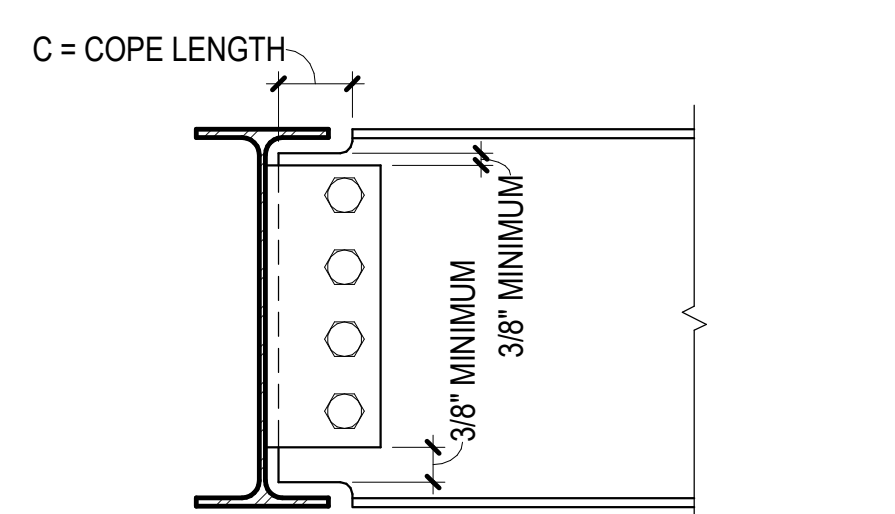
- DETAIL NOTATIONS:  
 TP INDICATES THICKNESS OF PLATE  
 D INDICATES FILLET WELD SIZE AS SPECIFIED FOR PERPENDICULAR FRAMING CONDITION (OTHER DETAILS THIS SHEET)  
 G INDICATES GAP IF SQUARE CUT PLATE IS USED
- FILLET WELDS:  
 FOR G ≤ 3/16" USE SQUARE CUT PLATE  
 FOR G > 3/16", BEVEL PLATE SUCH THAT G = 0 (TOLERANCE = +1/16", -0)  
 FOR (D + G) > 3/4", BEVEL PLATE SUCH THAT G = 0 (TOLERANCE = +1/16", -0)
- PJP AND CJP WELDS:  
 WELD PREPARATIONS NOT SHOWN

**1 SINGLE PLATE SHEAR CONNECTION NOTES**  
 NOT TO SCALE

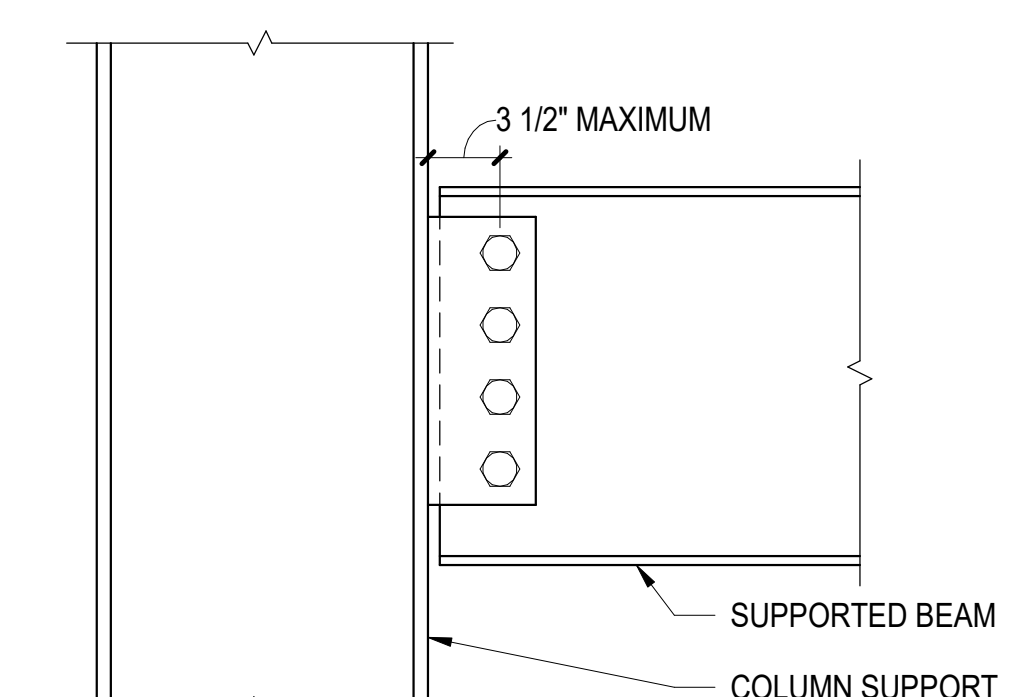
**2 TYPICAL SKEWED SINGLE PLATE WELD DETAILS**  
 NOT TO SCALE



**A TOP COPE ONLY (TC)**



**B TOP AND BOTTOM COPE (TBC)**  
 SEE NOTE 3



**C BEAM TO COLUMN FLANGE (NO COPE)**

**NOTES:**

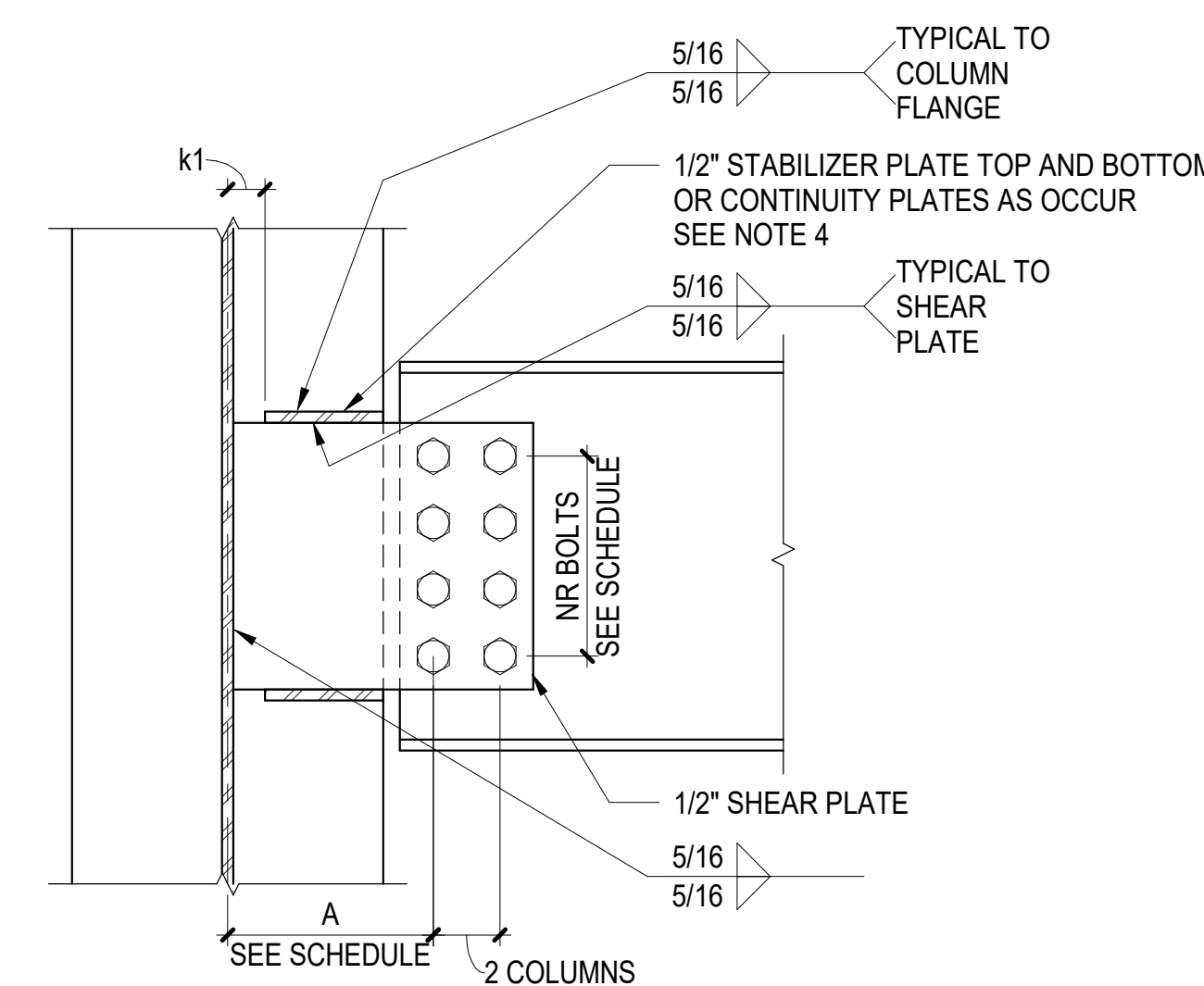
- SEE TYPICAL SINGLE PLATE SHEAR CONNECTION GENERAL NOTES FOR ADDITIONAL INFORMATION
- SELECT CONNECTION CAPACITY BASED ON COPED CONDITION OF BEAM
- TBC VALUES IN TABLE ALSO APPLY TO BOTTOM COPE ONLY CONDITION
- FOR V100 IN W24, INCREASE SHEAR TAB THICKNESS TO 1/2" AND PROVIDE (2) COLUMNS OF (6) BOLTS
- AT DRAG CONNECTIONS, PROVIDE ADDITIONAL COLUMN OF BOLTS

**9 TYPICAL SINGLE PLATE SHEAR CONNECTION AT BEAM OR COLUMN FLANGE (TYPE SP1)**  
 NOT TO SCALE

**TYPE SP1 SINGLE PLATE SHEAR CONNECTION SCHEDULE:  
 3/4" DIAMETER ASTM F3125-N BOLTS  
 GRADES A325 OR F1852**

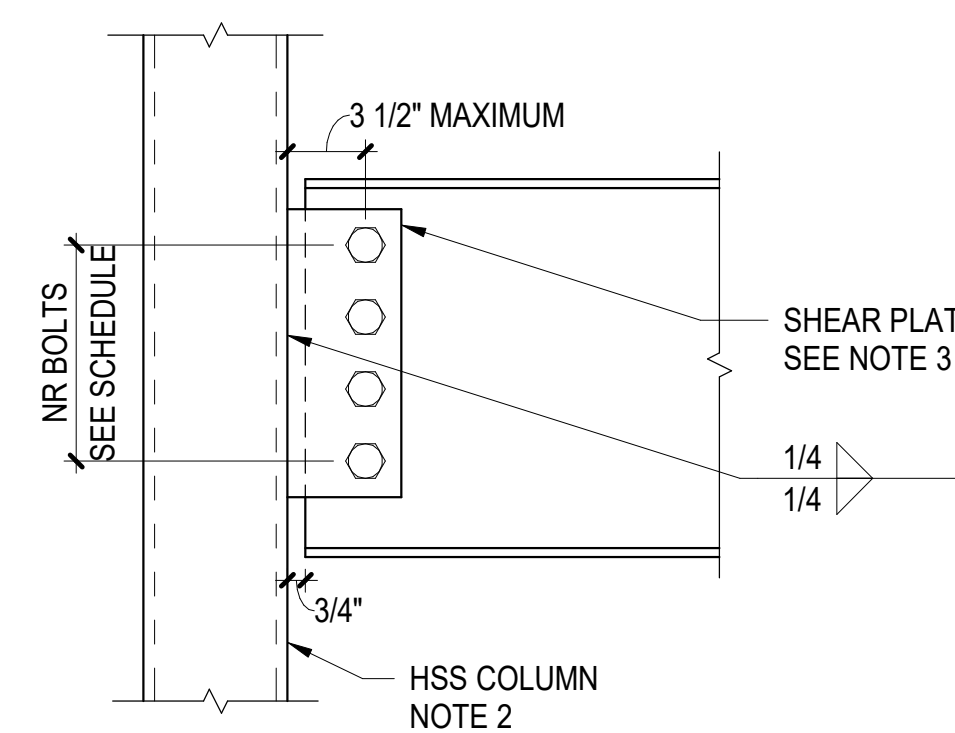
BEAM SIZE	NR BOLTS	NO COPE	CONNECTION CAPACITY (KIPS)							
			C = 4"		C = 6"		C = 8"			
			TC	TBC	TC	TBC	TC	TBC		
W8	x10	2	23	20	9	14	6	11	4	4
	x13-24	2	23	23	13	19	9	14	7	7
	x28+	2	23	23	16	23	11	20	9	9
W10	x12	2	23	23	11	23	7	19	5	5
	x15-26	2	23	23	13	23	9	23	7	7
	x30+	2	23	23	17	23	12	23	9	9
W12	x14-16	2	23	23	11	23	8	20	6	6
	x19-30	3	42	40	25	28	16	20	11	11
		2	23	23	13	23	9	23	7	7
W14	x34-48	3	42	42	30	37	20	28	14	14
		2	23	23	17	23	12	23	9	9
	x53+	3	42	42	42	42	33	42	26	26
W16	x26-31	3	42	42	32	42	22	42	16	16
		4	62	62	57	62	37	54	26	26
	x36-40	4	62	62	62	62	47	62	33	33
x45+		4	62	62	62	62	55	62	42	42
W18	x35-50	4	62	62	62	62	62	62	48	48
		5	81	81	81	81	73	81	52	52
	x55+	3	42	42	42	42	35	42	27	27
W21	x44-63	4	62	62	62	62	56	62	43	43
		5	81	81	81	81	81	81	64	64
	x68+	4	62	62	62	62	62	62	53	53
W24 - 4 MIN	x81+	5	81	81	81	81	81	81	81	81
		6	85	85	85	85	85	85	85	85
	x100+	7	104	104	104	104	104	104	104	104
W27, W30 - 5 MIN	x122+	8	123	123	123	123	123	123	123	123
		9	142	142	142	142	142	142	142	142
	x150+	10	161	161	161	161	161	161	161	161

**7 TYPICAL SINGLE PLATE SHEAR CONNECTION AT COLUMN WEB (TYPE SP2)**  
 NOT TO SCALE



**NOTES:**

- SEE TYPICAL SINGLE PLATE SHEAR CONNECTION GENERAL NOTES FOR ADDITIONAL INFORMATION
- SELECT CONNECTION CAPACITY BASED ON DETAILING DIMENSION "A"
- MINIMUM COLUMN WEB THICKNESS SHALL BE 0.29" (INCLUDES: W8x31+, W10x33+, W12x40+, W14x43+)
- STABILIZER PLATES ONLY REQUIRED FOR SHADED CAPACITY CASES
- SEE TYPICAL DETAIL FOR ADDITIONAL INFORMATION ON SINGLE PLATE CONNECTIONS TO COLUMN WEB WHEN STIFFENERS FROM OTHER CONNECTIONS ARE PRESENT
- AT DRAG CONNECTIONS, PROVIDE ADDITIONAL COLUMN OF BOLTS



**NOTES:**

- SEE TYPICAL SINGLE PLATE SHEAR CONNECTION GENERAL NOTES FOR ADDITIONAL INFORMATION
- DETAIL APPLIES TO SQUARE, RECTANGULAR, OR ROUND HSS COLUMNS
- SINGLE PLATE THICKNESS BASED ON HSS WALL THICKNESS PER SCHEDULE
- AT DRAG CONNECTIONS, PROVIDE ADDITIONAL COLUMN OF BOLTS

**11 TYPICAL SINGLE PLATE SHEAR CONNECTION AT HSS COLUMN (TYPE SP3)**  
 NOT TO SCALE

**TYPE SP2 SINGLE PLATE SHEAR CONNECTION SCHEDULE:  
 3/4" DIAMETER ASTM F3125-N BOLTS  
 GRADES A325 OR F1852**

BEAM SIZE	NR BOLTS	CONNECTION CAPACITY (KIPS)			
		A ≤ 6"	A ≤ 8"	A ≤ 10 1/2"	A ≤ 12"
W8 - W12	2	13	10	8	8
W12 - W18	3	30	24	20	18
W16 - W24	4	54	44	36	32
W18 - W30	5	80	66	54	48
W21 - W40	6	110	91	75	68
W27 - W44	7	142	120	99	89
W30 - W44	8	177	151	125	114
W33 - W44	9	214	184	154	140
W36 - W44	10	251	219	186	169

**TYPE SP3 SINGLE PLATE SHEAR CONNECTION SCHEDULE:  
 3/4" DIAMETER ASTM F3125-N BOLTS GRADES A325 OR F1852**

BEAM SIZE	NR BOLTS	CONNECTION CAPACITY (KIPS)	
		HSS WALL THICKNESS ≥ 3/8" SHEAR PLATE THICKNESS = 3/8"	HSS WALL THICKNESS = 1/4" OR 5/16" SHEAR PLATE THICKNESS = 1/4"
W8 - W12	2	23	23
W12 - W18	3	42	42
W16 - W24	4	62	62
W18 - W30	5	81	78
W21 - W40	6	85	85
W27 - W44	7	104	104
W30 - W44	8	123	123
W33 - W44	9	142	142
W36 - W44	10	161	161

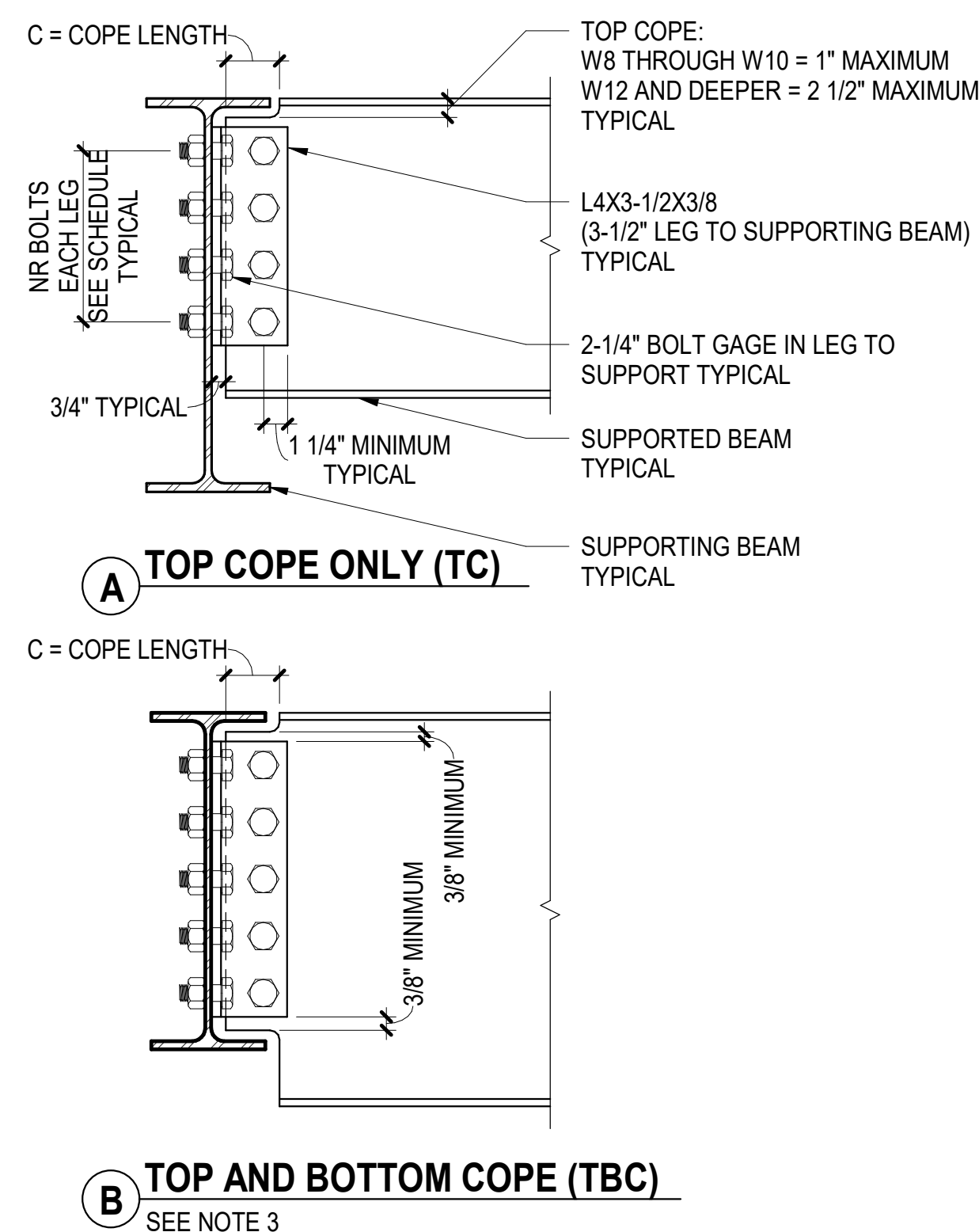


**NOTES:**

- ALL SHEAR CONNECTIONS PROVIDED ON THIS SHEET ARE COMPLETELY DESIGNED. THE DESIGN OF CONNECTIONS FOR FORCES OTHER THAN SHEAR, SUCH AS MOMENT AND DRAG CONNECTIONS, ARE THE RESPONSIBILITY OF THE CONTRACTOR. REFER TO STRUCTURAL GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
- ALL CONNECTION CAPACITIES PROVIDED IN SCHEDULES ARE STRENGTH LEVEL PER AISC-LOAD AND RESISTANCE FACTOR DESIGN. SELECT CONNECTION CAPACITY BASED ON FACTORED SHEAR REACTIONS SHOWN ON PLAN AND REQUIREMENTS OF DETAILS
- SINGLE PLATE, SINGLE ANGLE, OR DOUBLE ANGLE CONNECTIONS MAY BE USED AT THE CONTRACTOR'S OPTION UNLESS OTHERWISE NOTED IN THE CONSTRUCTION DOCUMENTS
- ALL CONNECTION SHOWN ARE DESIGNED UTILIZING BOLTS INDICATED
- THE FOLLOWING MINIMUM BOLT EDGE DISTANCES AND SPACING SHALL BE USED:  
 HORIZONTAL EDGE DISTANCE = 1-1/2" UON  
 VERTICAL EDGE DISTANCE = 1-1/2"  
 SPACING = 3"
- ALL CONNECTIONS SHOWN ARE DESIGNED UTILIZING ANGLE MATERIAL CONFORMING TO ASTM A572 OR A529 GRADE 50
- WHERE SINGLE ANGLE OR DOUBLE ANGLE CONNECTIONS ARE ALIGNED EACH SIDE OF THE SUPPORTING BEAM WEB (SHARED BOLTS), MINIMUM SUPPORTING BEAM WEB THICKNESS SHALL BE 0.25" FOR W8-W14 CONNECTIONS AND 0.35" FOR W16 AND DEEPER CONNECTIONS. CONNECTION SHALL BE DETAILED TO PERMIT ERECTION OF BEAMS EACH SIDE PER OSHA STANDARDS
- NOTATIONS:  
 SSLT INDICATES SHORT SLOTTED HOLES TRANSVERSE TO LINE OF FORCE
- ANGLE SHEAR CONNECTION DETAILS SHALL NOT BE USED AT DRAG CONNECTIONS

**9 ANGLE SHEAR CONNECTION NOTES**

NOT TO SCALE



**NOTES:**

- SEE TYPICAL ANGLE SHEAR CONNECTION GENERAL NOTES FOR ADDITIONAL INFORMATION
- SELECT CONNECTION CAPACITY BASED ON COPE CONDITION OF BEAM
- TBC VALUES IN TABLE ALSO APPLY TO BOTTOM COPE ONLY CONDITION
- SSLT HOLES IN ANGLE LEG TO SUPPORTED BEAM, STANDARD HOLES IN ANGLE LEG TO SUPPORT
- DETAIL SHALL NOT BE USED AT DRAG CONNECTIONS

**9 TYPICAL SINGLE ANGLE SHEAR CONNECTION AT BEAM (TYPE L1) - BOLTED-BOLTED**

NOT TO SCALE

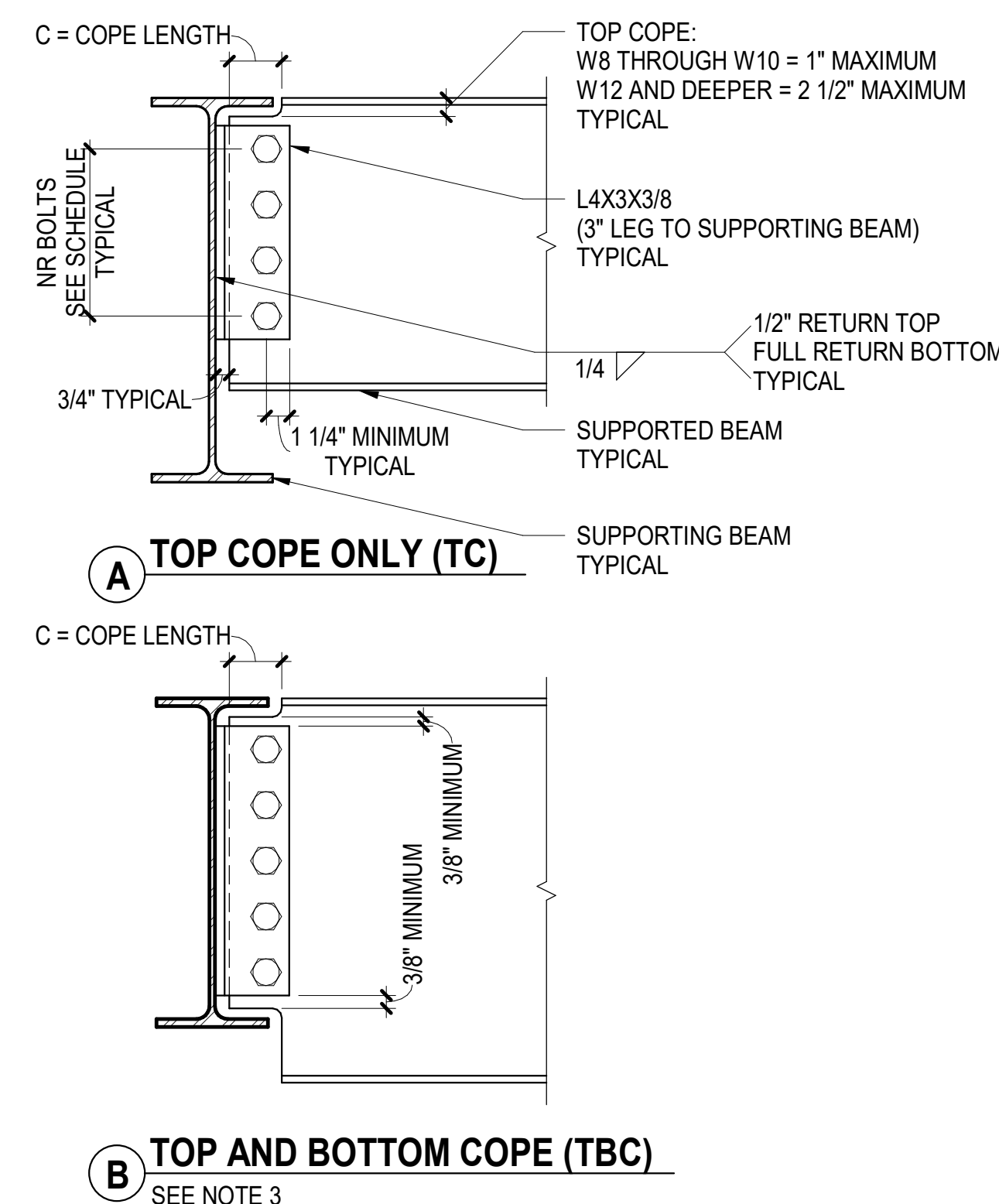
BEAM SIZE		NR BOLTS	CONNECTION CAPACITY (KIPS)						
			C = 4"		C = 6"		C = 8"		
			NO COPE	TC	TBC	TC	TBC	TC	TBC
W8	x10	2	18	18	9	14	6	11	4
	x13-24	2	18	18	13	18	9	14	7
	x28+	2	18	18	16	18	11	18	9
W10	x12	2	18	18	11	18	7	18	5
	x15-26	2	18	18	13	18	9	18	7
	x30+	2	18	18	17	18	12	18	9
W12	x14-16	2	18	18	11	18	8	18	6
	x19-30	3	33	33	25	28	16	20	11
	x35+	2	18	18	17	18	12	18	9
W14	x22-30	3	33	33	29	33	19	33	14
	x34-48	3	33	33	33	33	26	33	19
	x53+	3	33	33	33	33	33	33	26
W16	x26-31	3	36	36	32	36	22	36	16
	x36-40	4	55	55	55	55	37	54	26
	x45+	3	36	36	36	36	31	36	24
W18	x35-50	3	36	36	36	36	27	36	20
	x55+	4	55	55	55	55	48	55	34
	x55+	5	74	74	74	74	73	74	52
W21, W24 - 4 MIN	x55+	3	36	36	36	36	35	36	27
	x55+	4	55	55	55	55	55	55	48
	x55+	5	74	74	74	74	74	74	74
W27, W30 - 5 MIN	x55+	4	55	55	55	55	55	55	43
	x55+	5	74	74	74	74	74	74	64
	x55+	6	92	92	91	92	91	92	91
W33-W40 - 7 MIN	x55+	7	107	107	107	107	107	107	107
	x55+	8	123	123	123	123	123	123	123
	x55+	9	138	138	138	138	138	138	138
		10	154	154	154	154	154	154	154

**NOTES:**

- SEE TYPICAL ANGLE SHEAR CONNECTION GENERAL NOTES FOR ADDITIONAL INFORMATION
- SELECT CONNECTION CAPACITY BASED ON COPE CONDITION OF BEAM
- TBC VALUES IN TABLE ALSO APPLY TO BOTTOM COPE ONLY CONDITION
- SSLT HOLES IN ANGLE LEG TO SUPPORTED BEAM, STANDARD HOLES IN ANGLE LEG TO SUPPORT
- DETAIL SHALL NOT BE USED AT DRAG CONNECTIONS

**11 TYPICAL SINGLE ANGLE SHEAR CONNECTION AT BEAM (TYPE L2) - BOLTED-WELDED**

NOT TO SCALE



BEAM SIZE		NR BOLTS	CONNECTION CAPACITY (KIPS)						
			C = 4"		C = 6"		C = 8"		
			NO COPE	TC	TBC	TC	TBC	TC	TBC
W8	x10	2	25	20	9	14	6	11	4
	x13-24	2	32	27	13	19	9	14	7
	x28+	2	34	34	16	26	11	20	9
W10	x12	2	28	28	11	24	7	19	5
	x15-26	2	32	32	13	30	9	23	7
	x30+	2	34	34	17	34	12	34	9
W12	x14-16	2	30	29	11	28	8	20	6
	x19-30	3	47	40	25	28	16	20	11
	x35+	2	34	34	17	34	12	34	9
W14	x22-30	3	50	48	29	48	19	37	14
	x34-48	3	53	53	36	53	26	51	19
	x53+	3	54	54	47	54	33	54	26
W16	x26-31	3	51	51	32	51	22	51	16
	x36-40	4	69	67	57	67	37	54	26
	x45+	3	54	54	44	54	31	54	24
W18	x35-50	3	54	54	38	54	27	54	20
	x55+	4	72	72	68	72	48	72	34
	x55+	5	89	89	89	89	73	88	52
W21, W24 - 4 MIN	x55+	3	54	54	54	54	35	54	27
	x55+	4	72	72	72	72	62	72	48
	x55+	5	89	89	89	89	89	89	75
W27, W30 - 5 MIN	x55+	4	72	72	72	72	56	72	43
	x55+	5	89	89	89	89	89	89	64
	x55+	6	107	107	91	107	91	107	91
W33-W40 - 7 MIN	x55+	7	125	125	125	125	125	125	125
	x55+	8	143	143	143	143	143	143	143
	x55+	9	161	161	161	161	161	161	161
		10	179	179	179	179	179	179	179

ISSUED FOR

DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
TYPICAL STEEL BEAM SHEAR CONNECTIONS

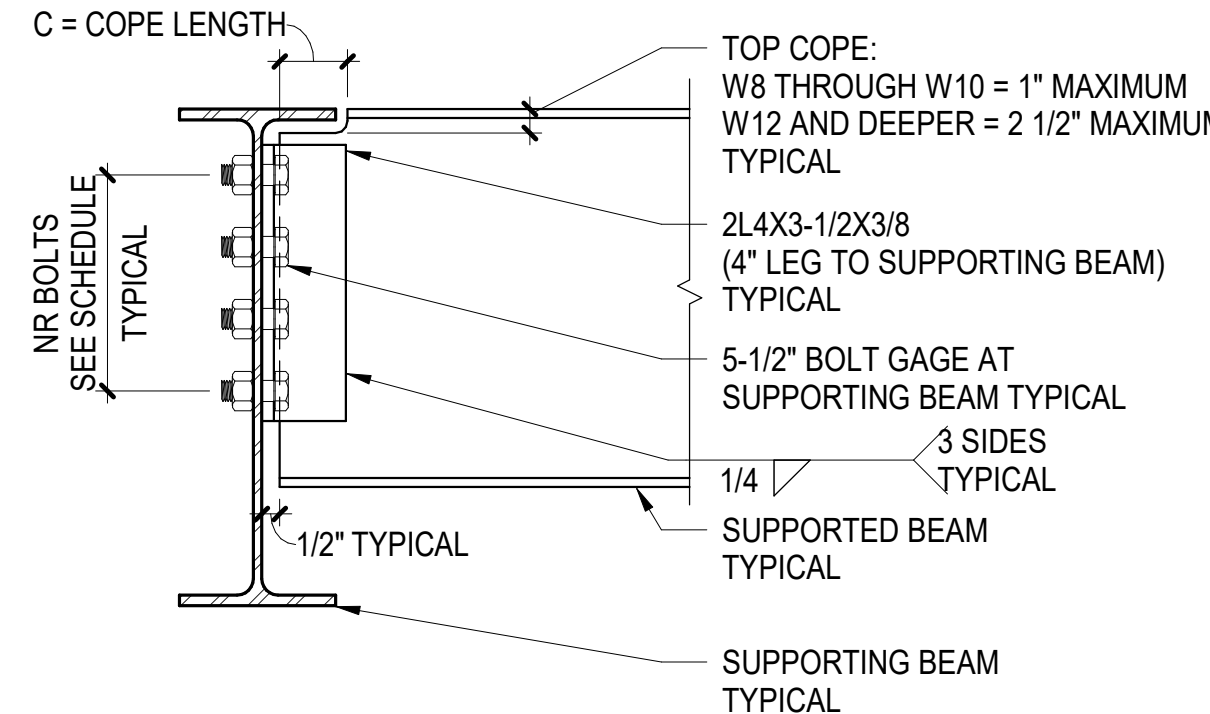
SHEET NUMBER  
**S 521**  
21-237.25

DATE

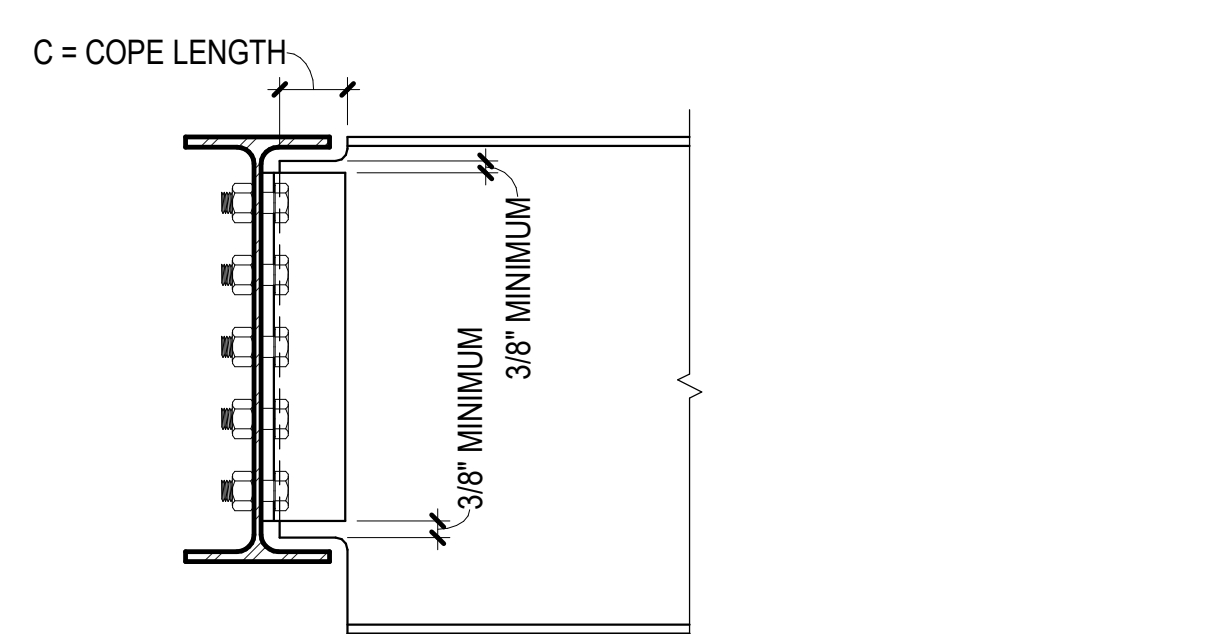
JUNE 30, 2023

### TYPE 2L2 DOUBLE ANGLE SHEAR CONNECTION SCHEDULE: 3/4" DIAMETER ASTM F3125-N BOLTS GRADES A325 OR F1852

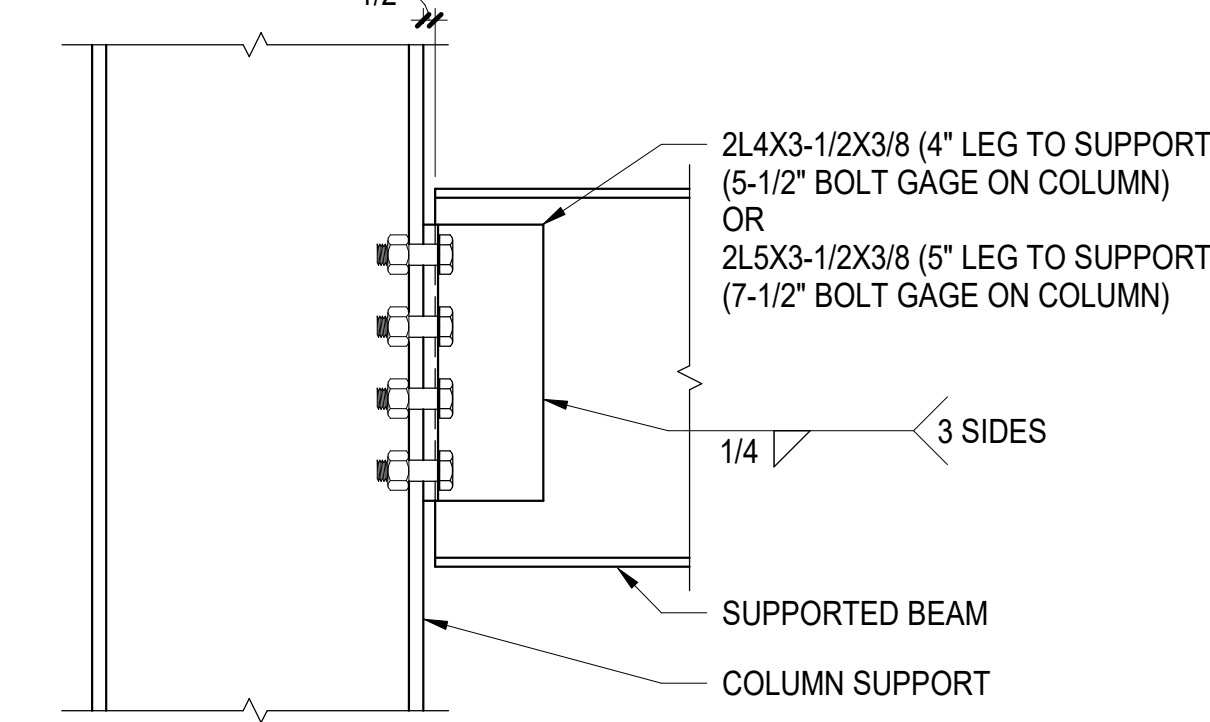
BEAM SIZE	NR BOLTS	NO COPE	CONNECTION CAPACITY (KIPS)				
			C = 4"		C = 8"		
			TC	TBC	TC	TBC	
W8	x10	2	44	20	9	14	6
	x13-24	2	44	27	13	19	9
W10	x12	2	44	34	11	24	7
	x15-26	2	44	43	13	30	9
W12	x14-16	2	44	44	17	44	12
	x19-30	2	44	40	11	28	8
W14	x22-30	3	66	66	29	49	19
	x34-48	3	66	66	36	66	26
W16	x26-31	3	92	92	32	72	22
	x36-40	3	92	92	38	91	27
W18	x35-50	3	92	92	44	92	31
	x55+	3	92	92	50	92	35
W21	x44-63	4	123	123	80	123	69
	x88+	4	123	123	96	123	83
W24 - 4 MIN		4	123	123	90	123	83
W27, W30 - 5 MIN		5	154	154	140	154	108
W33-W40 - 7 MIN		6	184	184	184	184	155
		7	215	215	215	215	174
		8	246	246	246	246	232
		9	276	276	276	276	276
		10	307	307	307	307	307



A TOP COPE ONLY (TC)



B TOP AND BOTTOM COPE (TBC)



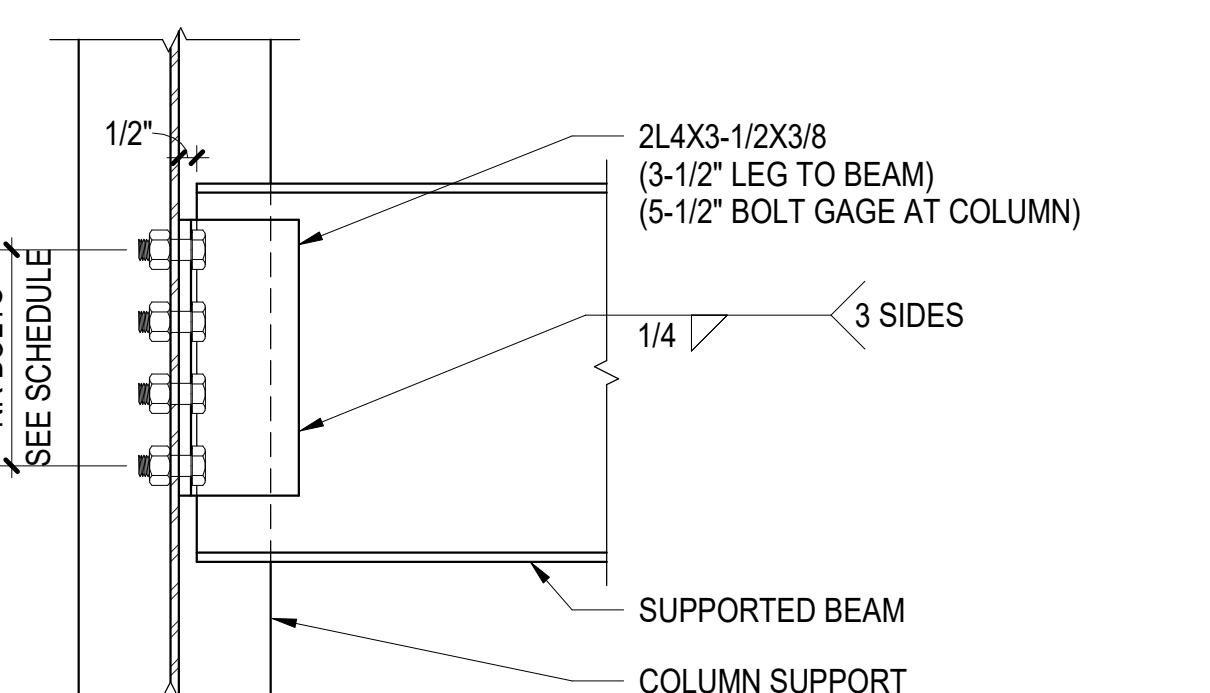
C BEAM TO COLUMN FLANGE (NO COPE)

NOTES:

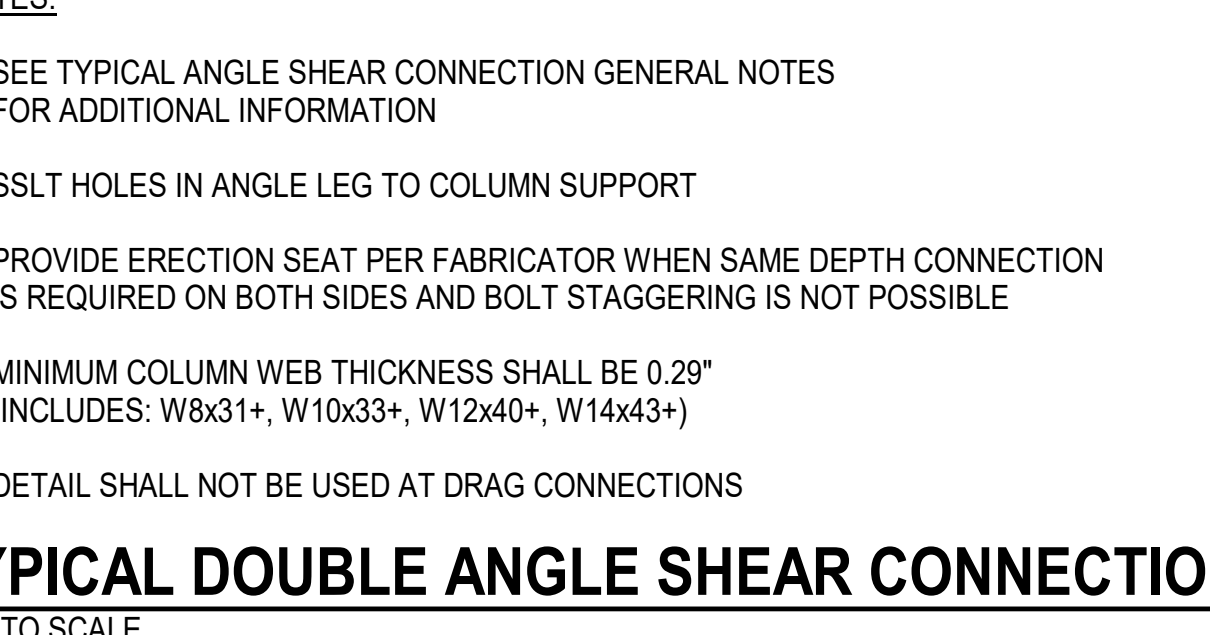
1. SEE TYPICAL ANGLE SHEAR CONNECTION GENERAL NOTES FOR ADDITIONAL INFORMATION
2. SELECT CONNECTION CAPACITY BASED ON COPED CONDITION OF BEAM
3. TBC VALUES IN TABLE ALSO APPLY TO BOTTOM COPE ONLY CONDITION
4. SSLT HOLES IN ANGLE LEG TO SUPPORT
5. MINIMUM COLUMN FLANGE WIDTH SHALL BE 8" (INCLUDES: W10x33+, W12x40+, W14x43+)
6. DETAIL SHALL NOT BE USED AT DRAG CONNECTIONS

9 TYPICAL DOUBLE ANGLE SHEAR CONNECTION AT BEAM OR COLUMN FLANGE (TYPE 2L2) - BOLTED-WELDED

NOT TO SCALE



A TOP COPE ONLY (TC)



B TOP AND BOTTOM COPE (TBC)



C BEAM TO COLUMN FLANGE (NO COPE)

NOTES:

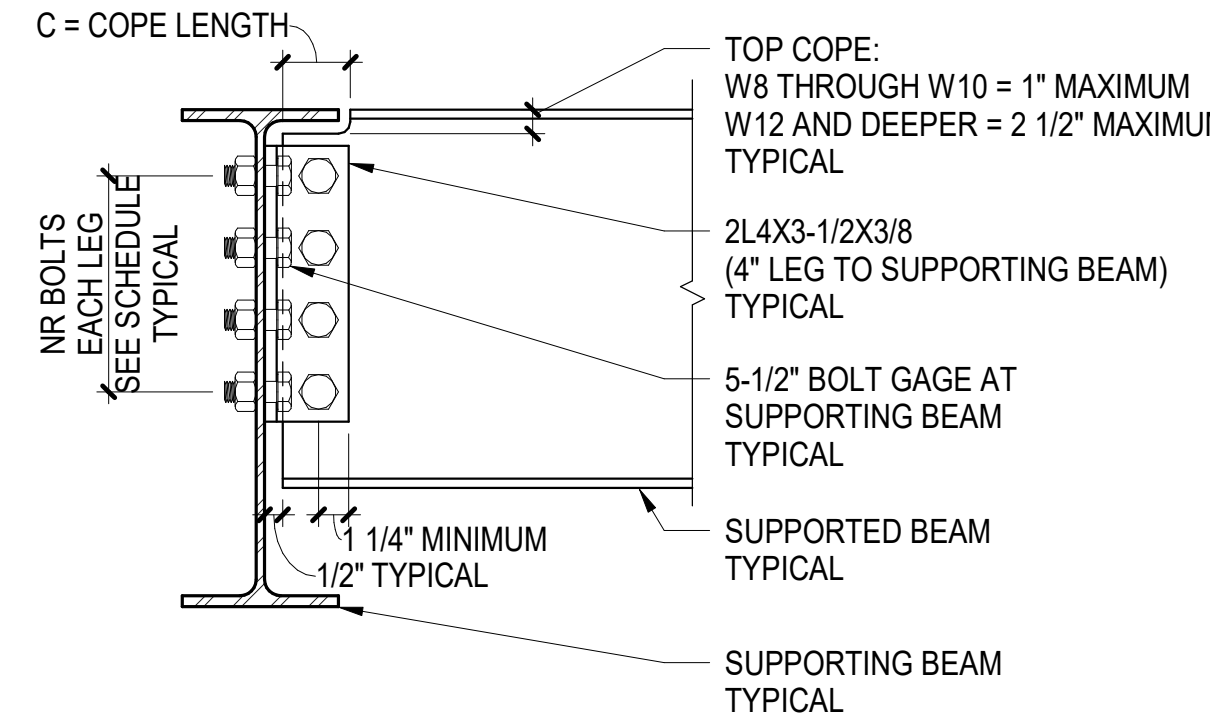
1. SEE TYPICAL ANGLE SHEAR CONNECTION GENERAL NOTES FOR ADDITIONAL INFORMATION
2. SELECT CONNECTION CAPACITY BASED ON COPED CONDITION OF BEAM
3. TBC VALUES IN TABLE ALSO APPLY TO BOTTOM COPE ONLY CONDITION
4. SSLT HOLES IN ANGLE LEG TO SUPPORT
5. MINIMUM COLUMN FLANGE WIDTH SHALL BE 8" (INCLUDES: W10x33+, W12x40+, W14x43+)
6. DETAIL SHALL NOT BE USED AT DRAG CONNECTIONS

11 TYPICAL DOUBLE ANGLE SHEAR CONNECTION AT COLUMN WEB (TYPE 2L4) - BOLTED-WELDED

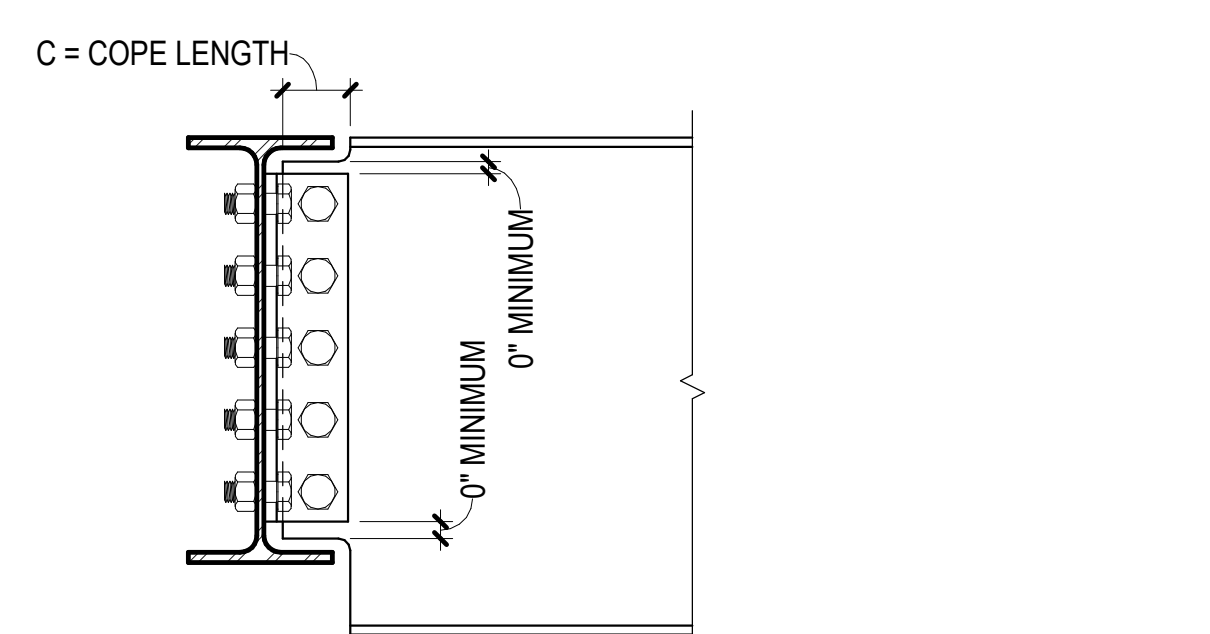
NOT TO SCALE

### TYPE 2L1 DOUBLE ANGLE SHEAR CONNECTION SCHEDULE: 3/4" DIAMETER ASTM F3125-N BOLTS GRADES A325 OR F1852

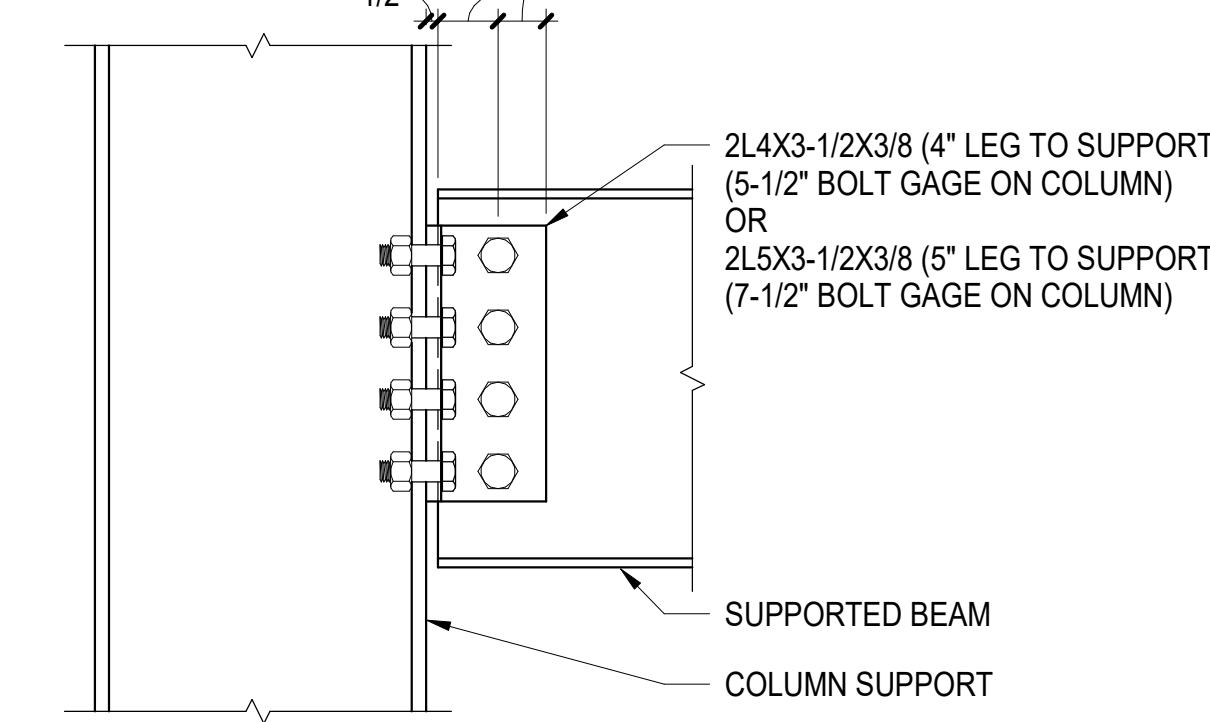
BEAM SIZE	NR BOLTS	NO COPE	CONNECTION CAPACITY (KIPS)				
			C = 4"		C = 8"		
			TC	TBC	TC	TBC	
W8	x10	2	25	20	9	14	6
	x13-24	2	34	27	13	19	9
W10	x12	2	28	28	11	24	7
	x15-26	2	34	34	13	30	9
W12	x14-16	2	44	44	17	44	12
	x19-30	2	30	30	11	28	8
W14	x22-30	3	55	53	29	49	19
	x34-48	3	66	66	36	66	26
W16	x26-31	3	59	58	32	58	22
	x36-40	3	70	68	38	68	27
W18	x35-50	3	71	69	38	69	27
	x55+	3	92	90	50	90	35
W21	x44-63	4	114	103	80	103	56
	x88+	4	123	123	96	123	69
W24 - 4 MIN		4	123	116	90	116	83
W27, W30 - 5 MIN		5	154	141	123	141	108
W33-W40 - 7 MIN		6	184	165	147	165	142
		7	215	215	200	215	174
		8	246	246	234	246	232
		9	276	276	276	276	276
		10	307	307	307	307	307



A TOP COPE ONLY (TC)



B TOP AND BOTTOM COPE (TBC)



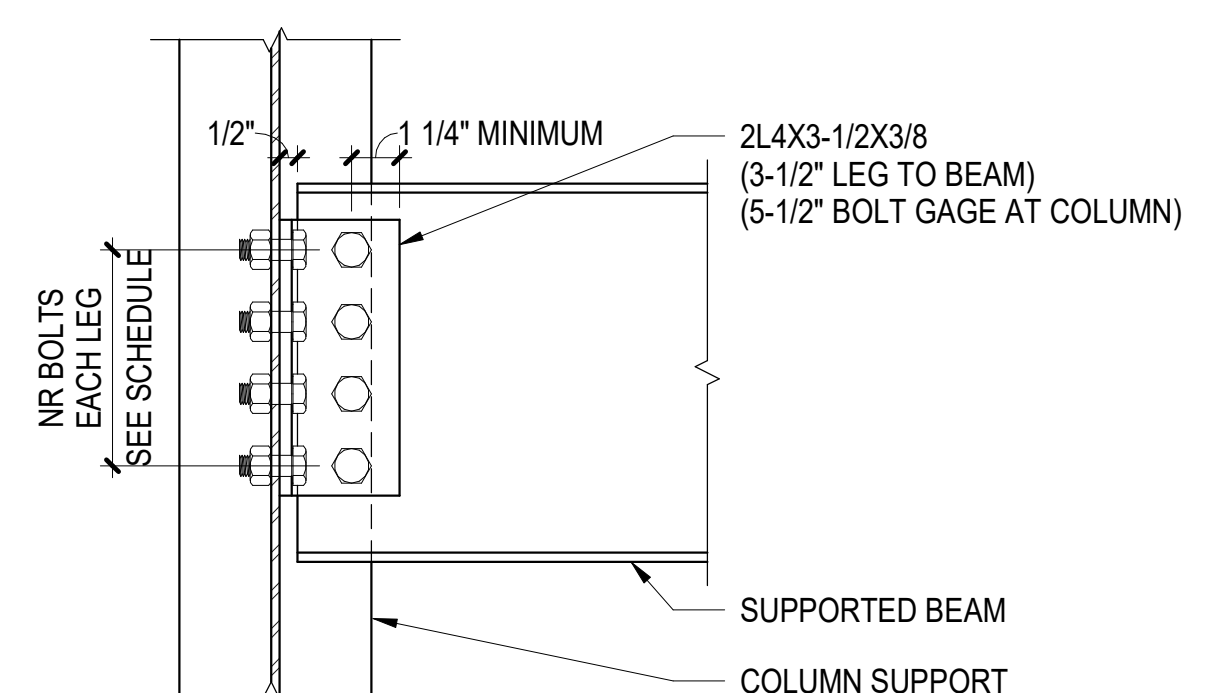
C BEAM TO COLUMN FLANGE (NO COPE)

NOTES:

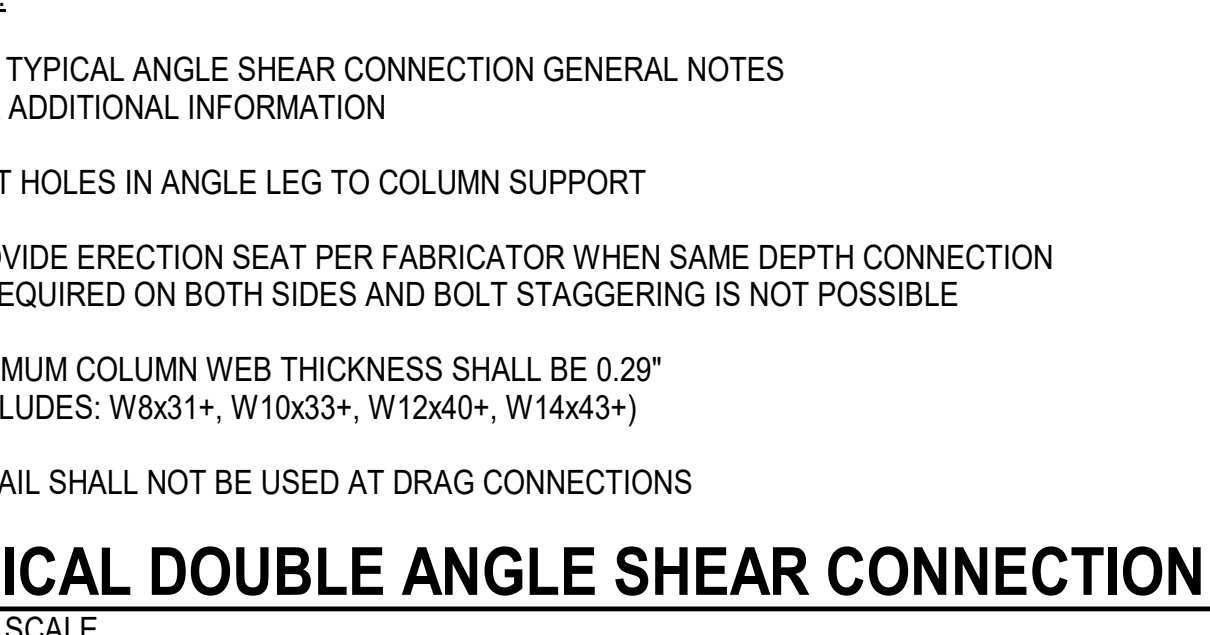
1. SEE TYPICAL ANGLE SHEAR CONNECTION GENERAL NOTES FOR ADDITIONAL INFORMATION
2. SELECT CONNECTION CAPACITY BASED ON COPED CONDITION OF BEAM
3. TBC VALUES IN TABLE ALSO APPLY TO BOTTOM COPE ONLY CONDITION
4. SSLT HOLES IN ANGLE LEG TO SUPPORT
5. MINIMUM COLUMN FLANGE WIDTH SHALL BE 8" (INCLUDES: W10x33+, W12x40+, W14x43+)
6. DETAIL SHALL NOT BE USED AT DRAG CONNECTIONS

5 TYPICAL DOUBLE ANGLE SHEAR CONNECTION AT BEAM OR COLUMN FLANGE (TYPE 2L1) - BOLTED-BOLTED

NOT TO SCALE



A TOP COPE ONLY (TC)



B TOP AND BOTTOM COPE (TBC)



C BEAM TO COLUMN FLANGE (NO COPE)

NOTES:

1. SEE TYPICAL ANGLE SHEAR CONNECTION GENERAL NOTES FOR ADDITIONAL INFORMATION
2. SELECT CONNECTION CAPACITY BASED ON COPED CONDITION OF BEAM
3. TBC VALUES IN TABLE ALSO APPLY TO BOTTOM COPE ONLY CONDITION
4. SSLT HOLES IN ANGLE LEG TO SUPPORT
5. MINIMUM COLUMN FLANGE WIDTH SHALL BE 8" (INCLUDES: W10x33+, W12x40+, W14x43+)
6. DETAIL SHALL NOT BE USED AT DRAG CONNECTIONS

9 TYPICAL DOUBLE ANGLE SHEAR CONNECTION AT COLUMN WEB (TYPE 2L3) - BOLTED-BOLTED

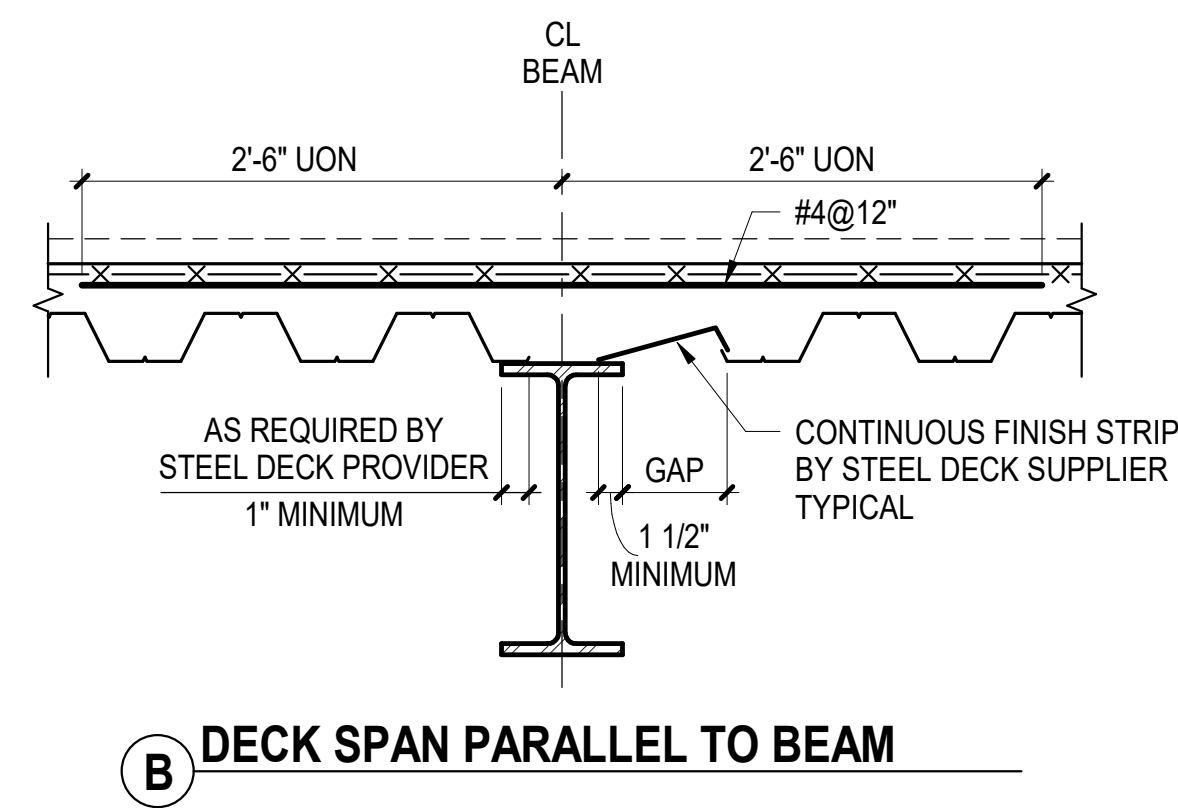
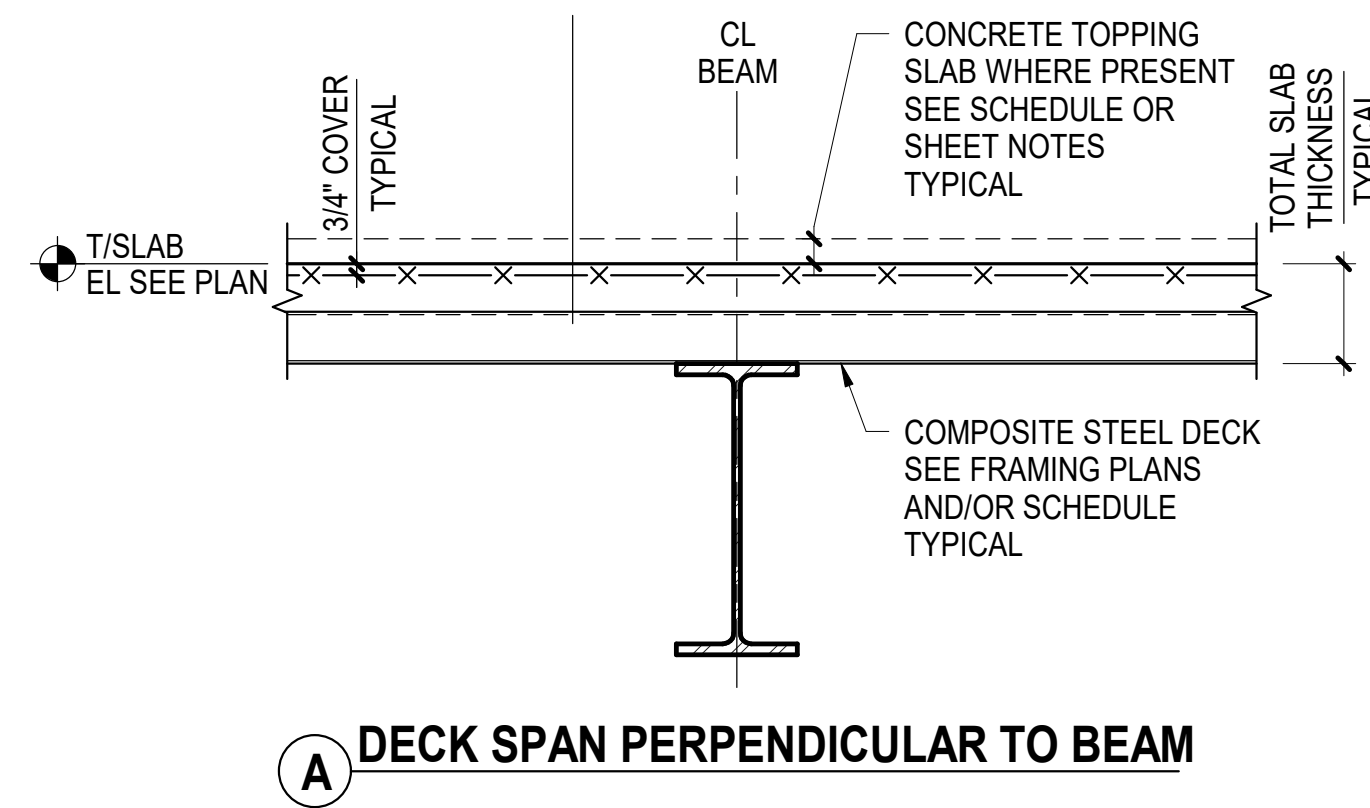
NOT TO SCALE

### TYPE 2L3 DOUBLE ANGLE SHEAR CONNECTION SCHEDULE: 3/4" DIAMETER ASTM F3125-N BOLTS GRADES A325 OR F1852

BEAM SIZE	NR BOLTS	CONNECTION CAPACITY (KIPS)
W8 - W12	2	25
W12	3	48
W14 - W18	3	55
W16 - W24	4	81
W18 - W30	5	124
W21 - W40	6	153
W27 - W44	7	178
W30 - W44	8	204
W33 - W44	9	229
W36 - W44	10	254

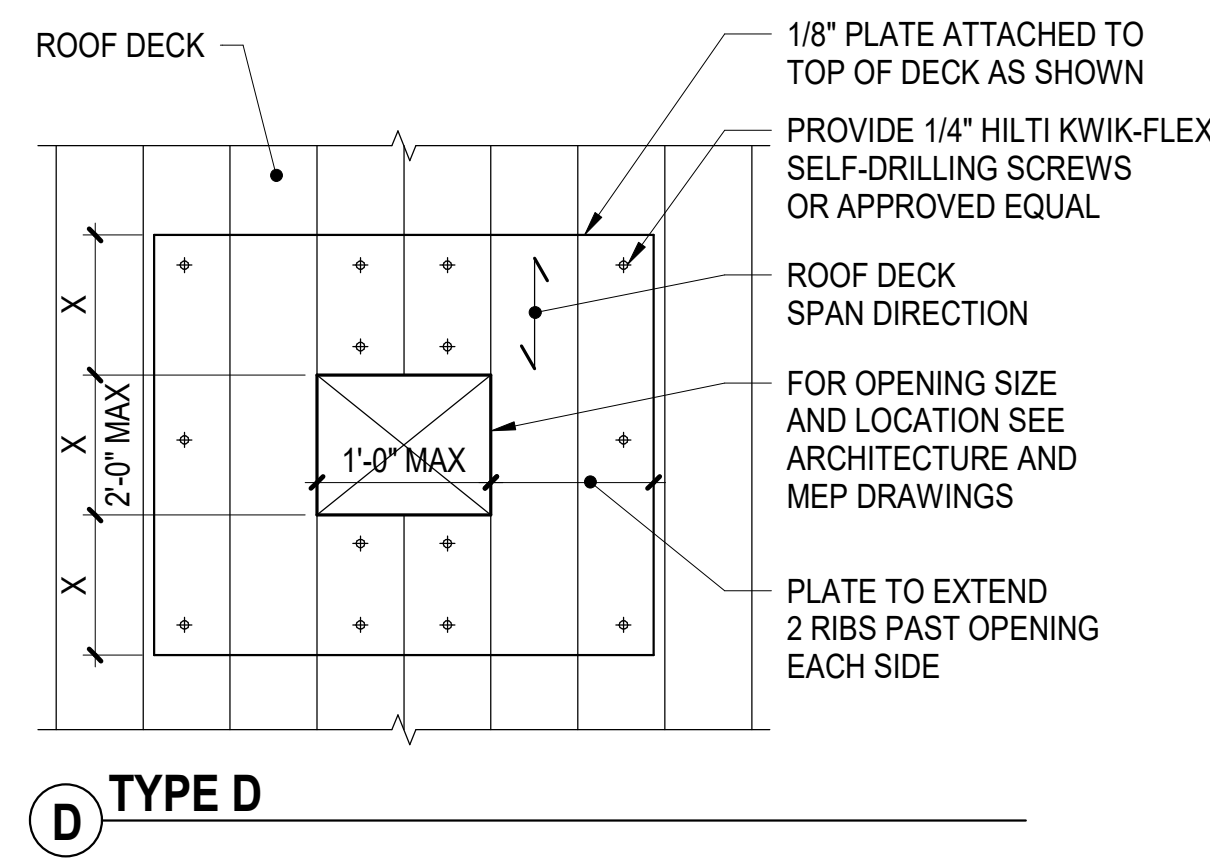
PROJECT TITLE: HAVERHILL ELEMENTARY SCHOOL  
 OWNER: PORTAGE PUBLIC SCHOOLS  
 LOCATION: Portage, Michigan  
 SHEET NUMBER: S 522  
 DATE: JUNE 30, 2023  
 SHEET TITLE: TYPICAL STEEL BEAM SHEAR CONNECTIONS  
 ARCHITECT: TowerPinkster Architecture · Engineering · Interiors

ISSUED FOR: \_\_\_\_\_ DATE: \_\_\_\_\_  
 © 2023 ALL RIGHTS RESERVED



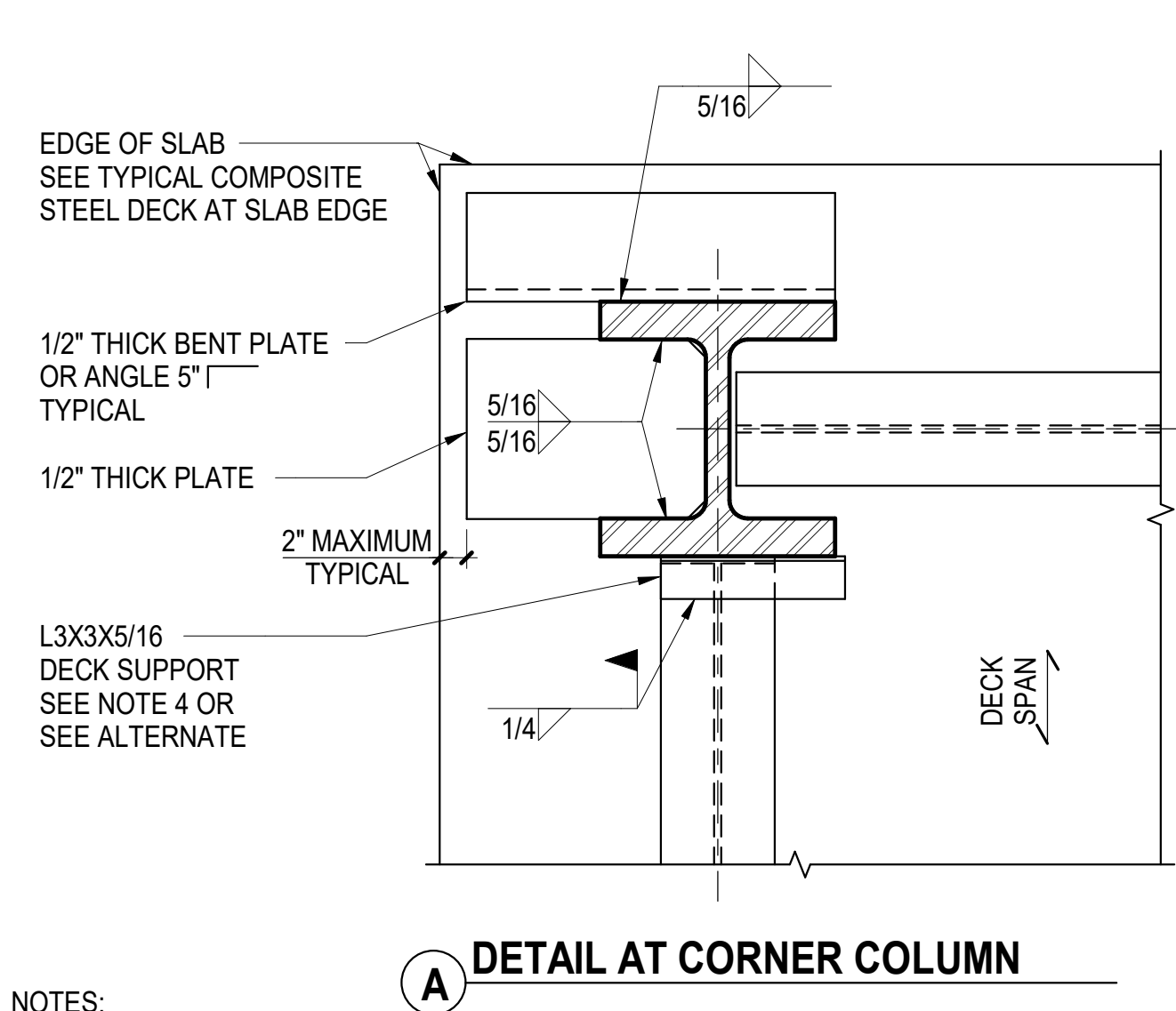
- NOTES:**
- SEE FRAMING PLANS AND/OR SCHEDULE FOR SLAB THICKNESS, REINFORCEMENT, AND COMPOSITE STEEL DECK
  - COMPOSITE STEEL DECK SHALL BE WELDED TO SUPPORT FRAMING SEE GENERAL NOTES AND SPECIFICATIONS FOR INFORMATION

**1 TYPICAL COMPOSITE STEEL DECK AT INTERIOR SUPPORTS**  
 NOT TO SCALE



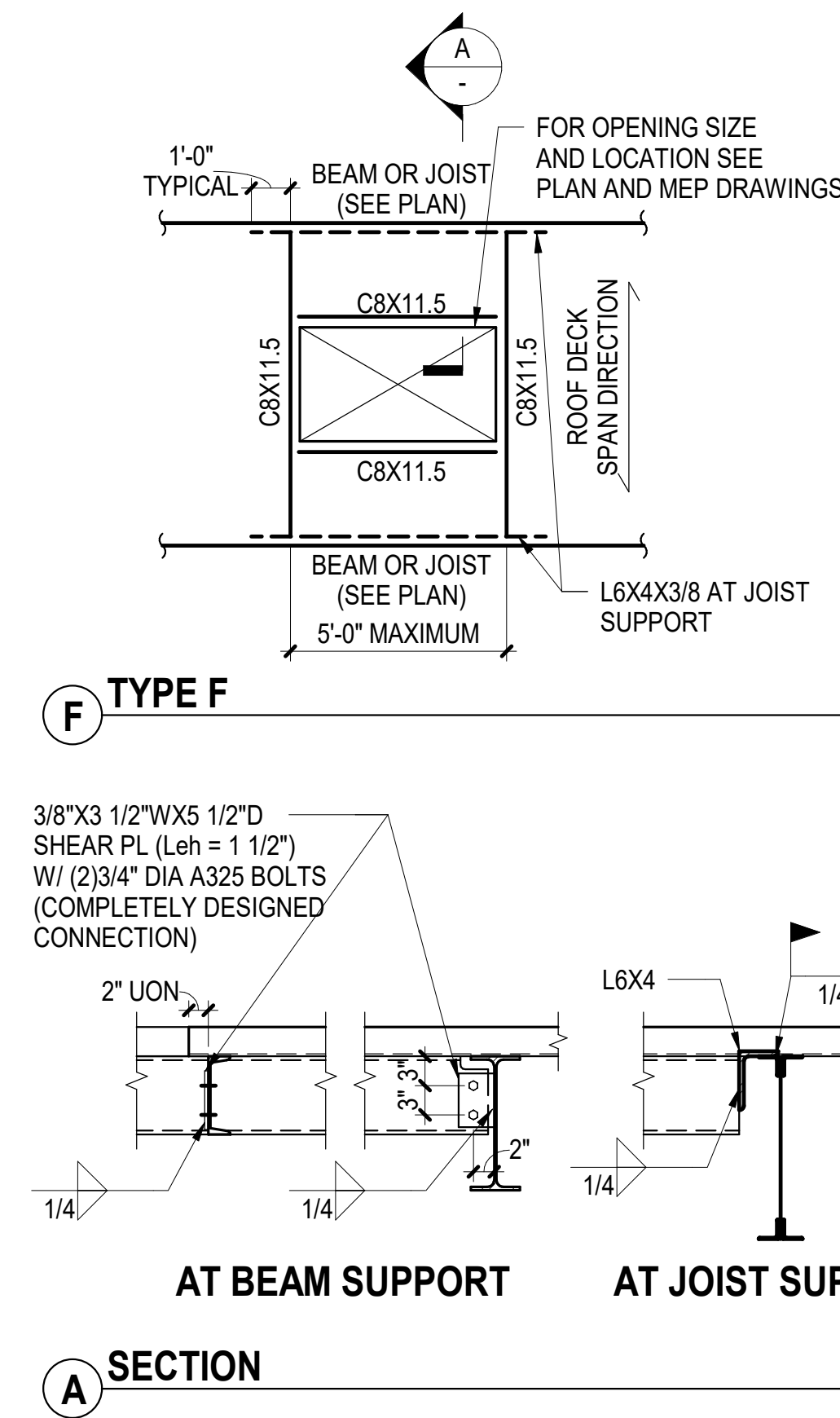
- NOTES:**
- FOR EDGE OVERHANG GREATER THAN 2\"/>
  - NO REINFORCEMENT REQUIRED IF OPENING IS 6\"/>
  - CLUSTERED OPENINGS WITH CLEAR SPACE LESS THAN 1'-0\"/>
  - ATTACH DECK TO CHANNELS TYPICAL
  - TYPE D SHALL NOT BE USED TO SUPPORT MECHANICAL EQUIPMENT
  - TYPE F FRAMING SHALL BE COORDINATED WITH EQUIPMENT SUPPORT FRAMING

**3 TYPICAL ROOF DECK AT OPENING**  
 NOT TO SCALE



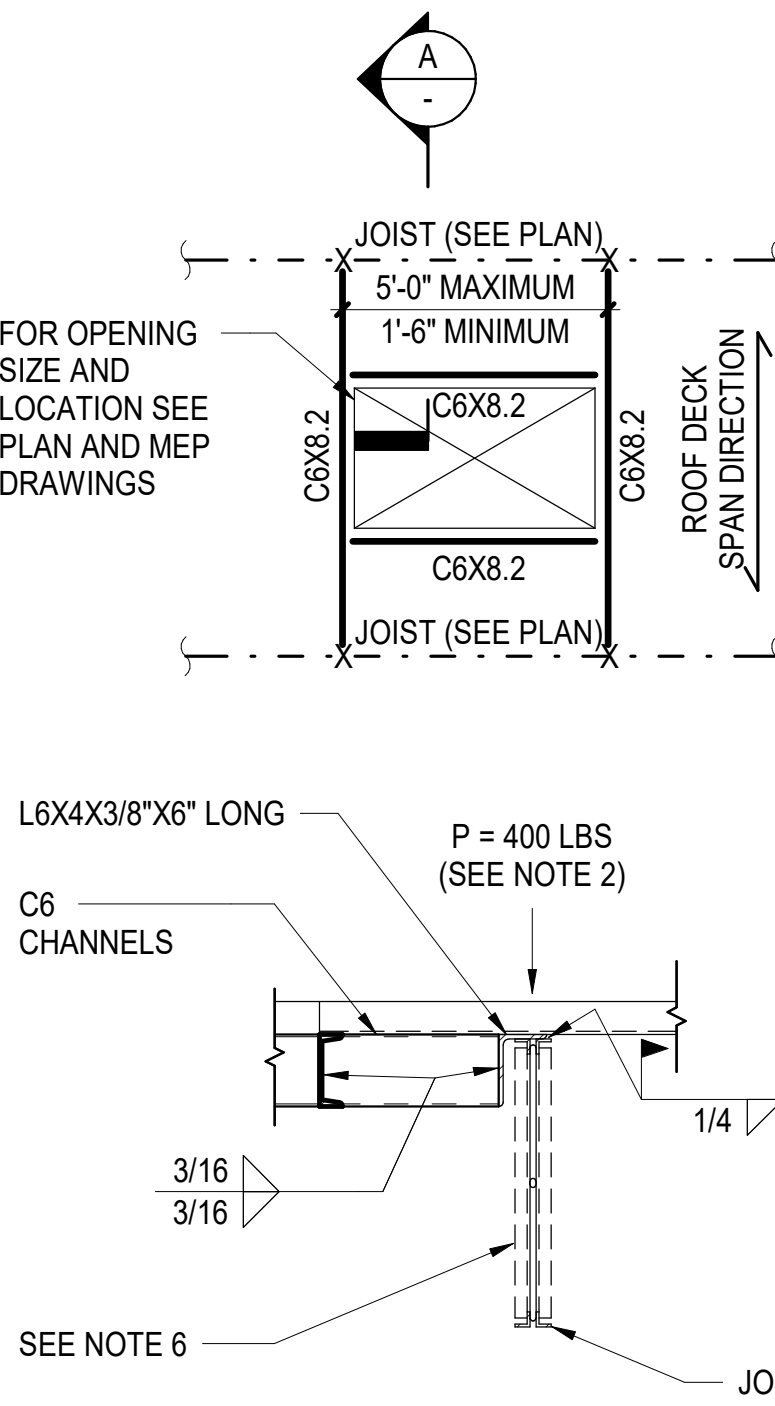
- NOTES:**
- SEE ADDITIONAL DETAILS AT EXTERIOR WALL SUPPORTS
  - ATTACH DECK (ENDS AND SIDE LAPS) TO SUPPORT ANGLES OR PLATES TYPICAL
  - SEE TYPICAL SLAB REINFORCEMENT AT COLUMN DETAILS
  - CONTRACTOR SHALL COORDINATE AND PROVIDE ANGLES AS REQUIRED FOR SUPPORT OF DECK NOTCHED AROUND COLUMN TYPICAL AT ALL FLOORS AT ALL COLUMNS, SIZES SHOWN ARE MINIMUM, CONTRACTOR TO VERIFY FOR ACTUAL CONDITIONS

**6 TYPICAL DECK SUPPORT AT COLUMN**  
 NOT TO SCALE

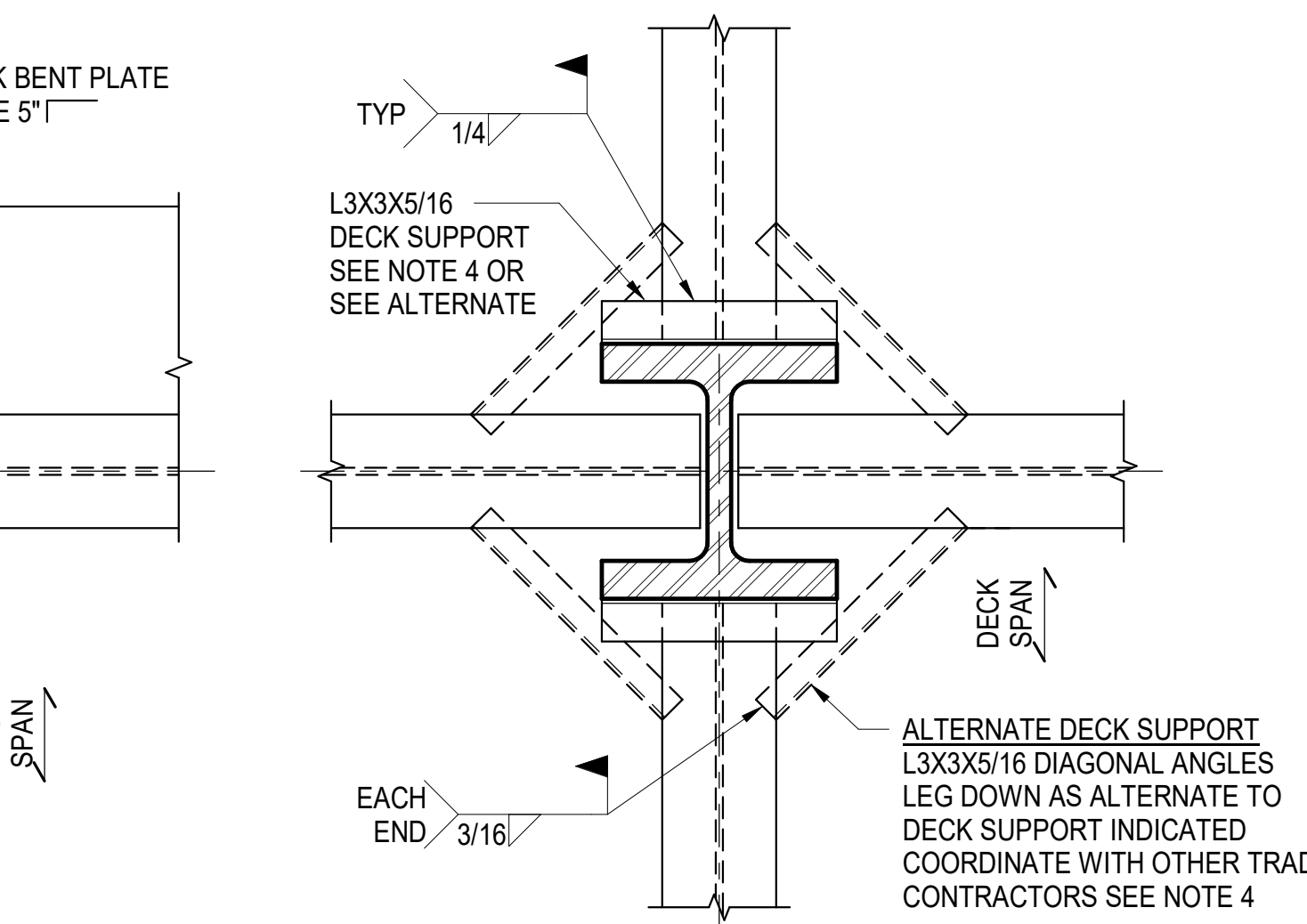


**A SECTION**

**2 TYPICAL SUPPORT OF STEEL DECK INCLINED OVER BEAM**  
 NOT TO SCALE

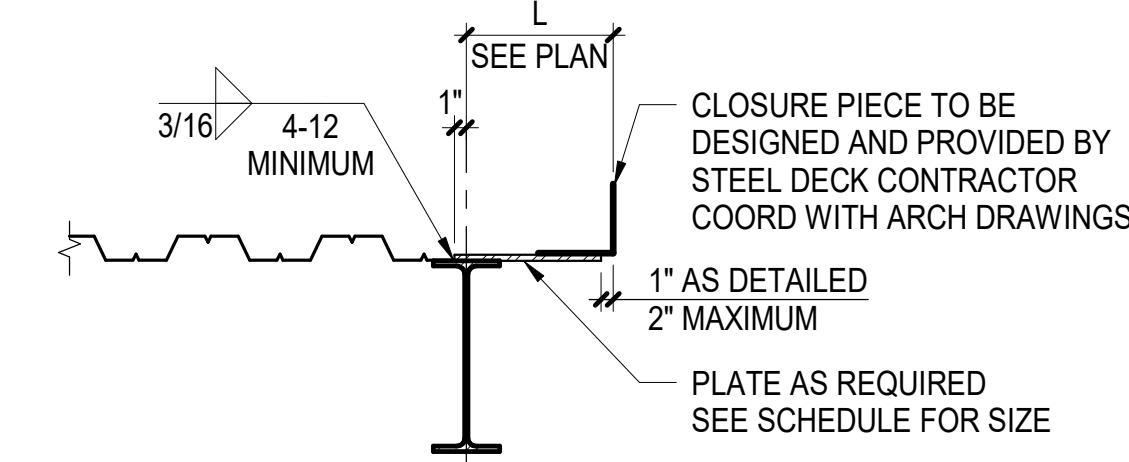


**4 TYPICAL ROOF TOP UNIT SUPPORTED AT JOIST DETAIL**  
 3/4\"/>



**D DETAIL AT INTERIOR COLUMN**

**5 TYPICAL ROOF DECK AT EDGE**  
 NOT TO SCALE



L	THICKNESS OF PLATE OR CLOSURE
≤ 1'-4"	1/4"
≤ 1'-0"	10 GAGE
≤ 0'-10"	12 GAGE

- NOTES:**
- AT CONTRACTOR'S OPTION SINGLE BENT PLATE (OR EQUIV ANGLE) MAY BE USED PROVIDED IT IS FIELD INSTALLED AND ACCOMMODATES SLAB EDGE TOLERANCES

**6 TYPICAL ROOF DECK DETAILS**

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

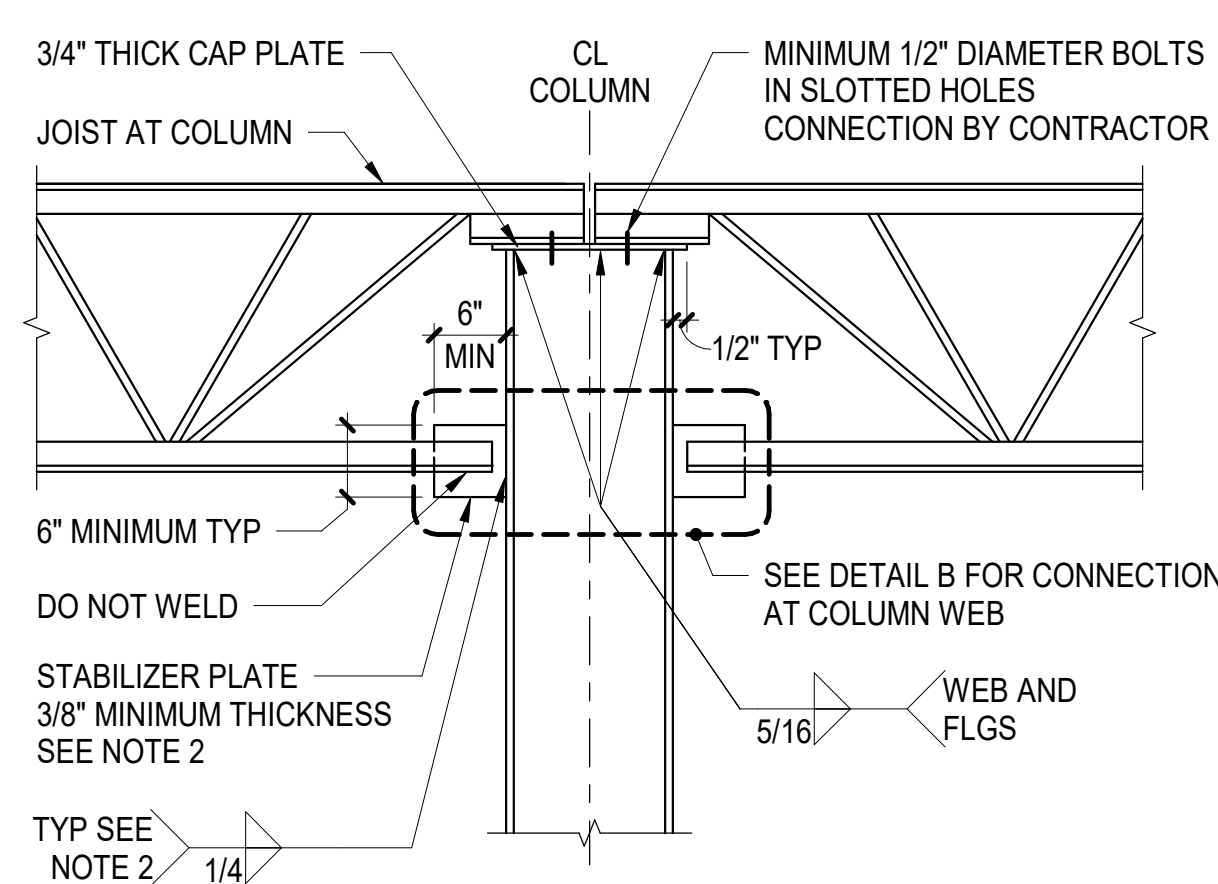
OWNER  
 PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
 TYPICAL ROOF DECK DETAILS

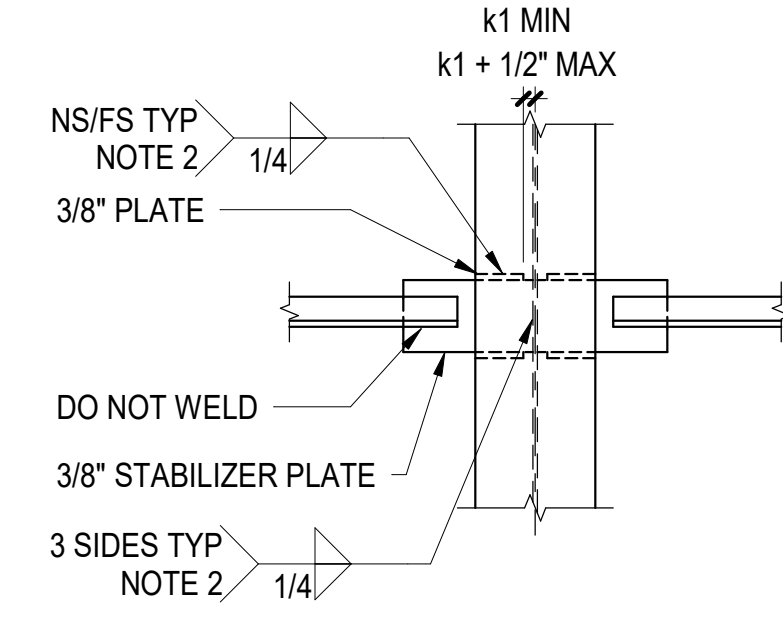
Portage, Michigan

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 530**  
 21-237.25



**A SECTION**

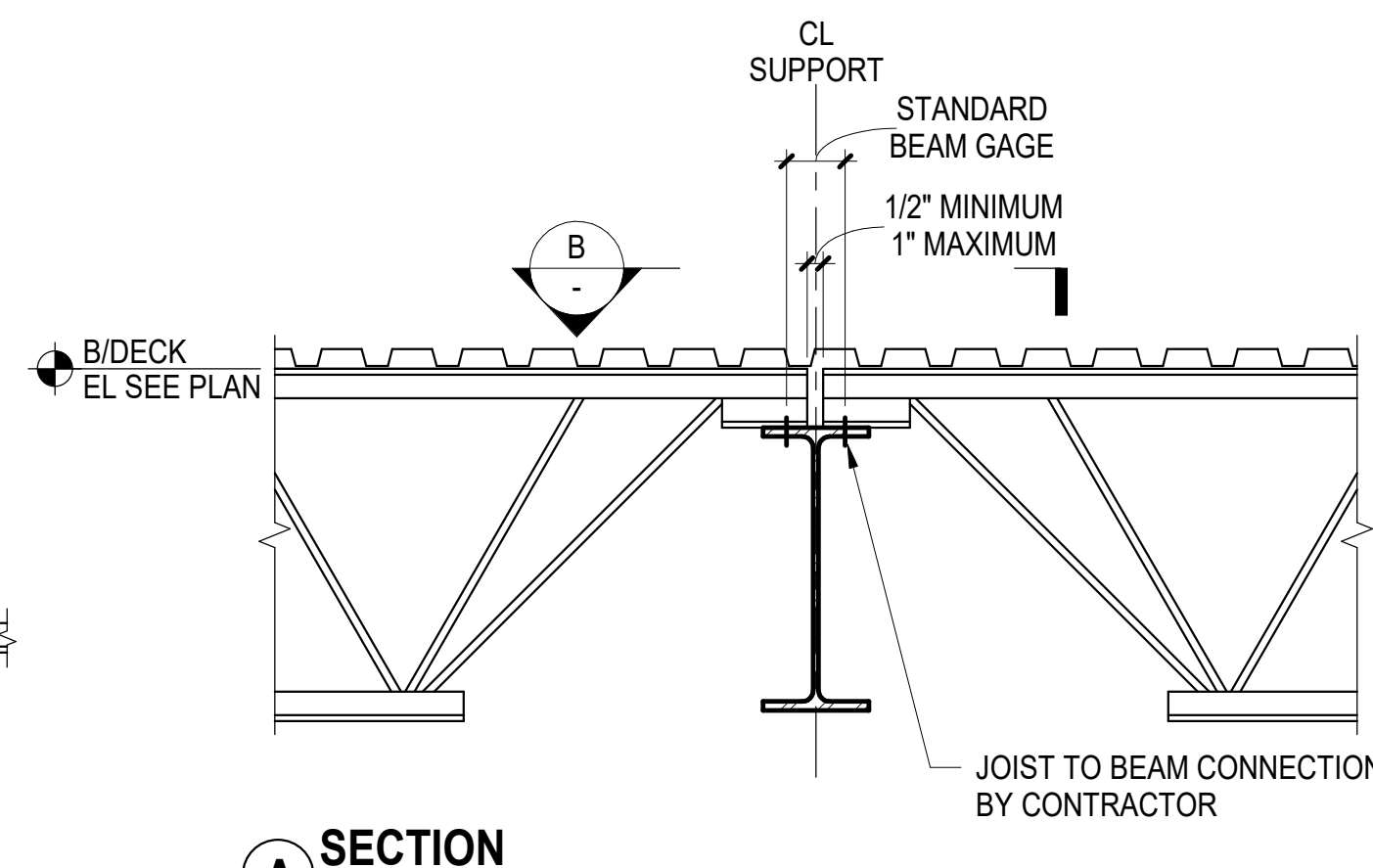


**B CONNECTION AT COLUMN WEB**

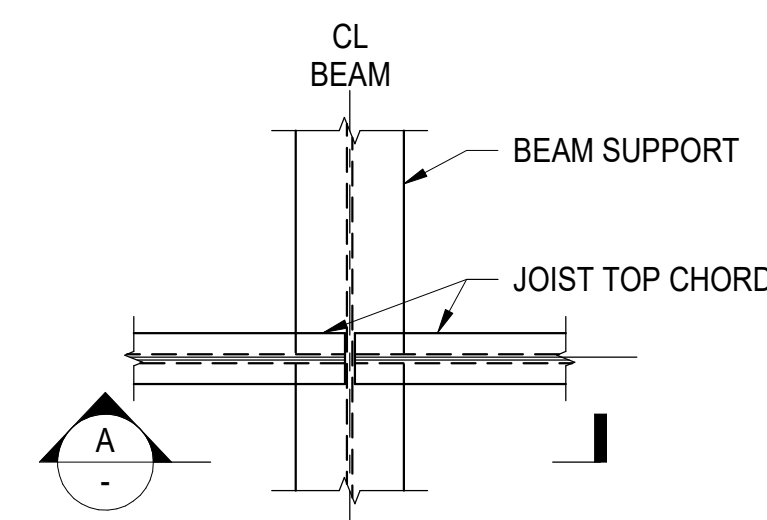
**NOTES:**

1. PROVIDE SIMILAR CONNECTION AT HSS COLUMNS.
2. IF TEMPORARY ERECTION BRACING IS ATTACHED TO THE BOTTOM CHORD STABILIZER PLATE, THE CONNECTION OF THE STABILIZER PLATE TO THE COLUMN MUST BE DESIGNED BY THE CONTRACTOR FOR THE ERECTION STABILITY LOADS AND THE REQUIRED PLATE AND WELDS MAY EXCEED THAT SHOWN IN THIS DETAIL.

**1 TYPICAL JOIST TO TOP OF COLUMN DETAILS**  
 NOT TO SCALE

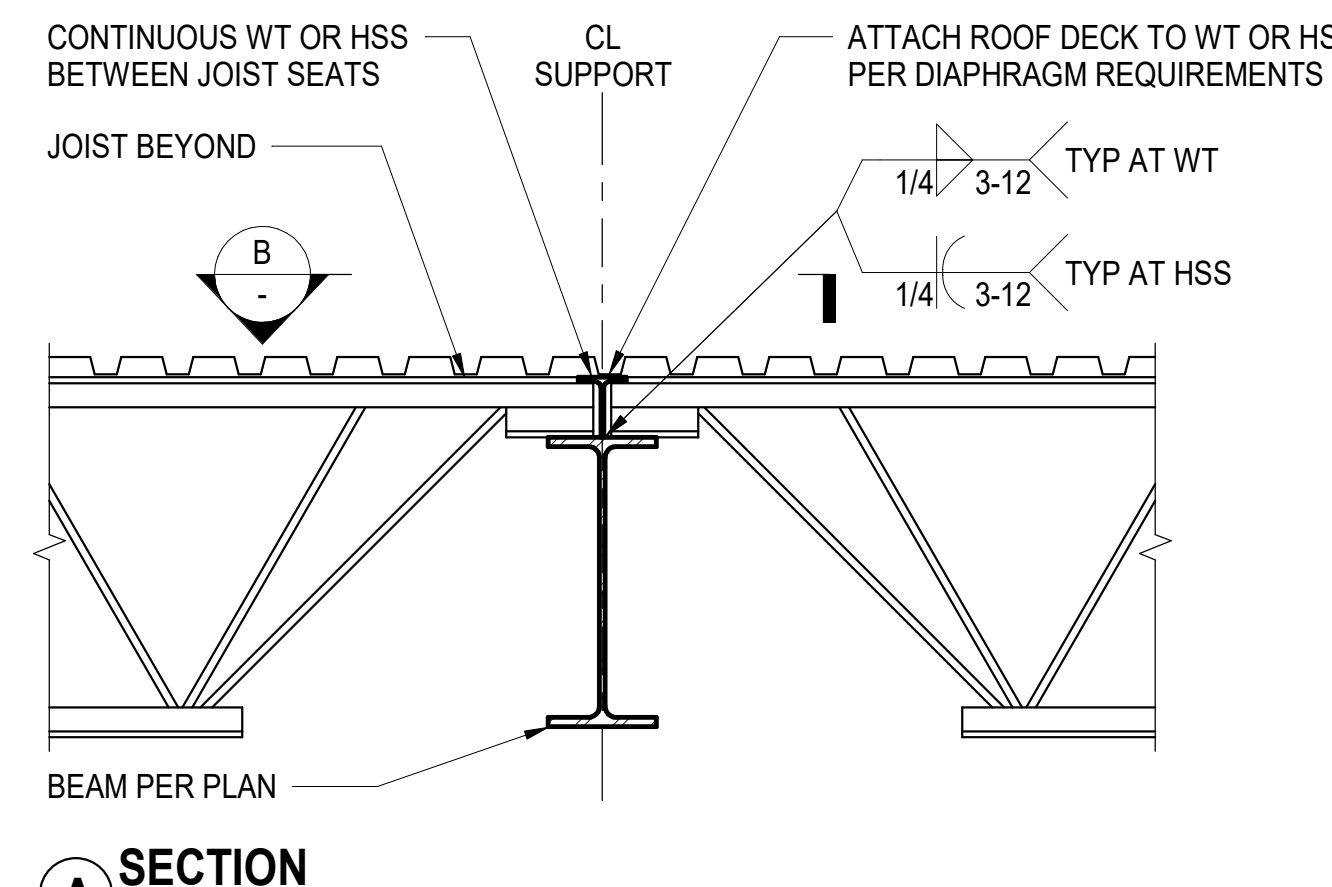


**A SECTION**

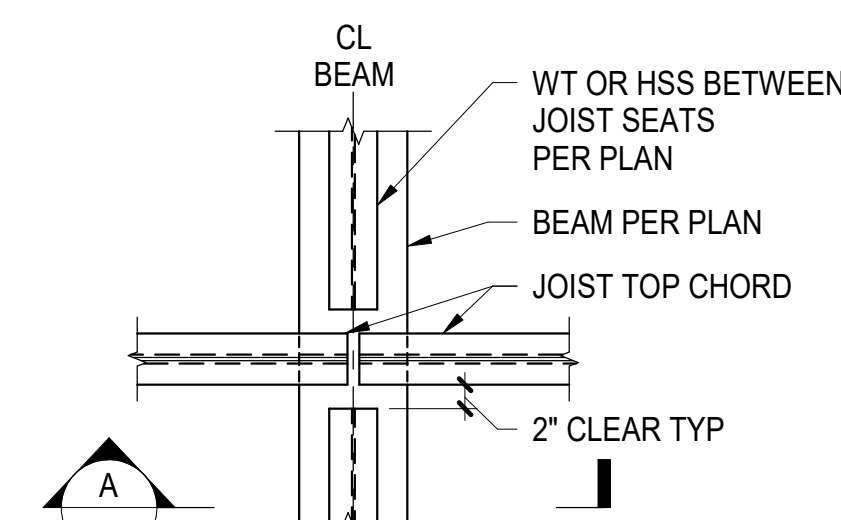


**B PLAN**

**2 TYPICAL JOIST TO BEAM DETAIL**  
 NOT TO SCALE

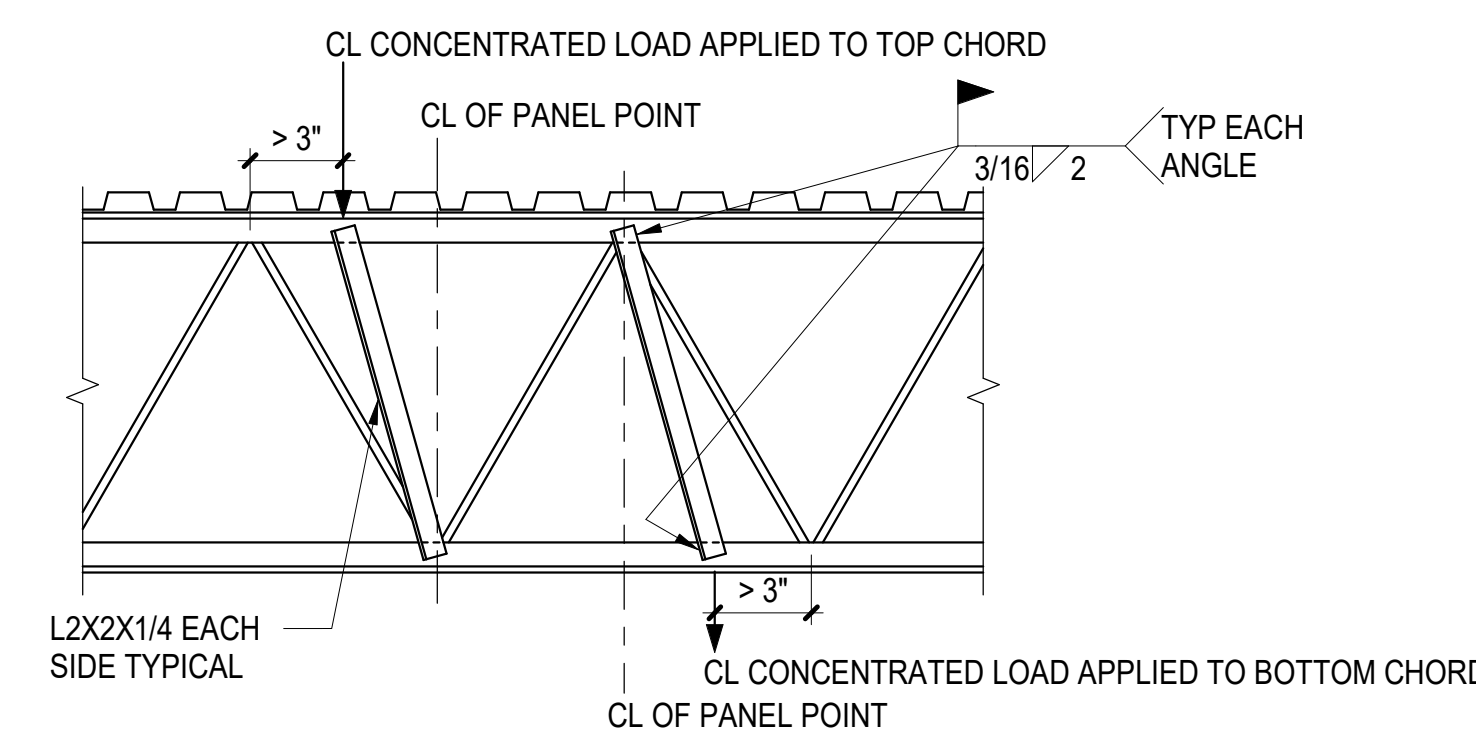


**A SECTION**



**B PLAN**

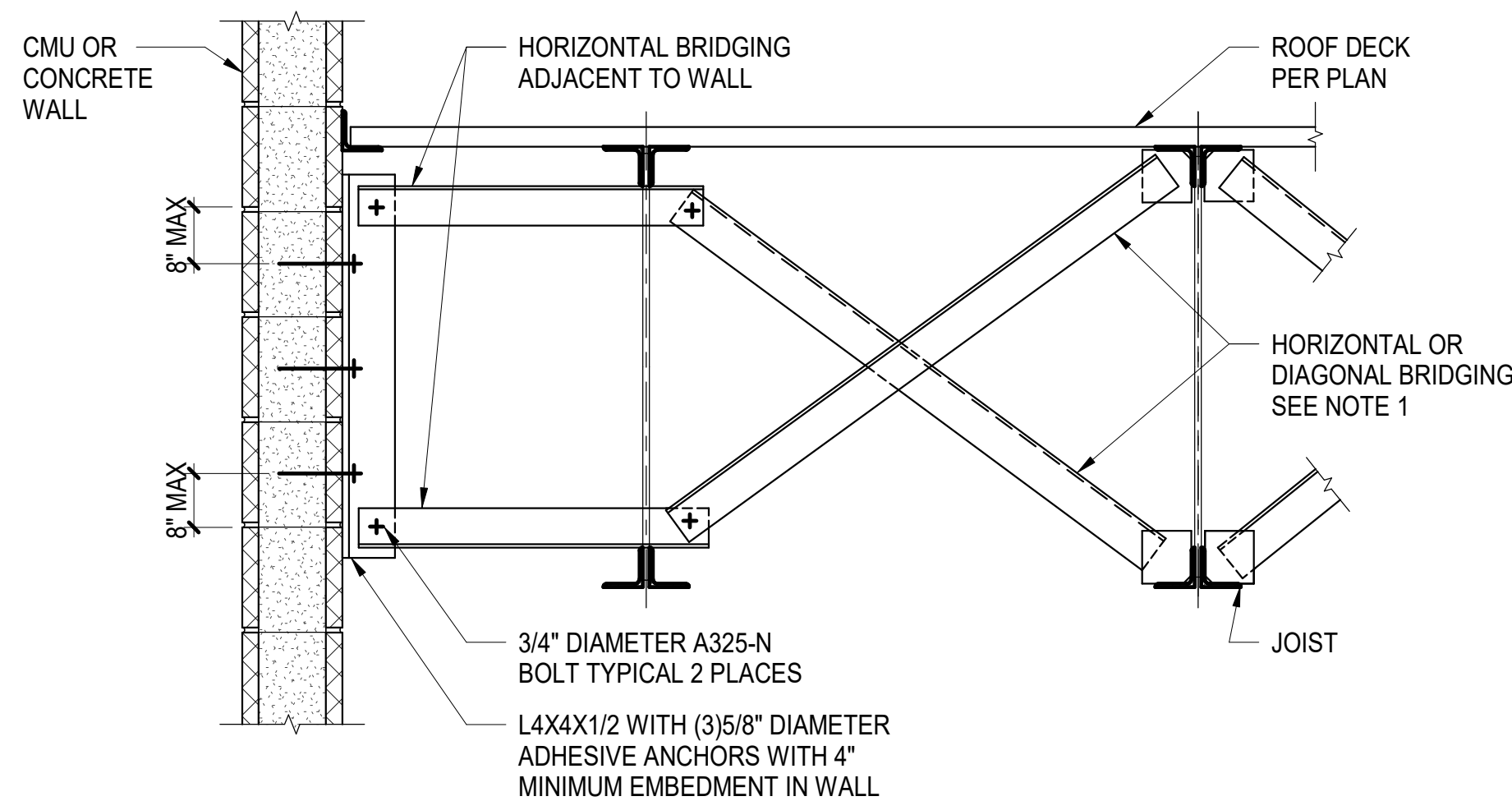
**3 TYPICAL DECK SUPPORT BETWEEN JOISTS**  
 NOT TO SCALE



**NOTES:**

1. THE TOTAL SUPERIMPOSED LOAD ON ANY JOIST SHALL NOT EXCEED THE LOADING SHOWN ON THE STRUCTURAL DRAWINGS INCLUDING CONCENTRATED AND UNIFORM LOADS. CONTRACTOR SHALL COORDINATE ALL SUBCONTRACTORS HANGING METHODS, LOCATIONS, AND LOADS WITH LIMITS PROVIDED IN STRUCTURAL DRAWINGS.
2. HANGING CONCENTRATED LOADS SHALL BE APPLIED CONCENTRIC TO THE JOIST CHORD.
3. JOIST REINFORCEMENT IS NOT REQUIRED FOR CONCENTRATED LOADS LESS THAN 100 POUNDS.
4. CONCENTRATED LOADS LOCATED WITHIN 3" OF THE PANEL POINT CAN BE CONSIDERED TO ACT AT THE PANEL POINT.
5. FOR CONCENTRATED LOADS THAT DO NOT MEET THE CRITERIA OF NOTES 3 AND 4, PROVIDE JOIST REINFORCEMENT PER THIS DETAIL. TOTAL LOAD APPLIED TO THE JOIST MUST SATISFY NOTE 1.

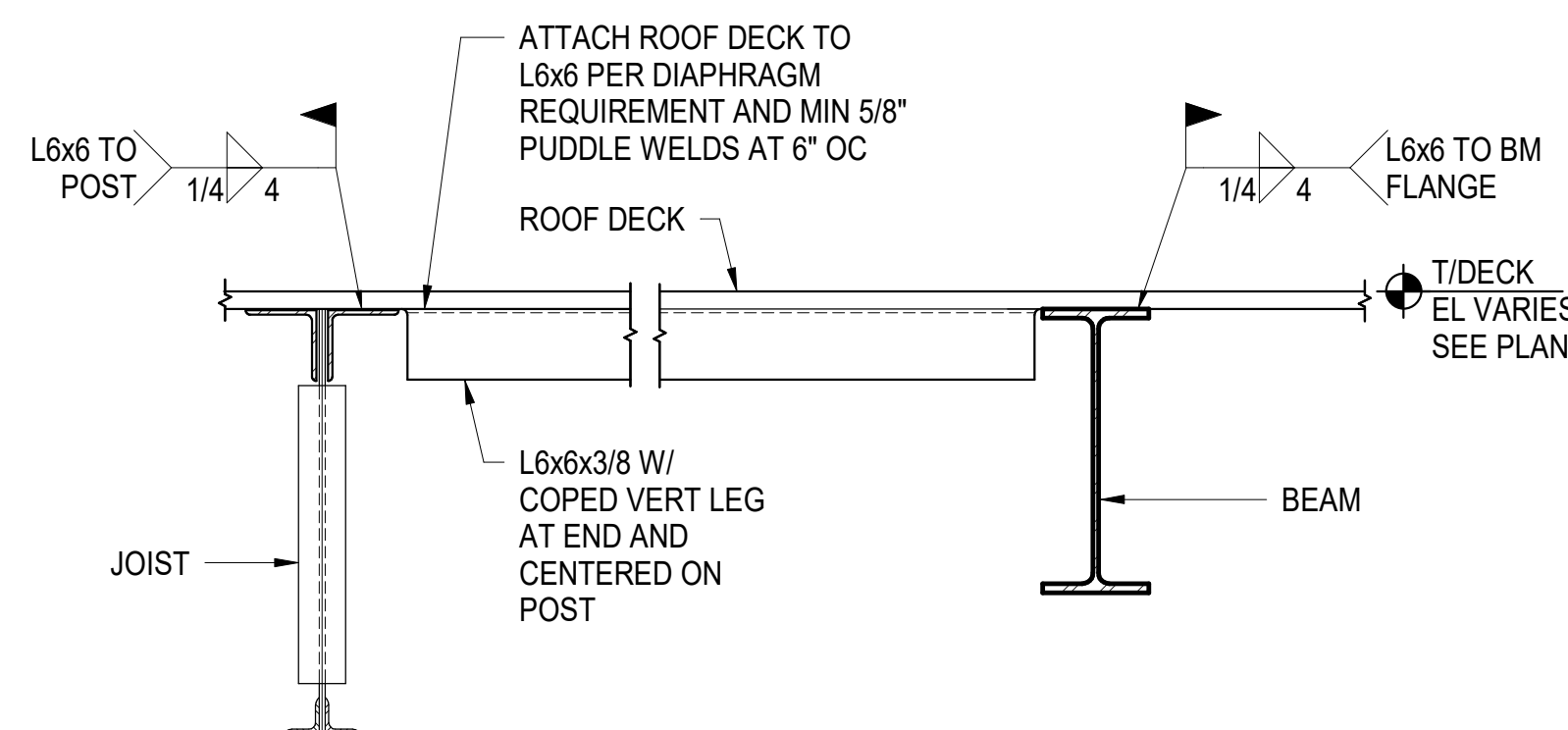
**4 TYPICAL JOIST REINFORCEMENT AT CONCENTRATED LOAD**  
 NOT TO SCALE



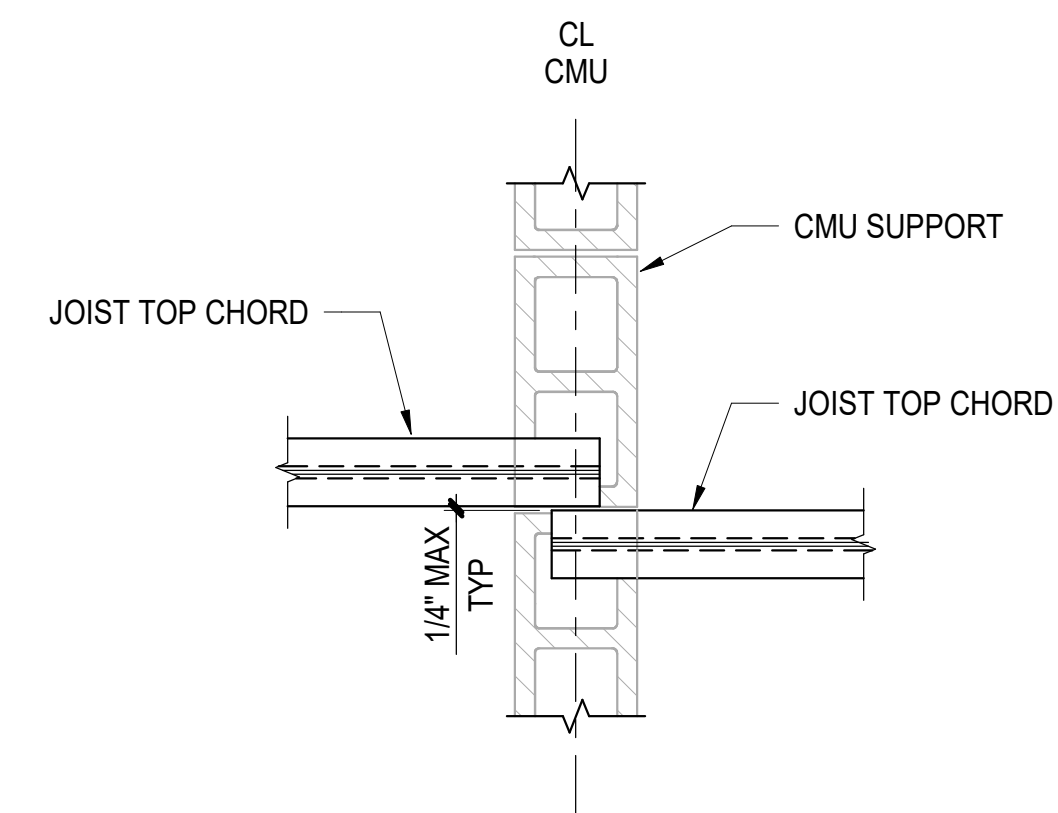
**NOTES:**

1. BRIDGING SHALL NOT BE CONNECTED TO JOIST WEB ELEMENTS.

**5 TYPICAL JOIST BRIDGING TO WALL DETAIL**  
 NOT TO SCALE



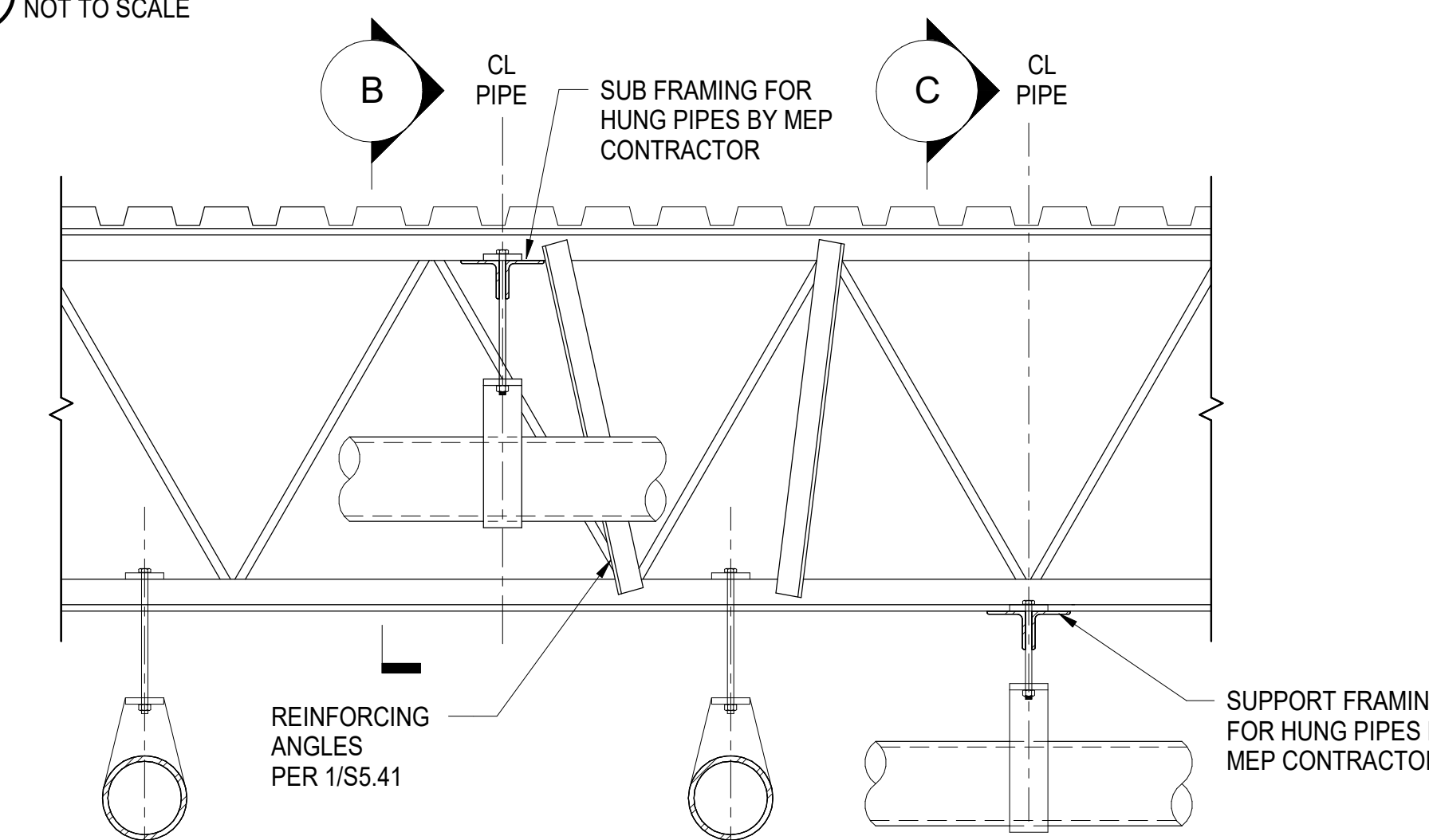
**6 TYPICAL BRACING DETAIL**  
 3/4" = 1'-0"



**NOTE:**

JOISTS SUPPORTED BY CMU THAT SHOW AS ALIGNED ON PLAN  
 SPACE BETWEEN TOP CHORD SEATS

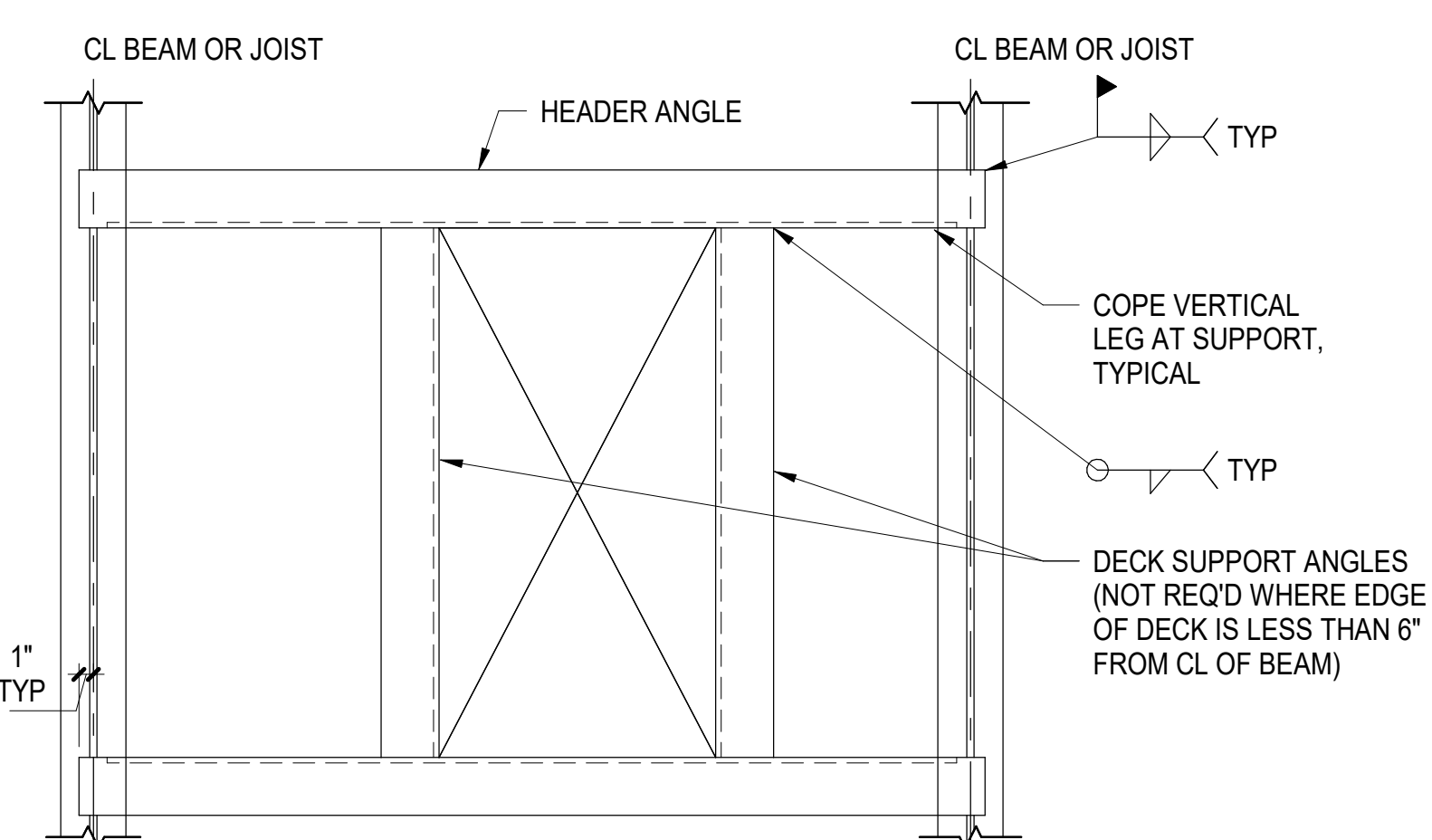
**7 TYPICAL ALIGNING JOIST TO CMU WALL DETAIL**  
 NOT TO SCALE



**NOTE:**

1. SEE 1/55.41 FOR ADDITIONAL HANGING LOAD LIMITATIONS

**10 TYPICAL MEP HANGER AT JOIST DETAIL**  
 1" = 1'-0"

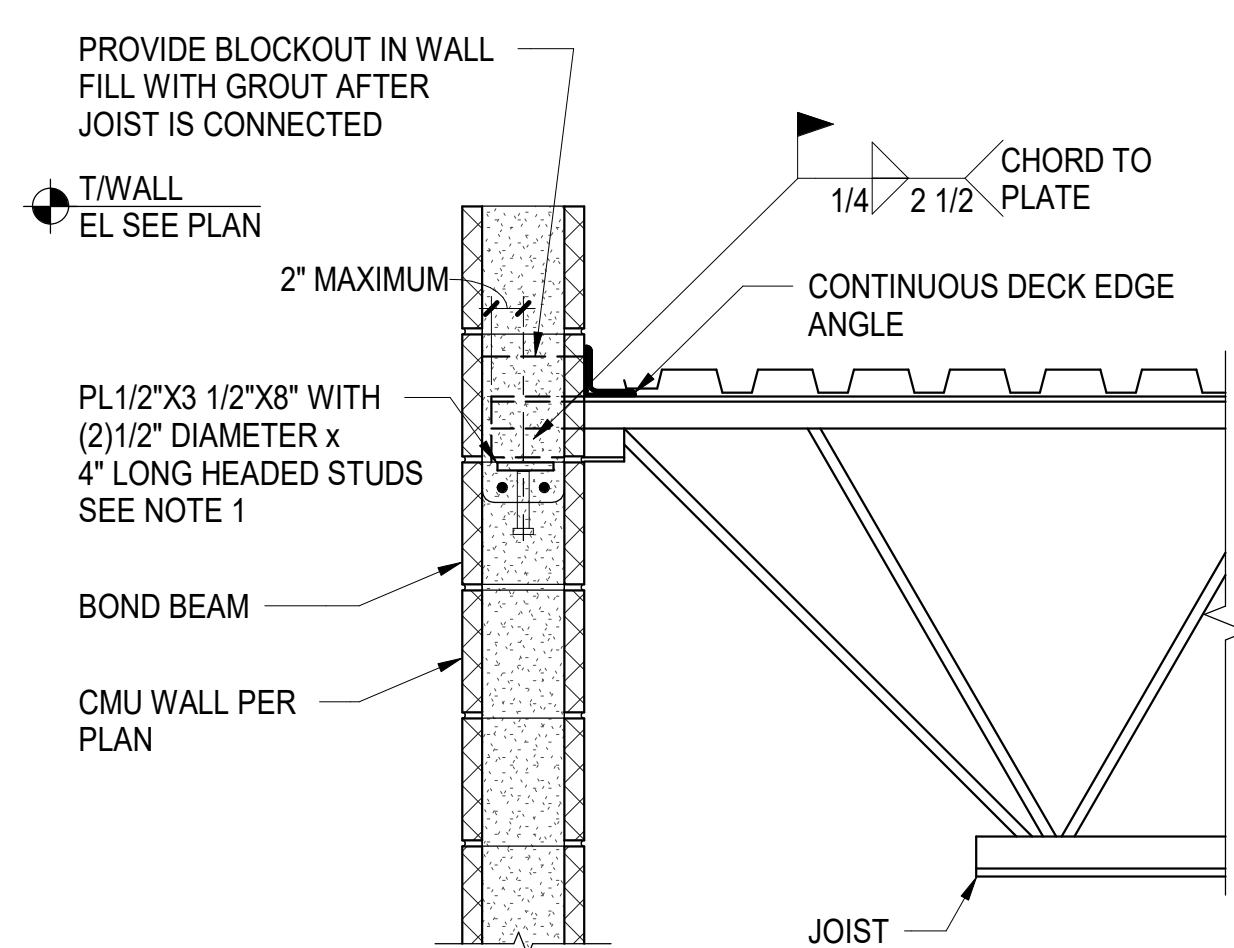


**NOTES:**

1. COORDINATE SIZE AND LOCATION OF ALL ROOF OPENINGS WITH GENERAL CONTRACTOR.
2. UNLESS OTHERWISE NOTED, SIZE OF DECK SUPPORT AND HEADER ANGLES IS AS FOLLOWS:

SPAN	SIZE
LESS THAN 4'-0"	L4x4x1/4
OVER 4'-0" TO 6'-0"	L5xL5x5/16
OVER 6'-0" TO 8'-0"	L6x6x3/8

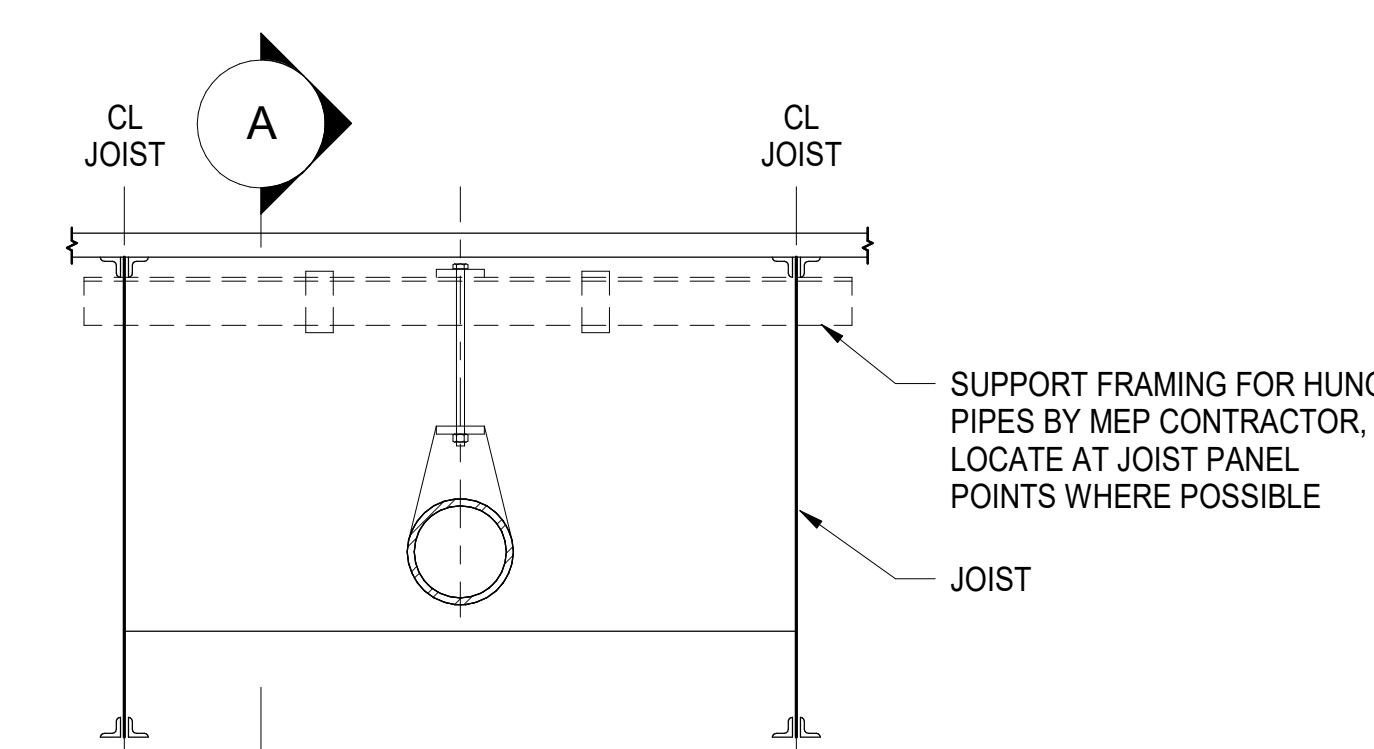
**8 TYPICAL ROOF OPENING FRAME**  
 1" = 1'-0"



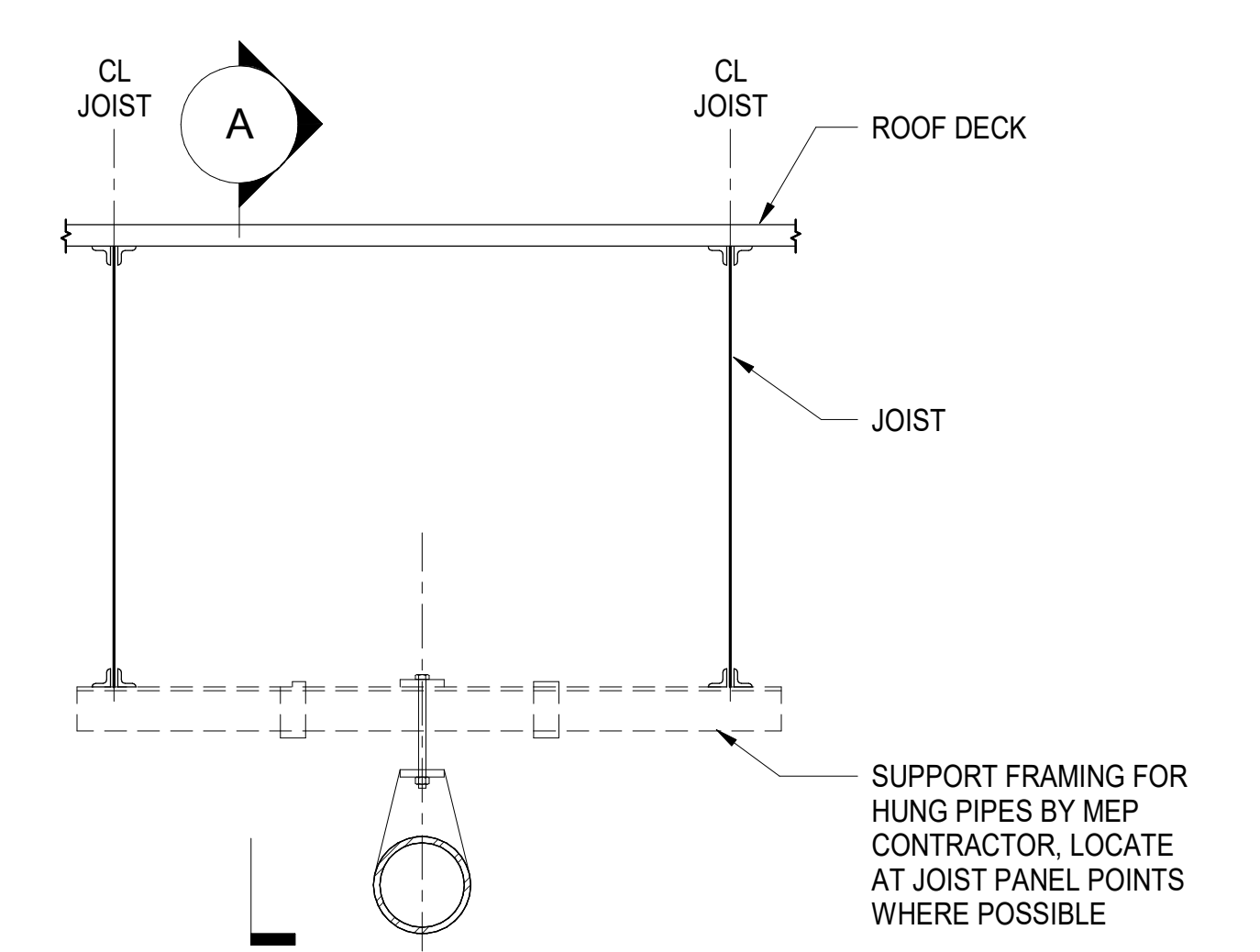
**NOTES:**

1. JOIST BEARING PLATE IS CENTERED ON CMU WALL THICKNESS. CONTRACTOR SHALL ACCOUNT FOR BEARING LOCATION IN DESIGN OF JOIST SEAT.

**9 TYPICAL JOIST TO MASONRY WALL DETAIL**  
 NOT TO SCALE



**A ELEVATION 1**



**A ELEVATION 2**

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

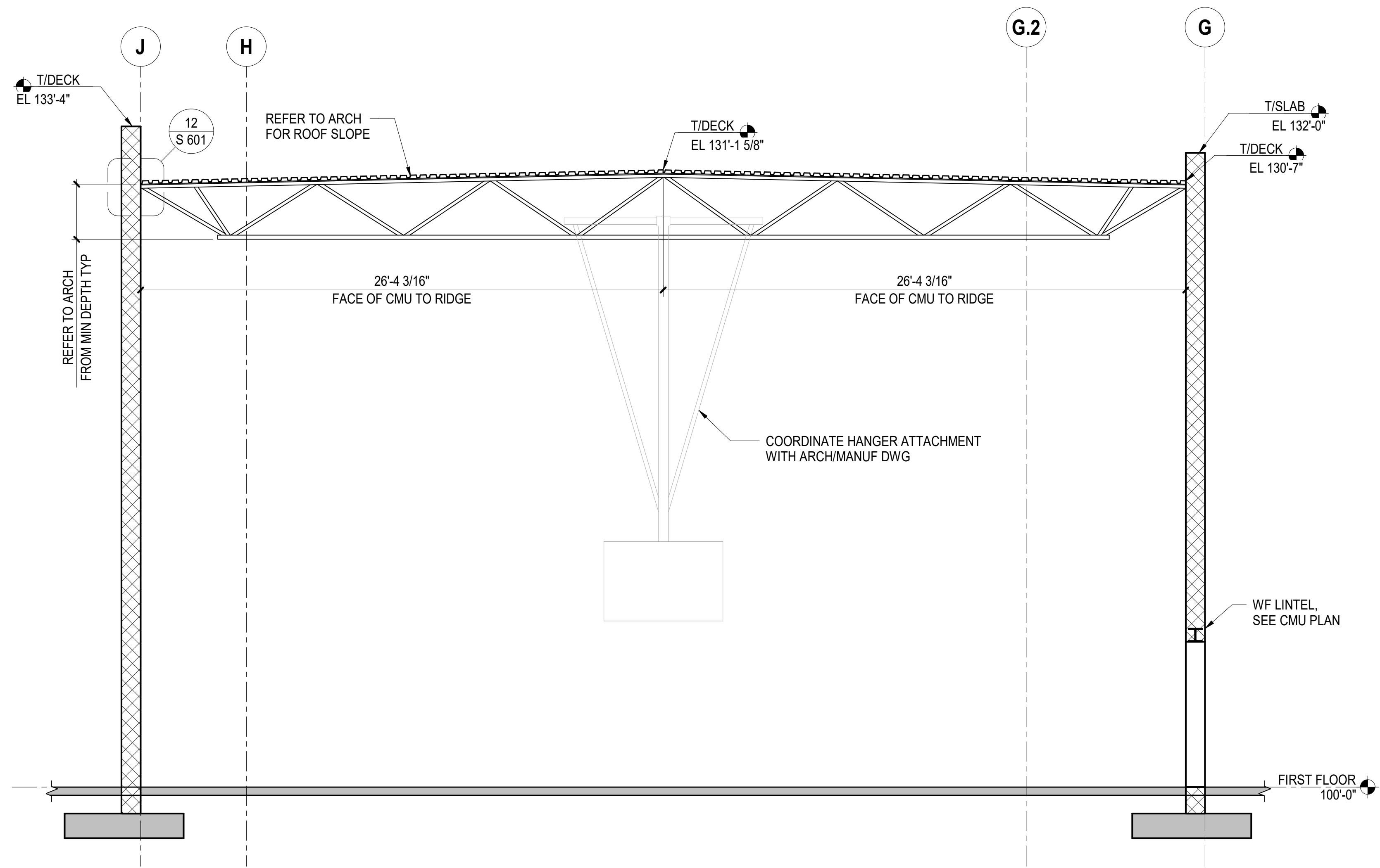
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 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 TYPICAL STEEL JOIST DETAILS

DATE  
 JUNE 30, 2023

SHEET NUMBER  
 S 540  
 21-237.25



**1** DOUBLE PITCHED TOP CHORD ROOF JOIST ELEVATION AT GYMNASIUM  
1/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

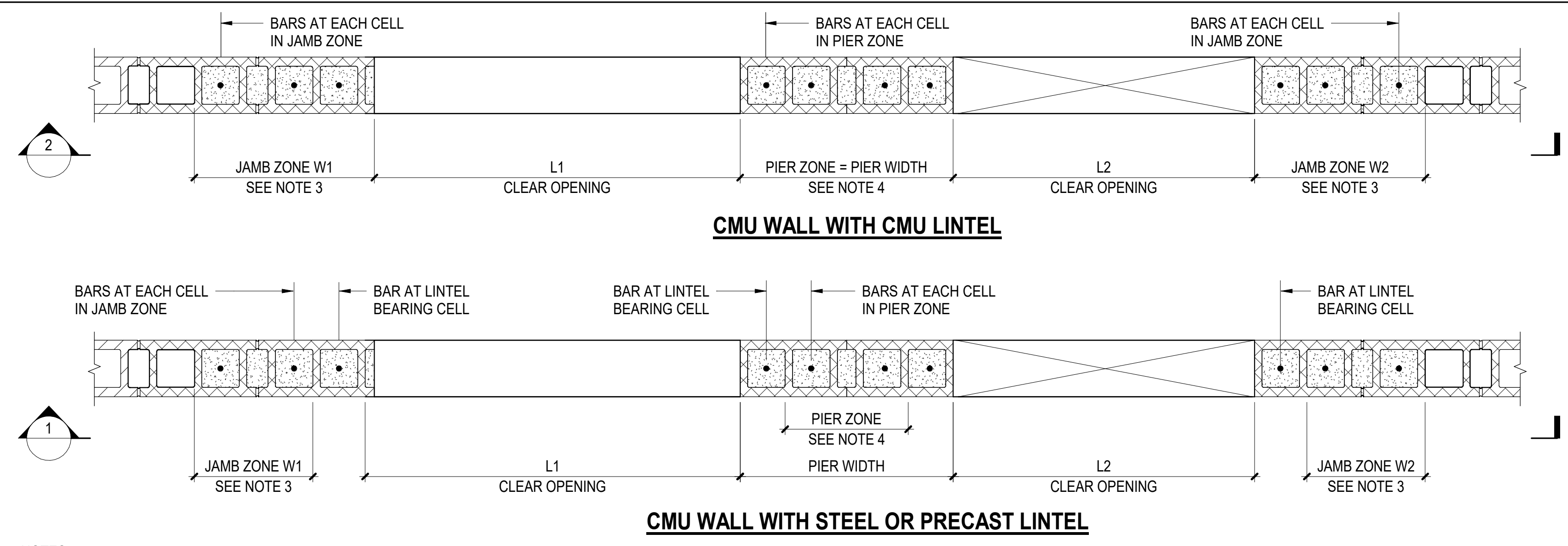
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

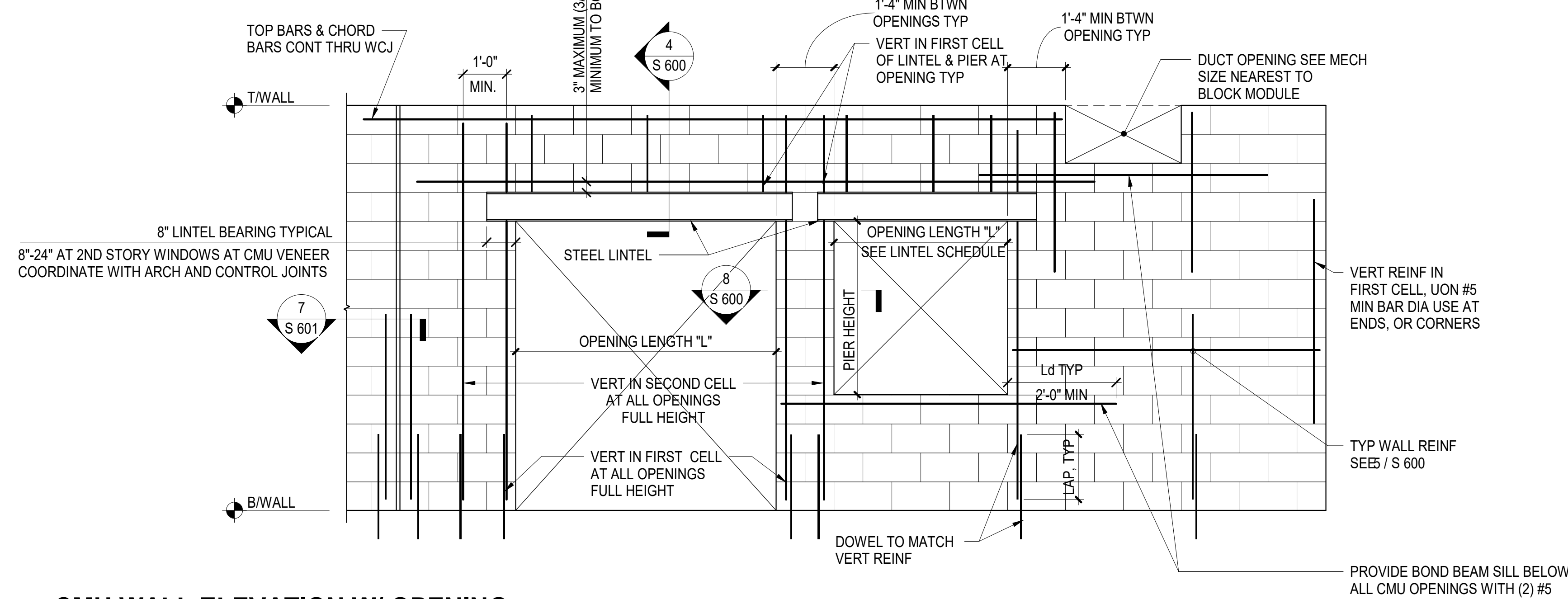
SHEET TITLE  
 STEEL JOIST DETAILS

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 541**  
 21-237.25

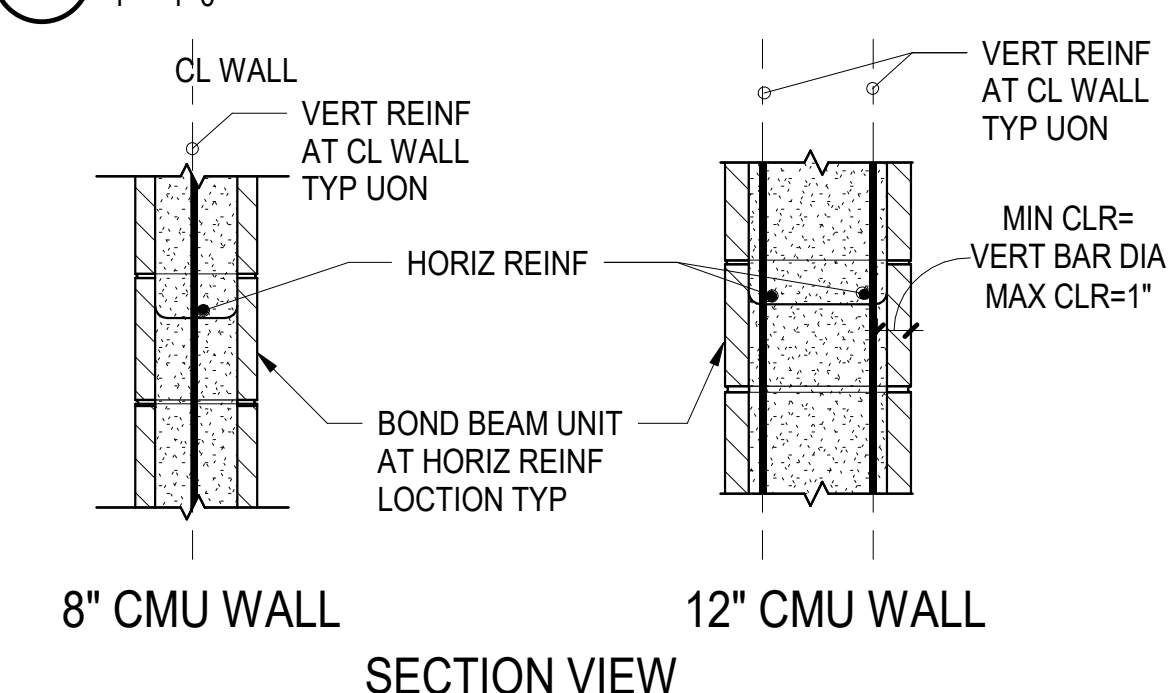


- NOTES:**
- SEE ARCHITECTURAL DRAWINGS FOR THE EXACT LOCATION OF MASONRY WALL OPENINGS
  - SUM OF OPENING WIDTHS L1 PLUS L2 ON EITHER SIDE OF PIER SHALL NOT EXCEED 24'-0", AND ANY INDIVIDUAL OPENING SHALL NOT EXCEED 12'-0" IN WIDTH. FOR CONDITIONS EXCEEDING THIS CRITERIA, ENGINEER OF RECORD SHALL BE NOTIFIED PRIOR TO CONSTRUCTION
  - W1 AND W2 REFERS TO WIDTH OF JAMB ZONE BASED ON ADJACENT CLEAR OPENING L1 AND L2, RESPECTIVELY AS PER TYPICAL CMU NON-BEARING WALL JAMB AND PIER ZONE SCHEDULE
  - PIER ZONE REFERS TO MINIMUM WIDTH OF PIER AS SCHEDULED ON TYPICAL CMU NON-BEARING WALL JAMB AND PIER ZONE SCHEDULE
  - PROVIDE P1 TYPE REINFORCEMENT EITHER SIDE OF THE OPENING AS FOLLOWS:
    - UPTO 7'-0" WIDE OPENING - 16" WIDE PIER
    - UPTO 12'-0" WIDE OPENING - 24" WIDE PIER



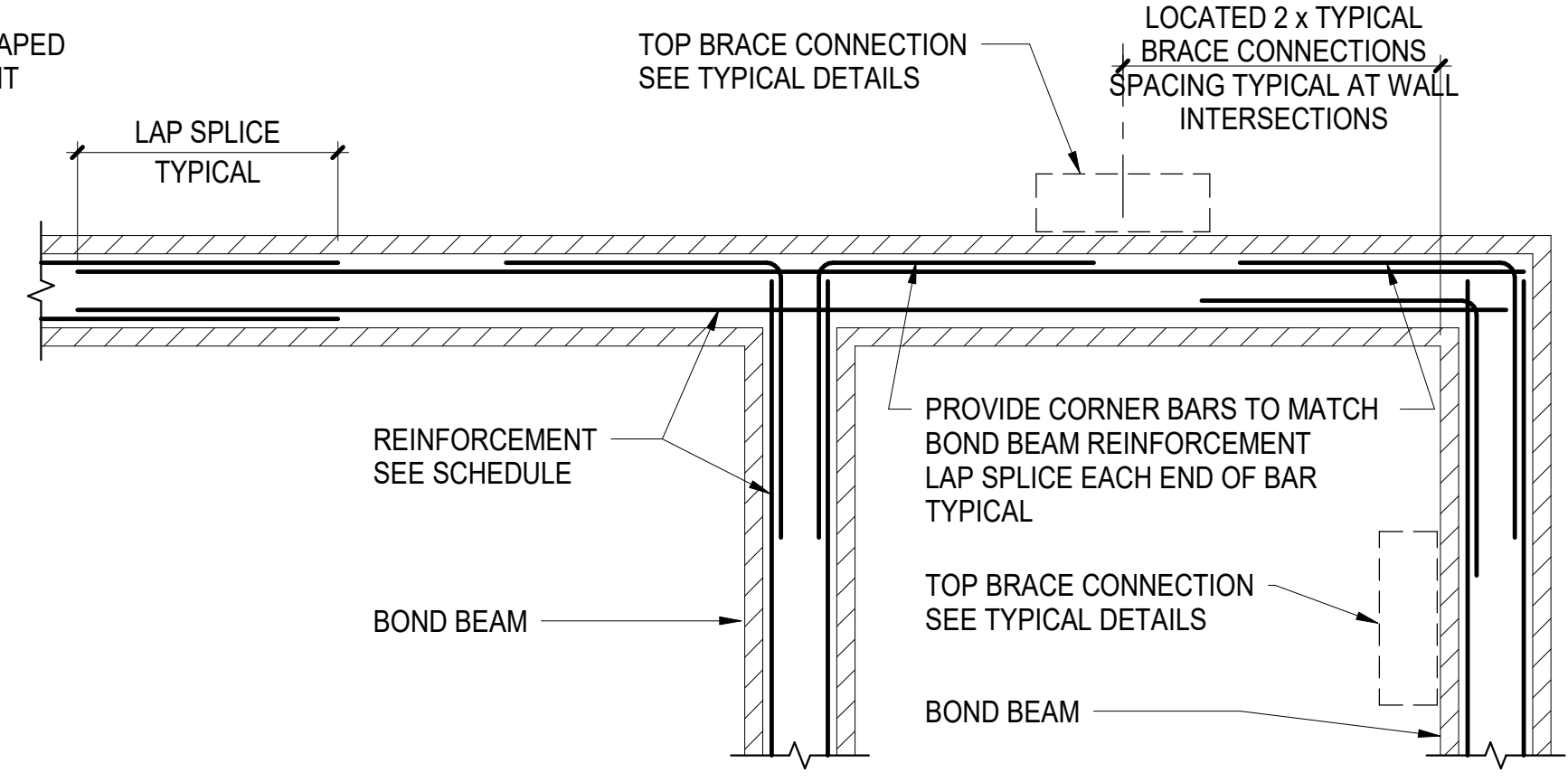
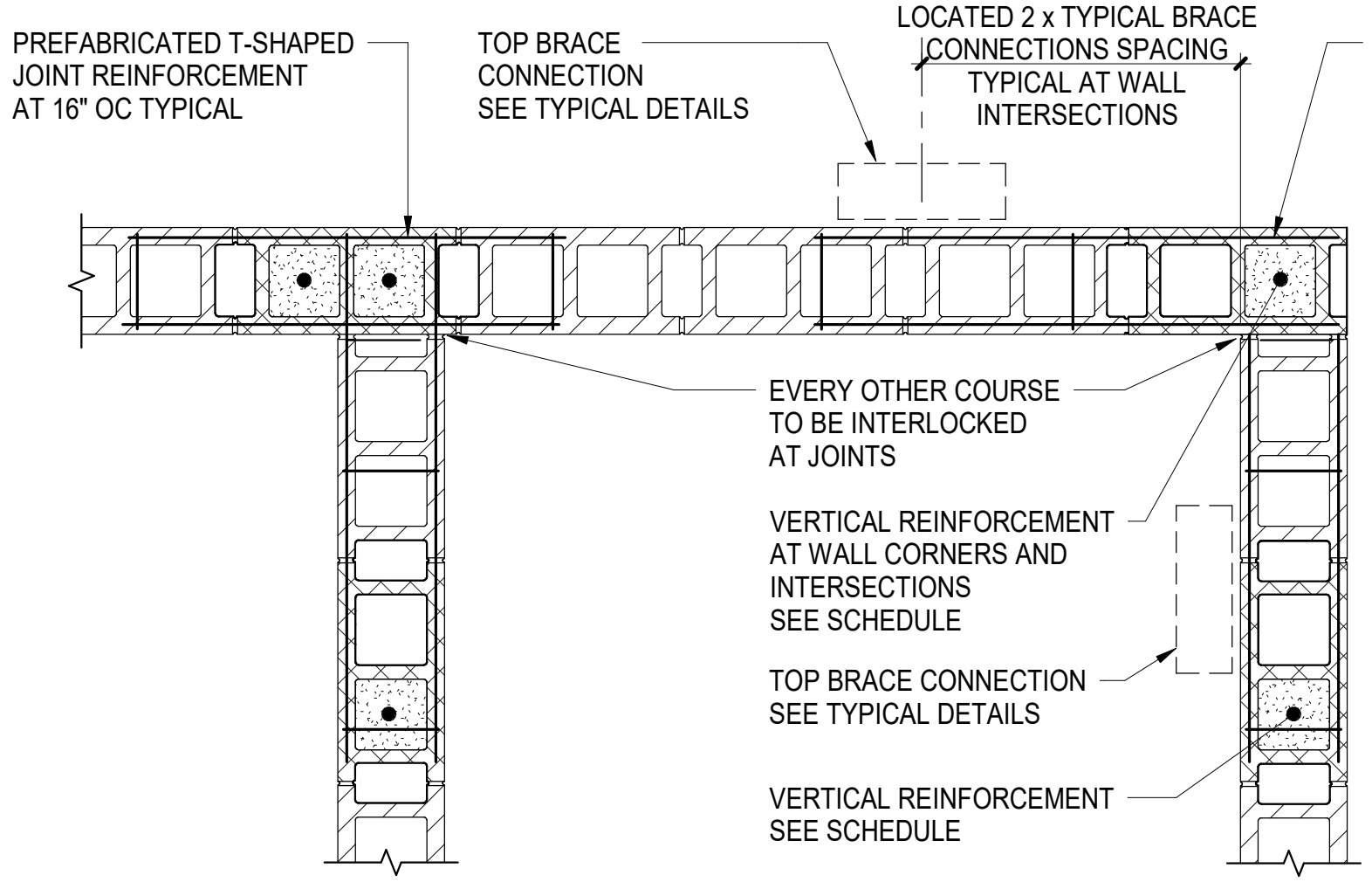
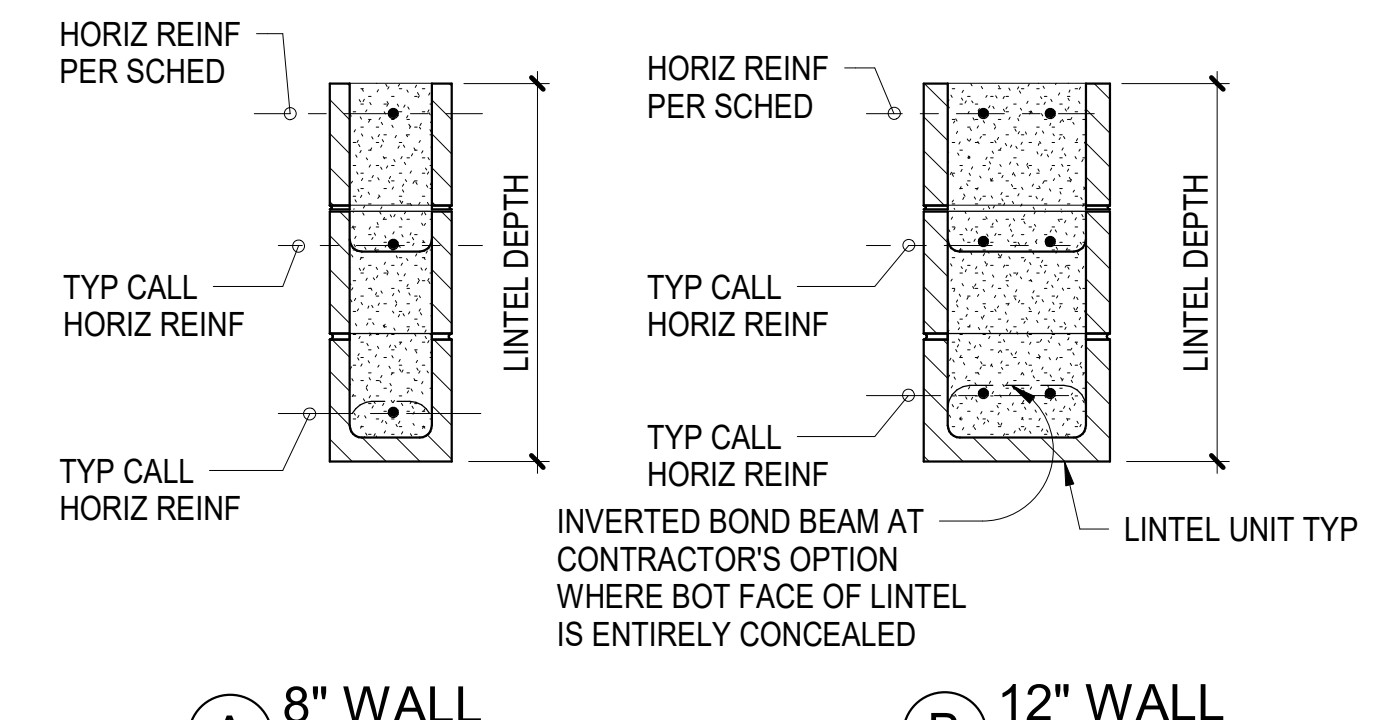
**1 TYPICAL CMU NON-BEARING WALL PLAN DETAIL AT ADJACENT WALL OPENINGS**  
 1" = 1'-0"

**2 CMU WALL ELEVATION W/ OPENING**  
 1/2" = 1'-0"



**REINFORCING SCHEDULE FOR CONCRETE MASONRY WALL**

WALL TYPE	NOMINAL THICKNESS	VERTICAL REINF	HORIZONTAL REINF	No. OF REINF CURTAIN
DCMU/CMU-1	8"	#4 @ 32" OC	SEE NOTE 9	SINGLE
CMU-2	8"	#4 @ 48" OC	SEE NOTE 9	SINGLE
CMU-3	12"	#4 @ 48" OC	SEE NOTE 9	DOUBLE
CMU-4	8"/12"	#4 @ 72" OC	SEE NOTE 9	SINGLE
CMU-5	8"	#4 @ 8" OC	SEE NOTE 9	DOUBLE



**HORIZONTAL JOINT REINFORCEMENT INTERSECTION DETAIL**

**BOND BEAM INTERSECTION DETAILS**

- NOTES:**
- SEE PLANS FOR WALL TYPE LOCATIONS
  - LAP SPLICE REINFORCING PER
  - CMU SHALL BE RUNNING BOND & GROUTED IN CELLS W/ REINFORCEMENTS.
  - USE DOUBLE OPEN END BLOCKS TO THE EXTENT PRACTICAL TYP DO NOT PLACE CLOSED SIDES BACK TO BACK. CONTRACTOR OPTION TO PROPOSE ALTERNATE DETAIL WITHOUT USE OF OPEN END BLOCK.
  - SEE STRUCTURAL GENERAL NOTES FOR MATERIAL SPECIFICATIONS
  - FOR WALL CONSTRUCTION & CONTROL JOINT SEE DETAILS 600
  - FOR WALL CORNERS & INTERSECTIONS SEE DETAIL
  - DCMU DENOTES DECORATIVE CONCRETE MASONRY UNIT.
  - PROVIDE LADDER TYPE HORIZONTAL REINFORCING 2x W2.1(9 GAGE) FOR WALLS AT 16" O.C. AT WALLS BETWEEN CONTROL JOINTS.

**REINFORCING SCHEDULE FOR LINTEL CMU WALL**

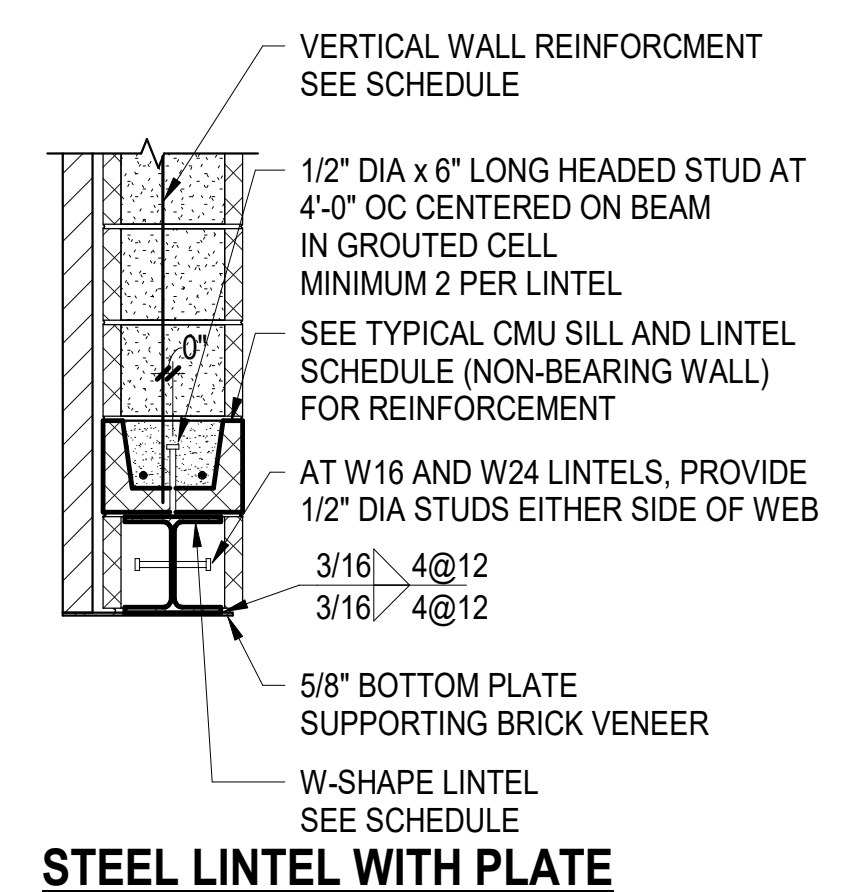
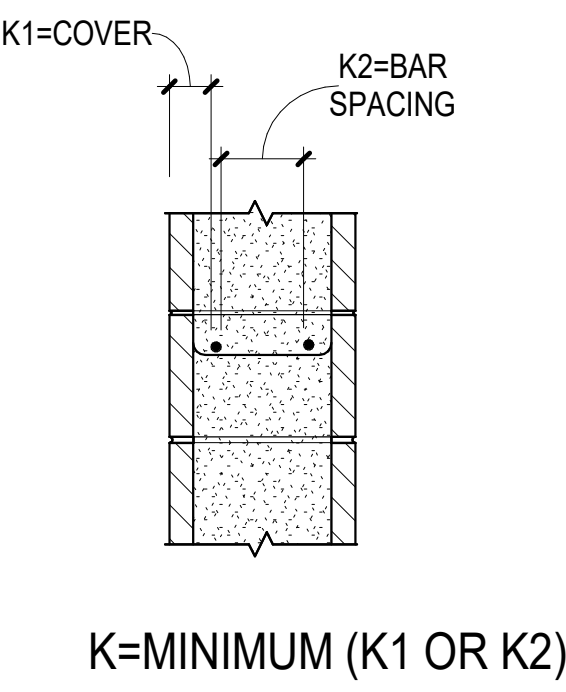
	OPENING LENGTH	MIN LINTEL DEPTH	8" WALL		12" WALL		MIN JAMB ZONE OR PIER WIDTH
			HORIZ	VERT	HORIZ	VERT	
ML-1	L ≤ 4'-0"	2'-0"	#5	-	2#5	-	16"
ML-2	L ≤ 6'-0"	2'-8"	#5	-	2#6	-	16"

**10 TYPICAL PLAN DETAIL AT MASONRY WALL WITH INTERLOCKED INTERSECTIONS**  
 1" = 1'-0"

**4 WALL LINTEL DETAIL AND SCHEDULE**  
 1" = 1'-0"

**LAP SPLICE LENGTH (f'm=2000PSI)**

BAR SIZE	FOR K <sub>1</sub> ≥ 2db	FOR K <sub>2</sub> ≥ 3db	FOR K <sub>1</sub> ≥ 4db
#3	N/A	1'-10"	1'-5"
#4	3'-0"	2'-6"	1'-10"
#5	3'-9"	3'-1"	2'-4"
#6	4'-6"	4'-6"	3'-6"
#7	5'-3"	5'-3"	4'-2"
#8	6'-0"	6'-0"	5'-6"
#9	6'-10"	6'-10"	6'-2"

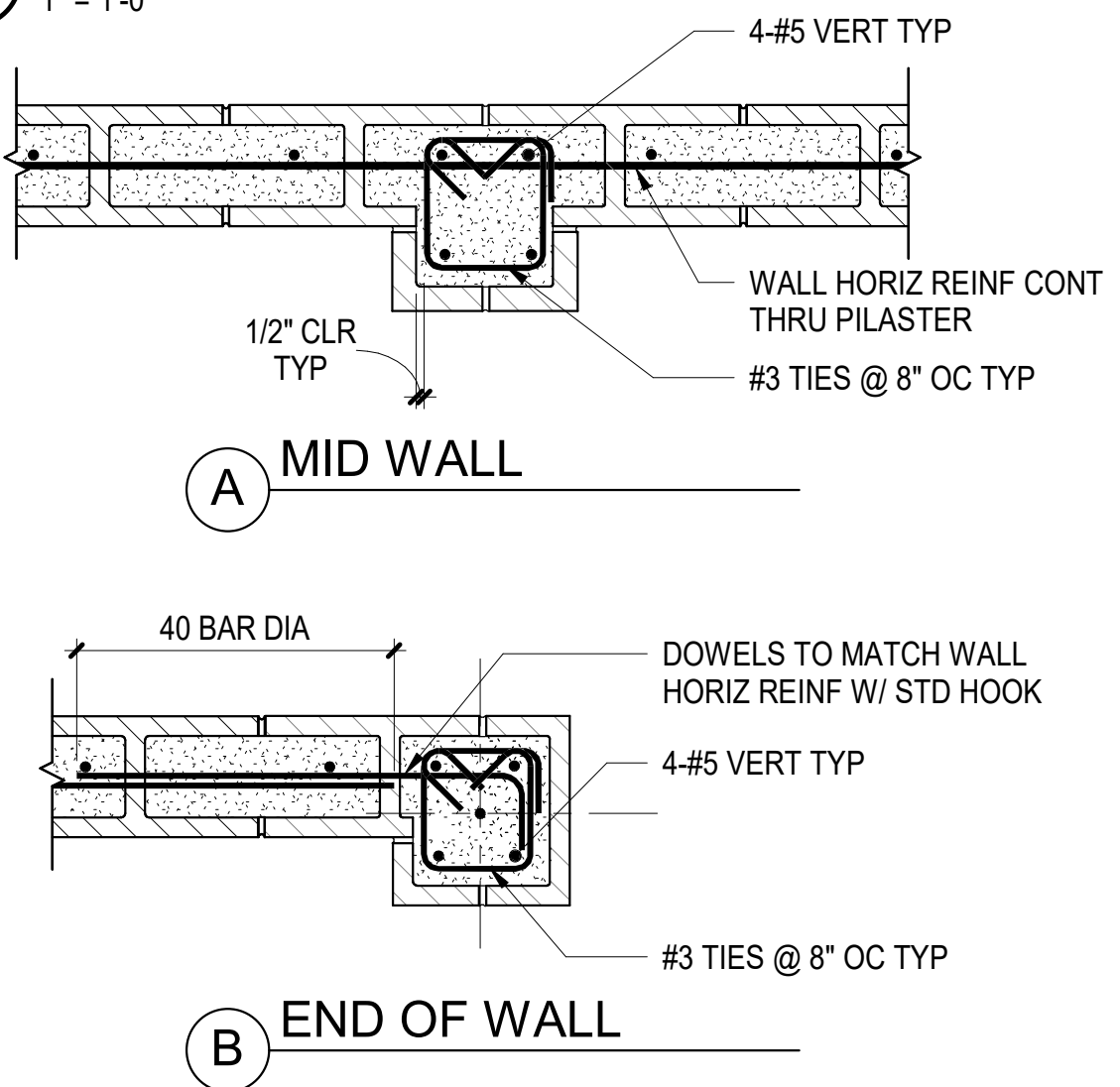


**STEEL LINTEL WITH PLATE**

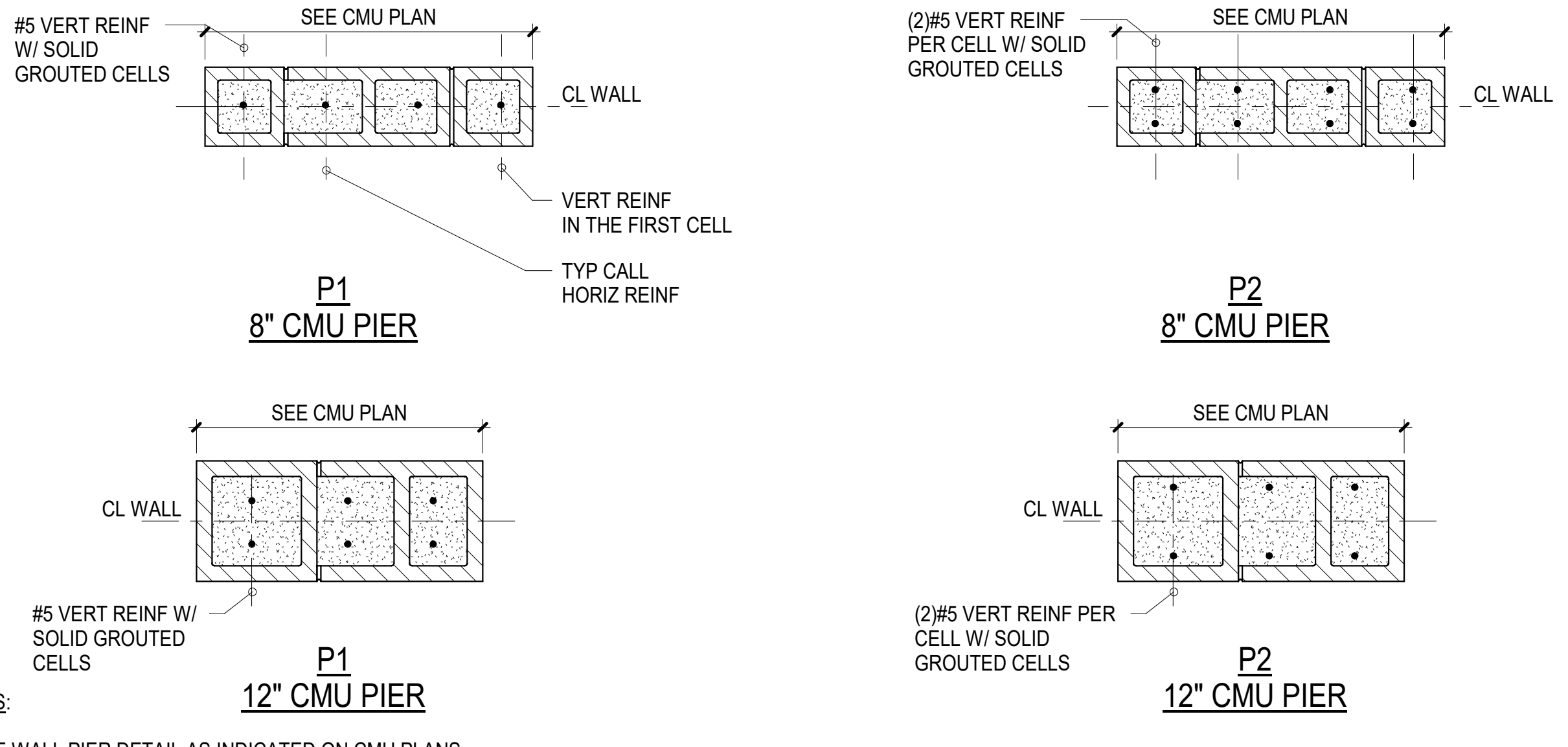
- NOTES:**
- "K" SHALL BE TAKEN AS THE CMU COVER DIMENSION OR THE CLEAR SPACING BETWEEN ADJACENT BARS, WHICHEVER IS LESS. SEE ABOVE.
  - WHERE EPOXY-COATED REINFORCING IS USED, INCREASE LAP SPLICE LENGTH BY 50%.
  - SPLICES OF HORIZONTAL REINFORCEMENT IN WALLS SHALL BE STAGGERED.
  - SPLICES OF HORIZONTAL REINFORCEMENT IN WALLS CONTAINING TWO CURTAINS OF REINFORCEMENT SHALL NOT OCCUR IN THE SAME LOCATION.
  - "N/A" MEANS "NOT ALLOWABLE" INCREASE "K" FOR ALLOWABLE LAP SPLICE.

**TYPICAL STEEL LINTEL SCHEDULE (NON-BEARING WALL)**  
 NOT TO SCALE

**3 CMU WALL REINFORCING SCHEDULE**  
 1" = 1'-0"



**4 WALL LINTEL DETAIL AND SCHEDULE**  
 1" = 1'-0"



- NOTES:**
- USE WALL PIER DETAIL AS INDICATED ON CMU PLANS
  - EXTEND HORIZONTAL TIES LAP SPLICE LENGTH ABOVE & BELOW OPENING

**7 PILASTER DETAIL**  
 1" = 1'-0"

**8 WALL PIER DETAIL**  
 1" = 1'-0"

**5 REBAR OFFSET AND LAP SPLICE CMU f'm=2000 PSI**  
 1" = 1'-0"

**6**  
 NOT TO SCALE

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PROJECT TITLE  
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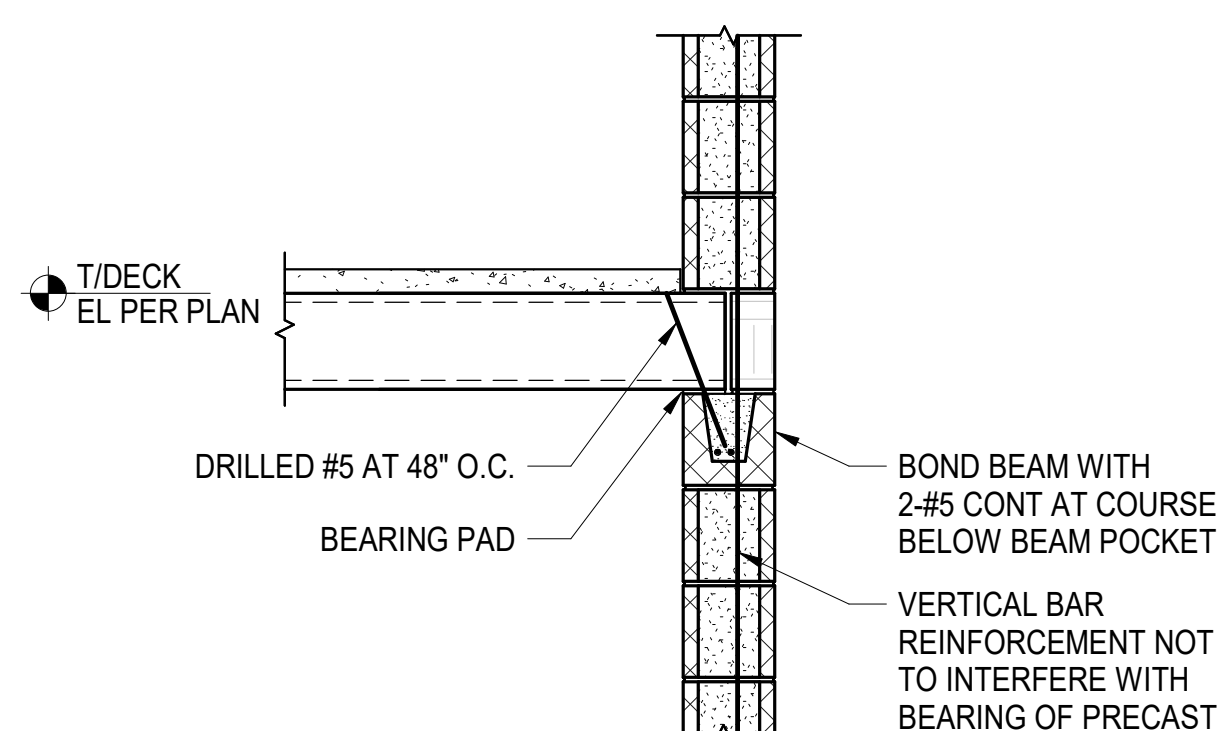
OWNER  
 PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
 TYPICAL MASONRY WALL DETAILS

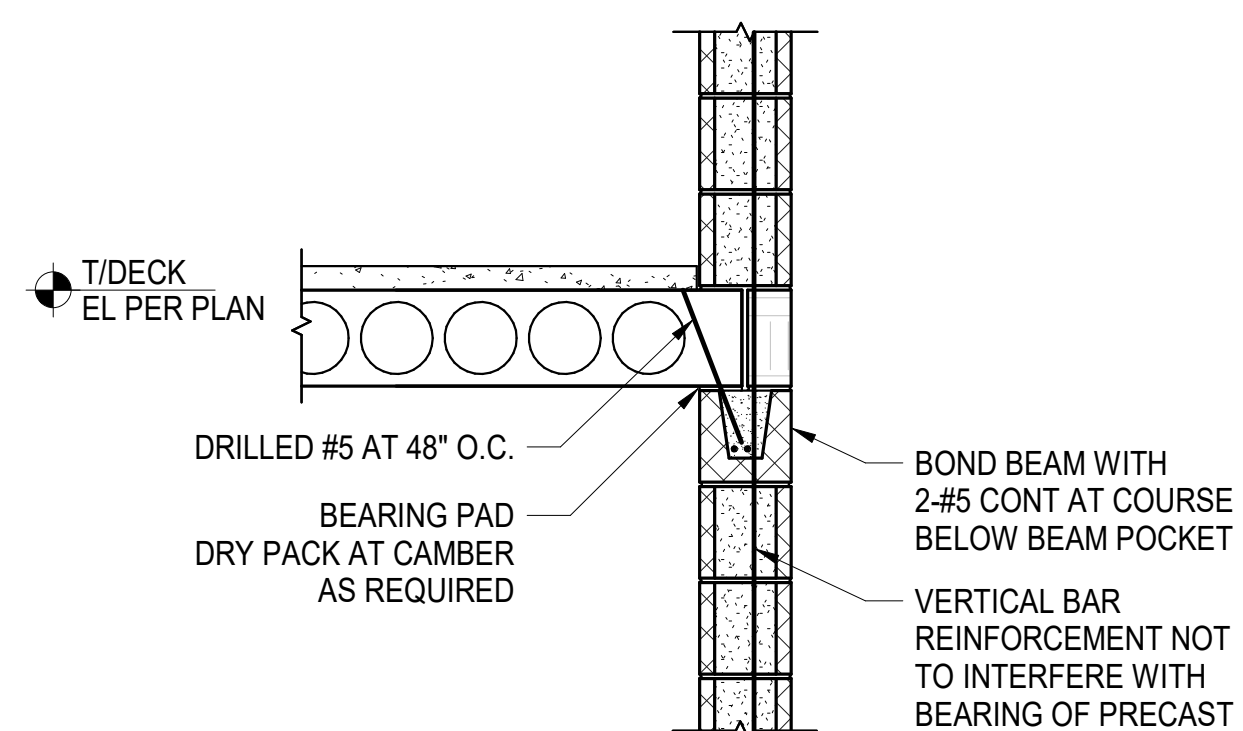
Portage, Michigan

DATE  
 JUNE 30, 2023

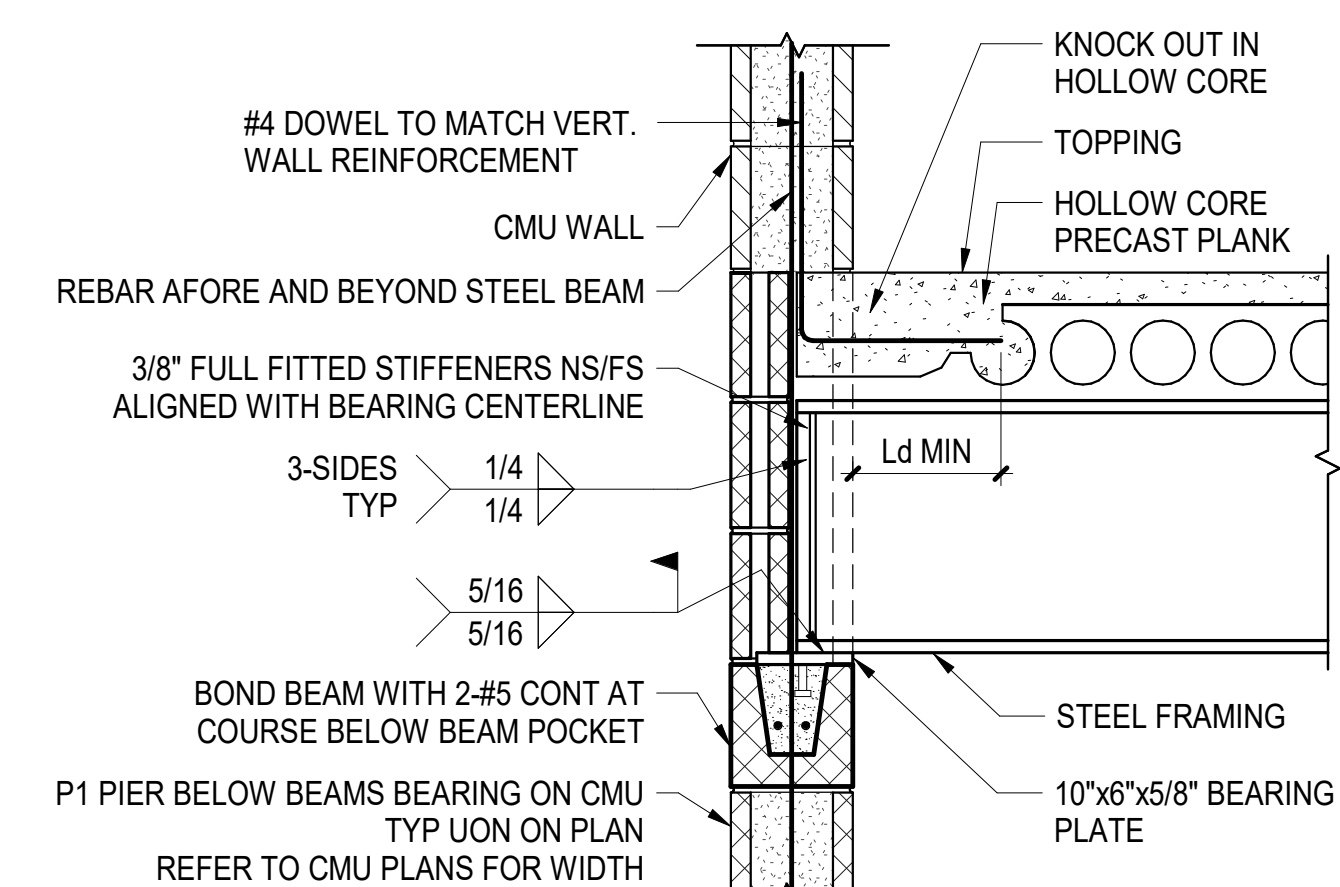
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 S 600  
 21-237.25



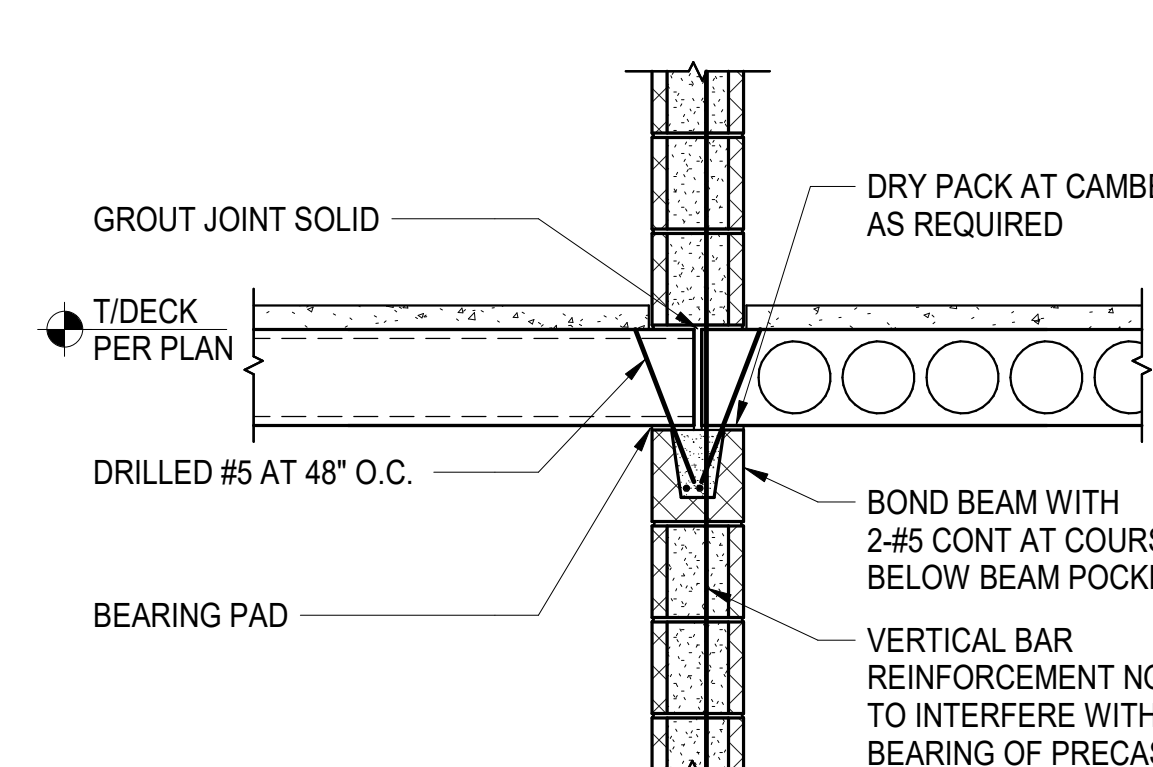
**1 TYPICAL PLANK BEARING AT CMU DETAIL ONE SIDE, SPAN PERPENDICULAR**  
 3/4" = 1'-0"



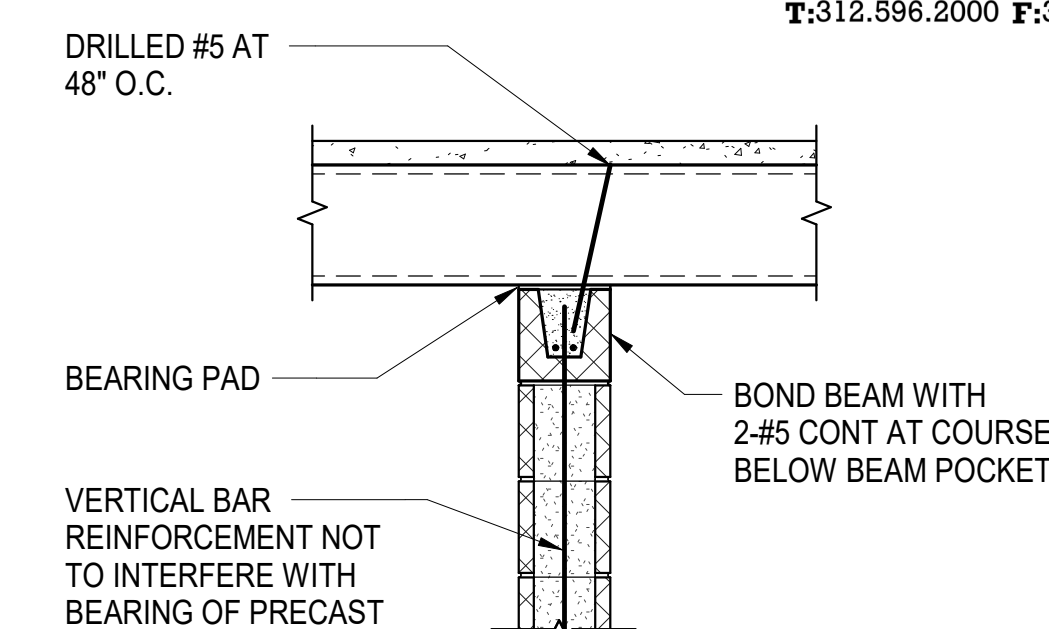
**2 TYPICAL PLANK BEARING AT CMU DETAIL ONE SIDE, SPAN PARALLEL**  
 3/4" = 1'-0"



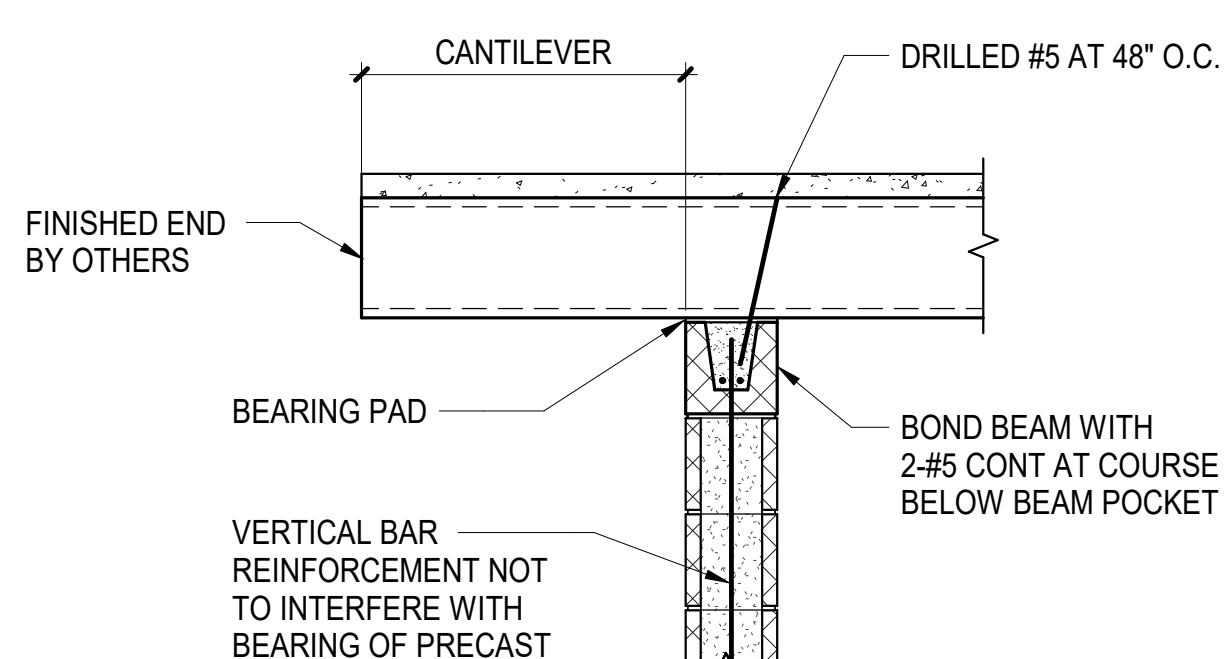
**3 TYPICAL STEEL BEAM SUPPORTING PLANK BEARING AT CMU WALL, ONE SIDE**  
 1" = 1'-0"



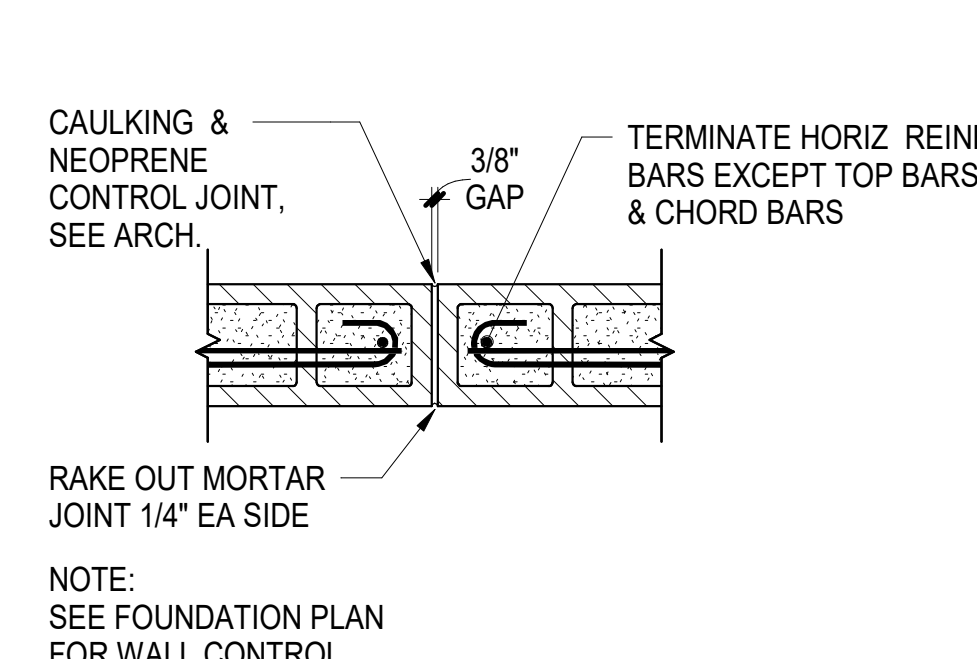
**4 TYPICAL PLANK BEARING AT CMU DETAIL BOTH SIDES**  
 3/4" = 1'-0"



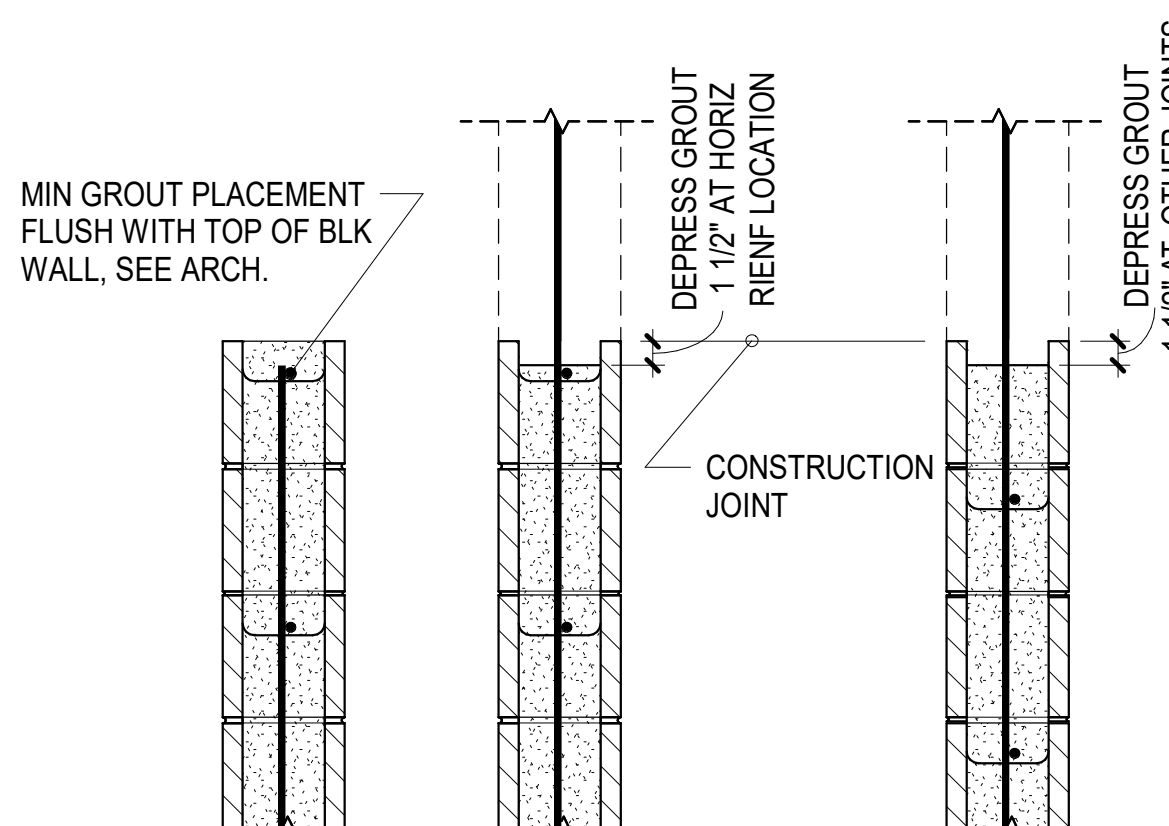
**5 TYPICAL PLANK BEARING AT CMU DETAIL CONTINUOUS OVER WALL BELOW**  
 3/4" = 1'-0"



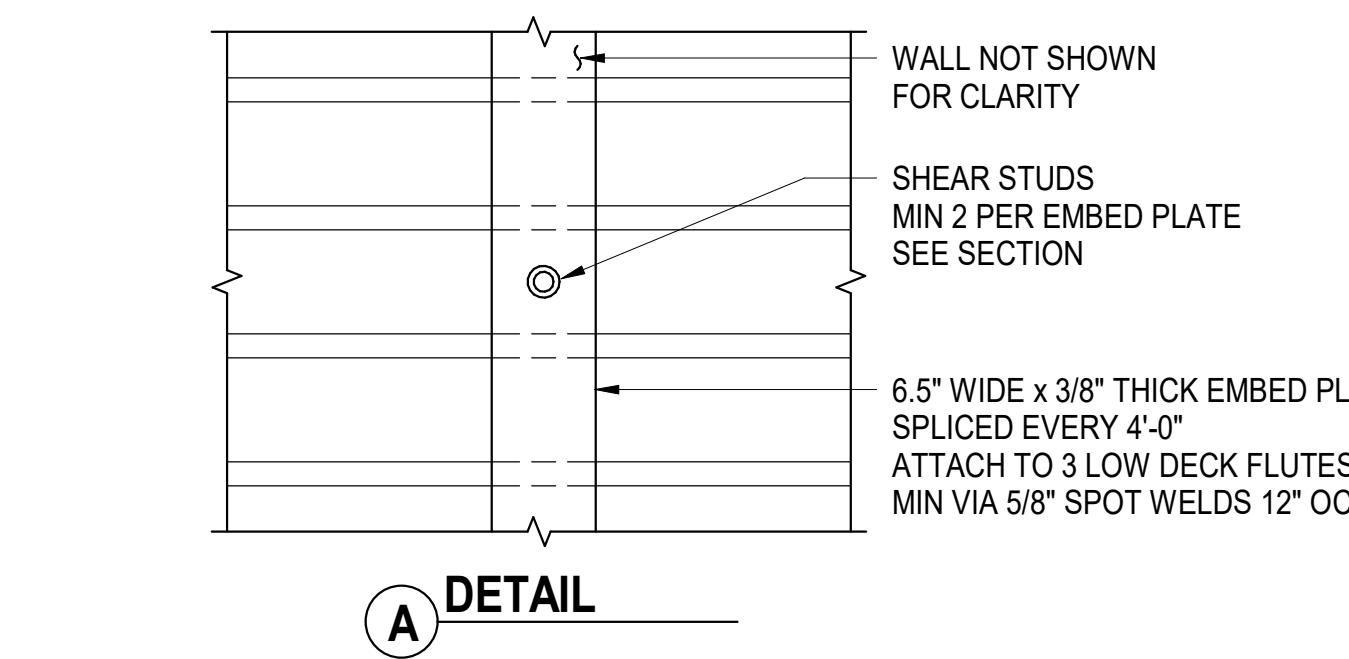
**6 TYPICAL PLANK BEARING AT CMU DETAIL CANTILEVER CONDITION**  
 3/4" = 1'-0"



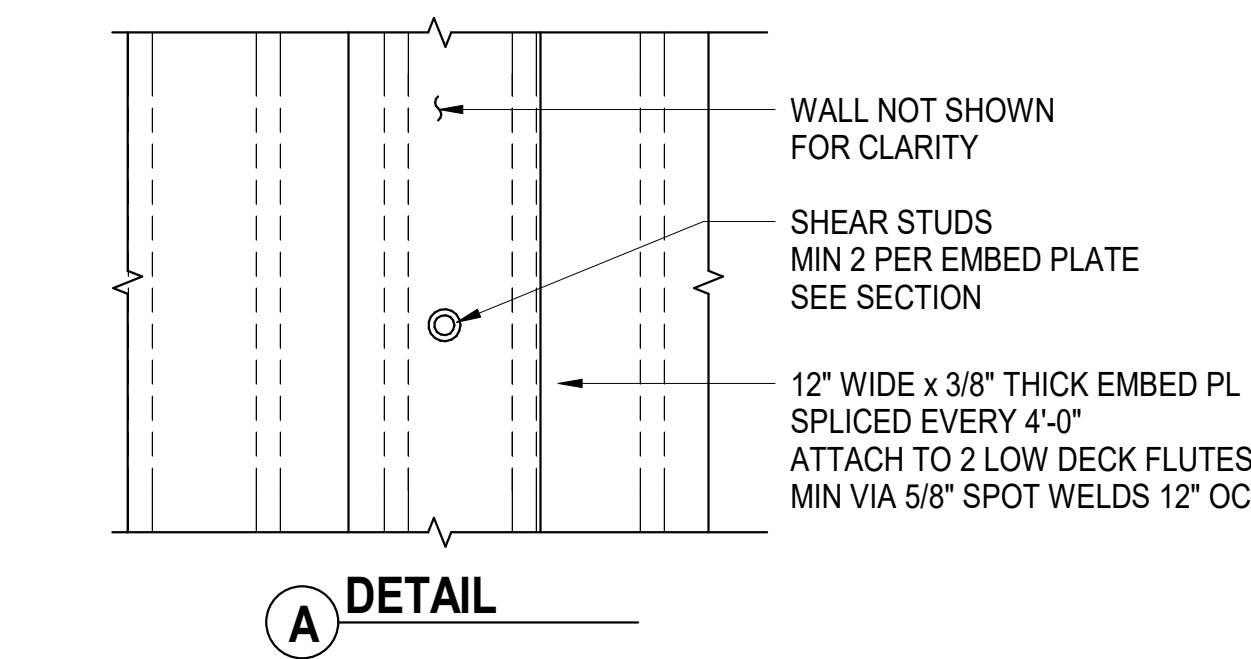
**7 CMU WALL CONTROL JOINT**  
 1" = 1'-0"



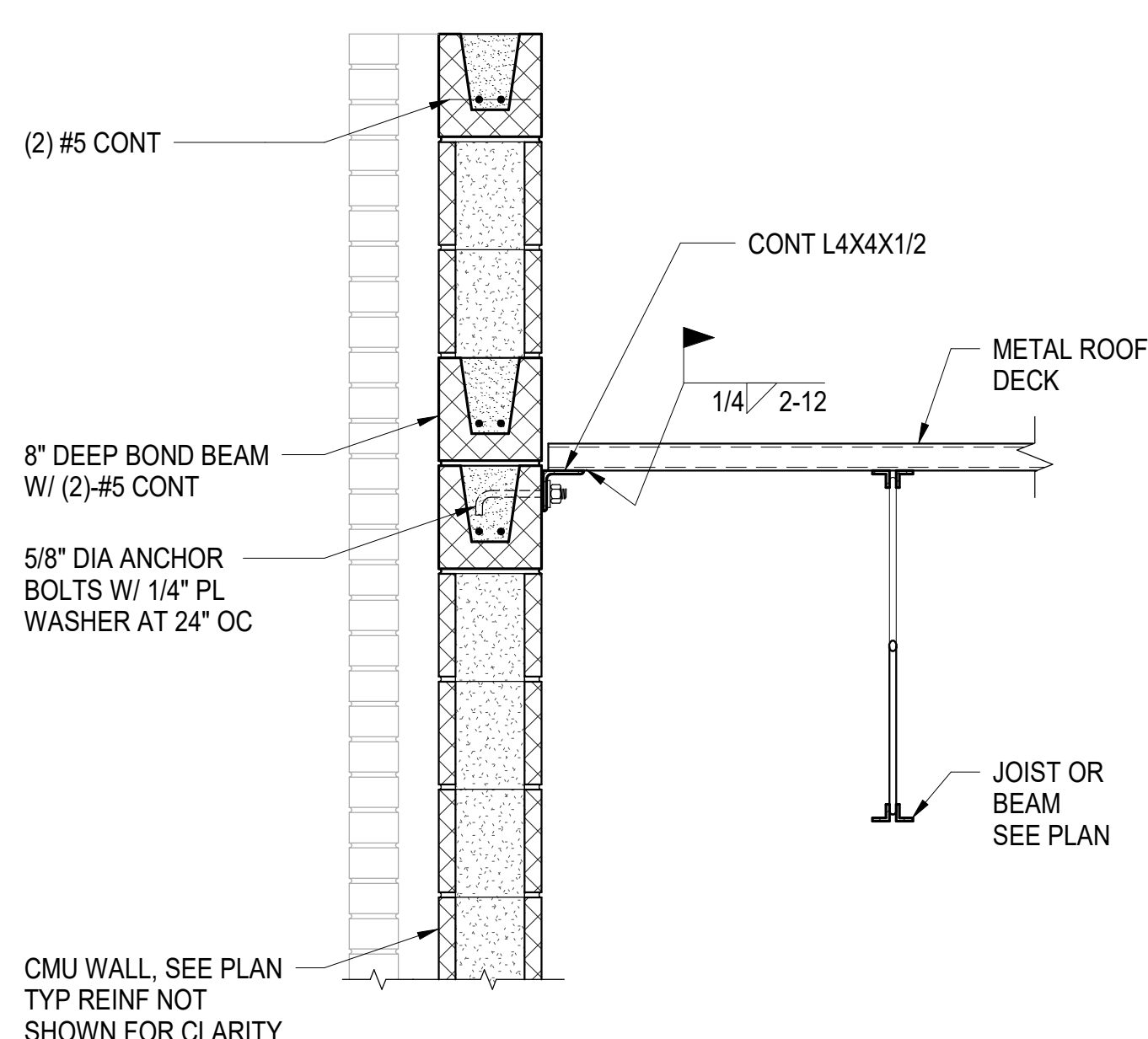
**8 CMU WALL CONSTRUCTION JOINTS**  
 1" = 1'-0"



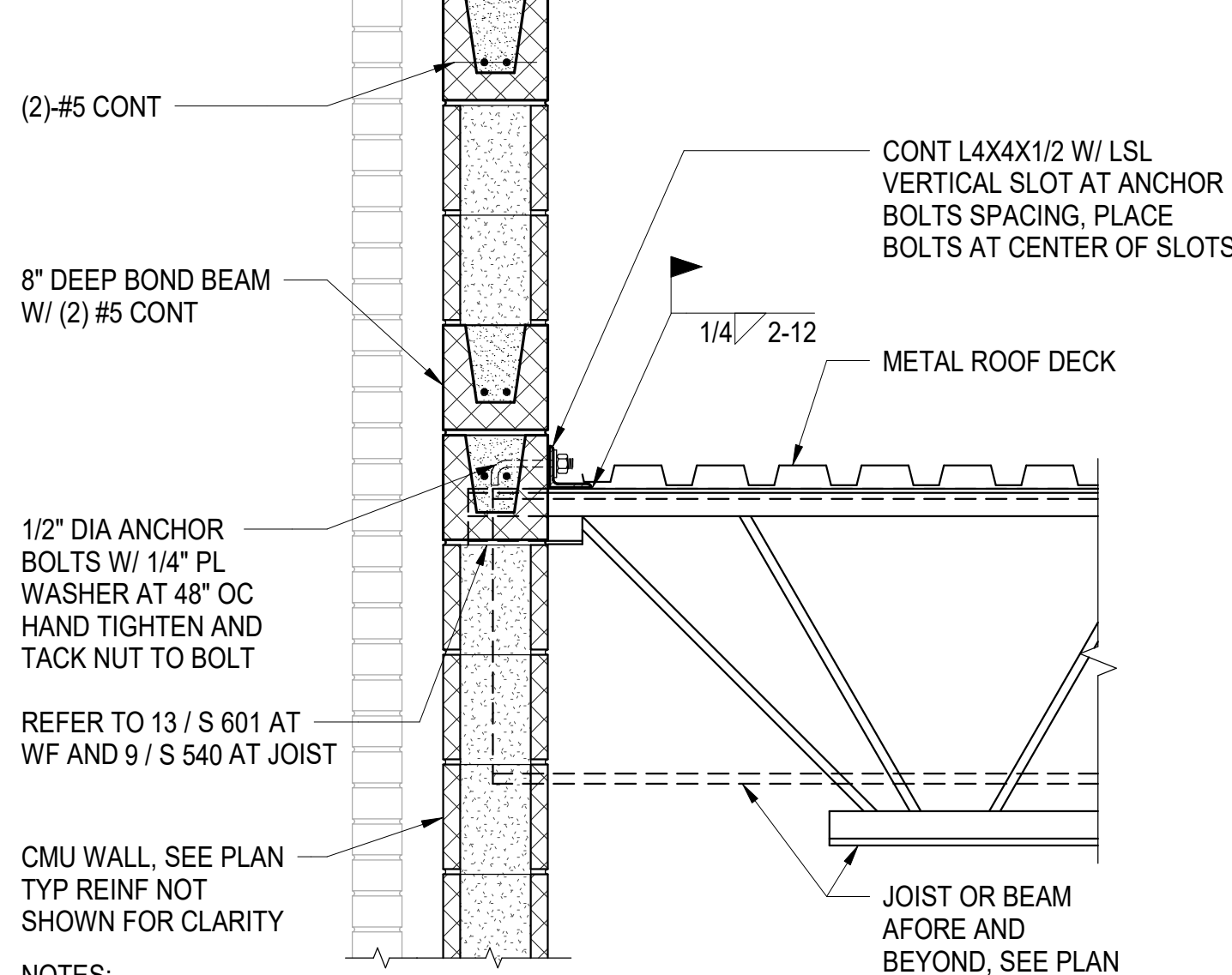
**9 TYPICAL INTERIOR CMU WALL AT ROOF FLUTES PERPENDICULAR**  
 NOT TO SCALE



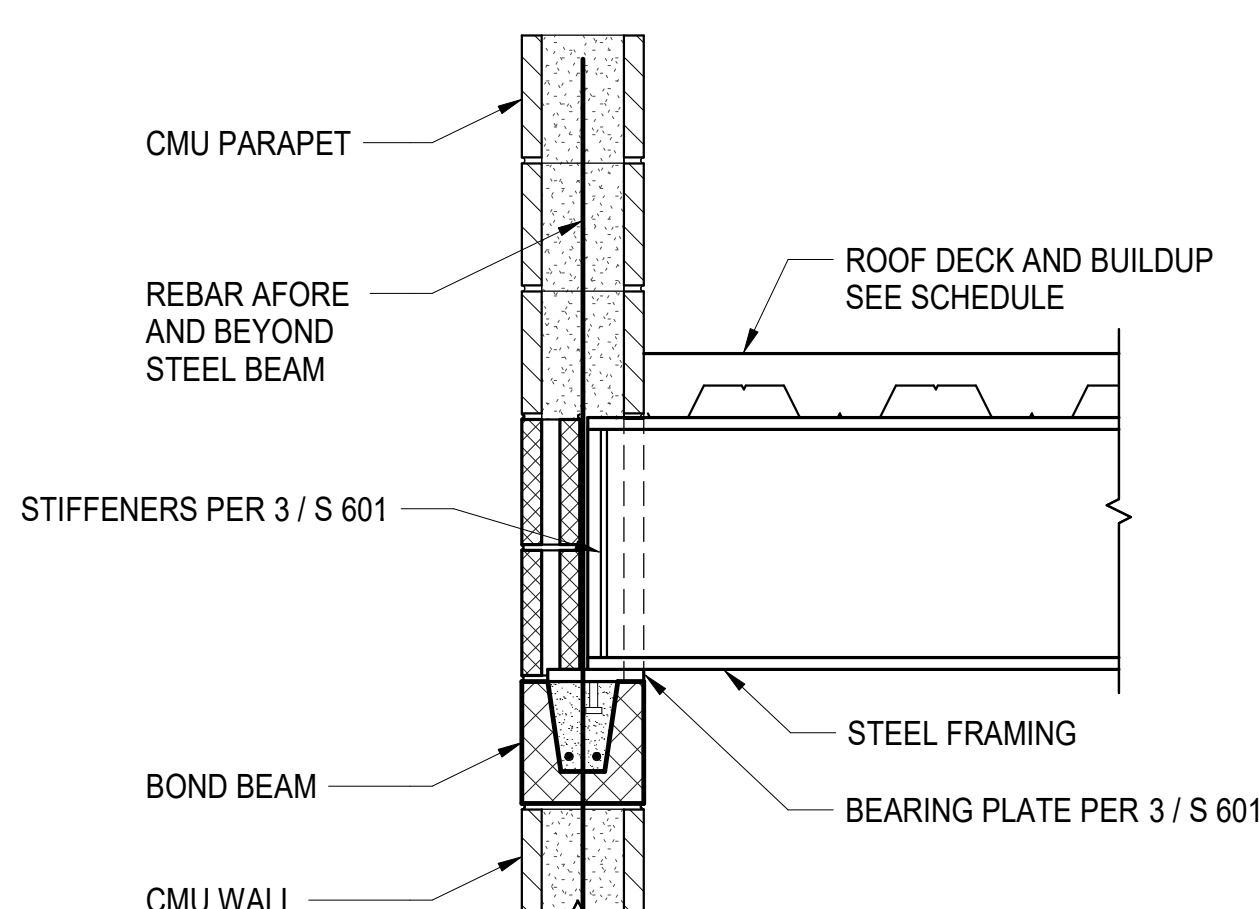
**10 TYPICAL INTERIOR CMU WALL AT ROOF FLUTES PARALLEL**  
 NOT TO SCALE



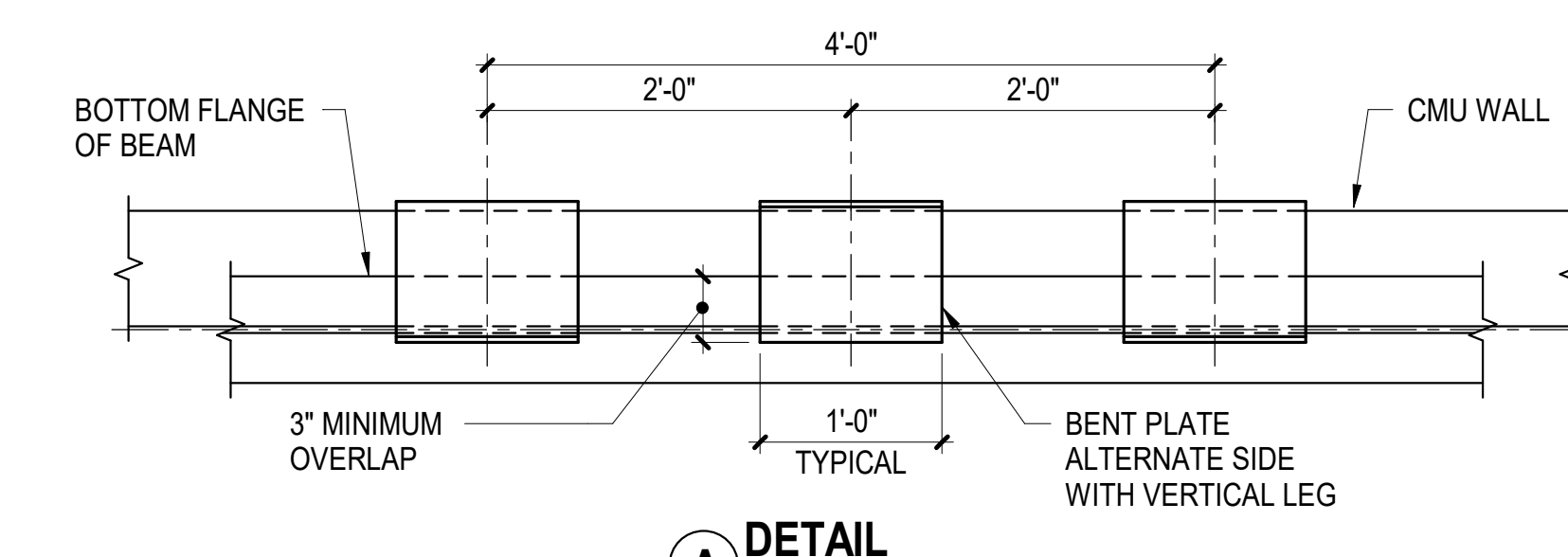
**11 TYPICAL EXTERIOR CMU WALL AT ROOF FLUTES PERPENDICULAR**  
 NOT TO SCALE



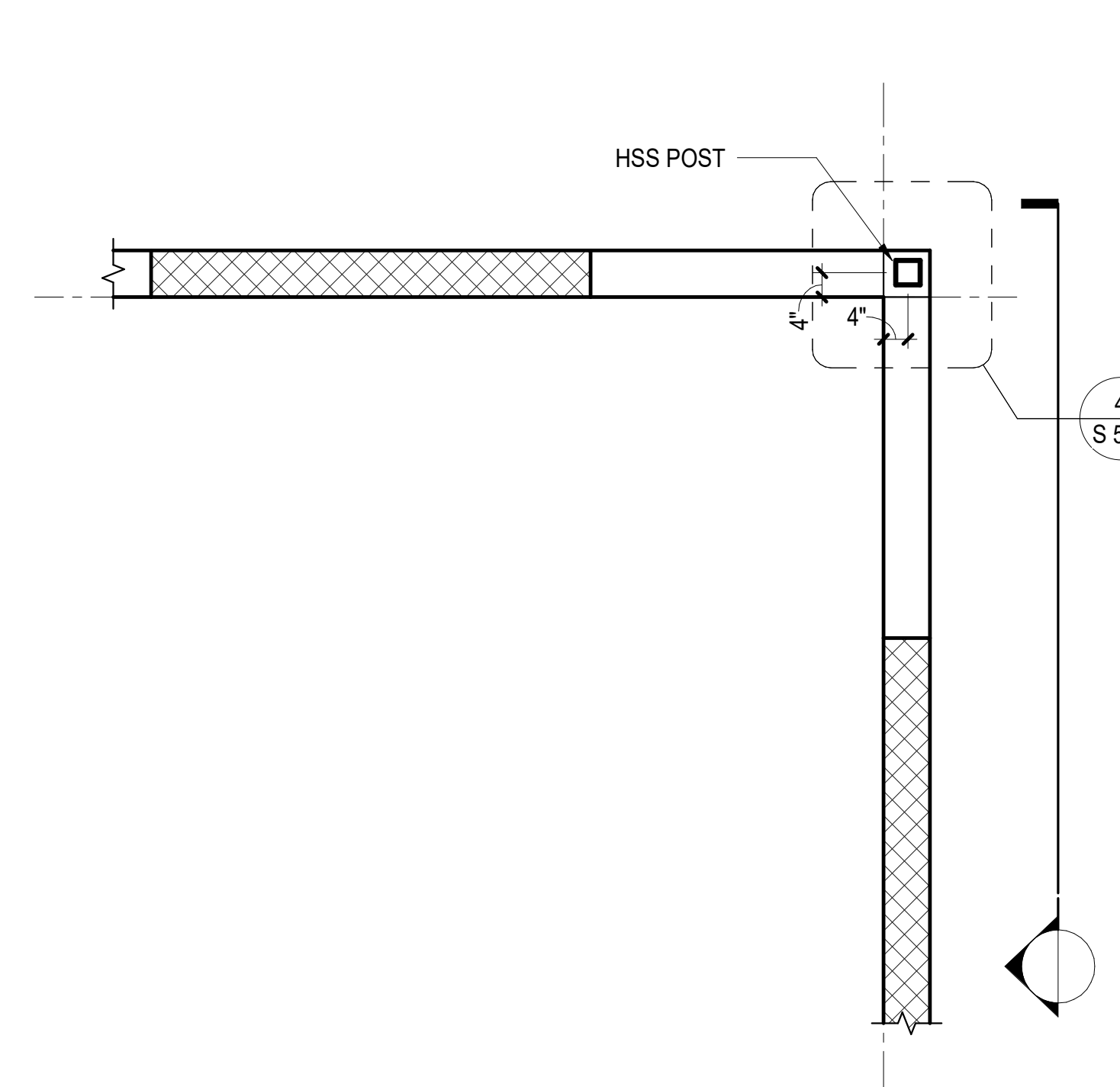
**12 TYPICAL EXTERIOR CMU WALL AT ROOF FLUTES PARALLEL**  
 NOT TO SCALE



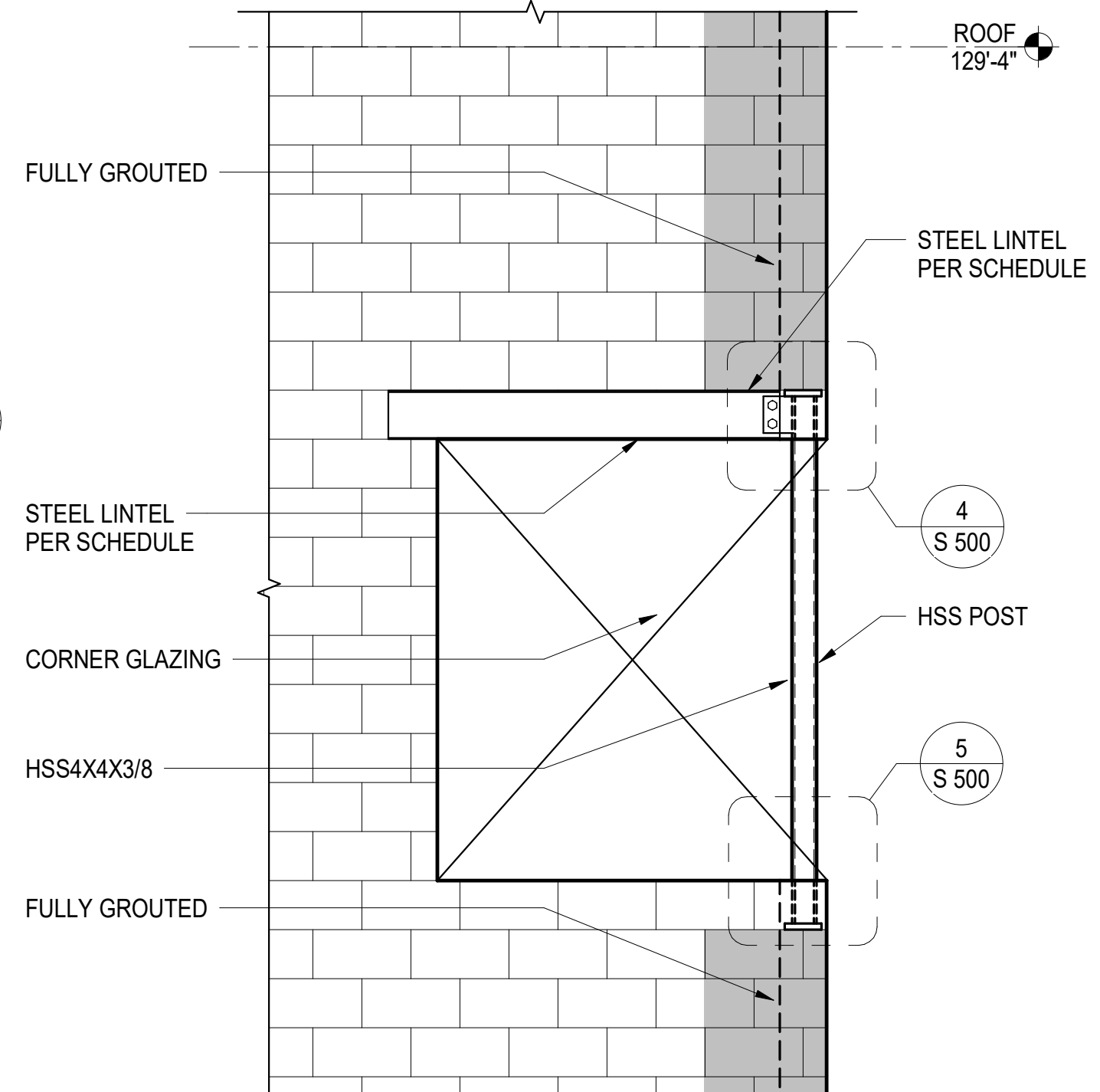
**13 STEEL BEAM SUPPORTED BY PERPENDICULAR CMU WALL AT ROOF DECK**  
 1" = 1'-0"



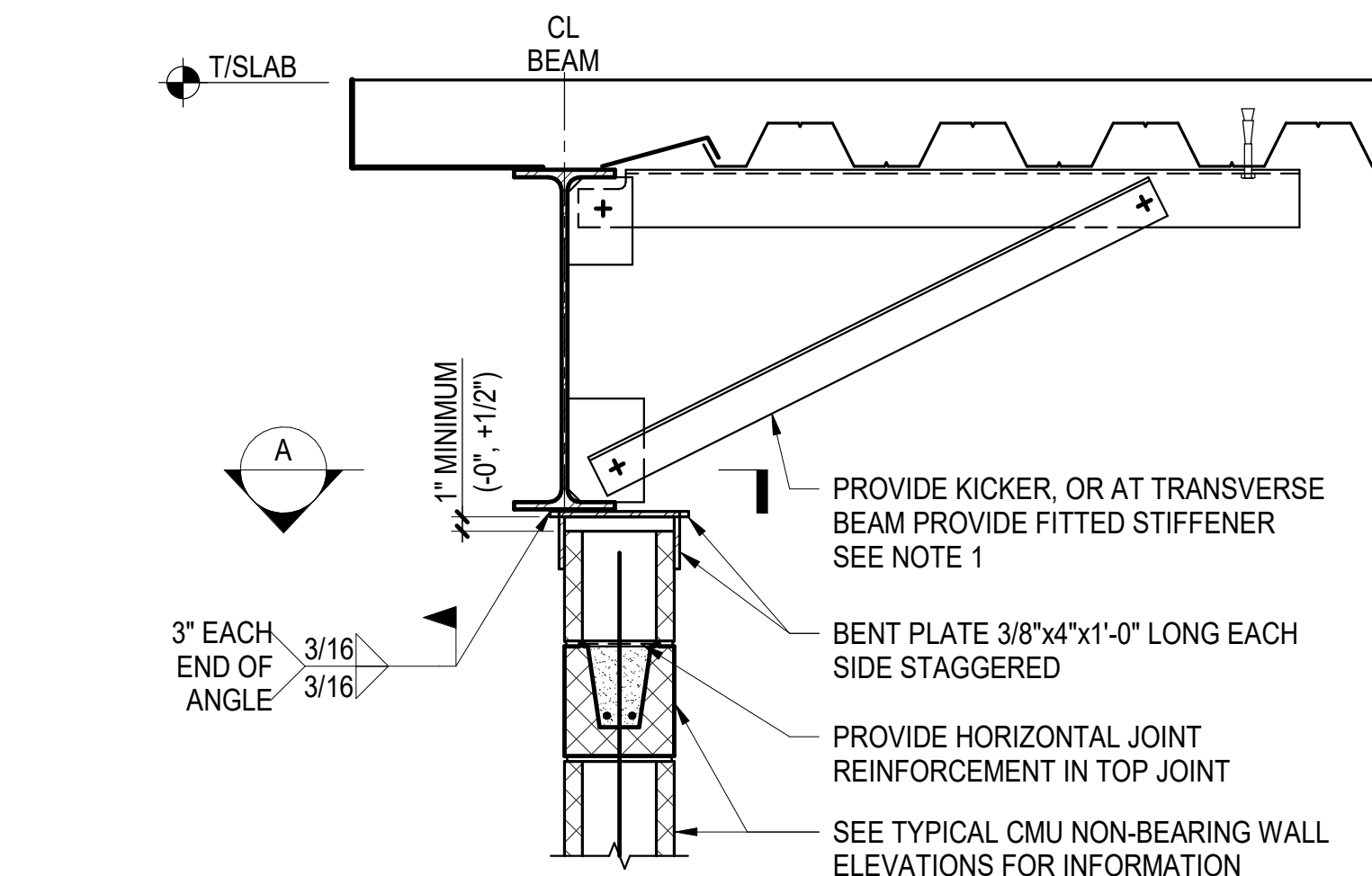
**15 TYPICAL DETAIL OF CMU WALL AT PERPENDICULAR STEEL BEAM**  
 NOT TO SCALE



**14 CORNER GLAZING CONDITION PLAN**  
 1/2" = 1'-0"



**15 TYPICAL DETAIL OF CMU WALL AT PERPENDICULAR STEEL BEAM**  
 NOT TO SCALE



**16 TYPICAL NON LOAD-BEARING CMU TOP BRACE DETAIL UNDER STEEL BEAM**  
 NOT TO SCALE

- NOTES:**
- FOR INTERIOR WALLS WITH HEIGHT <= 23'-6", KICKER SHALL BE PER TYPICAL KICKER DETAIL (P < 2,000 LBS) INTERIOR WALLS WITH HEIGHT > 23'-6", PROVIDE KICKER PER TYPICAL KICKER DETAIL (2,000 LBS <= P < 5,000 LBS)
  - FOR EXTERIOR WALLS, KICKER SHALL BE PER TYPICAL EDGE OR BRACED BEAM KICKER CONNECTION DETAIL
  - FITTED STIFFENER AT PERPENDICULAR BEAMS SHALL BE PER TYPICAL FULL HEIGHT FITTED STIFFENER AT EDGE OR BRACED BEAM CONNECTION DETAIL

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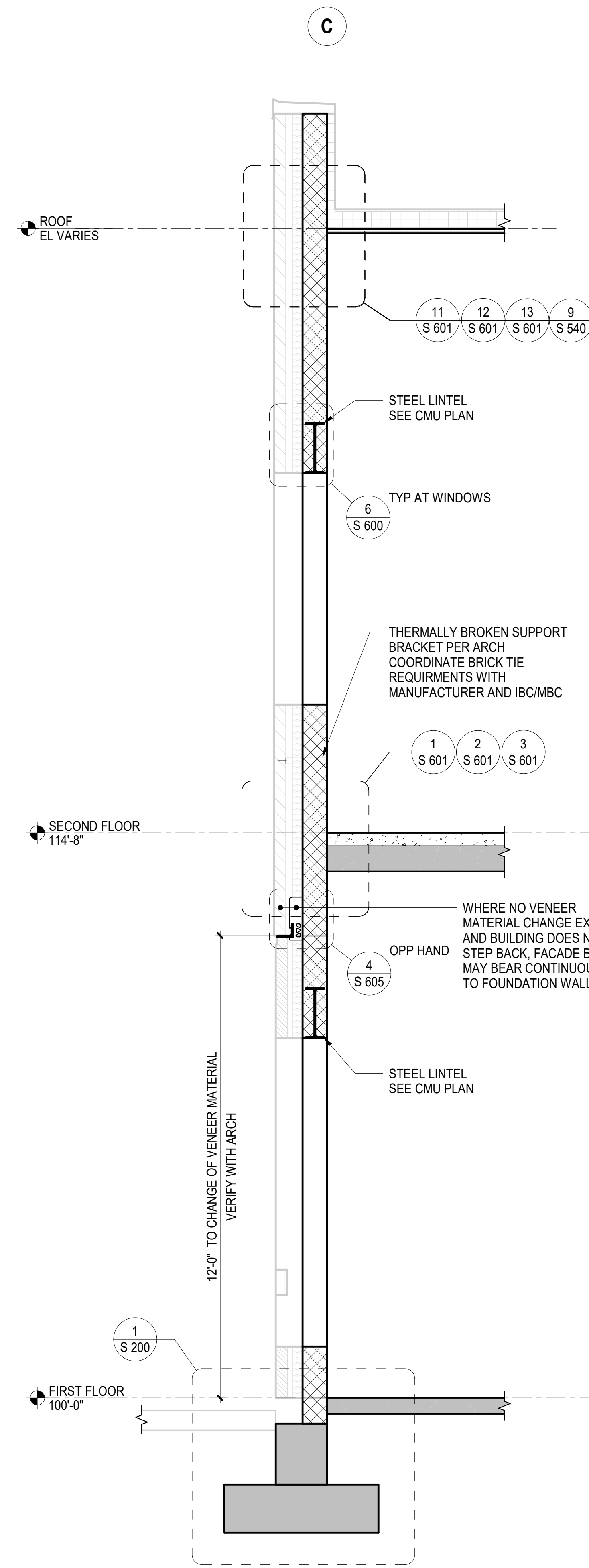
OWNER  
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SHEET NUMBER  
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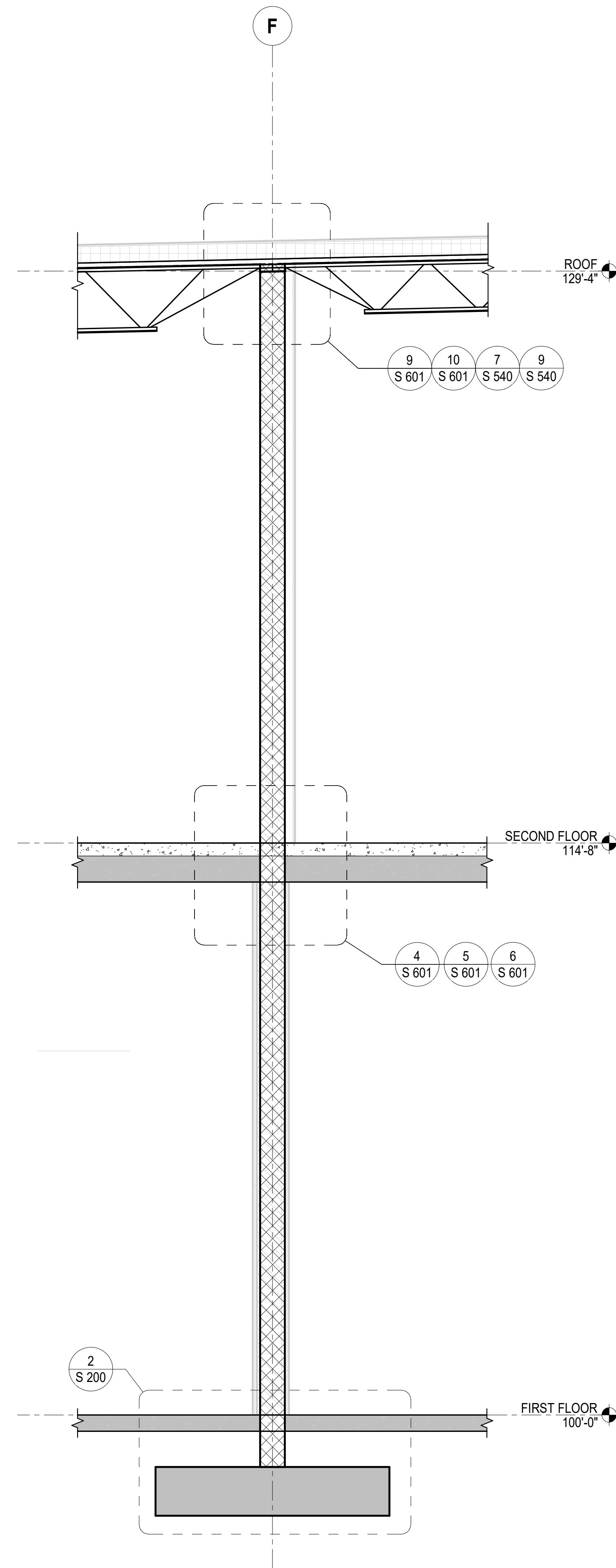
Portage, Michigan

DATE  
 JUNE 30, 2023

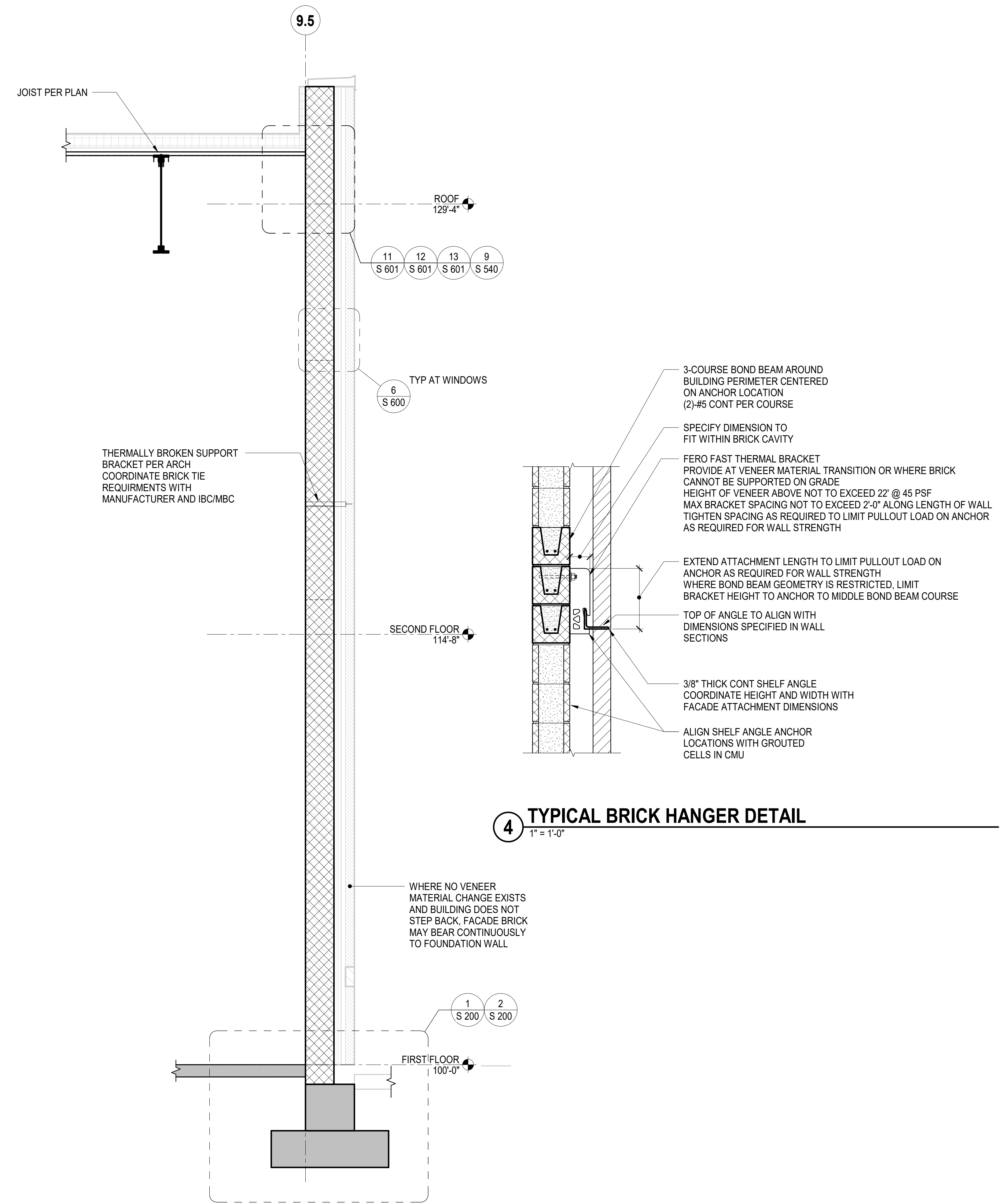
21-237.25



**1** TYPICAL EXTERIOR STRUCTURAL CMU WALL SECTION  
 1/2" = 1'-0"



**2** TYPICAL INTERIOR STRUCTURAL CMU WALL SECTION  
 1/2" = 1'-0"



**3** TYPICAL DOUBLE-HEIGHT STRUCTURAL CMU WALL SECTION  
 1/2" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

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 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 TYPICAL MASONRY SECTIONS

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 605**  
 21-237.25



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PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

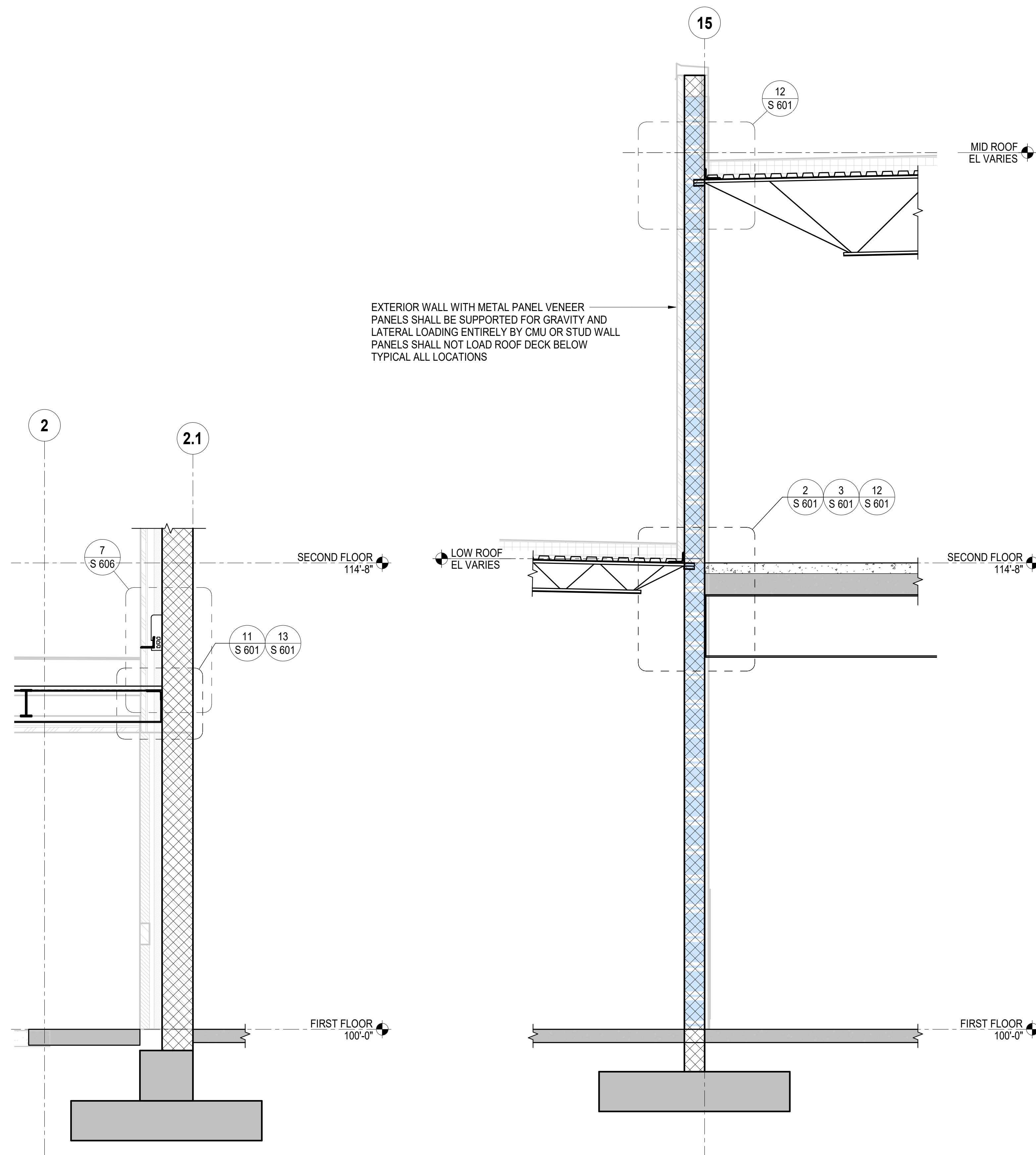
OWNER  
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Portage, Michigan

SHEET TITLE  
 EXTERIOR WALL SECTIONS

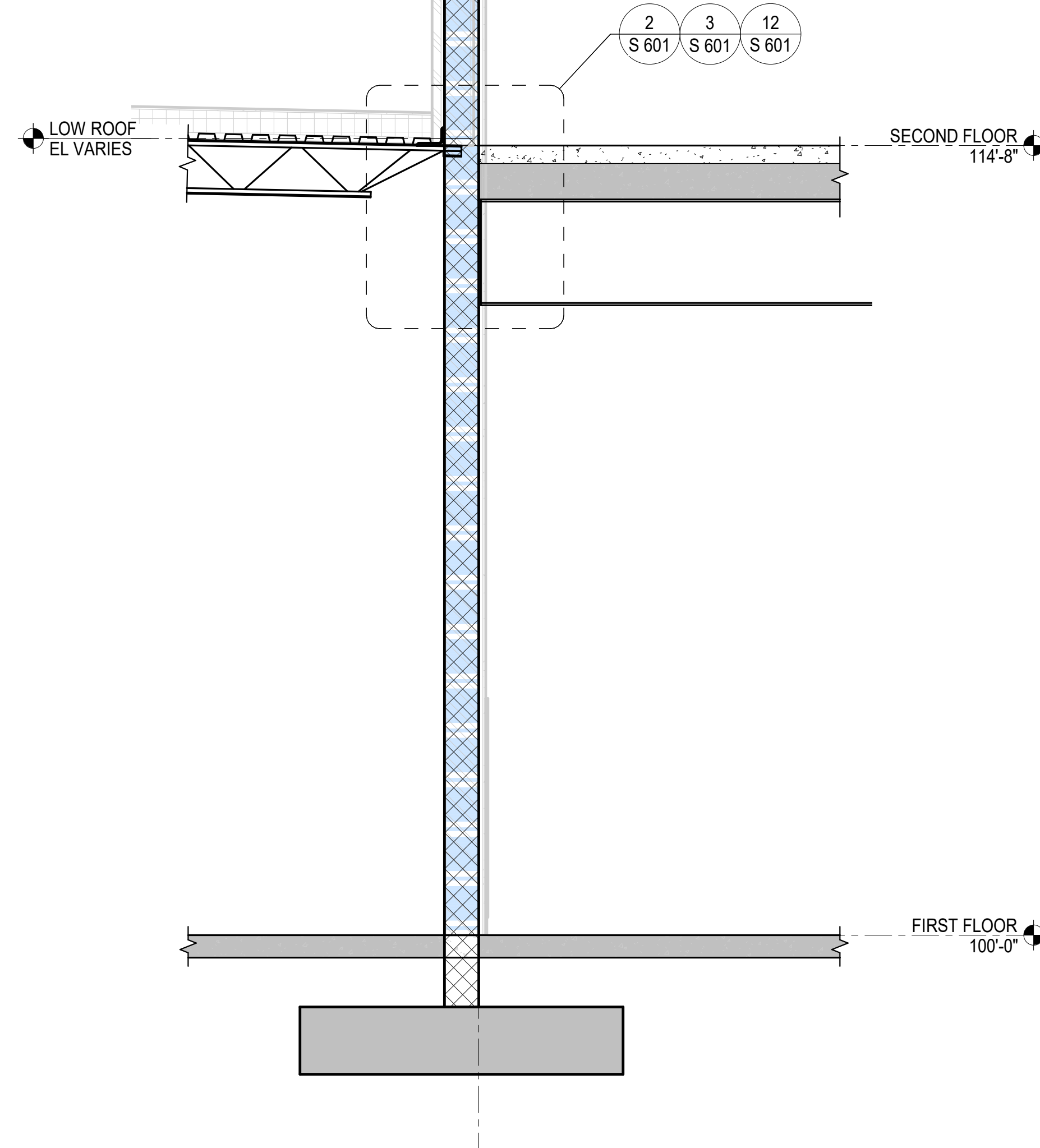
DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 606**  
 21-237.25

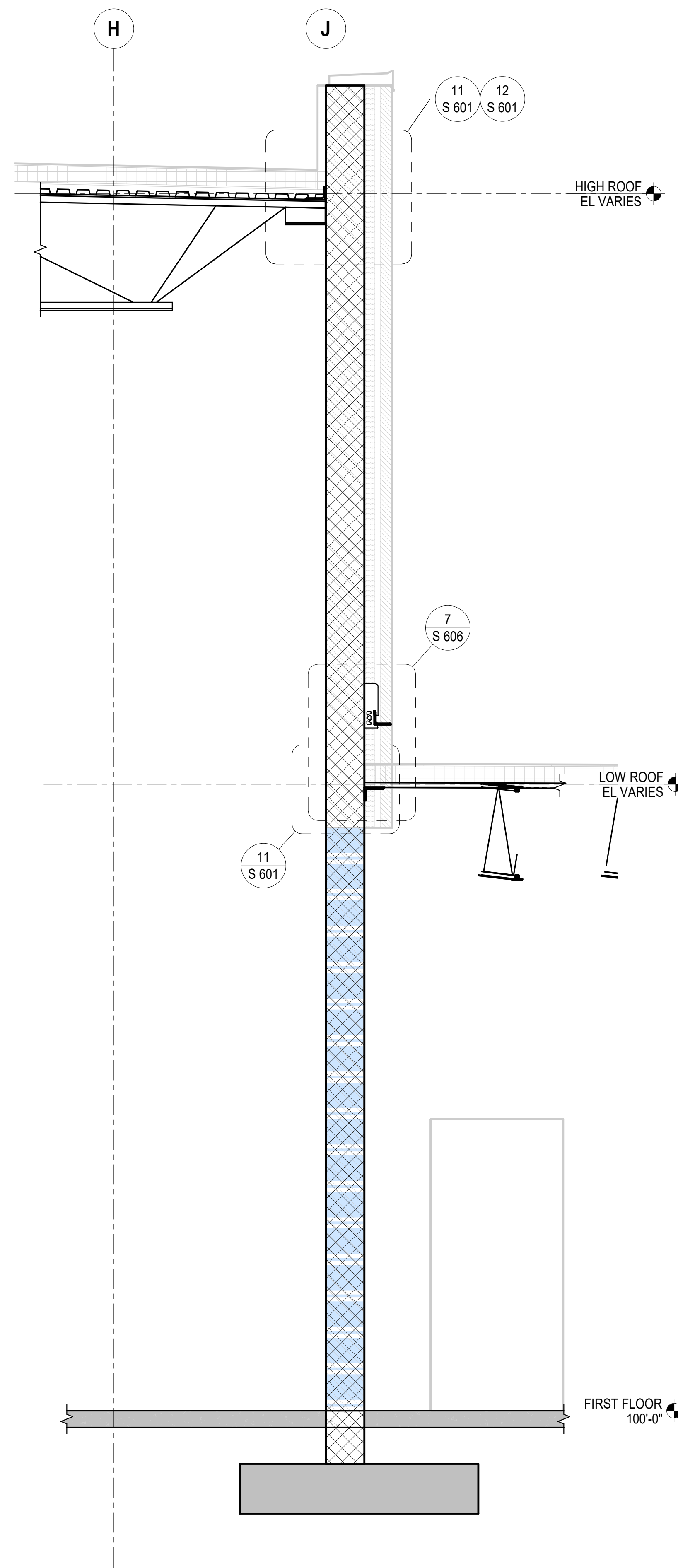


**1** INTERFACE BETWEEN CANOPY AND STRUCTURAL CMU  
 1/2" = 1'-0"

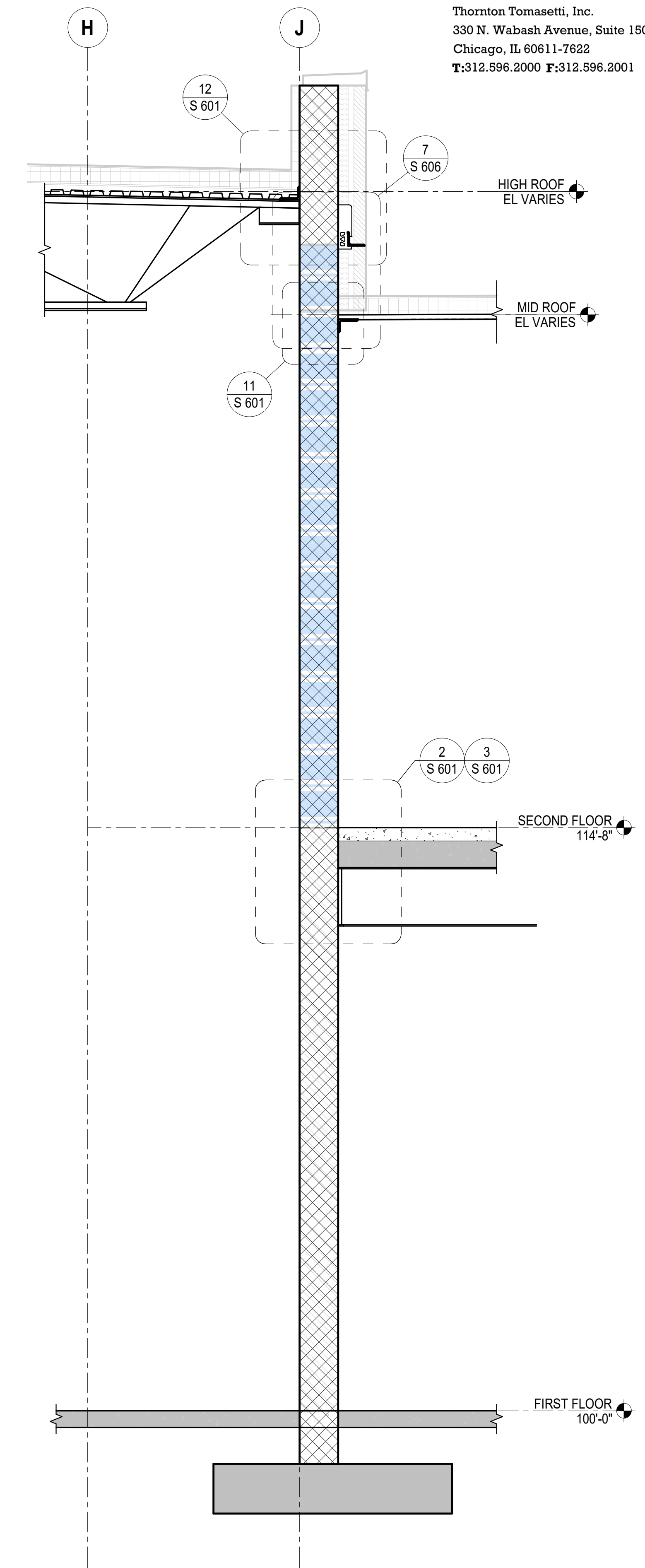
EXTERIOR WALL WITH METAL PANEL VENEER  
 PANELS SHALL BE SUPPORTED FOR GRAVITY AND LATERAL LOADING ENTIRELY BY CMU OR STUD WALL  
 PANELS SHALL NOT LOAD ROOF DECK BELOW  
 TYPICAL ALL LOCATIONS



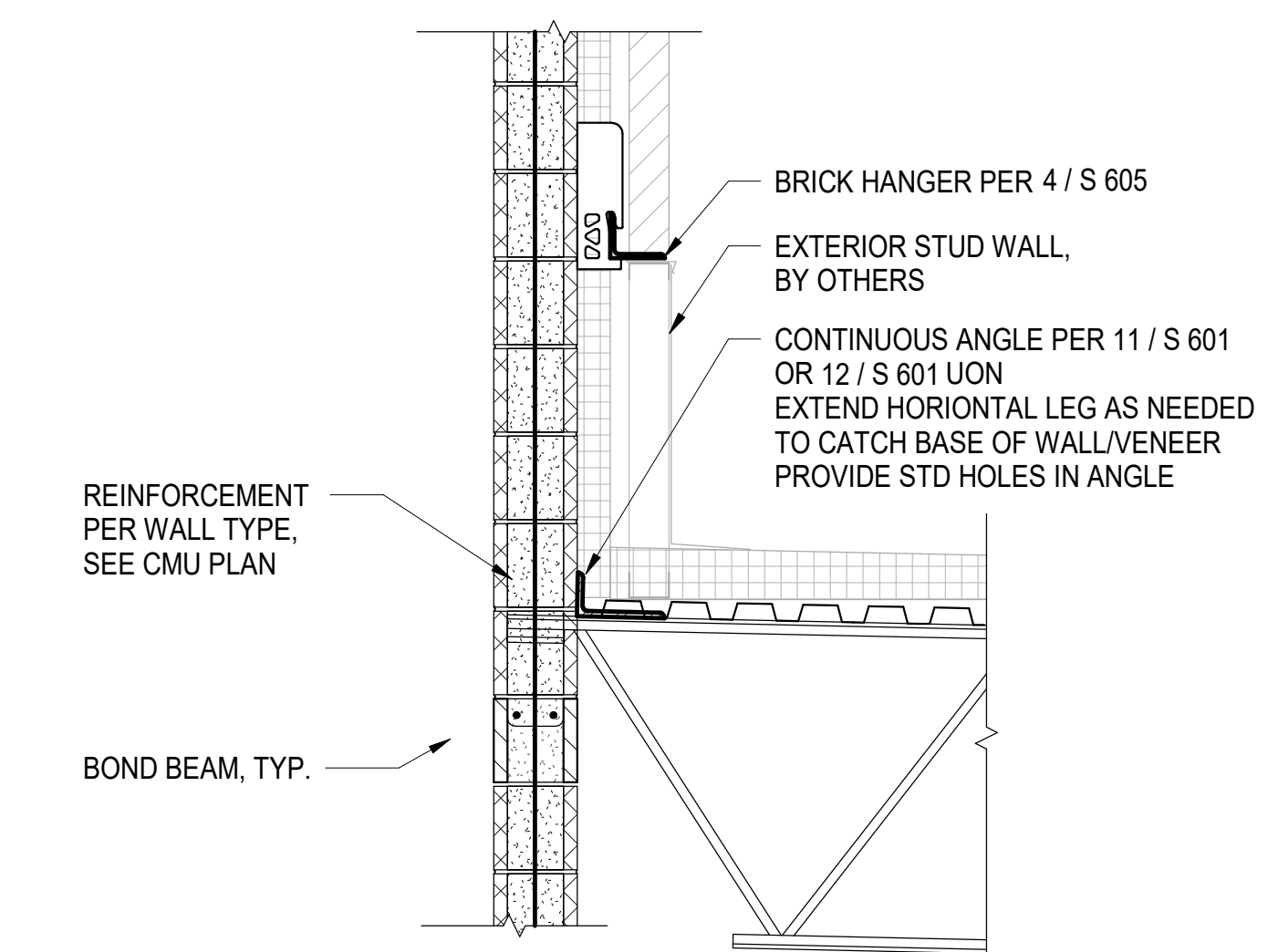
**2** LOW ROOF INTERFACE AT STRUCTURAL CMU  
 1/2" = 1'-0"



**3** LOW ROOF INTERFACE AT STRUCTURAL CMU  
 1/2" = 1'-0"



**4** MID ROOF INTERFACE AT STRUCTURAL CMU  
 1/2" = 1'-0"



**7** WALL DETAIL AT ROOF  
 3/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

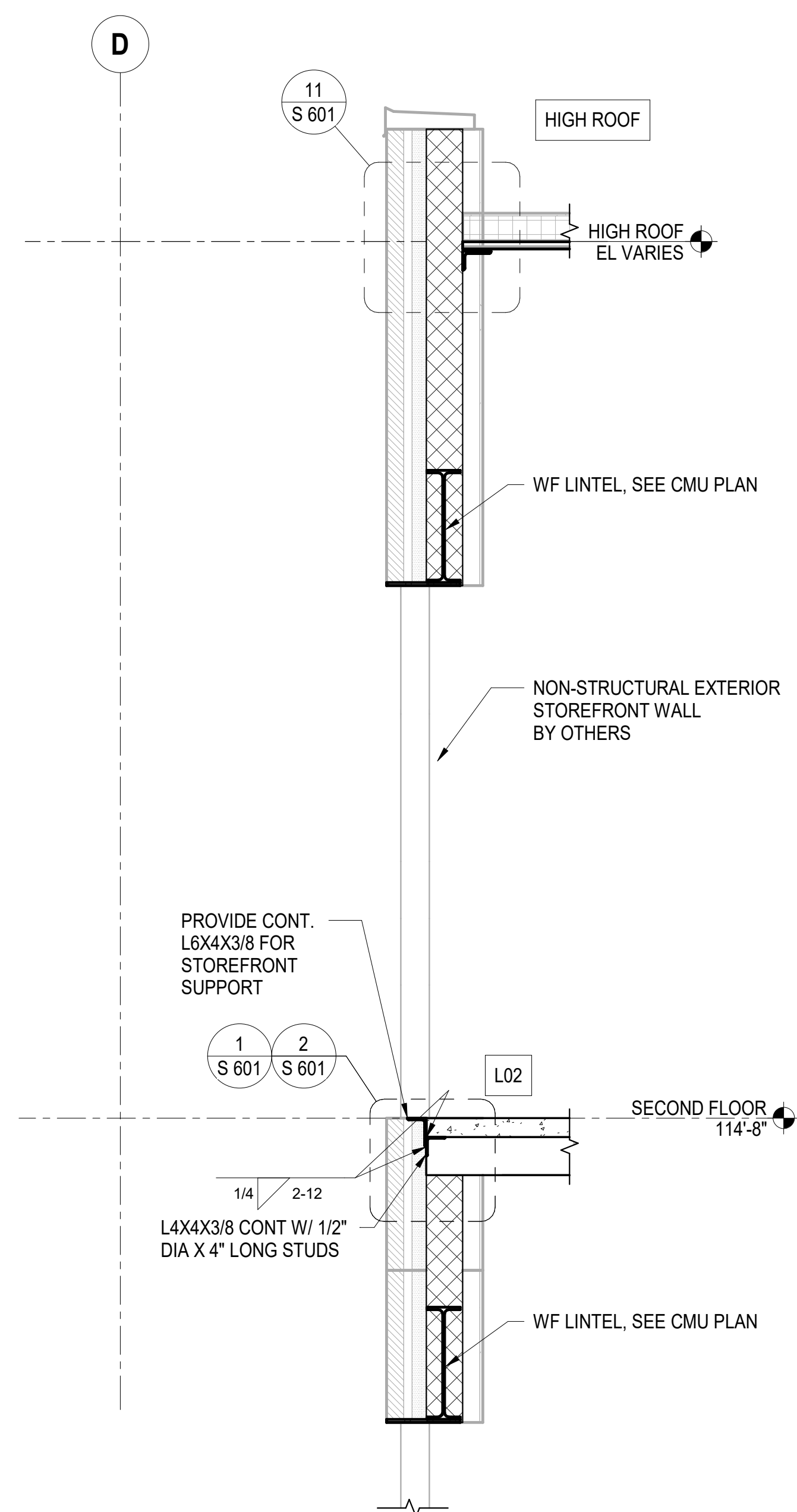
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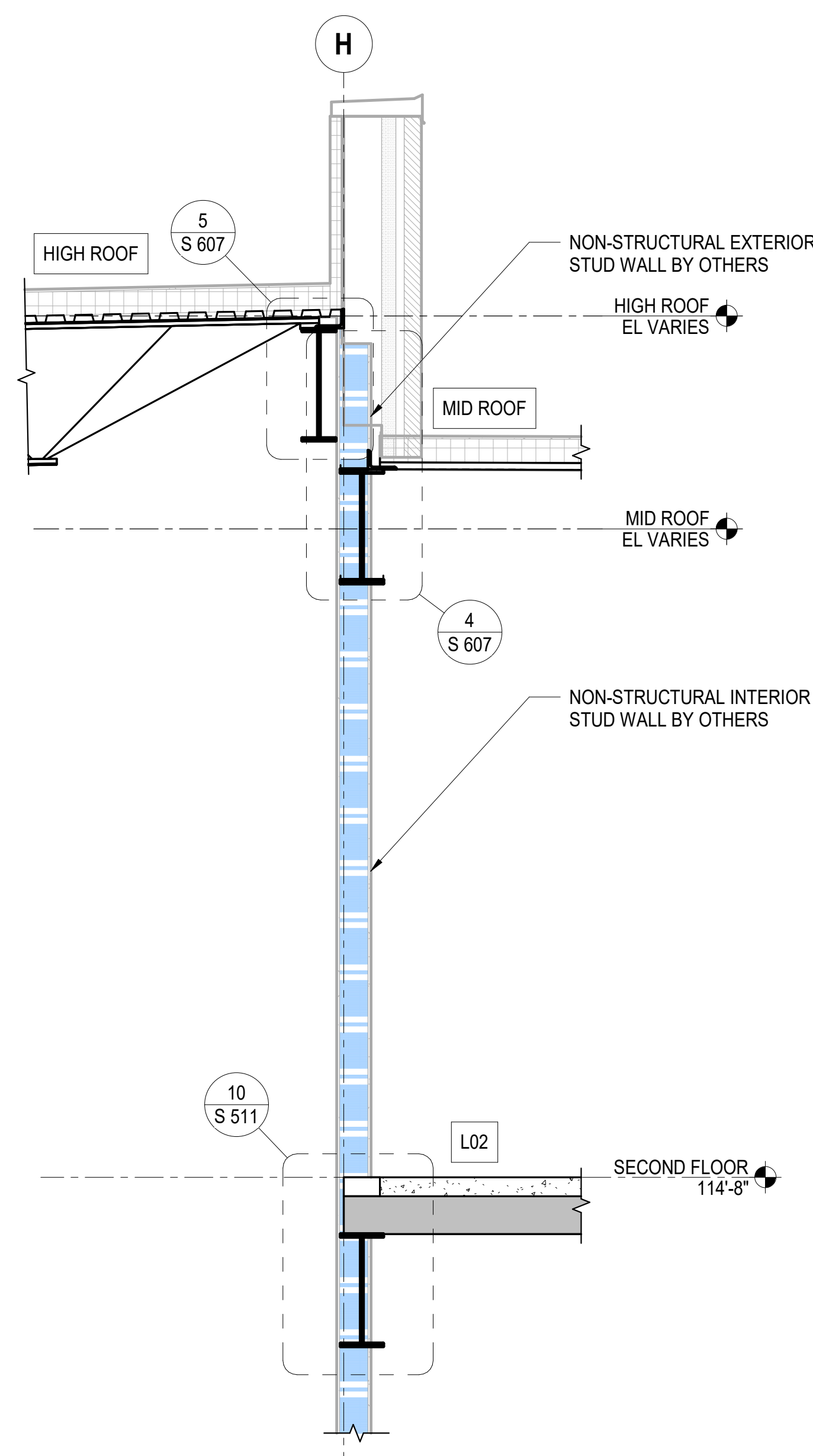
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 EXTERIOR WALL SECTIONS

DATE  
 JUNE 30, 2023

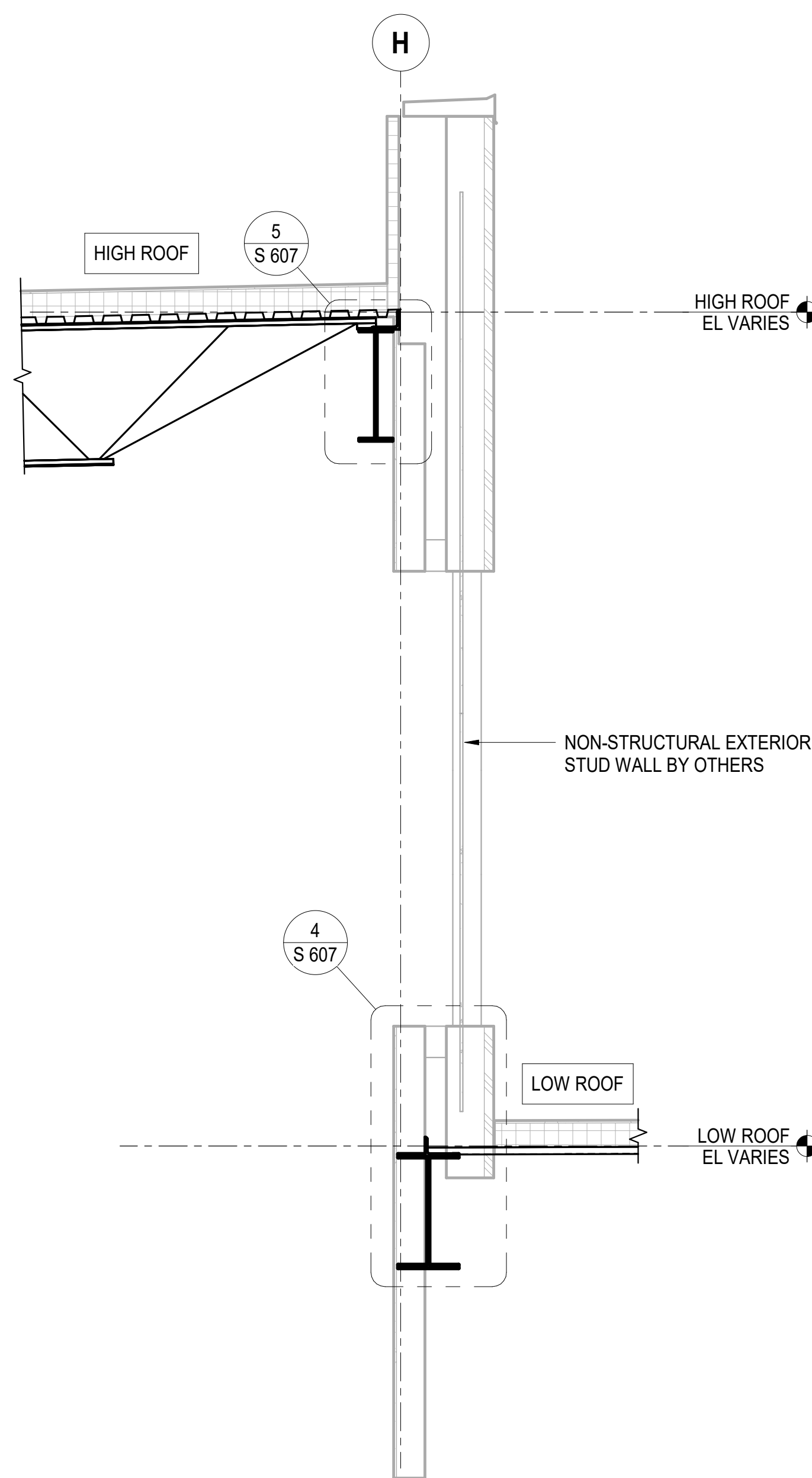
SHEET NUMBER  
**S 607**  
 21-237.25



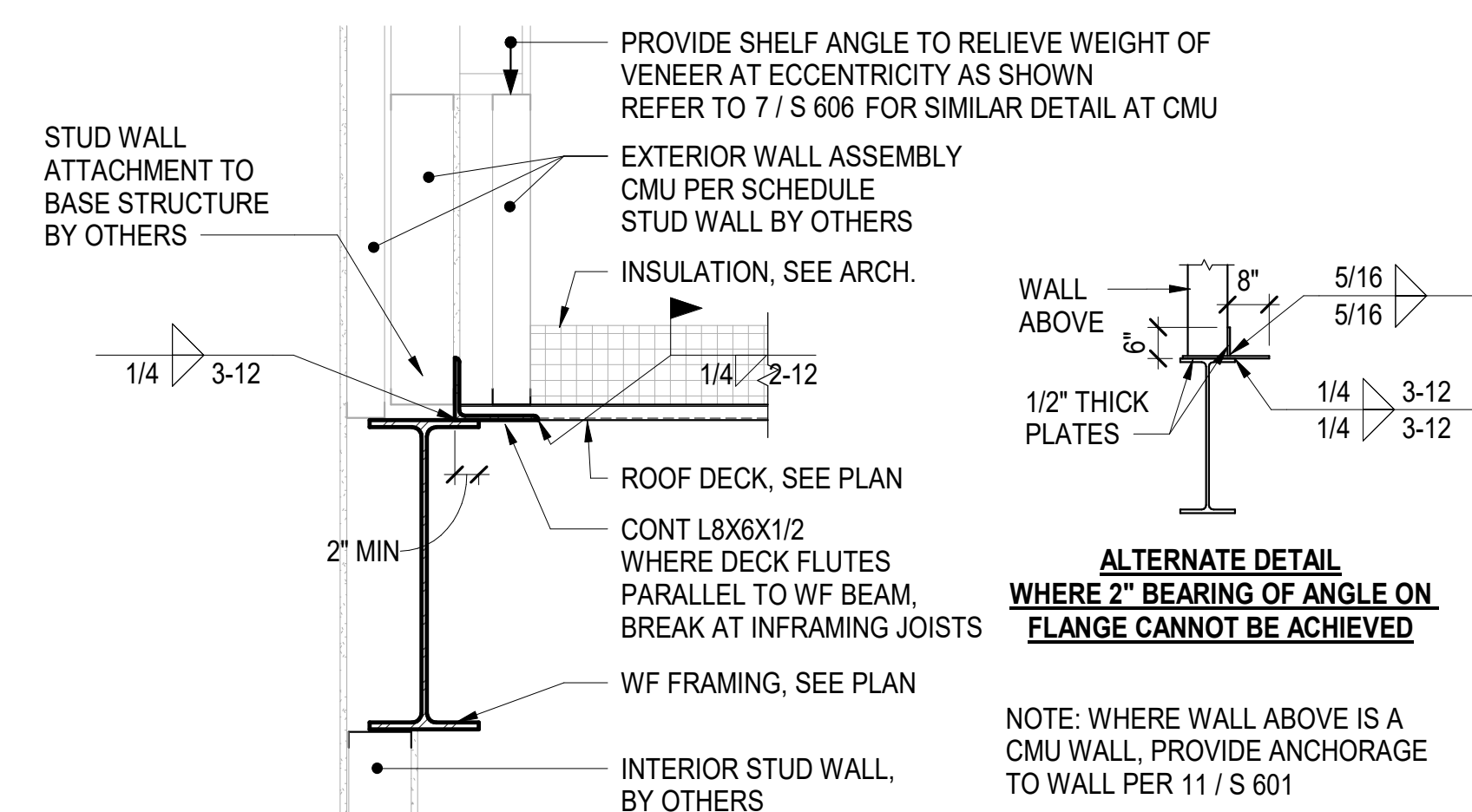
**1** TYPICAL EXTERIOR STOREFRONT AT HIGH ROOF AND L02  
 1/2" = 1'-0"



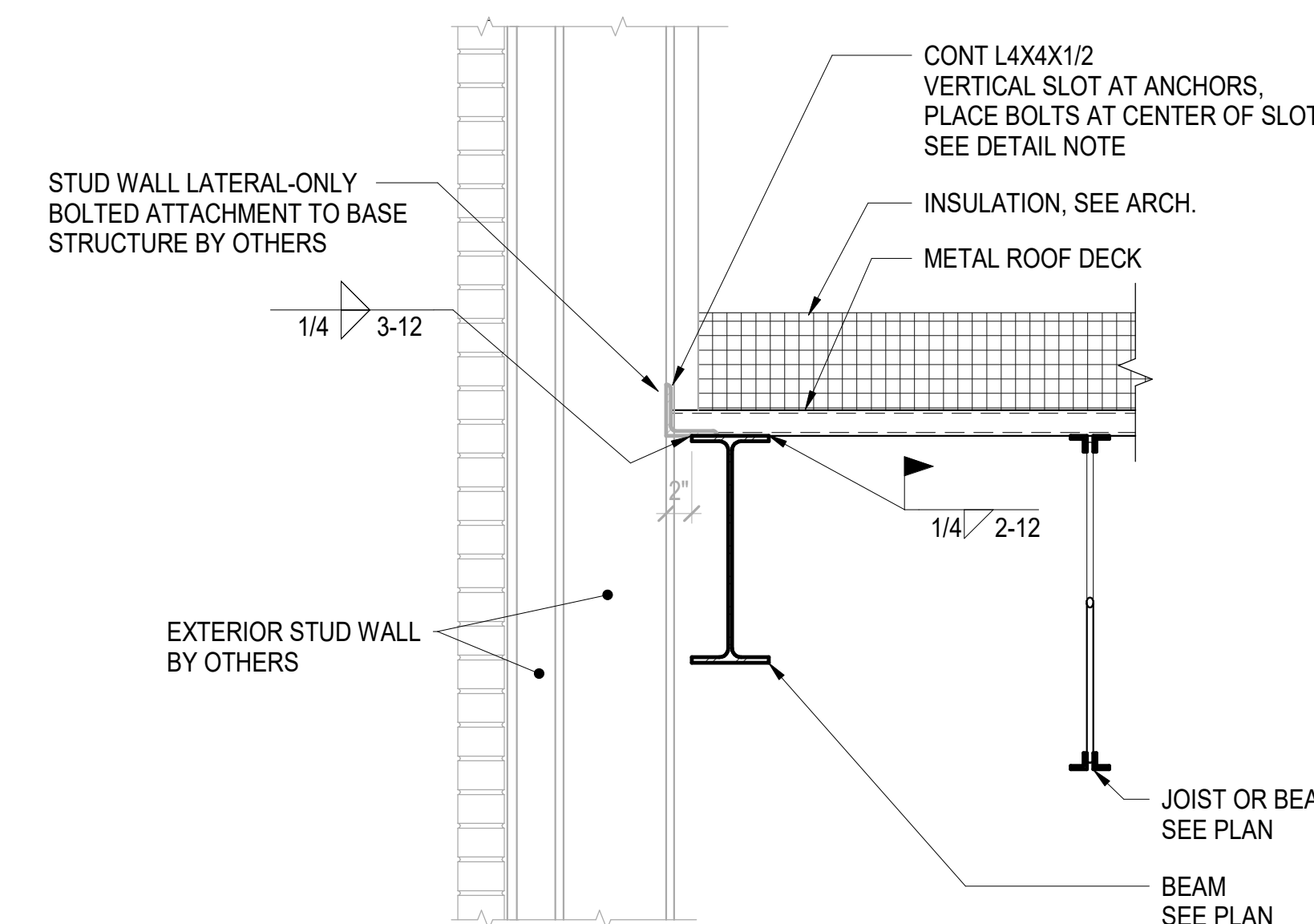
**2** TYPICAL EXTERIOR STUD WALL AT HIGH / MID ROOF INTERFACE  
 1/2" = 1'-0"



**3** TYPICAL EXTERIOR STUD WALL AT HIGH / LOW ROOF INTERFACE  
 1/2" = 1'-0"

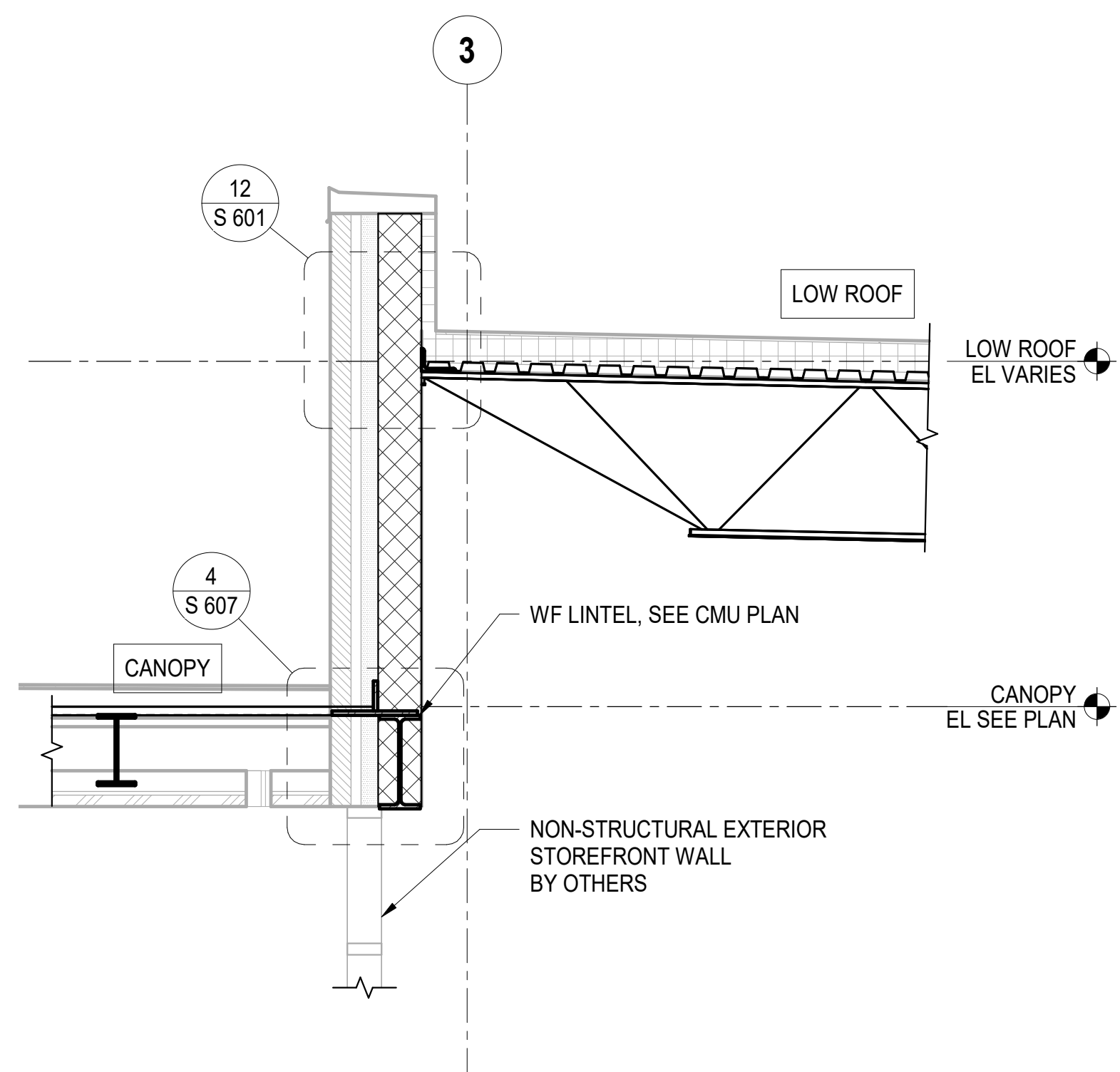


**4** LATERAL-AND-GRAVITY WALL BASE ATTACHMENT AT ROOF  
 3/4" = 1'-0"

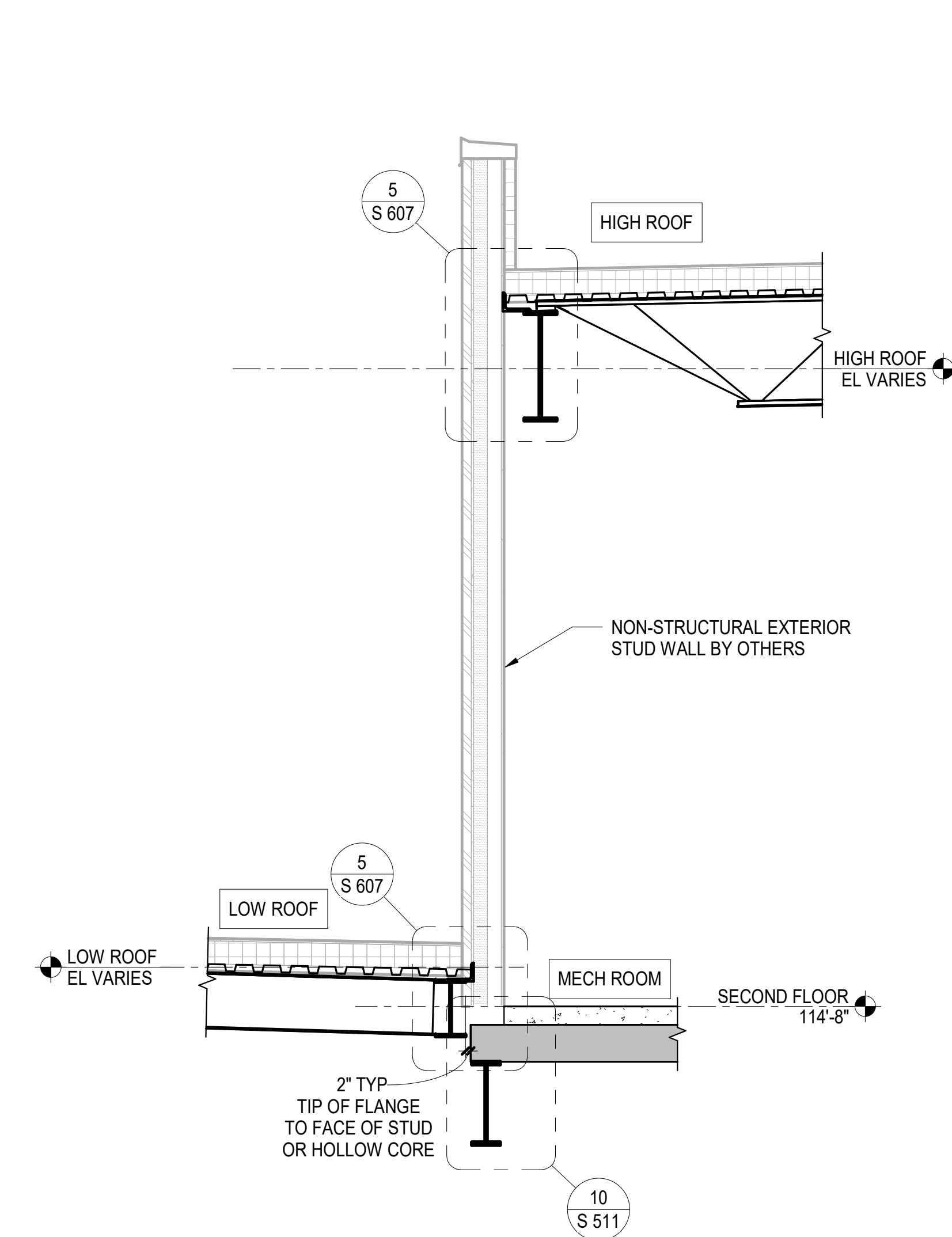


**5** LATERAL-ONLY STUD WALL ATTACHMENT AT OFFSET WIDE FLANGE AT ROOF  
 1" = 1'-0"

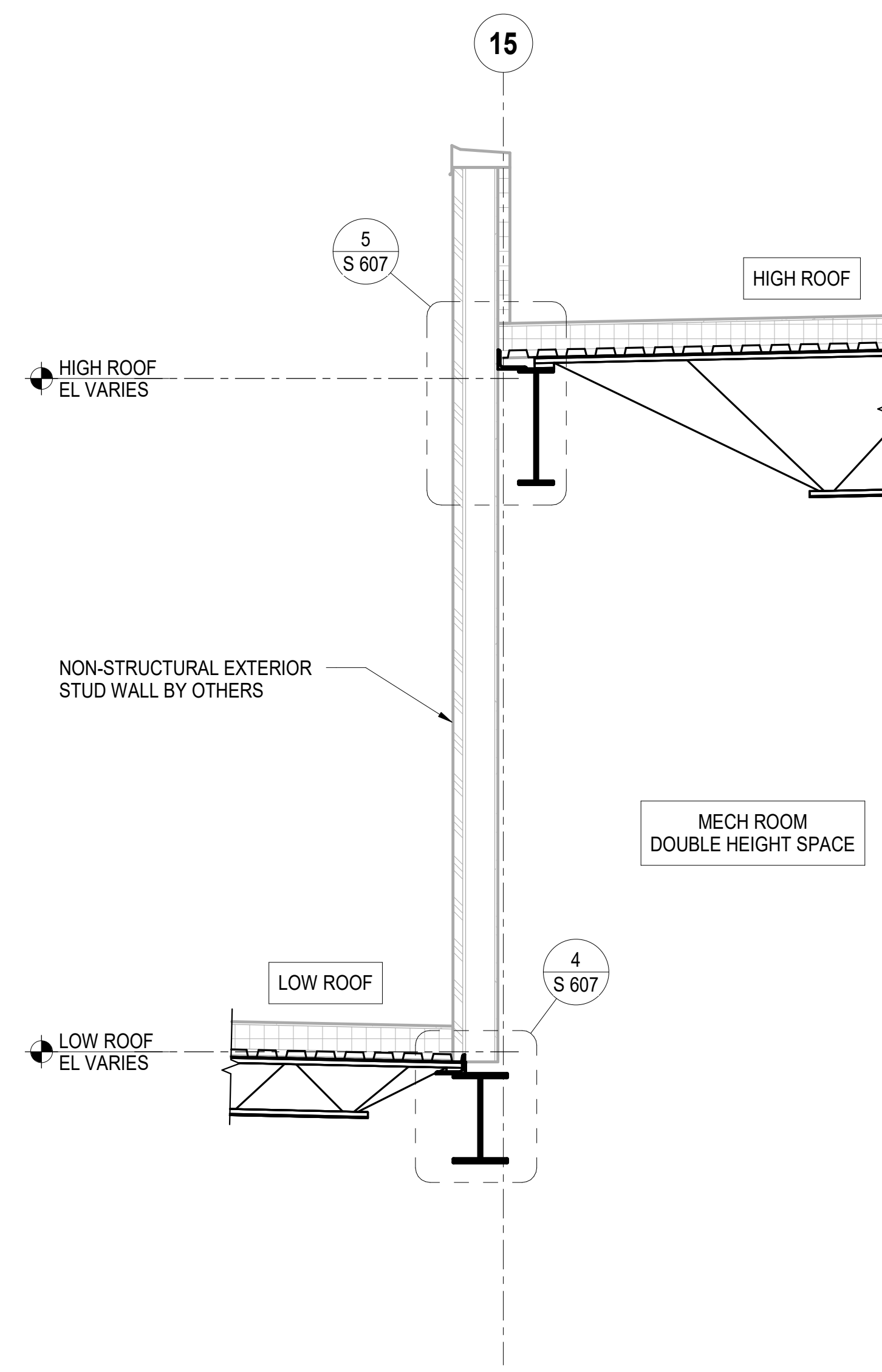
NOTES:  
 1. WHERE VENEER AND WF BEAM ARE ON SAME SIDE OF WALL, BRICK RELIEF ASSEMBLY PER 4 / S 607 IS REQUIRED  
 2. AT W24X84 ON GRIDLINE M BETWEEN GRIDLINES 15 AND 18, PROVIDE L6X4X1/2 ANGLE (LLV) WITH 3" LONG SLOTS



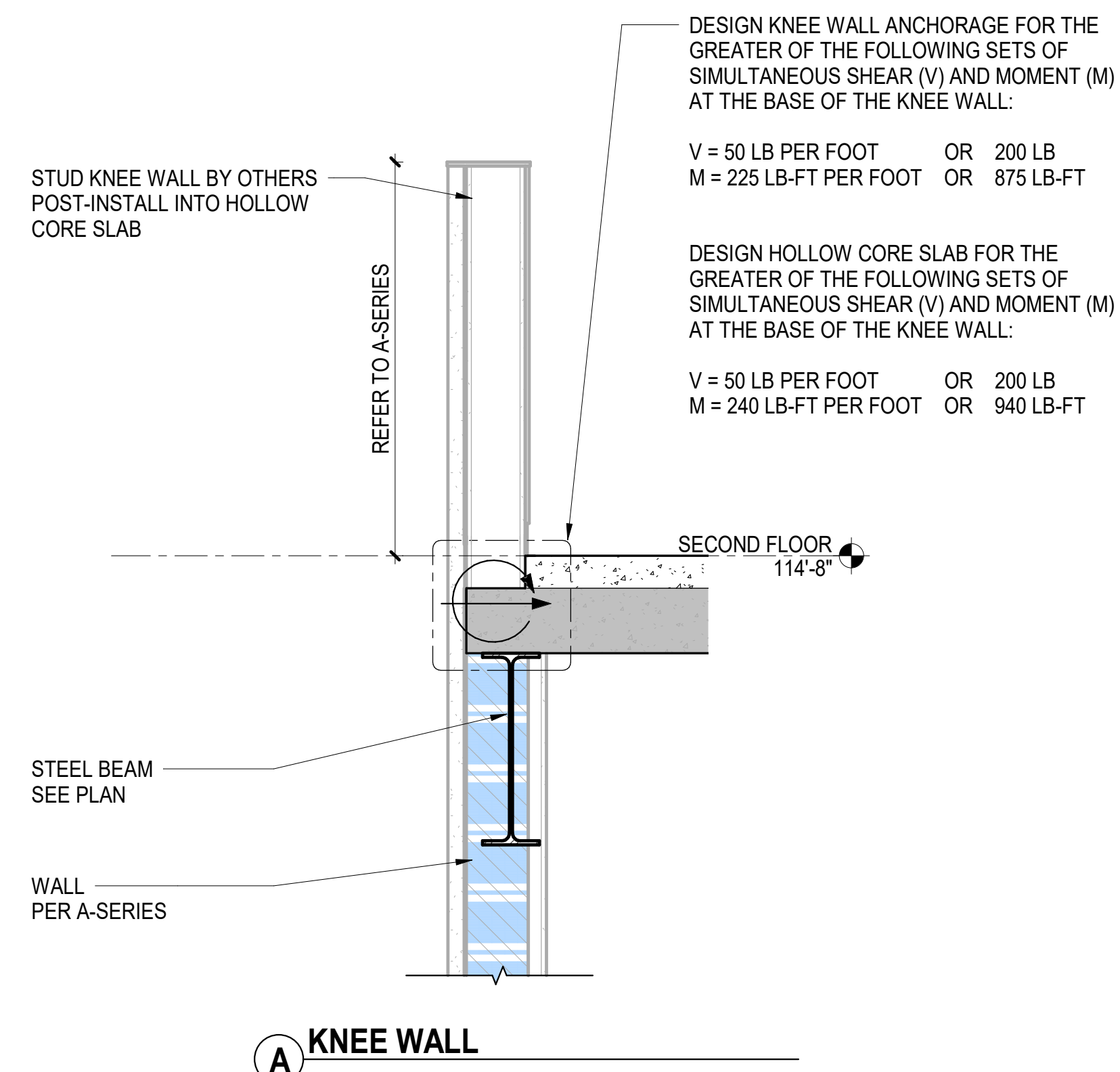
**6** EXTERIOR STUD WALL AT LOW ROOF / CANOPY INTERFACE  
 1/2" = 1'-0"



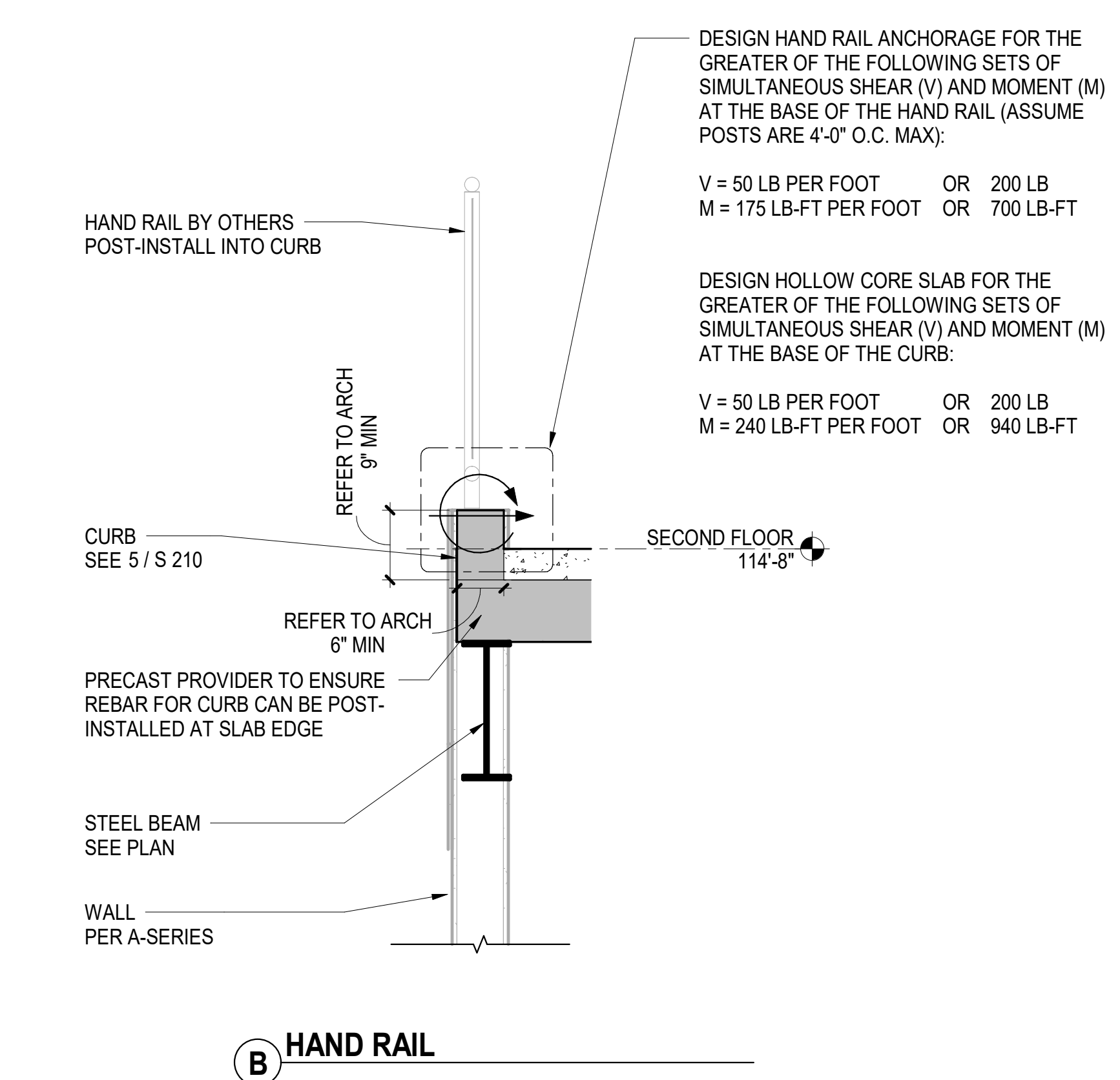
**7** EXTERIOR STUD WALL AT MECHANICAL ROOM / LOW ROOF INTERFACE  
 1/2" = 1'-0"



**8** EXTERIOR STUD WALL AT MECHANICAL ROOM / LOW ROOF INTERFACE  
 1/2" = 1'-0"

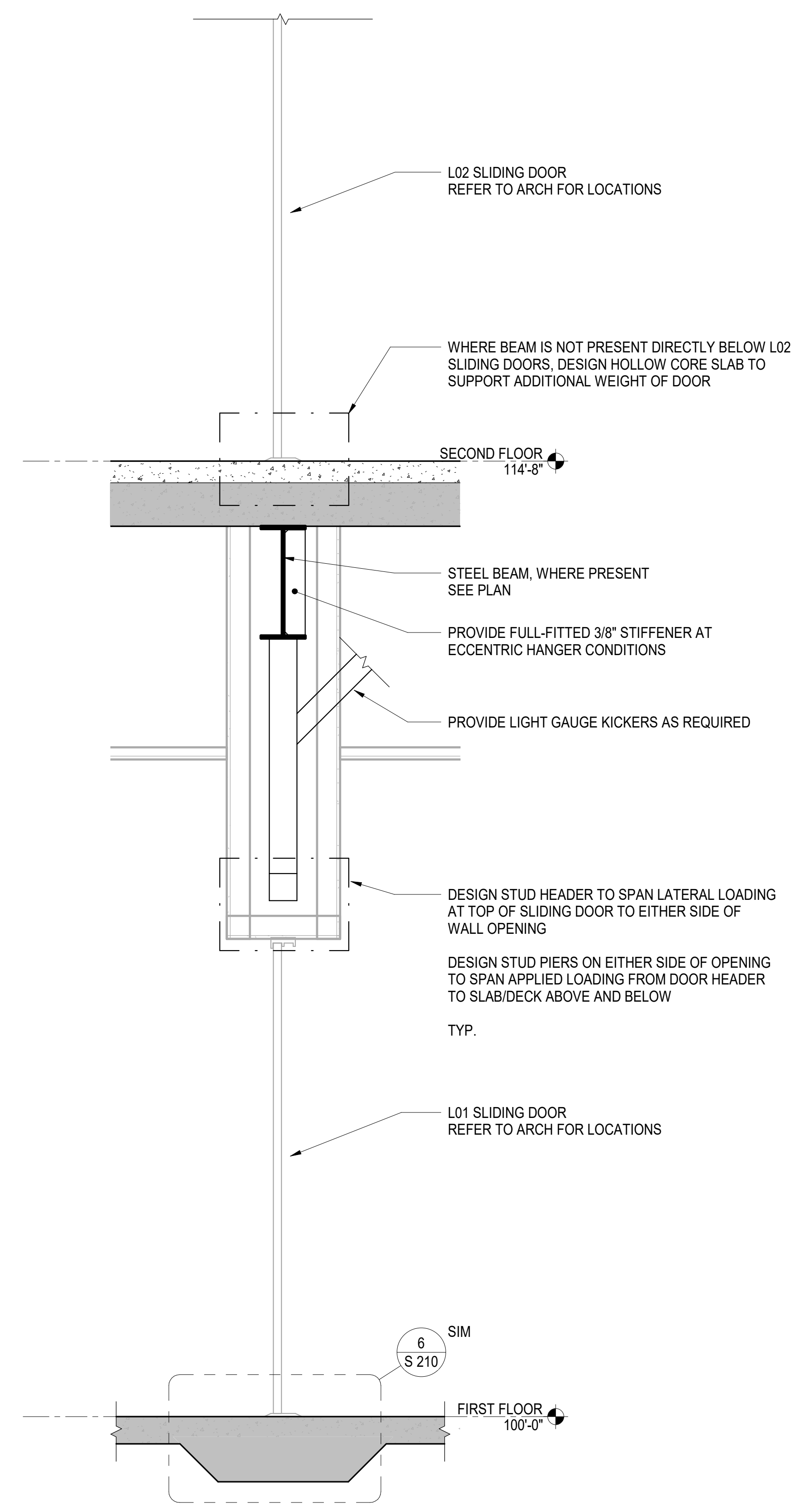


**A KNEE WALL**

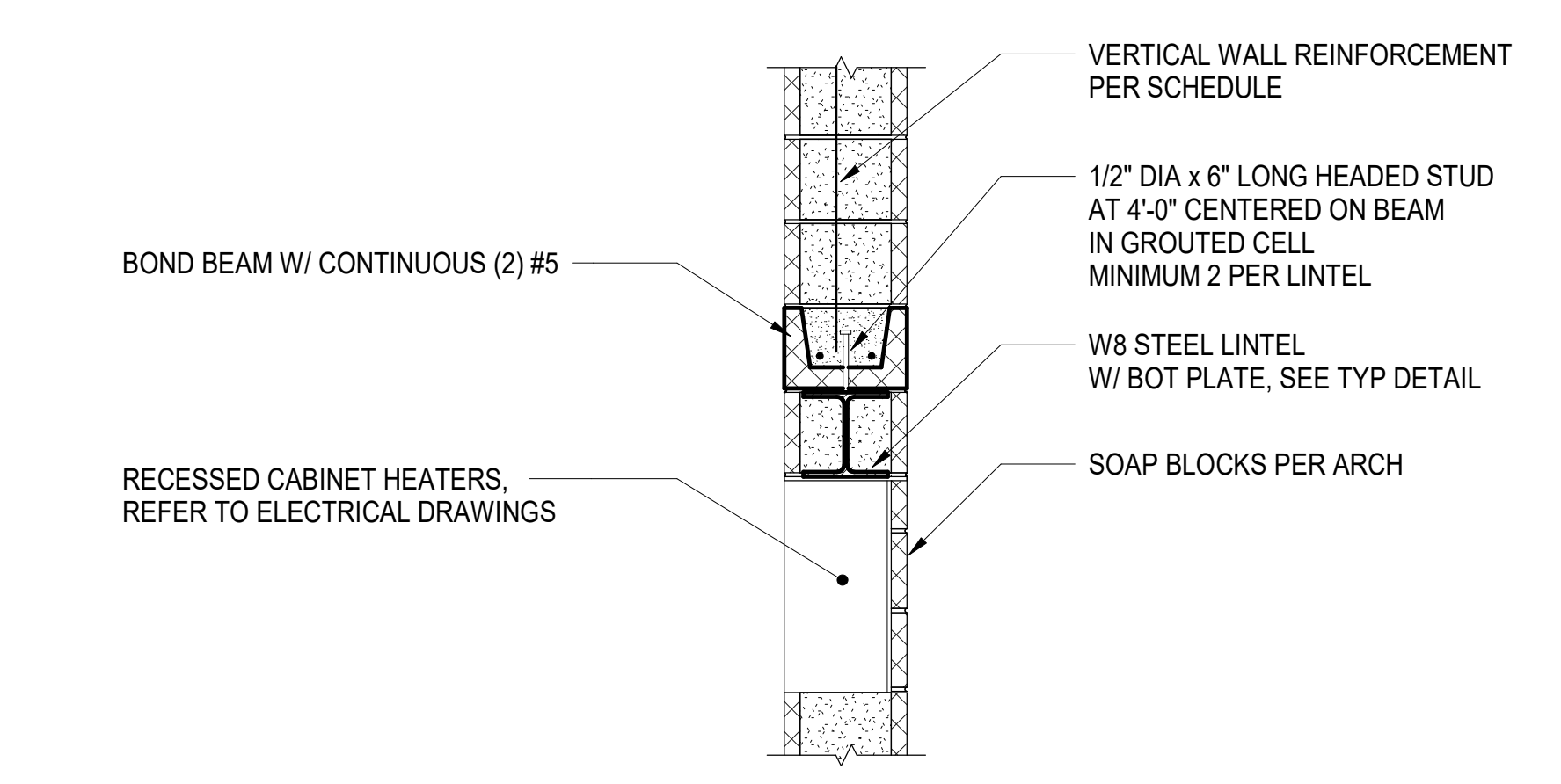


**B HAND RAIL**

**1 SECTION AT 2ND FL KNEE WALL AND HAND RAILS**  
 3/4" = 1'-0"



**2 SECTION AT SLIDING PARTITION DOOR WITHIN STUD WALL**  
 3/4" = 1'-0"



**3 SECTION AT RECESSED CABINET HEATER**  
 3/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

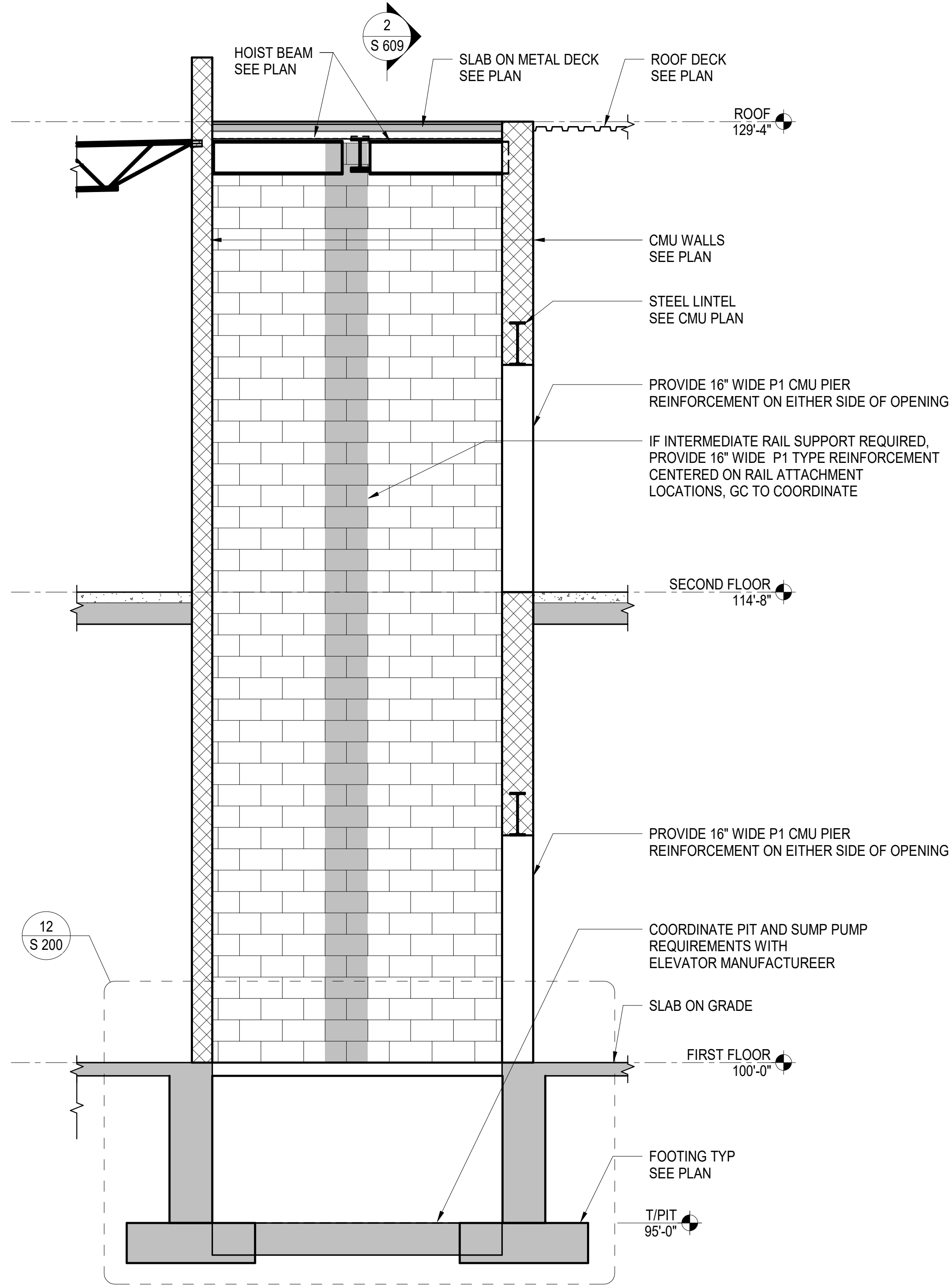
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

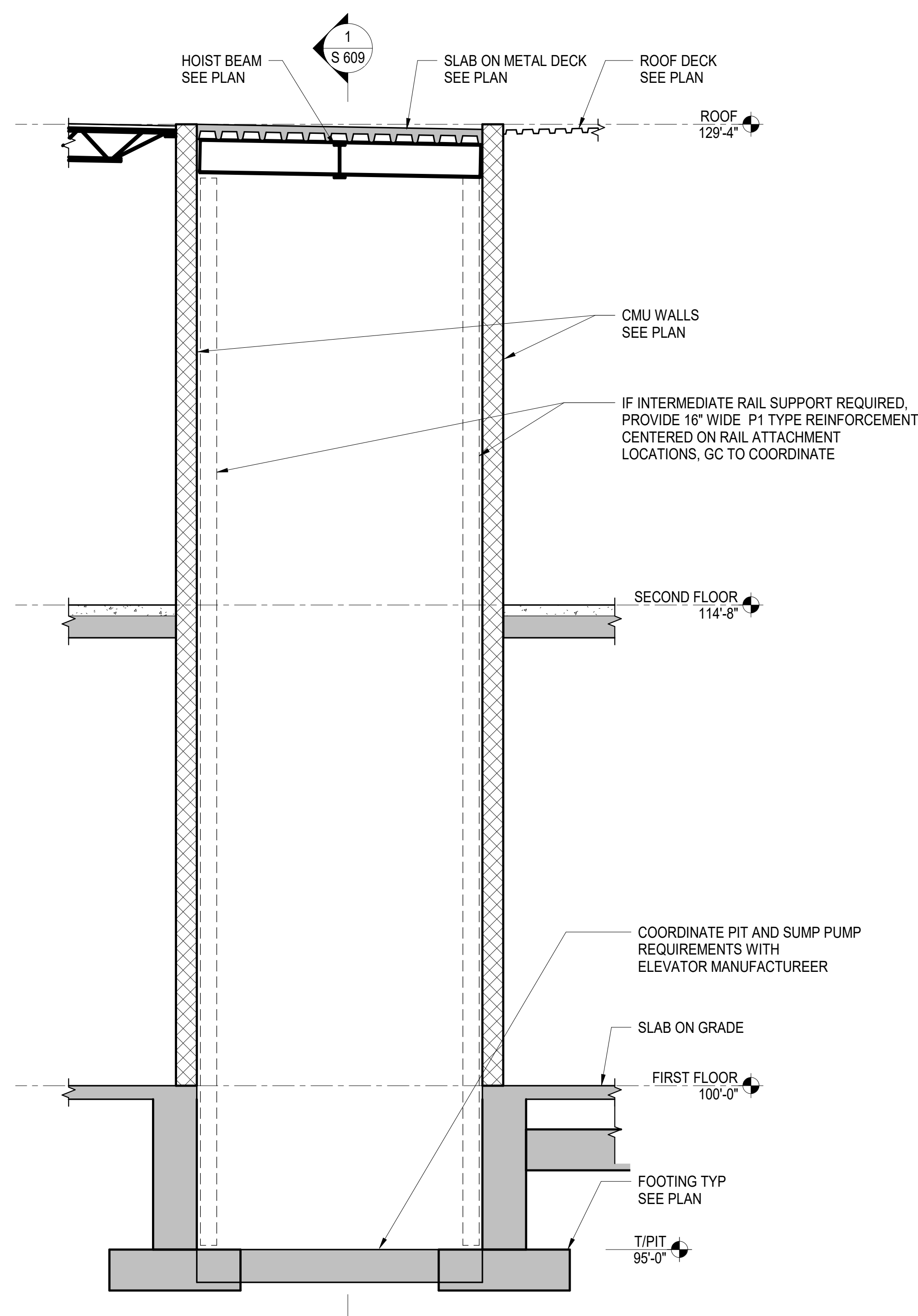
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 INTERIOR WALL SECTIONS

DATE  
 JUNE 30, 2023

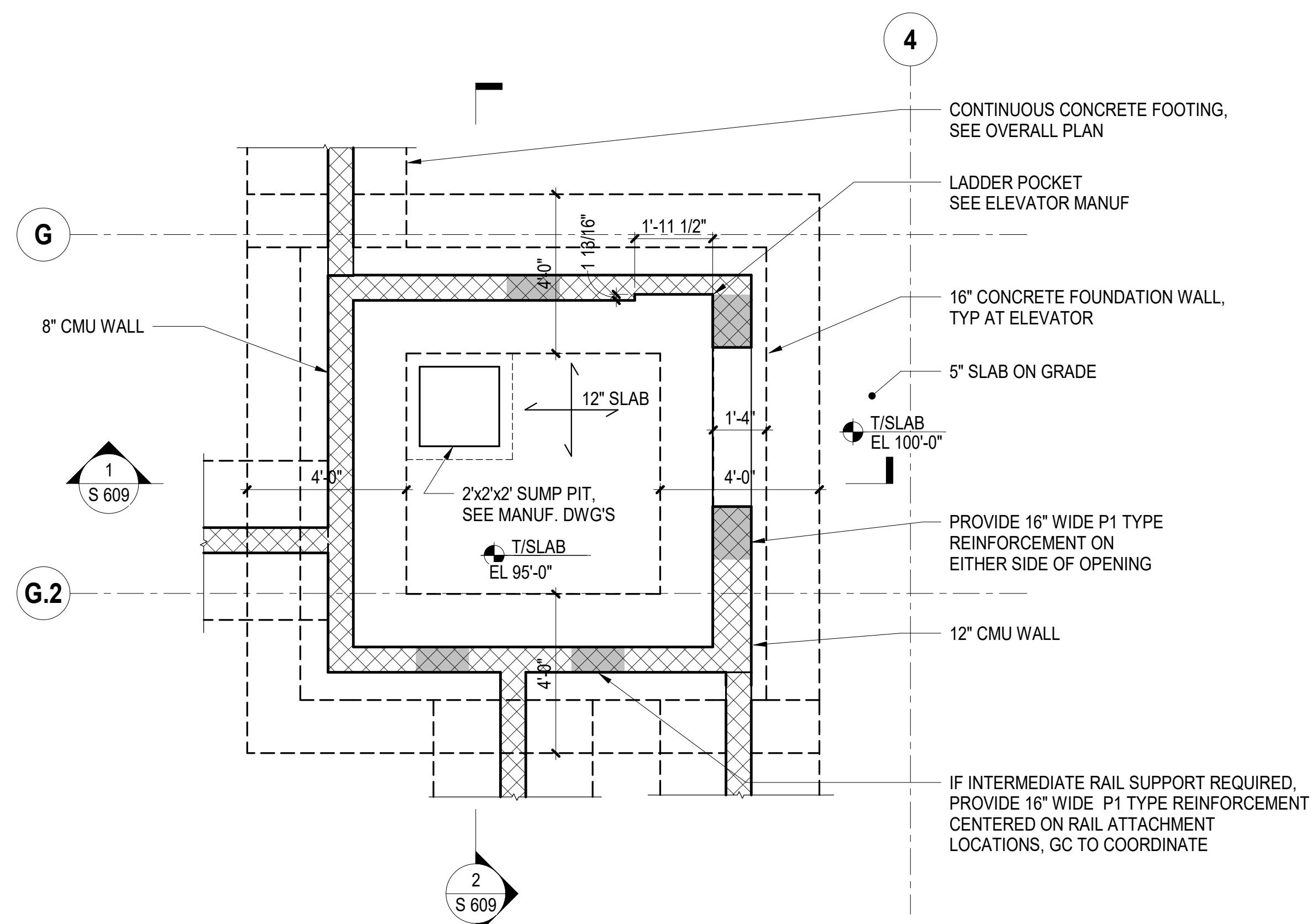
SHEET NUMBER  
**S 608**  
 21-237.25



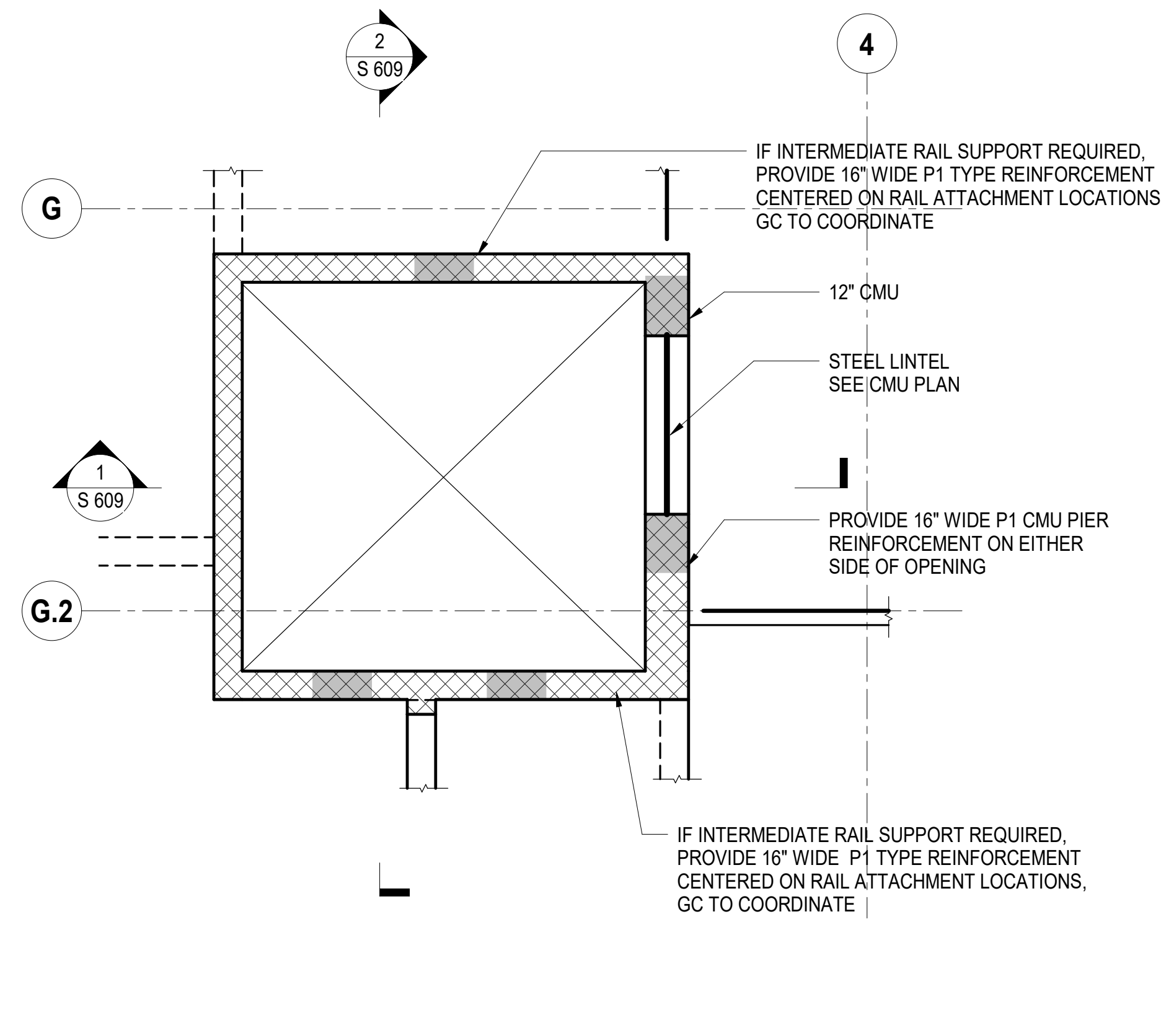
**1 SECTION AT ELEVATOR SHAFT**  
 3/8" = 1'-0"



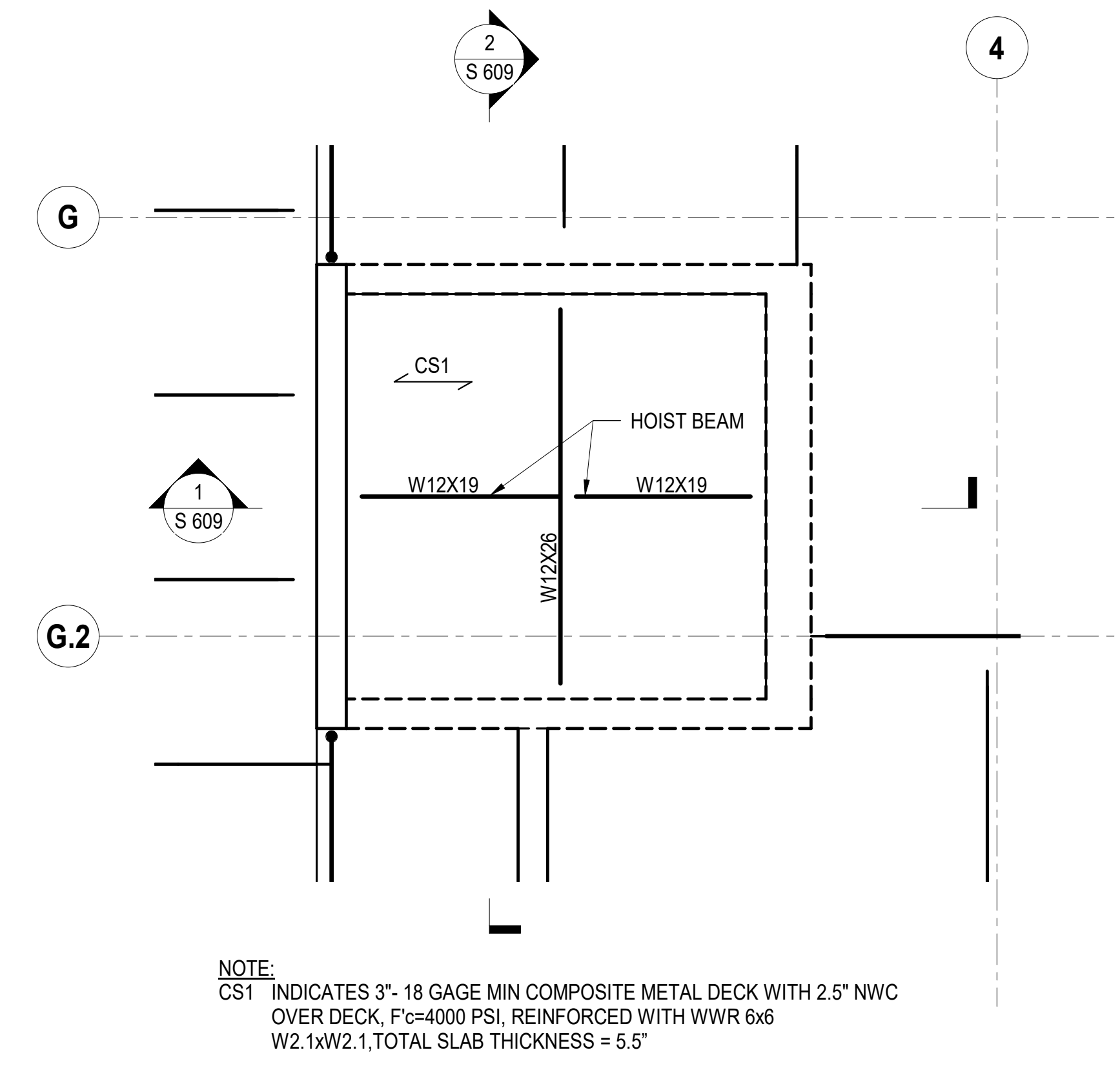
**2 SECTION AT ELEVATOR SHAFT**  
 3/8" = 1'-0"



**3 ELEVATOR PIT SLAB PARTIAL PLAN**  
 3/8" = 1'-0"



**4 SECOND FLOOR ELEVATOR PARTIAL PLAN**  
 3/8" = 1'-0"



**5 ROOF ELEVATOR PARTIAL PLAN**  
 3/8" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

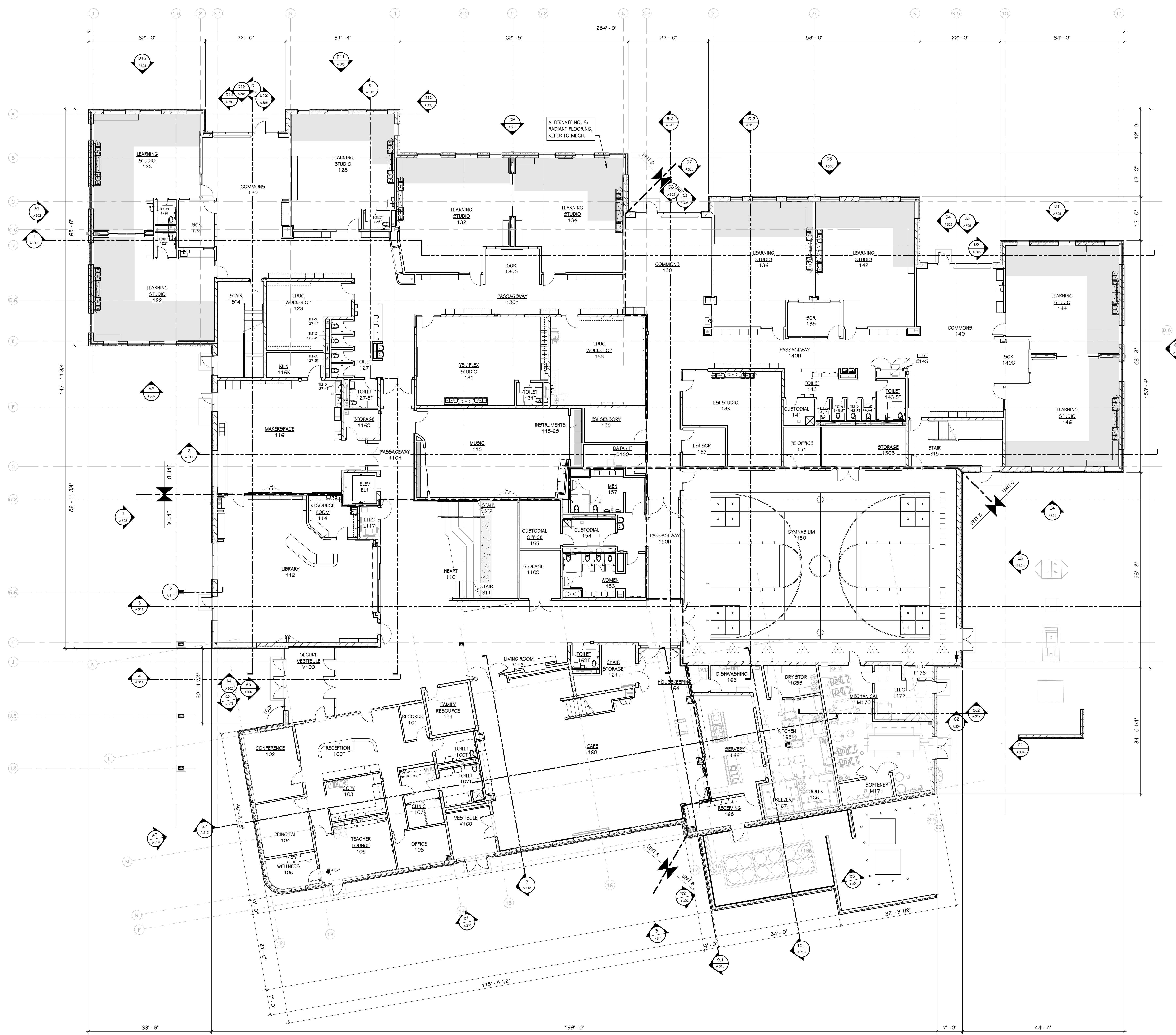
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 ELEVATOR SECTIONS

Portage, Michigan

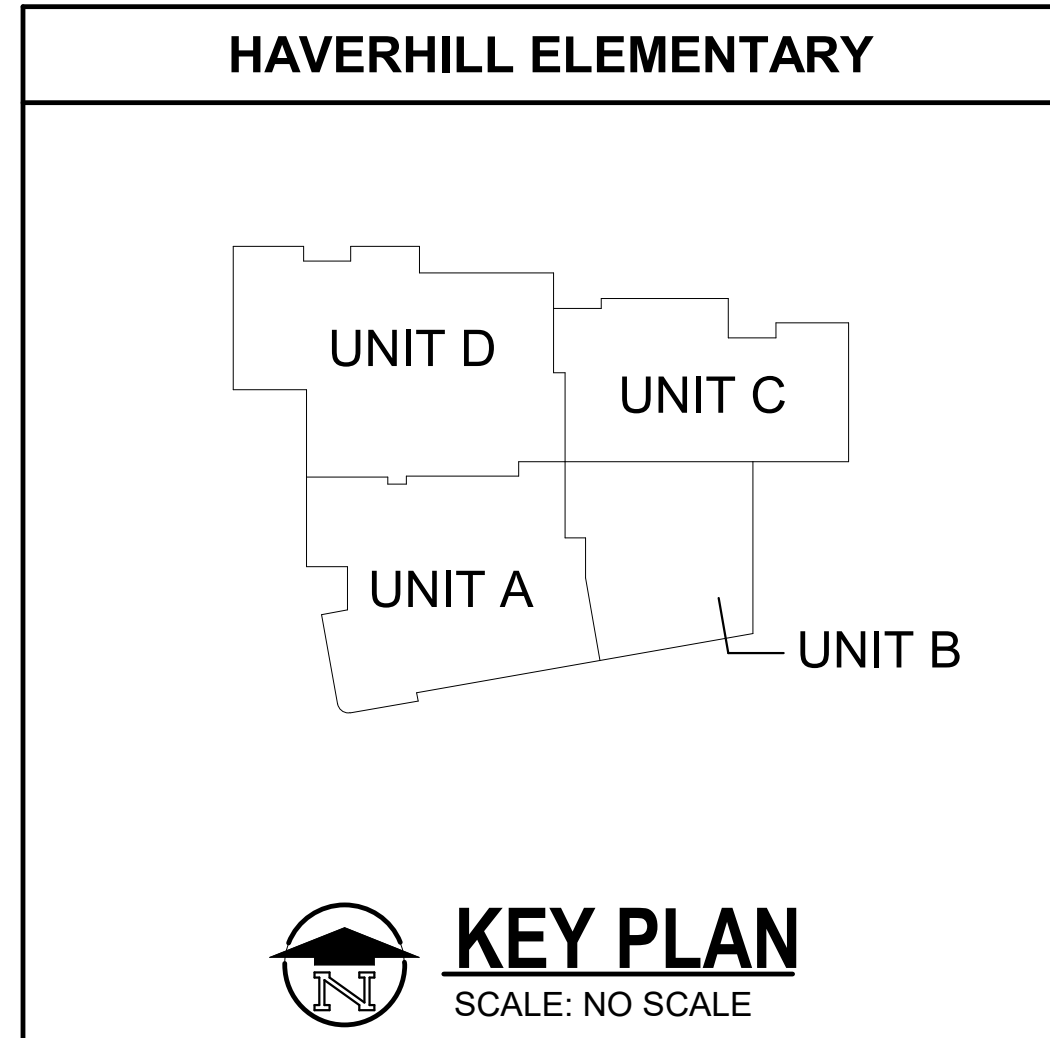
DATE  
 JUNE 30, 2023

SHEET NUMBER  
**S 609**  
 21-237.25

- GENERAL NOTES**
1. REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
  2. REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
  3. PROVIDE CEILING AND WALL ACCESS PANELS AS REQ'D. FOR MECH. AND PLUMBING. COORD WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
  4. PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE. COORDINATE WITH INTERIOR FINISHES.



**FIRST FLOOR PLAN**  
3/32" = 1'-0"



ISSUED FOR DATE

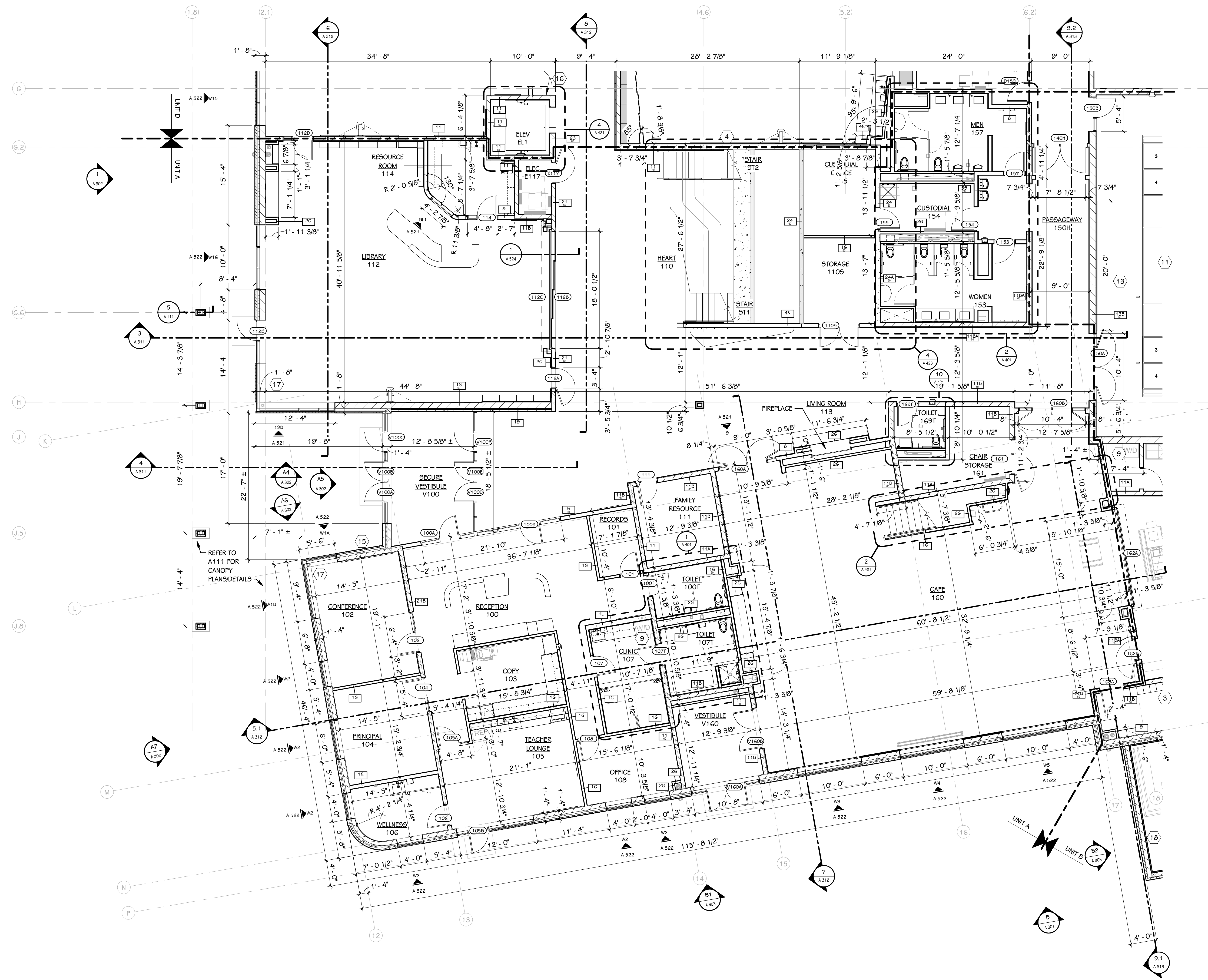
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS  
Portage, Michigan

SHEET TITLE  
FIRST FLOOR PLAN

DATE  
JUNE 30, 2023

SHEET NUMBER  
A 101  
21-237.20



FIRST FLOOR PLAN - UNIT A  
1/8" = 1'-0"

- GENERAL NOTES**
- REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
  - REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
  - PROVIDE CEILING AND WALL ACCESS PANELS AS REQD. FOR MECH. AND PLUMBING, COORD WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
  - PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE, COORDINATE WITH INTERIOR FINISHES.
- KEYED NOTES - NEW CONSTRUCTION**
- LOCKABLE CAB. FOR ELEV. DISCONNECT, PROVIDE BLOCKING SUPPORT FOR DISCONNECT AS REQD., COORD. WITH ELEC.
  - ELEV. FIRE ALARM DISCONNECT TO BE LOCATED ABOVE CEILING, PROVIDE ACCESS PANEL. COORD. WITH ELEC. AND ELEV. MANUF.
  - (8) 12"x18"x60" SINGLE TIER METAL LOCKERS
  - 5/8" TYPE 'X' GYP. BOARD ON 1 5/8" RSC-1 (RESILIENT SOUND ISOLATION CLIP)
  - 2" DUCT LINER, FLOOR TO ROOF DECK
  - PROVIDE 4"x4" CONCRETE CURB AROUND OPENINGS THROUGH FLOOR, COORDINATE LOCATIONS WITH MECHANICAL
  - PROVIDE 4" CONCRETE HOUSEKEEPING PAD WHERE REQUIRED BY MECH., COORD. LOCATION AND FOOTPRINT WITH MECH.
  - INFILL ENTIRE STUD WALL CAVITY WITH SOUND BATT
  - STACKABLE WASHER/DRYER, OWNER FURNISHED, CONTRACTOR INSTALLED, COORD. UTILITIES WITH MECH/ELECT.
  - VOLLEYBALL SLEEVE, COORD. WITH VOLLEYBALL MANUF.
  - BB-1 - BACKWARD SWING OVERHEAD-SUPPORTED BACKSTOP (MOTORIZED)
  - BB-2 - WALL MOUNTED BACKSTOP
  - SAFETY PADS - 2'x6", MOUNT 12" A.F.F., CENTER ON BASKETBALL HOOP
  - CLIMBING WALL WITH MAT SYSTEM
  - KNOX BOX, RECESSED, 60" A.F.F., COORDINATE LOCATION WITH AHJ, COLOR TO COORD. WITH ADJACENT DOOR/WINDOW FRAMING
  - KNOX BOX MINI ELEVATOR KEY BOX, ALUM. COORD. LOCATION WITH AHJ
  - PROVIDE METAL TRIM AT EXPOSED CORNER COLUMN, 1/4" O.C
  - AWP-10: SOUND ABSORBING PERFORATED METALL WALL PANEL, CONT. INSIDE PERIMETER OF CONDENSER SCREEN WALL, MOUNT 2" A.F.F. TO 7'-10" A.F.F.
  - SLOPE FLOOR 1/8" = 1'-0" TO FLOOR DRAINS, PROVIDE APPROPRIATE SLOPE AROUND HOUSEKEEPING PADS AND OBSTRUCTIONS.
  - PROVIDE CONCRETE CURB AT STUD WALL, REFER TO DETAIL 1/A102D
  - REFER TO A601 FOR SLIDING DOOR ALTERNATES
  - PIPE BOLLARDS (6) WITH SLEEVE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

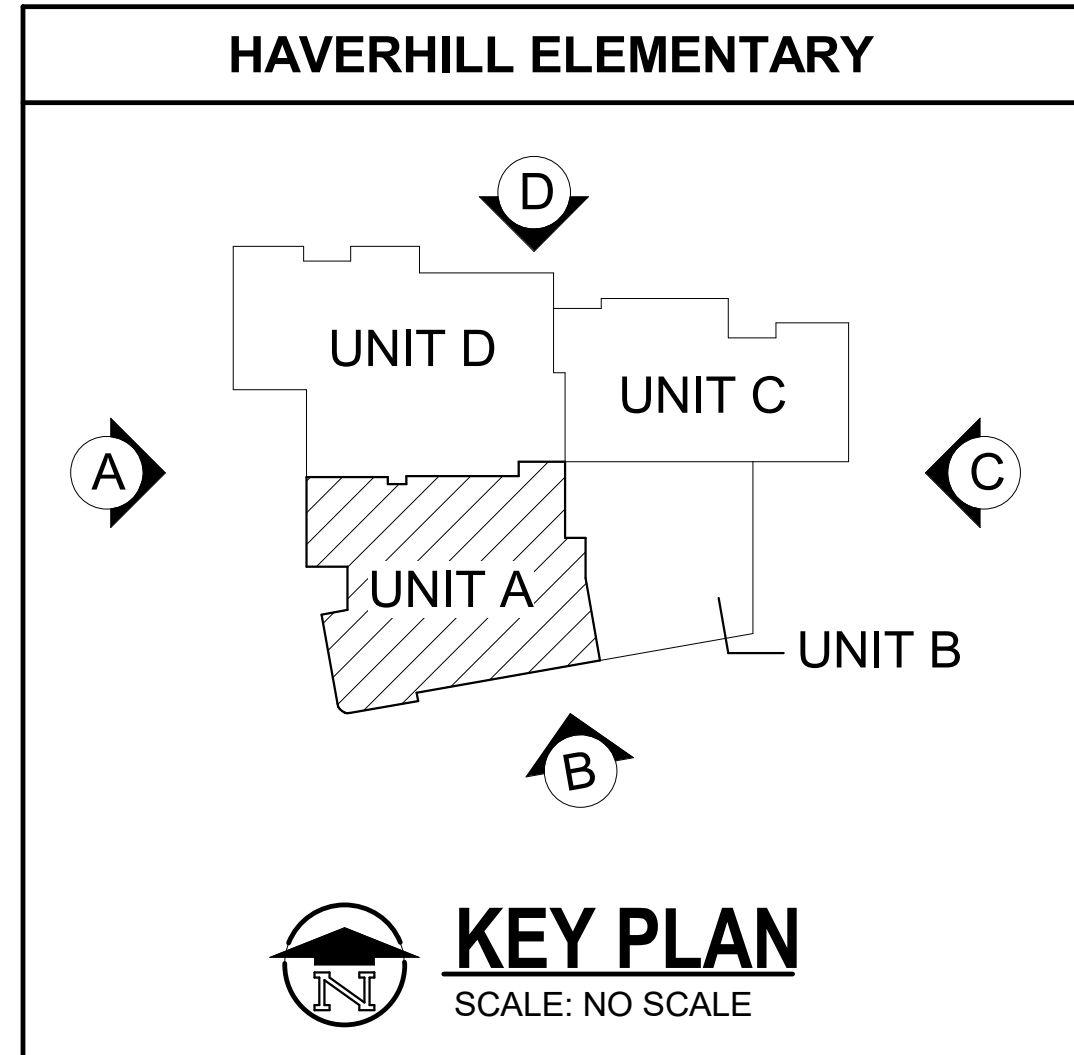
OWNER  
PORTAGE PUBLIC SCHOOLS

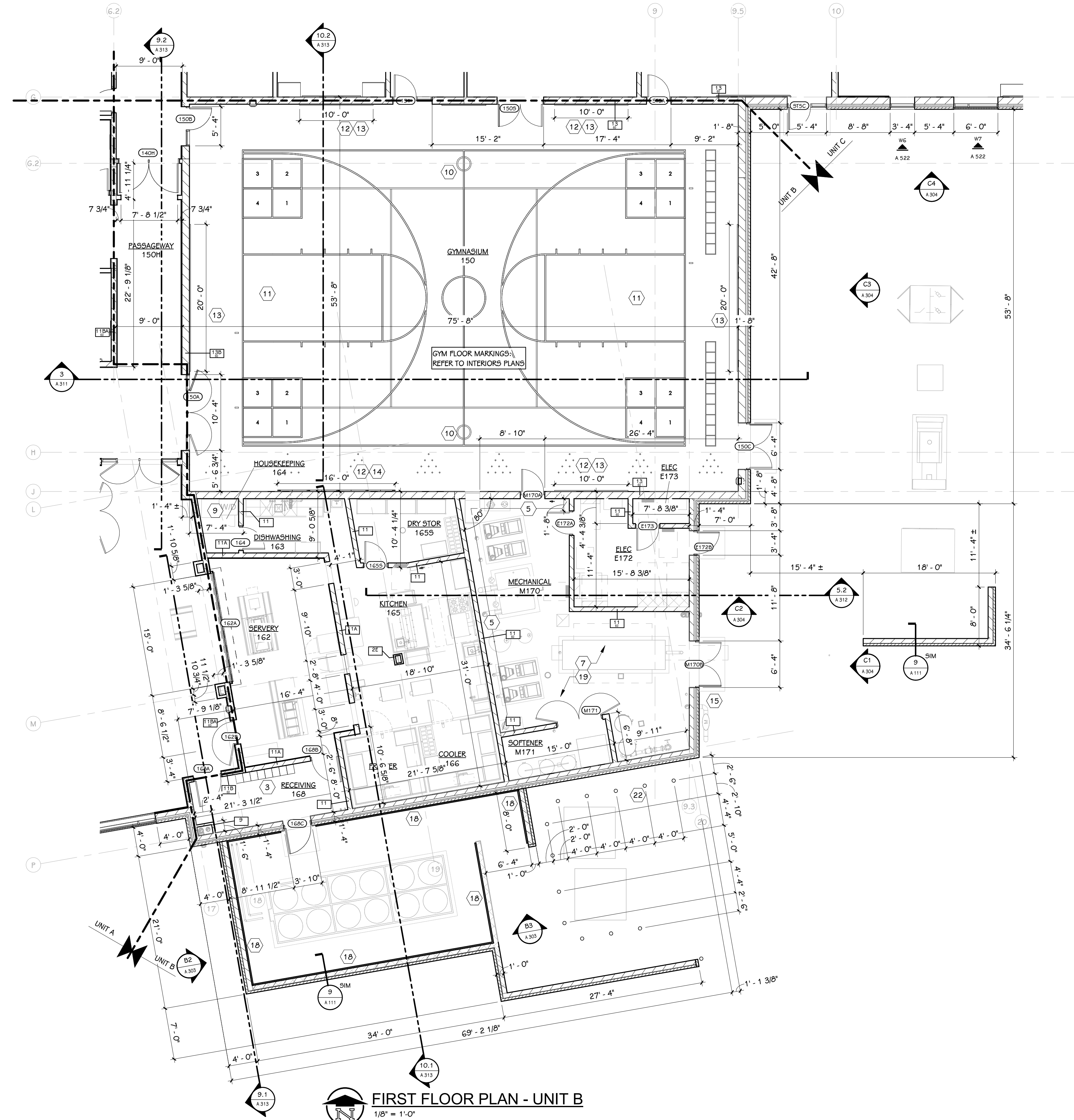
Portage, Michigan

SHEET TITLE  
FIRST FLOOR PLAN - UNIT A

DATE  
JUNE 30, 2023

SHEET NUMBER  
A 101A  
21-237.20





FIRST FLOOR PLAN - UNIT B  
1/8" = 1'-0"

- GENERAL NOTES**
- REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
  - REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
  - PROVIDE CEILING AND WALL ACCESS PANELS AS REQD. FOR MECH. AND PLUMBING. COORD WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
  - PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE. COORDINATE WITH INTERIOR FINISHES.
- KEYED NOTES - NEW CONSTRUCTION**
- LOCKABLE CAB. FOR ELEV. DISCONNECT, PROVIDE BLOCKING SUPPORT FOR DISCONNECT AS REQD., COORD. WITH ELEC.
  - ELEV. FIRE ALARM DISCONNECT TO BE LOCATED ABOVE CEILING, PROVIDE ACCESS PANEL. COORD. WITH ELEC. AND ELEV. MANUF.
  - (8) 12"x18"x60" SINGLE TIER METAL LOCKERS
  - 5/8" TYPE 'X' GYP. BOARD ON 1 5/8" RSC-1 (RESILIENT SOUND ISOLATION CLIP)
  - 2" DUCT LINER, FLOOR TO ROOF DECK
  - PROVIDE 4"x4" CONCRETE CURB AROUND OPENINGS THROUGH FLOOR, COORDINATE LOCATIONS WITH MECHANICAL
  - PROVIDE 4" CONCRETE HOUSEKEEPING PAD WHERE REQUIRED BY MECH., COORD. LOCATION AND FOOTPRINT WITH MECH.
  - INFILL ENTIRE STUD WALL CAVITY WITH SOUND BATT
  - STACKABLE WASHER/DRYER, OWNER FURNISHED, CONTRACTOR INSTALLED, COORD. UTILITIES WITH MECH/ELECT.
  - VOLLEYBALL SLEEVE, COORD. WITH VOLLEYBALL MANUF.
  - BB-1 - BACKWARD SWING OVERHEAD-SUPPORTED BACKSTOP (MOTORIZED)
  - BB-2 - WALL MOUNTED BACKSTOP
  - SAFETY PADS - 2"x6", MOUNT 12" A.F.F., CENTER ON BASKETBALL HOOP
  - CLIMBING WALL WITH MAT SYSTEM
  - KNOX BOX, RECESSED, 60" A.F.F., COORDINATE LOCATION WITH AHU, COLOR TO COORD. WITH ADJACENT DOOR/WINDOW FRAMING
  - KNOX BOX MINI ELEVATOR KEY BOX, ALUM. COORD. LOCATION WITH AHU
  - PROVIDE METAL TRIM AT EXPOSED CORNER COLUMN, 1/A101C
  - AWP-10: SOUND ABSORBING PERFORATED METALL WALL PANEL, CONT. INSIDE PERIMETER OF CONDENSER SCREEN WALL, MOUNT 2" A.F.F. TO 7'-10" A.F.F.
  - SLOPE FLOOR 1/8" = 1'-0" TO FLOOR DRAINS, PROVIDE APPROPRIATE SLOPE AROUND HOUSEKEEPING PADS AND OBSTRUCTIONS.
  - PROVIDE CONCRETE CURB AT STUD WALL, REFER TO DETAIL 1/A102D
  - REFER TO A601 FOR SLIDING DOOR ALTERNATES
  - PIPE DOLLARDS (6) WITH SLEEVE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

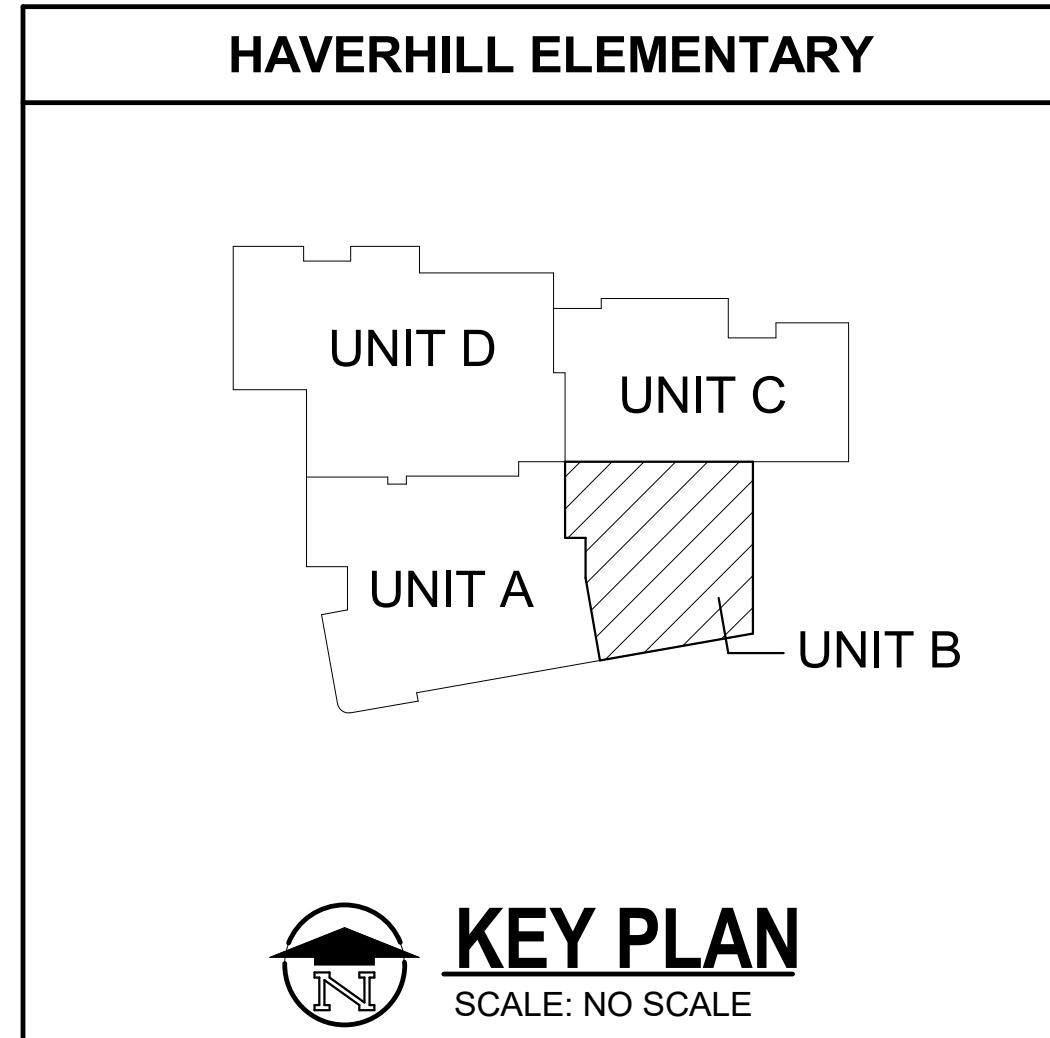
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

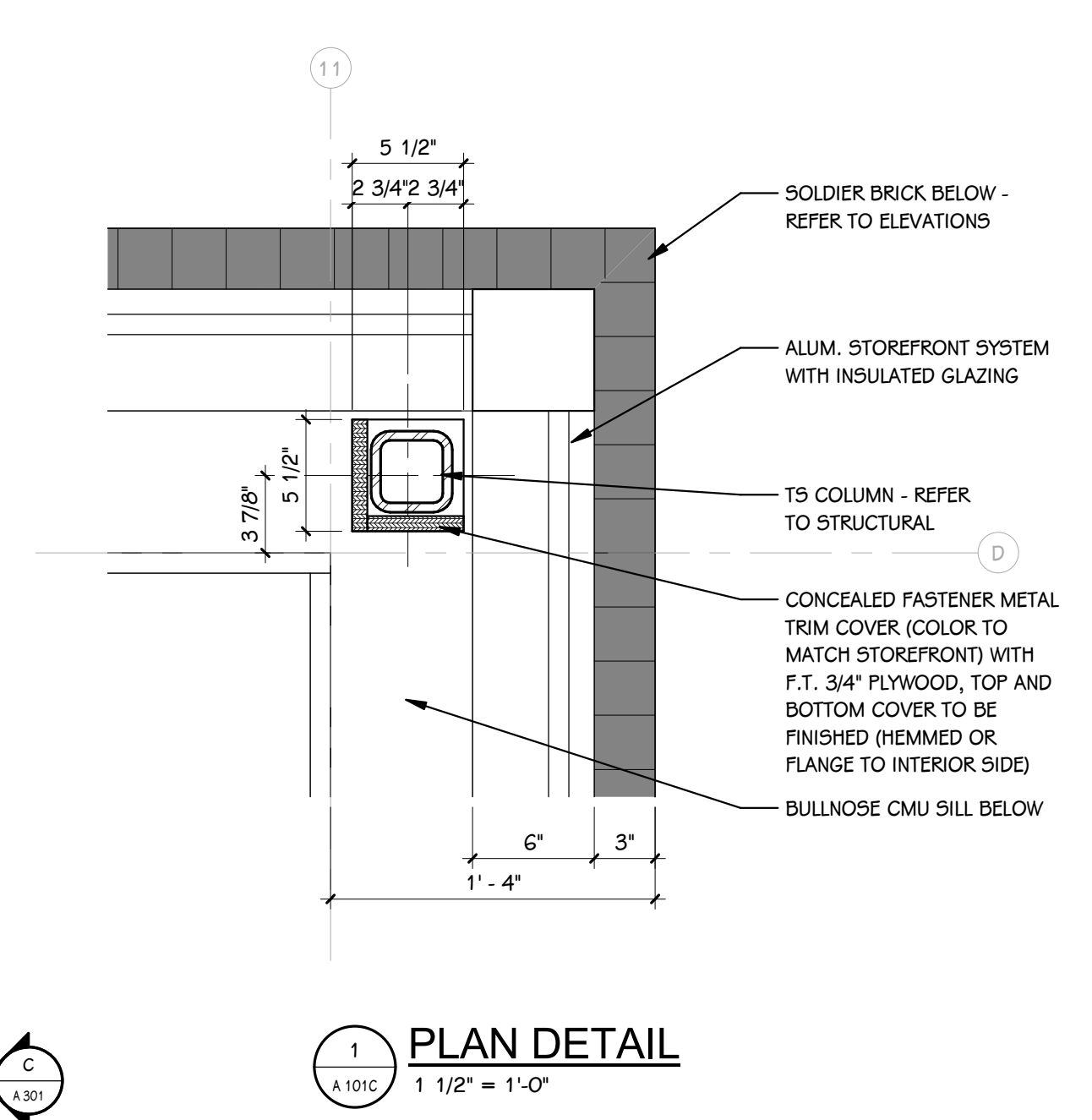
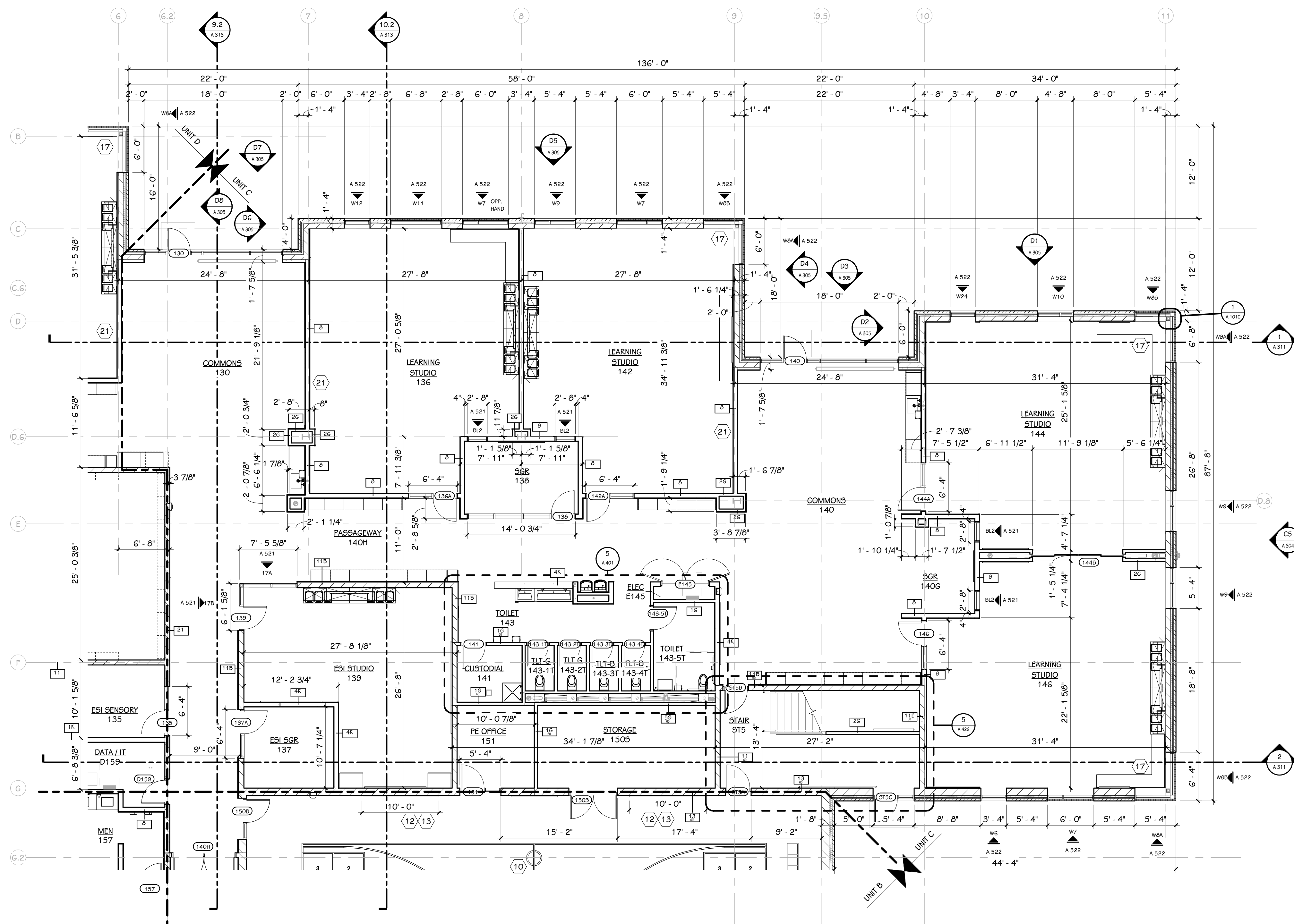
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FIRST FLOOR PLAN - UNIT B

DATE  
JUNE 30, 2023

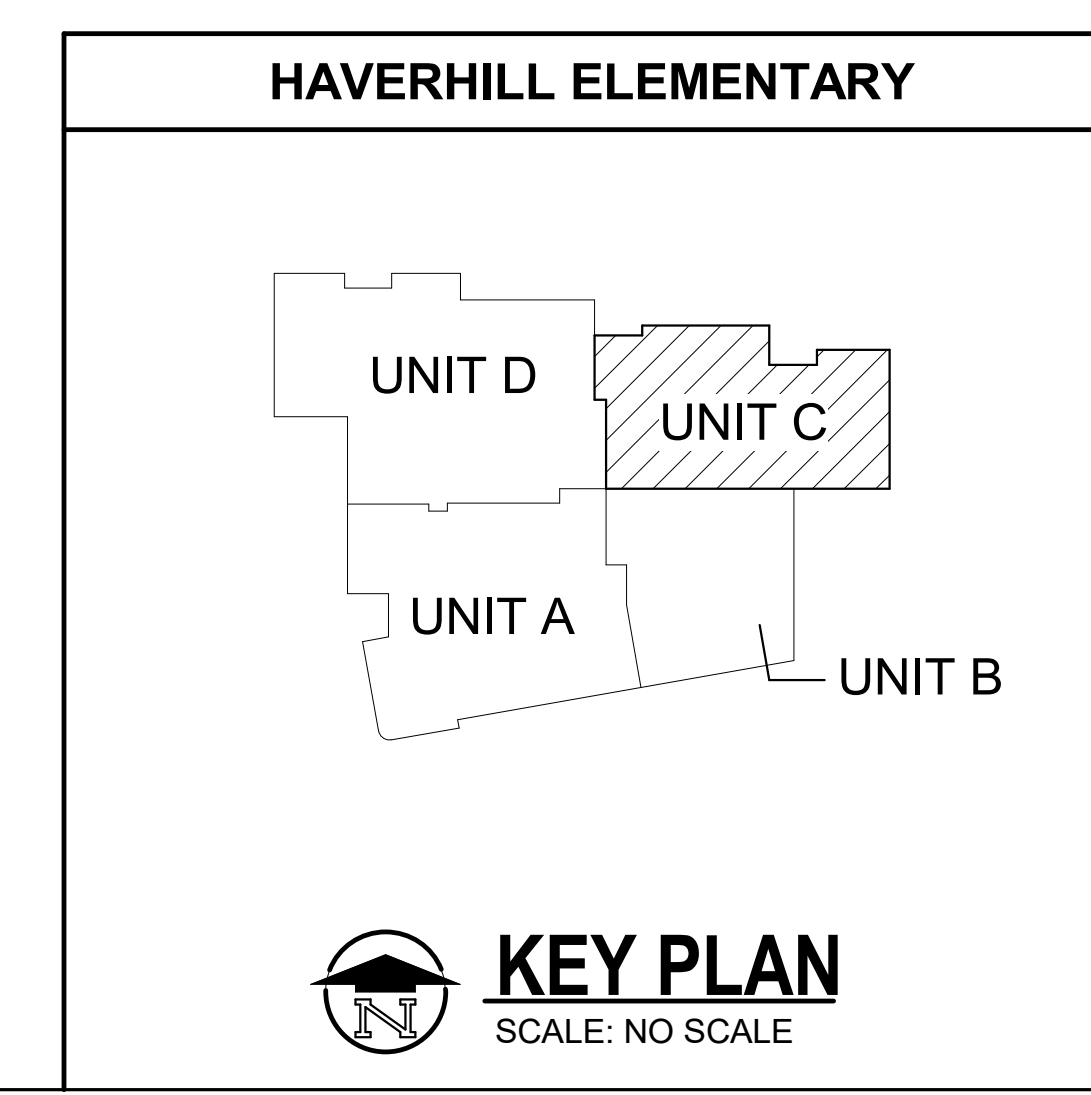
SHEET NUMBER  
A 101B  
21-237.20



- GENERAL NOTES**
- REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
  - REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
  - PROVIDE CEILING AND WALL ACCESS PANELS AS REQ'D. FOR MECH. AND PLUMBING. COORD WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
  - PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE. COORDINATE WITH INTERIOR FINISHES.
- KEYED NOTES - NEW CONSTRUCTION**
- LOCKABLE CAB. FOR ELEV. DISCONNECT, PROVIDE BLOCKING SUPPORT FOR DISCONNECT AS REQ'D., COORD. WITH ELECT.
  - ELEV. FIRE ALARM DISCONNECT TO BE LOCATED ABOVE CEILING, PROVIDE ACCESS PANEL. COORD. WITH ELECT. AND ELEV. MANUF.
  - (8) 12" X 18" X 60" SINGLE TIER METAL LOCKERS
  - 5/8" TYPE 'X' GYP. BOARD ON 1 5/8" RSC-1 (RESILIENT SOUND ISOLATION CLIP)
  - 2" DUCT LINER, FLOOR TO ROOF DECK
  - PROVIDE 4"x4" CONCRETE CURB AROUND OPENINGS THROUGH FLOOR, COORDINATE LOCATIONS WITH MECHANICAL
  - PROVIDE 4" CONCRETE HOUSEKEEPING PAD WHERE REQUIRED BY MECH., COORD. LOCATION AND FOOTPRINT WITH MECH.
  - INFILL ENTIRE STUD WALL CAVITY WITH SOUND BATT
  - STACKABLE WASHER/DRYER, OWNER FURNISHED, CONTRACTOR INSTALLED, COORD. UTILITIES WITH MECH/ELECT.
  - VOLLEYBALL SLEEVE, COORD. WITH VOLLEYBALL MANUF.
  - BB-1 - BACKWARD SWING OVERHEAD-SUPPORTED BACKSTOP (MOTORIZED)
  - BB-2 - WALL MOUNTED BACKSTOP
  - SAFETY PADS - 2"x6", MOUNT 12" A.F.F., CENTER ON BASKETBALL HOOP
  - CLIMBING WALL WITH MAT SYSTEM
  - KNOX BOX, RECESSED, 60" A.F.F., COORDINATE LOCATION WITH AHJ, COLOR TO COORD. WITH ADJACENT DOOR/WINDOW FRAMING
  - KNOX BOX MINI ELEVATOR KEY BOX, ALUM. COORD. LOCATION WITH AHJ
  - PROVIDE METAL TRIM AT EXPOSED CORNER COLUMN, 1/A101C
  - AWP-10: SOUND ABSORBING PERFORATED METAL WALL PANEL, CONT. INSIDE PERIMETER OF CONDENSER SCREEN WALL, MOUNT 2" A.F.F. TO 7'-10" A.F.F.
  - SLOPE FLOOR 1/8" = 1'-0" TO FLOOR DRAINS, PROVIDE APPROPRIATE SLOPE AROUND HOUSEKEEPING PADS AND OBSTRUCTIONS.
  - PROVIDE CONCRETE CURB AT STUD WALL, REFER TO DETAIL 1/A102D
  - REFER TO A601 FOR SLIDING DOOR ALTERNATES
  - PIPE DOLLARDS (6) WITH SLEEVE



**FIRST FLOOR PLAN - UNIT C**  
1/8" = 1'-0"



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

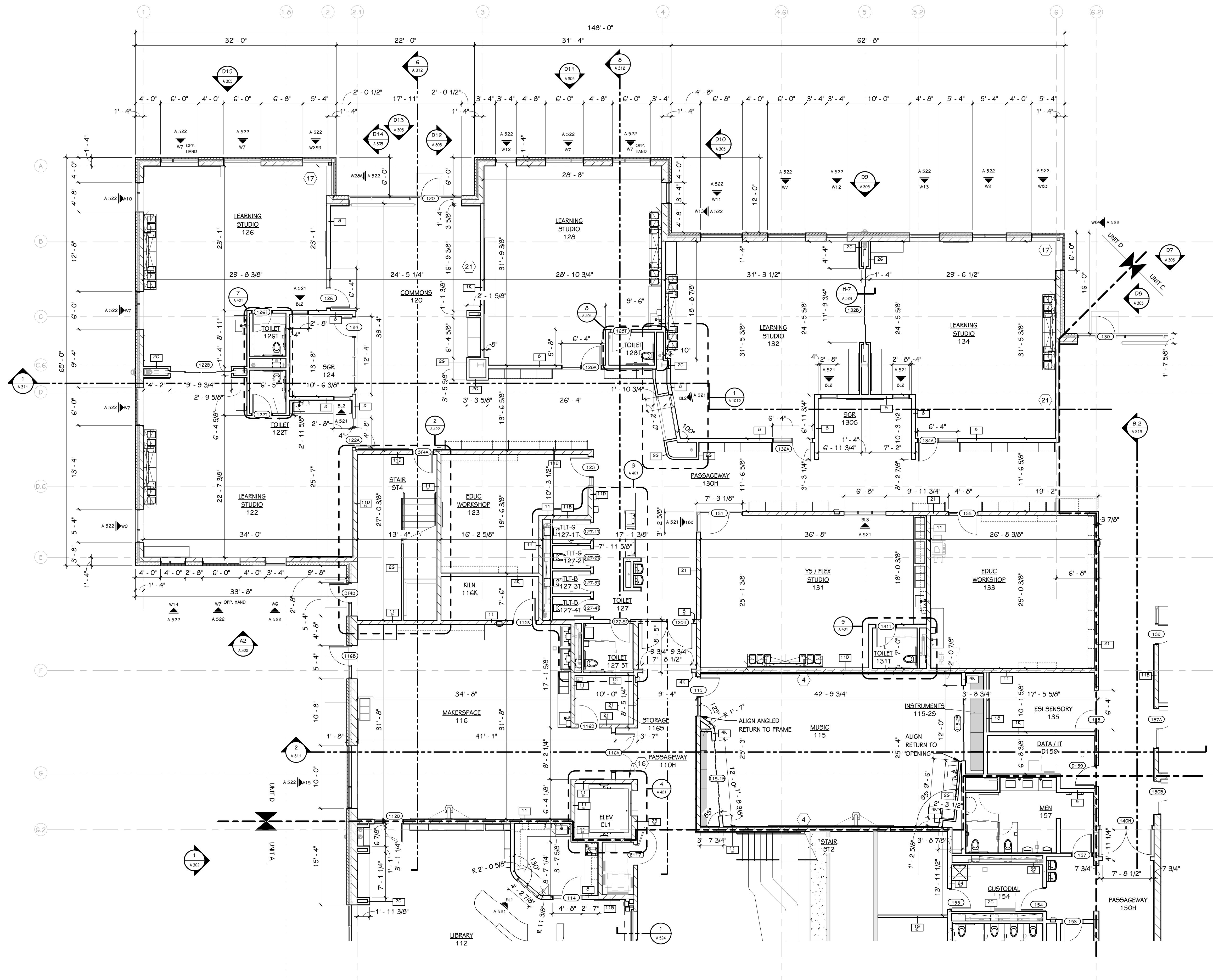
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SHEET TITLE  
FIRST FLOOR PLAN - UNIT C

SHEET NUMBER  
**A 101C**  
21-237.20

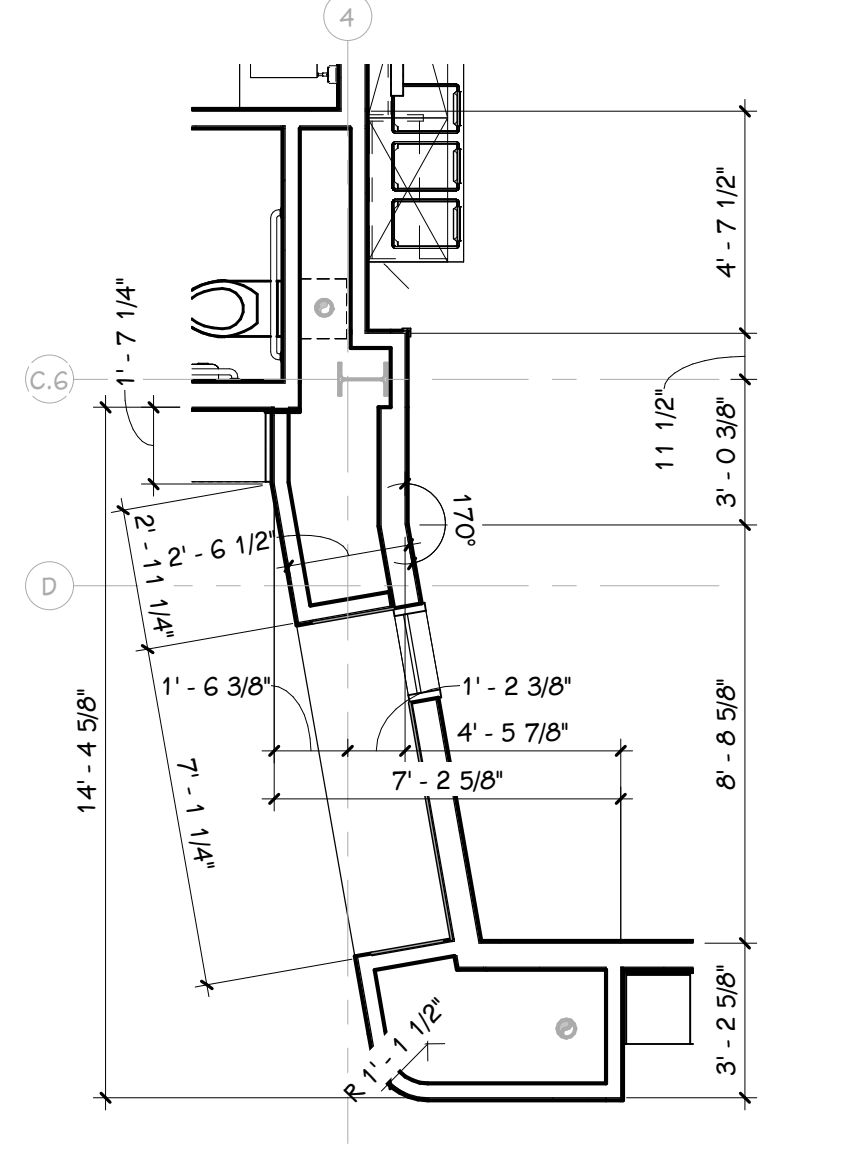
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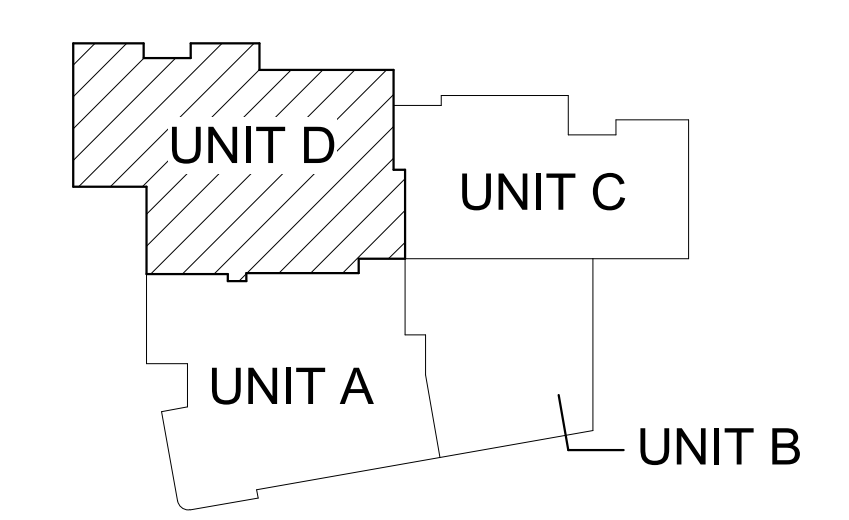
**FIRST FLOOR PLAN - UNIT D**  
1/8" = 1'-0"

- GENERAL NOTES**
- REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
  - REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
  - PROVIDE CEILING AND WALL ACCESS PANELS AS REQ'D. FOR MECH. AND PLUMBING, COORD WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
  - PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE, COORDINATE WITH INTERIOR FINISHES.
- KEYED NOTES - NEW CONSTRUCTION**
- LOCKABLE CAB. FOR ELEV. DISCONNECT, PROVIDE BLOCKING SUPPORT FOR DISCONNECT AS REQ'D., COORD. WITH ELECT.
  - ELEV. FIRE ALARM DISCONNECT TO BE LOCATED ABOVE CEILING, PROVIDE ACCESS PANEL. COORD. WITH ELECT. AND ELEV. MANUF.
  - (8) 12x18x160" SINGLE TIER METAL LOCKERS
  - 5/8" TYPE 'X' GYP. BOARD ON 1 5/8" RISC-1 (RESILIENT SOUND ISOLATION CLIP)
  - 2" DUCT LINER, FLOOR TO ROOF DECK
  - PROVIDE 4x4" CONCRETE CURB AROUND OPENINGS THROUGH FLOOR, COORDINATE LOCATIONS WITH MECHANICAL
  - PROVIDE 4" CONCRETE HOUSEKEEPING PAD WHERE REQUIRED BY MECH., COORD. LOCATION AND FOOTPRINT WITH MECH.
  - INFILL ENTIRE STUD WALL CAVITY WITH SOUND BATT
  - STACKABLE WASHER/DRYER, OWNER FURNISHED, CONTRACTOR INSTALLED, COORD. UTILITIES WITH MECH/ELECT.
  - VOLLEYBALL SLEEVE, COORD. WITH VOLLEYBALL MANUF.
  - BB-1 - BACKWARD SWING OVERHEAD-SUPPORTED BACKSTOP (MOTORIZED)
  - BB-2 - WALL MOUNTED BACKSTOP
  - SAFETY PADS - 2x6", MOUNT 12" A.F.F., CENTER ON BASKETBALL HOOP
  - CLIMBING WALL WITH MAT SYSTEM
  - KNOX BOX, RECESSED, 60" A.F.F., COORDINATE LOCATION WITH AHJ, COLOR TO COORD. WITH ADJACENT DOOR/WINDOW FRAMING
  - KNOX BOX MINI ELEVATOR KEY BOX, ALUM. COORD. LOCATION WITH AHJ
  - PROVIDE METAL TRIM AT EXPOSED CORNER COLUMN, 1/A101C
  - AWP-10: SOUND ABSORBING PERFORATED METALL WALL PANEL, CONT. INSIDE PERIMETER OF CONDENSER SCREEN WALL, MOUNT 2" A.F.F. TO 7'-10" A.F.F.
  - SLOPE FLOOR 1/8" = 1'-0" TO FLOOR DRAINS, PROVIDE APPROPRIATE SLOPE AROUND HOUSEKEEPING PADS AND OBSTRUCTIONS.
  - PROVIDE CONCRETE CURB AT STUD WALL, REFER TO DETAIL 1/A102D
  - REFER TO A601 FOR SLIDING DOOR ALTERNATES
  - PIPE BOLLARDS (6) WITH SLEEVE



**PLAN DETAIL**  
1/4" = 1'-0"

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

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Architecture · Engineering · Interiors  
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ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

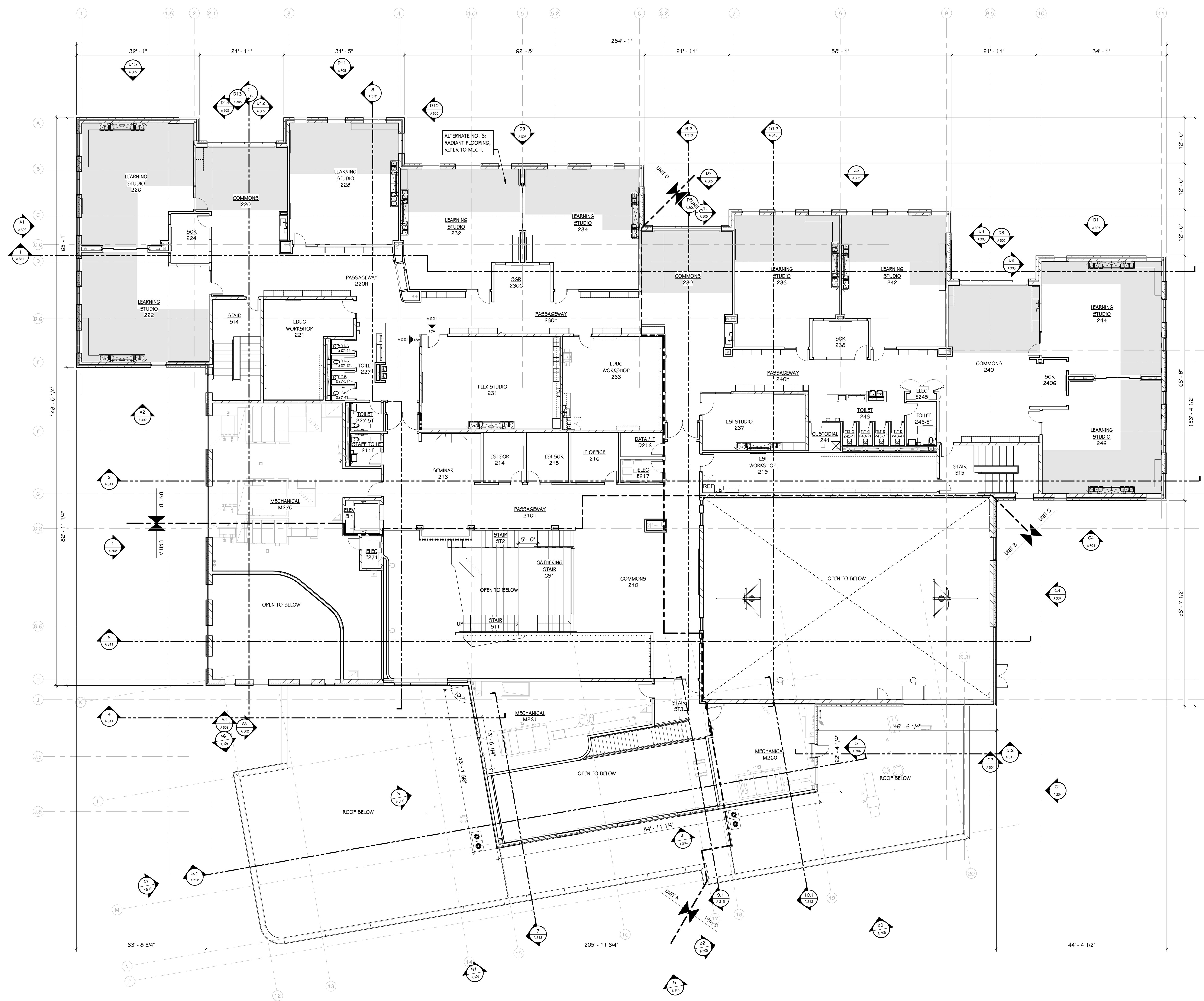
SHEET TITLE  
FIRST FLOOR PLAN - UNIT D

SHEET NUMBER  
A 101D

DATE  
JUNE 30, 2023

21-237.20

- GENERAL NOTES**
1. REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
  2. REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
  3. PROVIDE CEILING AND WALL ACCESS PANELS AS REQ'D. FOR MECH. AND PLUMBING. COORD. WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
  4. PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE. COORDINATE WITH INTERIOR FINISHES.



**SECOND FLOOR PLAN**  
3/32" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

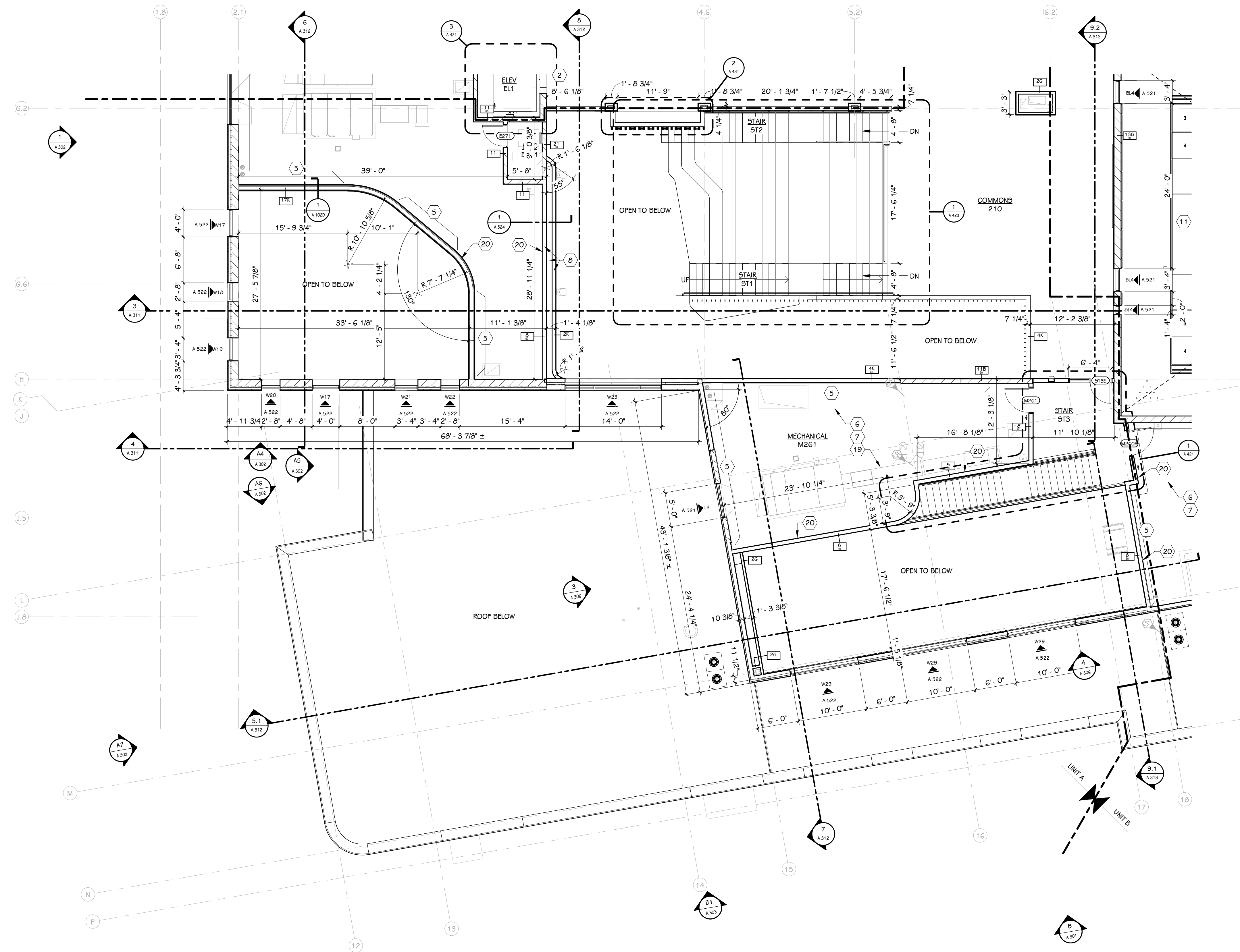
Portage, Michigan

SHEET TITLE  
SECOND FLOOR PLAN

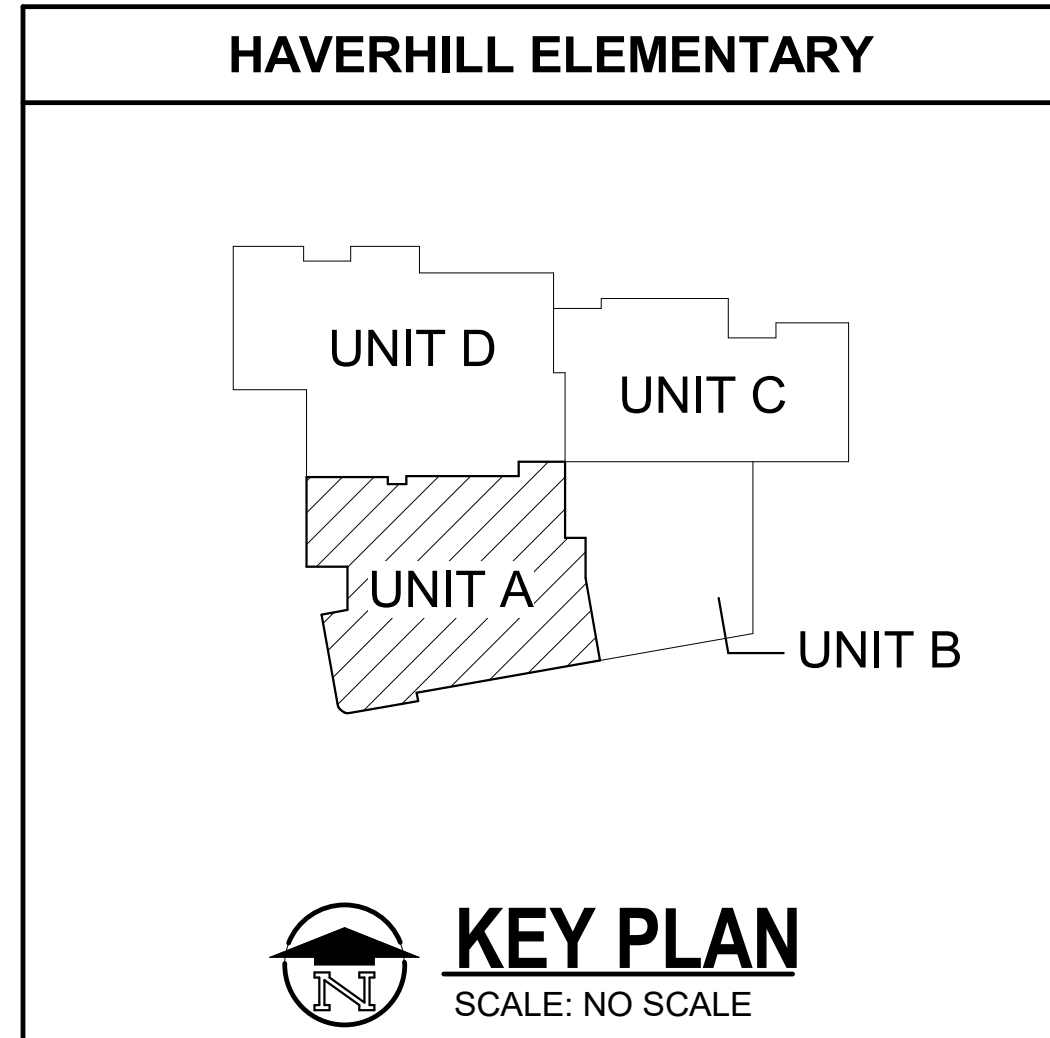
DATE  
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SHEET NUMBER  
A 102  
21-237.20

GENERAL NOTES	
1.	REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
2.	REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
3.	PROVIDE CEILING AND WALL ACCESS PANELS AS REQ'D. FOR MECH. AND PLUMBING, COORD WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
4.	PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE, COORDINATE WITH INTERIOR FINISHES.
KEYED NOTES - NEW CONSTRUCTION ○	
1.	LOCKABLE CAB. FOR ELEV. DISCONNECT, PROVIDE BLOCKING SUPPORT FOR DISCONNECT AS REQ'D., COORD. WITH ELECT.
2.	ELEV. FIRE ALARM DISCONNECT TO BE LOCATED ABOVE CEILING, PROVIDE ACCESS PANEL COORD. WITH ELECT. AND ELEV. MANUF.
3.	(8) 1/2" X 1/8" X 60" SINGLE TIER METAL LOCKERS
4.	5/8" TYPE 'X' GYP. BOARD ON 1 5/8" RSC-1 (RESILIENT SOUND ISOLATION CLIP)
5.	2" DUCT LINER, FLOOR TO ROOF DECK
6.	PROVIDE 4"x4" CONCRETE CURB AROUND OPENINGS THROUGH FLOOR, COORDINATE LOCATIONS WITH MECHANICAL
7.	PROVIDE 4" CONCRETE HOUSEKEEPING PAD WHERE REQUIRED BY MECH., COORD. LOCATION AND FOOTPRINT WITH MECH.
8.	INFILL ENTIRE STUD WALL CAVITY WITH SOUND BATT
9.	STACKABLE WASHER/DRYER, OWNER FURNISHED, CONTRACTOR INSTALLED, COORD. UTILITIES WITH MECH/ELECT.
10.	VOLLEYBALL SLEEVE, COORD. WITH VOLLEYBALL MANUF.
11.	BB-1 - BACKWARD SWING OVERHEAD-SUPPORTED BACKSTOP (MOTORIZED)
12.	BB-2 - WALL MOUNTED BACKSTOP
13.	SAFETY PADS - 2'x6", MOUNT 12" A.F.F., CENTER ON BASKETBALL HOOP
14.	CLIMBING WALL WITH MAT SYSTEM
15.	KNOX BOX, RECESSED, 60" A.F.F., COORDINATE LOCATION WITH AHU, COLOR TO COORD. WITH ADJACENT DOOR/WINDOW FRAMING
16.	KNOX BOX MINI ELEVATOR KEY BOX, ALUM. COORD. LOCATION WITH AHU
17.	PROVIDE METAL TRIM AT EXPOSED CORNER COLUMN, 1/A101C
18.	AWP-10: SOUND ABSORBING PERFORATED METALL WALL PANEL, CONT. INSIDE PERIMETER OF CONDENSER SCREEN WALL, MOUNT 2" A.F.F. TO 7'-10" A.F.F.
19.	SLOPE FLOOR 1/8" = 1'-0" TO FLOOR DRAINS, PROVIDE APPROPRIATE SLOPE AROUND HOUSEKEEPING PADS AND OBSTRUCTIONS.
20.	PROVIDE CONCRETE CURB AT STUD WALL, REFER TO DETAIL 1/A102D
21.	REFER TO A601 FOR SLIDING DOOR ALTERNATES
22.	PIPE DOLLARDS (6) WITH SLEEVE



**SECOND FLOOR PLAN - UNIT A**  
1/8" = 1'-0"



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

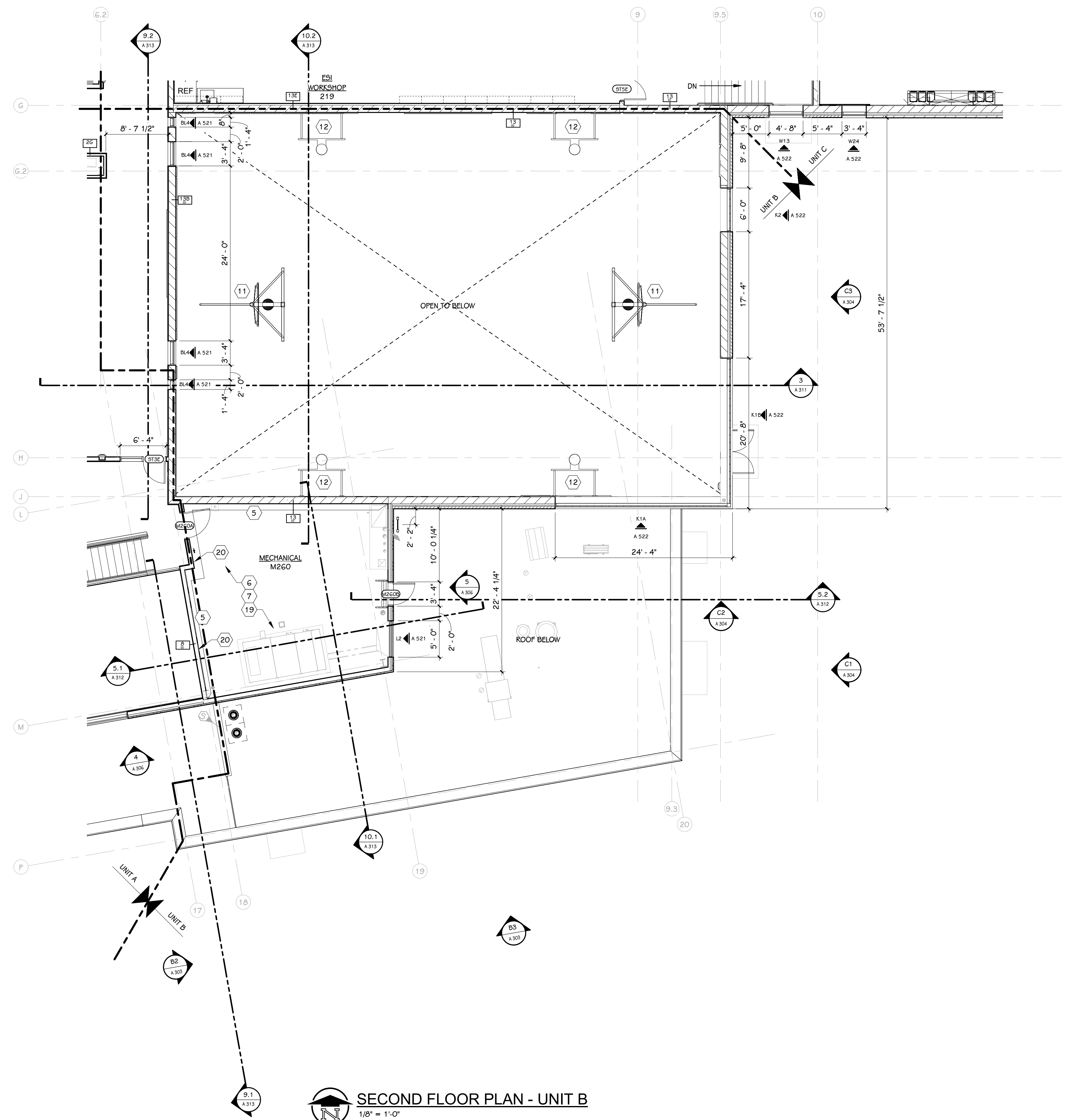
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR PLAN - UNIT A

SHEET NUMBER  
**A 102A**  
21-237.20

DATE  
JUNE 30, 2023



**SECOND FLOOR PLAN - UNIT B**  
1/8" = 1'-0"

- GENERAL NOTES**
- REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
  - REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
  - PROVIDE CEILING AND WALL ACCESS PANELS AS REQ'D. FOR MECH. AND PLUMBING. COORD WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
  - PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE. COORDINATE WITH INTERIOR FINISHES.
- KEYED NOTES - NEW CONSTRUCTION**
- LOCKABLE CAB. FOR ELEV. DISCONNECT, PROVIDE BLOCKING SUPPORT FOR DISCONNECT AS REQ'D., COORD. WITH ELECT.
  - ELEV. FIRE ALARM DISCONNECT TO BE LOCATED ABOVE CEILING, PROVIDE ACCESS PANEL. COORD. WITH ELECT. AND ELEV. MANUF.
  - (8) 12x18x60" SINGLE TIER METAL LOCKERS
  - 5/8" TYPE 'X' GYP. BOARD ON 1 5/8" RSC-1 (RESILIENT SOUND ISOLATION CLIP)
  - 2" DUCT LINER, FLOOR TO ROOF DECK
  - PROVIDE 4"x4" CONCRETE CURB AROUND OPENINGS THROUGH FLOOR, COORDINATE LOCATIONS WITH MECHANICAL
  - PROVIDE 4" CONCRETE HOUSEKEEPING PAD WHERE REQUIRED BY MECH., COORD. LOCATION AND FOOTPRINT WITH MECH.
  - INFILL ENTIRE STUD WALL CAVITY WITH SOUND BATT
  - STACKABLE WASHER/DRYER, OWNER FURNISHED, CONTRACTOR INSTALLED, COORD. UTILITIES WITH MECH/ELECT.
  - VOLLEYBALL SLEEVE, COORD. WITH VOLLEYBALL MANUF.
  - BB-1 - BACKWARD SWING OVERHEAD-SUPPORTED BACKSTOP (MOTORIZED)
  - BB-2 - WALL MOUNTED BACKSTOP
  - SAFETY PADS - 2x6", MOUNT 12" A.F.F., CENTER ON BASKETBALL HOOP
  - CLIMBING WALL WITH MAT SYSTEM
  - KNOX BOX, RECESSED, 60" A.F.F., COORDINATE LOCATION WITH AHU, COLOR TO COORD. WITH ADJACENT DOOR/WINDOW FRAMING
  - KNOX BOX MINI ELEVATOR KEY BOX, ALLUM. COORD. LOCATION WITH AHU
  - PROVIDE METAL TRIM AT EXPOSED CORNER COLUMN, 1/A101C
  - AWP-10: SOUND ABSORBING PERFORATED METALL WALL PANEL, CONT. INSIDE PERIMETER OF CONDENSER SCREEN WALL, MOUNT 2" A.F.F. TO 7'-10" A.F.F.
  - SLOPE FLOOR 1/8" = 1'-0" TO FLOOR DRAINS, PROVIDE APPROPRIATE SLOPE AROUND HOUSEKEEPING PADS AND OBSTRUCTIONS.
  - PROVIDE CONCRETE CURB AT STUD WALL, REFER TO DETAIL 1/A102D
  - REFER TO A601 FOR SLIDING DOOR ALTERNATES
  - PIPE DOLLARDS (6) WITH SLEEVE

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

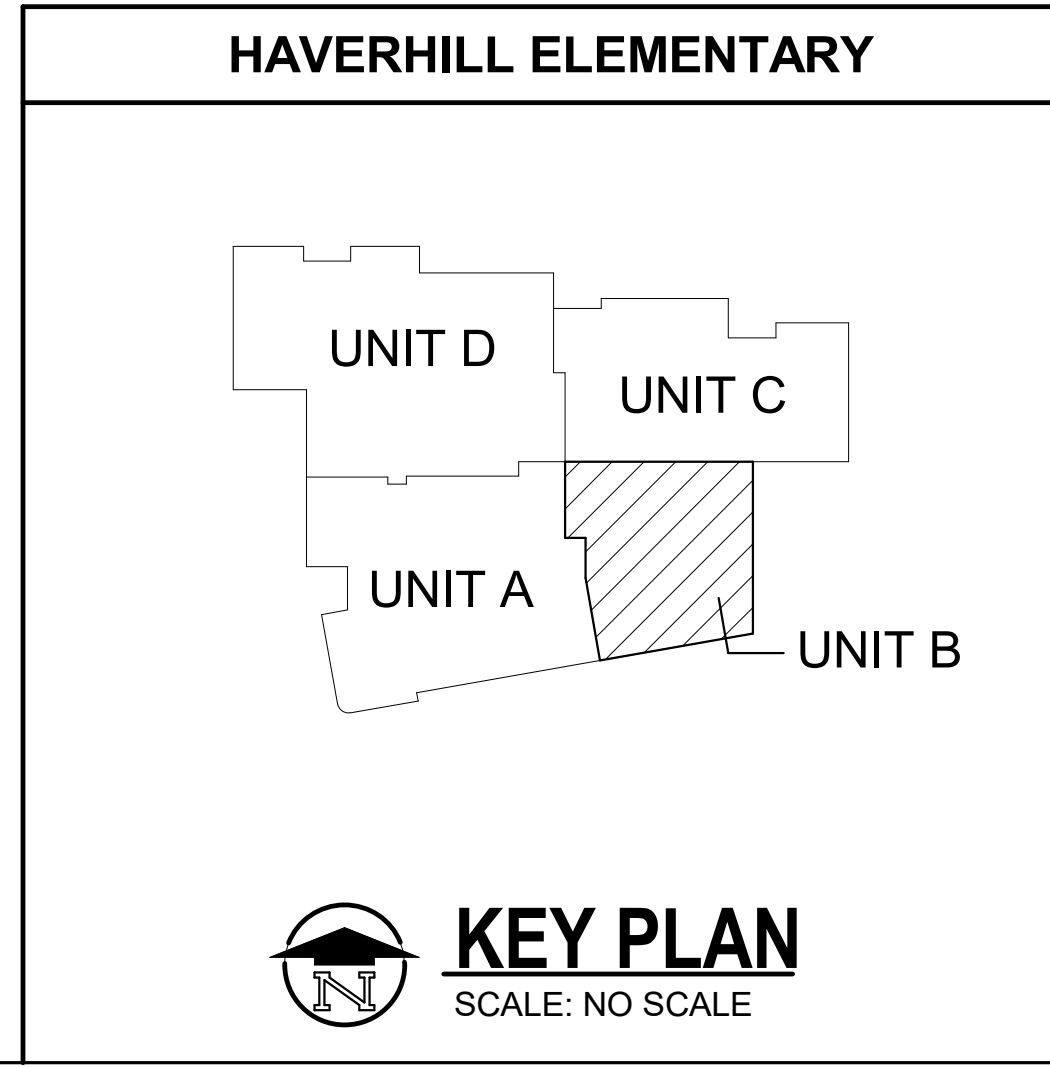
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR PLAN - UNIT B

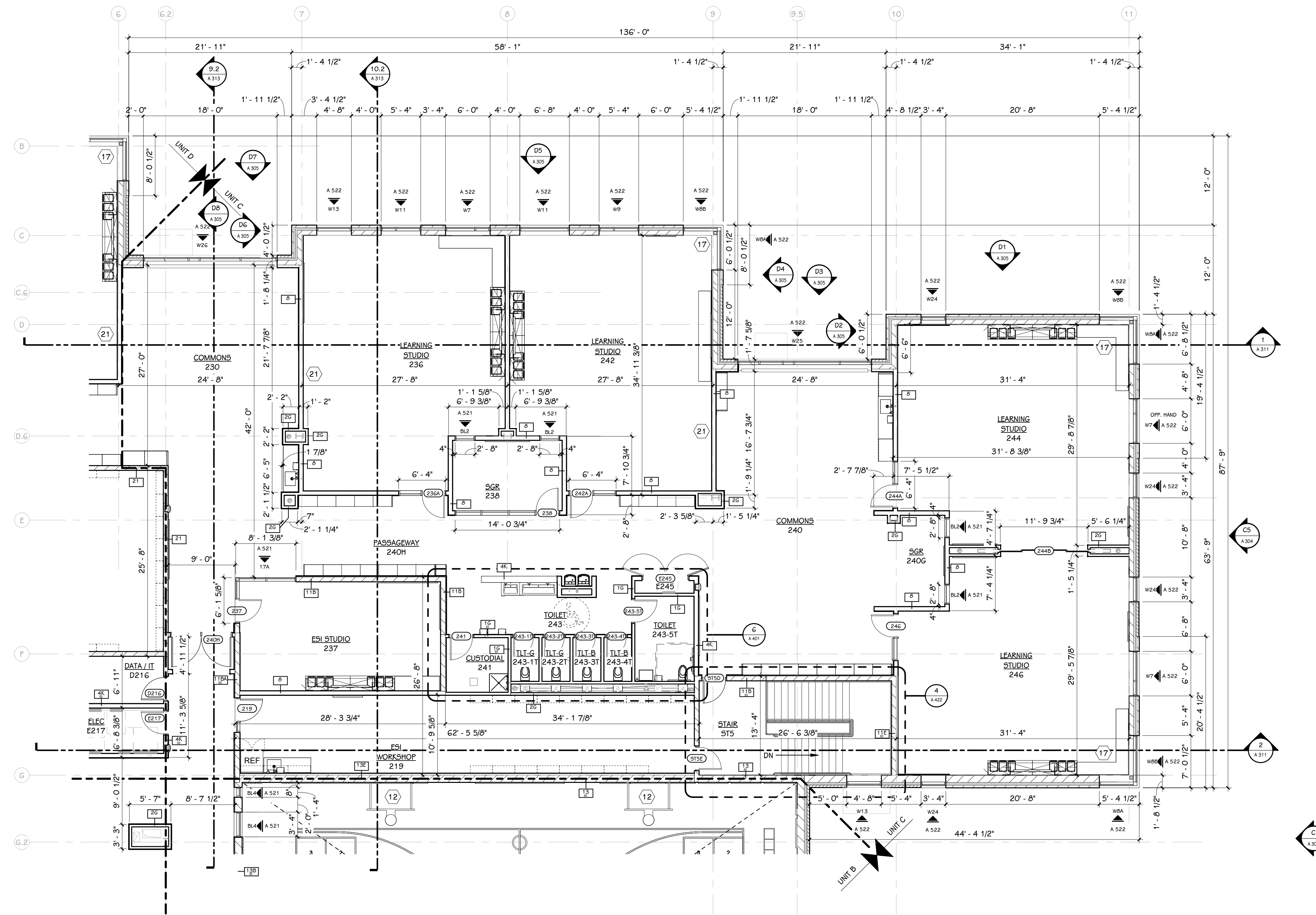
DATE  
JUNE 30, 2023

SHEET NUMBER  
A 102B  
21-237.20



- GENERAL NOTES**
- REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
  - REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
  - PROVIDE CEILING AND WALL ACCESS PANELS AS REQD. FOR MECH. AND PLUMBING, COORD WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
  - PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE, COORDINATE WITH INTERIOR FINISHES.
- KEYED NOTES - NEW CONSTRUCTION**
- LOCKABLE CAB. FOR ELEV. DISCONNECT, PROVIDE BLOCKING SUPPORT FOR DISCONNECT AS REQD., COORD. WITH ELECT.
  - ELEV. FIRE ALARM DISCONNECT TO BE LOCATED ABOVE CEILING, PROVIDE ACCESS PANEL. COORD. WITH ELECT. AND ELEV. MANUF.
  - (8) 12"X18"X60" SINGLE TIER METAL LOCKERS
  - 5/8" TYPE 'X' GYP. BOARD ON 1 5/8" RSC-1 (RESILIENT SOUND ISOLATION CLIP)
  - 2" DUCT LINER, FLOOR TO ROOF DECK
  - PROVIDE 4"x4" CONCRETE CURB AROUND OPENINGS THROUGH FLOOR, COORDINATE LOCATIONS WITH MECHANICAL
  - PROVIDE 4"X1 CONCRETE HOUSEKEEPING PAD WHERE REQUIRED BY MECH., COORD. LOCATION AND FOOTPRINT WITH MECH.
  - INFILL ENTIRE STUD WALL CAVITY WITH SOUND BATT
  - STACKABLE WASHER/DRYER, OWNER FURNISHED, CONTRACTOR INSTALLED, COORD. UTILITIES WITH MECH/ELECT.
  - VOLLEYBALL SLEEVE, COORD. WITH VOLLEYBALL MANUF.
  - BB-1 - BACKWARD SWING OVERHEAD-SUPPORTED BACKSTOP (MOTORIZED)
  - BB-2 - WALL MOUNTED BACKSTOP
  - SAFETY PADS - 2'X6", MOUNT 12" A.F.F., CENTER ON BASKETBALL HOOP
  - CLIMBING WALL WITH MAT SYSTEM
  - KNOX BOX, RECESSED, 60" A.F.F., COORDINATE LOCATION WITH AHJ, COLOR TO COORD. WITH ADJACENT DOOR/WINDOW FRAMING
  - KNOX BOX MINI ELEVATOR KEY BOX, ALUM. COORD. LOCATION WITH AHJ
  - PROVIDE METAL TRIM AT EXPOSED CORNER COLUMN, 1/A101C
  - AWP-10: SOUND ABSORBING PERFORATED METALL WALL PANEL, CONT. INSIDE PERIMETER OF CONDENSER SCREEN WALL, MOUNT 2" A.F.F. TO 7'-10" A.F.F.
  - SLOPE FLOOR 1/8" = 1'-0" TO FLOOR DRAINS, PROVIDE APPROPRIATE SLOPE AROUND HOUSEKEEPING PADS AND OBSTRUCTIONS.
  - PROVIDE CONCRETE CURB AT STUD WALL, REFER TO DETAIL 1/A102D
  - REFER TO A601 FOR SLIDING DOOR ALTERNATES
  - PIPE DOLLARDS (6) WITH SLEEVE

ISSUED FOR DATE

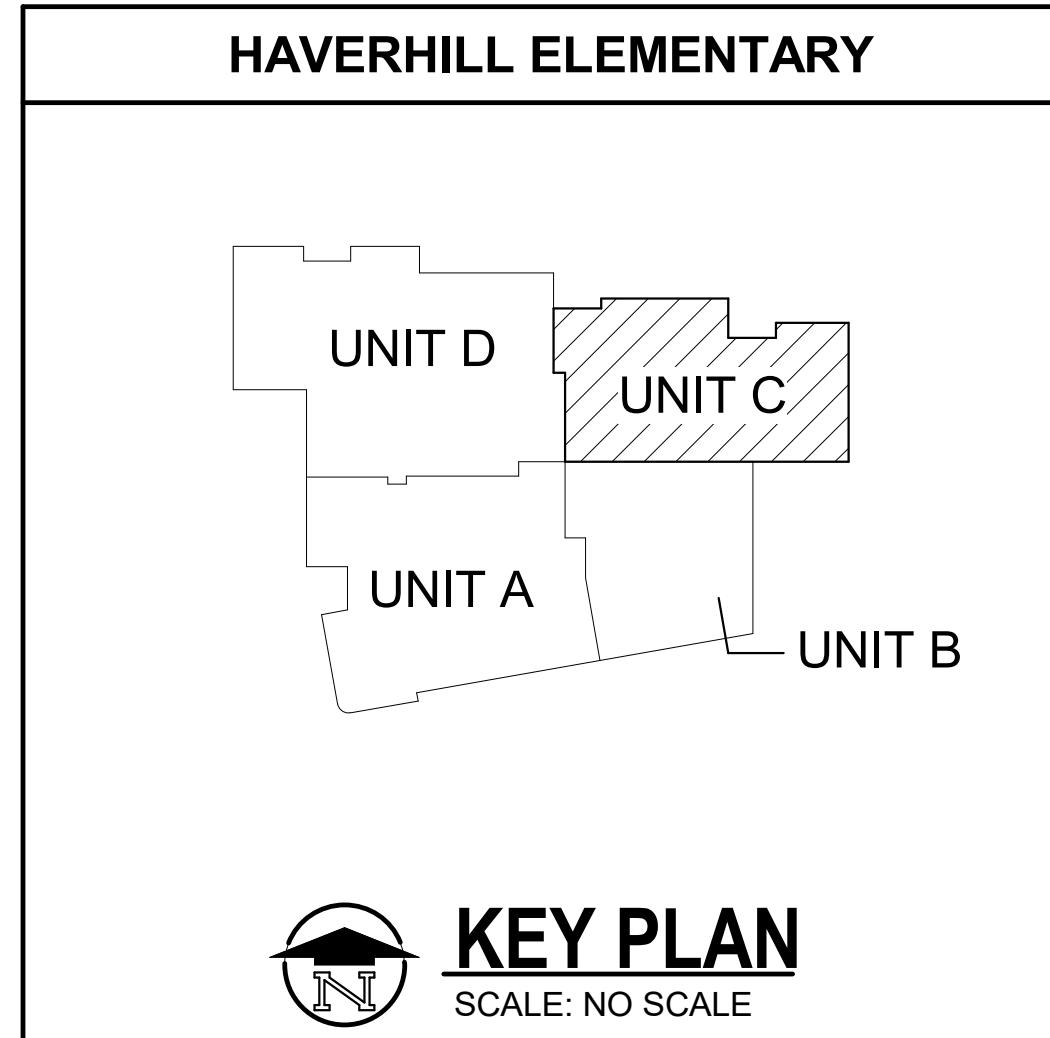


**SECOND FLOOR PLAN - UNIT C**  
1/8" = 1'-0"

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

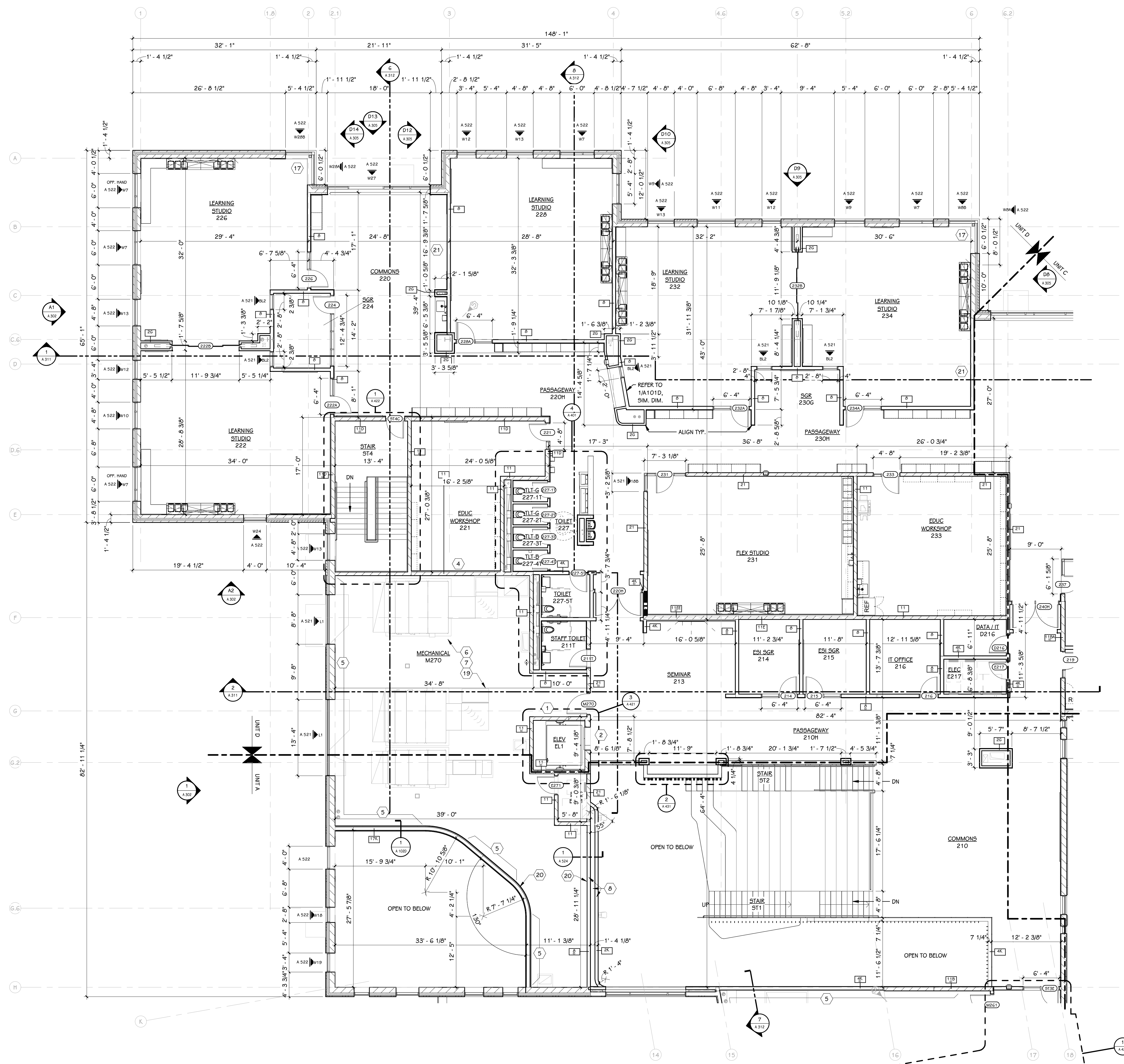
Portage, Michigan



SHEET TITLE  
SECOND FLOOR PLAN - UNIT C

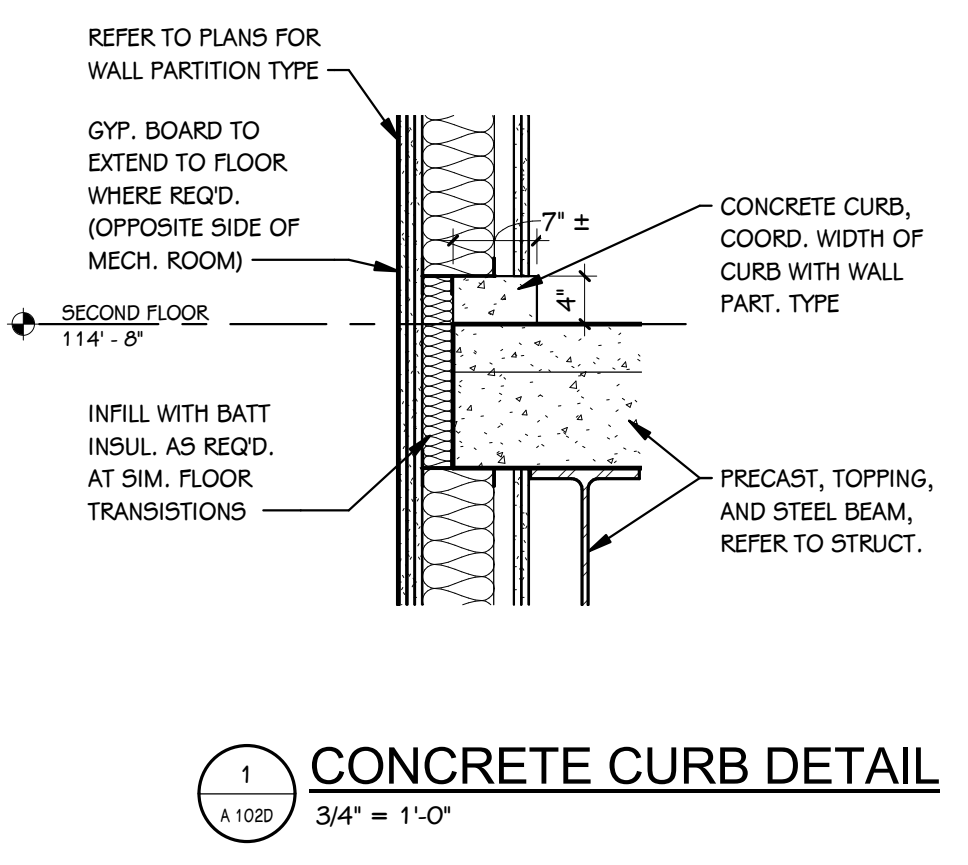
DATE  
JUNE 30, 2023

SHEET NUMBER  
**A 102C**  
21-237.20

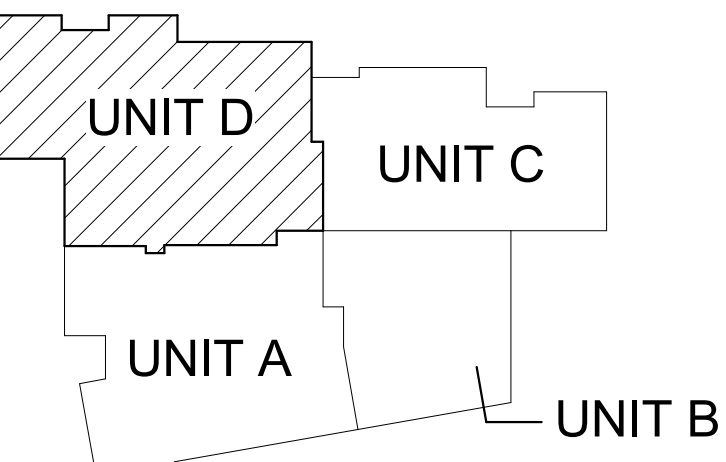


**SECOND FLOOR PLAN - UNIT D**  
1/8" = 1'-0"

- GENERAL NOTES**
- REFER TO CODE COMPLIANCE PLAN FOR WALL RATING LINES.
  - REFER TO FLOOR FINISH PLANS FOR INTERIOR ELEVATION CALLOUTS.
  - PROVIDE CEILING AND WALL ACCESS PANELS AS REQ'D. FOR MECH. AND PLUMBING. COORD WITH MECH/ELEC. AND WITH ARCHITECT. PAINT TO MATCH ADJACENT SURFACE.
  - PROVIDE EXPANSION JOINTS IN WALLS, FLOOR AND CEILING WHERE APPLICABLE. COORDINATE WITH INTERIOR FINISHES.
- KEYED NOTES - NEW CONSTRUCTION**
- LOCKABLE CAB. FOR ELEV. DISCONNECT, PROVIDE BLOCKING SUPPORT FOR DISCONNECT AS REQ'D., COORD. WITH ELEC.
  - ELEV. FIRE ALARM DISCONNECT TO BE LOCATED ABOVE CEILING, PROVIDE ACCESS PANEL. COORD. WITH ELEC. AND ELEV. MANUF.
  - 12'-18"X60" SINGLE TIER METAL LOCKERS
  - 5/8" TYPE 'X' GYP. BOARD ON 1 5/8" RSC-1 (RESILIENT SOUND ISOLATION CUP)
  - 2" DUCT LINER, FLOOR TO ROOF DECK
  - PROVIDE 4"x4" CONCRETE CURB AROUND OPENINGS THROUGH FLOOR, COORDINATE LOCATIONS WITH MECHANICAL
  - PROVIDE 4" CONCRETE HOUSEKEEPING PAD WHERE REQUIRED BY MECH., COORD. LOCATION AND FOOTPRINT WITH MECH.
  - INFILL ENTRY STUD WALL CAVITY WITH SOUND BATT
  - STACKABLE WASHER/DRYER, OWNER FURNISHED, CONTRACTOR INSTALLED, COORD. UTILITIES WITH MECH/ELECT.
  - VOLLEYBALL SLEEVE, COORD. WITH VOLLEYBALL MANUF.
  - BB-1 - BACKWARD SWING OVERHEAD-SUPPORTED BACKSTOP (MOTORIZED)
  - BB-2 - WALL MOUNTED BACKSTOP
  - SAFETY PADS - 2"x6", MOUNT 12" A.F.F., CENTER ON BASKETBALL HOOP
  - CLIMBING WALL WITH MAT SYSTEM
  - KNOX BOX, RECESSED, 60" A.F.F., COORDINATE LOCATION WITH AHJ, COLOR TO COORD. WITH ADJACENT DOOR/WINDOW FRAMING
  - KNOX BOX MINI ELEVATOR KEY BOX, ALUM. COORD. LOCATION WITH AHJ
  - PROVIDE METAL TRIM AT EXPOSED CORNER COLUMN, 1/A101C
  - AWP-10: SOUND ABSORBING PERFORATED METALL WALL PANEL, CONT. INSIDE PERIMETER OF CONDENSER SCREEN WALL, MOUNT 2" A.F.F. TO 7'-10" A.F.F.
  - SLOPE FLOOR 1/8"=1'-0" TO FLOOR DRAINS, REFER APPROPRIATE SLOPE AROUND HOUSEKEEPING PADS AND OBSTRUCTIONS.
  - PROVIDE CONCRETE CURB AT STUD WALL, REFER TO DETAIL 1/A102D
  - REFER TO A601 FOR SLIDING DOOR ALTERNATES
  - PIPE BOLLARDS (6) WITH SLEEVE



**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
SECOND FLOOR PLAN - UNIT D

Portage, Michigan

SHEET NUMBER  
**A 102D**  
21-237.20

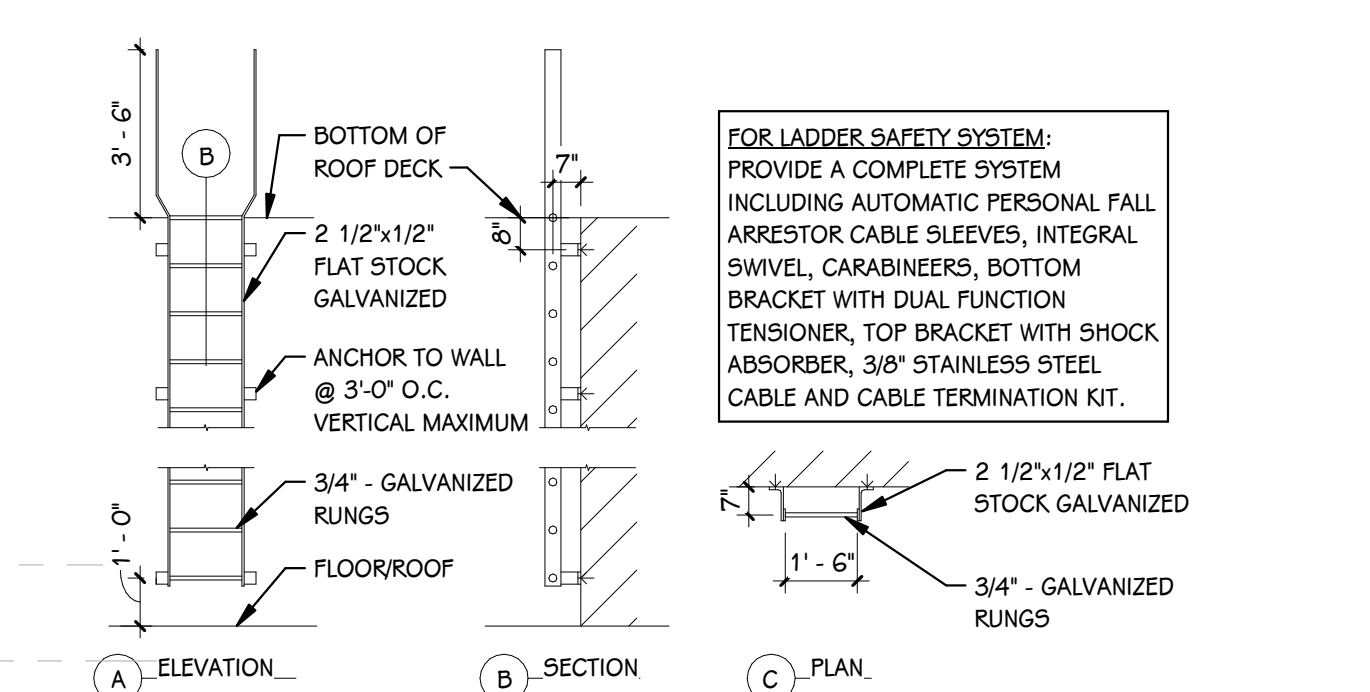
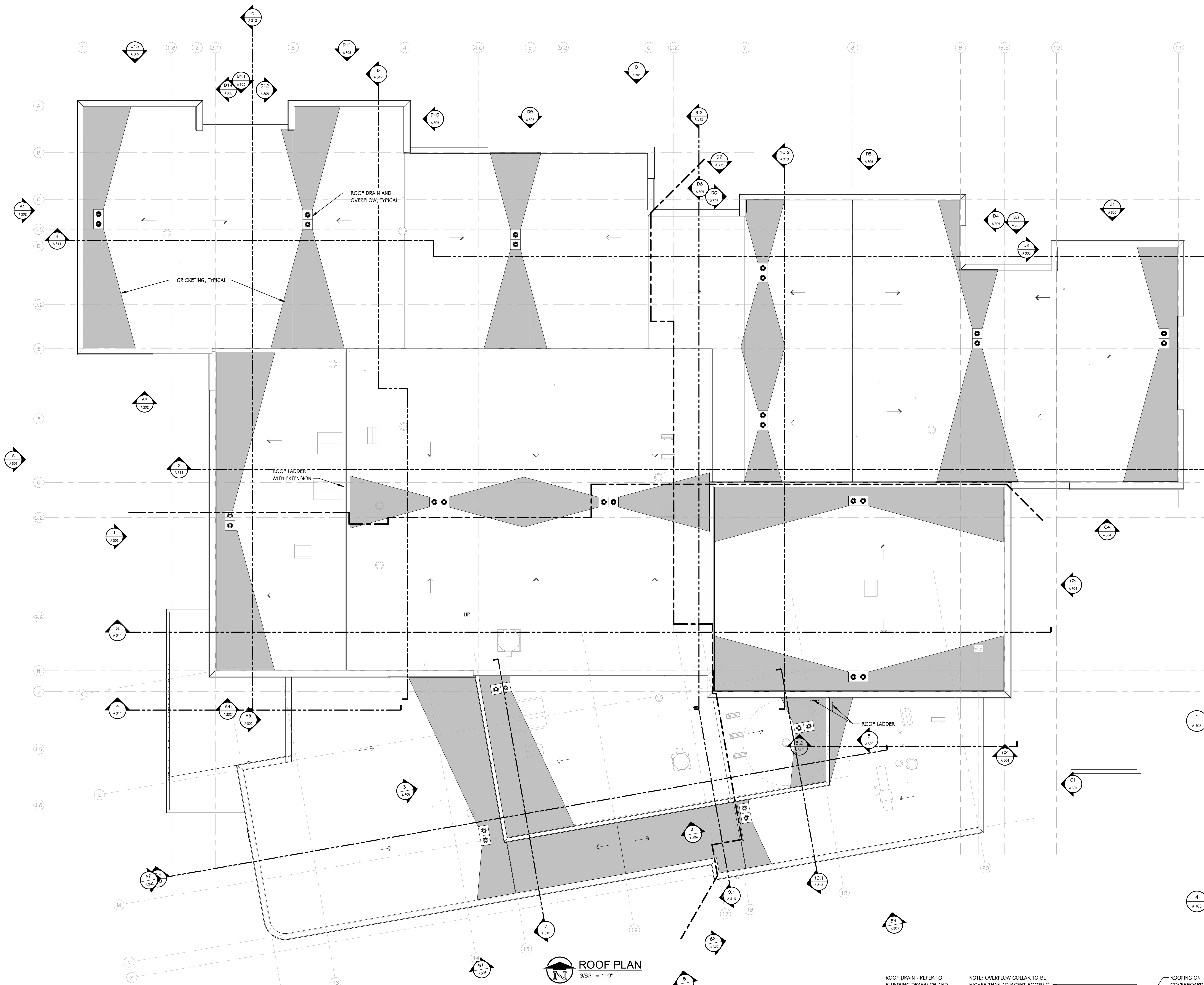
DATE  
JUNE 30, 2023

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

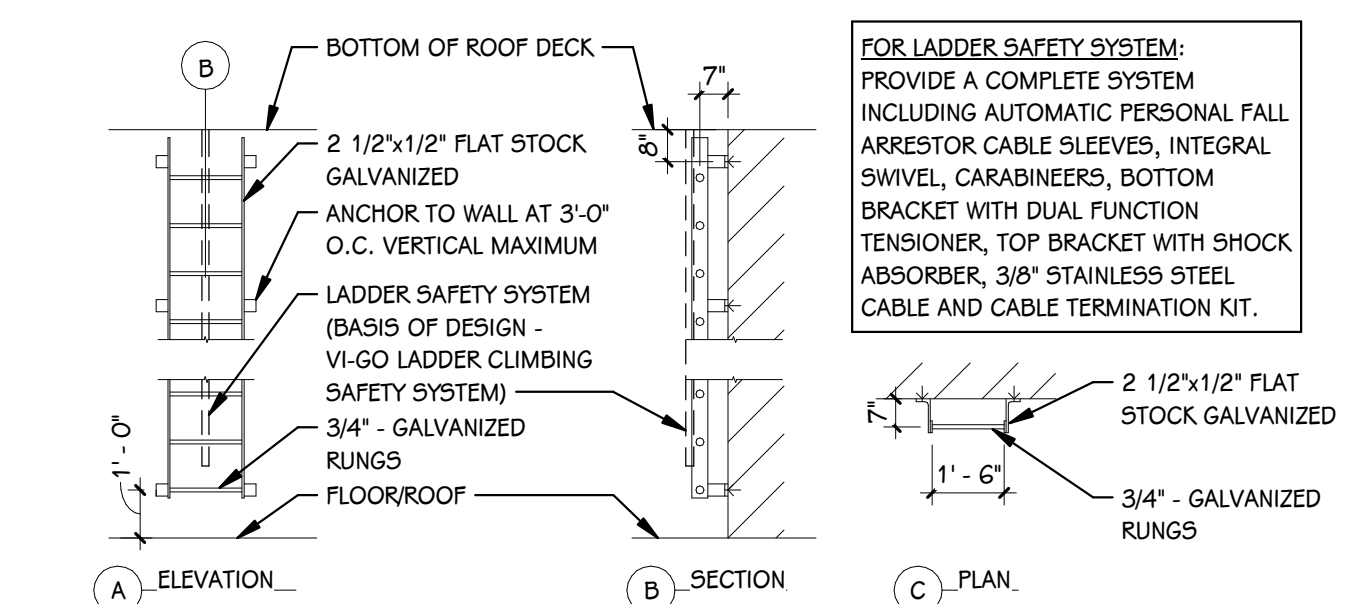
ROOF PLAN KEY	
	TAPERED INSULATION
R.D.	ROOF DRAIN - SEE PLUMBING DRAWINGS
O.D.	OVERFLOW DRAIN - SEE PLUMBING DRAWINGS
	ROOF SLOPE DUE TO TAPERED INSULATION OR SLOPED STRUCTURE - REFER TO STRUCTURAL DRAWINGS
AHU OR RTU	ROOF TOP UNIT - SEE MECHANICAL DRAWINGS
ACCU	CONDENSING UNIT - SEE MECHANICAL DRAWINGS
E.F.	EXHAUST FAN / HOOD - SEE MECHANICAL DRAWINGS

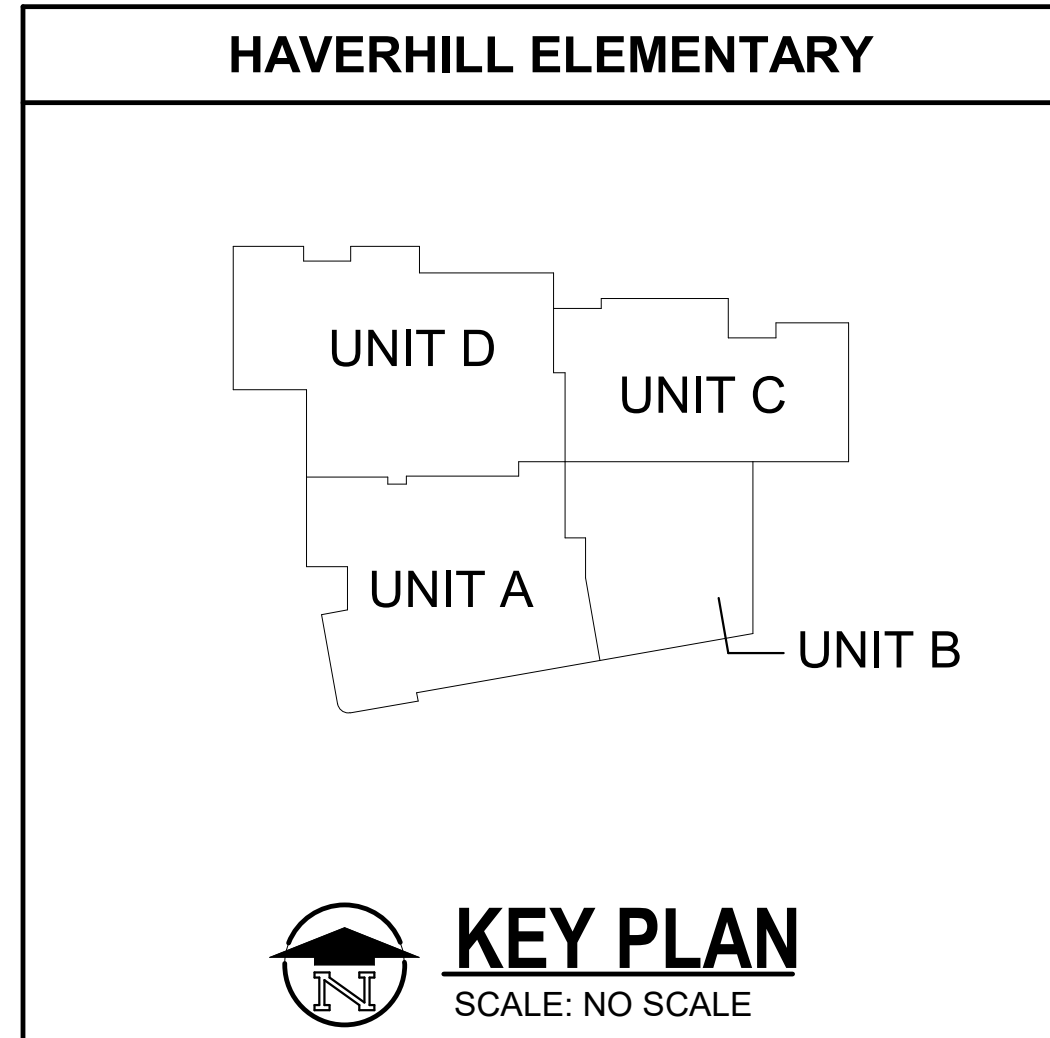
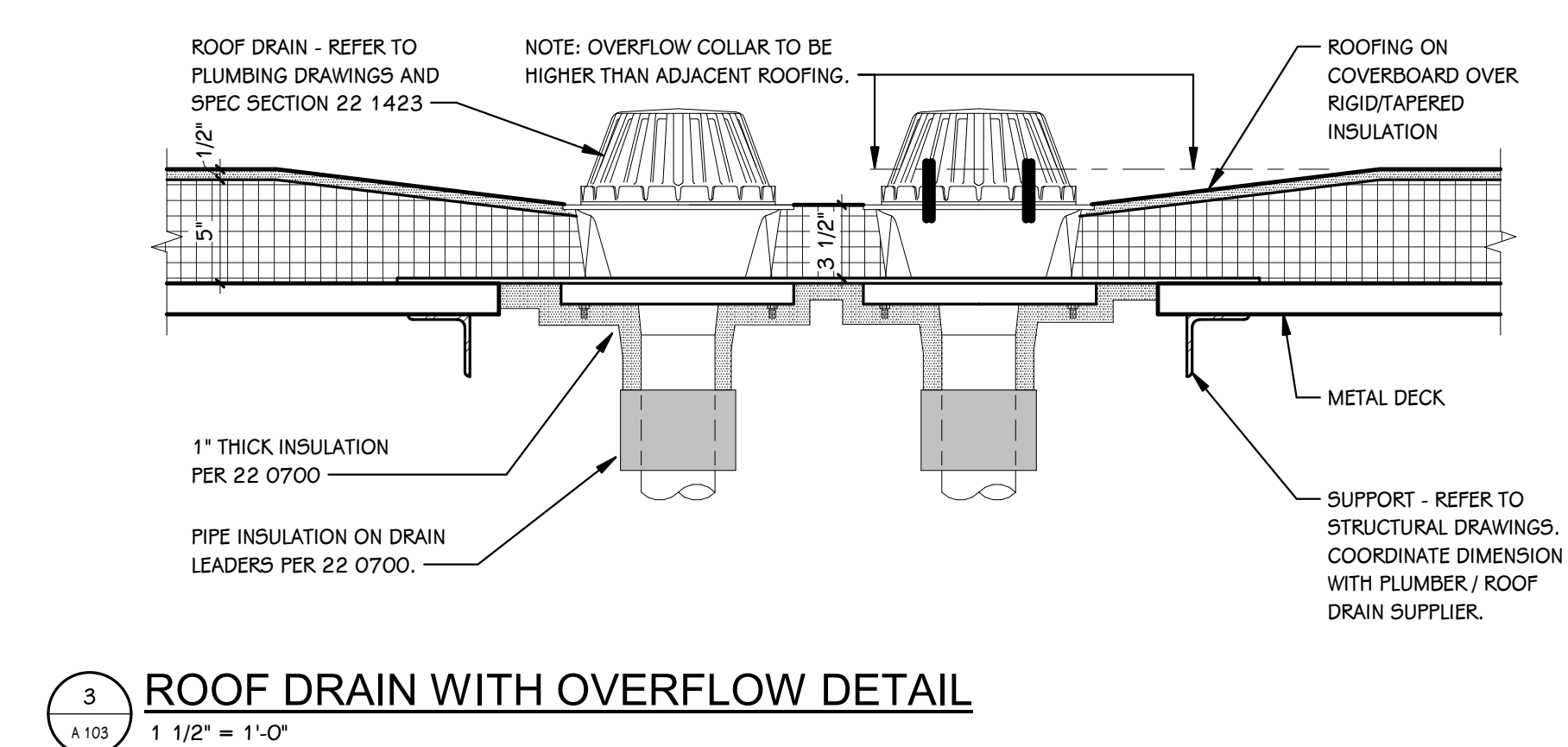
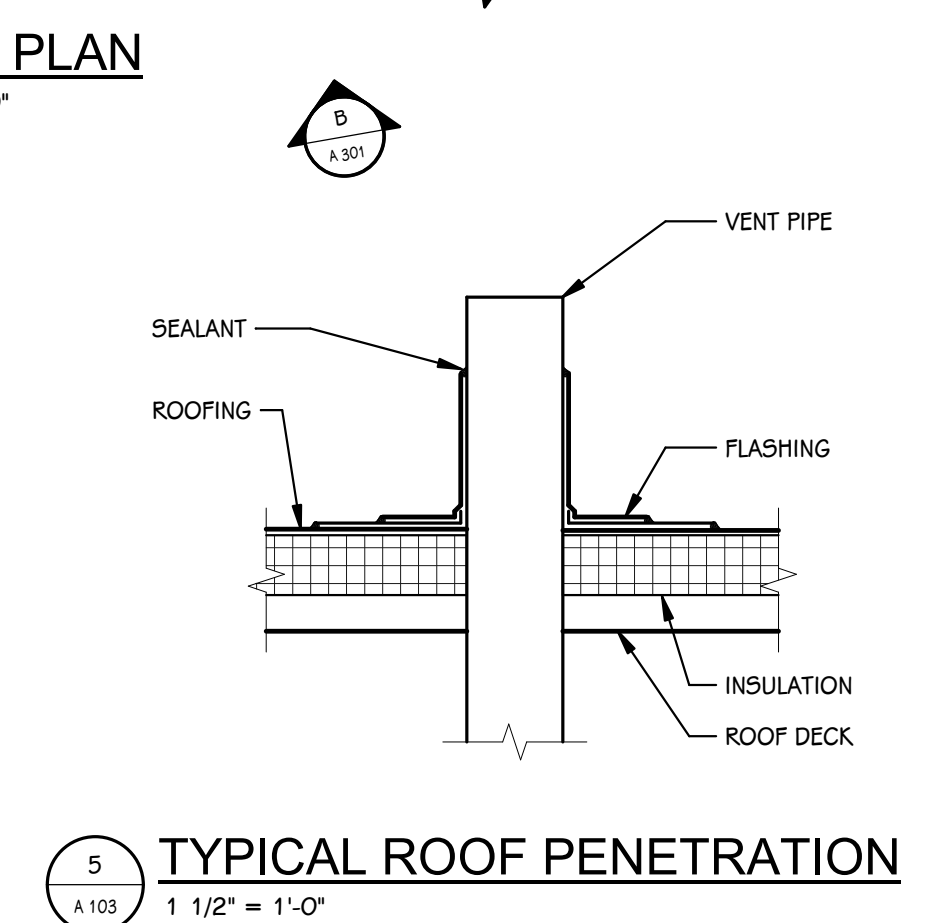
NOTES	
1.	TYPICAL ROOF SLOPE 1/4" / 1'-0" UNLESS NOTED OTHERWISE.
2.	PROVIDE ROOFING MANUFACTURERS STANDARD ROOFING TERMINATION DETAILS AT ALL PARAPETS, PRE-MANUFACTURED ROOF EDGE SYSTEMS, CURBS, PIPE PENETRATIONS, ETC.
3.	PROVIDE CRICKETS AS REQUIRED AT ALL MECHANICAL UNITS, VENTS, ETC. TO MAINTAIN POSITIVE SLOPE OF 1/4" / 1'-0" MINIMUM.



**1 ROOF LADDER DETAIL WITH EXTENDED SIDE RAIL**  
1/4" = 1'-0"



**4 LADDER DETAIL WITH SAFETY SYSTEM**  
1/4" = 1'-0"



ISSUED FOR DATE

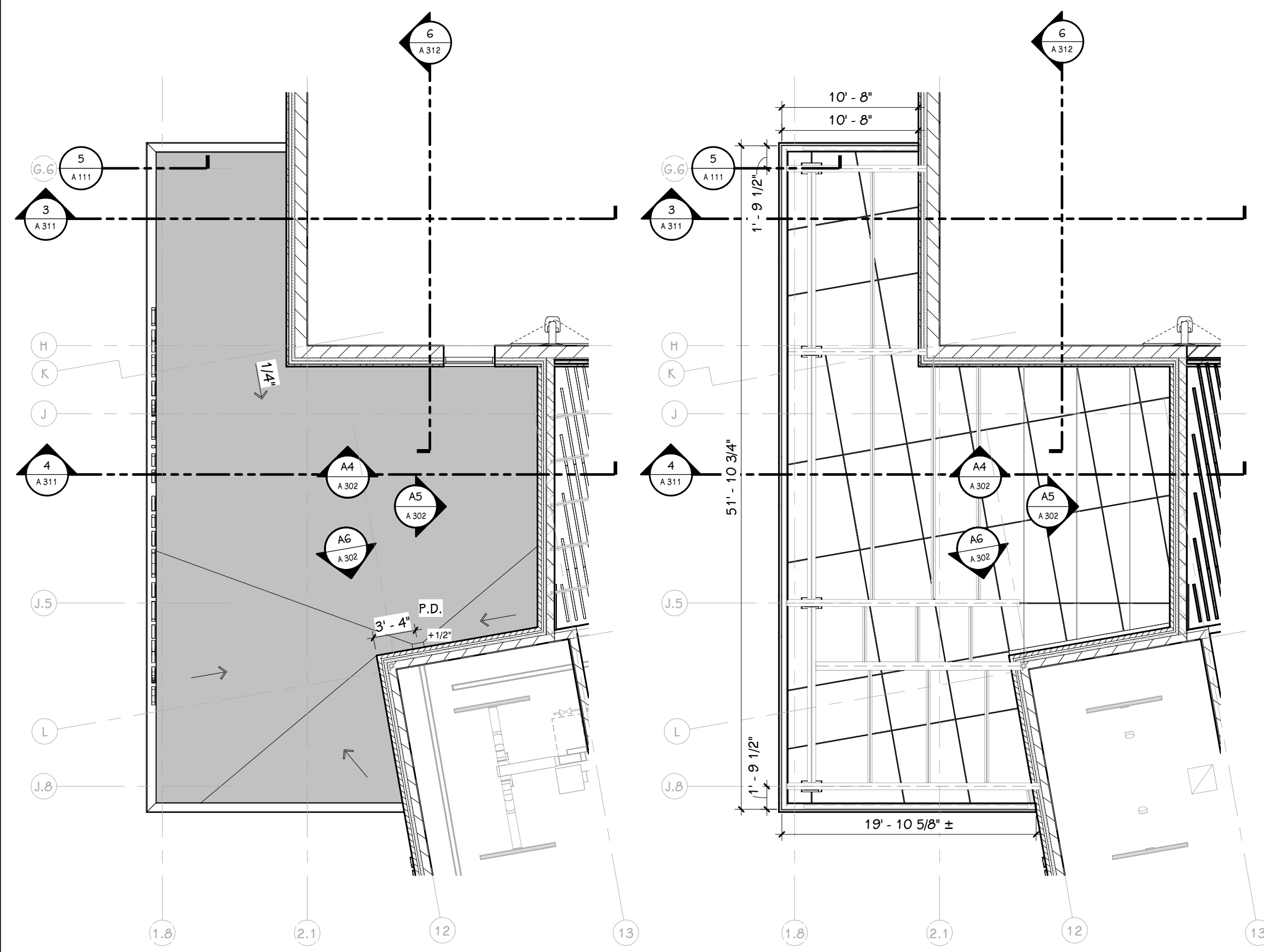
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

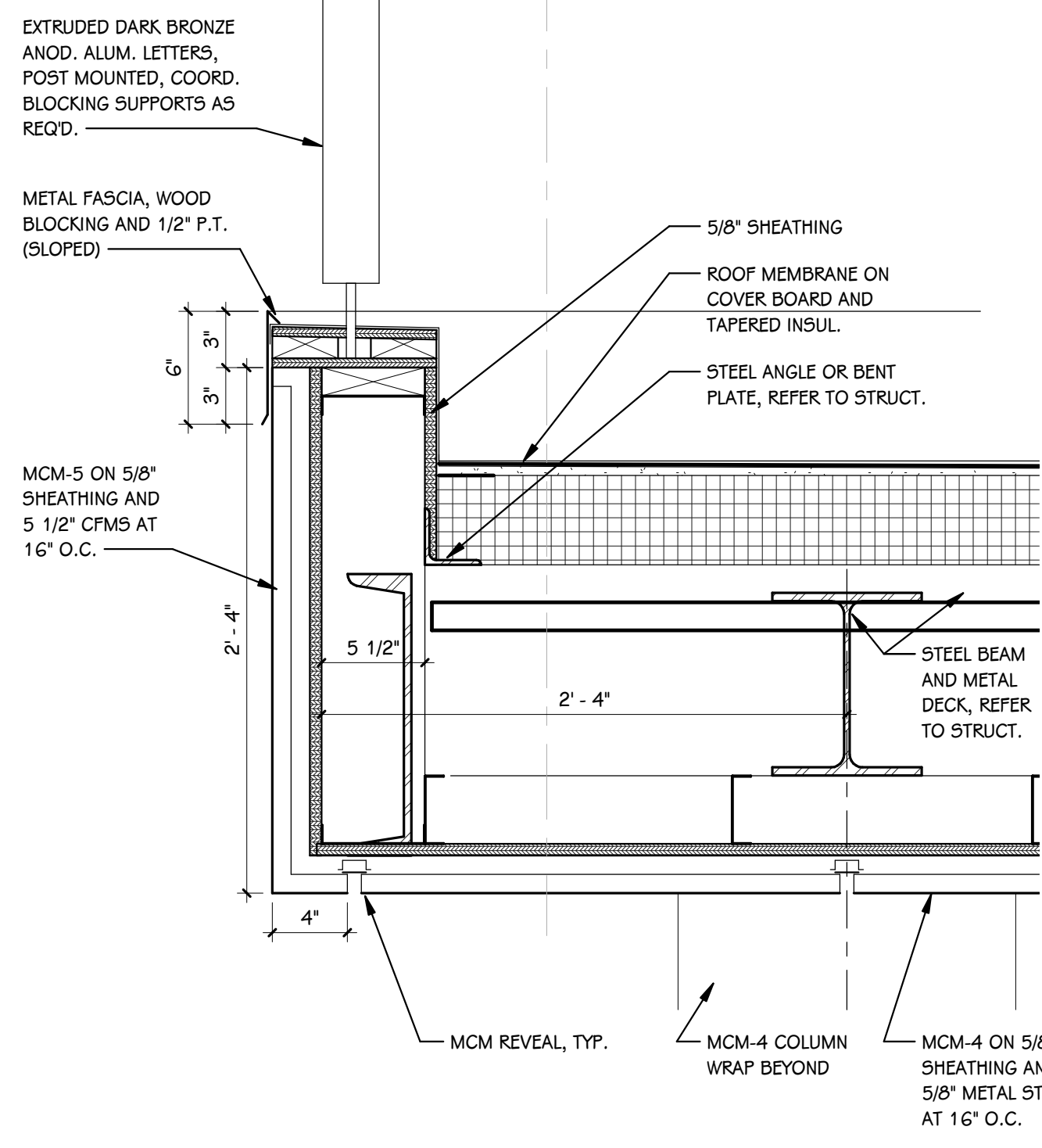
SHEET TITLE  
ROOF PLAN

DATE  
JUNE 30, 2023  
SHEET NUMBER  
A 103  
21-237.20

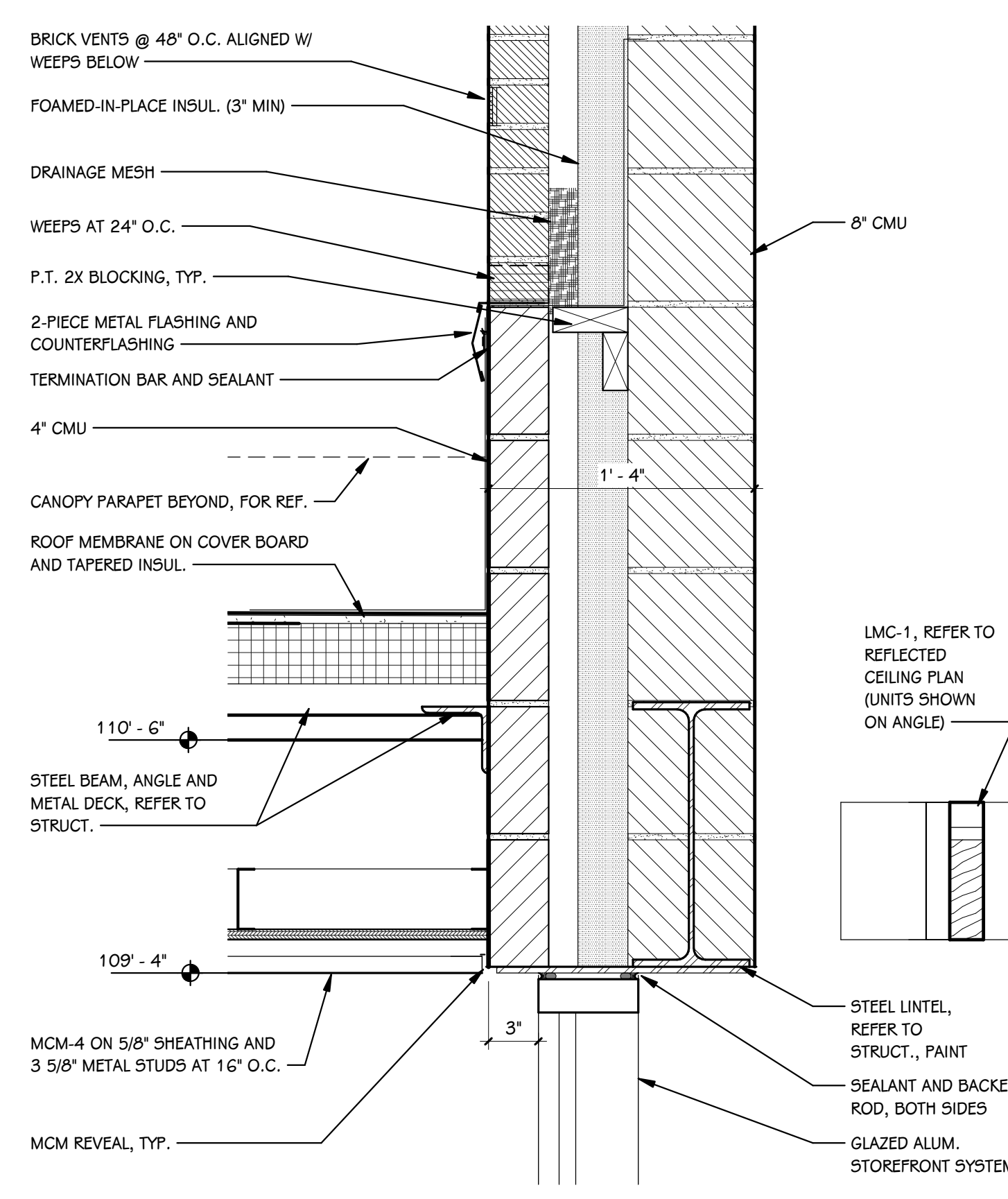


1 CANOPY ROOF PLAN  
1/8" = 1'-0"

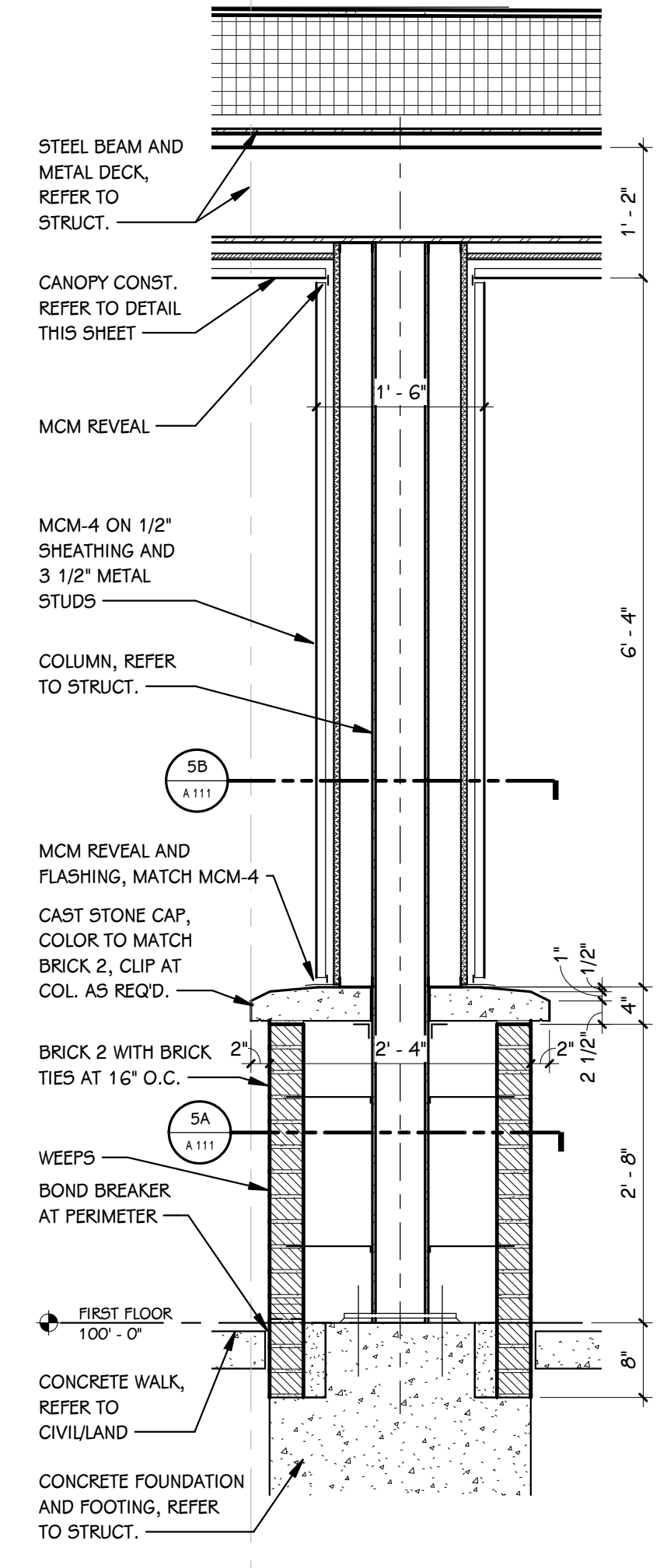
1A CANOPY ROOF PLAN  
1/8" = 1'-0"



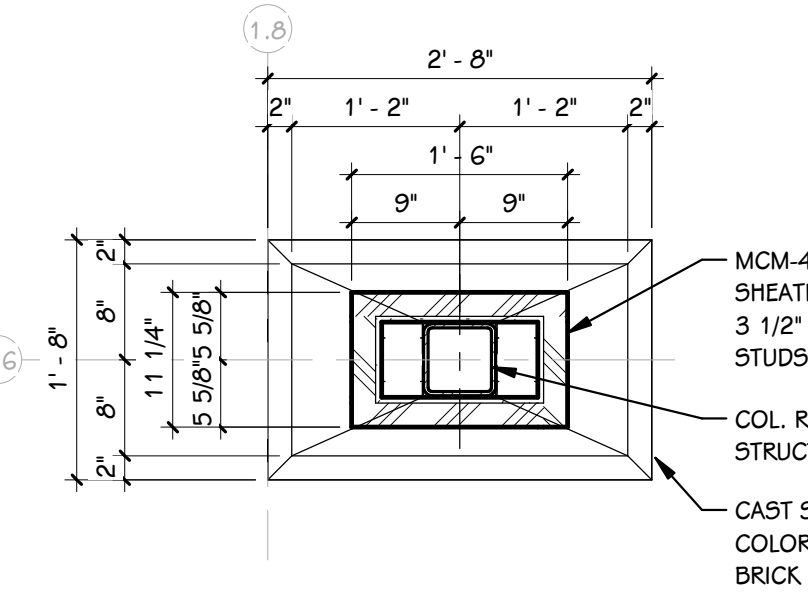
2 WALL SECTION  
1 1/2" = 1'-0"



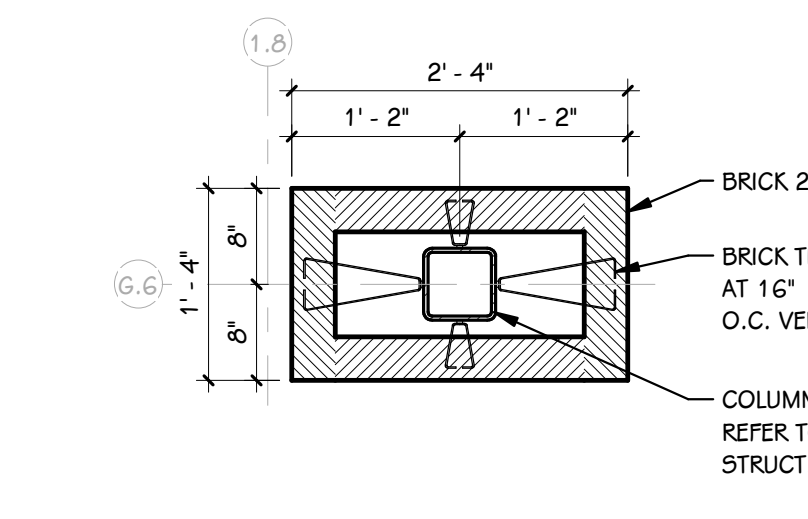
3 WALL SECTION  
1 1/2" = 1'-0"



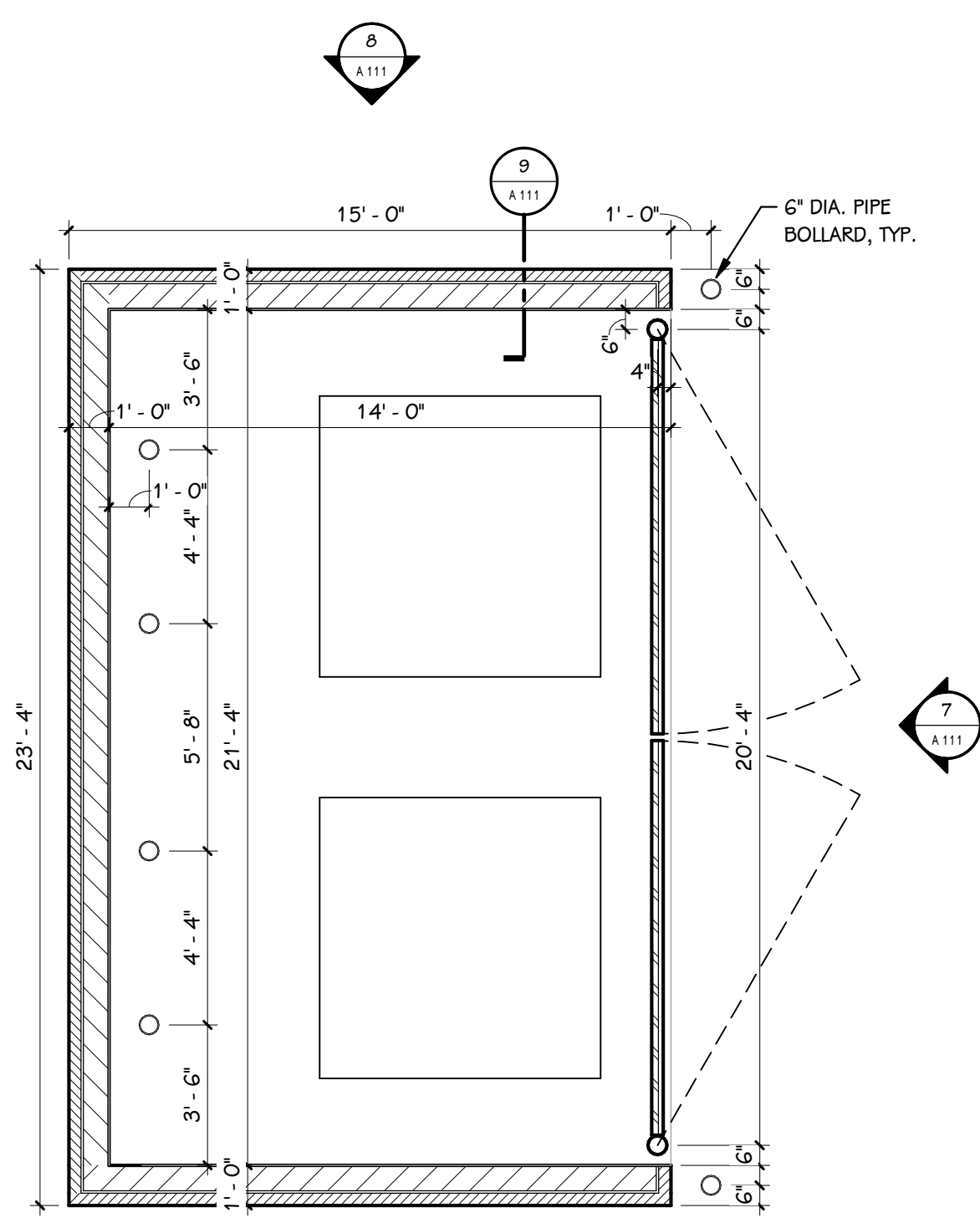
5 WALL SECTION  
3/4" = 1'-0"



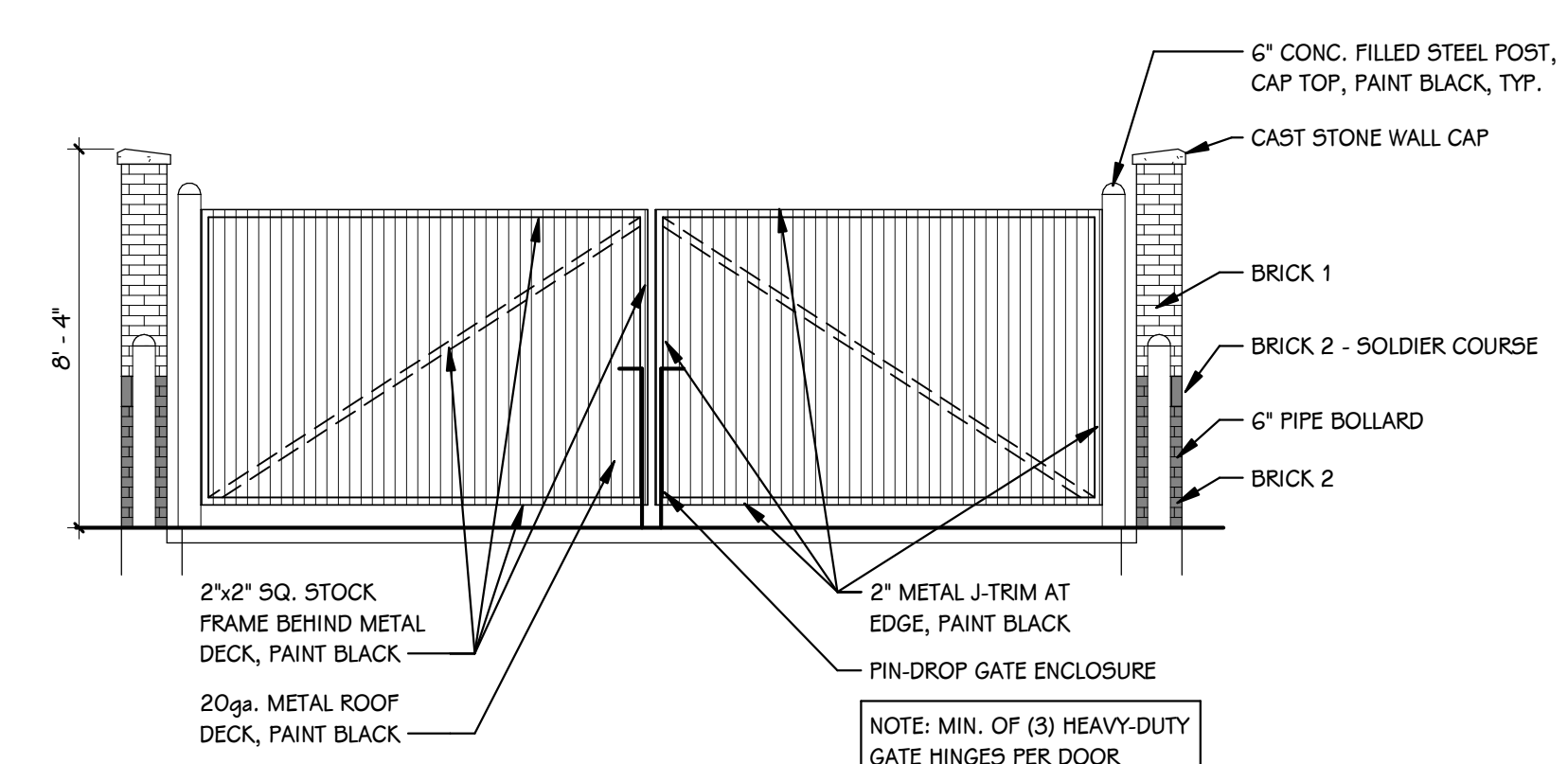
5B COLUMN PLAN DETAIL  
3/4" = 1'-0"



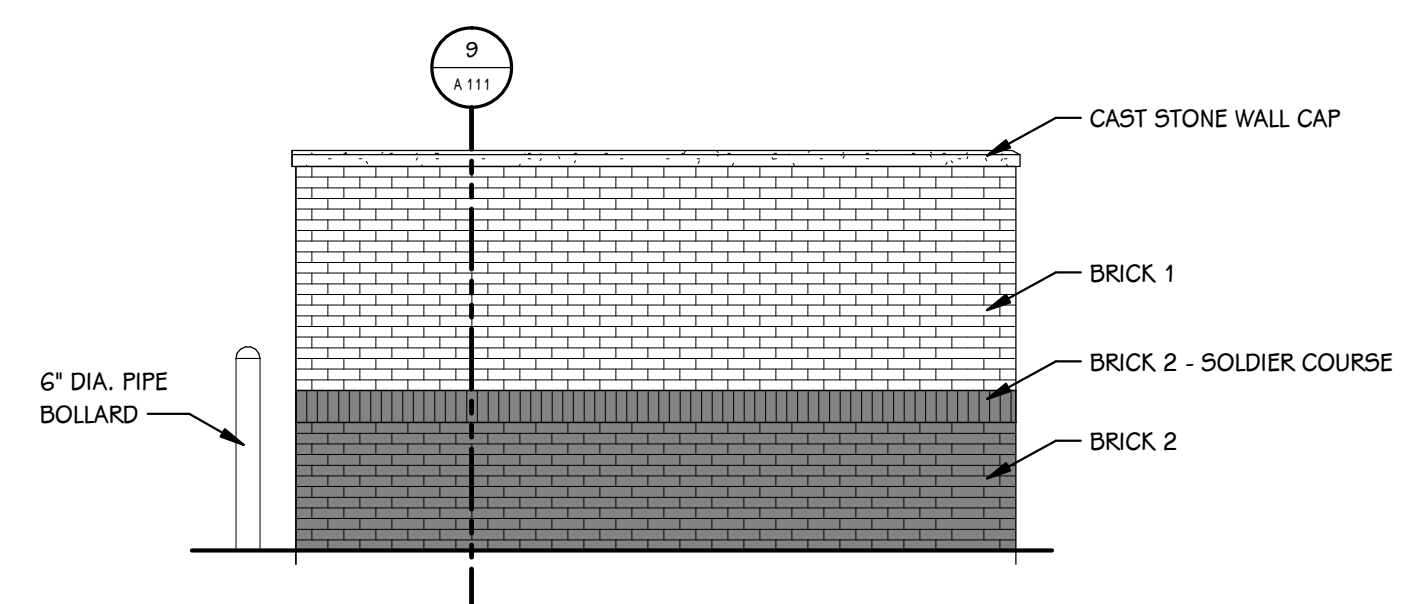
5A BRICK COLUMN PLAN  
3/4" = 1'-0"



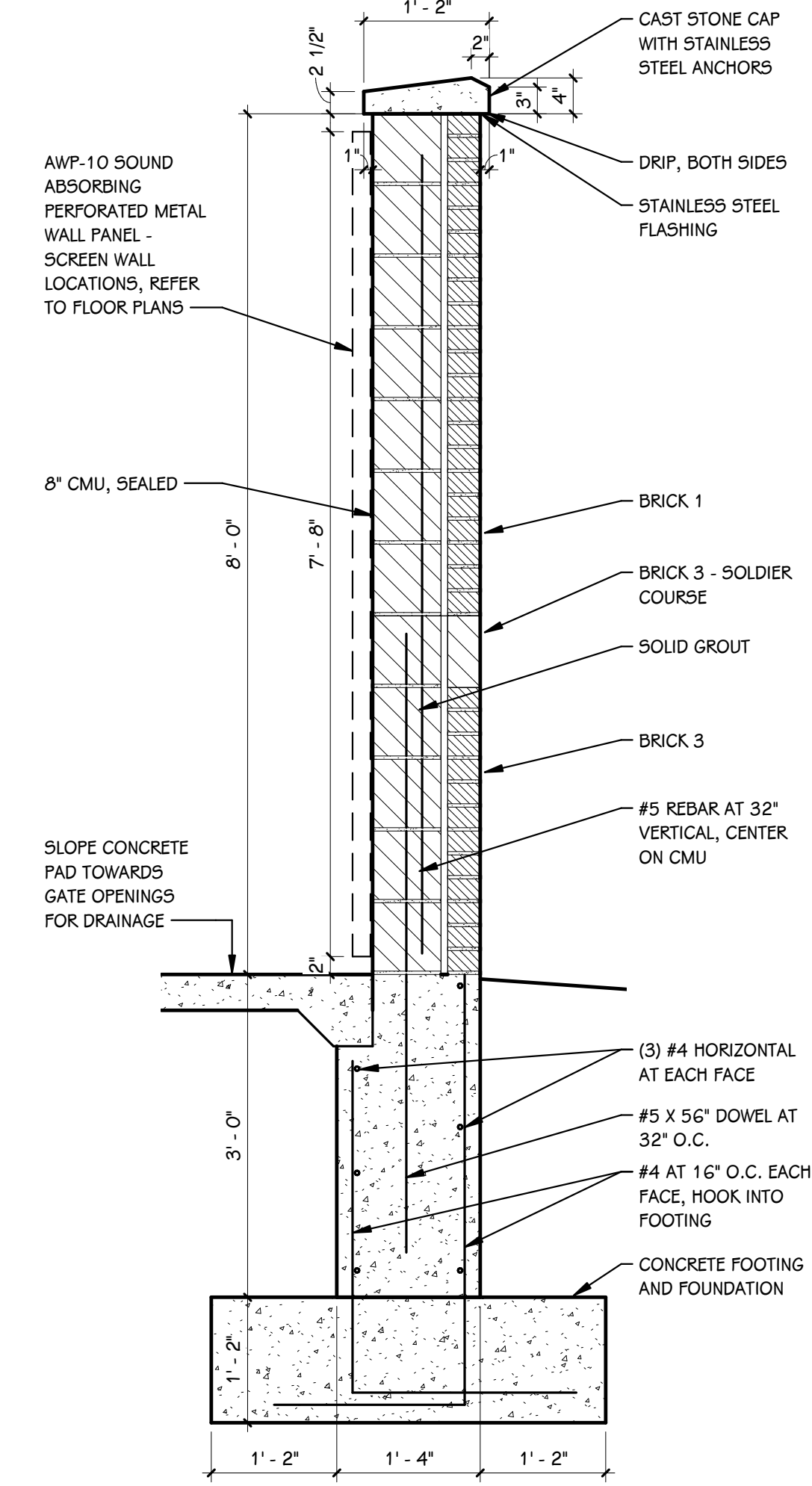
6 DUMPSTER ENCLOSURE PLAN  
1/4" = 1'-0"



7 SOUTH ELEVATION  
1/4" = 1'-0"




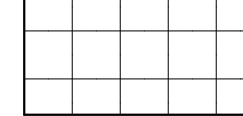
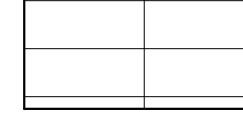
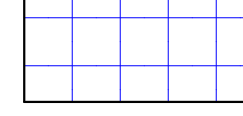
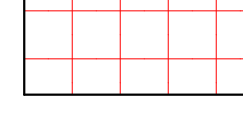

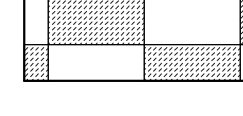
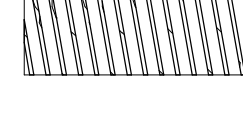




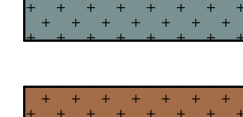


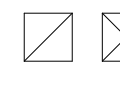

8 EAST ELEVATION  
1/4" = 1'-0"



9 WALL SECTION  
3/4" = 1'-0"



**REFLECTED CEILING KEY**

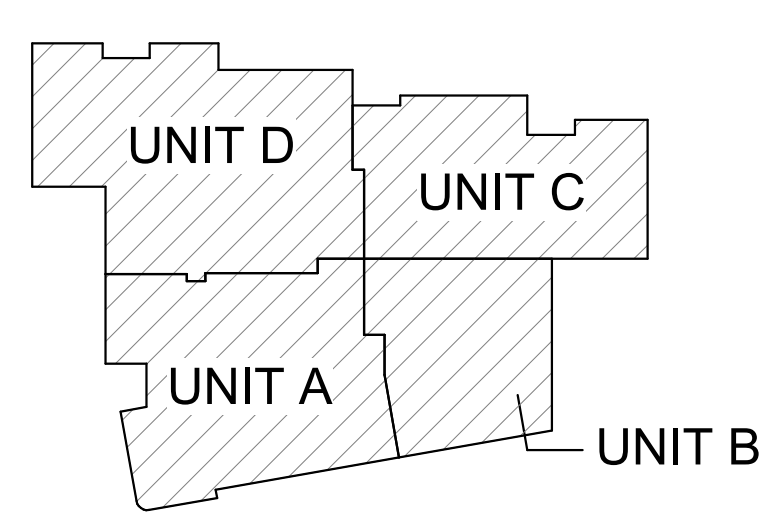
-  GYPSUM BOARD  
FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME,  
IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
-  ACOUSTICAL TILE GRID (ACP-1)  
24" x 24" LAY IN
-  ACOUSTICAL TILE GRID (ACP-2)  
24" x 72" LAY IN - PROVIDE ACP-5 AND CUT  
ADJACENT TILES AS REQUIRED FOR LIGHTING LAYOUT
-  ACOUSTICAL TILE GRID (ACP-3)  
24" x 24" LAY IN  
TOILET ROOM
-  ACOUSTICAL TILE GRID (ACP-4)  
24" x 24" LAY IN  
KITCHEN
-  ACOUSTICAL TILE GRID (ACP-6)  
24" x 24" LAY IN  
KINETICS QUIET/LE INSTALLED OVER ACP-1 FACING TILE
-  GYPSUM CEILING PANEL (GCP-1)  
LAY IN GYPSUM CEILING PANELS, ONLY WHERE HATCHED  
MUSIC ROOM
-  LINEAR METAL CEILING SYSTEM (LMC-1)  
COORDINATING PAINT P-18 ABOVE
-  ACOUSTICAL CEILING BAFFLE (ACB)
-  ACOUSTICAL CEILING COATING (ACC-1)  
COORDINATING PAINT, P-1  
FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
-  ACOUSTICAL CEILING COATING (ACC-2)  
COORDINATING PAINT, P-19  
FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
-  ACOUSTICAL CEILING COATING (ACC-3)  
COORDINATING PAINT, P-12  
FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
-  ACOUSTICAL CEILING COATING (ACC-4)  
COORDINATING PAINT, P-9  
FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
-  ACOUSTICAL CEILING COATING (ACC-5)  
COORDINATING PAINT, P-15  
FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
-  ACOUSTICAL CEILING COATING (ACC-6)  
COORDINATING PAINT, P-18  
FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
-  OR ○ LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
-  MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

**GENERAL NOTES - REFLECTED CEILINGS**

1. WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE AND SMALL PIECE OF TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
2. AT AREAS OF EXPOSED CEILING WITH OR WITHOUT ACOUSTICAL COATING; PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS AND ACC LEGEND FOR PAINT COLORS.
3. AT ALL AREAS OF EXPOSED CEILING PROVIDE 8" H. ALUMINUM EDGE TRIM UNLESS NOTED OTHERWISE.
4. PROVIDE UNISTRIP AT SUSPENDED BAFFLES WHERE THERE IS INTERFERENCE FROM MECHANICAL, ELECTRICAL AND FIRE PROTECTION SYSTEMS ABOVE.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

**Haverhill Elementary**



**KEY PLAN**  
SCALE: NO SCALE



**FIRST FLOOR REFLECTED CEILING PLAN**  
3/32" = 1'-0"

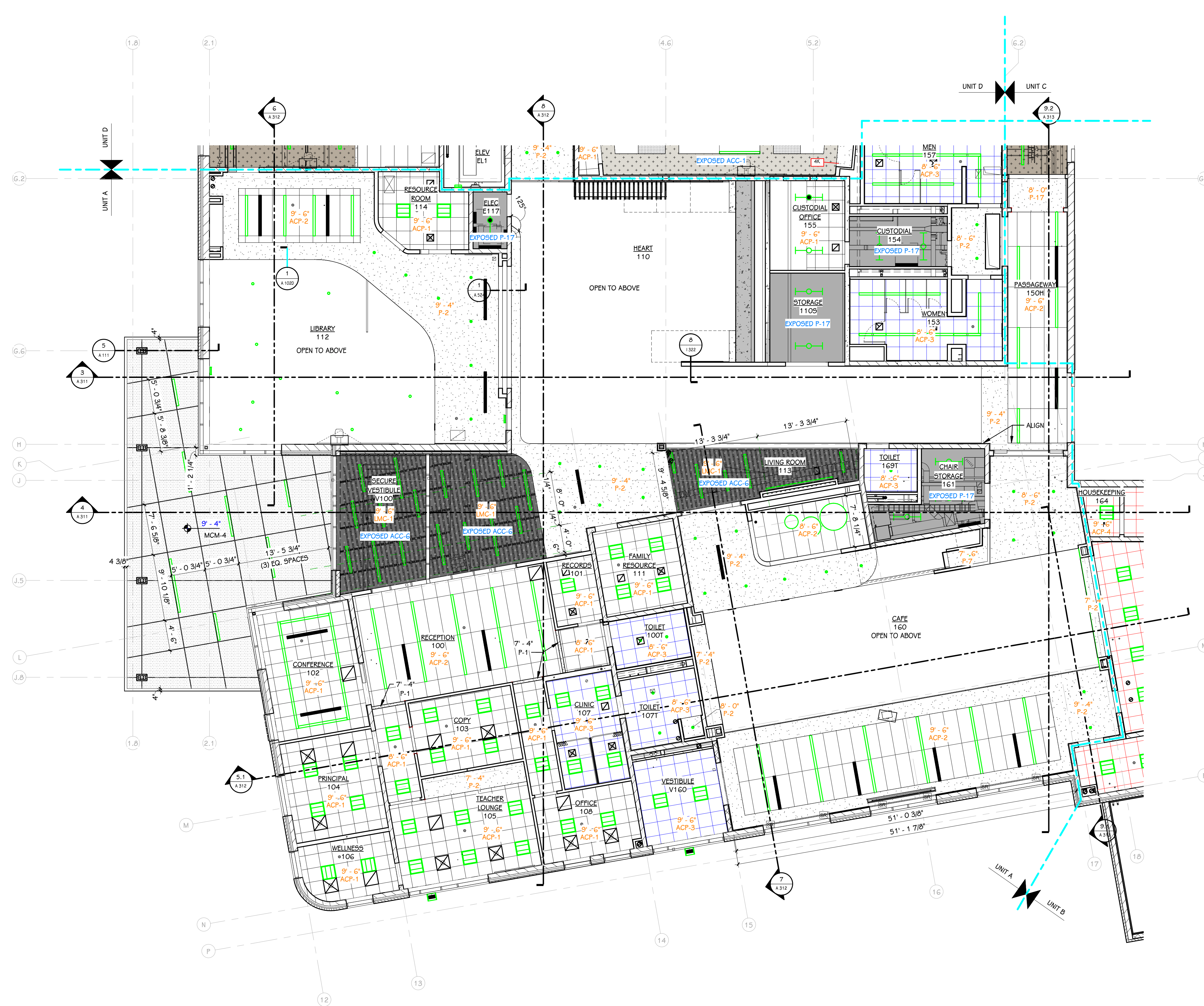
ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**Haverhill Elementary School**  
BID PACKAGE 6: CONSTRUCTION

OWNER  
**Portage Public Schools**  
Portage, Michigan

SHEET TITLE  
**FIRST FLOOR REFLECTED CEILING PLAN**

DATE  
**JUNE 30, 2023**  
SHEET NUMBER  
**A 201**  
21-237.20



**FIRST FLOOR REFLECTED CEILING PLAN - UNIT A**  
1/8" = 1'-0"

**REFLECTED CEILING KEY**

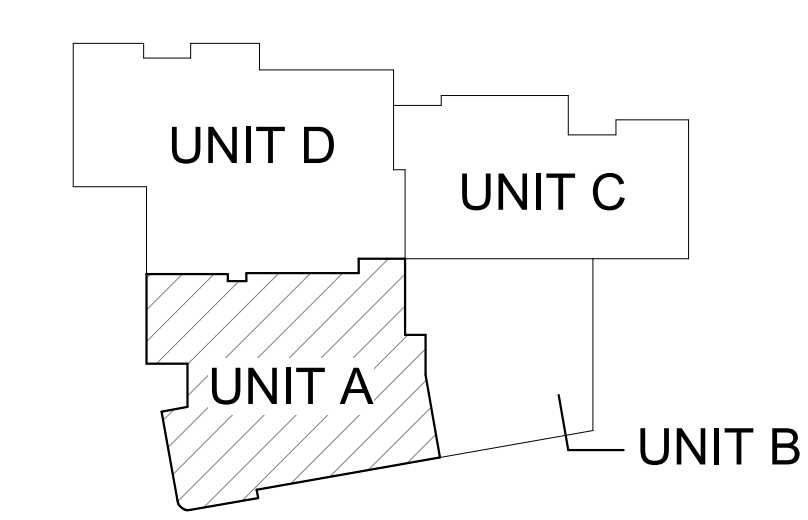
- GYPSUM BOARD  
FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME,  
IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
  - ACOUSTICAL TILE GRID (ACP-1)  
24" x 24" LAY IN
  - ACOUSTICAL TILE GRID (ACP-2)  
24" x 72" LAY IN - PROVIDE ACP-5 AND CUT  
ADJACENT TILES AS REQUIRED FOR LIGHTING LAYOUT
  - ACOUSTICAL TILE GRID (ACP-3)  
24" x 24" LAY IN  
TOILET ROOM
  - ACOUSTICAL TILE GRID (ACP-4)  
24" x 24" LAY IN  
KITCHEN
  - ACOUSTICAL TILE GRID (ACP-6)  
24" x 24" LAY IN  
KINETICS QUIET TILE INSTALLED OVER ACP-1 FACING TILE
  - GYPSUM CEILING PANEL (GCP-1)  
LAY IN GYPSUM CEILING PANELS, ONLY WHERE HATCHED  
MUSIC ROOM
  - LINEAR METAL CEILING SYSTEM (LMC-1)  
COORDINATING PAINT P-18 ABOVE
  - ACOUSTICAL CEILING BAFFLE (ACB)
  - ACOUSTICAL CEILING COATING (ACC-1)  
COORDINATING PAINT, P-1  
FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
  - ACOUSTICAL CEILING COATING (ACC-2)  
COORDINATING PAINT, P-19  
FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
  - ACOUSTICAL CEILING COATING (ACC-3)  
COORDINATING PAINT, P-12  
FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
  - ACOUSTICAL CEILING COATING (ACC-4)  
COORDINATING PAINT, P-9  
FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
  - ACOUSTICAL CEILING COATING (ACC-5)  
COORDINATING PAINT, P-15  
FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
  - ACOUSTICAL CEILING COATING (ACC-6)  
COORDINATING PAINT, P-18  
FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
- OR ○ LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN  
 ☒ MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

**GENERAL NOTES - REFLECTED CEILING**

1. WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE AND SMALL PIECE OF TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
2. AT AREAS OF EXPOSED CEILING WITH OR WITHOUT ACOUSTICAL COATING; PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS AND ACC LEGEND FOR PAINT COLORS
3. AT ALL AREAS OF EXPOSED CEILING PROVIDE 8" H. ALUMINUM EDGE TRIM UNLESS NOTED OTHERWISE.
4. PROVIDE UNISTRUT AT SUSPENDED BAFFLES WHERE THERE IS INTERFERENCE FROM MECHANICAL, ELECTRICAL AND FIRE PROTECTION SYSTEMS ABOVE.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

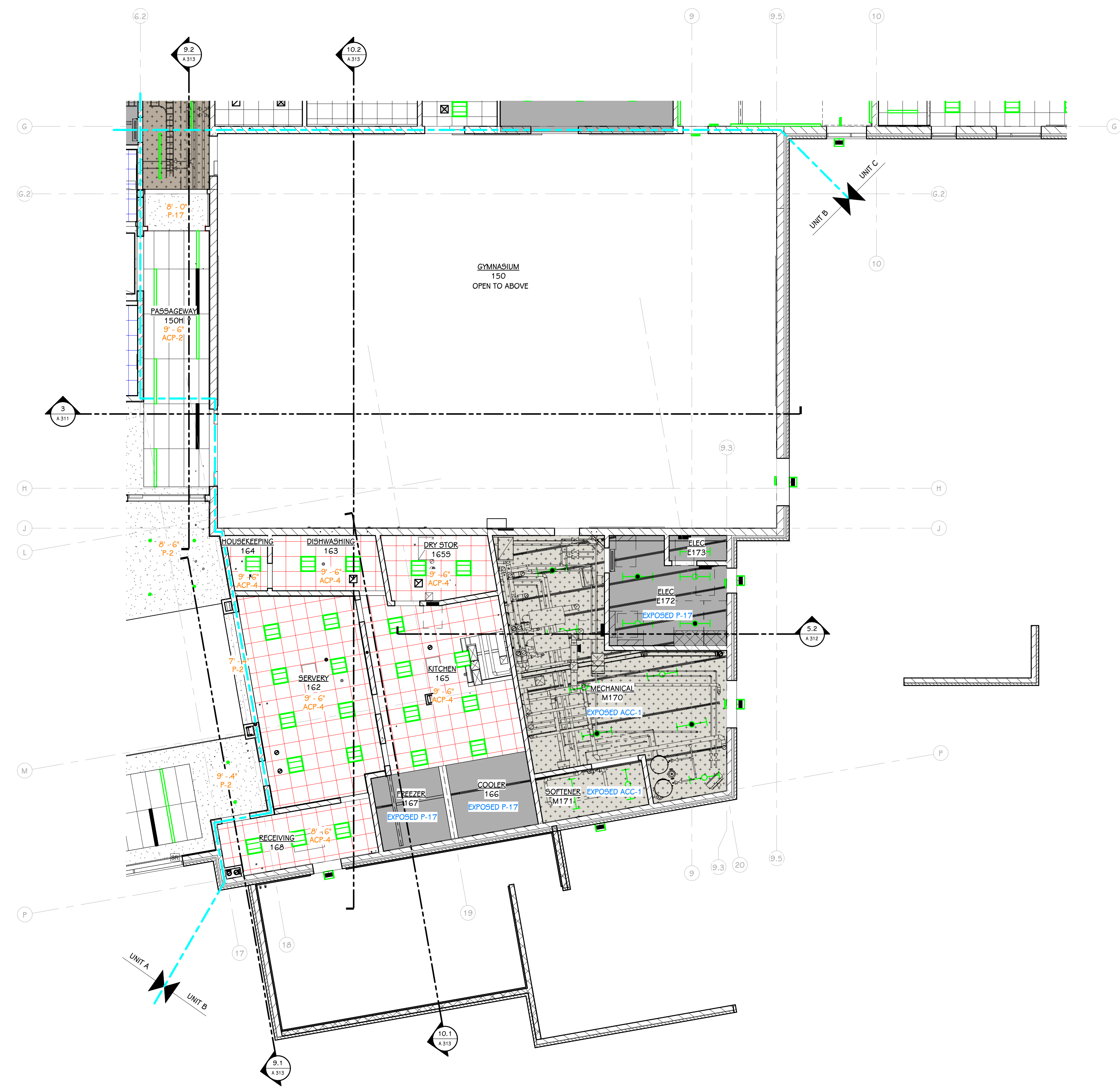
PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**  
BID PACKAGE 6: CONSTRUCTION

OWNER  
**PORTAGE PUBLIC SCHOOLS**  
Portage, Michigan

SHEET TITLE  
**FIRST FLOOR REFLECTED CEILING**  
PLAN - UNIT A

SHEET NUMBER  
**A 201A**  
21-237.20

DATE  
**JUNE 30, 2023**



**FIRST FLOOR REFLECTED CEILING PLAN - UNIT B**  
 1/8" = 1'-0"

**REFLECTED CEILING KEY**

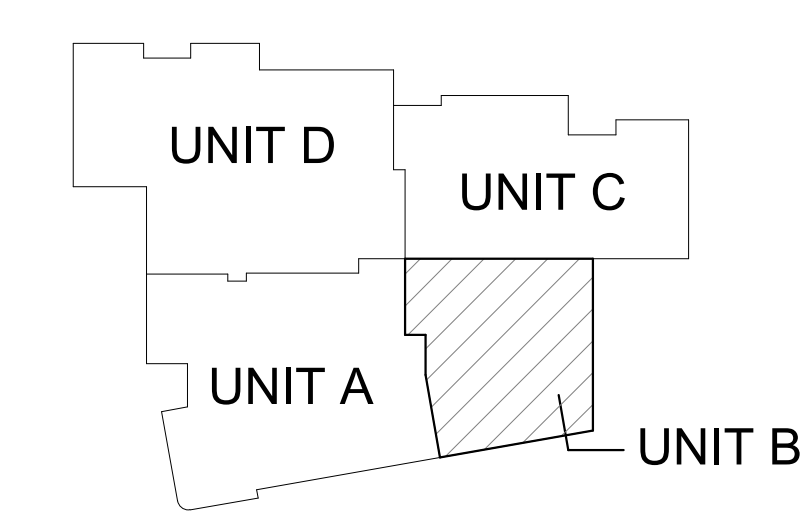
- GYPSUM BOARD  
FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME, IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
- ACOUSTICAL TILE GRID (ACP-1)  
24" x 24" LAY IN
- ACOUSTICAL TILE GRID (ACP-2)  
24" x 72" LAY IN - PROVIDE ACP-5 AND CUT ADJACENT TILES AS REQUIRED FOR LIGHTING LAYOUT
- ACOUSTICAL TILE GRID (ACP-3)  
24" x 24" LAY IN TOILET ROOM
- ACOUSTICAL TILE GRID (ACP-4)  
24" x 24" LAY IN KITCHEN
- ACOUSTICAL TILE GRID (ACP-6)  
24" x 24" LAY IN KINETICS QUIET TILE INSTALLED OVER ACP-1 FACING TILE
- GYPSUM CEILING PANEL (GCP-1)  
LAY IN GYPSUM CEILING PANELS, ONLY WHERE HATCHED MUSIC ROOM
- LINEAR METAL CEILING SYSTEM (LMC-1)  
COORDINATING PAINT P-18 ABOVE
- ACOUSTICAL CEILING BAFFLE (ACB)
- ACOUSTICAL CEILING COATING (ACC-1)  
COORDINATING PAINT, P-1  
FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
- ACOUSTICAL CEILING COATING (ACC-2)  
COORDINATING PAINT, P-19  
FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
- ACOUSTICAL CEILING COATING (ACC-3)  
COORDINATING PAINT, P-12  
FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
- ACOUSTICAL CEILING COATING (ACC-4)  
COORDINATING PAINT, P-9  
FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
- ACOUSTICAL CEILING COATING (ACC-5)  
COORDINATING PAINT, P-15  
FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
- ACOUSTICAL CEILING COATING (ACC-6)  
COORDINATING PAINT, P-18  
FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
- LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
- MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

**GENERAL NOTES - REFLECTED CEILINGS**

1. WHERE CEILING TILE IS LESS THAN 3' AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
2. AT AREAS OF EXPOSED CEILING WITH OR WITHOUT ACOUSTICAL COATING; PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS AND ACC LEGEND FOR PAINT COLORS
3. AT ALL AREAS OF EXPOSED CEILING PROVIDE 8" H. ALUMINUM EDGE TRIM UNLESS NOTED OTHERWISE.
4. PROVIDE UNISTRUT AT SUSPENDED BAFFLES WHERE THERE IS INTERFERENCE FROM MECHANICAL, ELECTRICAL AND FIRE PROTECTION SYSTEMS ABOVE.

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**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

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PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION**

ISSUED FOR  
DATE

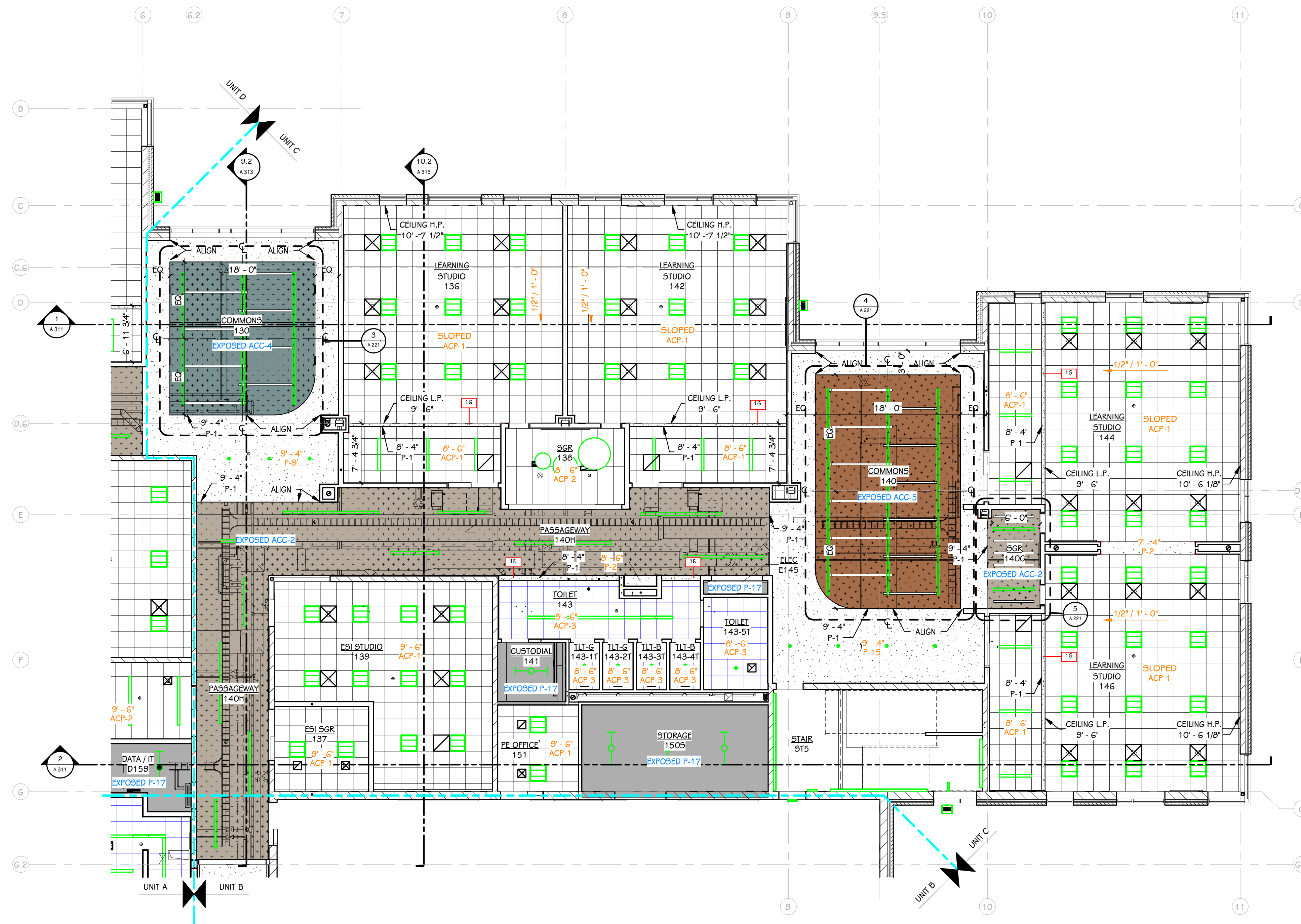
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**FIRST FLOOR REFLECTED CEILING  
PLAN - UNIT B**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**A 201B**  
21-237.20



**FIRST FLOOR REFLECTED CEILING PLAN - UNIT C**  
1/8" = 1'-0"

**REFLECTED CEILING KEY**

	GYPSUM BOARD FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME, IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
	ACOUSTICAL TILE GRID (ACP-1) 24" x 24" LAY IN
	ACOUSTICAL TILE GRID (ACP-2) 24" x 72" LAY IN - PROVIDE ACP-5 AND CUT ADJACENT TILES AS REQUIRED FOR LIGHTING LAYOUT
	ACOUSTICAL TILE GRID (ACP-3) 24" x 24" LAY IN TOILET ROOM
	ACOUSTICAL TILE GRID (ACP-4) 24" x 24" LAY IN KITCHEN
	ACOUSTICAL TILE GRID (ACP-6) 24" x 24" LAY IN KINETICS QUIET/TELE INSTALLED OVER ACP-1 FACING TILE
	GYPSUM CEILING PANEL (GCP-1) LAY IN GYPSUM CEILING PANELS, ONLY WHERE HATCHED MUSIC ROOM
	LINEAR METAL CEILING SYSTEM (LMC-1) COORDINATING PAINT P-18 ABOVE
	ACOUSTICAL CEILING BAFFLE (ACB)
	ACOUSTICAL CEILING COATING (ACC-1) COORDINATING PAINT, P-1 FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-2) COORDINATING PAINT, P-19 FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-3) COORDINATING PAINT, P-12 FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-4) COORDINATING PAINT, P-9 FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-5) COORDINATING PAINT, P-15 FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-6) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
	○ ○ ○ LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
	☒ ☒ ☒ MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

**GENERAL NOTES - REFLECTED CEILING**

- WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
- AT AREAS OF EXPOSED CEILING WITH OR WITHOUT ACOUSTICAL COATING; PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS AND ACC LEGEND FOR PAINT COLORS
- AT ALL AREAS OF EXPOSED CEILING PROVIDE 8" H. ALUMINUM EDGE TRIM UNLESS NOTED OTHERWISE.
- PROVIDE UNISTRUT AT SUSPENDED BAFFLES WHERE THERE IS INTERFERENCE FROM MECHANICAL, ELECTRICAL AND FIRE PROTECTION SYSTEMS ABOVE.

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

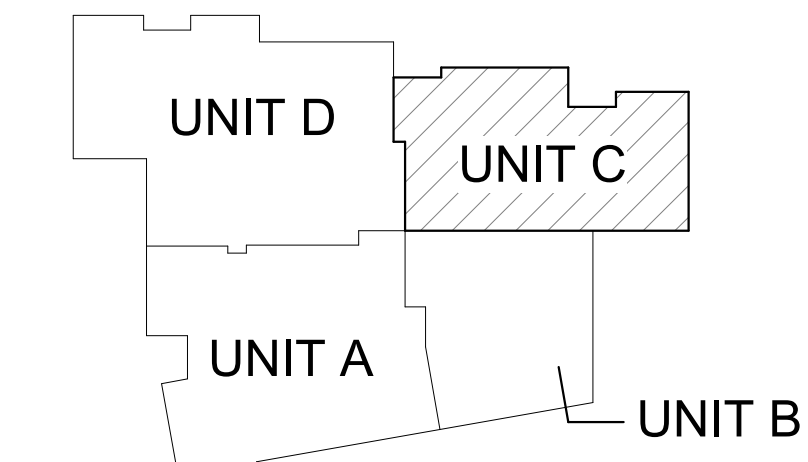
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**

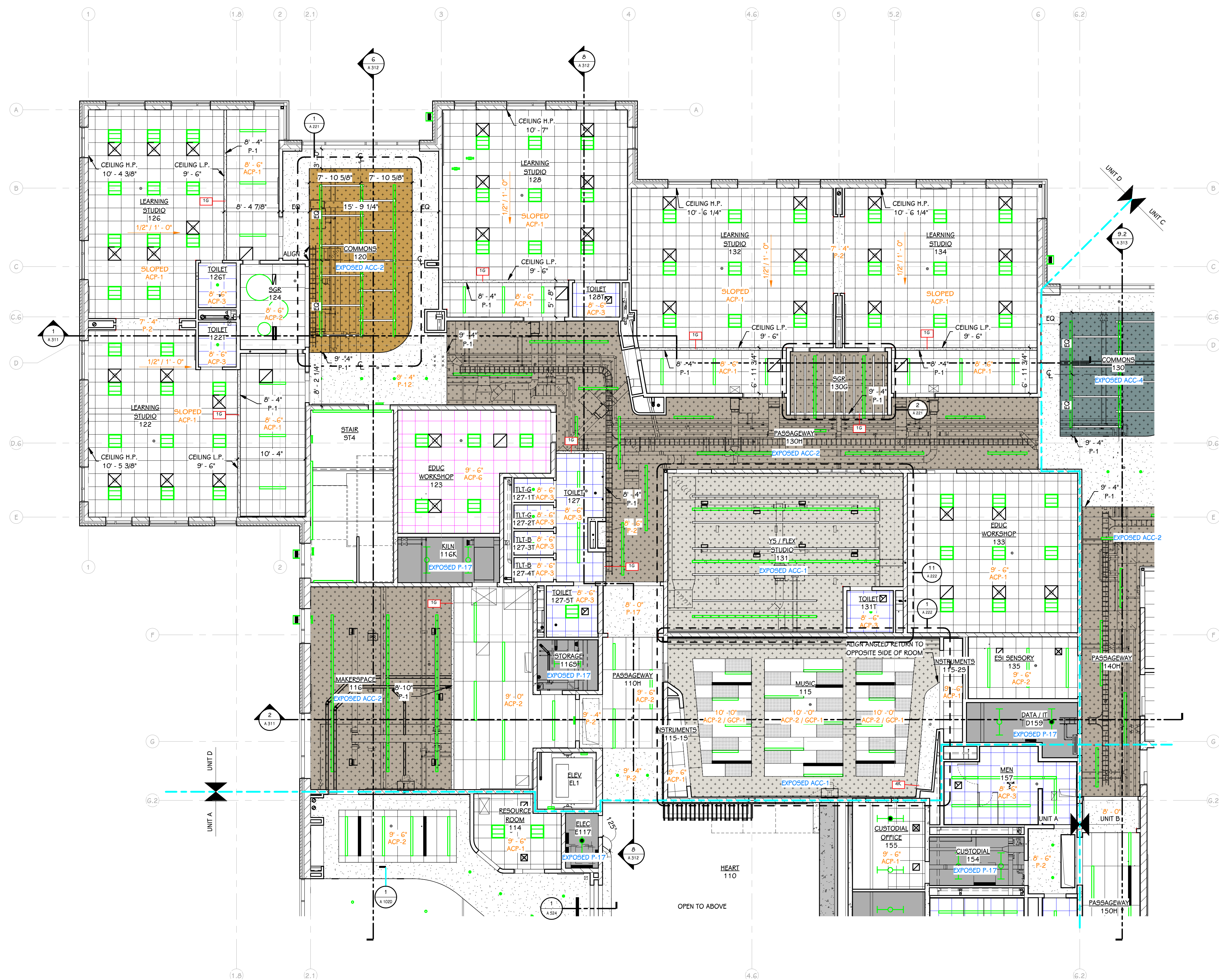


**KEY PLAN**  
SCALE: NO SCALE

SHEET TITLE  
FIRST FLOOR REFLECTED CEILING  
PLAN - UNIT C

SHEET NUMBER  
**A 201C**  
21-237.20

DATE  
JUNE 30, 2023



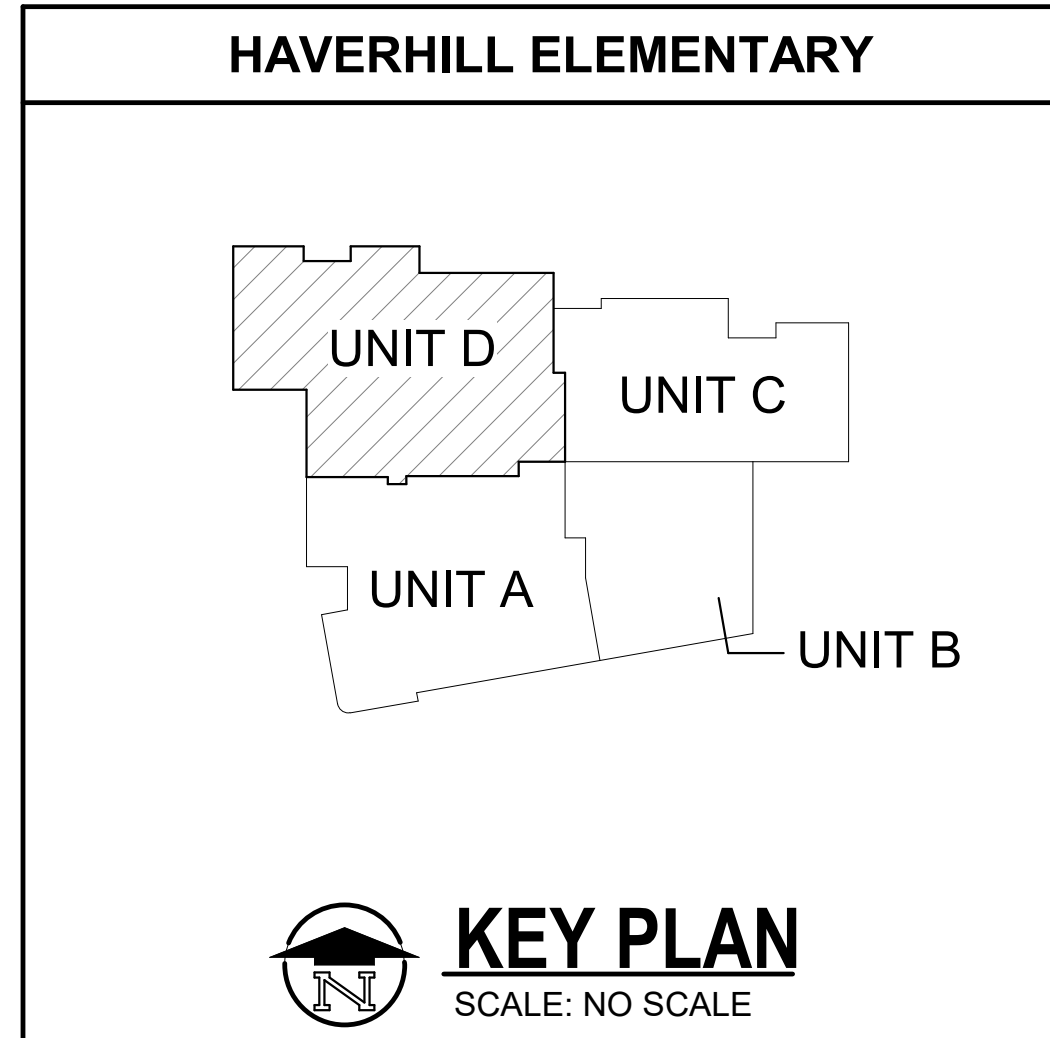
**FIRST FLOOR REFLECTED CEILING PLAN - UNIT D**  
1/8" = 1'-0"

**REFLECTED CEILING KEY**

	GYP-SUM BOARD FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME, IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
	ACOUSTICAL TILE GRID (ACP-1) 24" x 24" LAY IN
	ACOUSTICAL TILE GRID (ACP-2) 24" x 72" LAY IN - PROVIDE ACP-5 AND CUT ADJACENT TILES AS REQUIRED FOR LIGHTING LAYOUT
	ACOUSTICAL TILE GRID (ACP-3) 24" x 24" LAY IN TOILET ROOM
	ACOUSTICAL TILE GRID (ACP-4) 24" x 24" LAY IN KITCHEN
	ACOUSTICAL TILE GRID (ACP-6) 24" x 24" LAY IN KINETICS QUIET TILE INSTALLED OVER ACP-1 FACING TILE
	GYP-SUM CEILING PANEL (GCP-1) LAY IN GYP-SUM CEILING PANELS, ONLY WHERE HATCHED MUSIC ROOM
	LINEAR METAL CEILING SYSTEM (LMC-1) COORDINATING PAINT P-18 ABOVE
	ACOUSTICAL CEILING BAFFLE (ACB)
	ACOUSTICAL CEILING COATING (ACC-1) COORDINATING PAINT, P-1 FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-2) COORDINATING PAINT, P-19 FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-3) COORDINATING PAINT, P-12 FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-4) COORDINATING PAINT, P-9 FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-5) COORDINATING PAINT, P-15 FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-6) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
	OR LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
	MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

- GENERAL NOTES - REFLECTED CEILING**
- WHERE CEILING TILE IS LESS THAN 3' AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE AND SMALL PIECE OF TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
  - AT AREAS OF EXPOSED CEILING WITH OR WITHOUT ACOUSTICAL COATING; PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS AND ACC LEGEND FOR PAINT COLORS
  - AT ALL AREAS OF EXPOSED CEILING PROVIDE 8" H. ALUMINUM EDGE TRIM UNLESS NOTED OTHERWISE.
  - PROVIDE UNISTRUT AT SUSPENDED BAFFLES WHERE THERE IS INTERFERENCE FROM MECHANICAL, ELECTRICAL AND FIRE PROTECTION SYSTEMS ABOVE.

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ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERRILL ELEMENTARY SCHOOL**  
BID PACKAGE 6: CONSTRUCTION


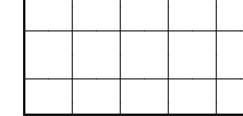
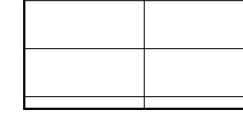
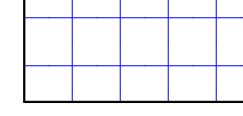
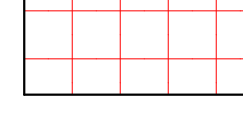

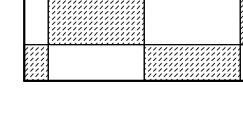





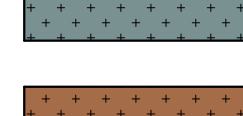


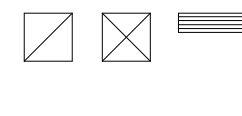

OWNER  
**PORTAGE PUBLIC SCHOOLS**

SHEET TITLE  
**FIRST FLOOR REFLECTED CEILING PLAN - UNIT D**

Portage, Michigan

SHEET NUMBER  
**A 201D**  
DATE  
**JUNE 30, 2023**  
21-237.20

**REFLECTED CEILING KEY**

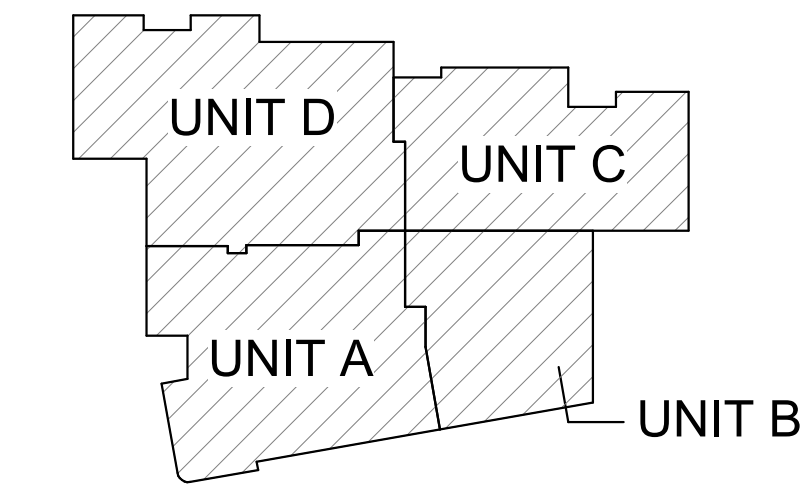
-  GYPSUM BOARD  
FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME,  
IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
-  ACOUSTICAL TILE GRID (ACP-1)  
24" x 24" LAY IN
-  ACOUSTICAL TILE GRID (ACP-2)  
24" x 72" LAY IN - PROVIDE ACP-5 AND CUT  
ADJACENT TILES AS REQUIRED FOR LIGHTING LAYOUT
-  ACOUSTICAL TILE GRID (ACP-3)  
24" x 24" LAY IN  
TOILET ROOM
-  ACOUSTICAL TILE GRID (ACP-4)  
24" x 24" LAY IN  
KITCHEN
-  ACOUSTICAL TILE GRID (ACP-6)  
24" x 24" LAY IN  
KINETICS QUIET/LE INSTALLED OVER ACP-1 FACING TILE
-  GYPSUM CEILING PANEL (GCP-1)  
LAY IN GYPSUM CEILING PANELS, ONLY WHERE HATCHED  
MUSIC ROOM
-  LINEAR METAL CEILING SYSTEM (LMC-1)  
COORDINATING PAINT P-18 ABOVE
-  ACOUSTICAL CEILING BAFFLE (ACB)
-  ACOUSTICAL CEILING COATING (ACC-1)  
COORDINATING PAINT, P-1  
FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
-  ACOUSTICAL CEILING COATING (ACC-2)  
COORDINATING PAINT, P-19  
FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
-  ACOUSTICAL CEILING COATING (ACC-3)  
COORDINATING PAINT, P-12  
FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
-  ACOUSTICAL CEILING COATING (ACC-4)  
COORDINATING PAINT, P-9  
FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
-  ACOUSTICAL CEILING COATING (ACC-5)  
COORDINATING PAINT, P-15  
FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
-  ACOUSTICAL CEILING COATING (ACC-6)  
COORDINATING PAINT, P-18  
FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
-  LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
-  MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

**GENERAL NOTES - REFLECTED CEILINGS**

1. WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
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**HAYERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE



**SECOND FLOOR REFLECTED CEILING PLAN**  
3/32" = 1'-0"

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAYERHILL ELEMENTARY SCHOOL**  
BID PACKAGE 6: CONSTRUCTION

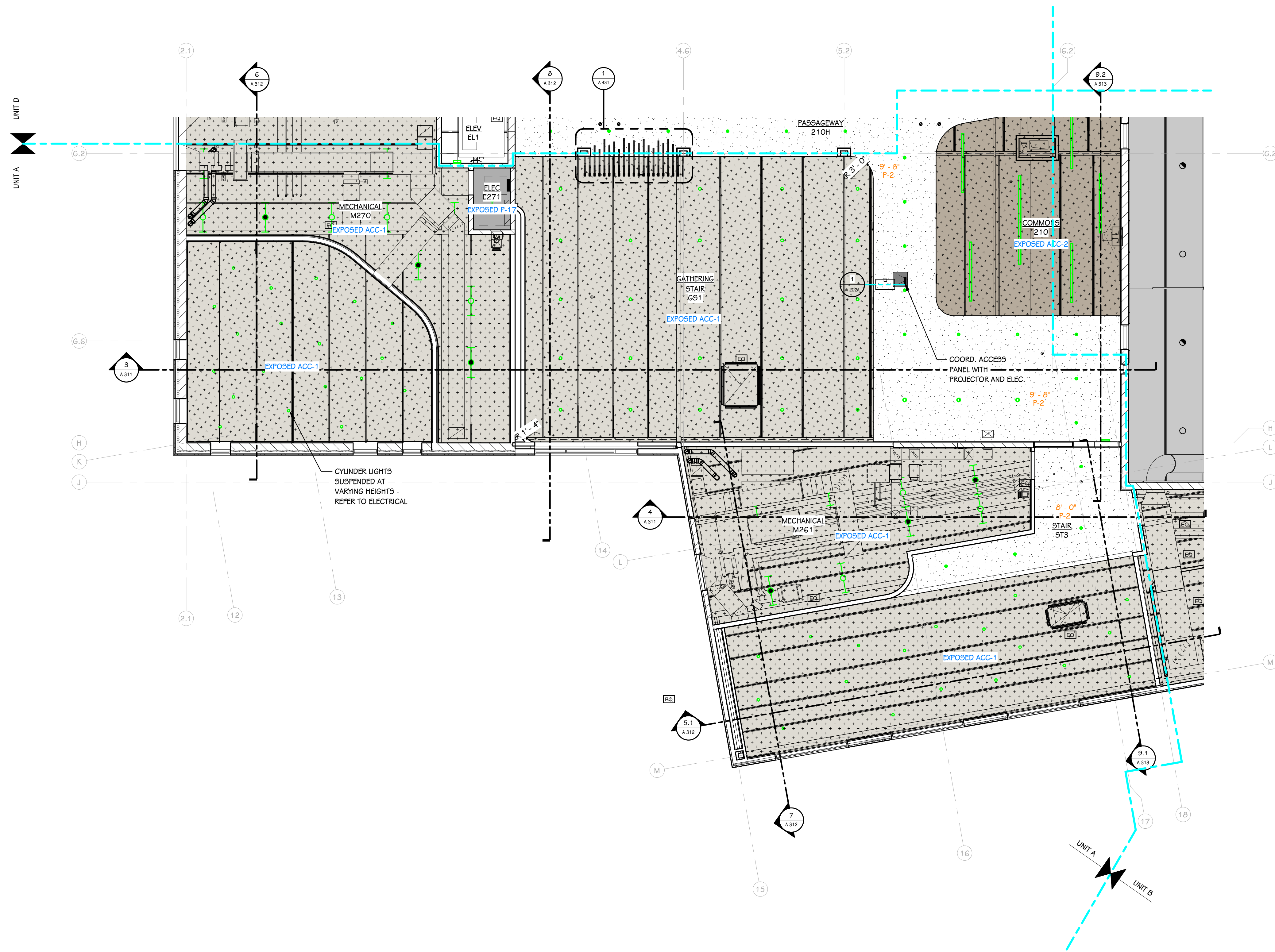
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

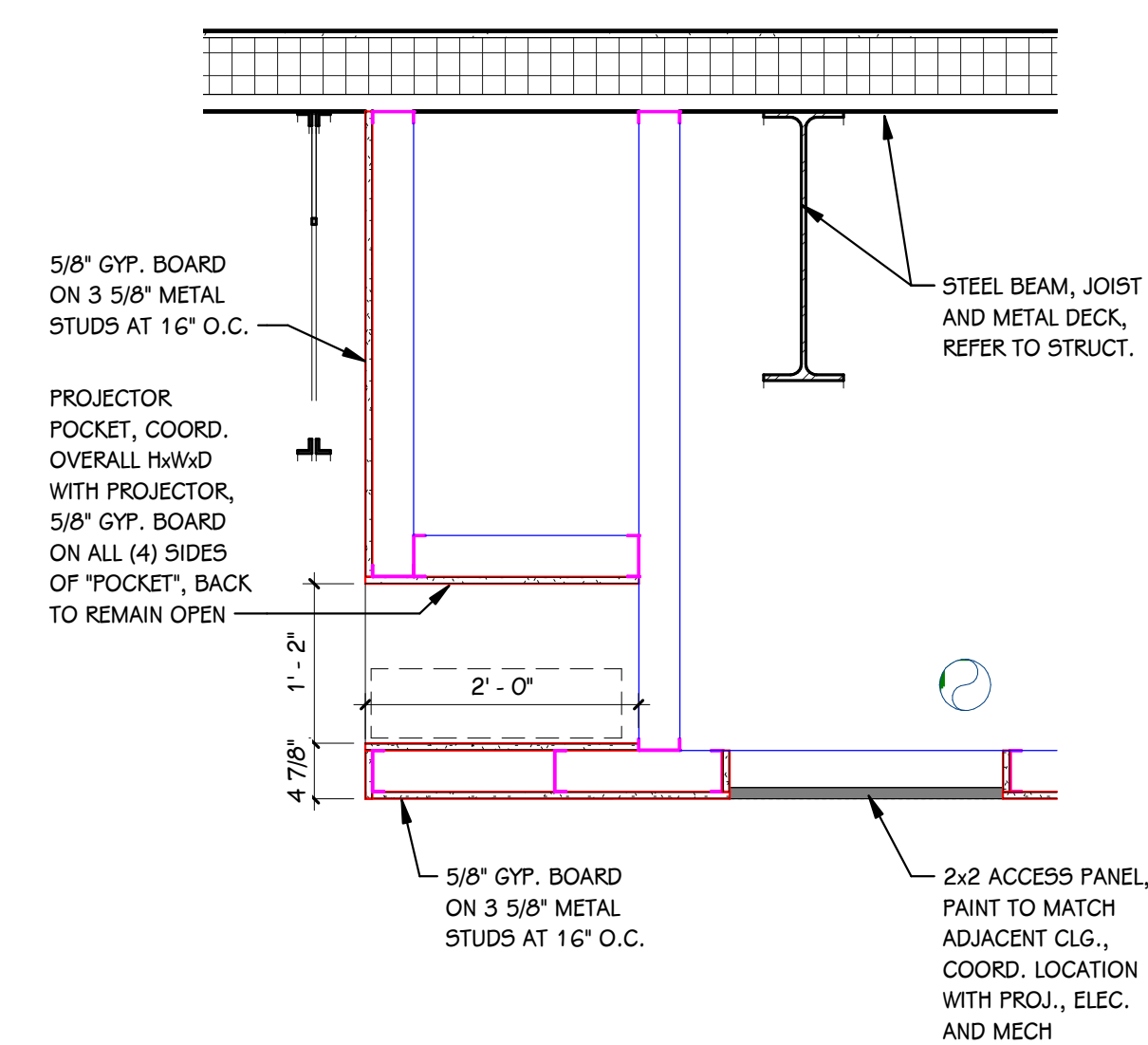
SHEET TITLE  
**SECOND FLOOR REFLECTED CEILING PLAN**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**A 202**  
21-237.20



**SECOND FLOOR REFLECTED CEILING PLAN - UNIT A**  
1/8" = 1'-0"



**PROJECTOR BULKHEAD DETAIL**  
1/32" = 1'-0"

**REFLECTED CEILING KEY**

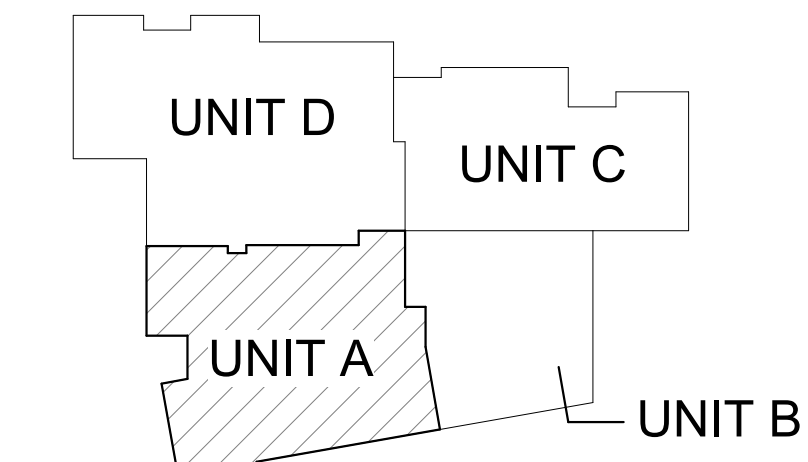
	GYPSUM BOARD FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME, IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
	ACOUSTICAL TILE GRID (ACP-1) 24" x 24" LAY IN
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	GYPSUM CEILING PANEL (GCP-1) LAY IN GYPSUM CEILING PANELS, ONLY WHERE HATCHED MUSIC ROOM
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	ACOUSTICAL CEILING BAFFLE (ACB)
	ACOUSTICAL CEILING COATING (ACC-1) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-2) COORDINATING PAINT, P-19 FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-3) COORDINATING PAINT, P-12 FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-4) COORDINATING PAINT, P-9 FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-5) COORDINATING PAINT, P-15 FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-6) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
	○ OR ○ LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
	☒ MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

**GENERAL NOTES - REFLECTED CEILING**

- WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE AND SMALL PIECE OF TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
- AT AREAS OF EXPOSED CEILING WITH OR WITHOUT ACOUSTICAL COATING; PAINT ALL STRUCTURE, DUCTWORK, PIPING, CONDUIT, HANGERS ETC., COORDINATE WITH MECHANICAL, ELECTRICAL AND PLUMBING SPECIFICATIONS. REFER TO THE REFLECTED CEILING PLANS AND ACC LEGEND FOR PAINT COLORS.
- AT ALL AREAS OF EXPOSED CEILING PROVIDE 8" H. ALUMINUM EDGE TRIM UNLESS NOTED OTHERWISE.
- PROVIDE UNISTRUT AT SUSPENDED BAFFLES WHERE THERE IS INTERFERENCE FROM MECHANICAL, ELECTRICAL AND FIRE PROTECTION SYSTEMS ABOVE.

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**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

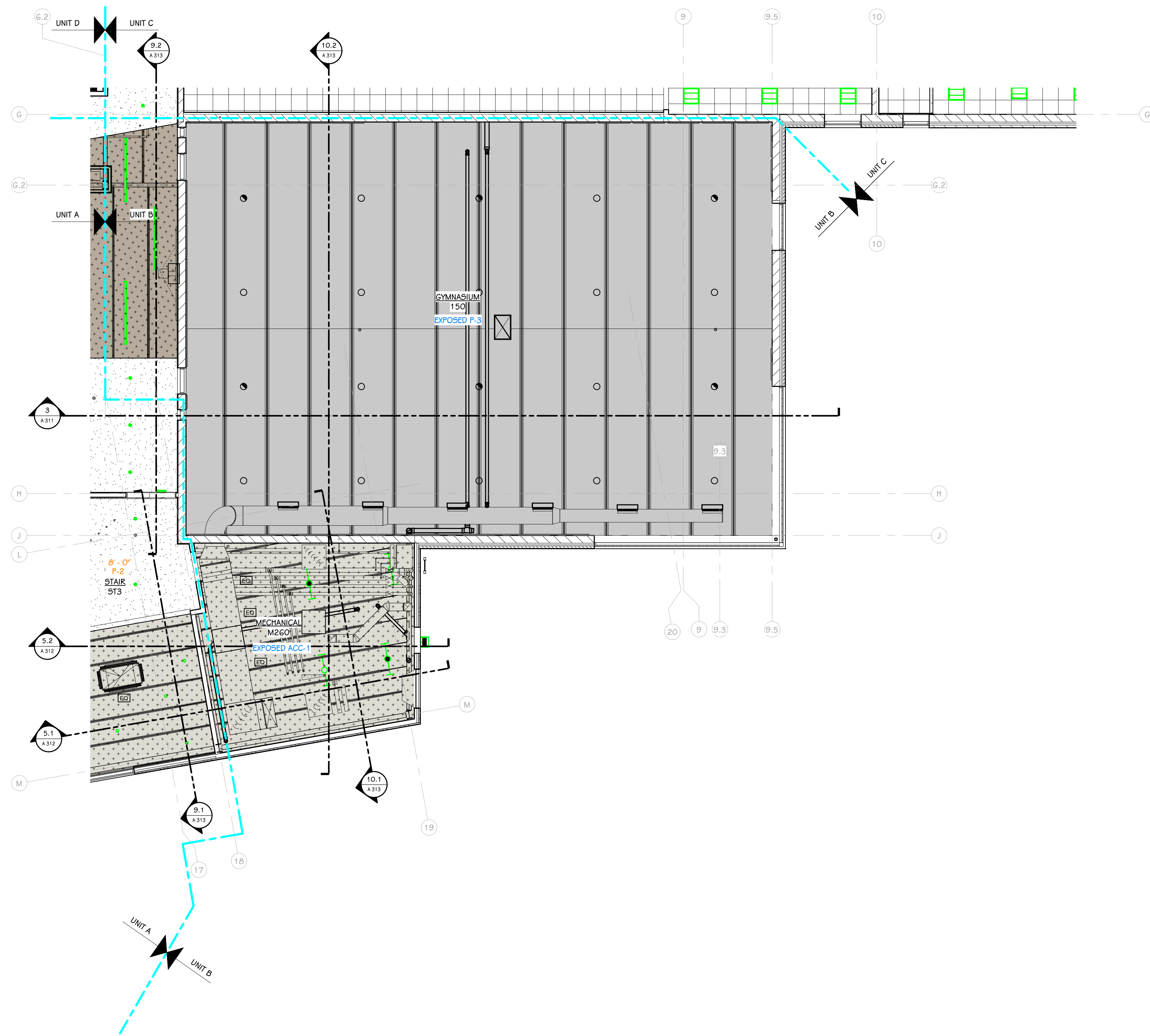
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR REFLECTED CEILING  
PLAN - UNIT A

DATE  
JUNE 30, 2023

SHEET NUMBER  
A 202A  
21-237.20



**SECOND FLOOR REFLECTED CEILING PLAN - UNIT B**  
1/8" = 1'-0"

**REFLECTED CEILING KEY**

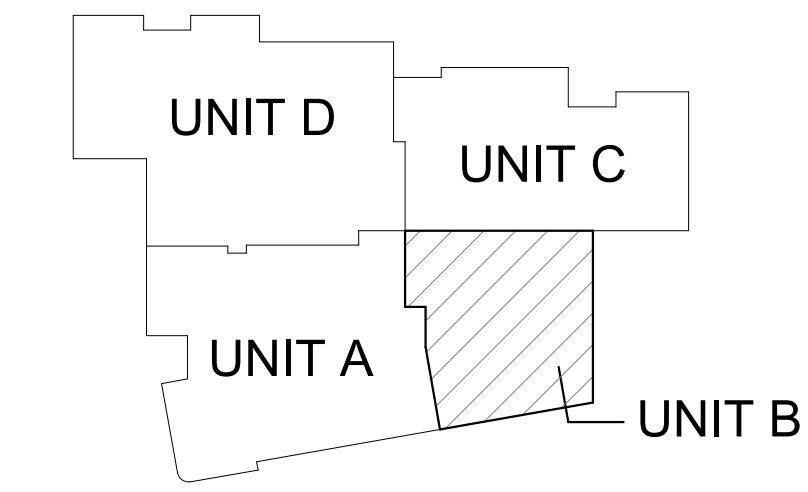
	GYPSUM BOARD FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME, IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
	ACOUSTICAL TILE GRID (ACP-1) 24" x 24" LAY IN
	ACOUSTICAL TILE GRID (ACP-2) 24" x 72" LAY IN - PROVIDE ACP-5 AND CUT ADJACENT TILES AS REQUIRED FOR LIGHTING LAYOUT
	ACOUSTICAL TILE GRID (ACP-3) 24" x 24" LAY IN TOILET ROOM
	ACOUSTICAL TILE GRID (ACP-4) 24" x 24" LAY IN KITCHEN
	ACOUSTICAL TILE GRID (ACP-6) 24" x 24" LAY IN KINETICS QUIET TILE INSTALLED OVER ACP-1 FACING TILE
	GYPSUM CEILING PANEL (GCP-1) LAY IN GYPSUM CEILING PANELS, ONLY WHERE HATCHED MUSIC ROOM
	LINEAR METAL CEILING SYSTEM (LMC-1) COORDINATING PAINT P-18 ABOVE
	ACOUSTICAL CEILING BAFFLE (ACB)
	ACOUSTICAL CEILING COATING (ACC-1) COORDINATING PAINT, P-1 FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-2) COORDINATING PAINT, P-19 FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-3) COORDINATING PAINT, P-12 FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-4) COORDINATING PAINT, P-9 FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-5) COORDINATING PAINT, P-15 FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-6) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
	○ OR ○ LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
	☒ MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

**GENERAL NOTES - REFLECTED CEILING**

- WHERE CEILING TILE IS LESS THAN 3" AT PERIMETER OF ROOM PROVIDE A CUT 2x4 TILE IN LIEU OF FULL 2x2 TILE OR DOUBLE GRID - MATCH 2x2 FOR STYLE AND COLOR.
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**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

**TowerPinkster**  
Architecture · Engineering · Interiors  
TOWERPINKSTER.COM  
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ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

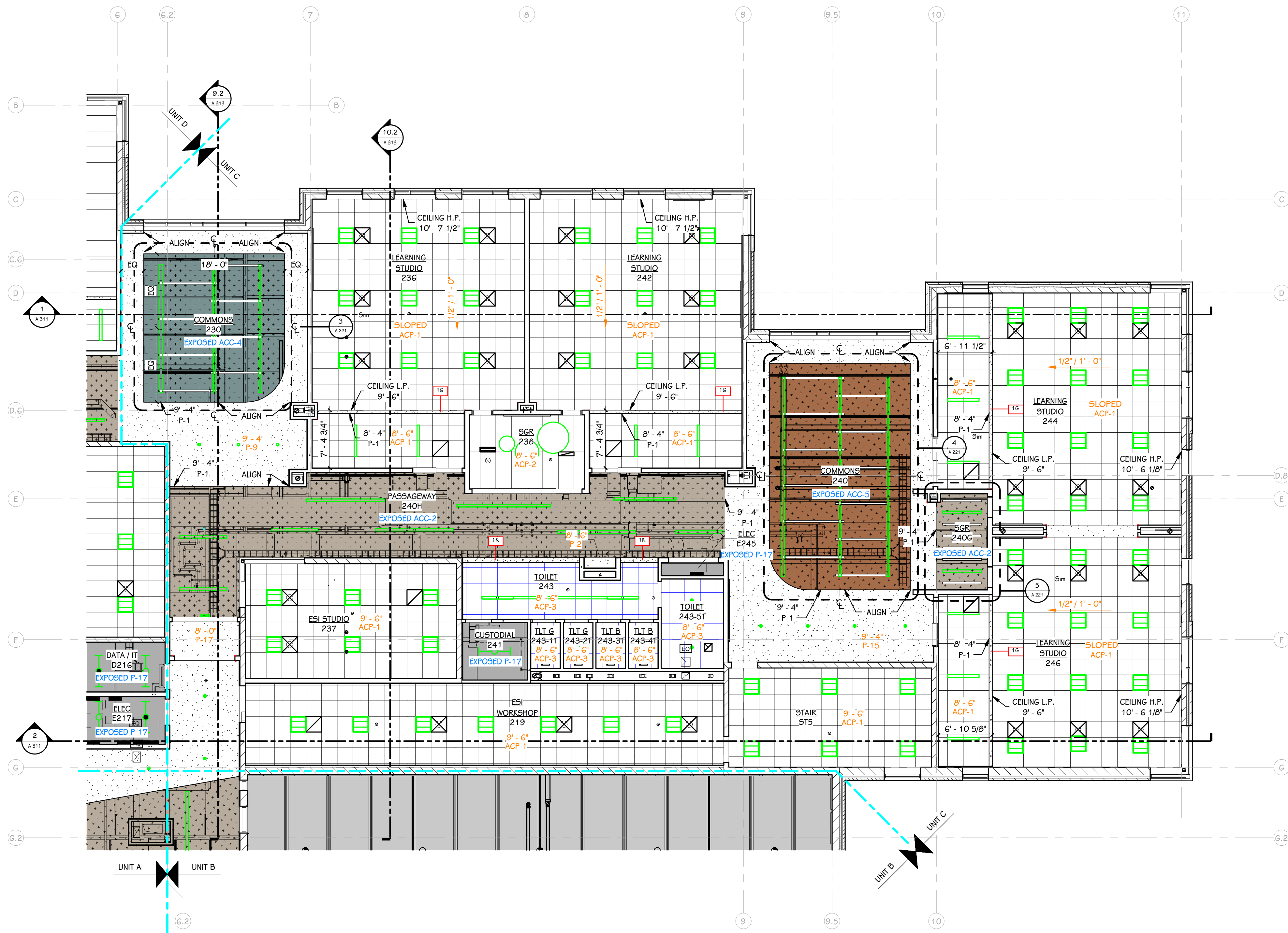
SHEET TITLE  
**SECOND FLOOR REFLECTED CEILING  
PLAN - UNIT B**

SHEET NUMBER  
**A 202B**

DATE  
**JUNE 30, 2023**

21-237.20





**SECOND FLOOR REFLECTED CEILING PLAN - UNIT C**  
1/8" = 1'-0"

**REFLECTED CEILING KEY**

	GYPSUM BOARD FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME, IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
	ACOUSTICAL TILE GRID (ACP-1) 24" x 24" LAY IN
	ACOUSTICAL TILE GRID (ACP-2) 24" x 72" LAY IN - PROVIDE ACP-5 AND CUT ADJACENT TILES AS REQUIRED FOR LIGHTING LAYOUT
	ACOUSTICAL TILE GRID (ACP-3) 24" x 24" LAY IN TOILET ROOM
	ACOUSTICAL TILE GRID (ACP-4) 24" x 24" LAY IN KITCHEN
	ACOUSTICAL TILE GRID (ACP-6) 24" x 24" LAY IN KINETICS QUIETTILE INSTALLED OVER ACP-1 FACING TILE
	GYPSUM CEILING PANEL (GCP-1) LAY IN GYPSUM CEILING PANELS, ONLY WHERE HATCHED MUSIC ROOM
	LINEAR METAL CEILING SYSTEM (LMC-1) COORDINATING PAINT P-18 ABOVE
	ACOUSTICAL CEILING BAFFLE (ACB)
	ACOUSTICAL CEILING COATING (ACC-1) COORDINATING PAINT, P-1 FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-2) COORDINATING PAINT, P-19 FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-3) COORDINATING PAINT, P-12 FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-4) COORDINATING PAINT, P-9 FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-5) COORDINATING PAINT, P-15 FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-6) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
	○ OR ○ LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
	☒ MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

**GENERAL NOTES - REFLECTED CEILING**

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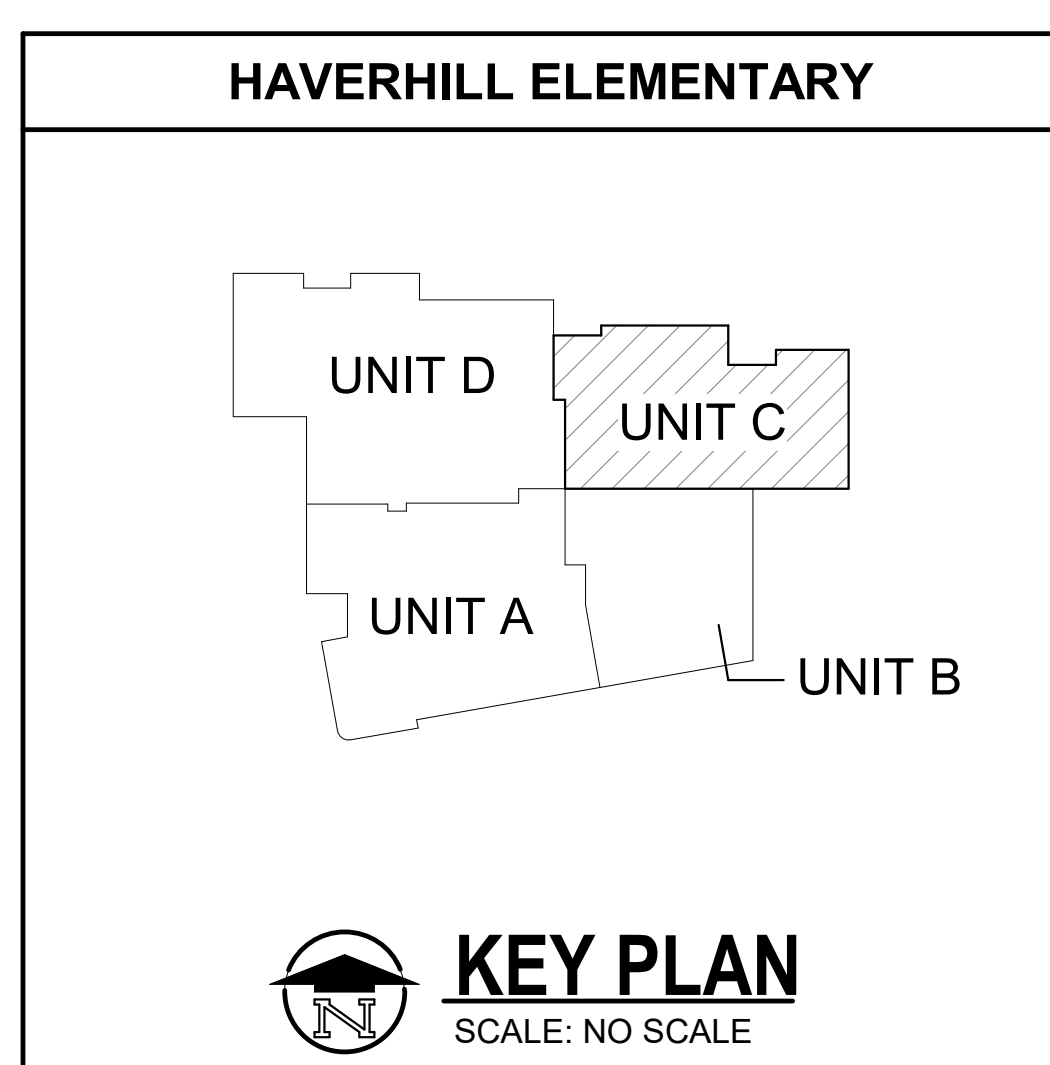
ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

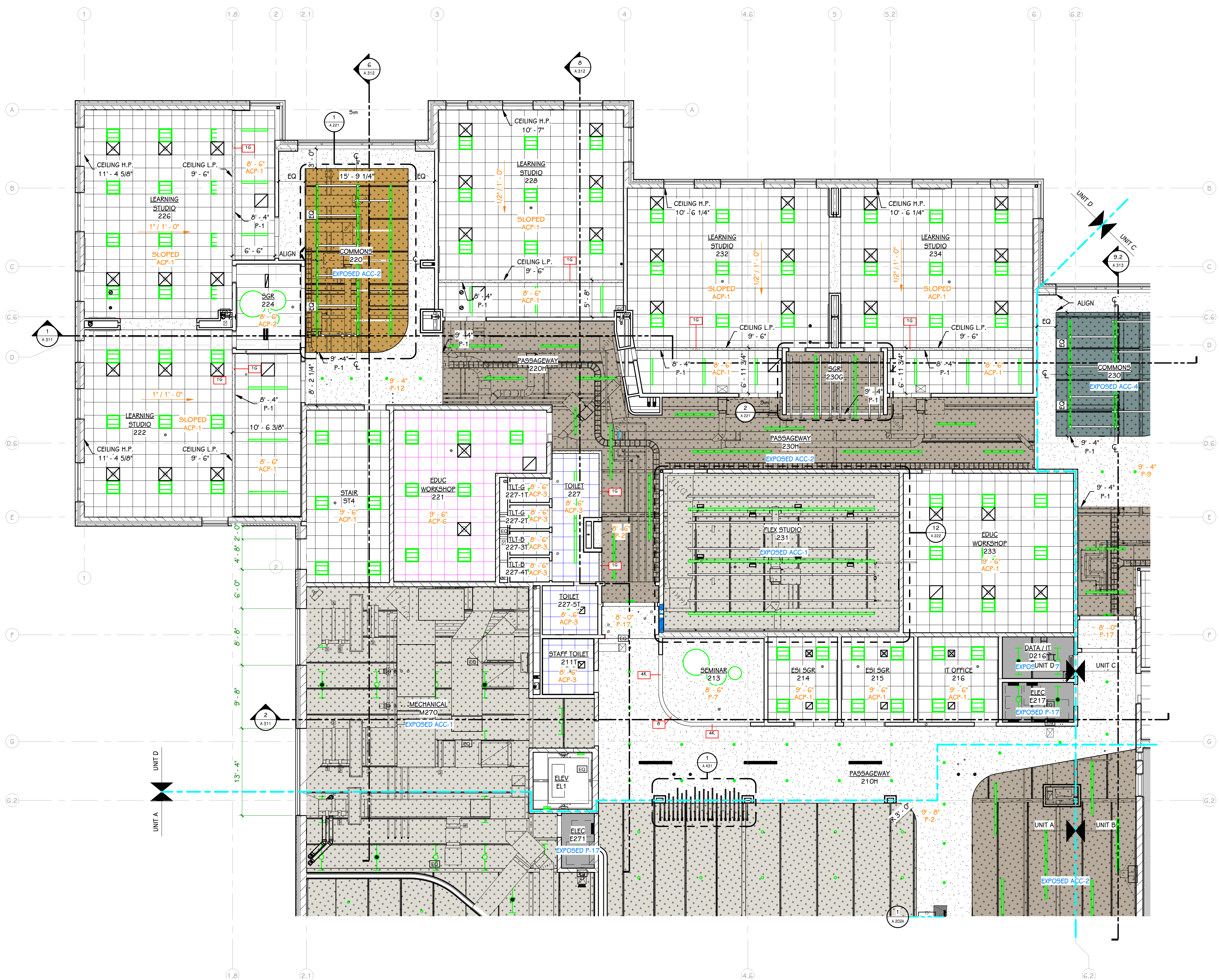
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SHEET TITLE  
SECOND FLOOR REFLECTED CEILING  
PLAN - UNIT C

SHEET NUMBER  
**A 202C**  
21-237.20

DATE  
JUNE 30, 2023



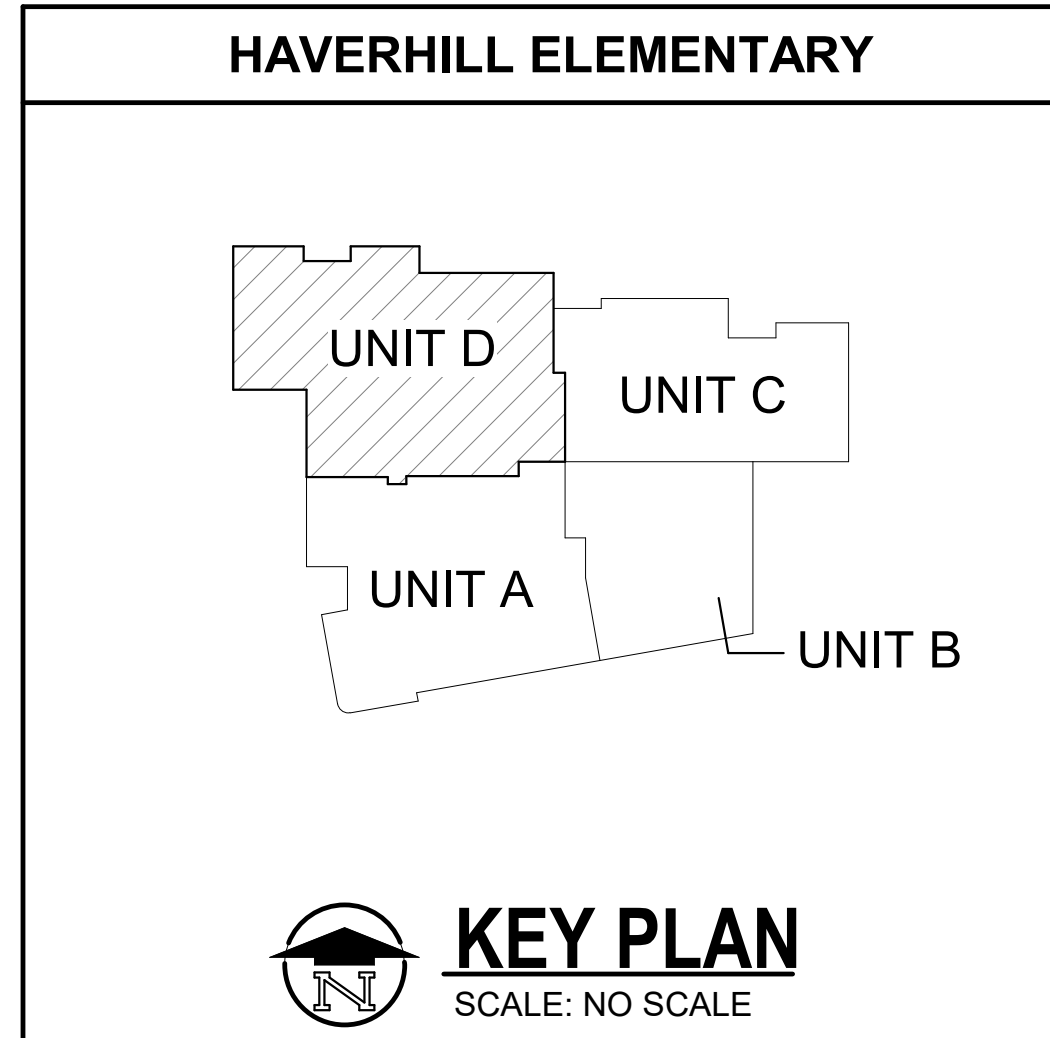
**SECOND FLOOR REFLECTED CEILING PLAN - UNIT D**  
1/8" = 1'-0"

**REFLECTED CEILING KEY**

	GYPSUM BOARD FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME, IN P-2 TO BE WHITE, IN P-7 TO BE BLACK
	ACOUSTICAL TILE GRID (ACP-1) 24" x 24" LAY IN
	ACOUSTICAL TILE GRID (ACP-2) 24" x 72" LAY IN - PROVIDE ACP-5 AND CUT ADJACENT TILES AS REQUIRED FOR LIGHTING LAYOUT
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	LINEAR METAL CEILING SYSTEM (LMC-1) COORDINATING PAINT P-18 ABOVE
	ACOUSTICAL CEILING BAFFLE (ACB)
	ACOUSTICAL CEILING COATING (ACC-1) COORDINATING PAINT, P-1 FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-2) COORDINATING PAINT, P-19 FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-3) COORDINATING PAINT, P-12 FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-4) COORDINATING PAINT, P-9 FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-5) COORDINATING PAINT, P-15 FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-6) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
	OR LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
	MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

- GENERAL NOTES - REFLECTED CEILING**
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ISSUED FOR DATE

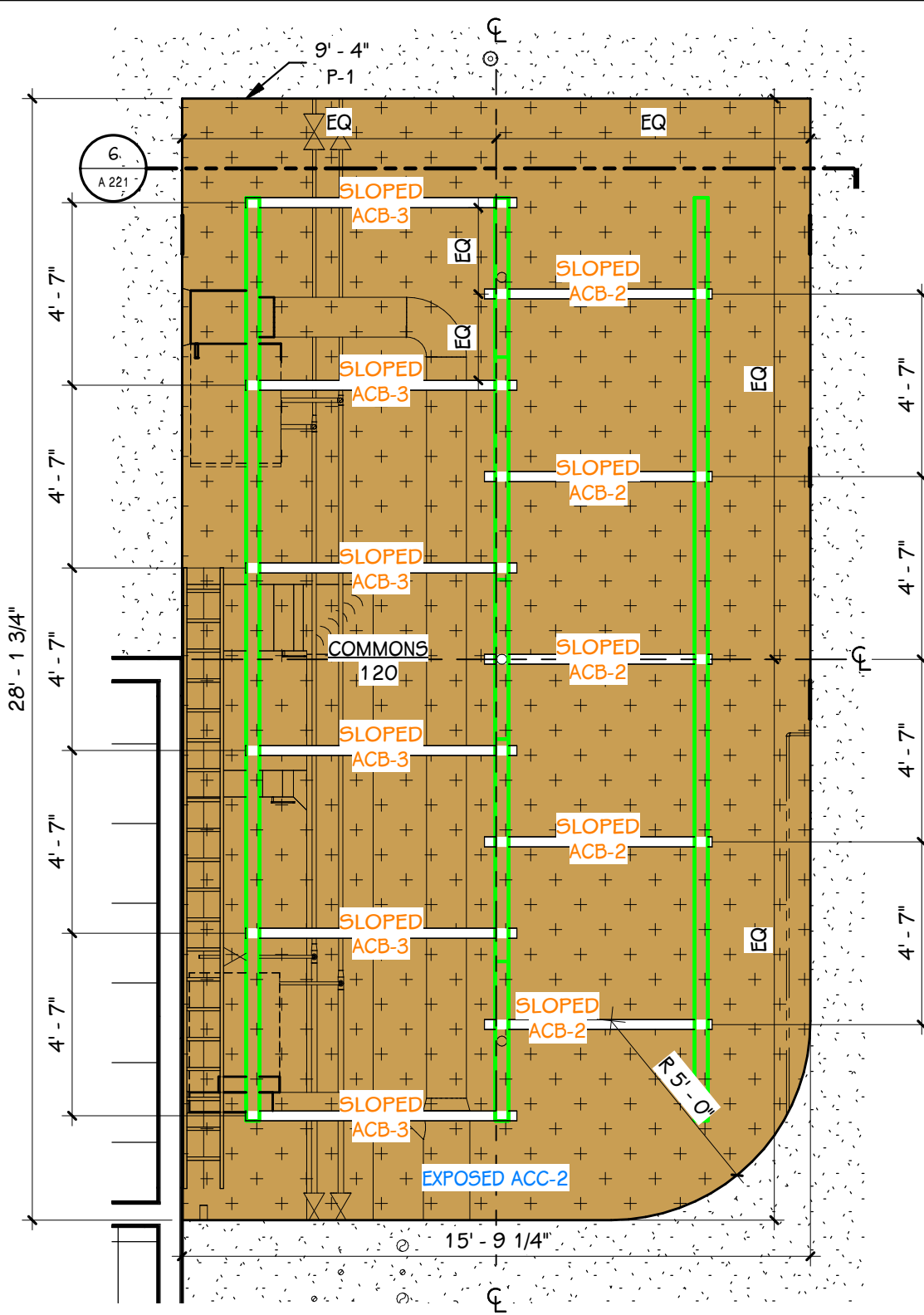
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

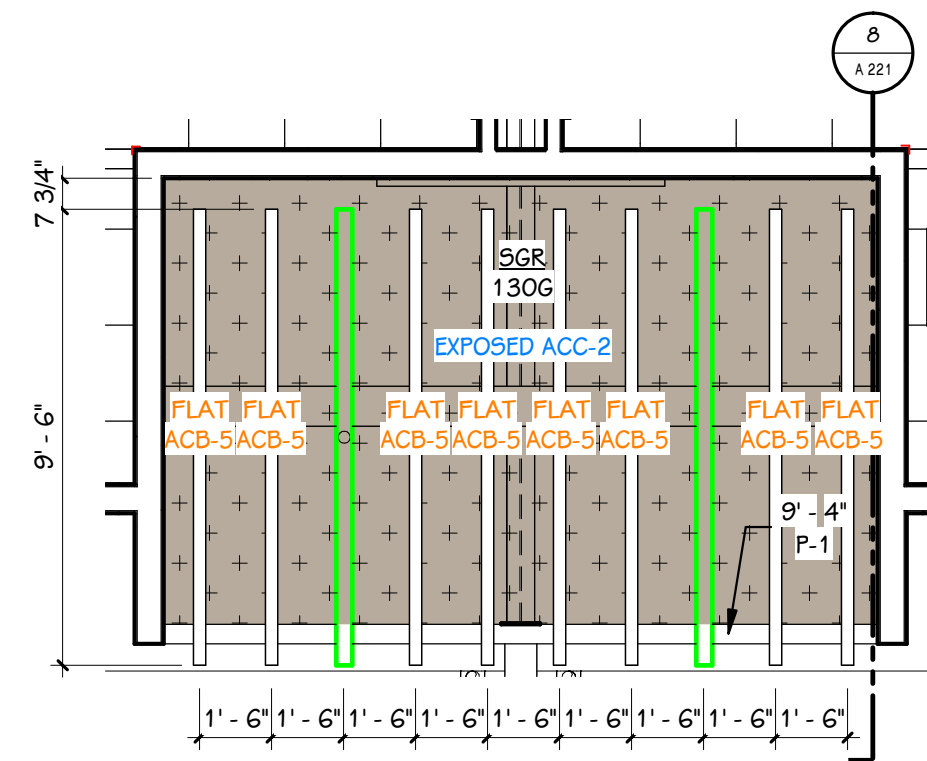
SHEET TITLE  
SECOND FLOOR REFLECTED CEILING  
PLAN - UNIT D

Portage, Michigan

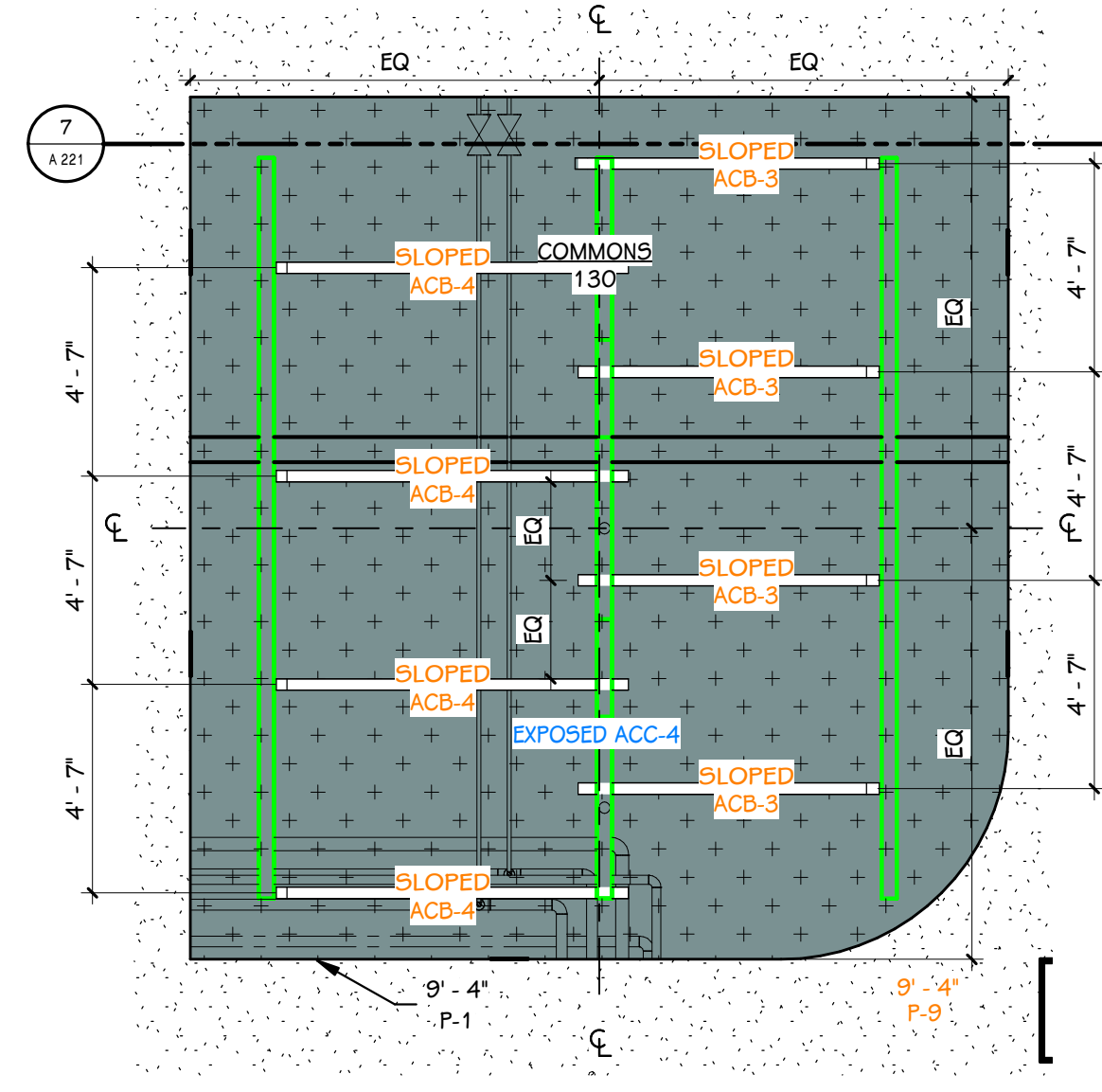
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**A 202D**  
DATE  
JUNE 30, 2023  
21-237-20



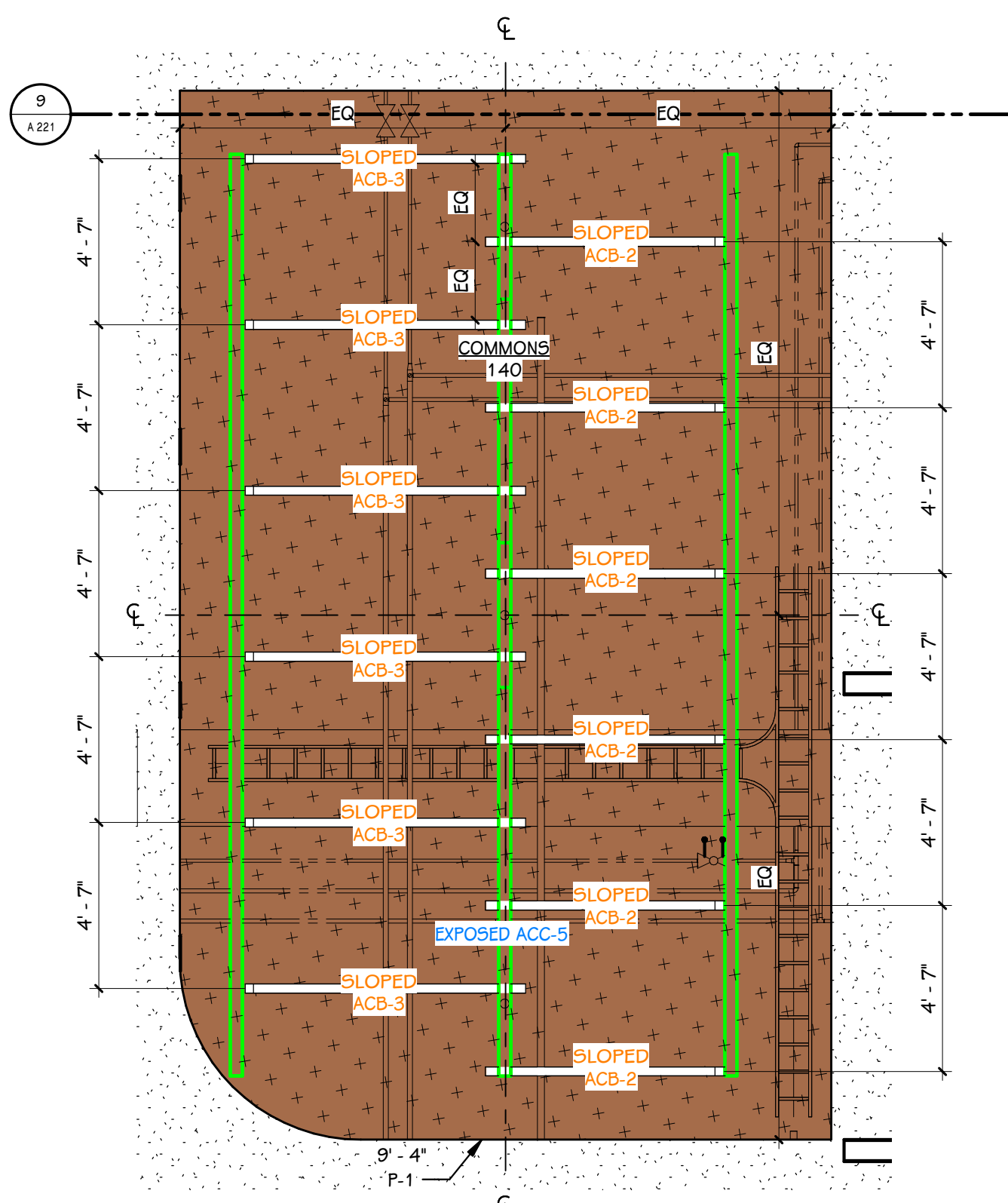
**COMMONS 120/220 - ENLARGED REFLECTED CEILING PLAN**  
 1  
 A.221  
 1/4" = 1'-0"



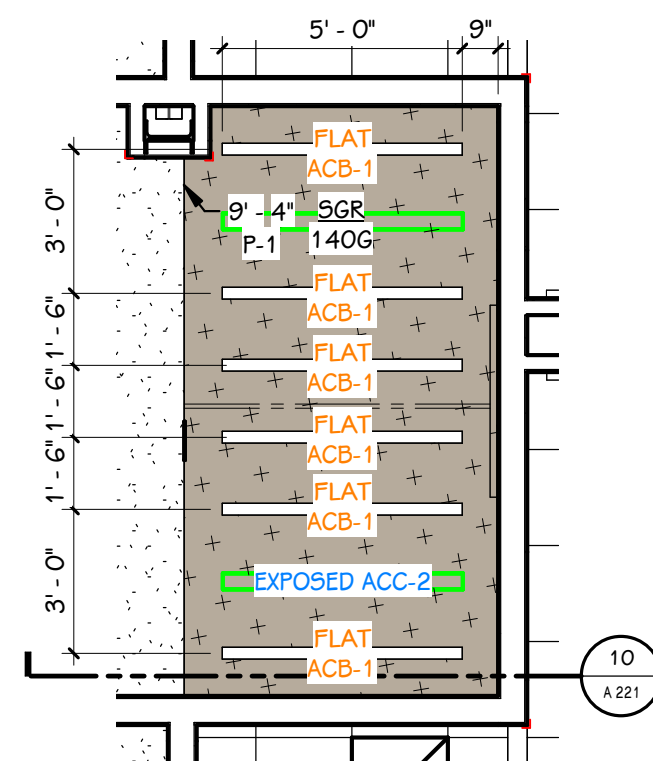
**SMALL GROUP 130G/230G - ENLARGED REFLECTED CEILING PLAN**  
 2  
 A.221  
 1/4" = 1'-0"



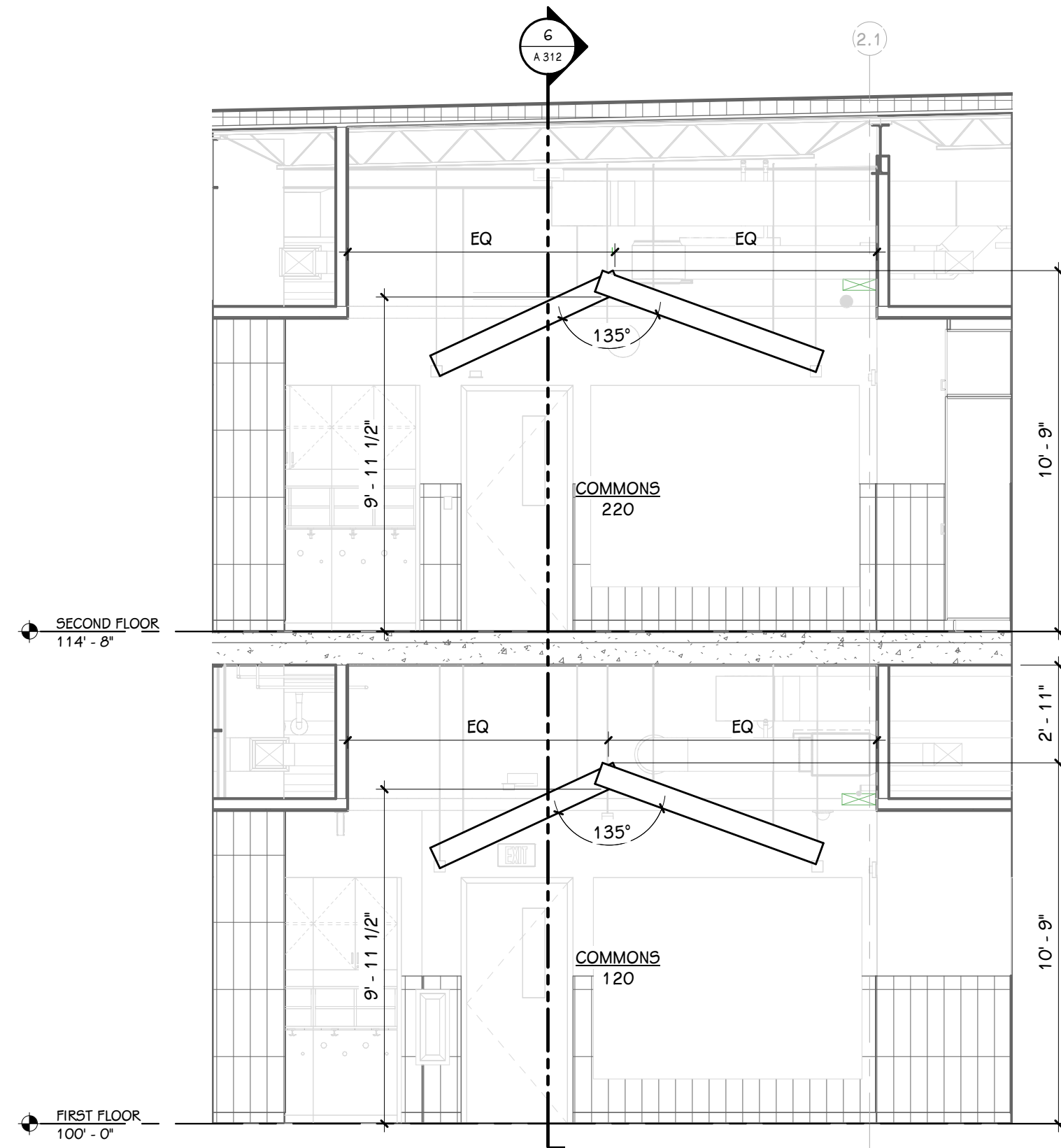
**COMMONS 130/230 - ENLARGED REFLECTED CEILING PLAN**  
 3  
 A.221  
 1/4" = 1'-0"



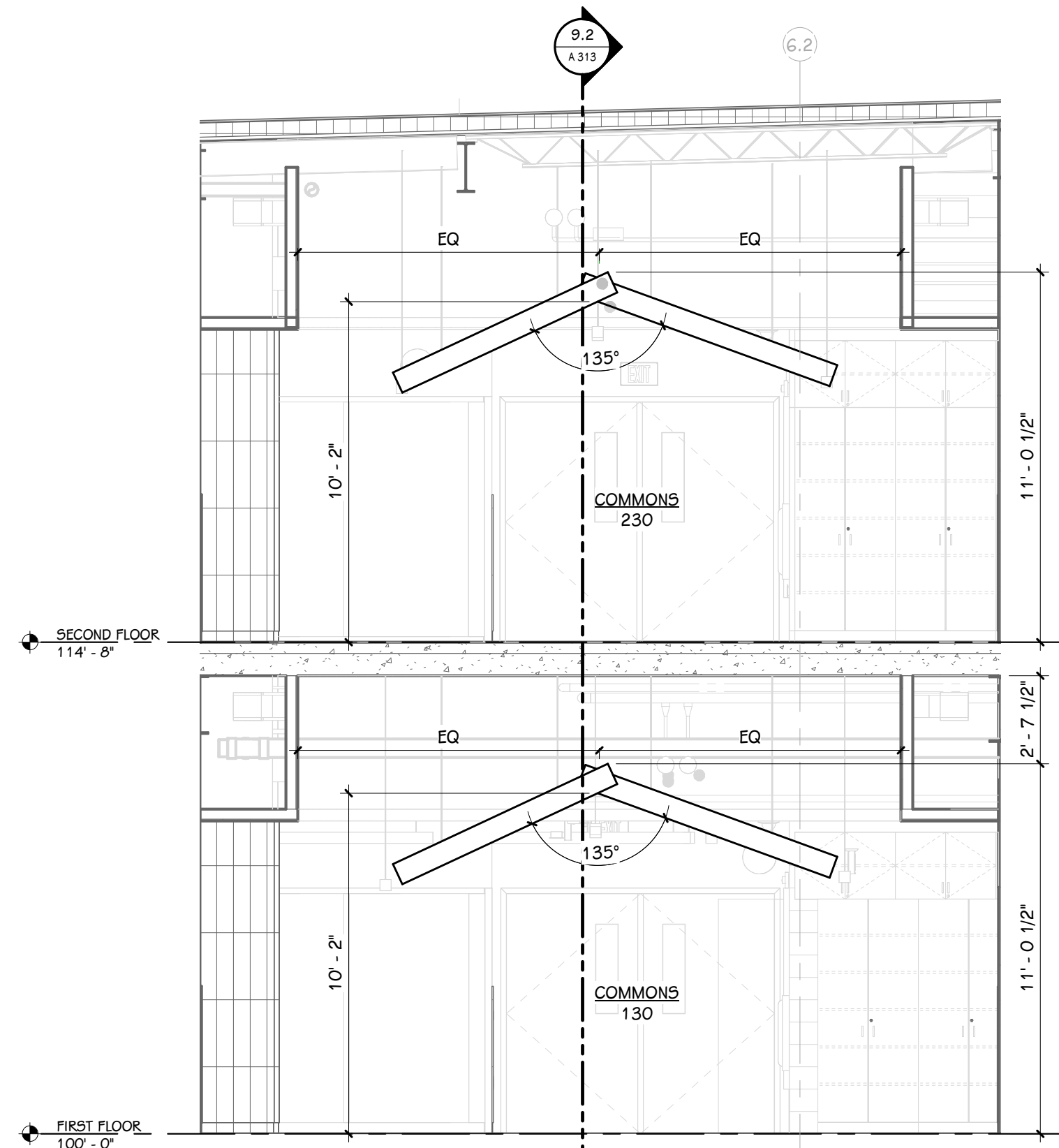
**COMMONS 140/240 - ENLARGED REFLECTED CEILING PLAN**  
 4  
 A.221  
 1/4" = 1'-0"



**SMALL GROUP 140G/240G - ENLARGED REFLECTED CEILING PLAN**  
 5  
 A.221  
 1/4" = 1'-0"



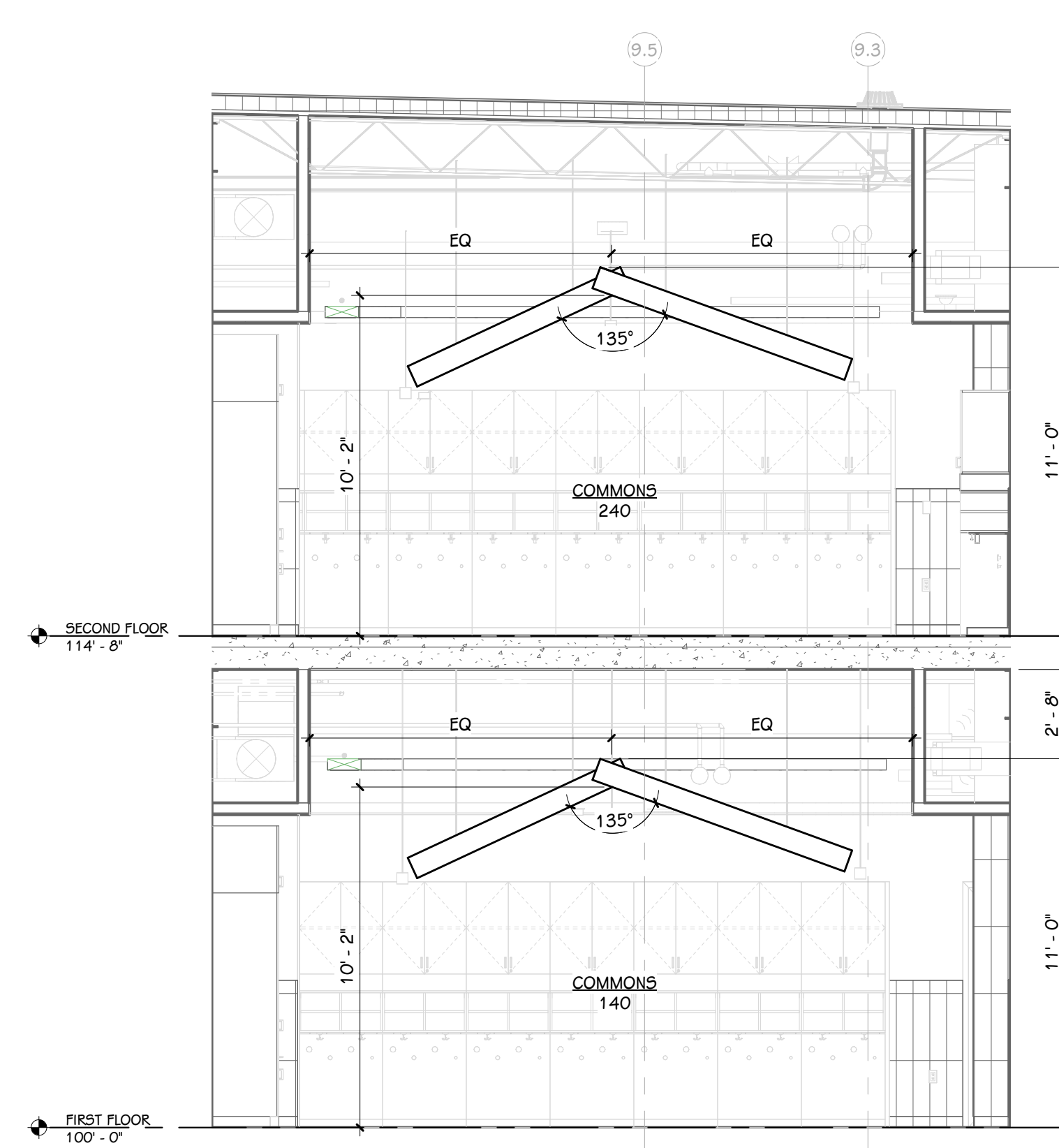
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 6  
 A.221  
 1/4" = 1'-0"



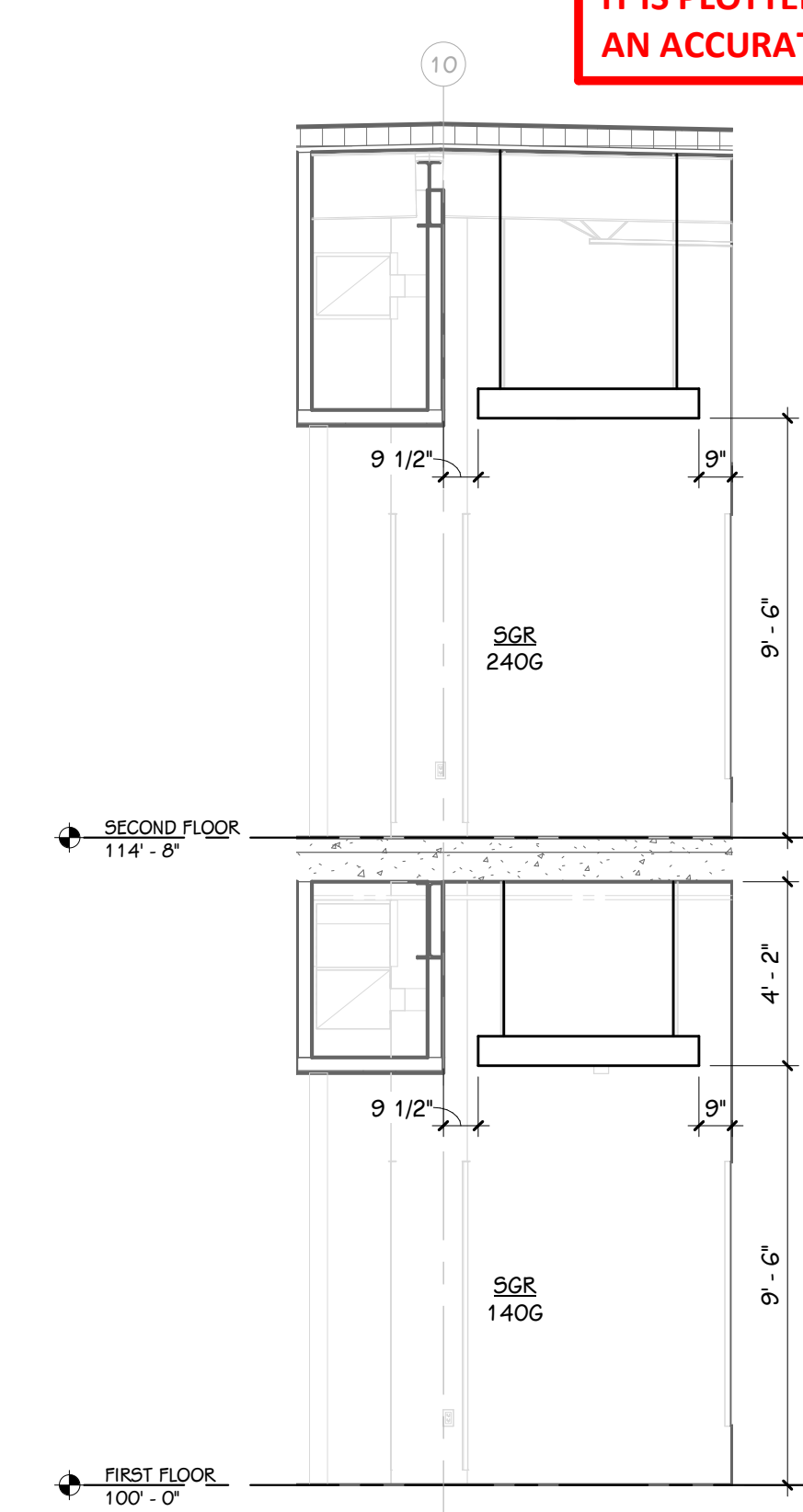
**COMMONS 130/230**  
 7  
 A.221  
 1/4" = 1'-0"



**COMMONS 130G/230G**  
 8  
 A.221  
 1/4" = 1'-0"



**COMMONS 140/240**  
 9  
 A.221  
 1/4" = 1'-0"



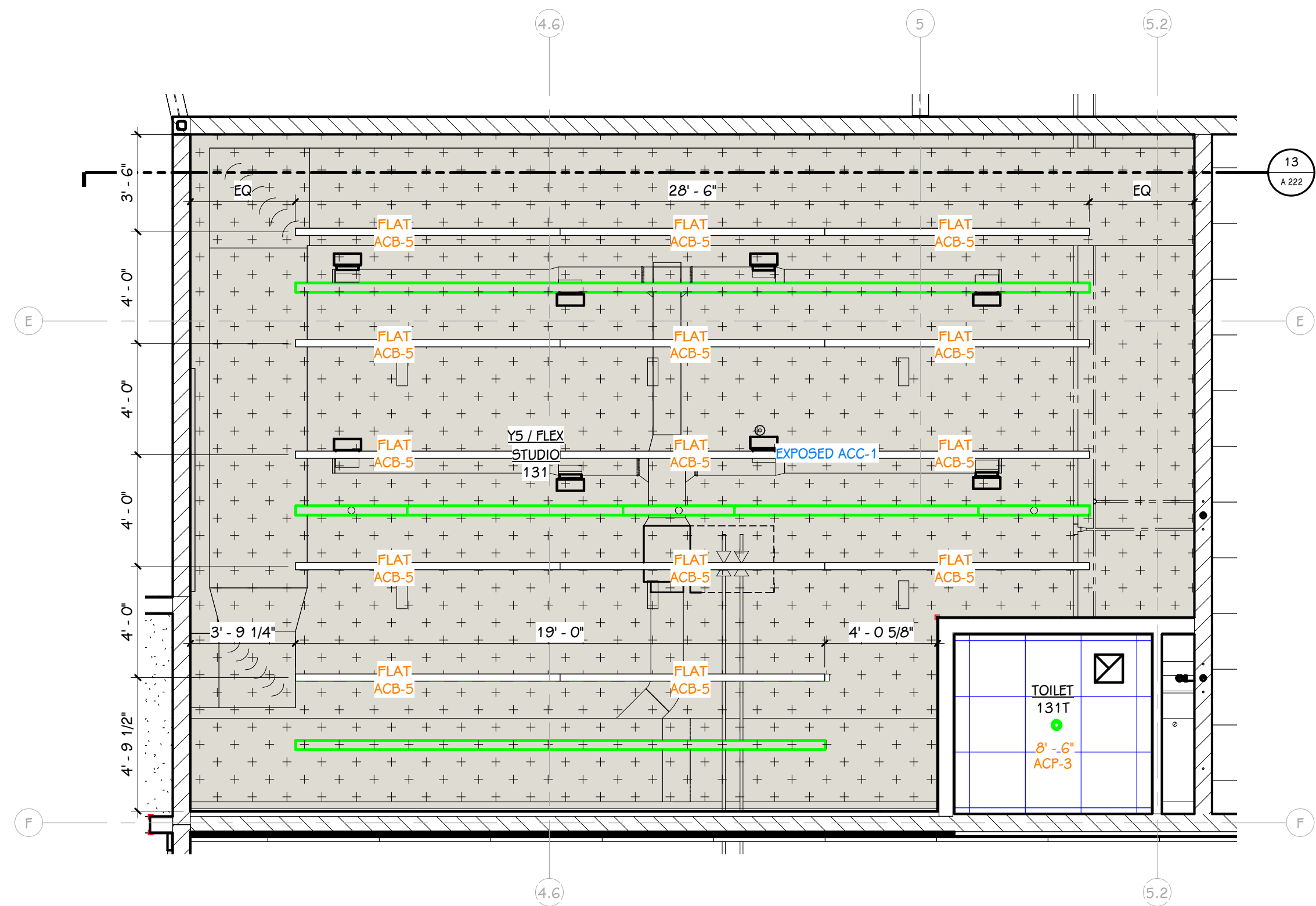
**COMMONS 140G/240G**  
 10  
 A.221  
 1/4" = 1'-0"

**REFLECTED CEILING KEY**

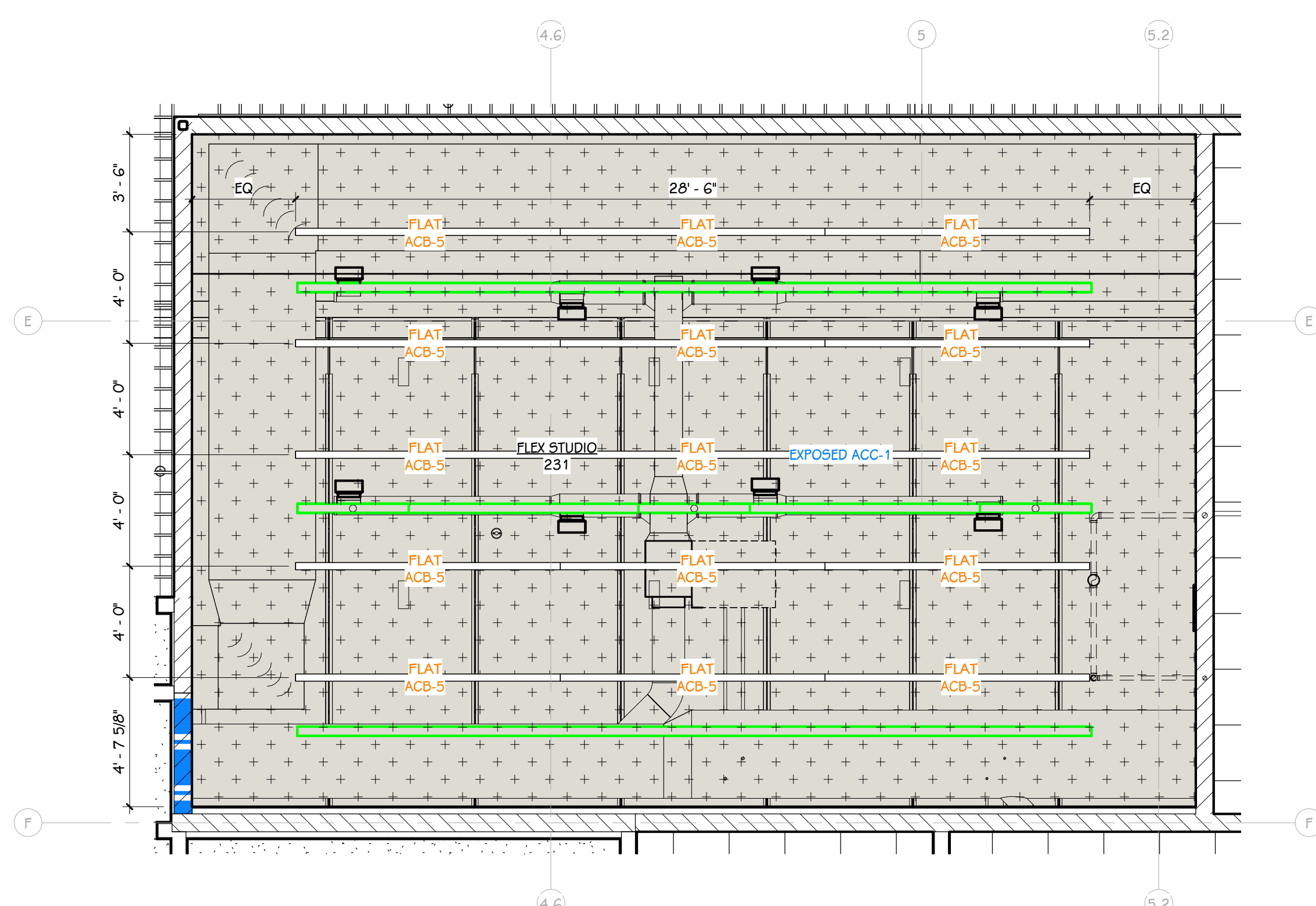
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	ACOUSTICAL CEILING BAFFLE (ACB)
	ACOUSTICAL CEILING COATING (ACC-1) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-2) COORDINATING PAINT, P-19 FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-3) COORDINATING PAINT, P-12 FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-4) COORDINATING PAINT, P-9 FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-5) COORDINATING PAINT, P-15 FIRE SUPPRESSION COVERS IN P-15 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-6) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
	○ OR ○ LIGHTING - REFER TO ELECTRICAL LIGHTING PLAN
	☒ MECHANICAL - REFER TO MECHANICAL SHEET METAL PLAN

- GENERAL NOTES - REFLECTED CEILING**
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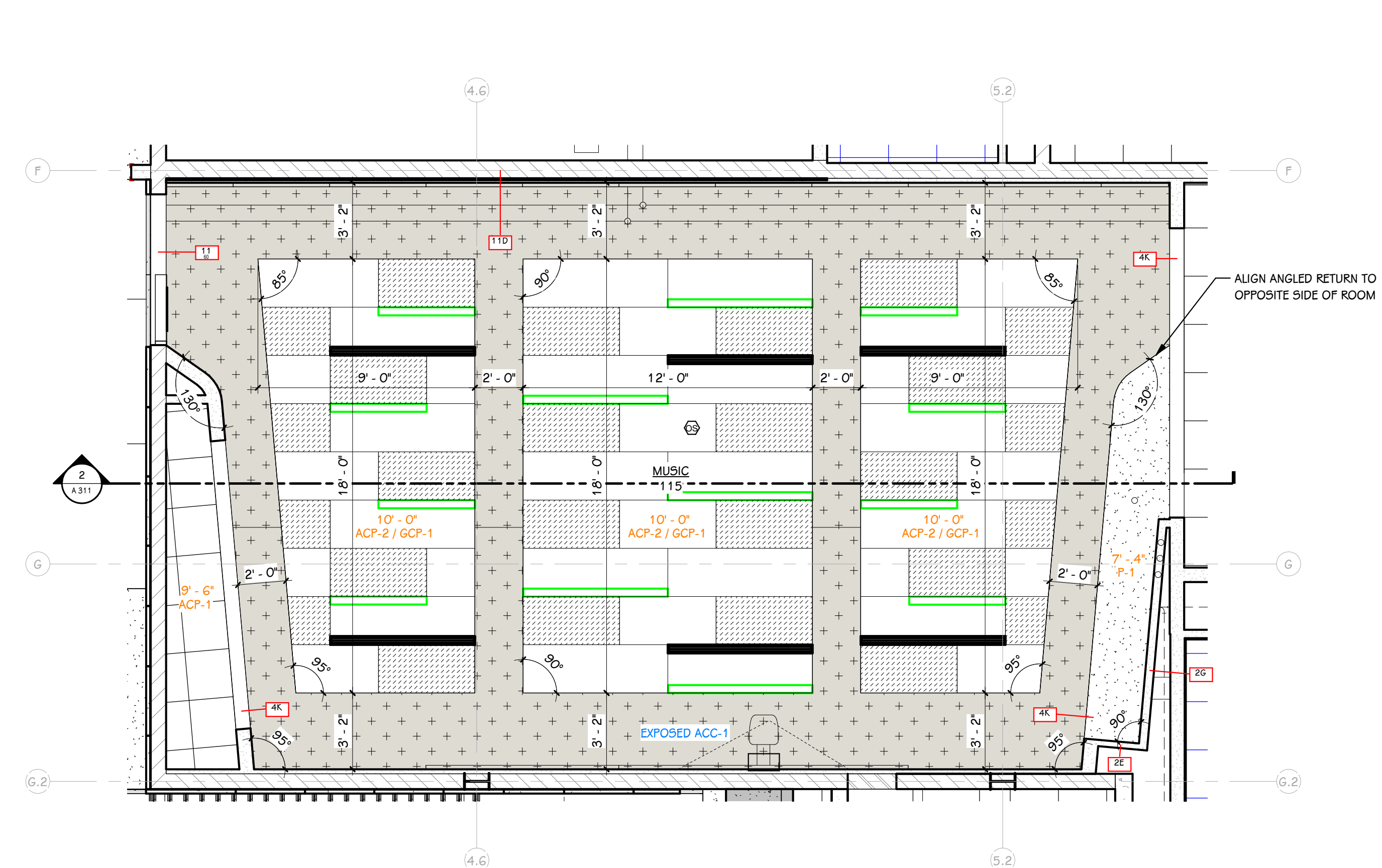
**FLEX STUDIO 131 - ENLARGED REFLECTED CEILING PLAN**  
 11  
 4.222  
 1/4" = 1'-0"



**FLEX STUDIO 231 - ENLARGED REFLECTED CEILING PLAN**  
 12  
 4.222  
 1/4" = 1'-0"



**FLEX STUDIO 131/241**  
 13  
 4.222  
 1/4" = 1'-0"



**115 MUSIC - ENLARGED REFLECTED CEILING PLAN**  
 1  
 4.222  
 1/4" = 1'-0"

**REFLECTED CEILING KEY**

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	ACOUSTICAL CEILING COATING (ACC-1) COORDINATING PAINT, P-1 FIRE SUPPRESSION COVERS IN P-1 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-2) COORDINATING PAINT, P-19 FIRE SUPPRESSION COVERS IN P-19 TO BE BRUSHED CHROME
	ACOUSTICAL CEILING COATING (ACC-3) COORDINATING PAINT, P-12 FIRE SUPPRESSION COVERS IN P-12 TO BE BLACK
	ACOUSTICAL CEILING COATING (ACC-4) COORDINATING PAINT, P-9 FIRE SUPPRESSION COVERS IN P-9 TO BE BLACK
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	ACOUSTICAL CEILING COATING (ACC-6) COORDINATING PAINT, P-18 FIRE SUPPRESSION COVERS IN P-18 TO BE BLACK
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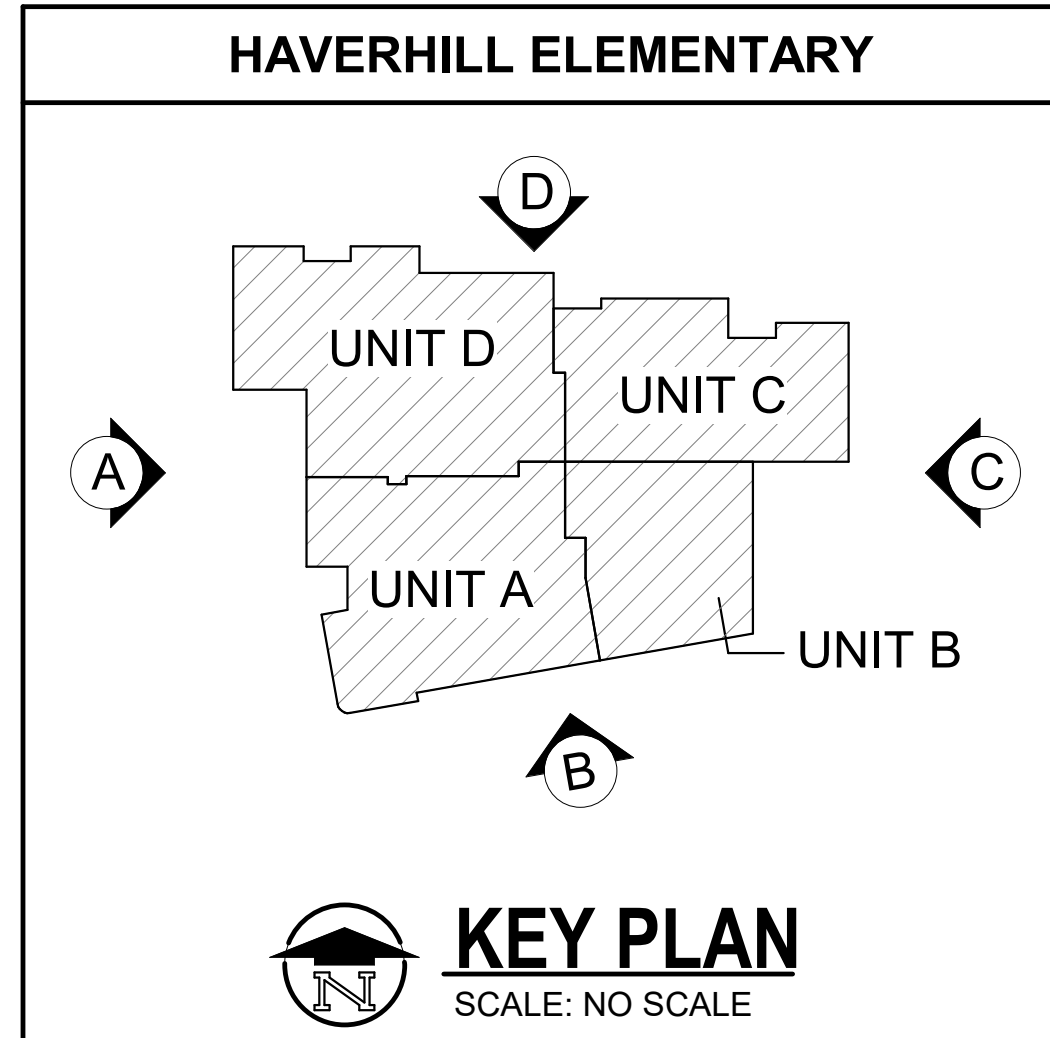
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**NOTES:**  
REFER TO WALL SECTIONS FOR FACADE PLANE PROJECTIONS AND REVEALS  
REFER TO EXTERIOR ELEVATIONS FOR ACCURATE FACADE MATERIAL FINISH

EXTERIOR ELEVATION KEY	
	BRICK 1 COLOR: SHERWOOD GREY VELOUR MANUFACTURER: BELDEN
	BRICK 2 COLOR: BLACK DIAMOND VELOUR MANUFACTURER: BELDEN
	BRICK 3 COLOR: MANGO GLAZED MANUFACTURER: BELDEN
DECORATIVE CONCRETE MASONRY UNIT (DCMU):	
	DCMU-1: CARAMEL MFR: CONSUMERS CONCRETE
	DCMU-2: SAGE MFR: CONSUMERS CONCRETE
	DCMU-3: TWEED MFR: CONSUMERS CONCRETE
METAL COMPOSITE MATERIAL (MCM):	
	MCM 1: ALABASTER MANUFACTURER: ALLUCOBOND
	MCM 2: BEIGE MANUFACTURER: ALLUCOBOND
	MCM 3: CASTLE GRAY MANUFACTURER: ALLUCOBOND
	MCM 4: CHESTNUT MANUFACTURER: ALLUCOBOND
	MCM 5: DARK BRONZE ANODIZED MANUFACTURER: ALLUCOBOND
CURTAINWALL, PREFIN. ALUM. FASCIA - COLOR: DARK BRONZE ANODIZED	
CJ = CONTROL JOINT, COLOR:	
EJ = BUILDING EXPANSION JOINT, COLOR:	

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
EXTERIOR ELEVATIONS

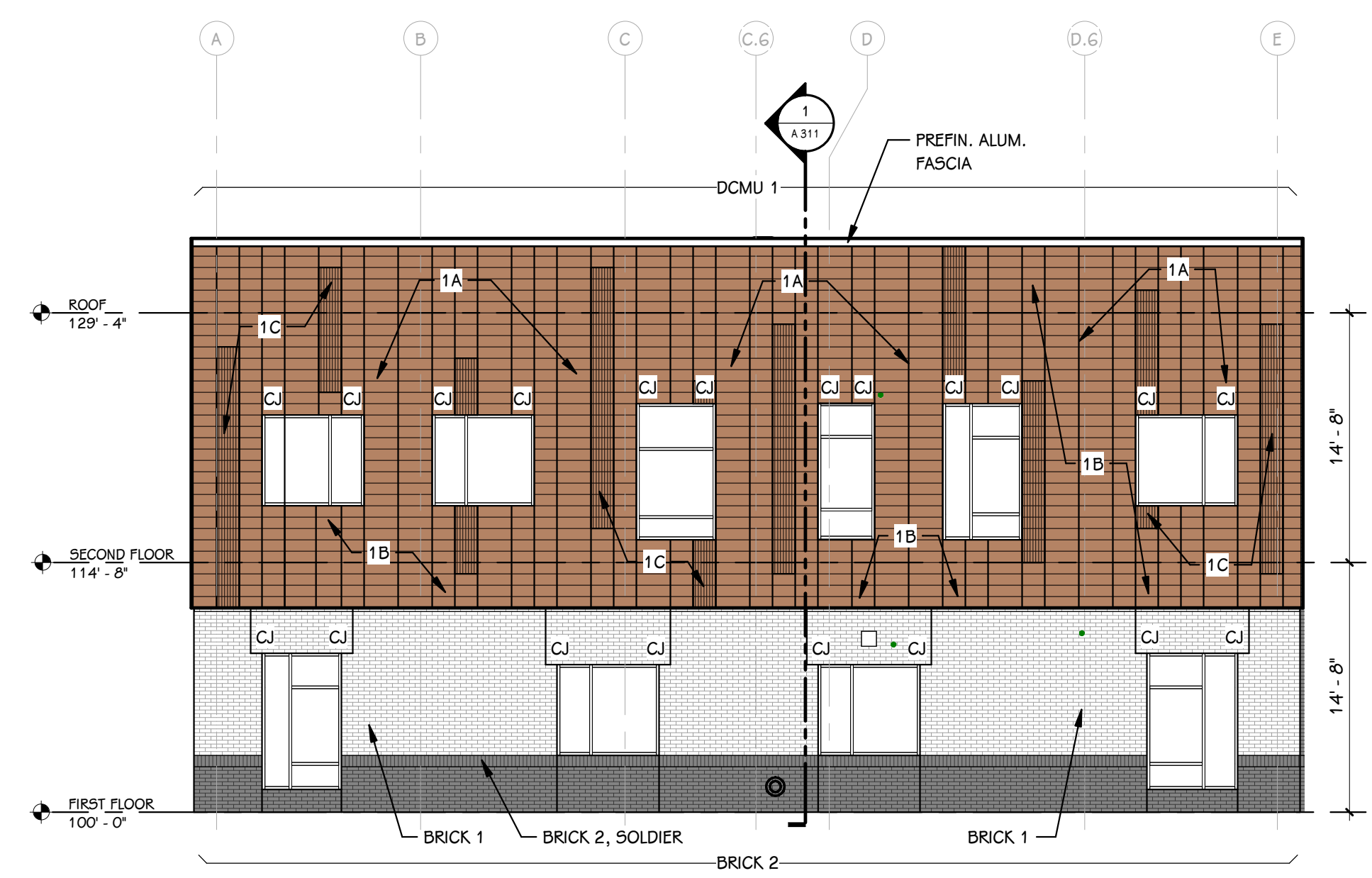
DATE  
JUNE 30, 2023

SHEET NUMBER  
A 301  
21-237.20

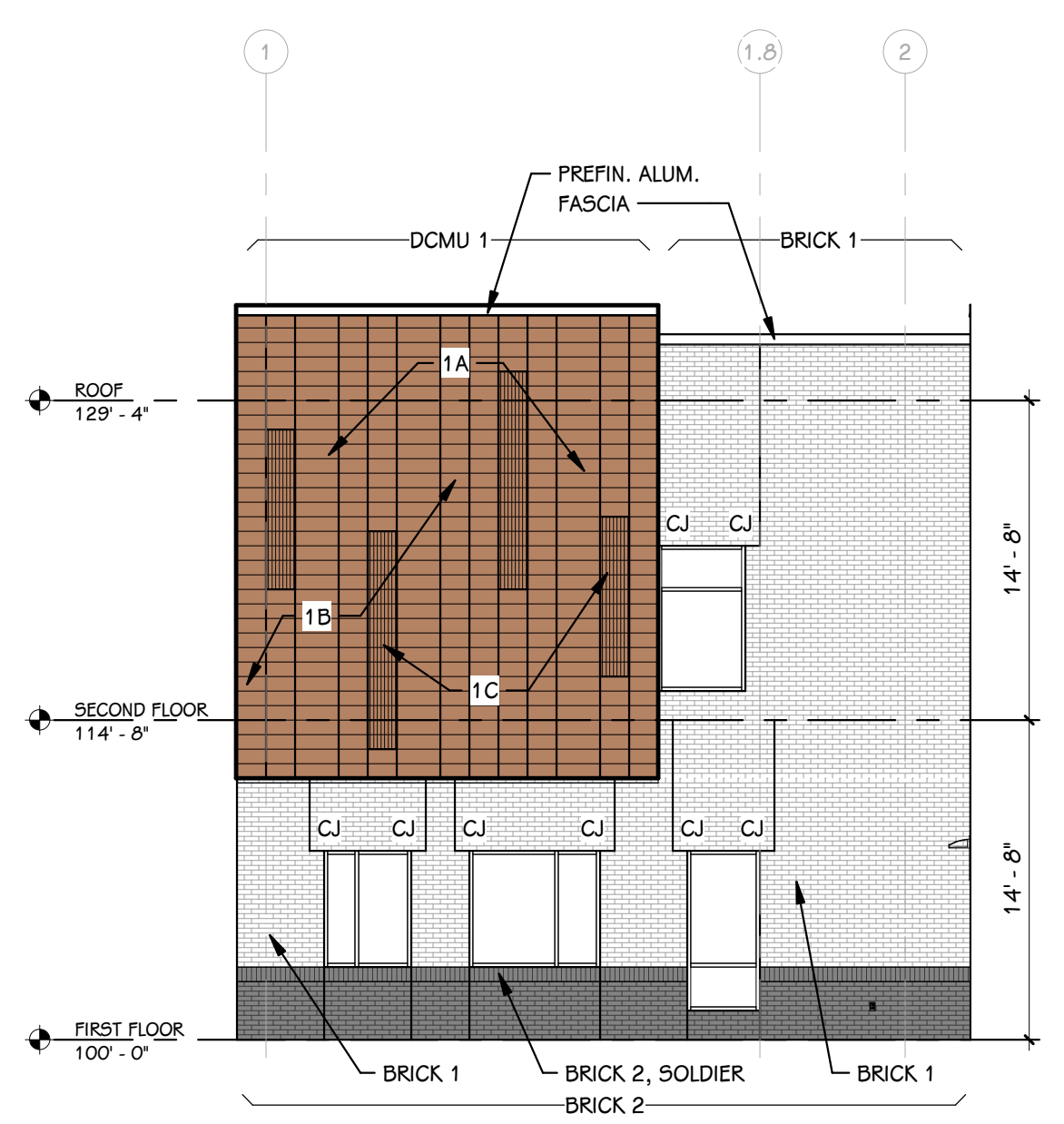
**NOTES:**  
REFER TO WALL SECTIONS FOR FACADE  
PLANE PROJECTIONS AND REVEALS  
REFER TO EXTERIOR ELEVATIONS FOR  
ACCURATE FACADE MATERIAL FINISH

**EXTERIOR ELEVATION KEY**

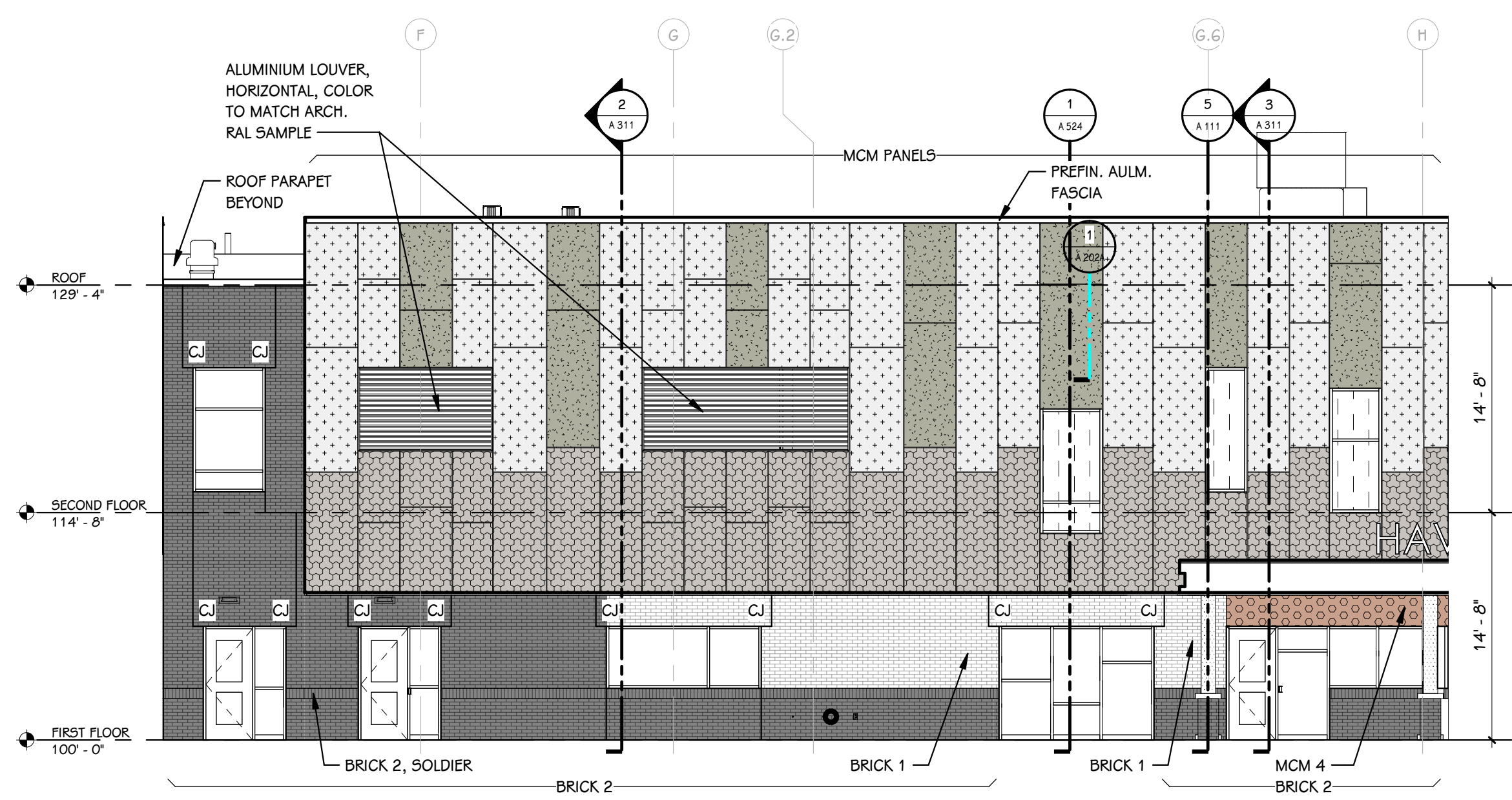
	BRICK 1 COLOR: SHERWOOD GREY VELOUR MANUFACTURER: BELDEN
	BRICK 2 COLOR: BLACK DIAMOND VELOUR MANUFACTURER: BELDEN
	BRICK 3 COLOR: MANGO GLAZED MANUFACTURER: BELDEN
<b>DECORATIVE CONCRETE MASONRY UNIT (DCMU):</b>	
	DCMU-1: CARAMEL MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	DCMU-2: SAGE MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	DCMU-3: TWIG MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
<b>METAL COMPOSITE MATERIAL (MCM):</b>	
	MCM 1: ALABASTER MANUFACTURER: ALLUCOBOND
	MCM 2: BEIGE MANUFACTURER: ALLUCOBOND
	MCM 3: CASTLE GRAY MANUFACTURER: ALLUCOBOND
	MCM 4: CHESTNUT MANUFACTURER: ALLUCOBOND
	MCM 5: DARK BRONZE ANODIZED MANUFACTURER: ALLUCOBOND
CURTAINWALL, PREFIN. ALUM. FASCIA - COLOR: DARK BRONZE ANODIZED	
CJ = CONTROL JOINT, COLOR:	
EJ - BUILDING EXPANSION JOINT, COLOR:	



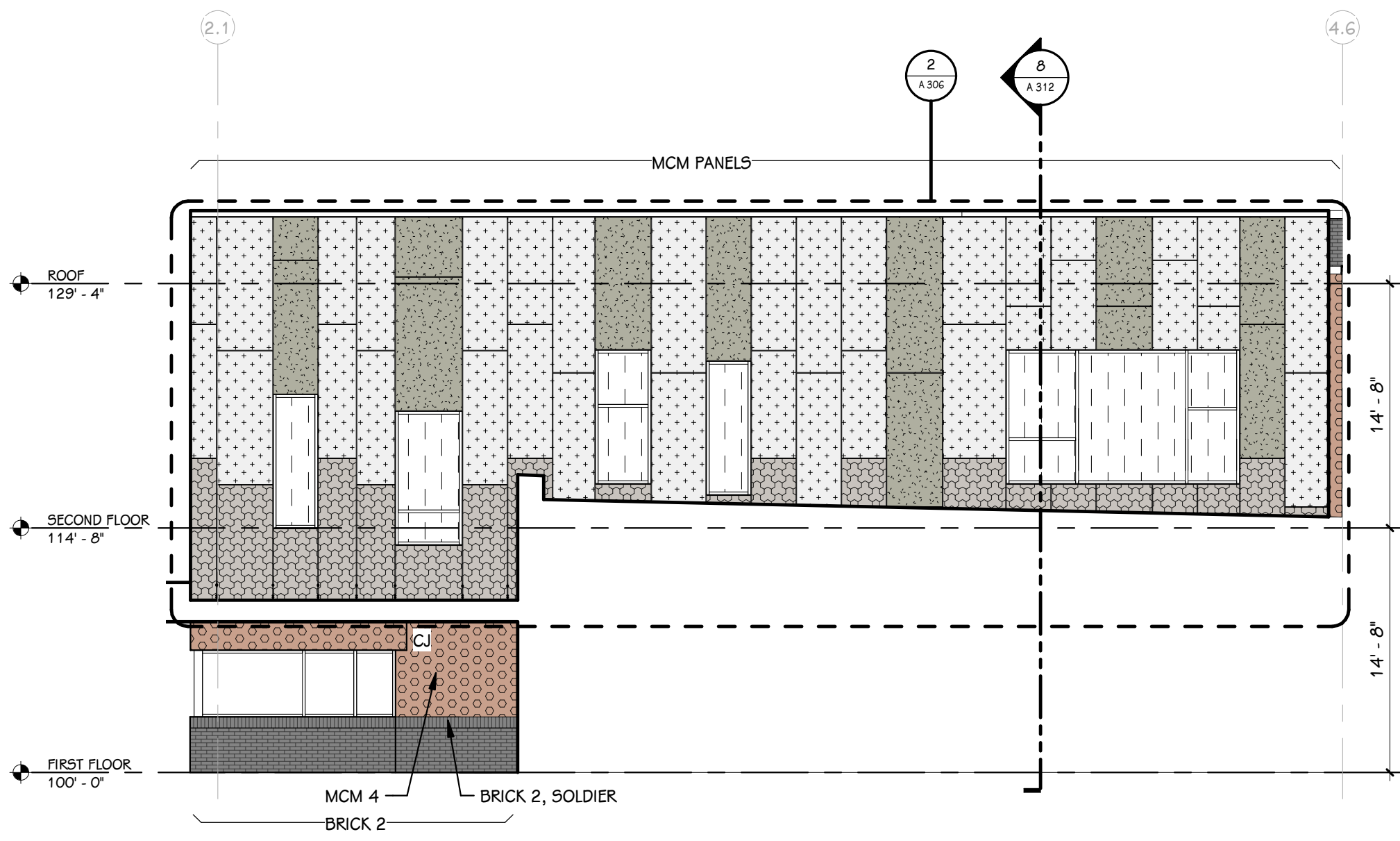
**A1**  
A.302  
**EXTERIOR ELEVATION - WEST**  
1/8" = 1'-0"



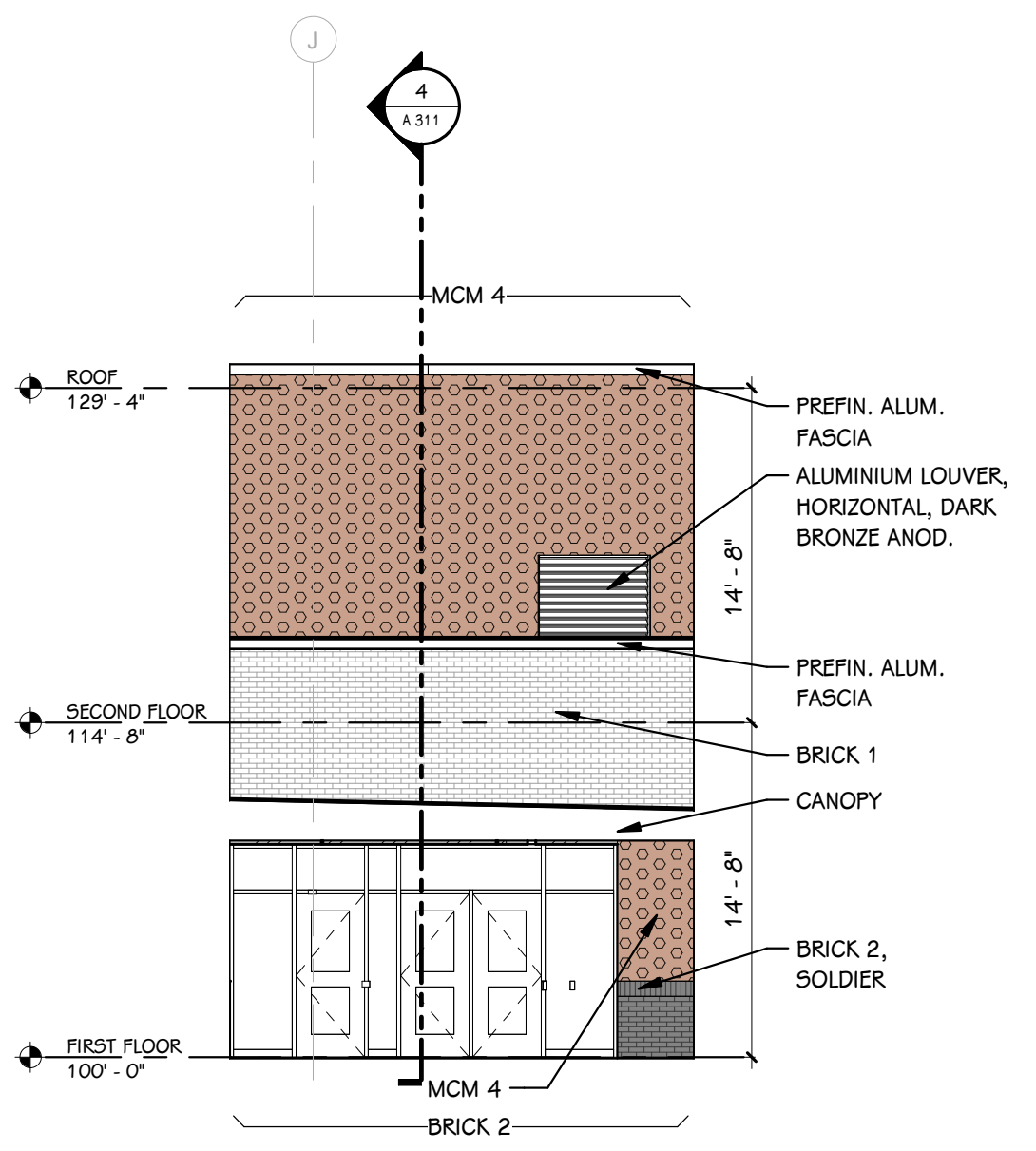
**A2**  
A.302  
**EXTERIOR ELEVATION - WEST**  
1/8" = 1'-0"



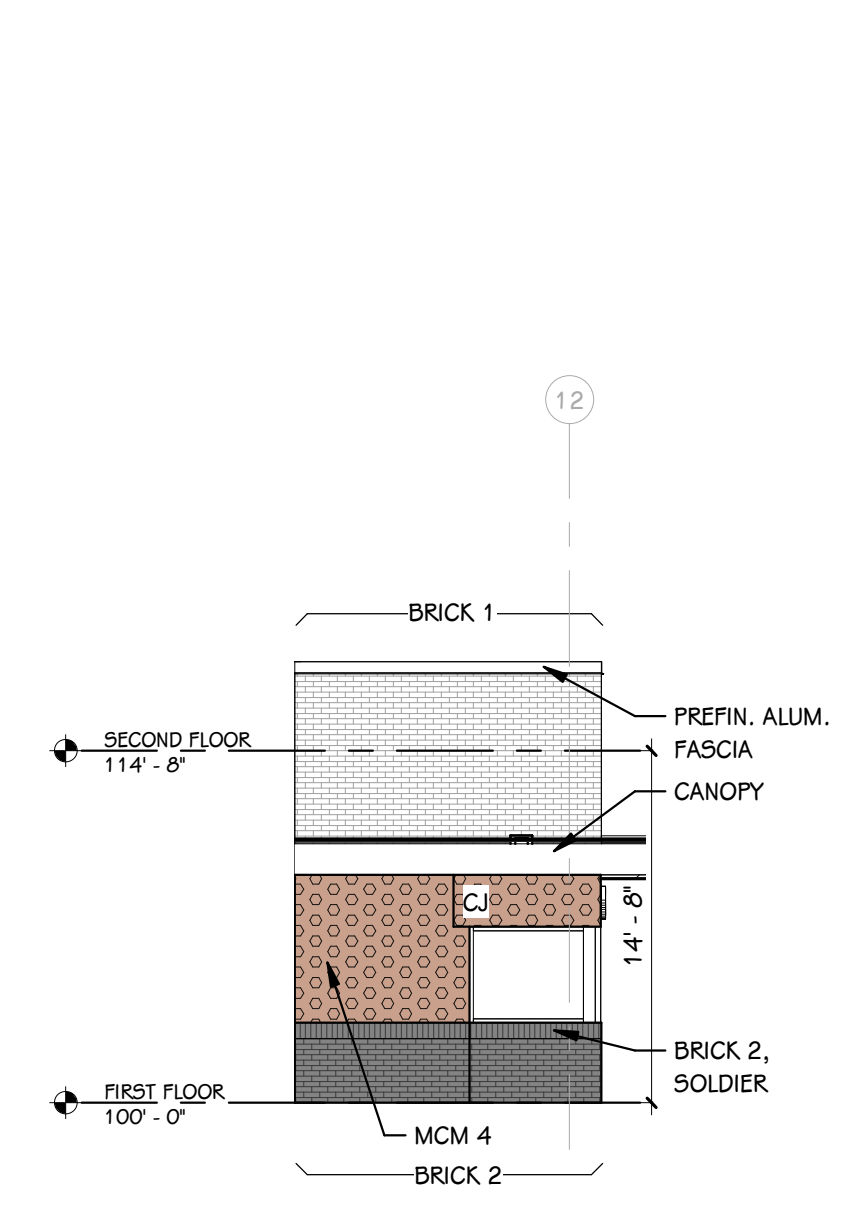
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A.302  
**EXTERIOR ELEVATION - WEST**  
1/8" = 1'-0"



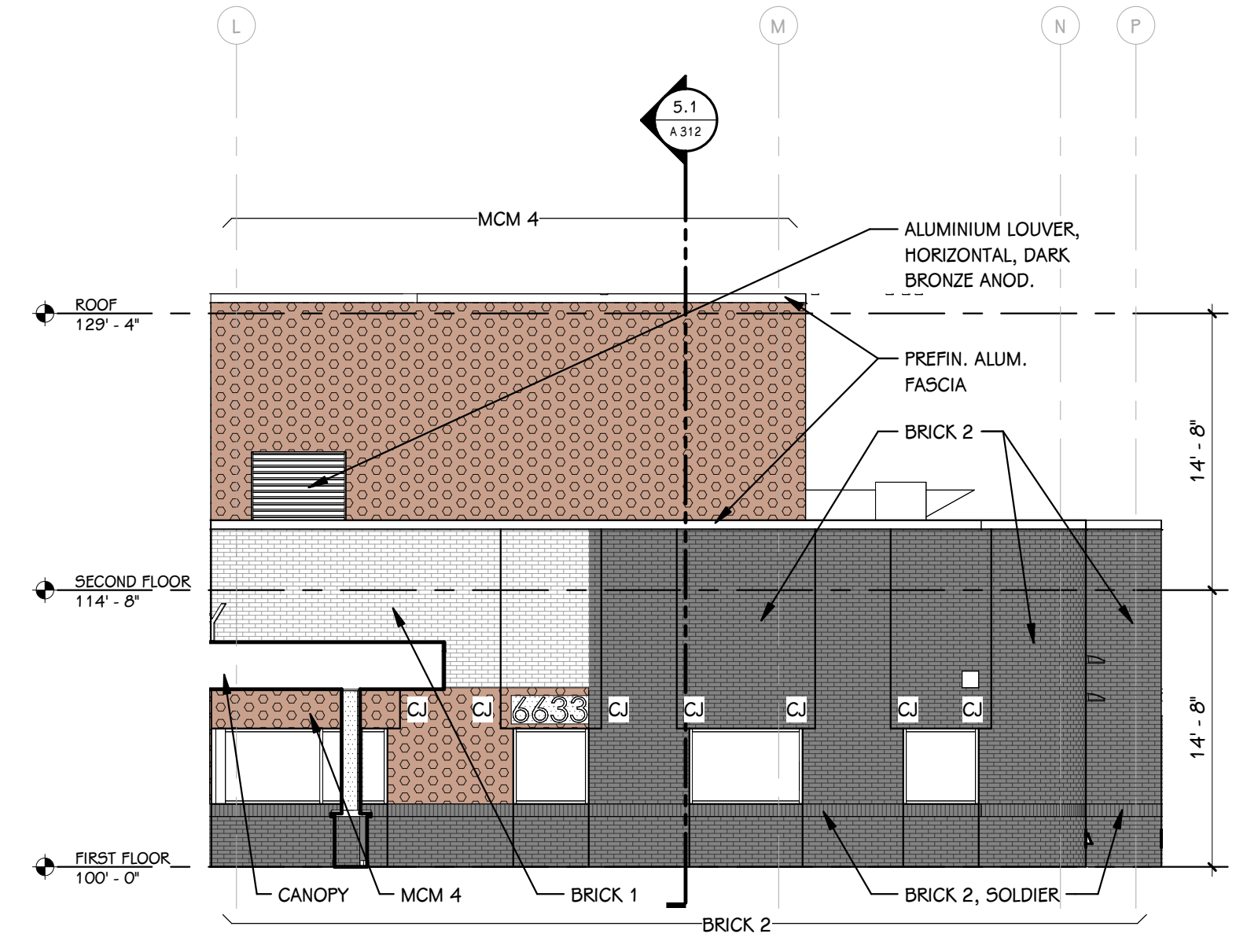
**A4**  
A.302  
**EXTERIOR ELEVATION - WEST**  
1/8" = 1'-0"



**A5**  
A.302  
**EXTERIOR ELEVATION - WEST**  
1/8" = 1'-0"

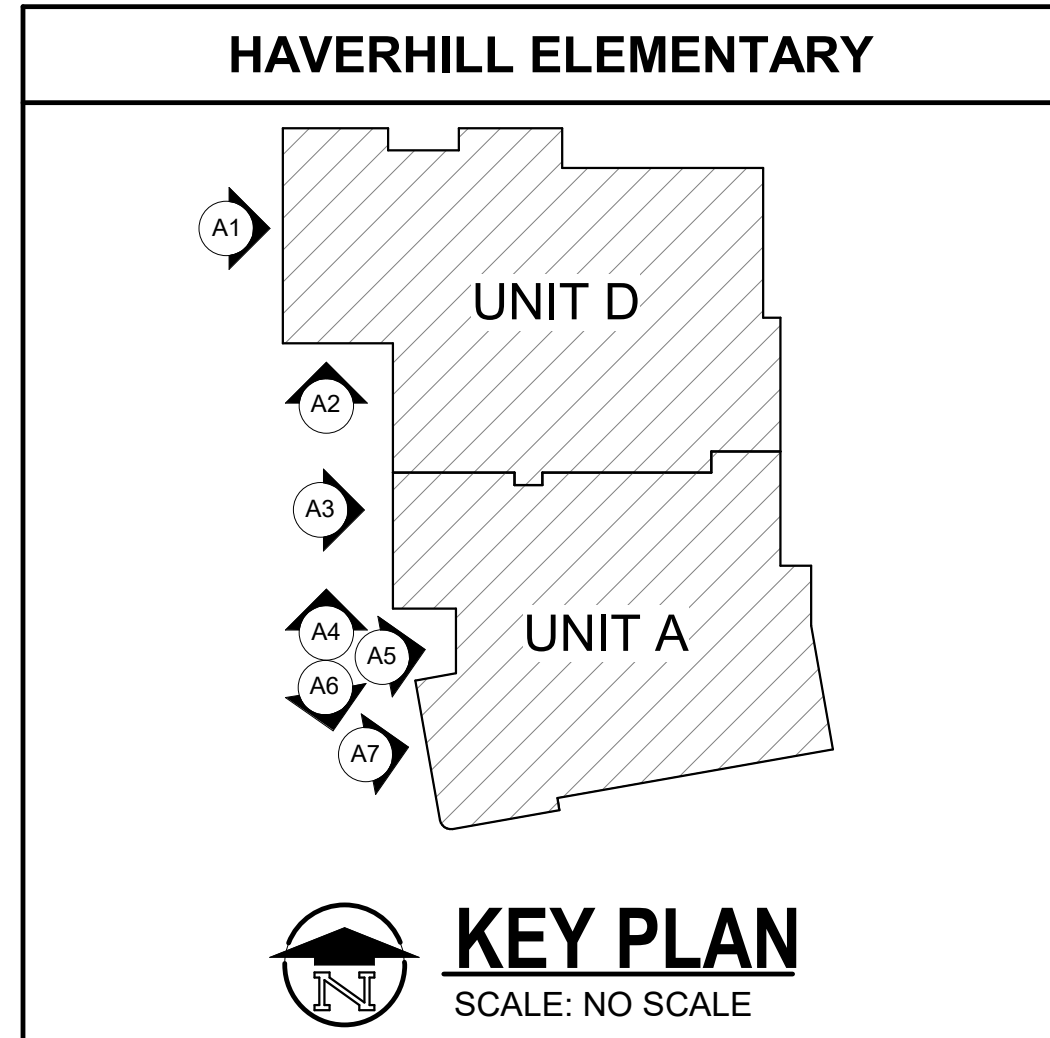


**A6**  
A.302  
**EXTERIOR ELEVATION - WEST**  
1/8" = 1'-0"



**A7**  
A.302  
**EXTERIOR ELEVATION - WEST**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



ISSUED FOR DATE

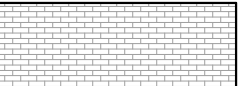
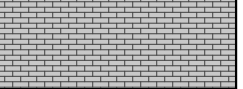


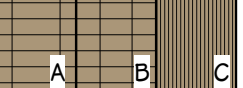
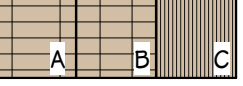
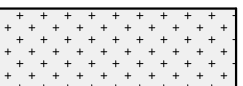
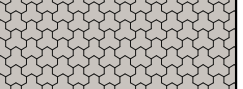

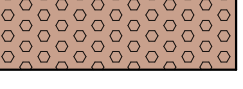
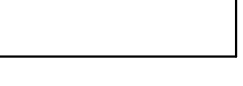
PROJECT TITLE  
**Haverhill Elementary School**  
Bid Package 6: Construction

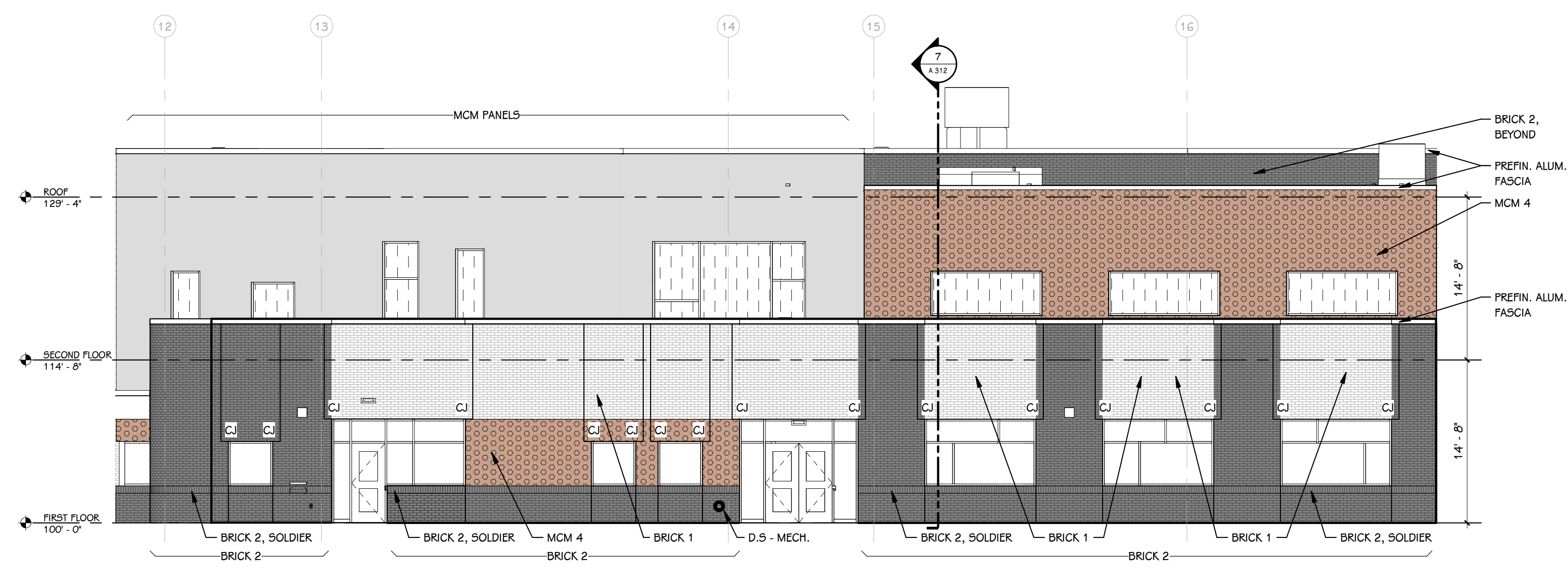
OWNER  
**Portage Public Schools**

SHEET TITLE  
**EXTERIOR ELEVATIONS - WEST**

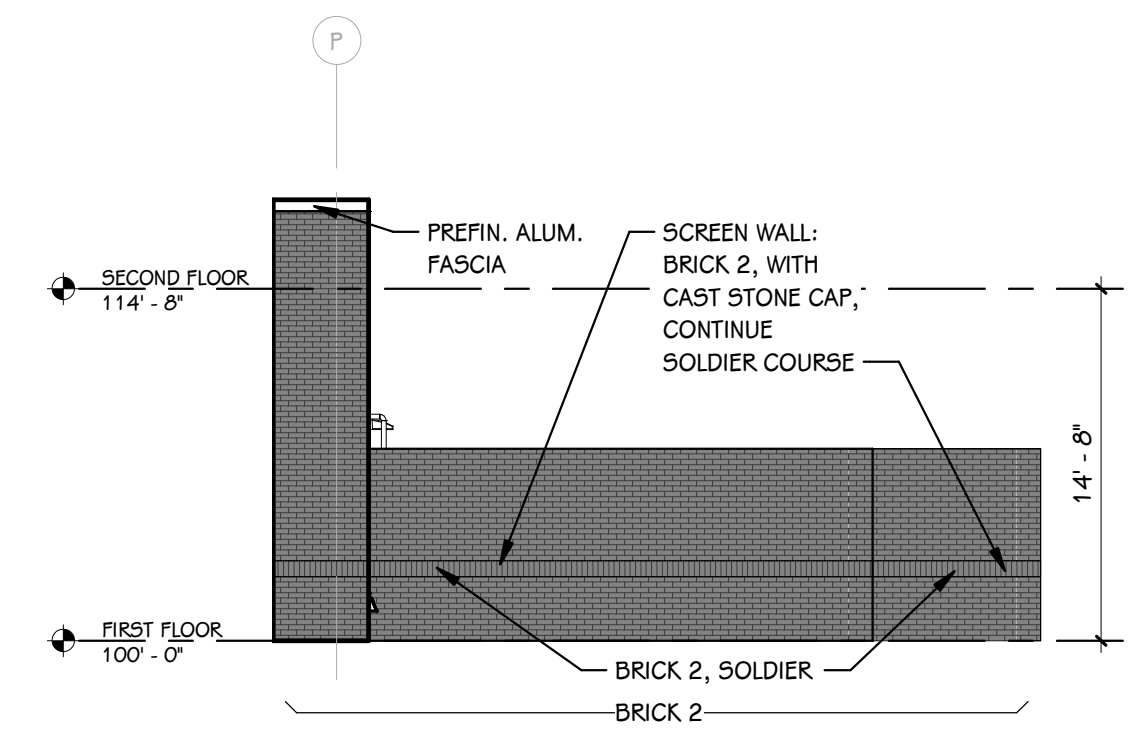
Portage, Michigan

SHEET NUMBER  
**A 302**  
DATE  
**JUNE 30, 2023**  
21-237.20

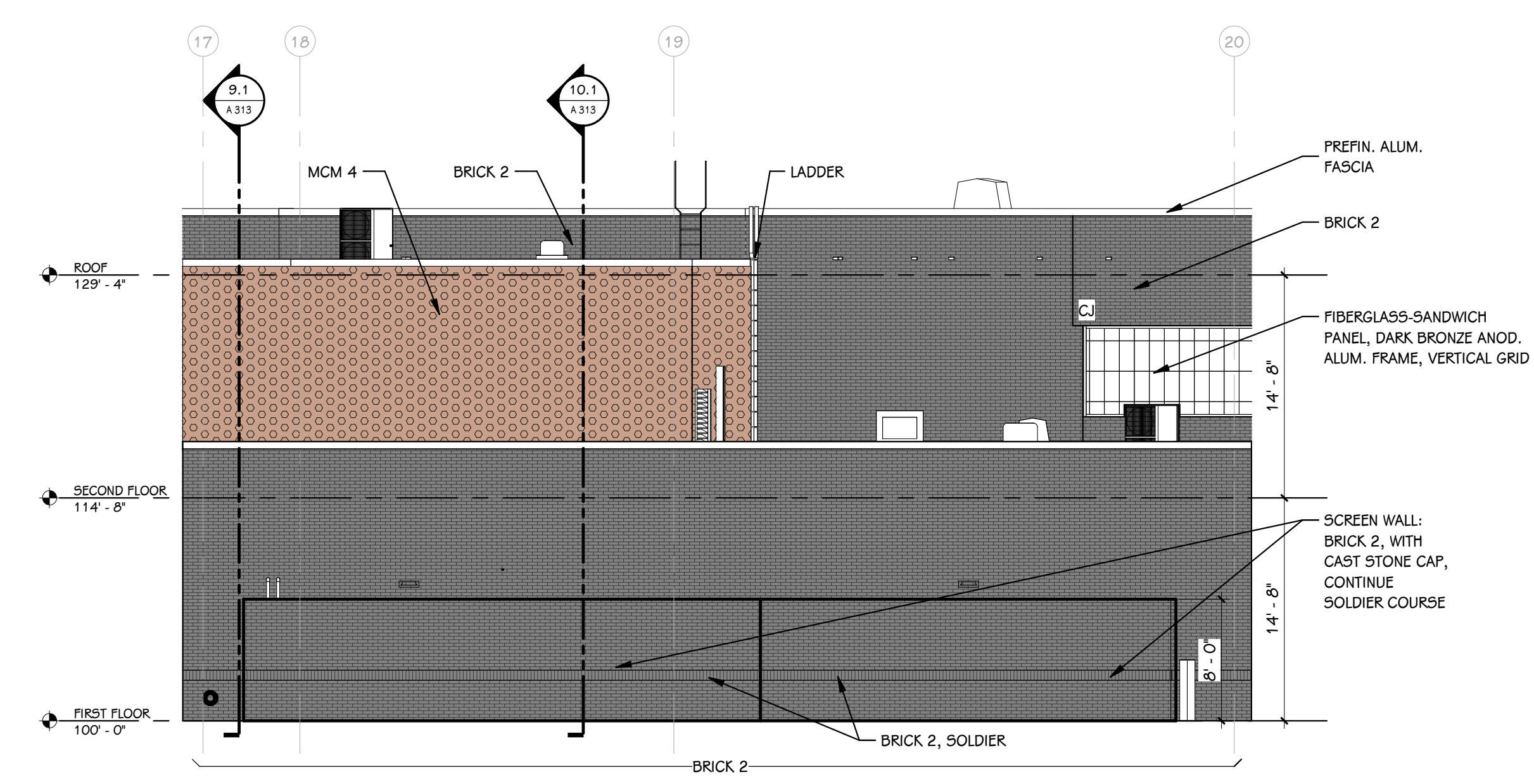
NOTES:	EXTERIOR ELEVATION KEY
REFER TO WALL SECTIONS FOR FACADE PLANE PROJECTIONS AND REVEALS	 BRICK 1 COLOR: SHERWOOD GREY VELOUR MANUFACTURER: BELDEN
REFER TO EXTERIOR ELEVATIONS FOR ACCURATE FACADE MATERIAL FINISH	 BRICK 2 COLOR: BLACK DIAMOND VELOUR MANUFACTURER: BELDEN
	 BRICK 3 COLOR: MANGO GLAZED MANUFACTURER: BELDEN
	DECORATIVE CONCRETE MASONRY UNIT (DCMU):
	 DCMU-1: CARAMEL MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	 DCMU-2: SAGE MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	 DCMU-3: TWEED MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	METAL COMPOSITE MATERIAL (MCM):
	 MCM 1: ALABASTER MANUFACTURER: ALLUCOBOND
	 MCM 2: BEIGE MANUFACTURER: ALLUCOBOND
	 MCM 3: CASTLE GRAY MANUFACTURER: ALLUCOBOND
	 MCM 4: CHESTNUT MANUFACTURER: ALLUCOBOND
	 MCM 5: DARK BRONZE ANODIZED MANUFACTURER: ALLUCOBOND
	CURTAINWALL, PREFIN. ALUM. FASCIA - COLOR: DARK BRONZE ANODIZED
	CJ = CONTROL JOINT, COLOR:
	EJ = BUILDING EXPANSION JOINT, COLOR:



**B1**  
EXTERIOR ELEVATION - SOUTH  
1/8" = 1'-0"

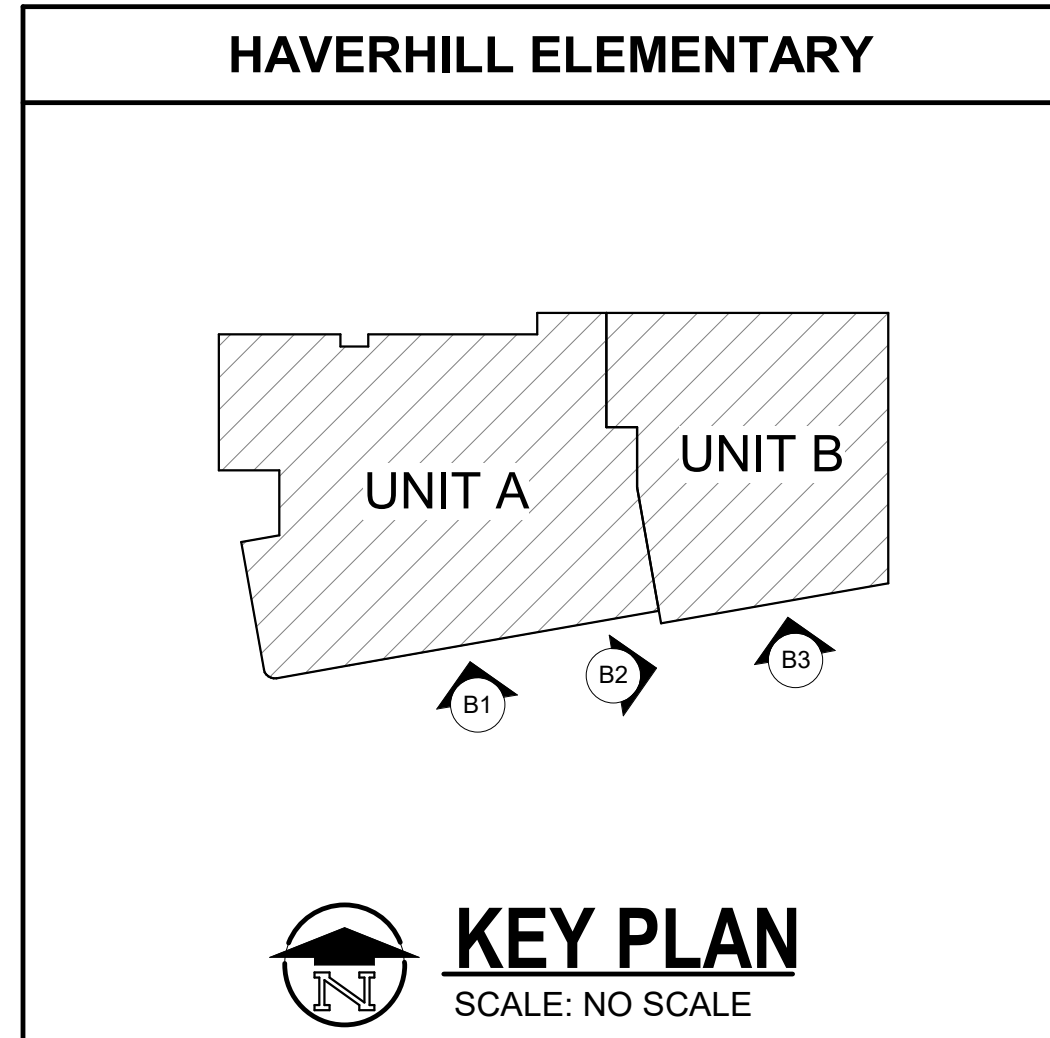


**B2**  
EXTERIOR ELEVATION - SOUTH  
1/8" = 1'-0"



**B3**  
EXTERIOR ELEVATION - SOUTH  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS  
Portage, Michigan

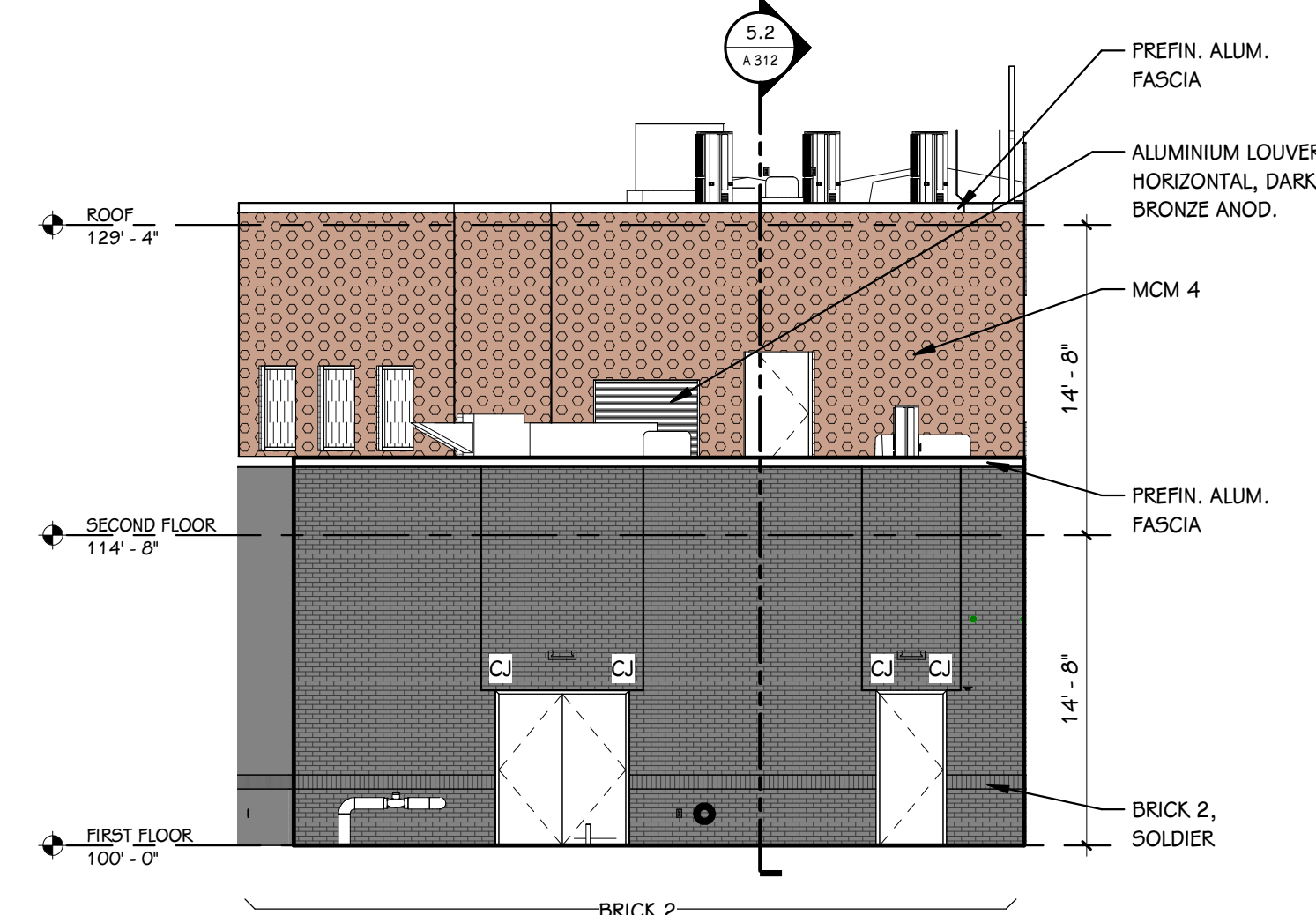
SHEET TITLE  
EXTERIOR ELEVATIONS - SOUTH

SHEET NUMBER  
**A 303**  
21-237.20

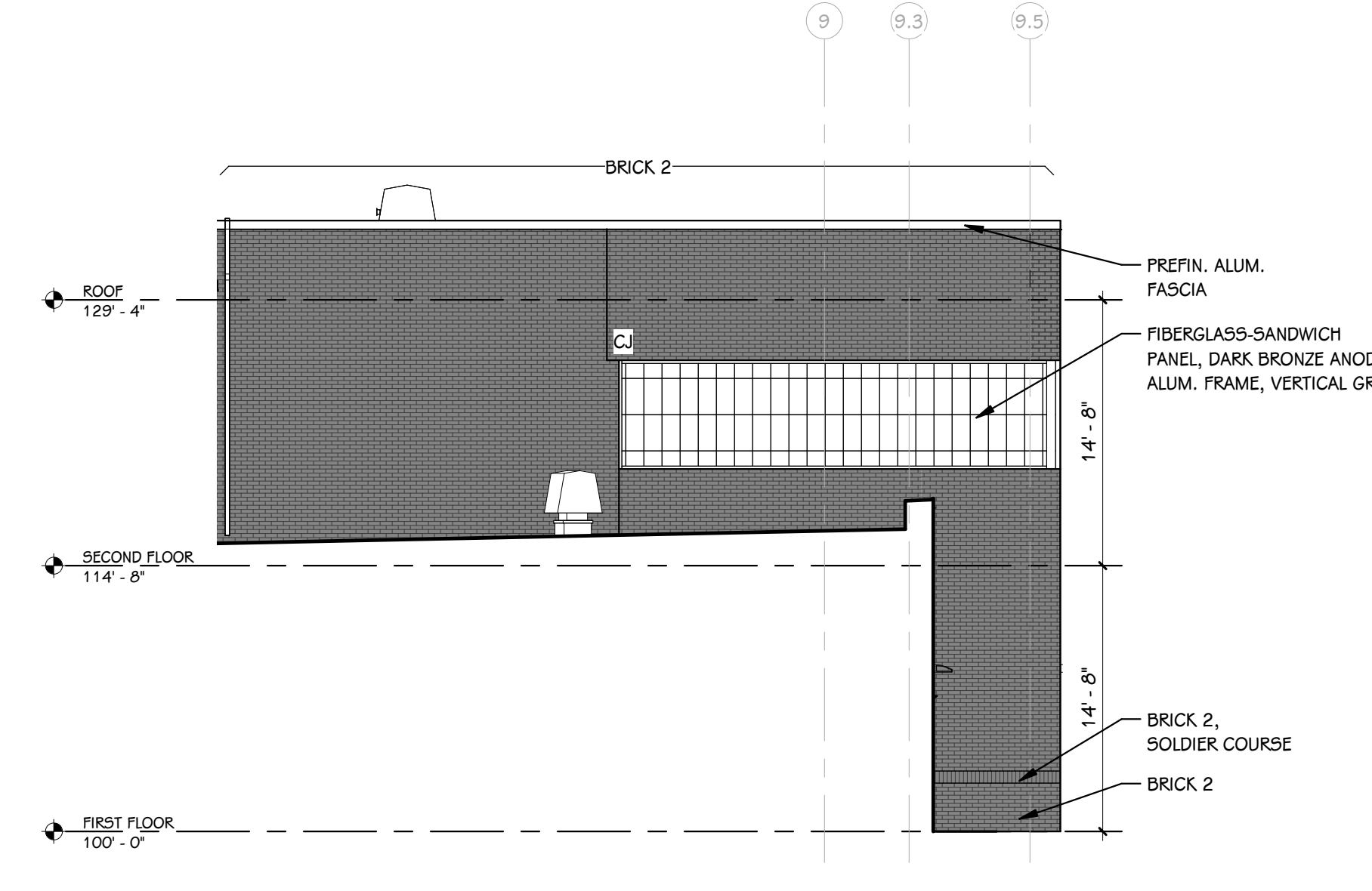
DATE  
JUNE 30, 2023

**NOTES:**  
REFER TO WALL SECTIONS FOR FACADE PLANE PROJECTIONS AND REVEALS  
REFER TO EXTERIOR ELEVATIONS FOR ACCURATE FACADE MATERIAL FINISH

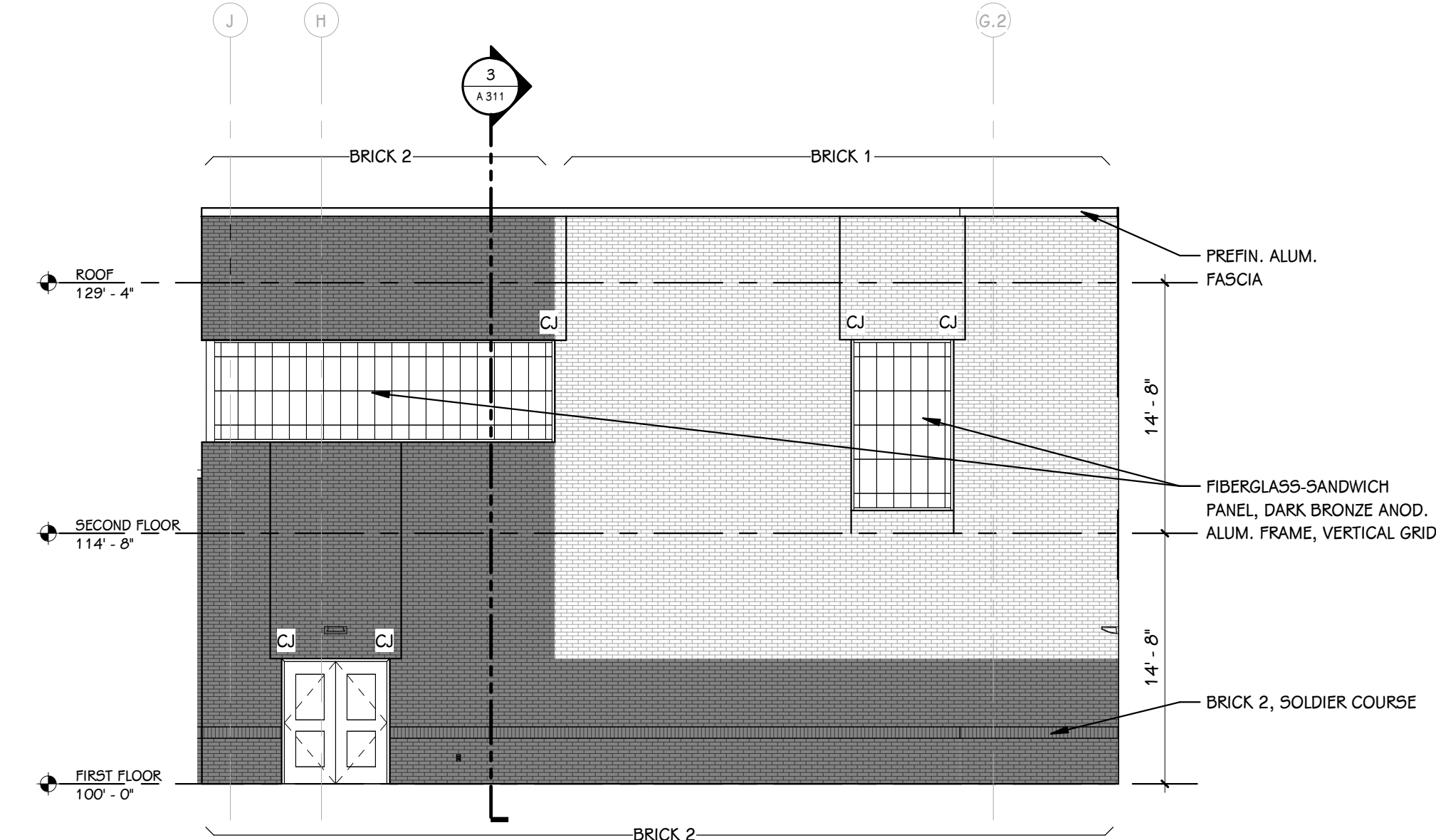
EXTERIOR ELEVATION KEY	
	BRICK 1 COLOR: SHERWOOD GREY VELOUR MANUFACTURER: BELDEN
	BRICK 2 COLOR: BLACK DIAMOND VELOUR MANUFACTURER: BELDEN
	BRICK 3 COLOR: MANGO GLAZED MANUFACTURER: BELDEN
DECORATIVE CONCRETE MASONRY UNIT (DCMU):	
	DCMU-1: CARAMEL MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	DCMU-2: SAGE MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	DCMU-3: TWEED MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
METAL COMPOSITE MATERIAL (MCM):	
	MCM 1: ALABASTER MANUFACTURER: ALLUCOBOND
	MCM 2: BEIGE MANUFACTURER: ALLUCOBOND
	MCM 3: CASTLE GRAY MANUFACTURER: ALLUCOBOND
	MCM 4: CHESTNUT MANUFACTURER: ALLUCOBOND
	MCM 5: DARK BRONZE ANODIZED MANUFACTURER: ALLUCOBOND
CURTAINWALL, PREFIN. ALUM. FASCIA - COLOR: DARK BRONZE ANODIZED	
CJ = CONTROL JOINT, COLOR:	
EJ - BUILDING EXPANSION JOINT, COLOR:	



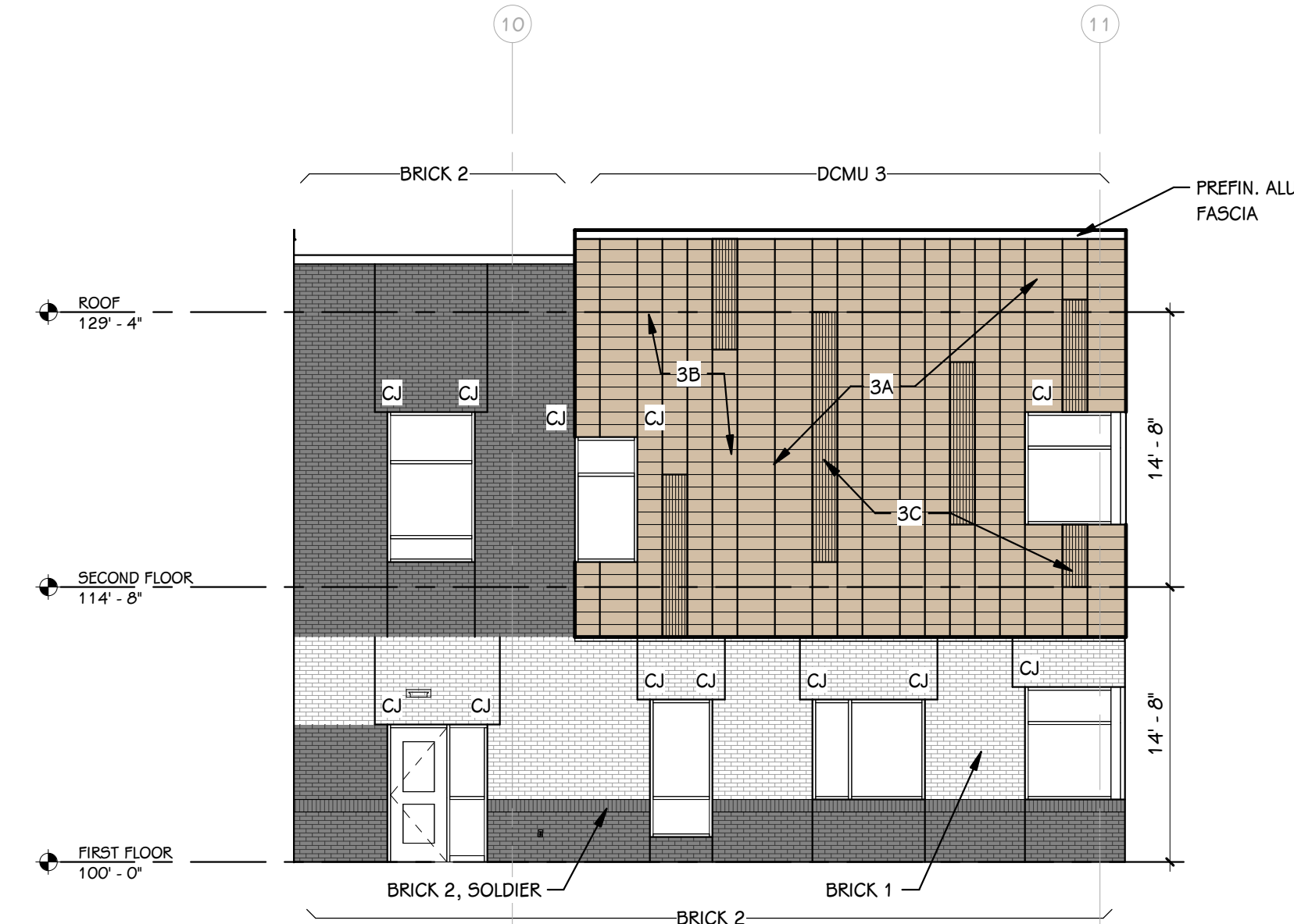
**C1**  
EXTERIOR ELEVATION - EAST  
1/8" = 1'-0"



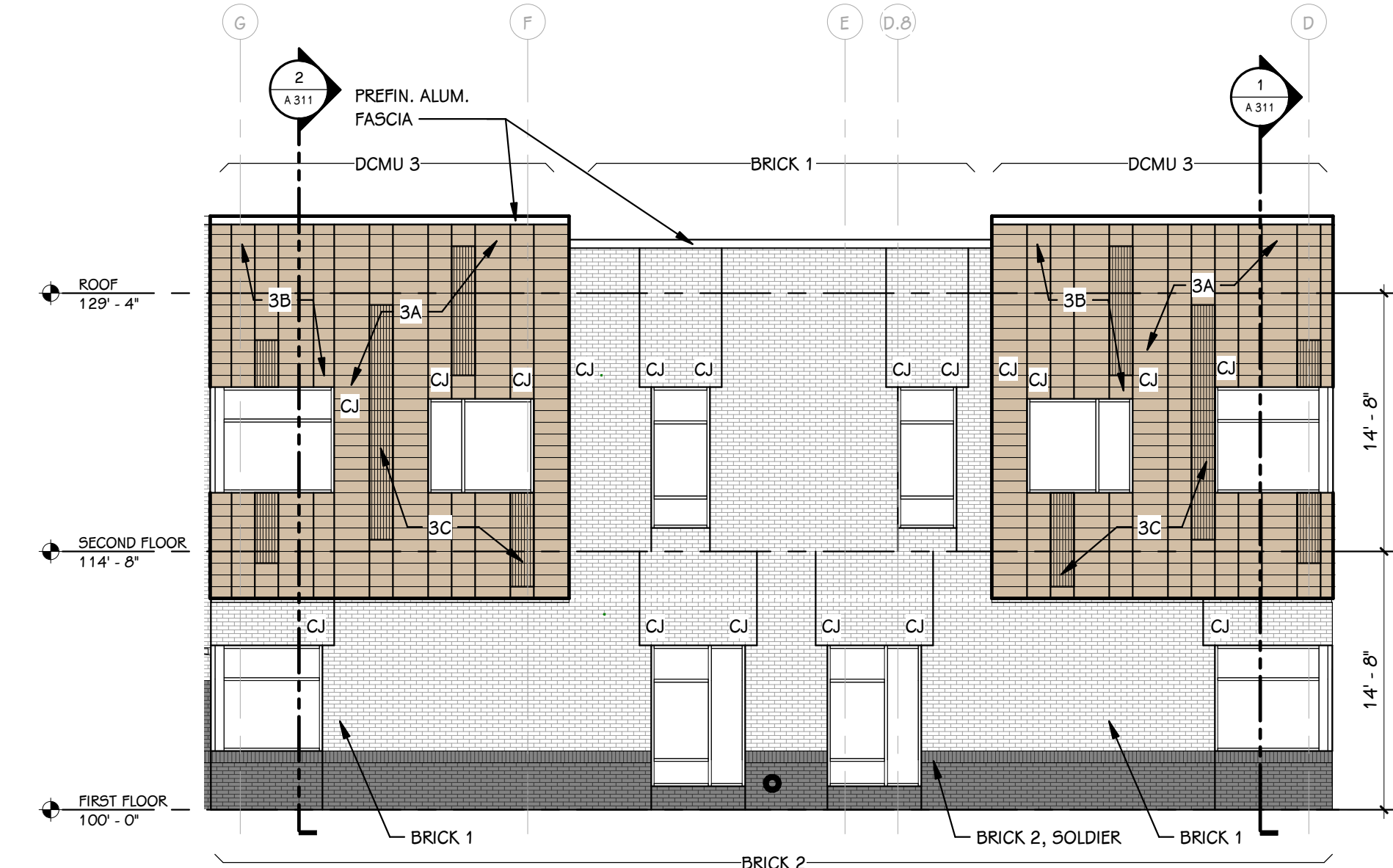
**C2**  
EXTERIOR ELEVATION - EAST  
1/8" = 1'-0"



**C3**  
EXTERIOR ELEVATION - EAST  
1/8" = 1'-0"

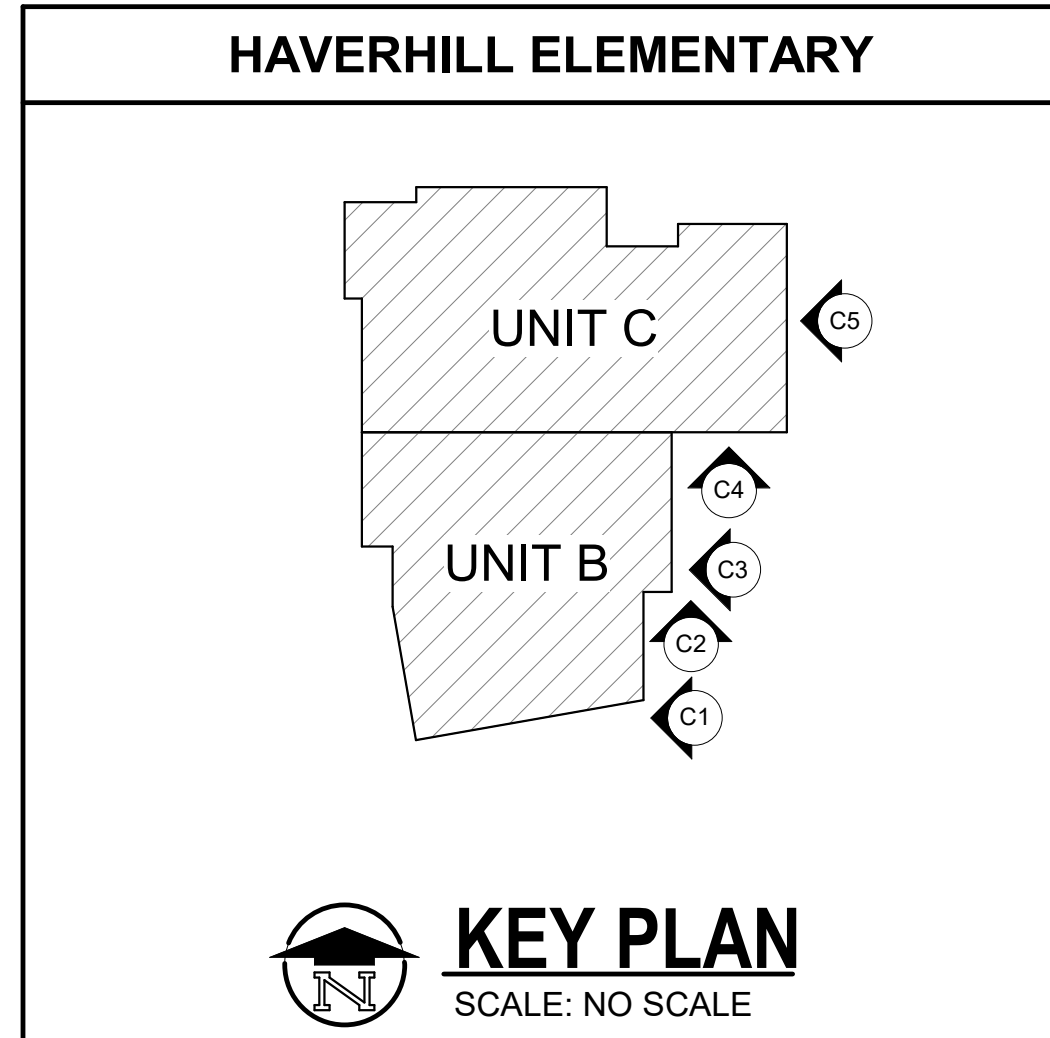


**C4**  
EXTERIOR ELEVATION - EAST  
1/8" = 1'-0"



**C5**  
EXTERIOR ELEVATION - EAST  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



ISSUED FOR: DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS  
Portage, Michigan

SHEET TITLE  
EXTERIOR ELEVATIONS - EAST

SHEET NUMBER  
**A 304**  
21-237.20

DATE  
JUNE 30, 2023



**NOTES:**  
REFER TO WALL SECTIONS FOR FACADE  
PLANE PROJECTIONS AND REVEALS  
REFER TO EXTERIOR ELEVATIONS FOR  
ACCURATE FACADE MATERIAL FINISH

**EXTERIOR ELEVATION KEY**

	BRICK 1 COLOR: SHERWOOD GREY VELOUR MANUFACTURER: BELDEN
	BRICK 2 COLOR: BLACK DIAMOND VELOUR MANUFACTURER: BELDEN
	BRICK 3 COLOR: MANGO GLAZED MANUFACTURER: BELDEN

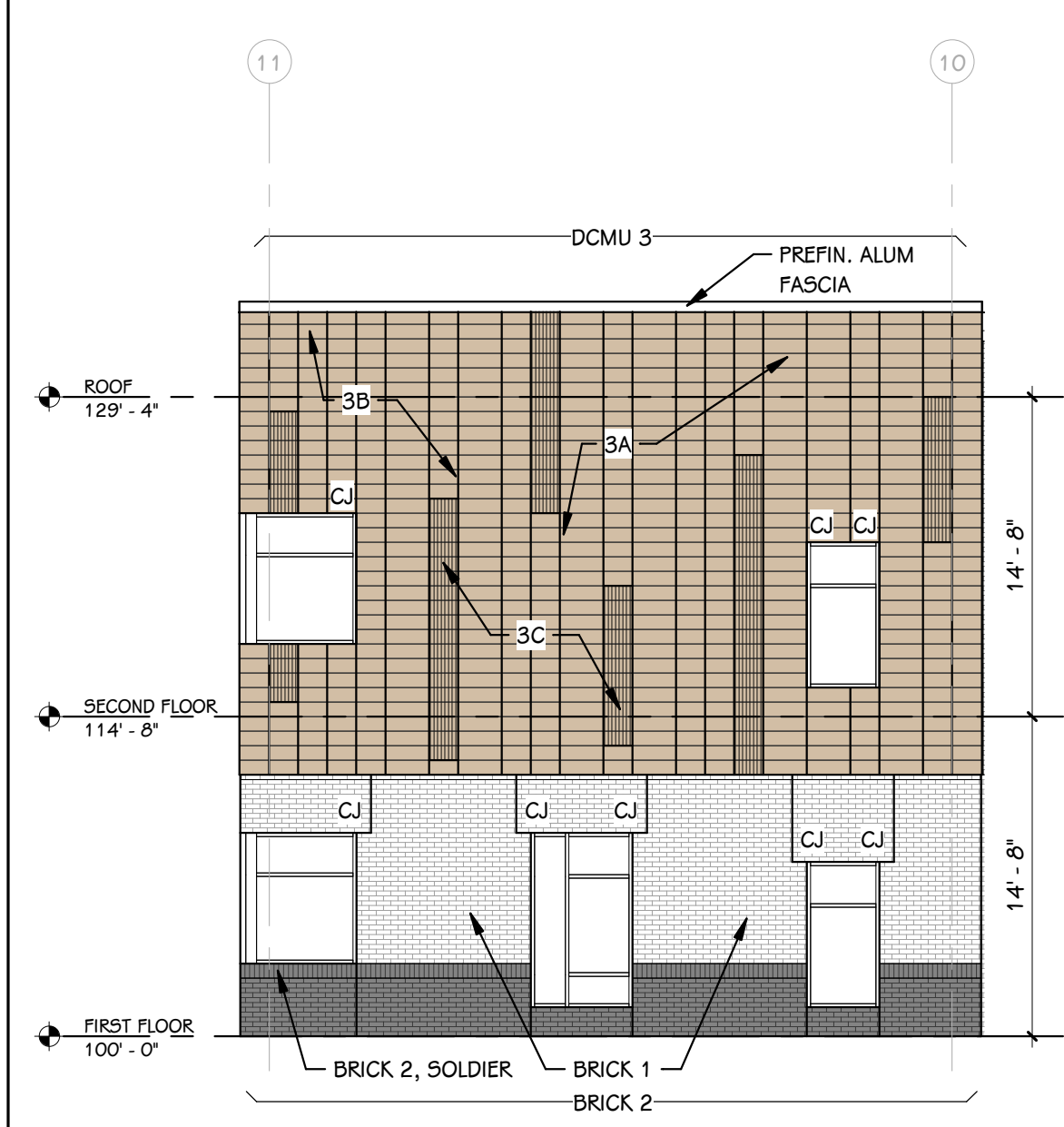
**DECORATIVE CONCRETE MASONRY UNIT (DCMU):**

	DCMU-1: CARAMEL MFR: CONSUMERS CONCRETE	A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	DCMU-2: SAGE MFR: CONSUMERS CONCRETE	A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	DCMU-3: TWEED MFR: CONSUMERS CONCRETE	A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE

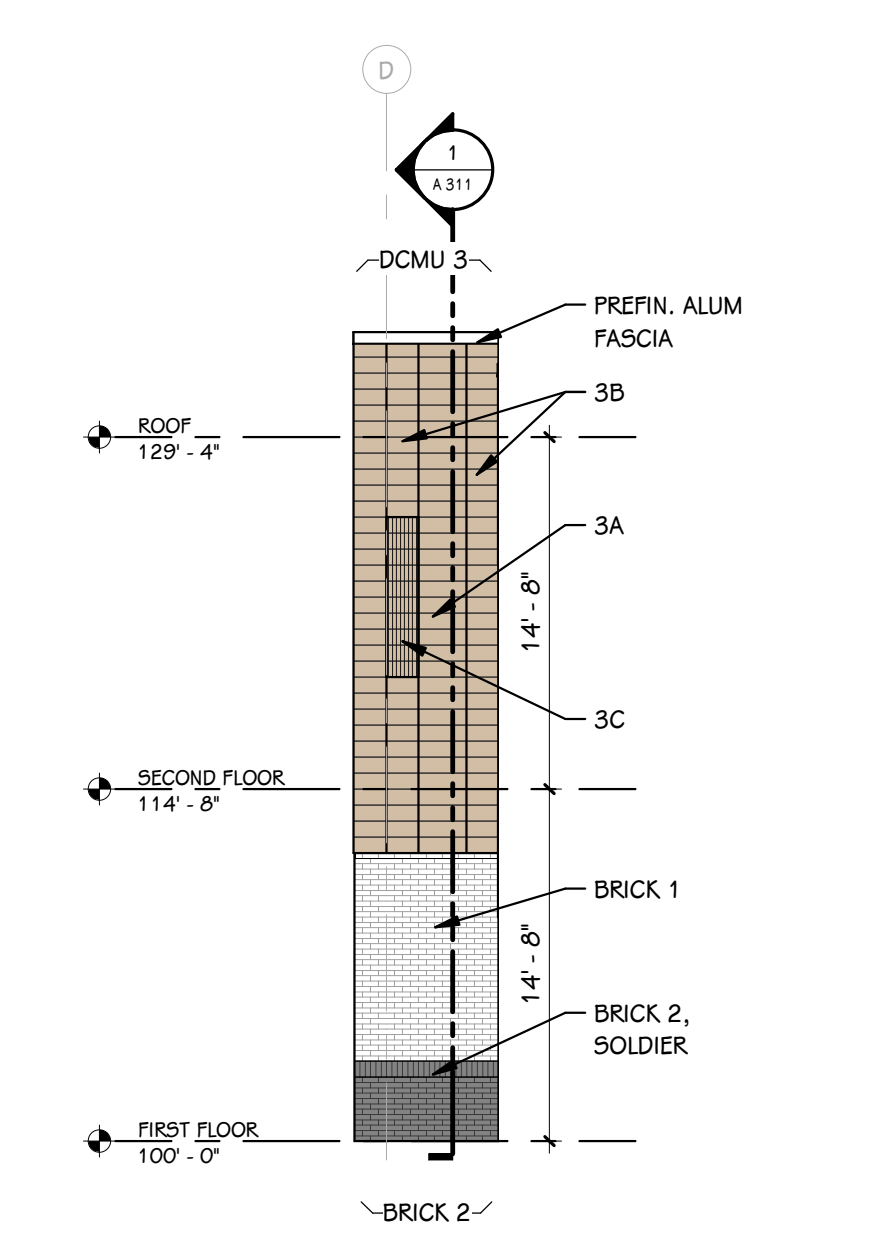
**METAL COMPOSITE MATERIAL (MCM):**

	MCM 1: ALABASTER MANUFACTURER: ALLUCOBOND
	MCM 2: BEIGE MANUFACTURER: ALLUCOBOND
	MCM 3: CASTLE GRAY MANUFACTURER: ALLUCOBOND
	MCM 4: CHESTNUT MANUFACTURER: ALLUCOBOND
	MCM 5: DARK BRONZE ANODIZED MANUFACTURER: ALLUCOBOND

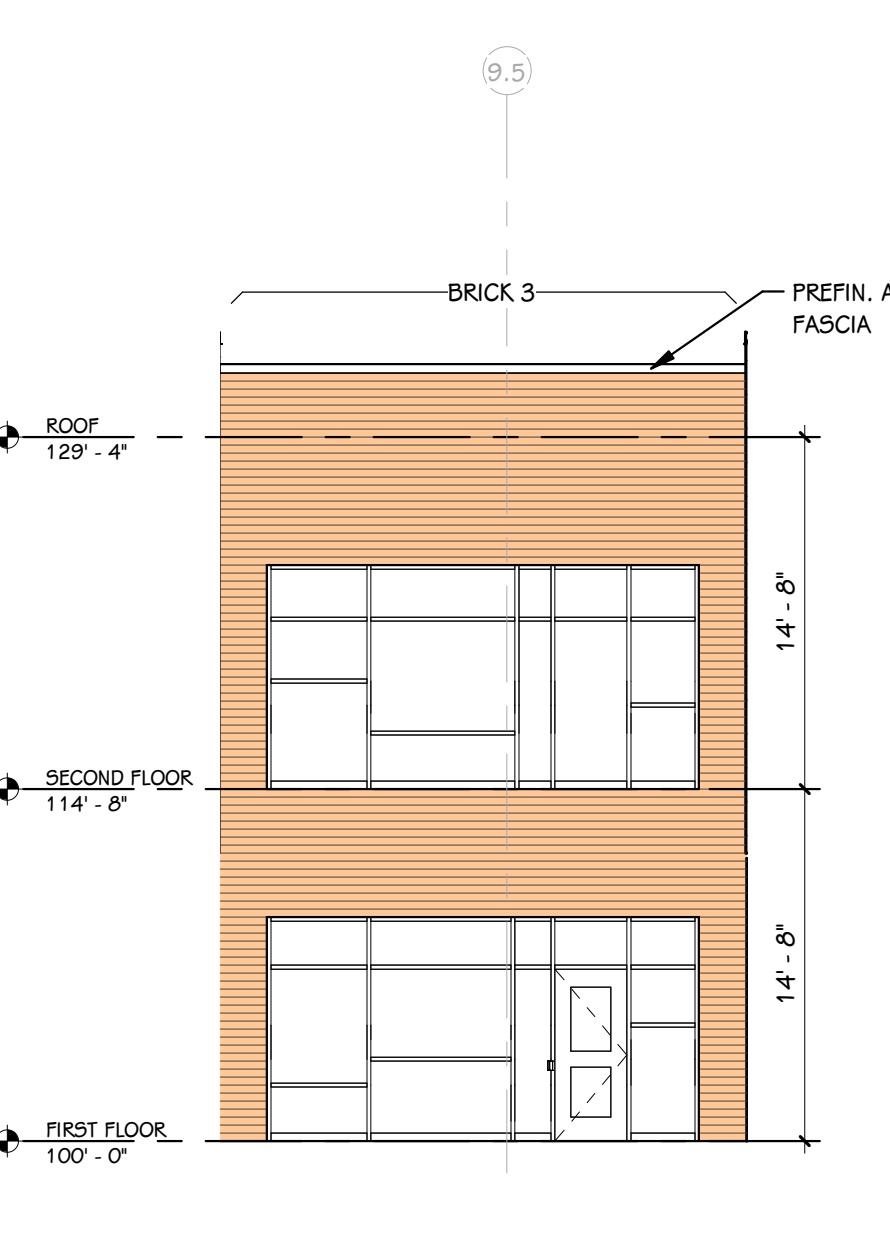
CURTAINWALL, PREFIN. ALUM. FASCIA - COLOR: DARK BRONZE ANODIZED  
CJ = CONTROL JOINT, COLOR:  
EJ = BUILDING EXPANSION JOINT, COLOR:



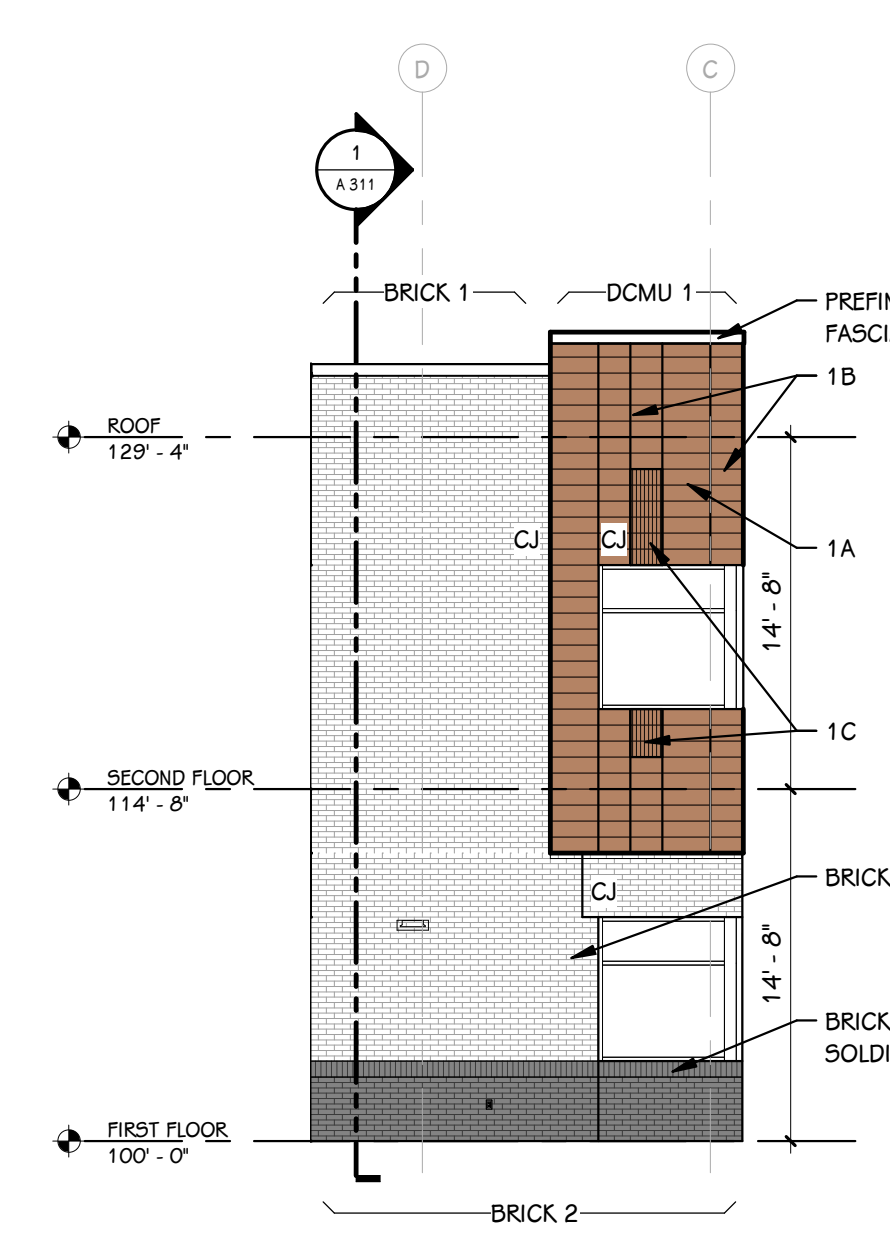
**D1**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



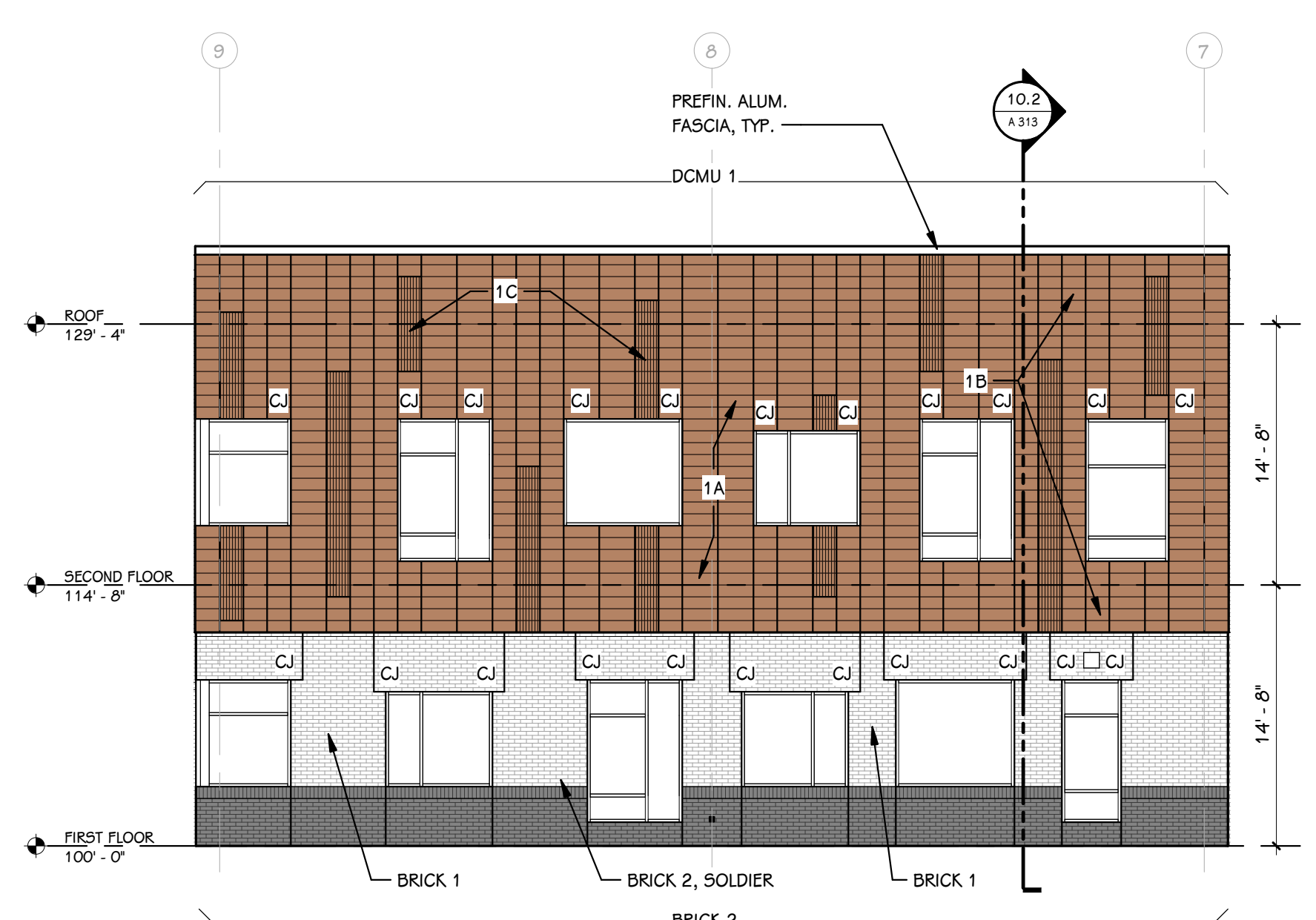
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EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



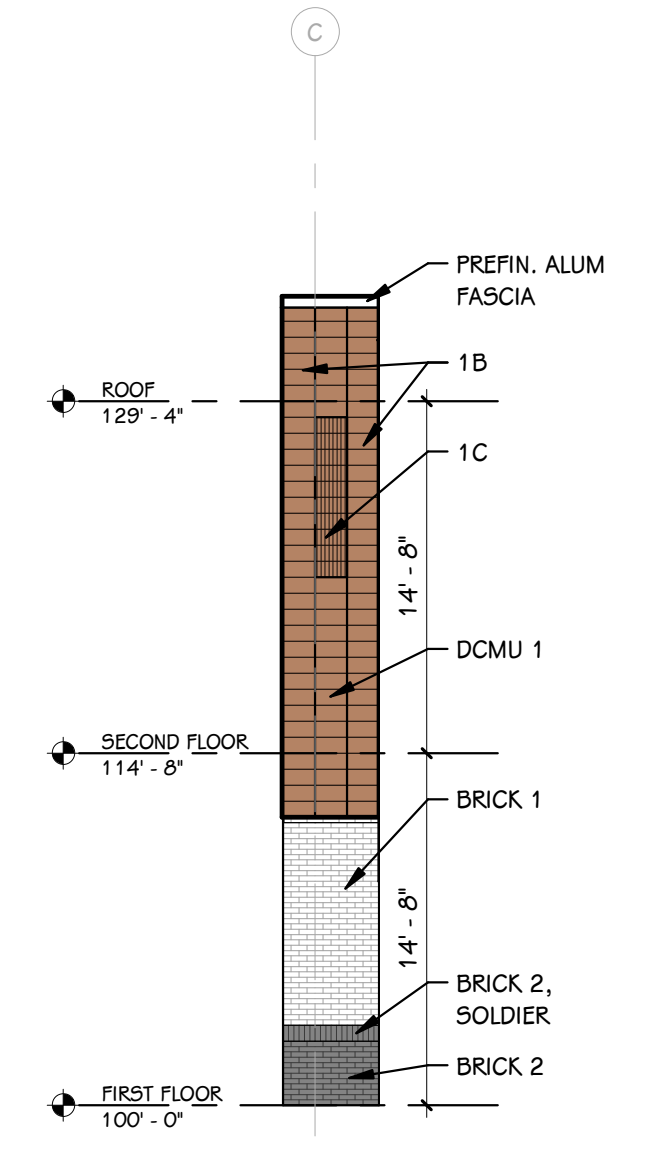
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EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



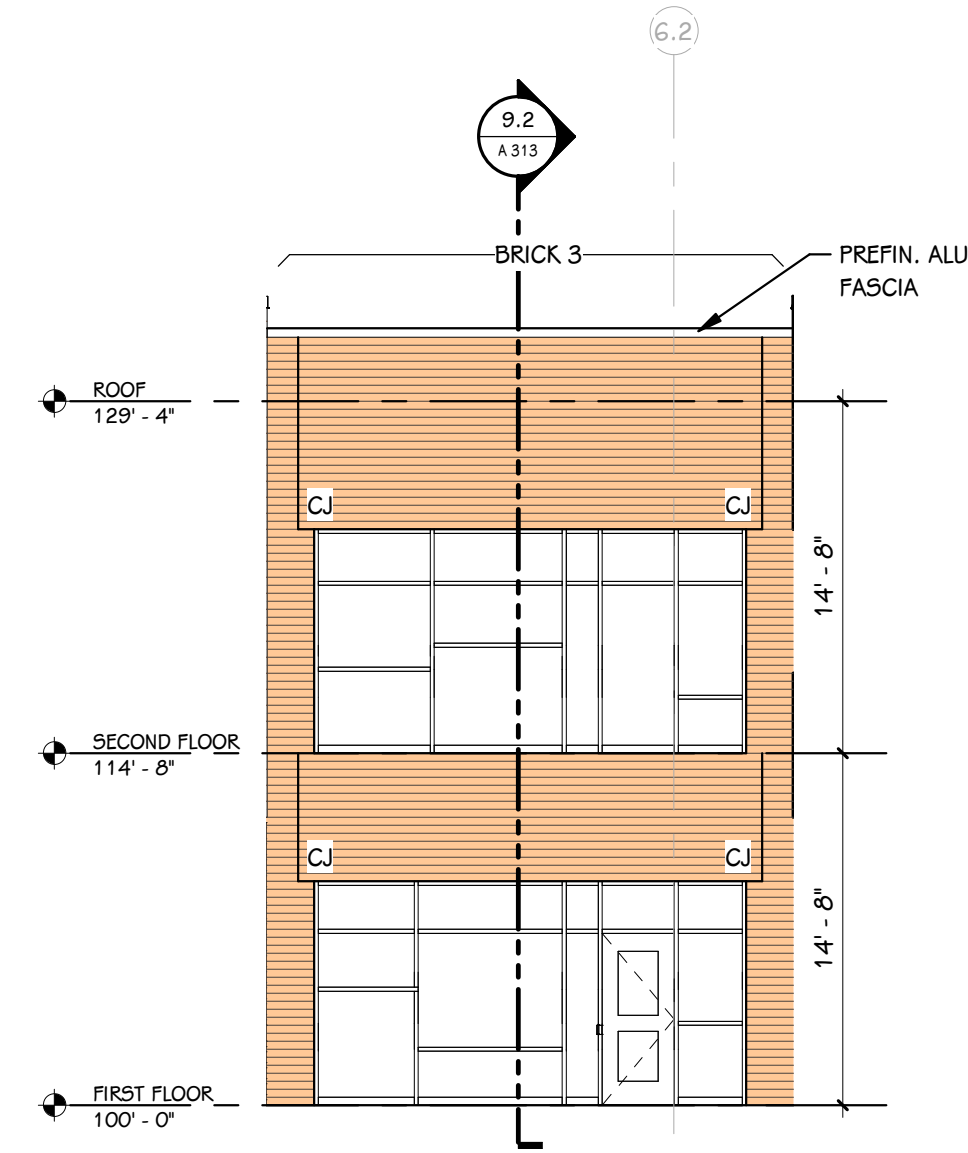
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EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



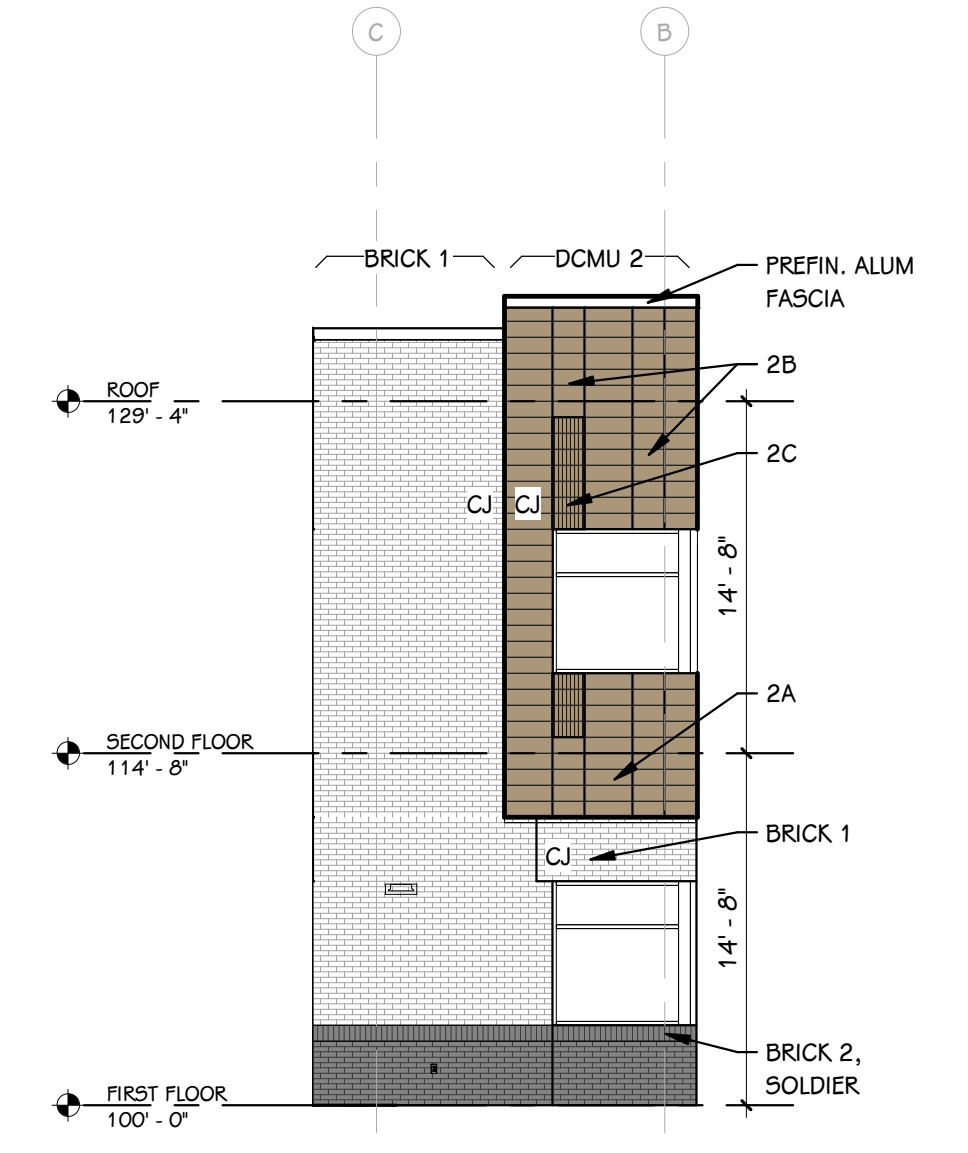
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EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



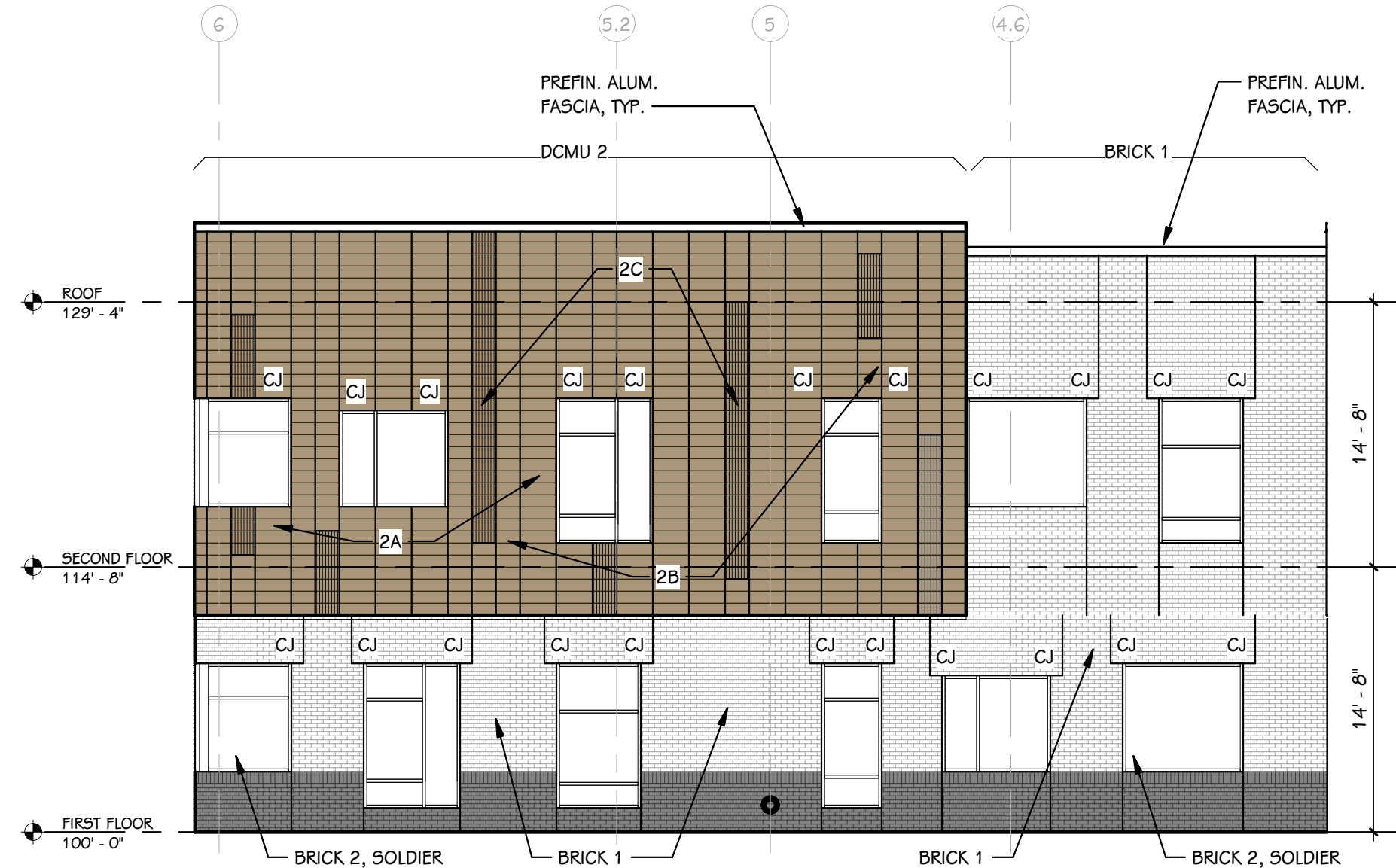
**D6**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



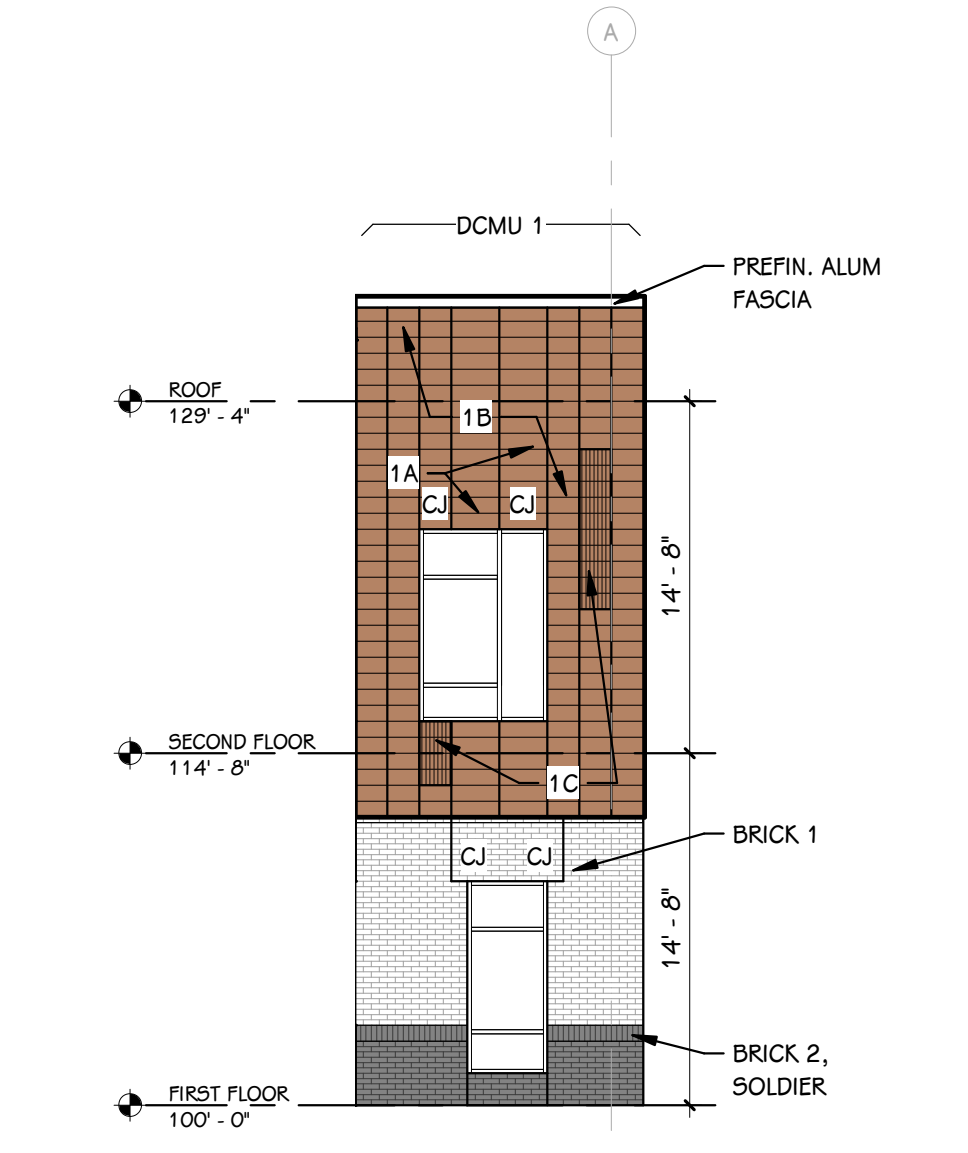
**D7**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



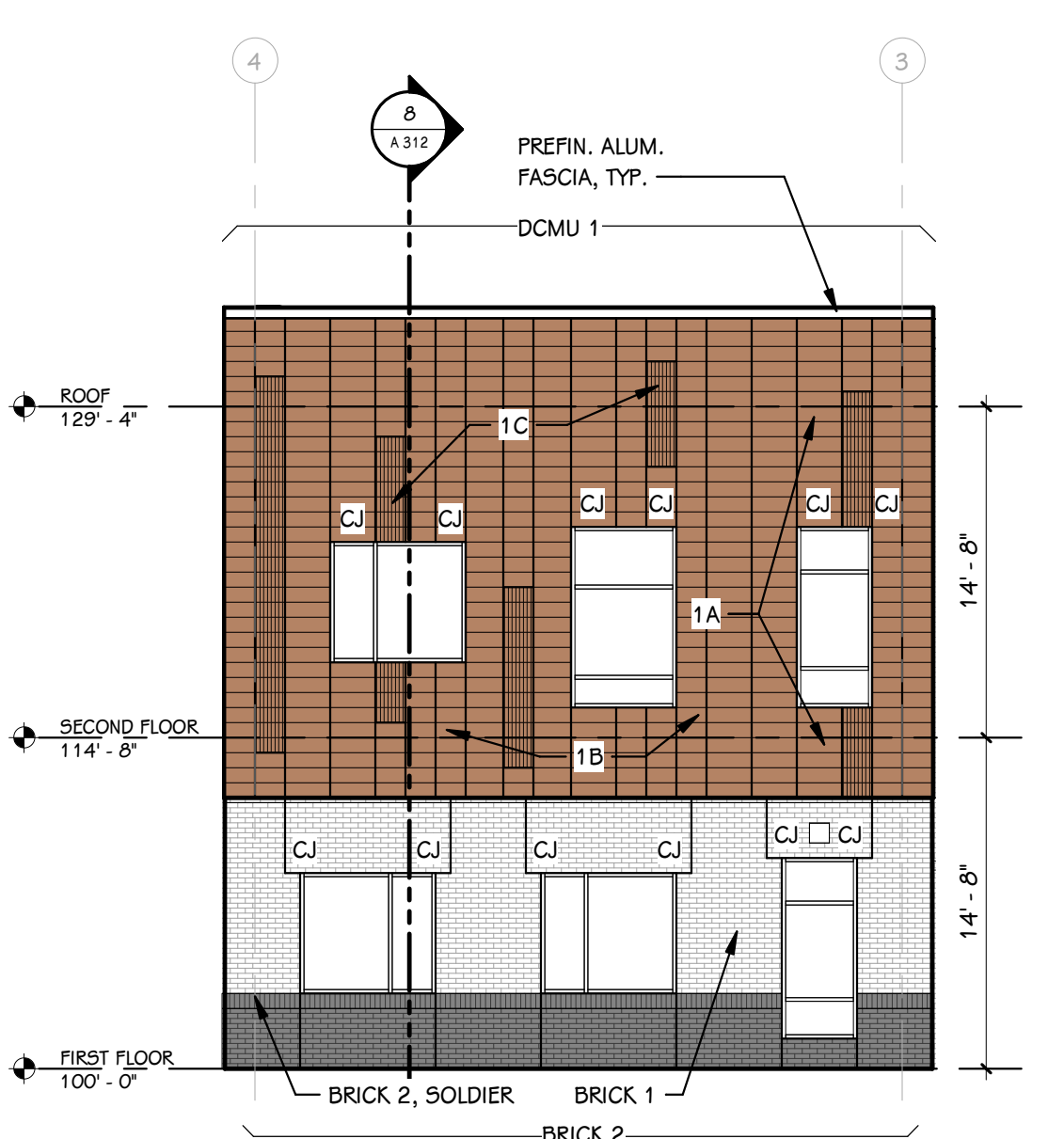
**D8**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



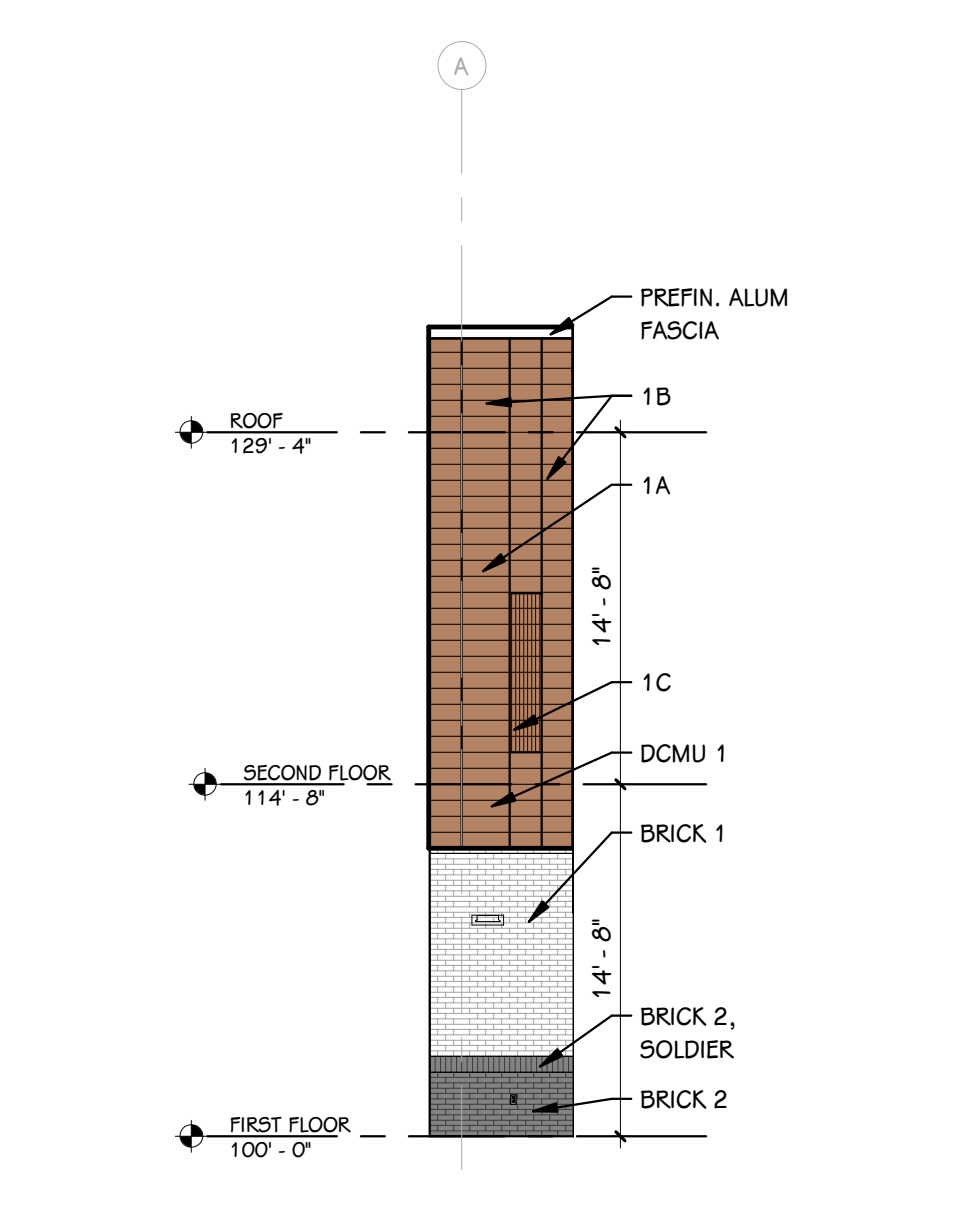
**D9**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



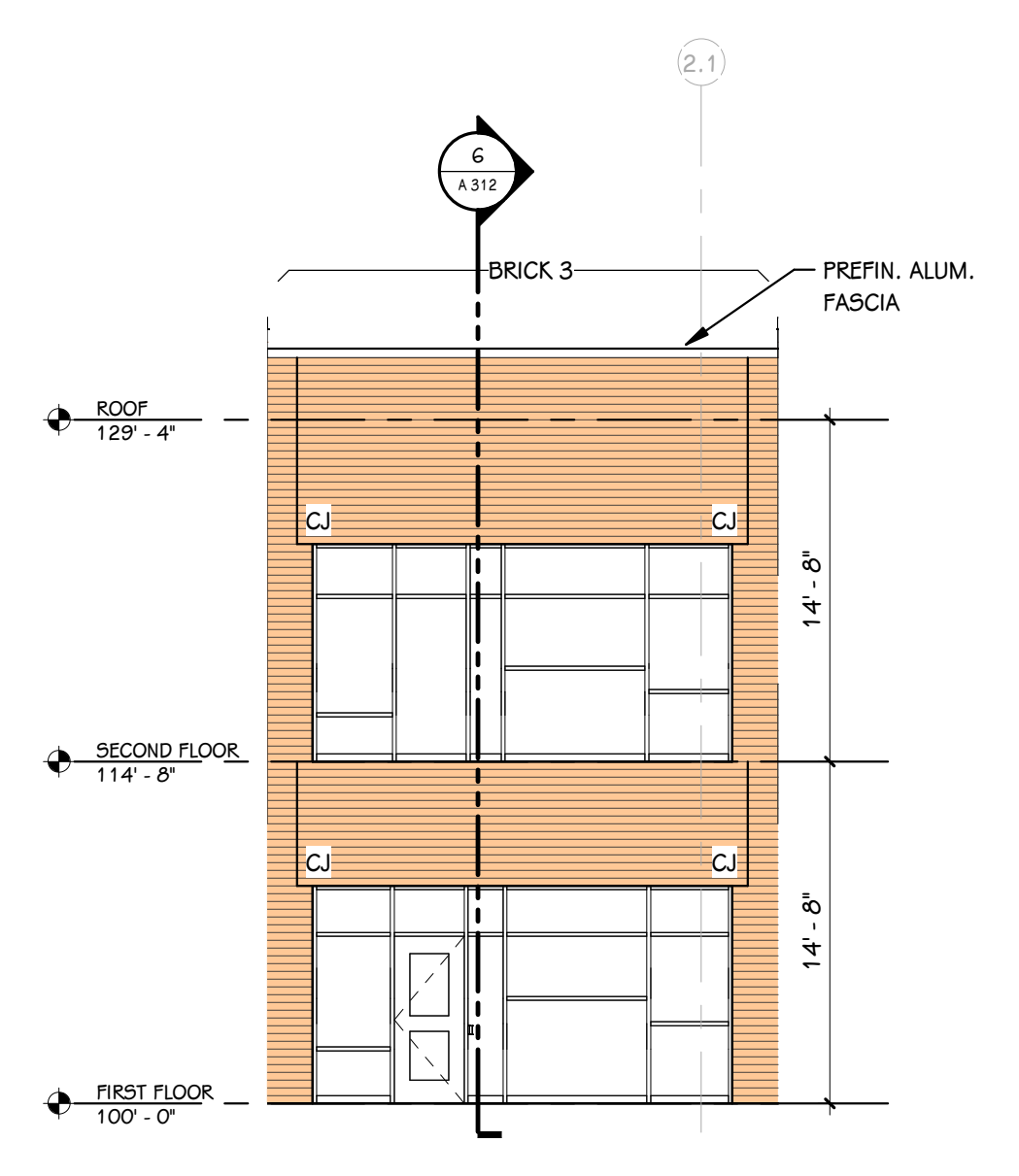
**D10**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



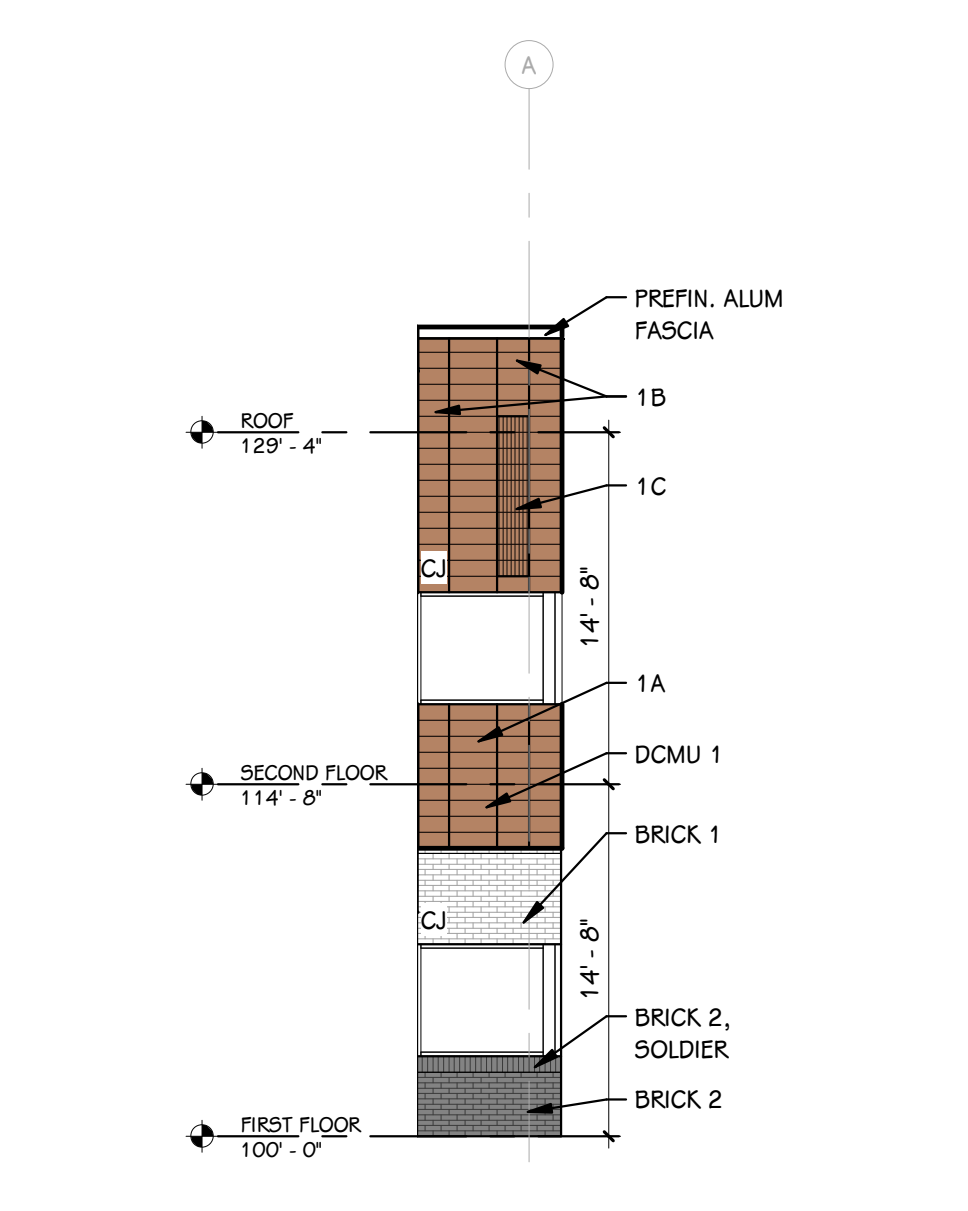
**D11**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



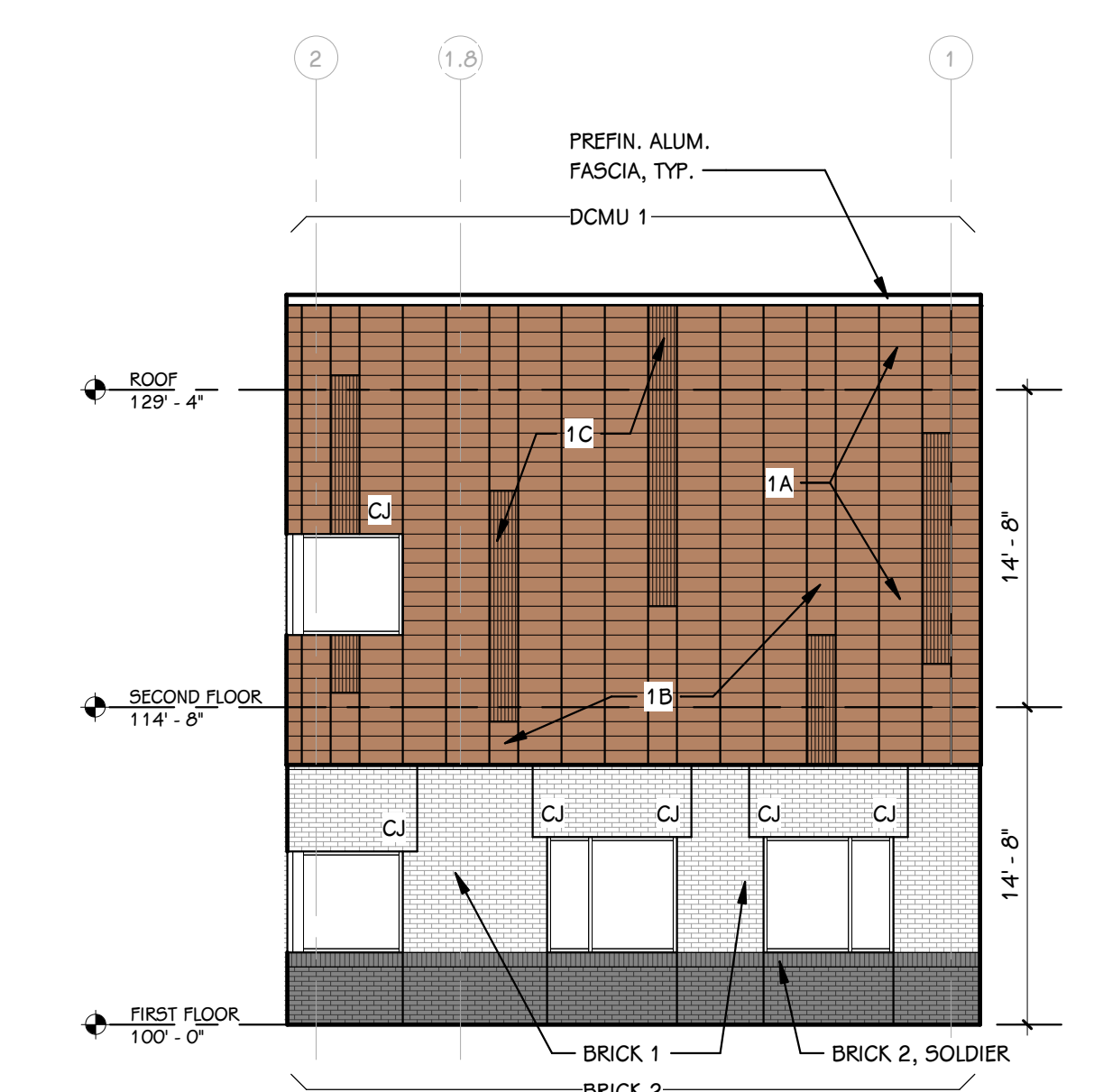
**D12**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



**D13**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"

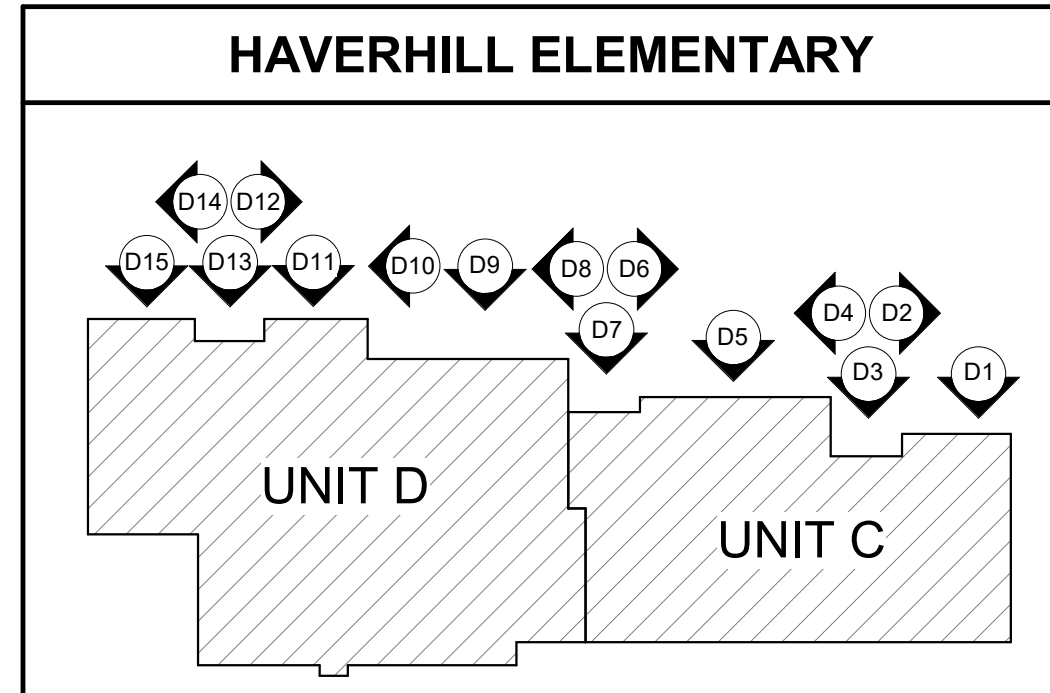


**D14**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"



**D15**  
EXTERIOR ELEVATION - NORTH  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



**KEY PLAN**  
SCALE: NO SCALE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

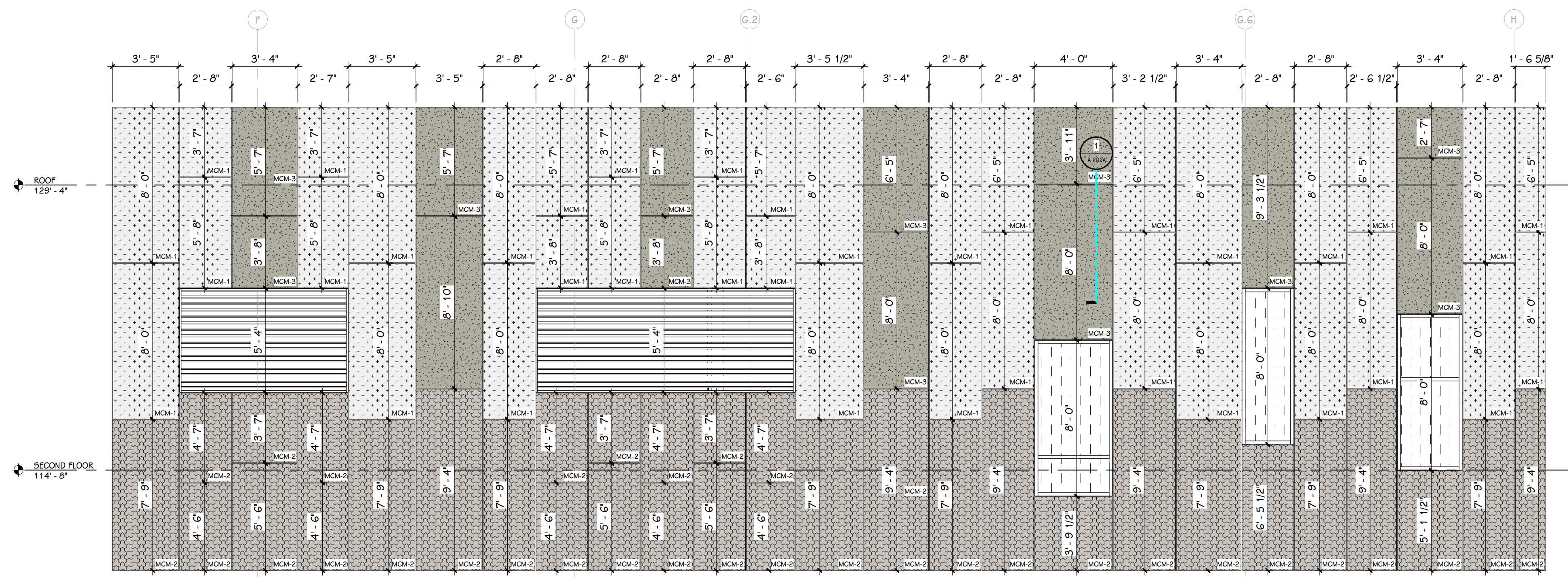
SHEET TITLE  
EXTERIOR ELEVATIONS - NORTH

Portage, Michigan

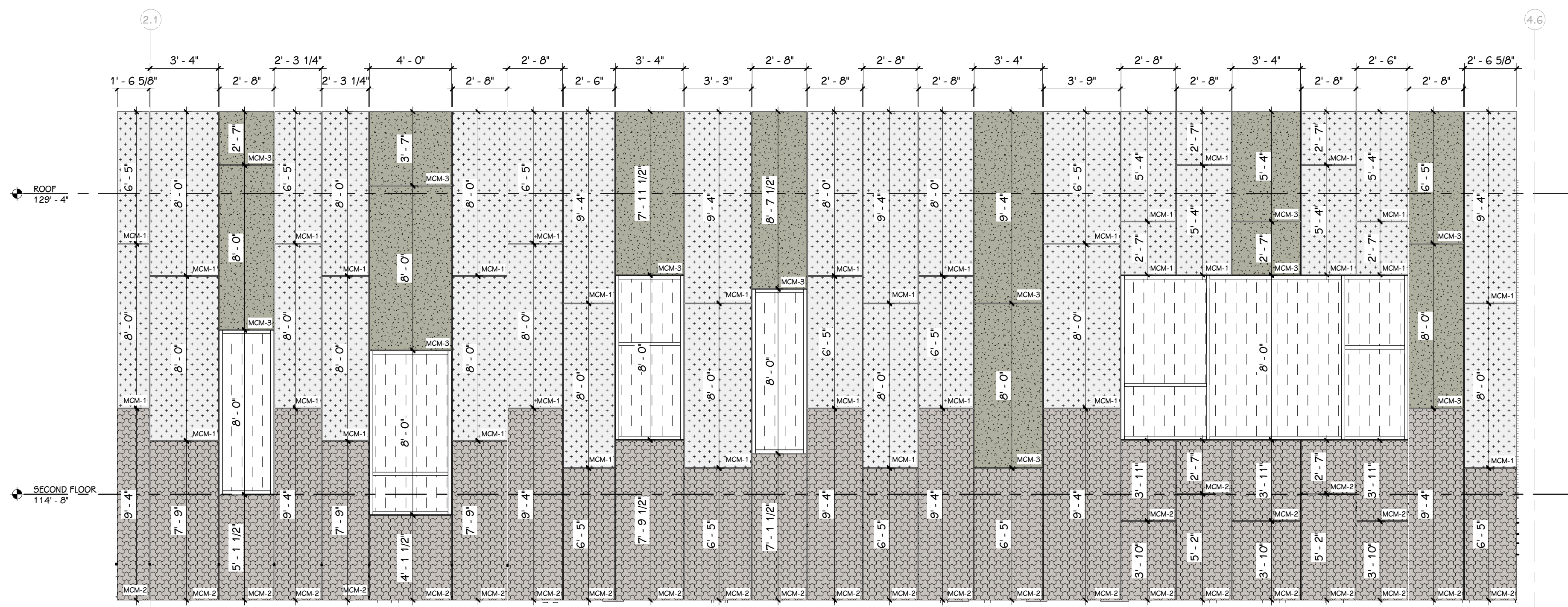
SHEET NUMBER  
**A 305**  
21-237.20

DATE  
JUNE 30, 2023

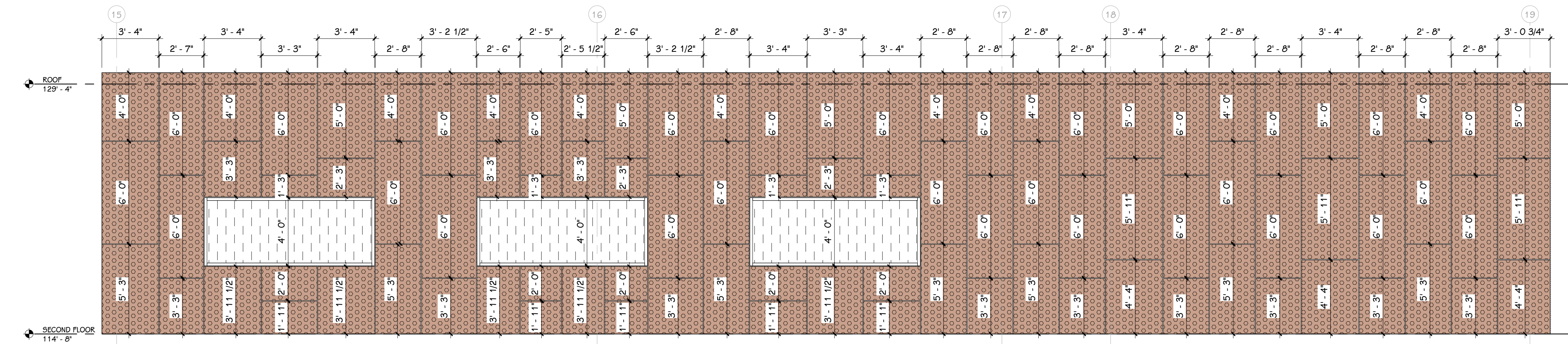
ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_



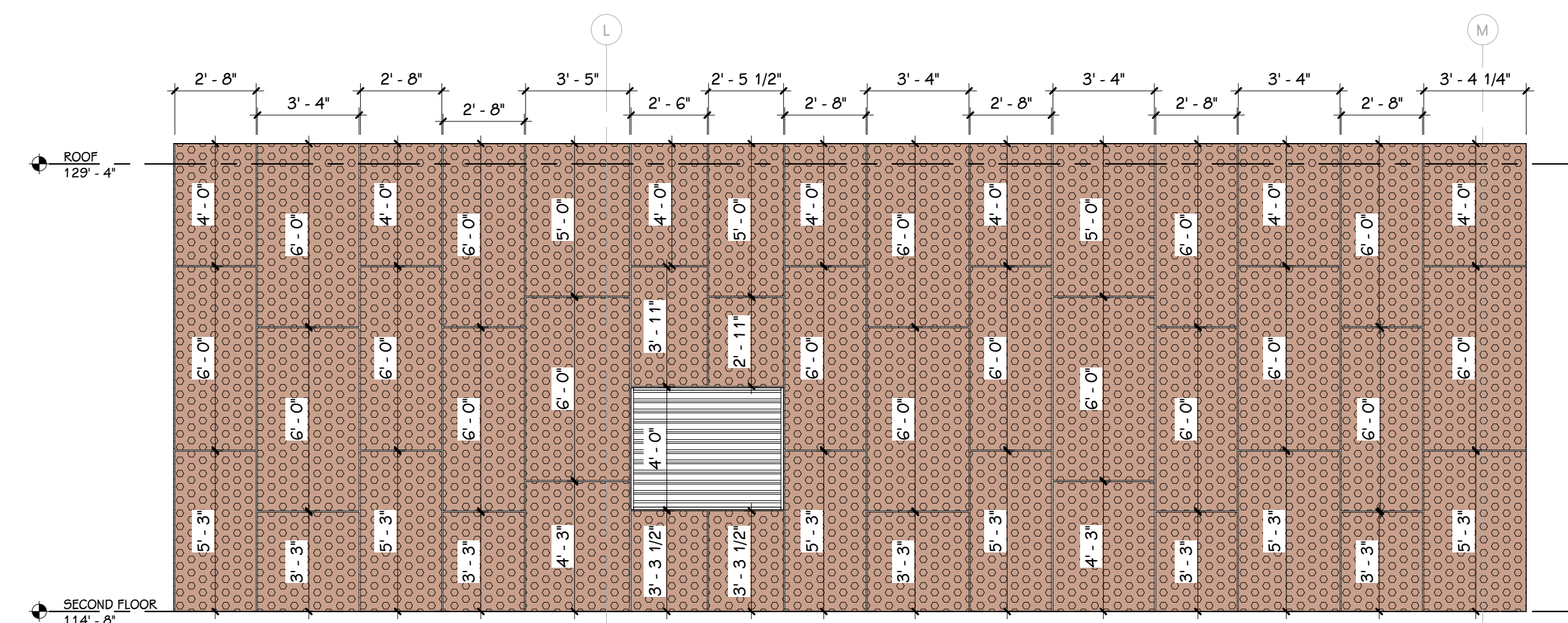
1 ENLARGED WEST ELEVATION - MCM PANELS  
 1/4" = 1'-0"



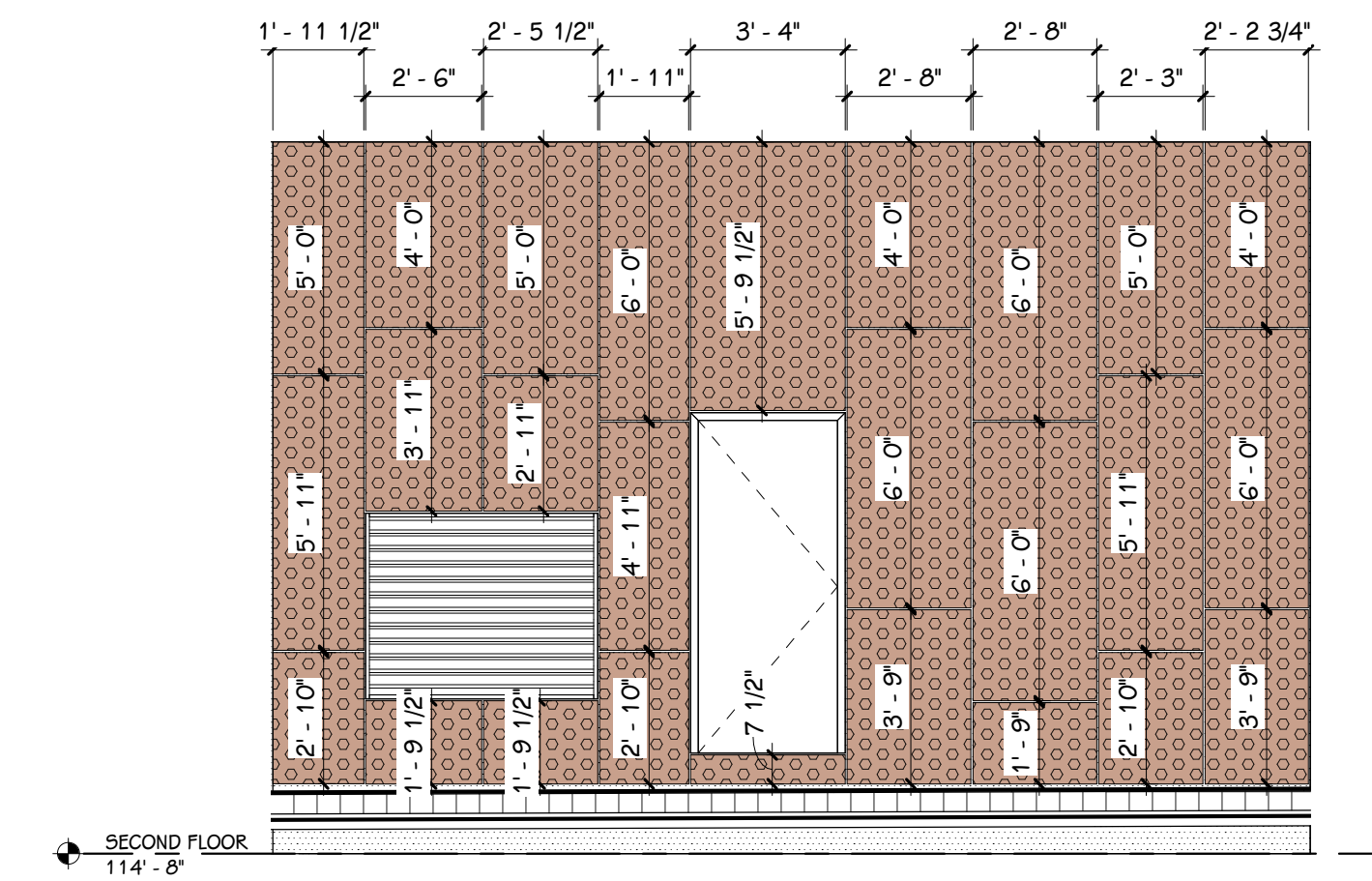
2 ENLARGED SOUTH ELEVATION - MCM PANELS  
 1/4" = 1'-0"



4 ENLARGED SOUTH ELEVATION - MCM 4 PANELS  
 1/4" = 1'-0"



3 ENLARGED WEST ELEVATION - MCM 4 PANELS  
 1/4" = 1'-0"

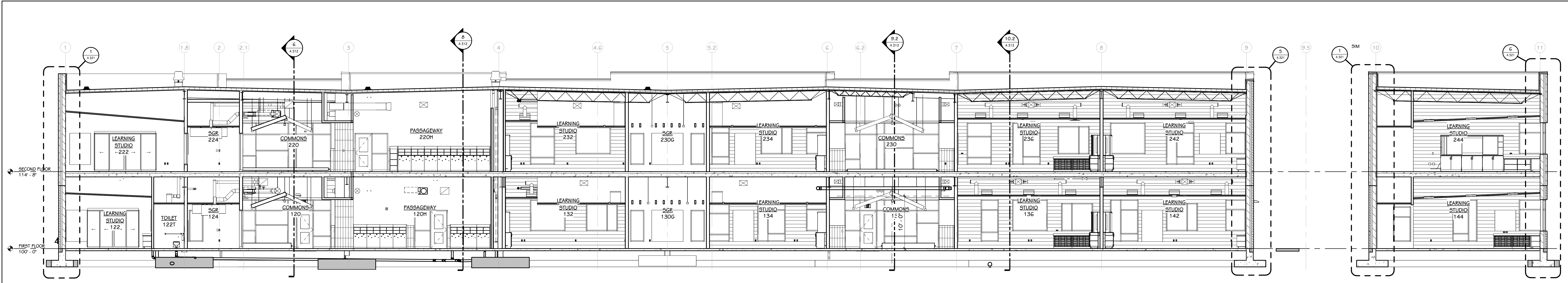


5 ENLARGED EAST ELEVATION - MCM 4 PANELS  
 1/4" = 1'-0"

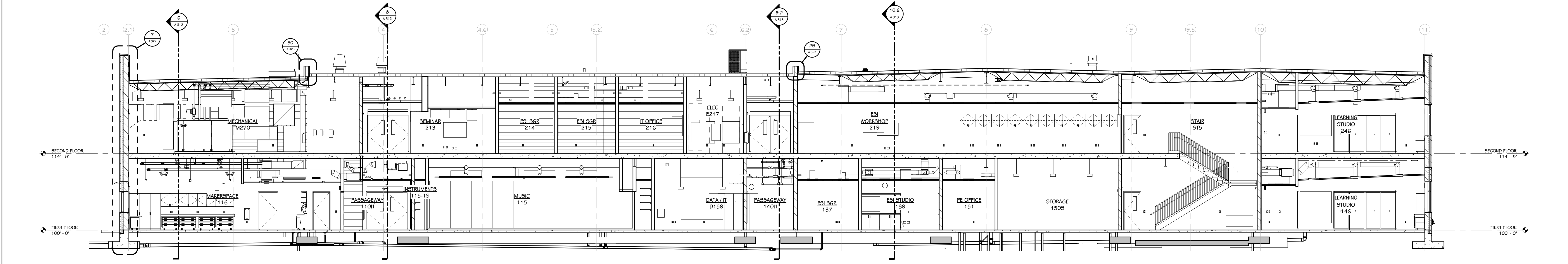
NOTES:  
 REFER TO WALL SECTIONS FOR FACADE  
 PLANE PROJECTIONS AND REVEALS  
 REFER TO EXTERIOR ELEVATIONS FOR  
 ACCURATE FACADE MATERIAL FINISH

EXTERIOR ELEVATION KEY	
	BRICK 1 COLOR: SHERWOOD GREY VELOUR MANUFACTURER: BELDEN
	BRICK 2 COLOR: BLACK DIAMOND VELOUR MANUFACTURER: BELDEN
	BRICK 3 COLOR: MANGO GLAZED MANUFACTURER: BELDEN
DECORATIVE CONCRETE MASONRY UNIT (DCMU):	
	DCMU-1: CARAMEL MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	DCMU-2: SAGE MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
	DCMU-3: TWEED MFR: CONSUMERS CONCRETE A = 8"x24" GROUND FACE B = 8"x16" GROUND FACE C = 8"x16" STRI-FACE
METAL COMPOSITE MATERIAL (MCM):	
	MCM 1: ALABASTER MANUFACTURER: ALLUCOBOND
	MCM 2: BEIGE MANUFACTURER: ALLUCOBOND
	MCM 3: CASTLE GRAY MANUFACTURER: ALLUCOBOND
	MCM 4: CHESTNUT MANUFACTURER: ALLUCOBOND
	MCM 5: DARK BRONZE ANODIZED MANUFACTURER: ALLUCOBOND
CURTAINWALL, PREFIN. ALUM. FASCIA - COLOR: DARK BRONZE ANODIZED	
CJ = CONTROL JOINT, COLOR:	
EJ = BUILDING EXPANSION JOINT, COLOR:	

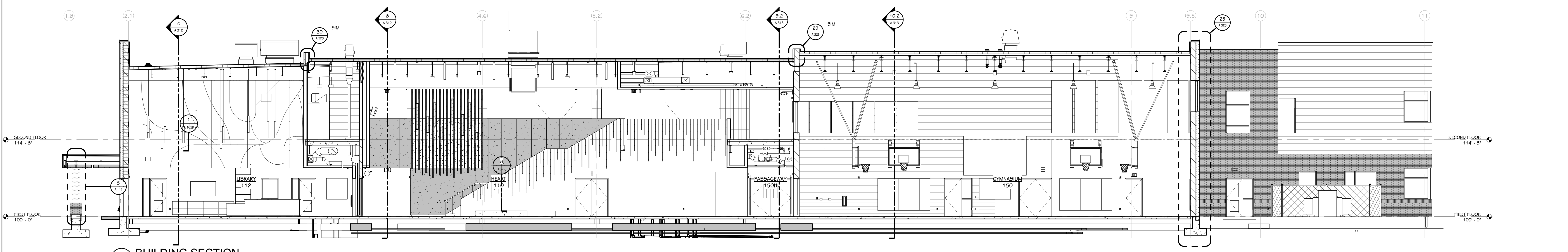
THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING



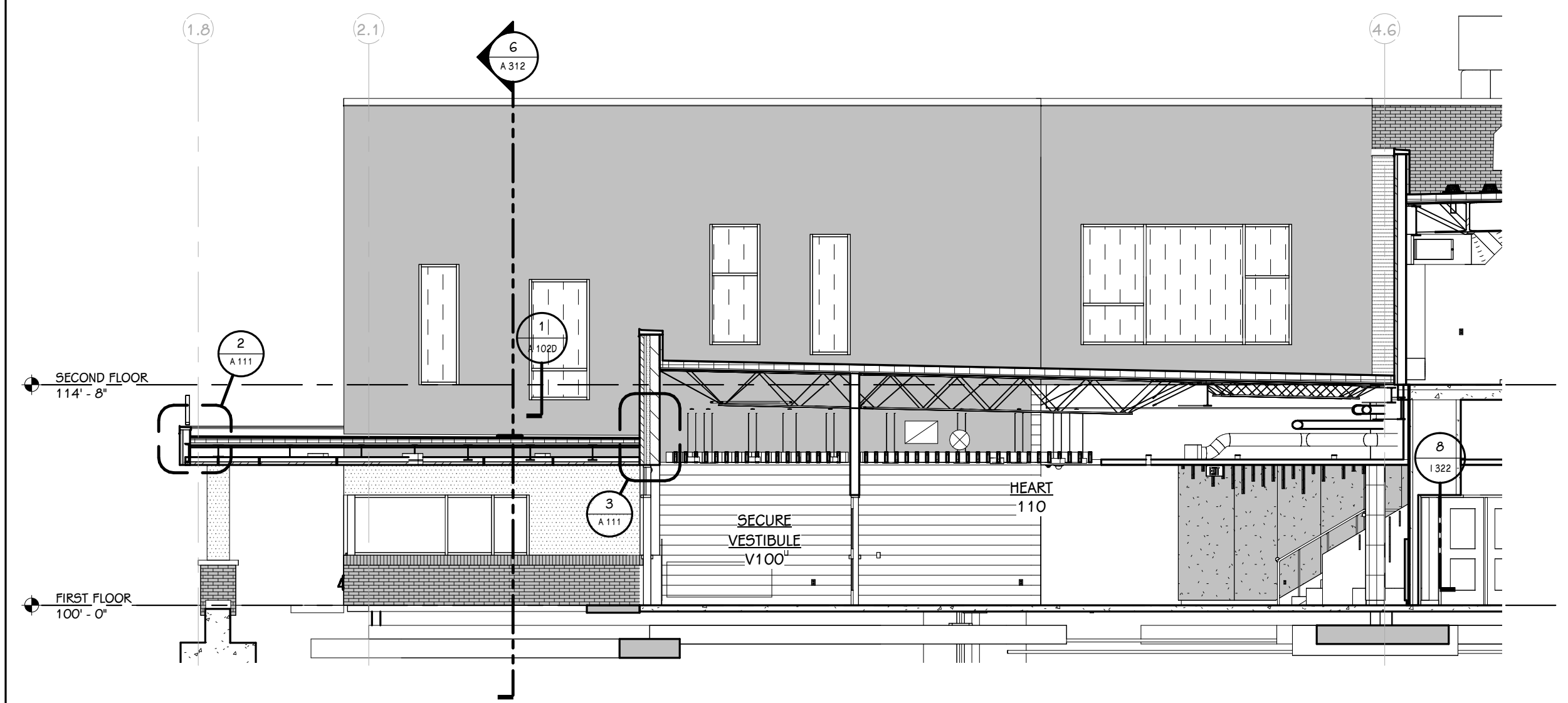
1 BUILDING SECTION  
1/8" = 1'-0"



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



3 BUILDING SECTION  
1/8" = 1'-0"



4 BUILDING SECTION  
1/8" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

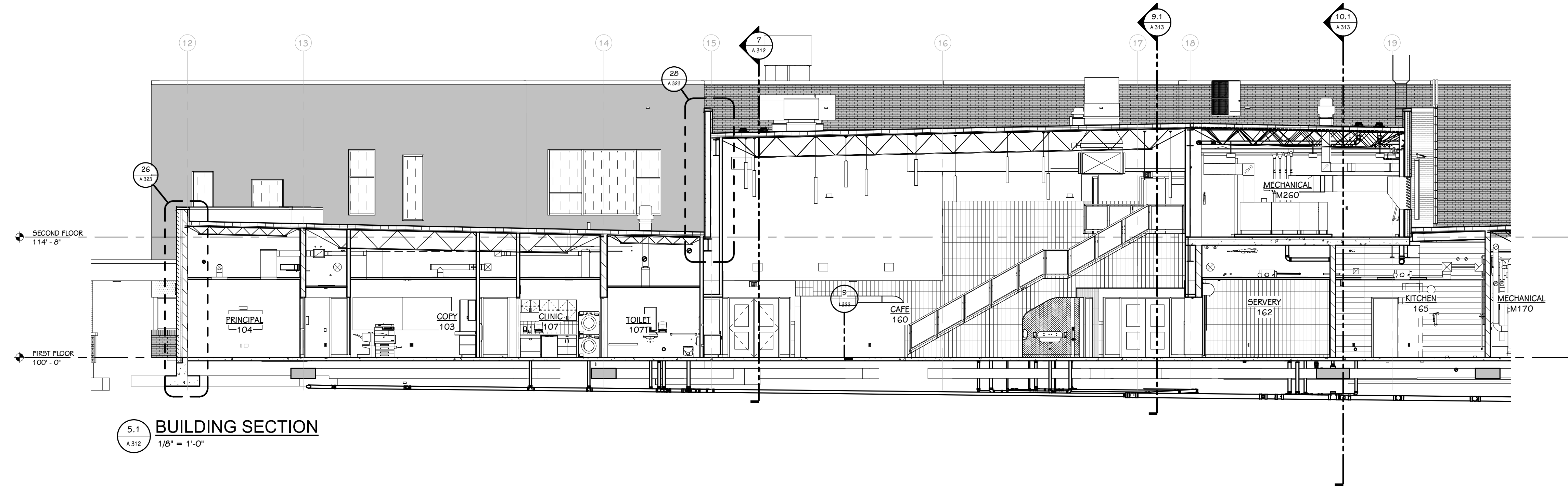
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

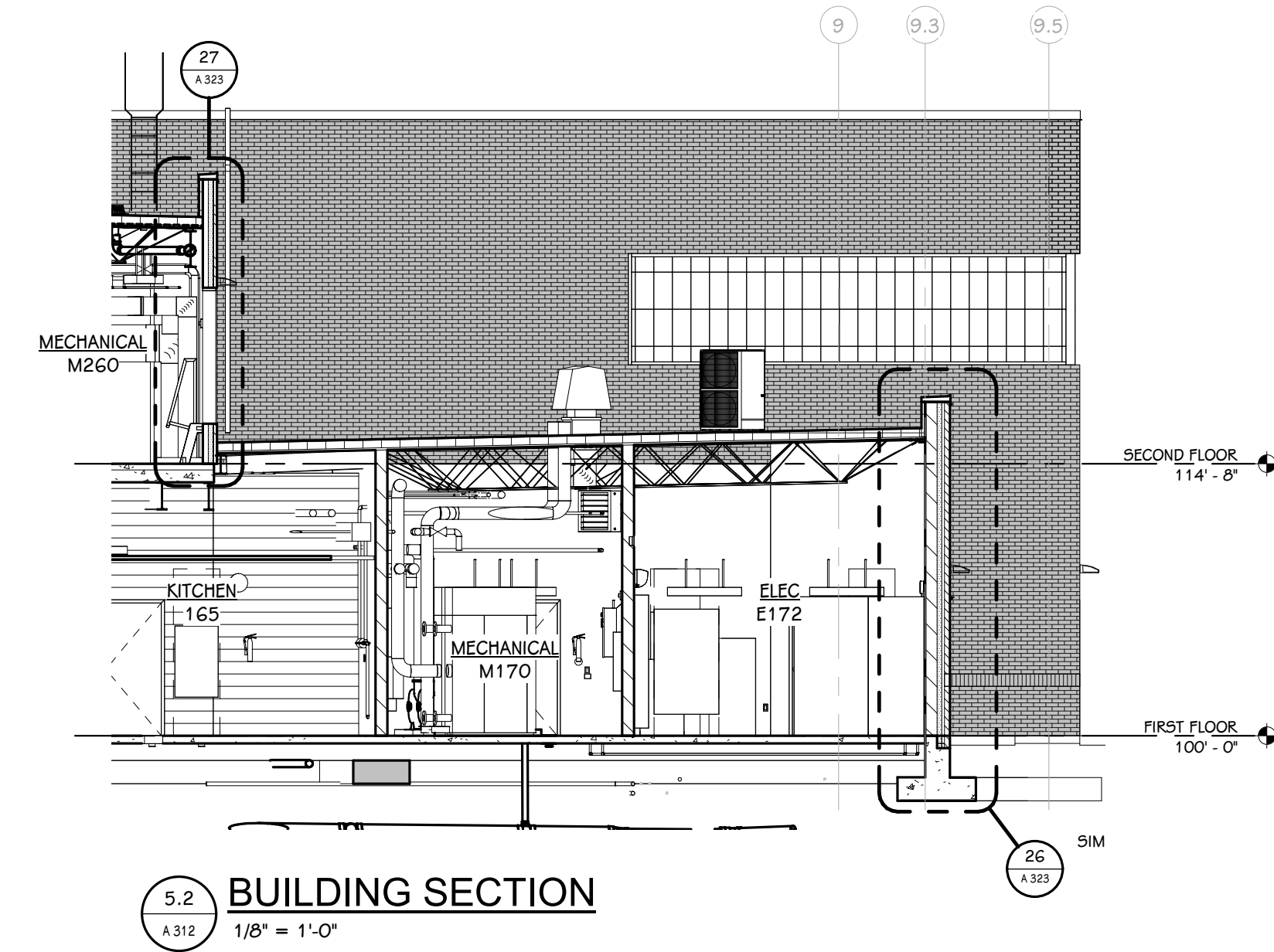
SHEET TITLE  
BUILDING SECTIONS

DATE  
JUNE 30, 2023

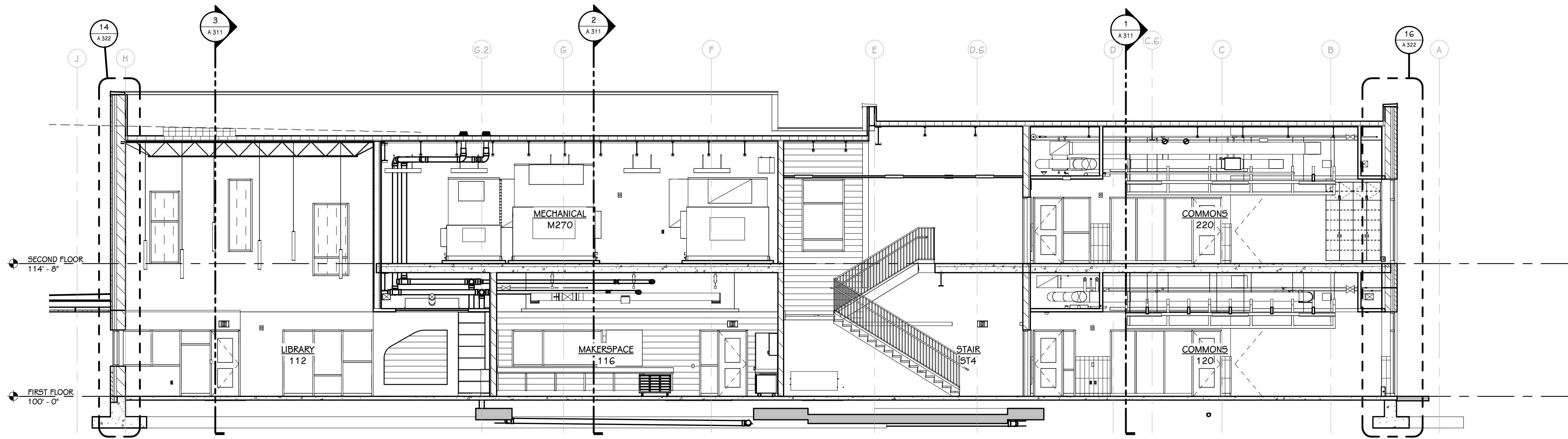
SHEET NUMBER  
A 311  
21-237.20



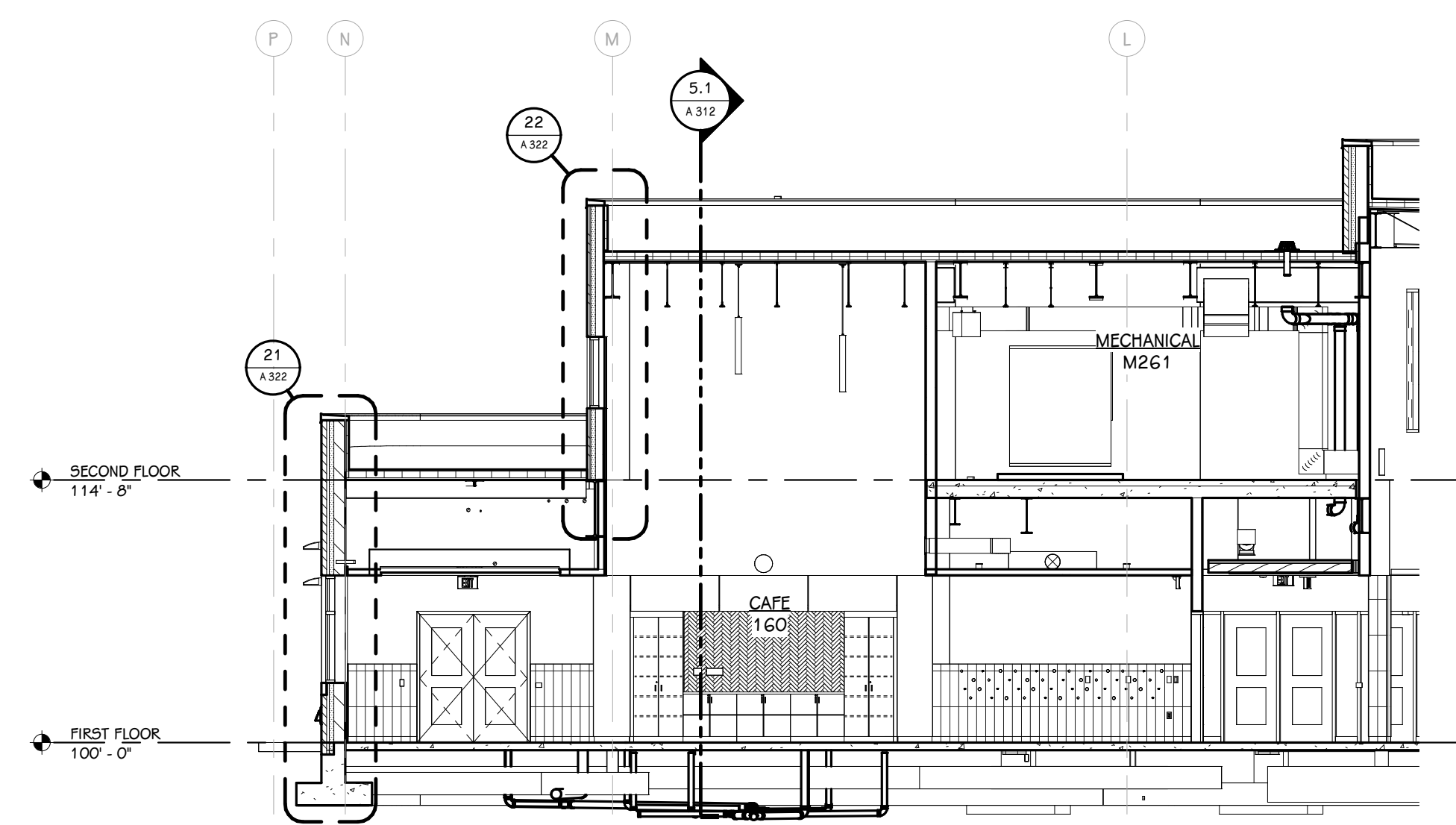
**5.1 BUILDING SECTION**  
 A312 1/8" = 1'-0"



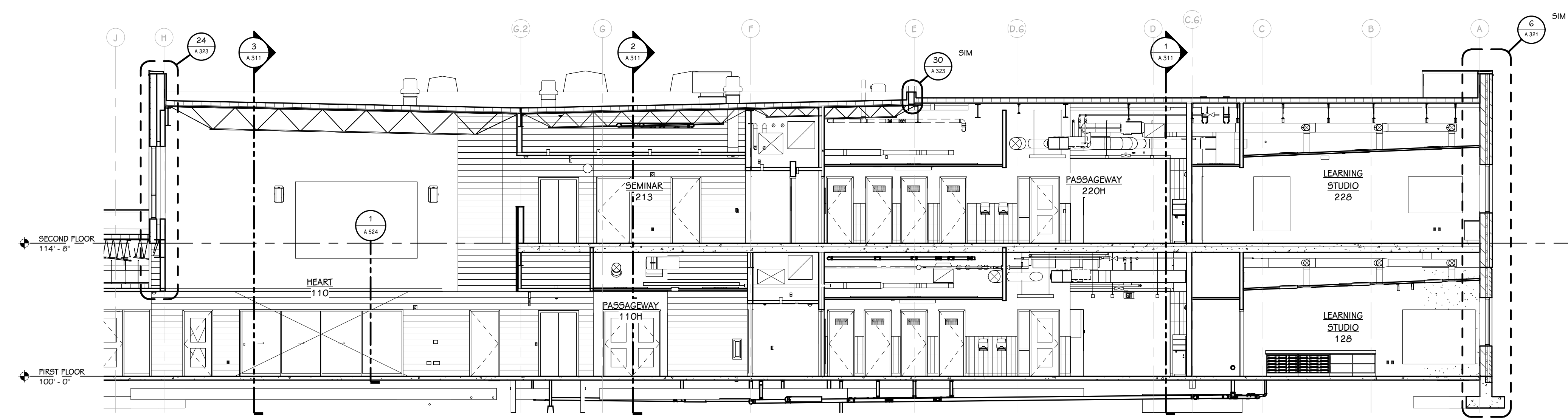
**5.2 BUILDING SECTION**  
 A312 1/8" = 1'-0"



**6 BUILDING SECTION**  
 A312 1/8" = 1'-0"



**7 BUILDING SECTION**  
 A312 1/8" = 1'-0"



**8 BUILDING SECTION**  
 A312 1/8" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION

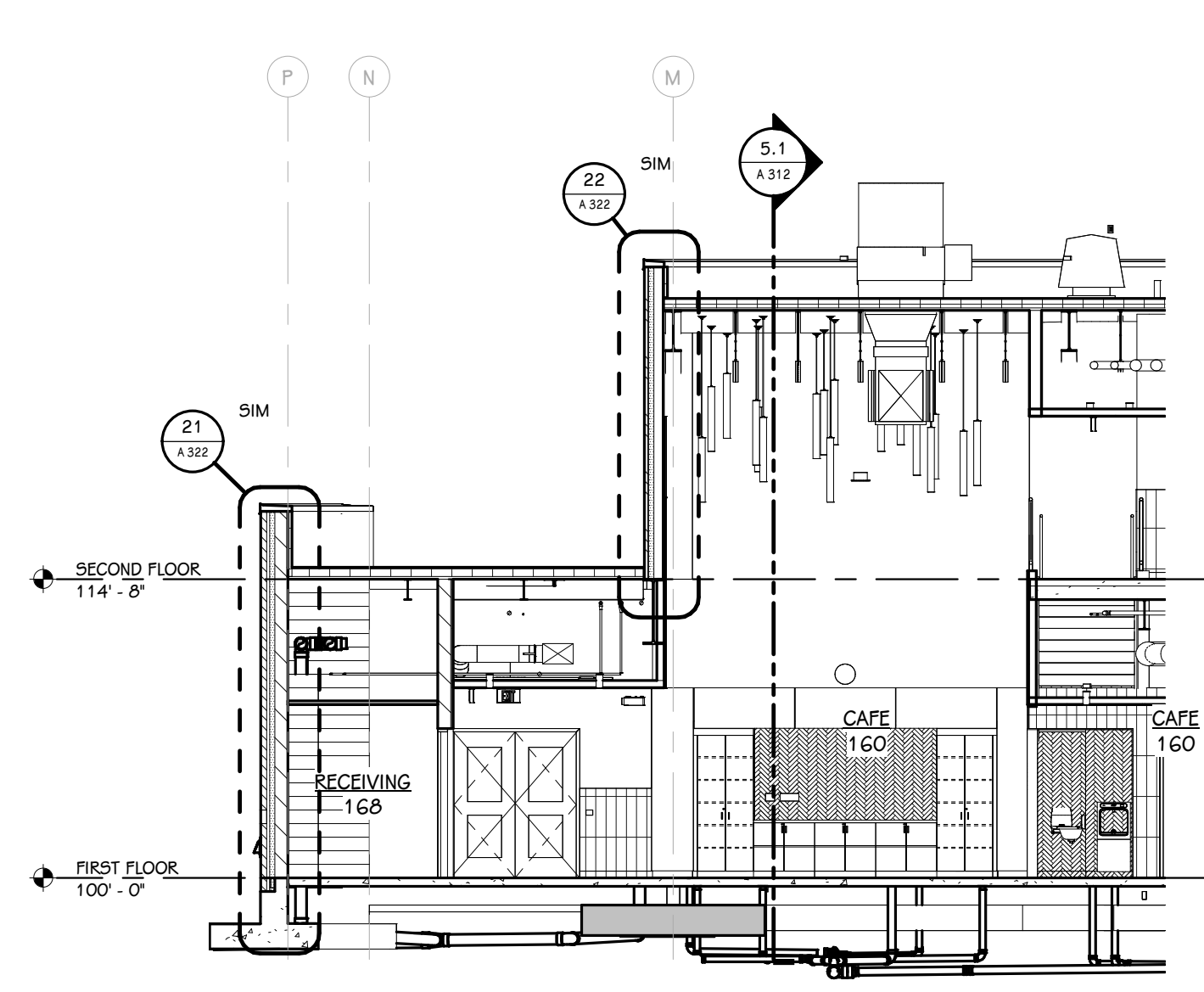
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

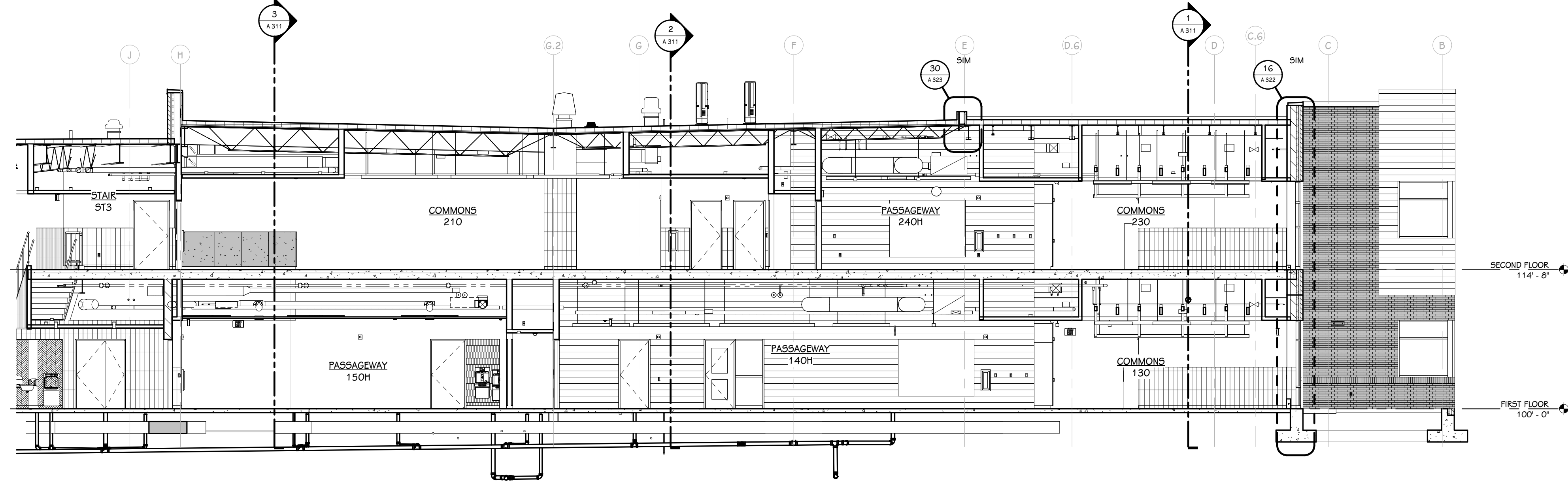
SHEET TITLE  
 BUILDING SECTIONS

DATE  
 JUNE 30, 2023

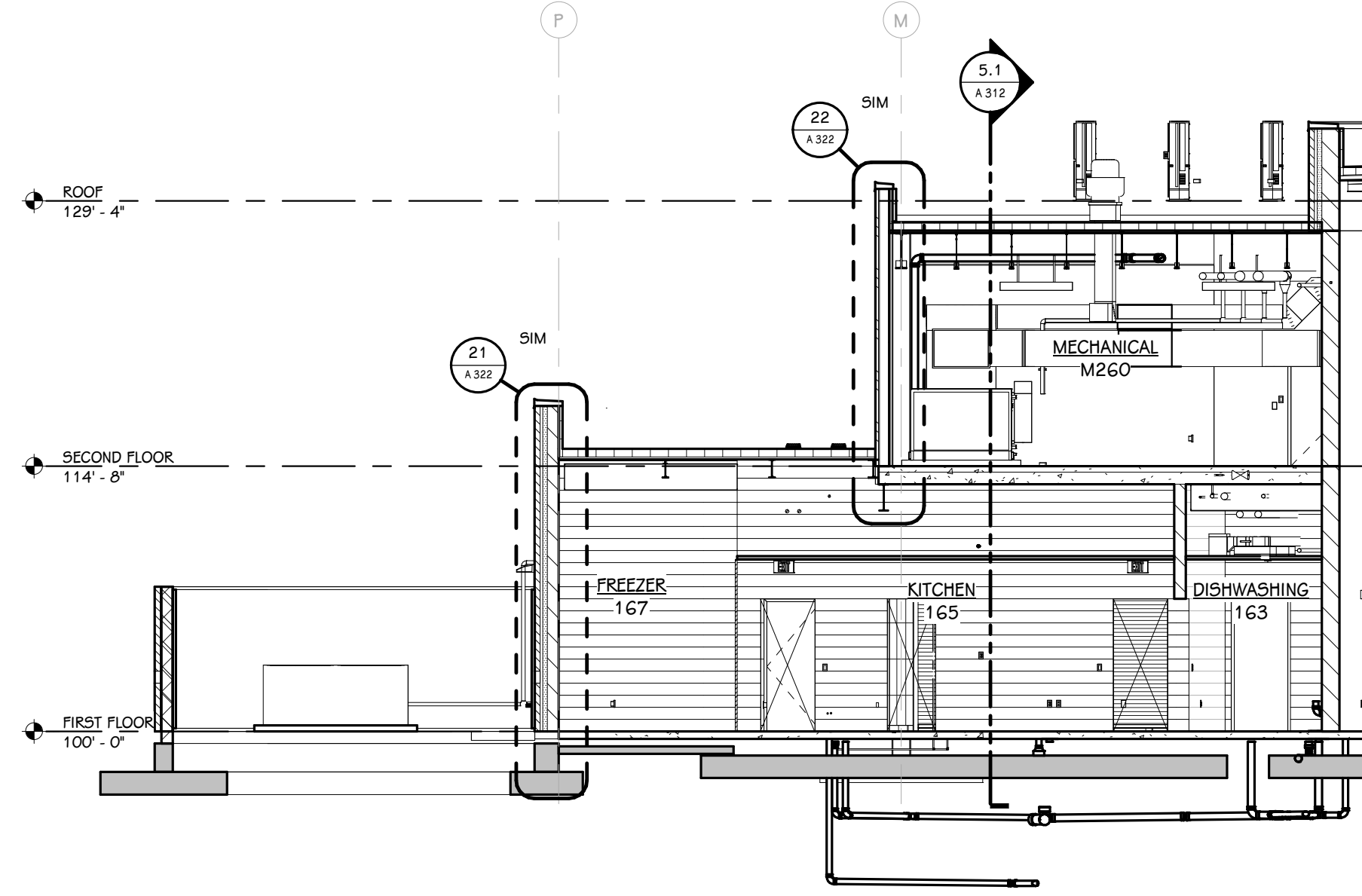
SHEET NUMBER  
**A 312**  
 21-237.20



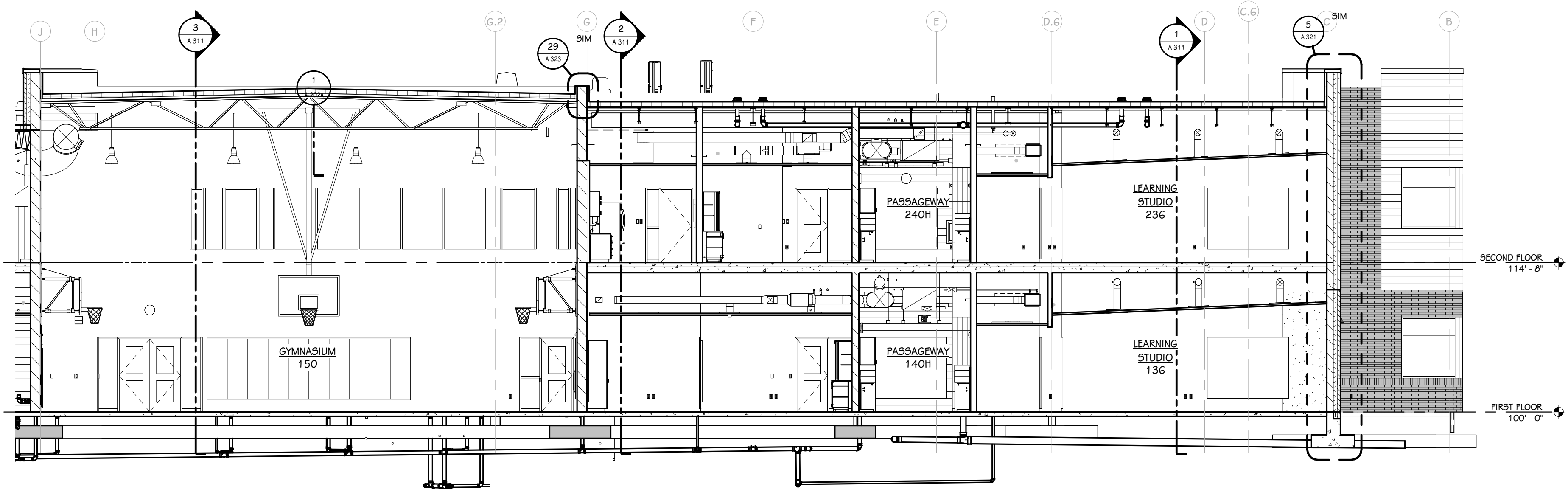
9.1 BUILDING SECTION  
A.313 1/8" = 1'-0"



9.2 BUILDING SECTION  
A.313 1/8" = 1'-0"



10.1 BUILDING SECTION  
A.313 1/8" = 1'-0"



10.2 BUILDING SECTION  
A.313 1/8" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

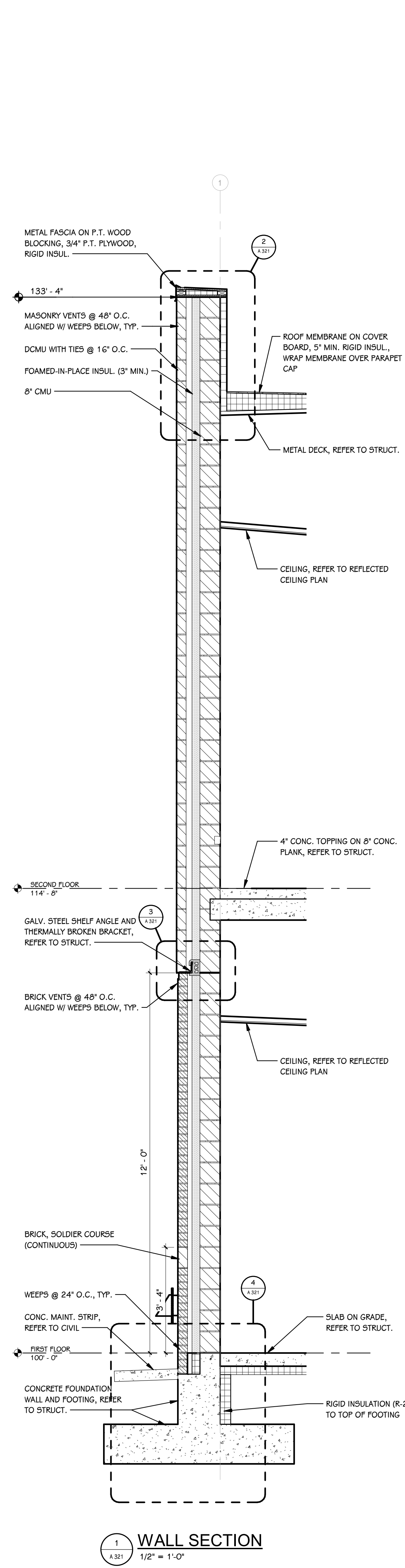
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

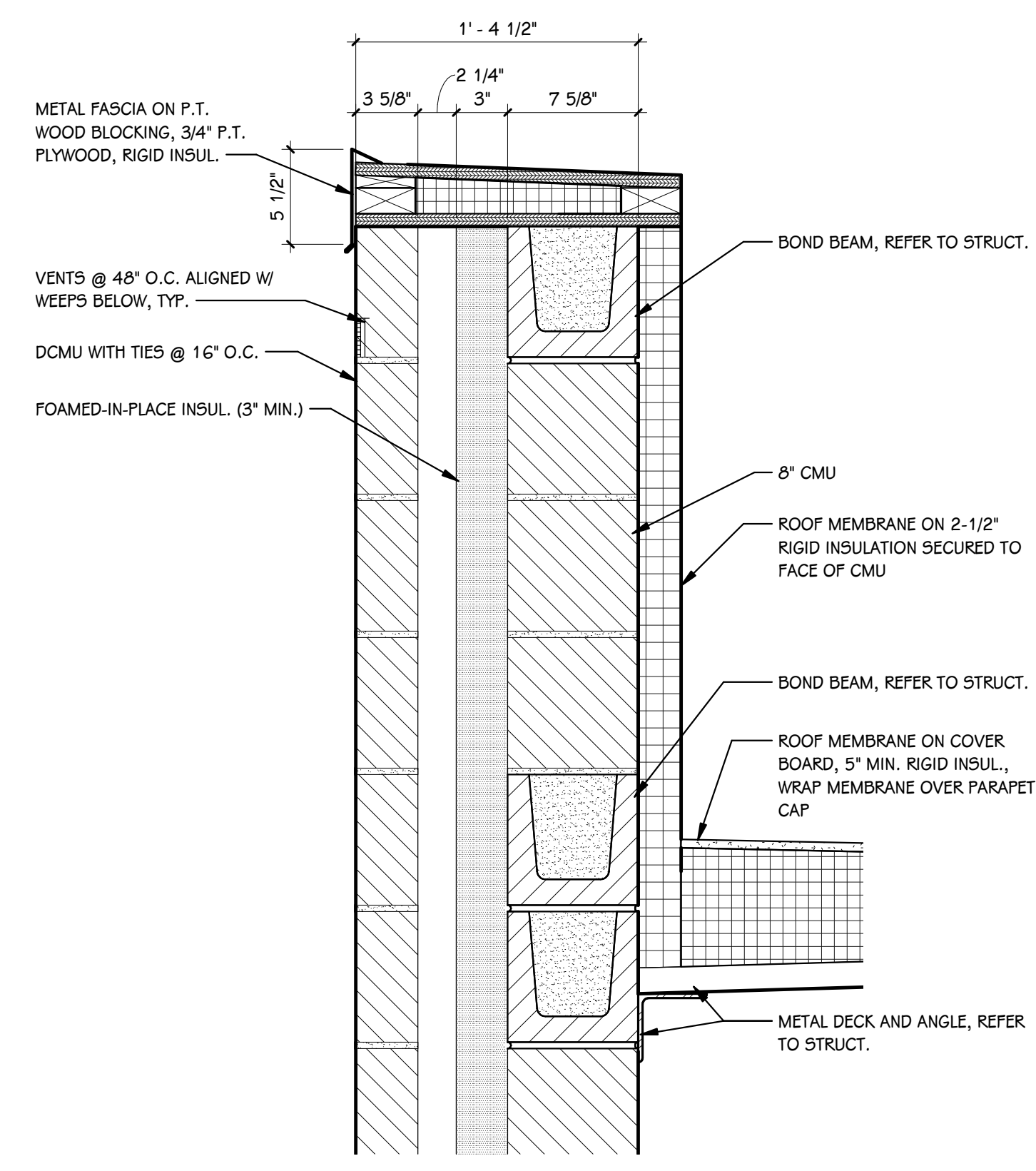
SHEET TITLE  
WALL SECTIONS

DATE  
JUNE 30, 2023

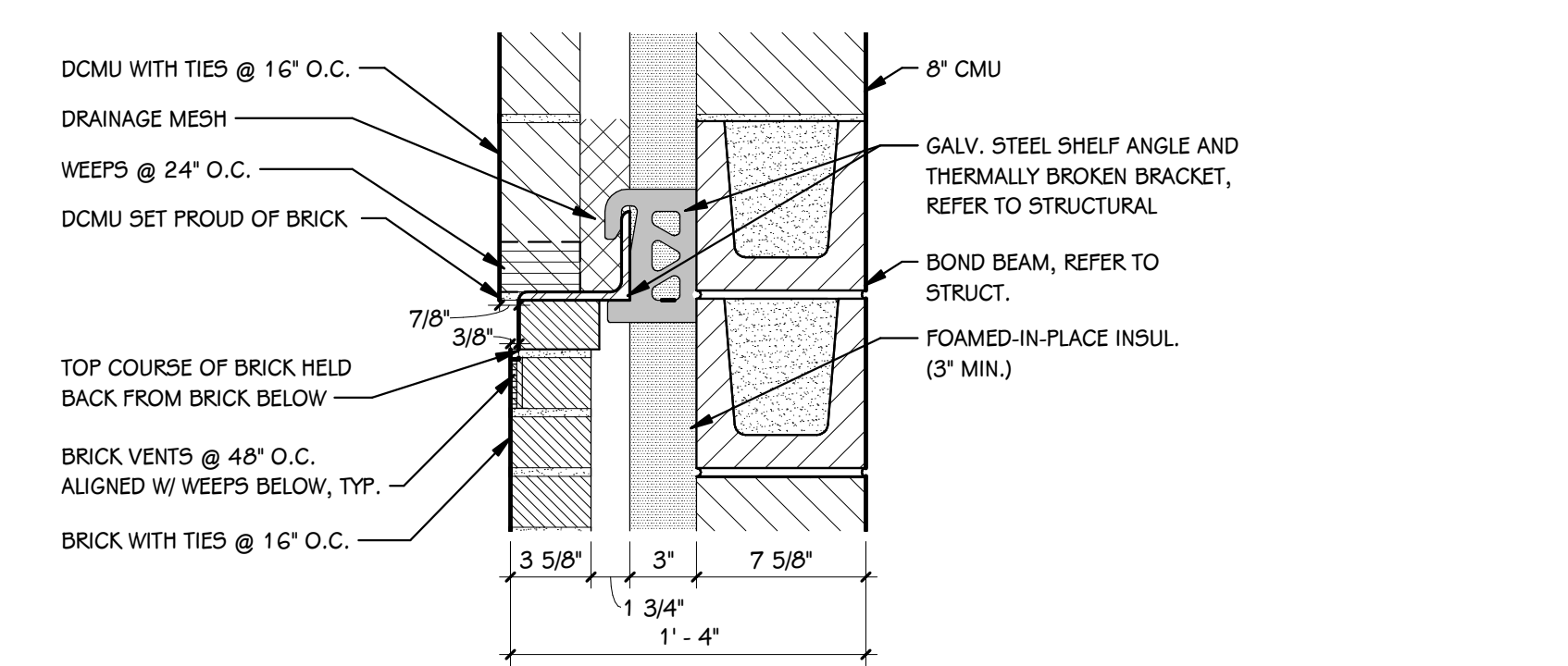
SHEET NUMBER  
A 321  
21-237.20



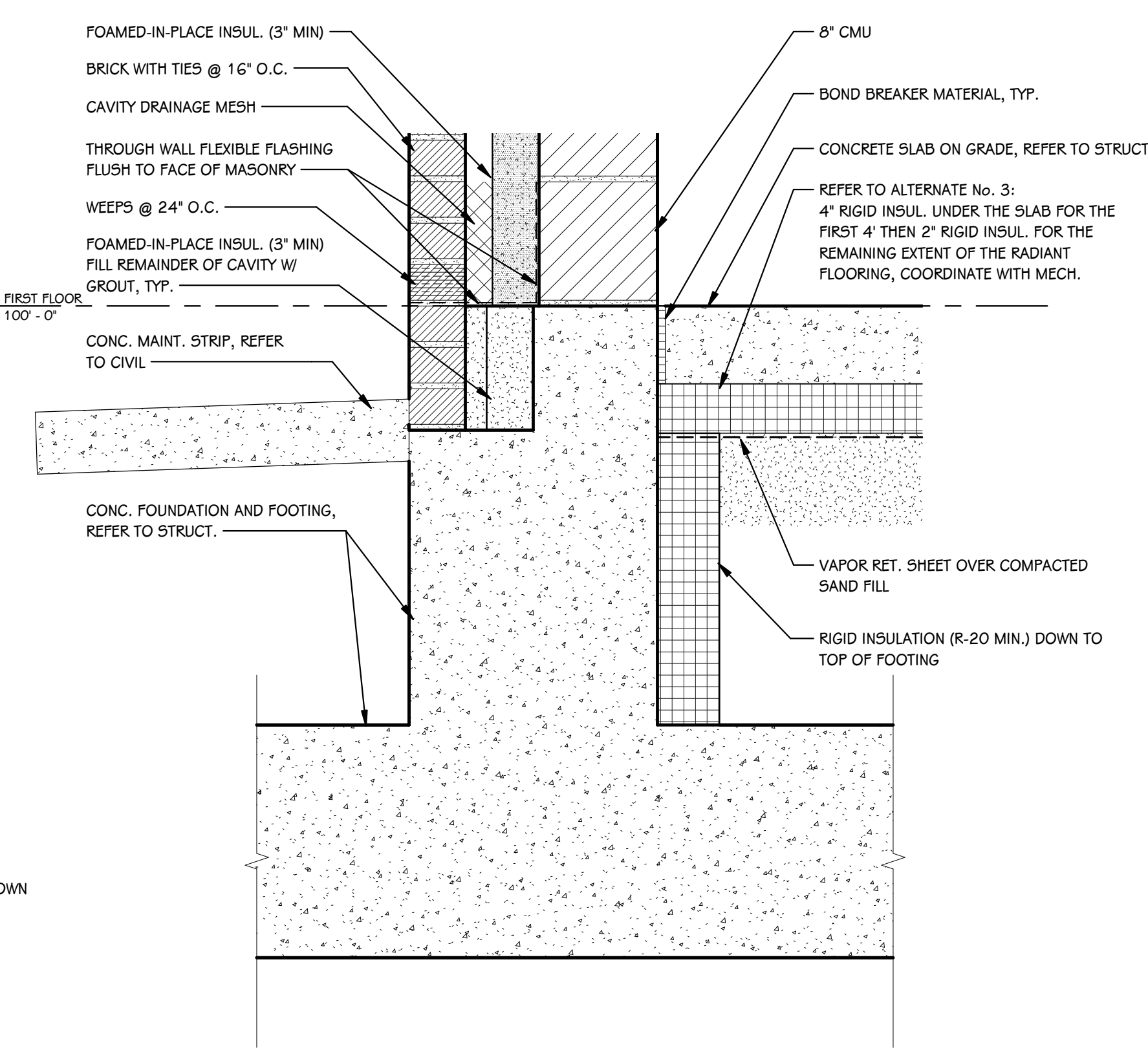
**1 WALL SECTION**  
A 321 1/2" = 1'-0"



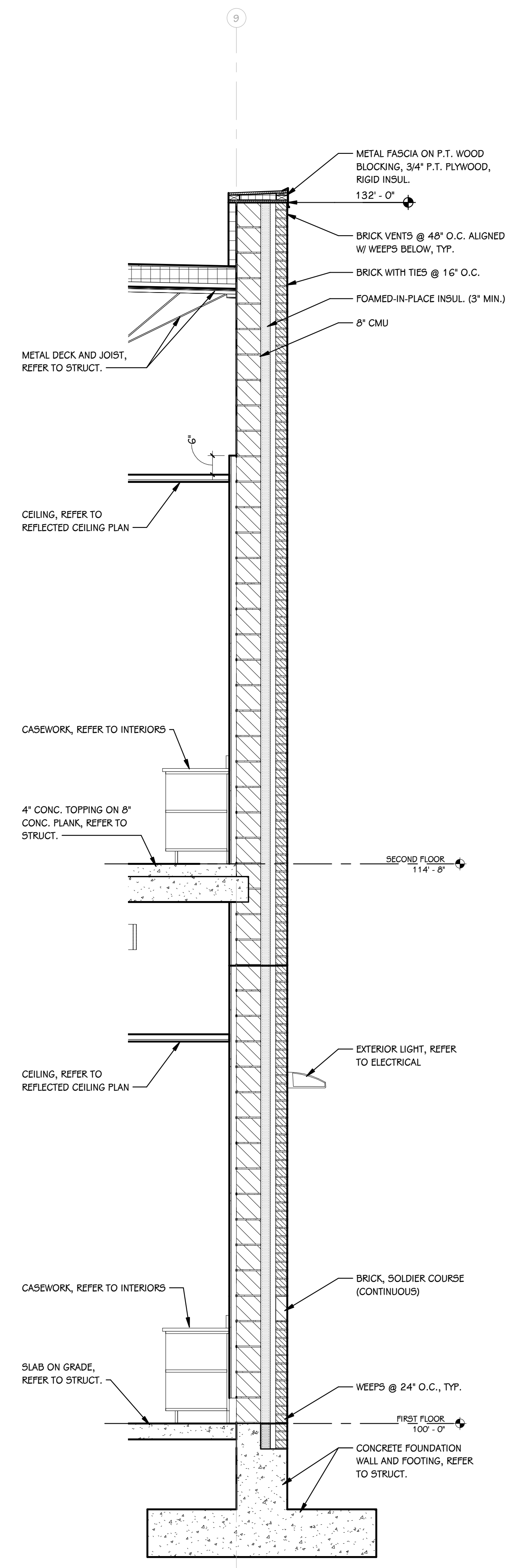
**2 TYP. CMU PARAPET DETAIL**  
A 321 1 1/2" = 1'-0"



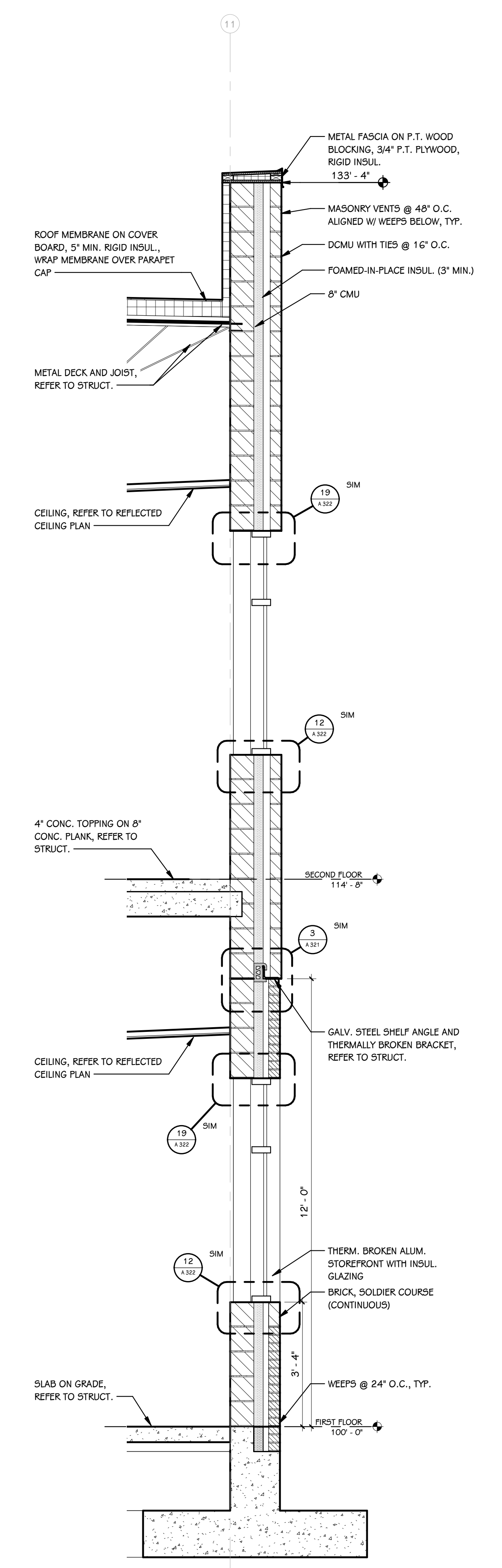
**3 WALL DETAIL**  
A 321 1 1/2" = 1'-0"



**4 TYP. FOUNDATION DETAIL**  
A 321 1 1/2" = 1'-0"



**5 WALL SECTION**  
A 321 1/2" = 1'-0"



**6 WALL SECTION**  
A 321 1/2" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

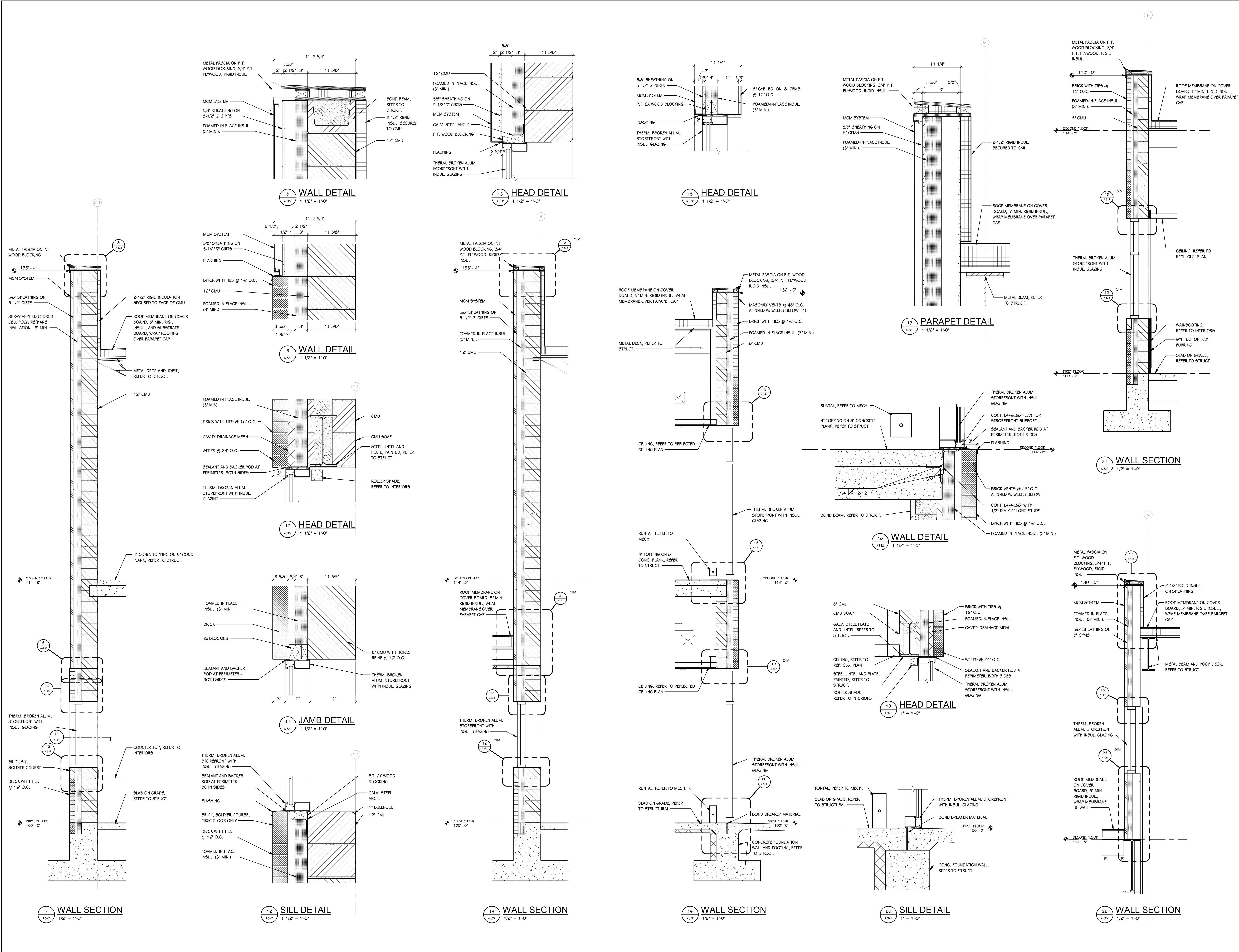
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
WALL SECTIONS

DATE  
JUNE 30, 2023

SHEET NUMBER  
A 322  
21-237.20



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

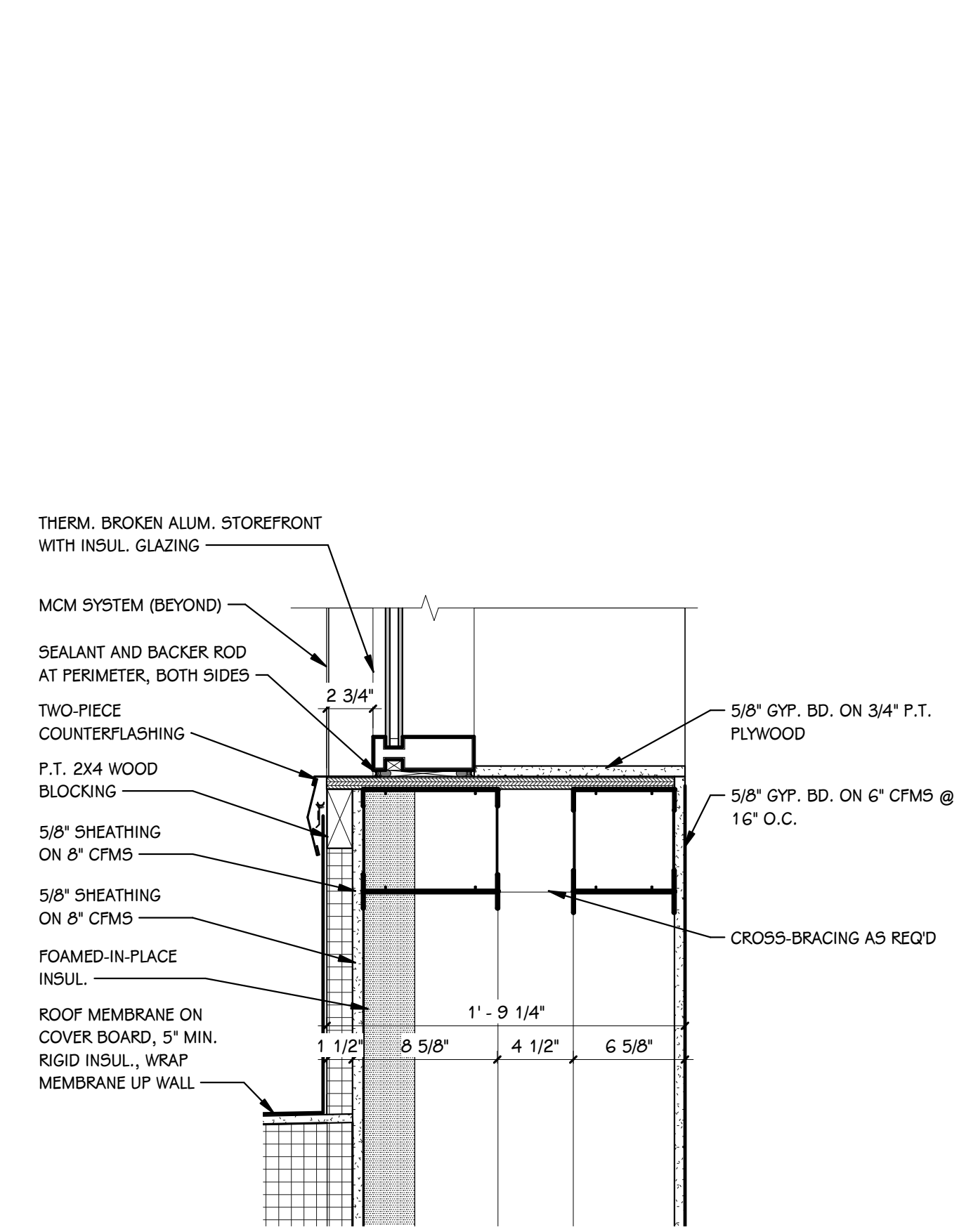
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

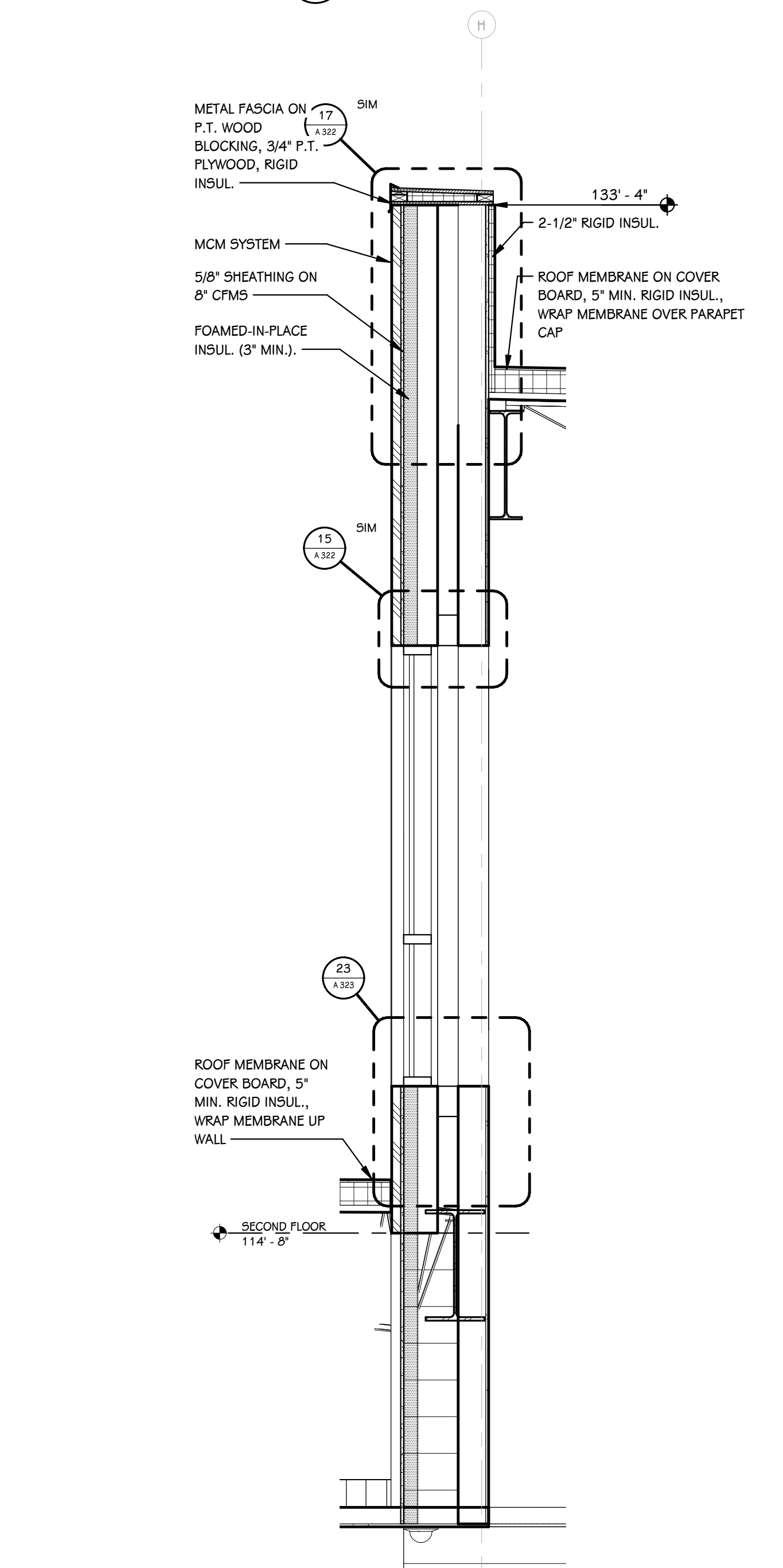
SHEET TITLE  
WALL SECTIONS

DATE  
JUNE 30, 2023

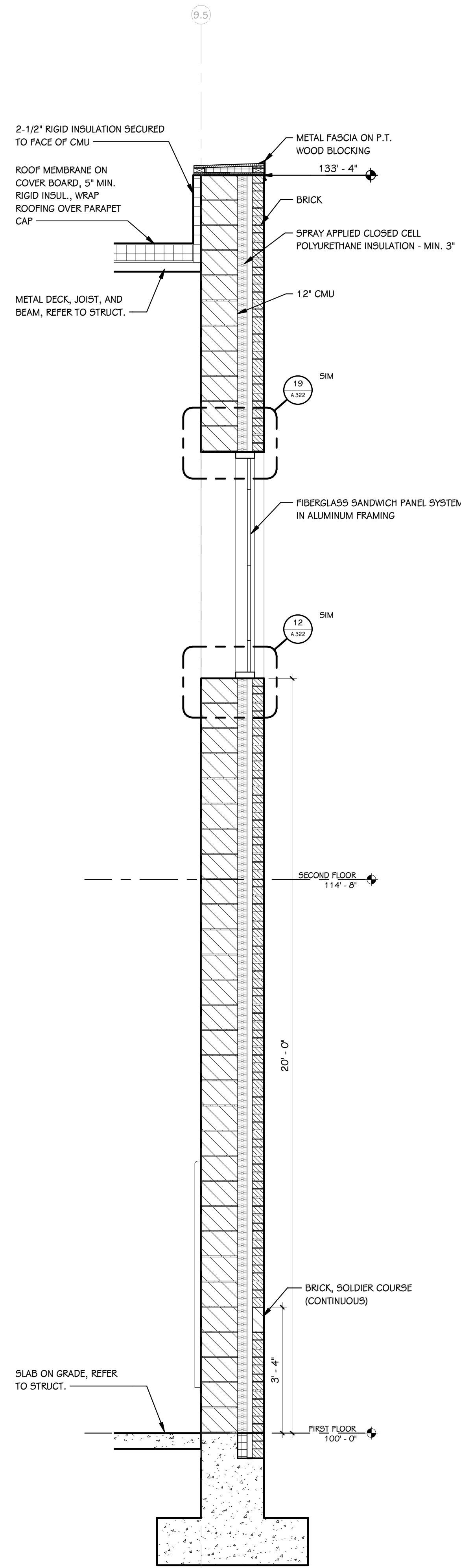
SHEET NUMBER  
A 323  
21-237.20



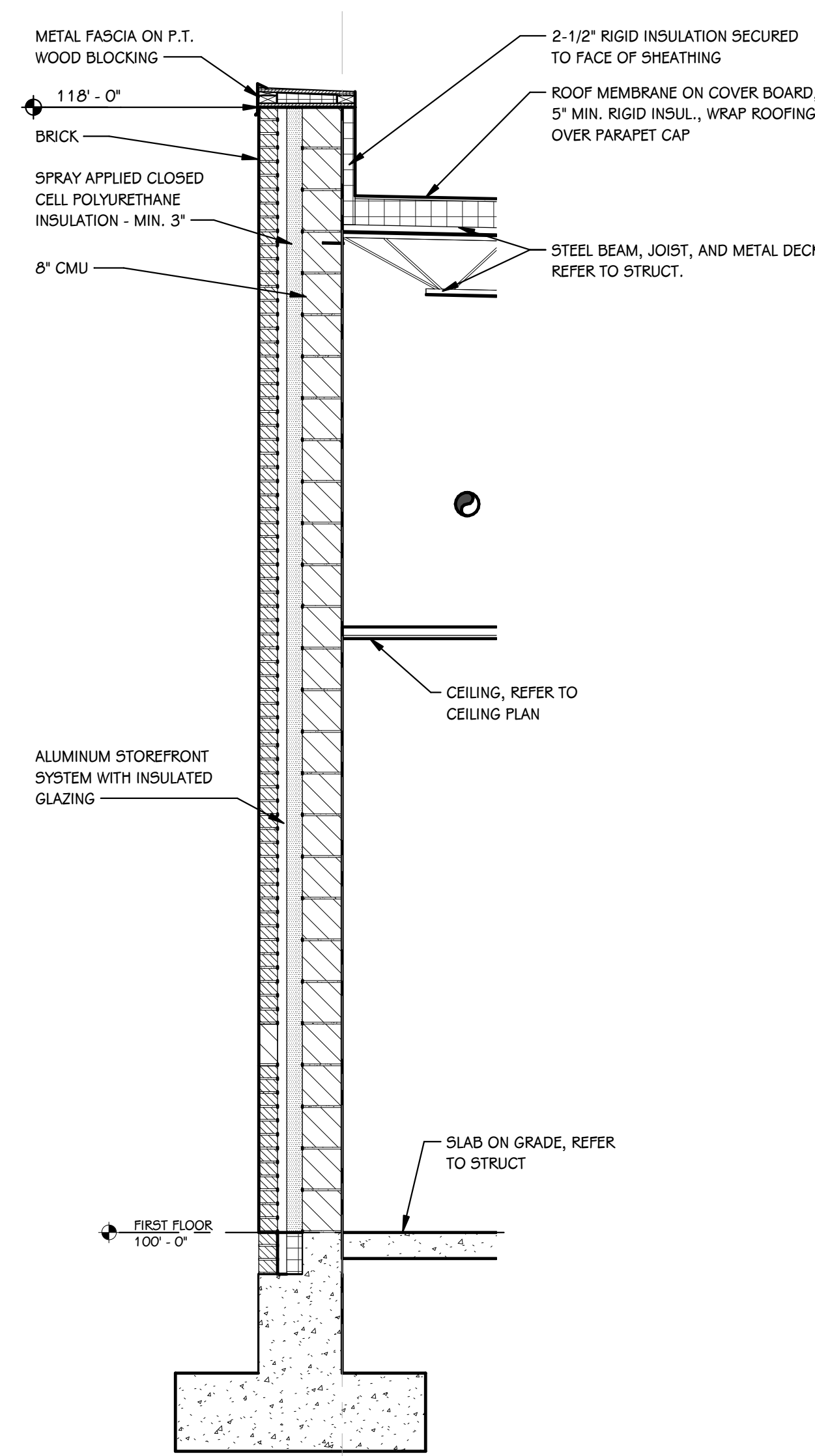
23 SILL DETAIL  
1/2" = 1'-0"



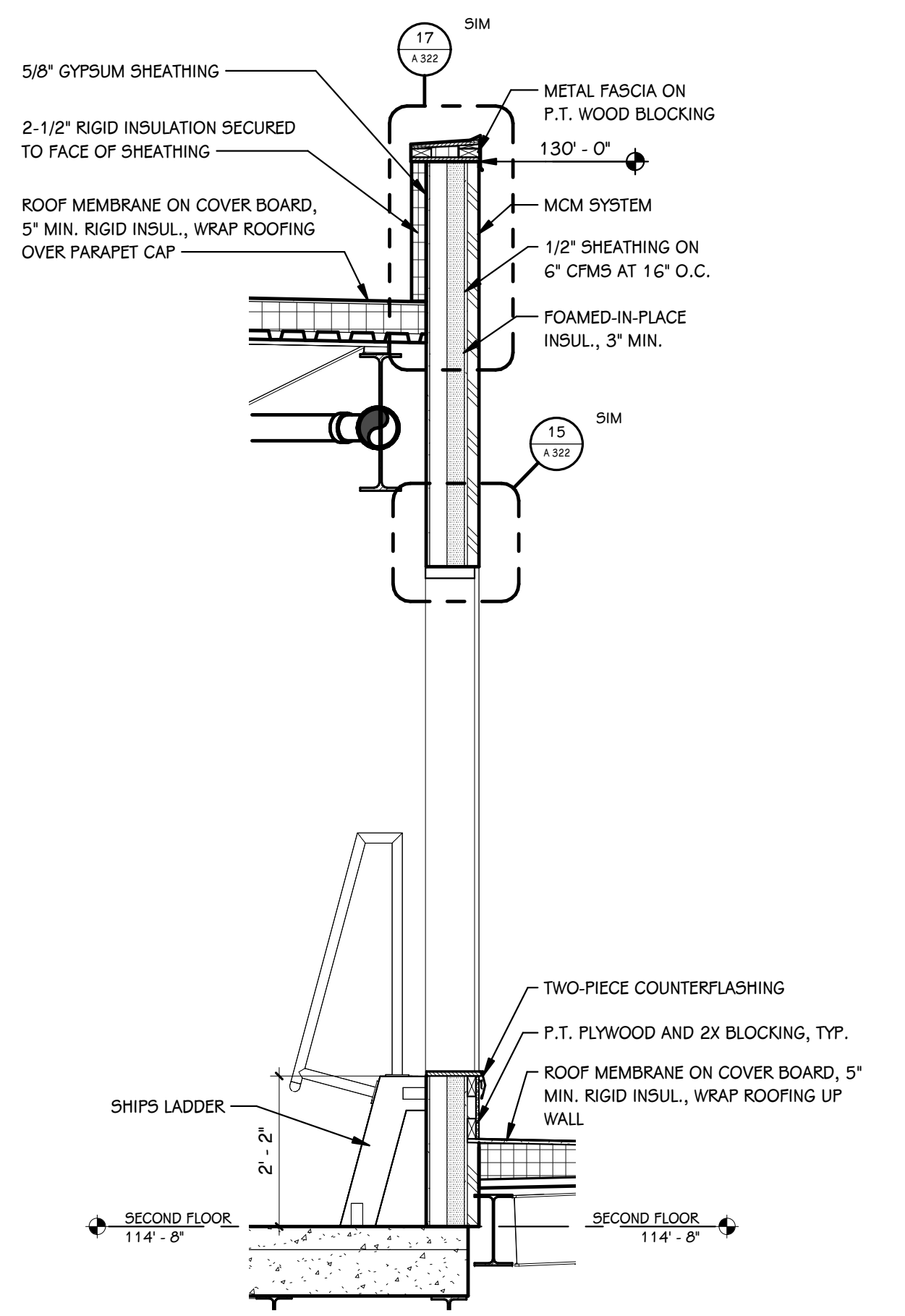
24 WALL SECTION  
1/2" = 1'-0"



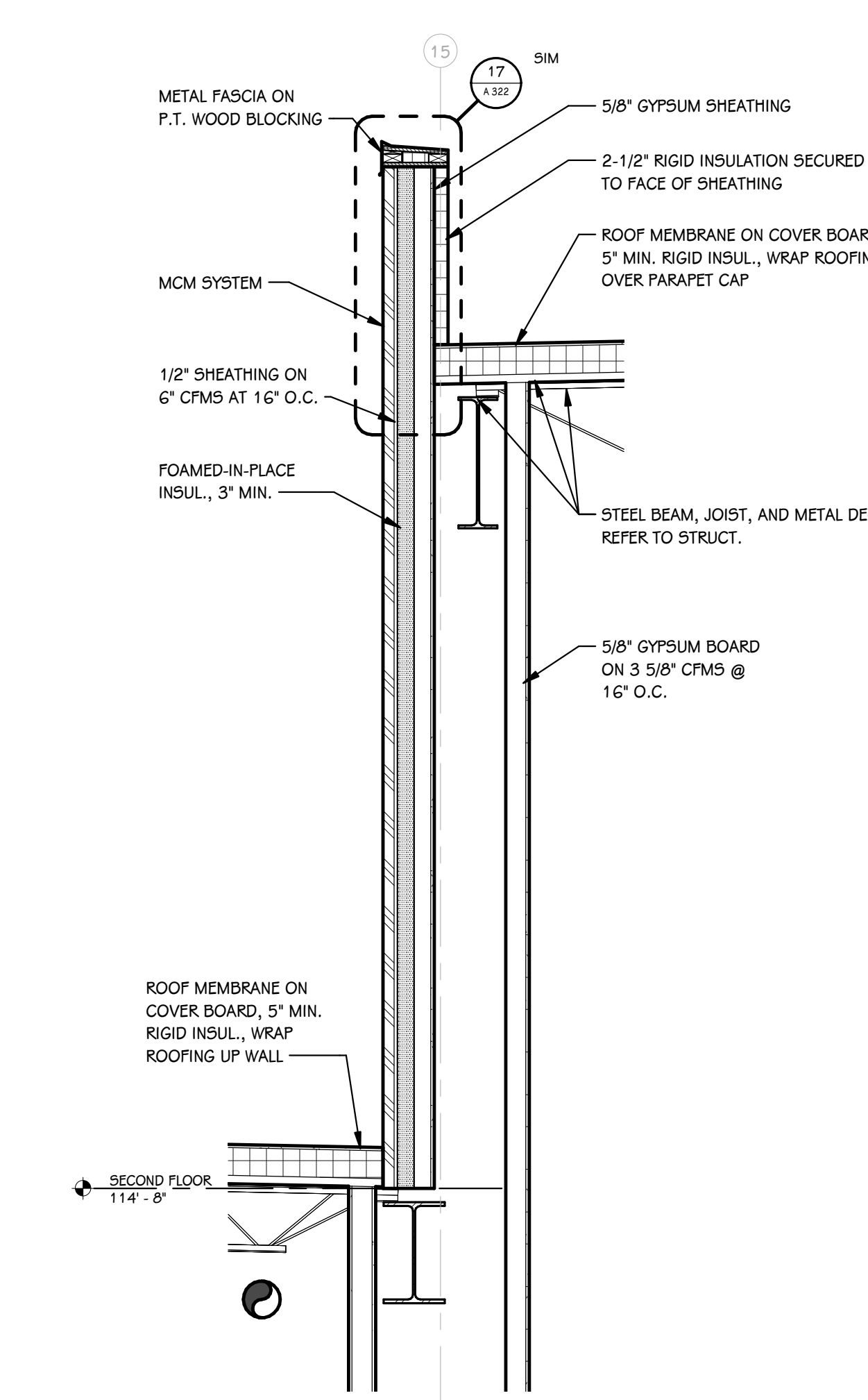
25 WALL SECTION  
1/2" = 1'-0"



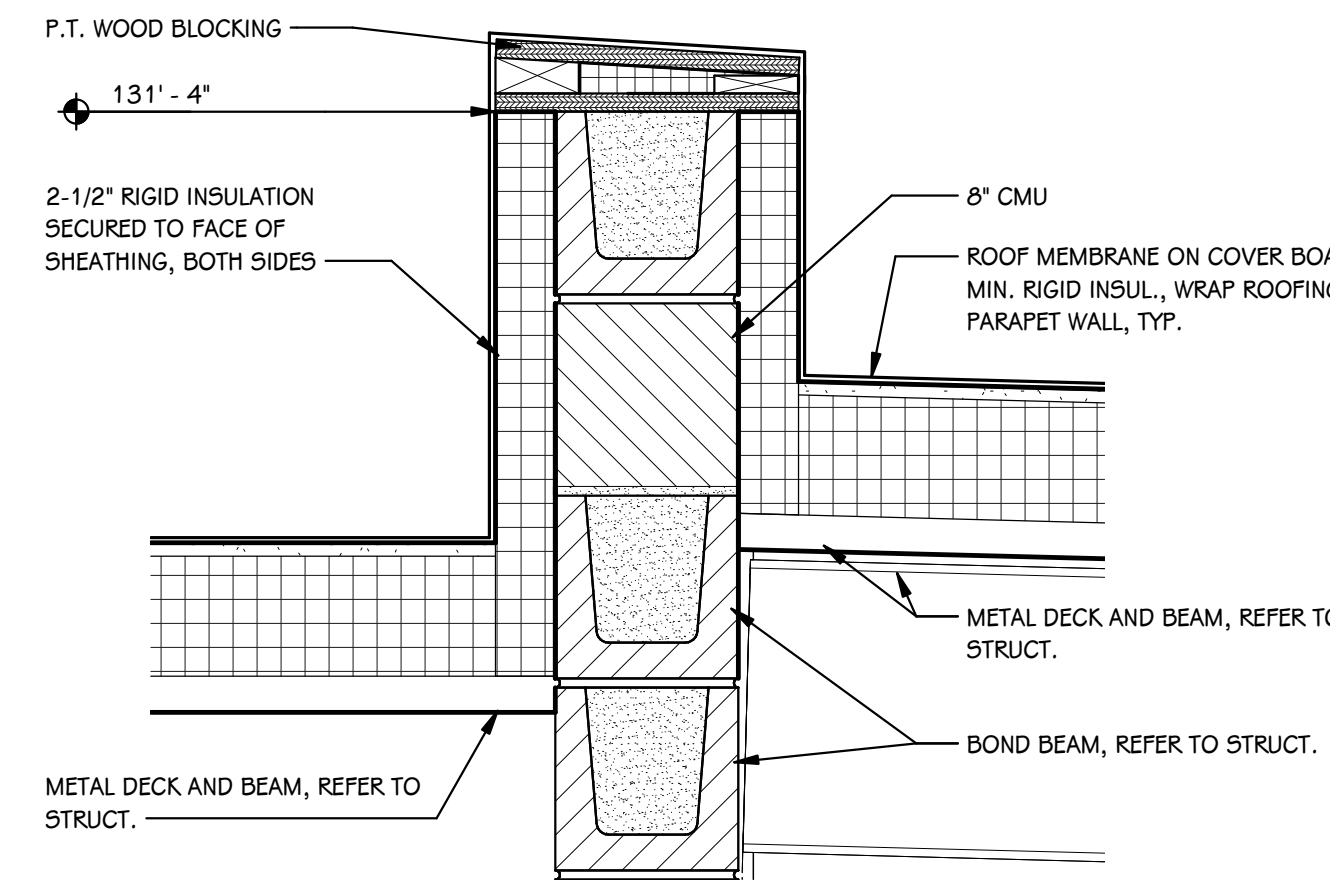
26 WALL SECTION  
1/2" = 1'-0"



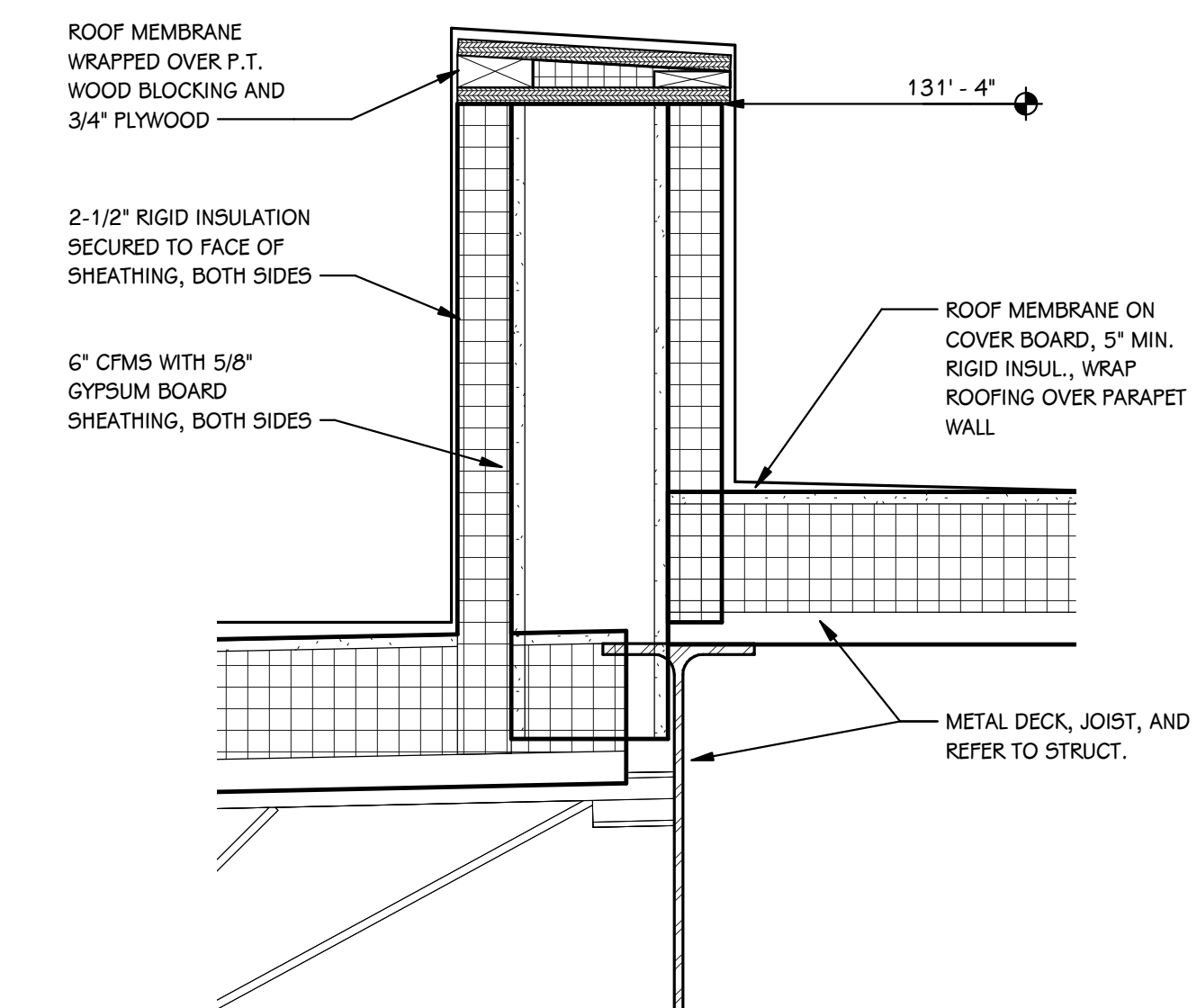
27 WALL SECTION  
1/2" = 1'-0"



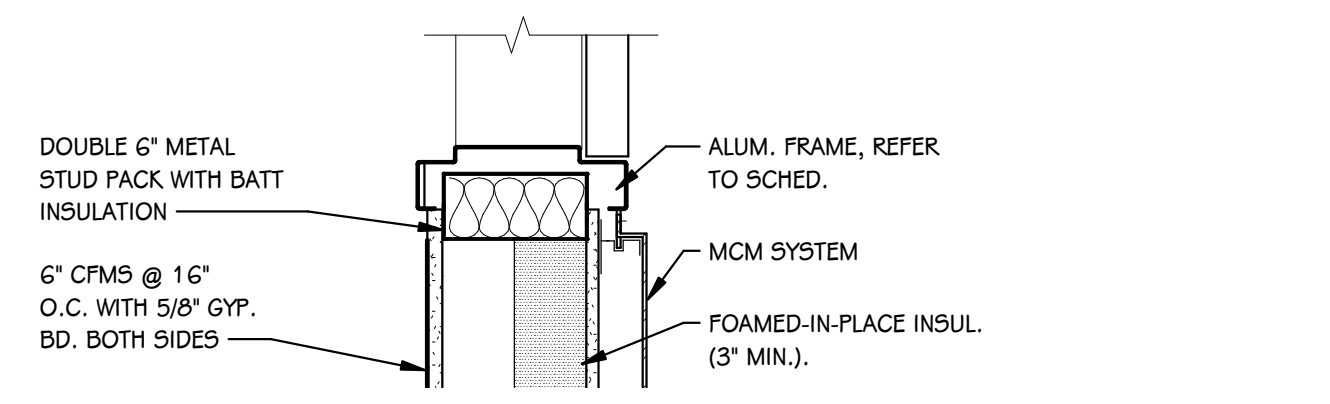
28 WALL SECTION  
1/2" = 1'-0"



29 WALL DETAIL  
1/2" = 1'-0"



30 WALL DETAIL  
1/2" = 1'-0"



31 JAMB DETAIL  
1/2" = 1'-0"



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ENLARGED PLANS, TYPICAL MOUNTING  
HEIGHTS, BARRIER-FREE MOUNTING  
HEIGHTS AND ACCESSORY MATRIX

SHEET NUMBER  
**A 401**  
21-237.20

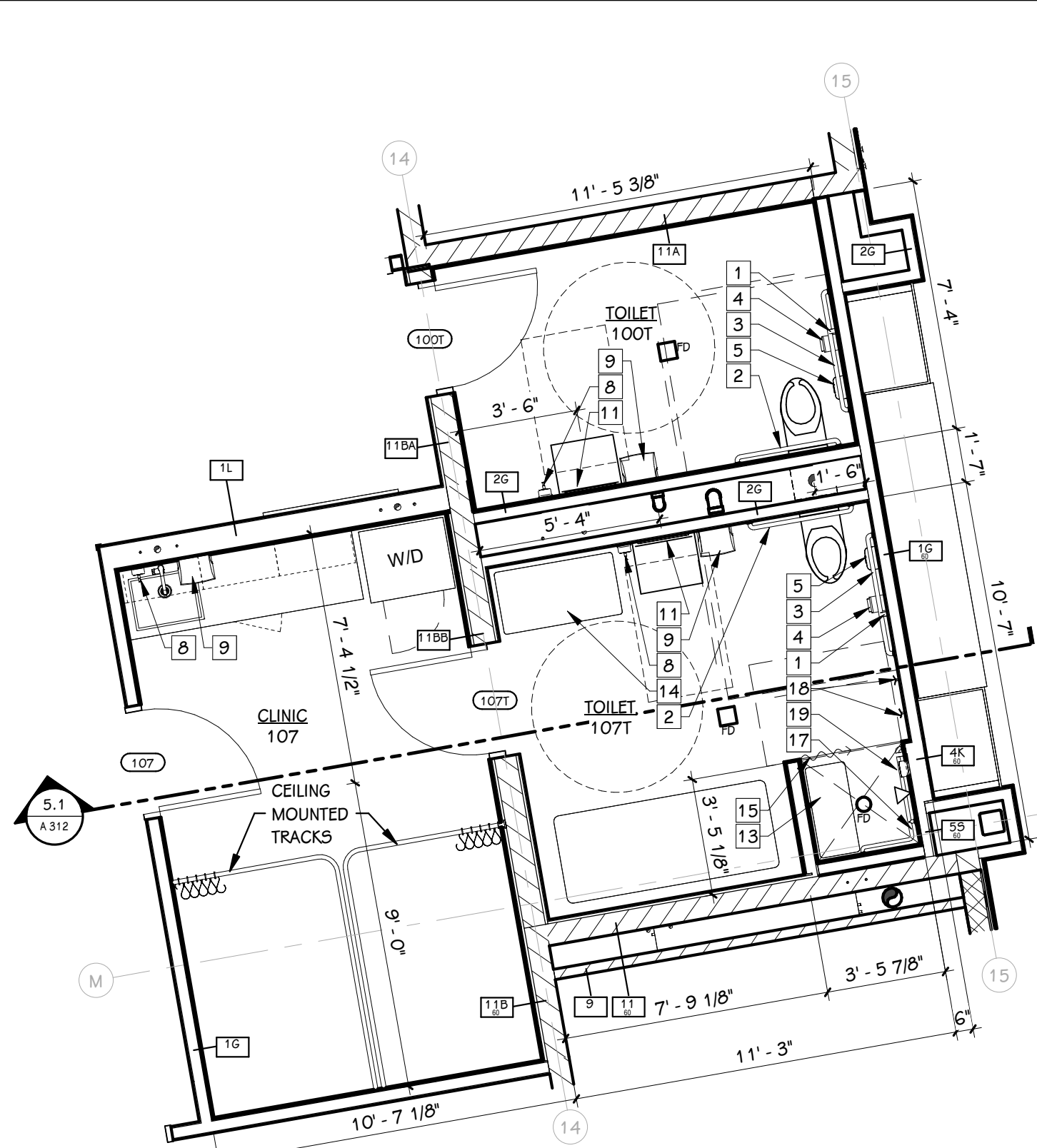
DATE  
JUNE 30, 2023

**KEYED NOTES - ENLARGED PLAN**

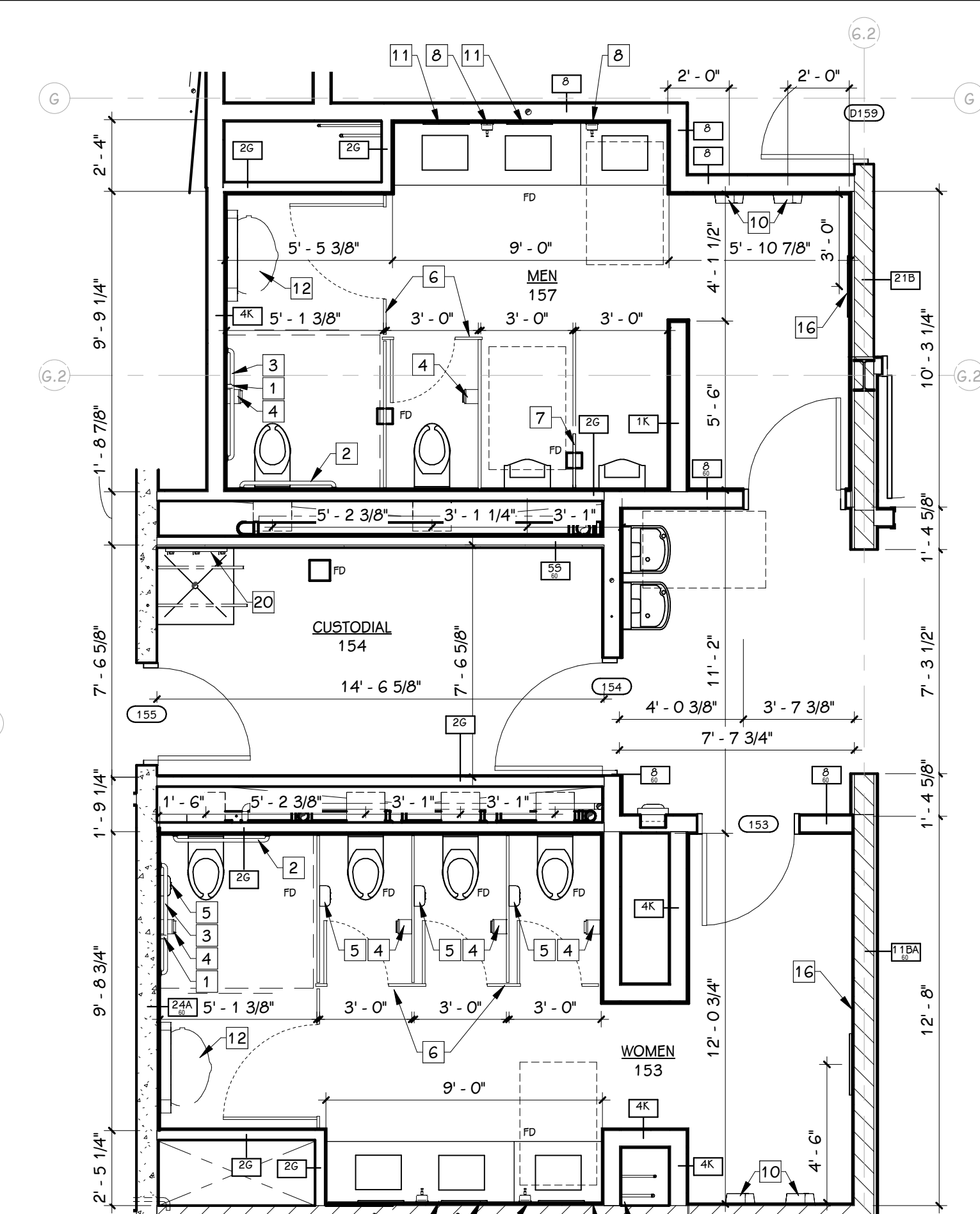
- 1 18" VERTICAL STAINLESS STEEL GRAB BAR
- 2 36" STAINLESS STEEL GRAB BAR
- 3 42" STAINLESS STEEL GRAB BAR
- 4 TOILET PAPER DISPENSER, OP, CI
- 5 SANITARY NAPKIN DISPOSAL
- 6 TOILET PARTITION
- 7 URINAL SCREEN
- 8 SOAP DISPENSER, OP, CI
- 9 PAPER TOWEL (ROLL) DISPENSER, OP, CI
- 10 HAND DRYER
- 11 STAINLESS STEEL FRAMED MIRROR (18"Wx34"H)
- 12 BABY CHANGING STATION
- 13 FOLD DOWN SHOWER SEAT (14"Wx32"L)
- 14 CHANGING SEAT (22"Wx42"L)
- 15 SHOWER ROD AND CURTAIN
- 16 STAINLESS STEEL FRAMED MIRROR (24"Wx60"H)
- 17 CONTINUOUS STAINLESS SHOWER GRAB BAR
- 18 ROBE HOOK
- 19 SOAP HOLDER
- 20 MOP AND BROOM HOLDER

**ACCESSORY NOTES**

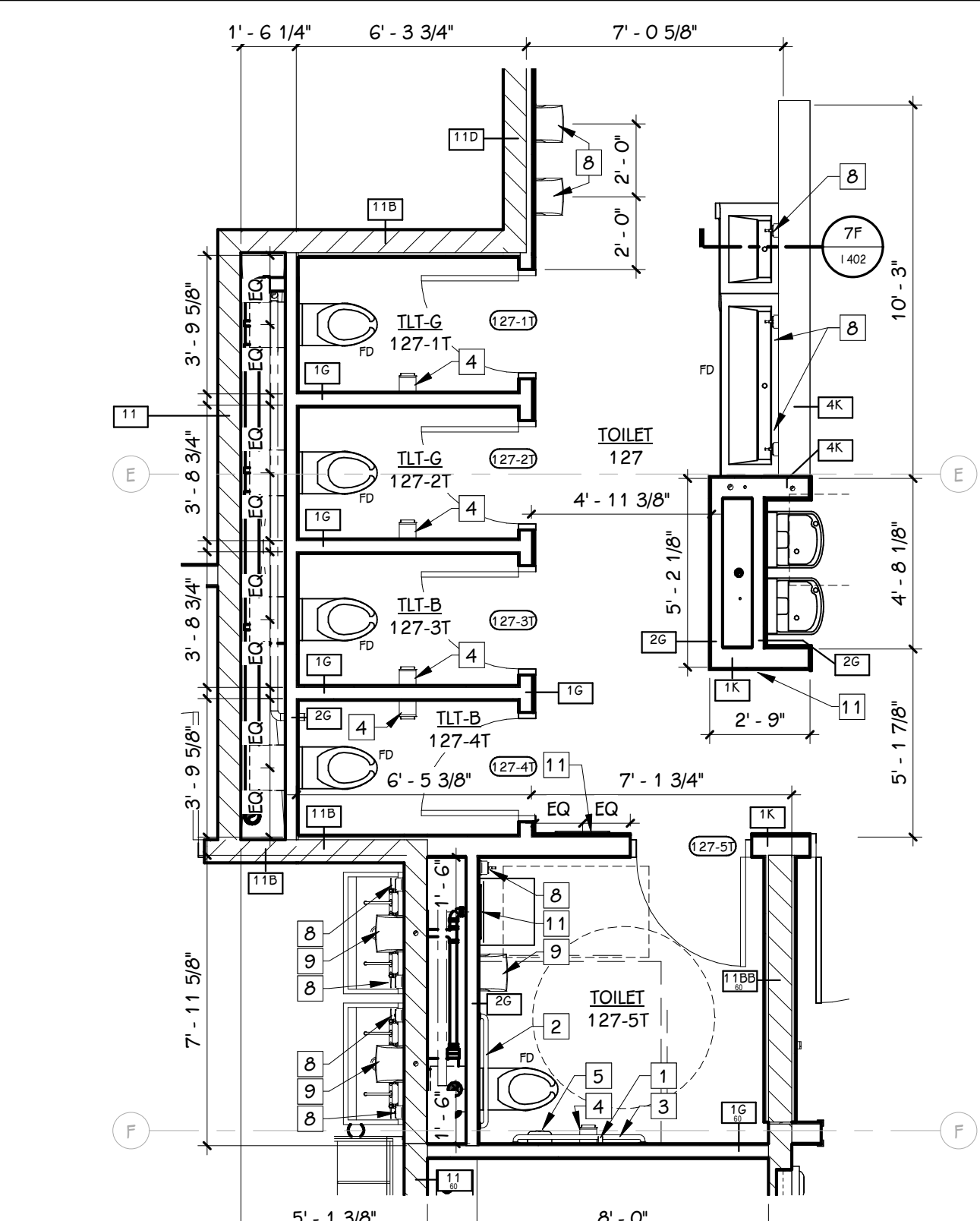
1. OP = OWNER PURCHASED, CI = OWNER INSTALLED, CP = CONTRACTOR PURCHASED, CI = CONTRACTOR INSTALLED.
2. DIMENSIONS INDICATED ARE TYPICAL UNLESS NOTED OTHERWISE ON PLANS.
3. GENERIC PLUMBING FIXTURES ARE SHOWN. REFER TO PLUMBING DRAWINGS AND SPECIFICATIONS FOR FIXTURE TYPES, MANUFACTURERS AND MOUNTING HEIGHTS.
4. CODE REQUIRED INTERIOR SIGNAGE - INCLUDES MINIMUM REQUIRED SIGN TYPES REQUIRED FOR OCCUPANCY AS DICTATED BY IBC, IFB, AND NFPA. COORDINATE WITH ANY OWNER-PROVIDED SIGNAGE.



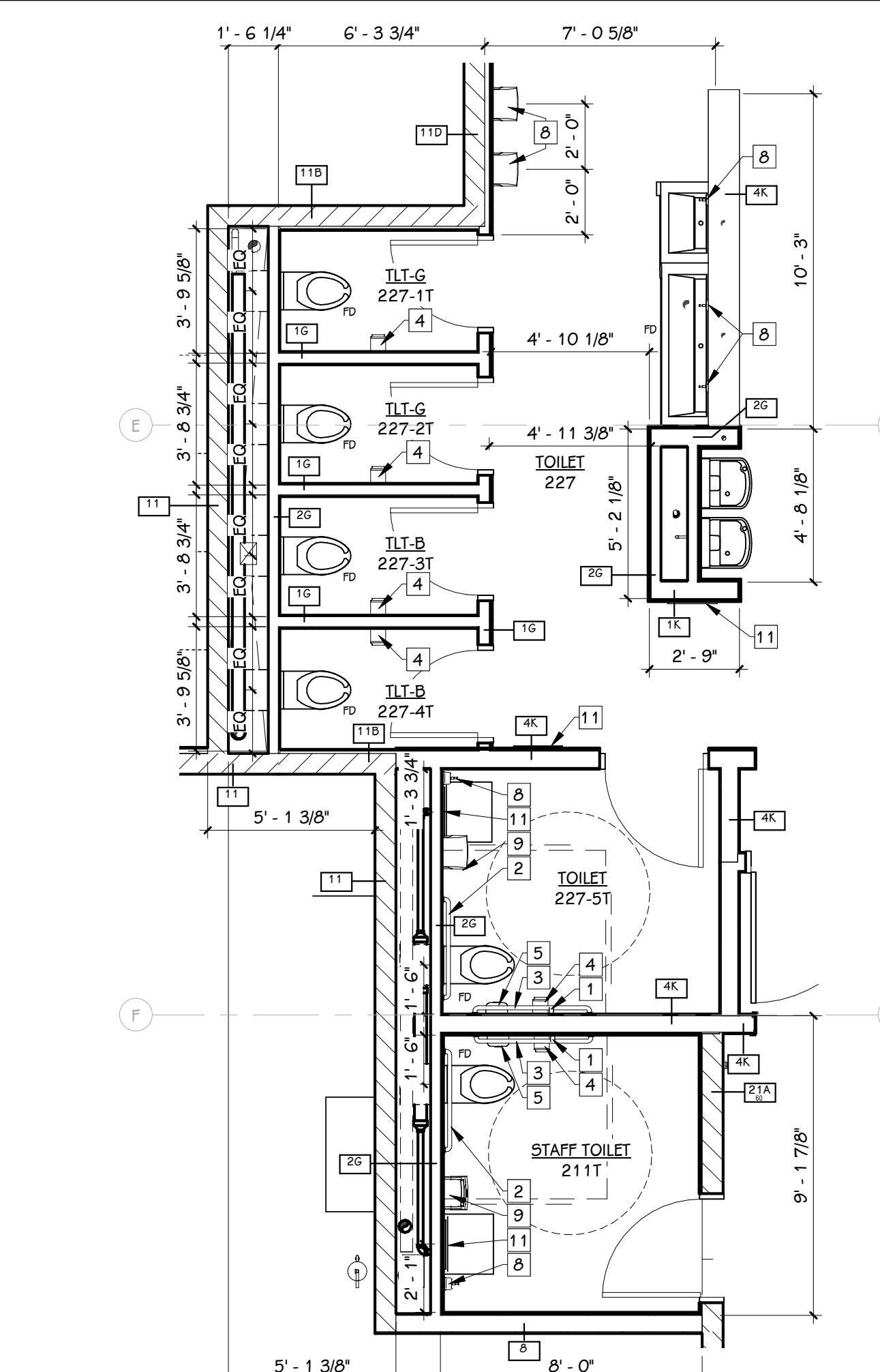
**1 ENLARGED PLAN**  
1/4" = 1'-0"



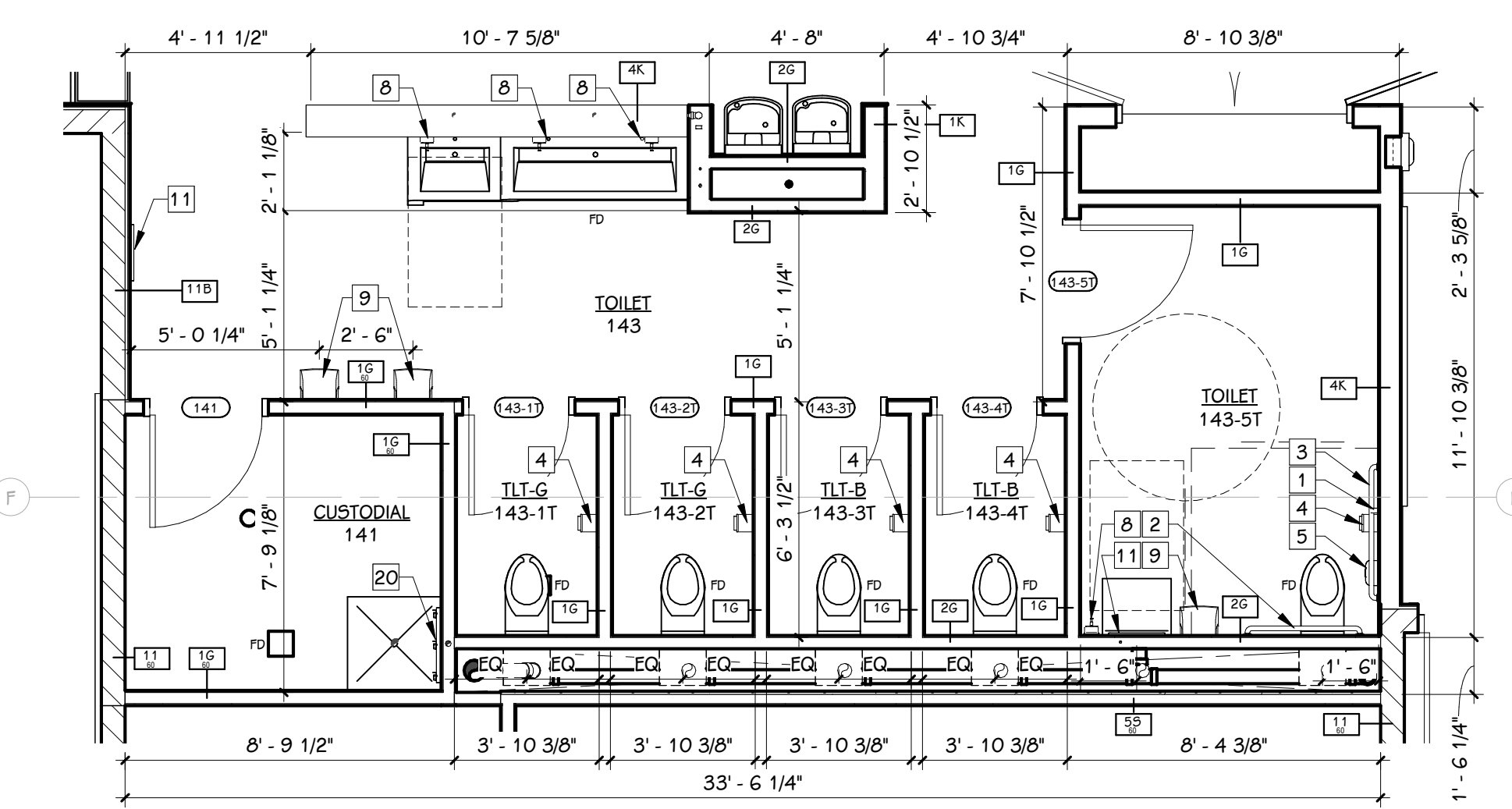
**2 ENLARGED PLAN**  
1/4" = 1'-0"



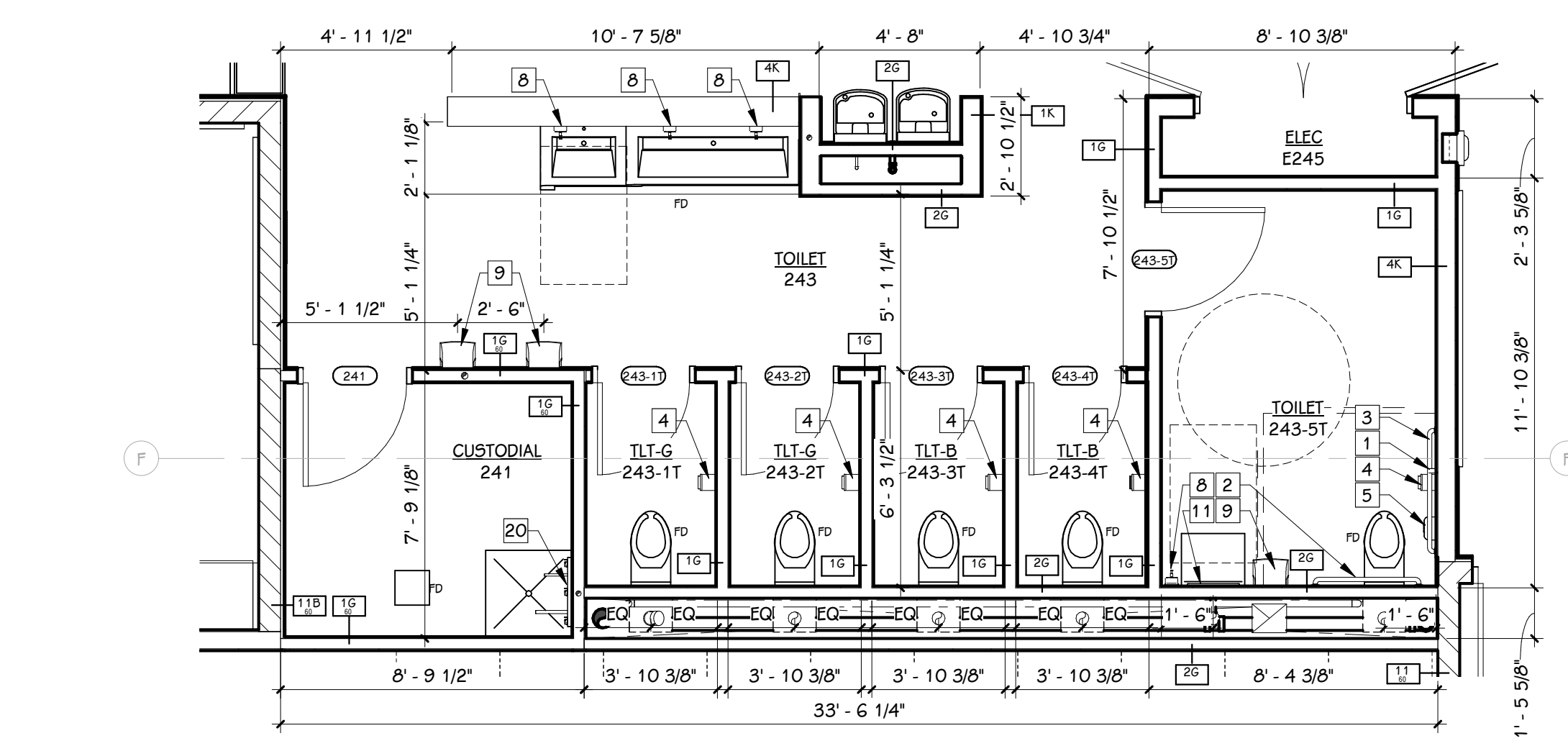
**3 ENLARGED PLAN**  
1/4" = 1'-0"



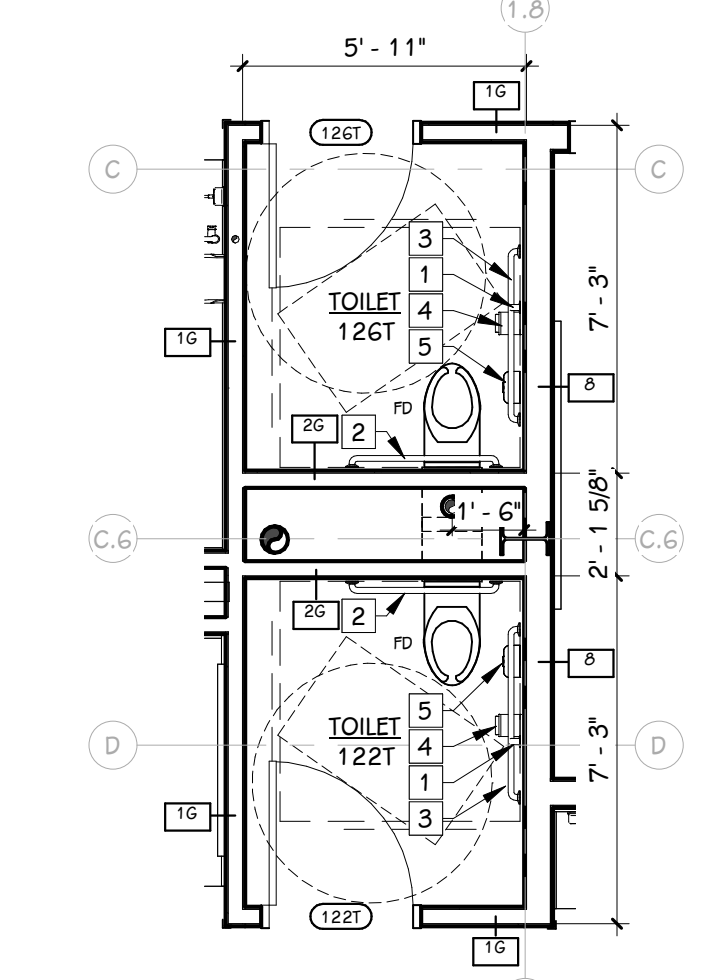
**4 ENLARGED PLAN**  
1/4" = 1'-0"



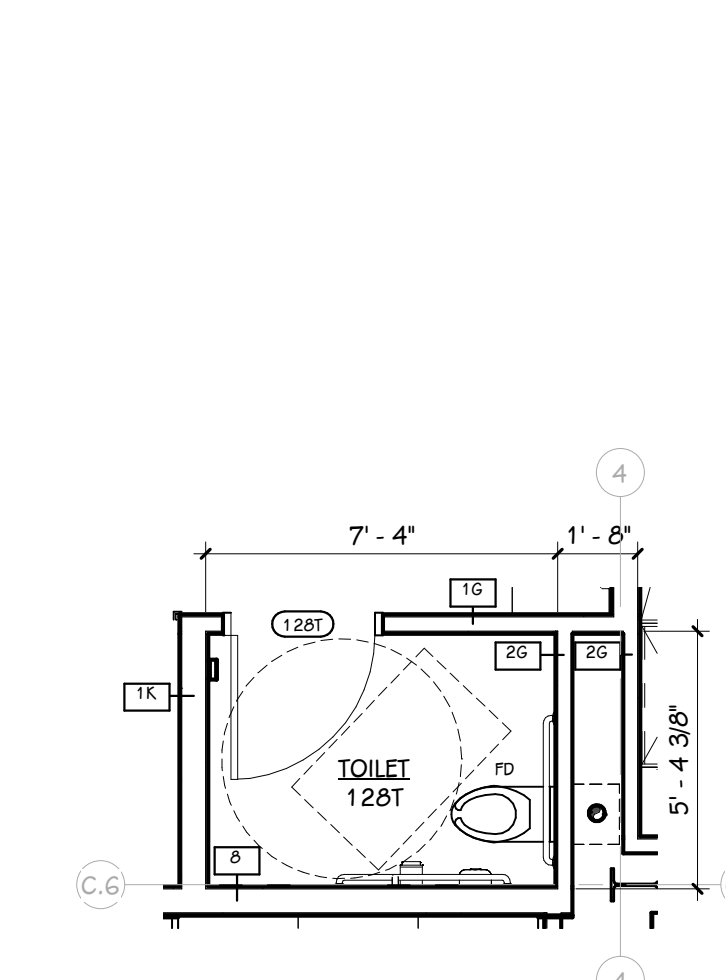
**5 ENLARGED PLAN**  
1/4" = 1'-0"



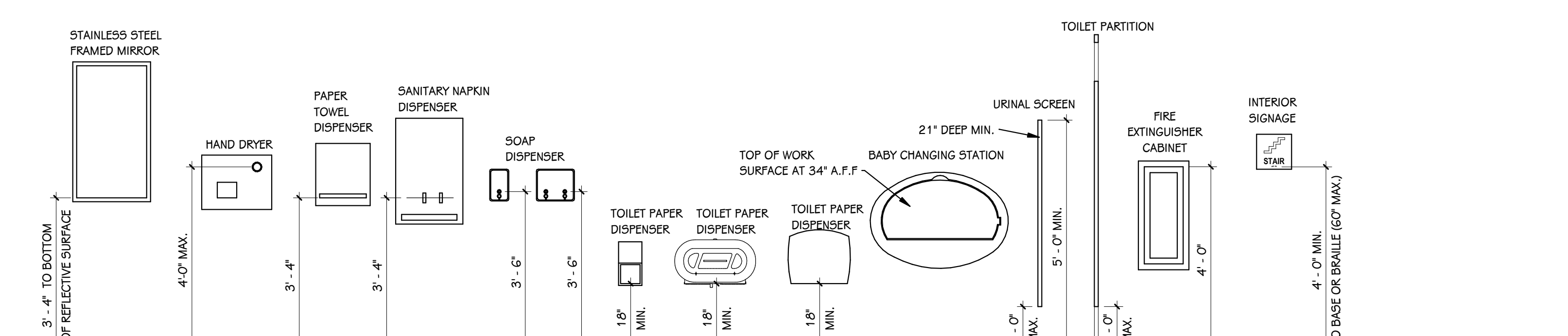
**6 ENLARGED PLAN**  
1/4" = 1'-0"



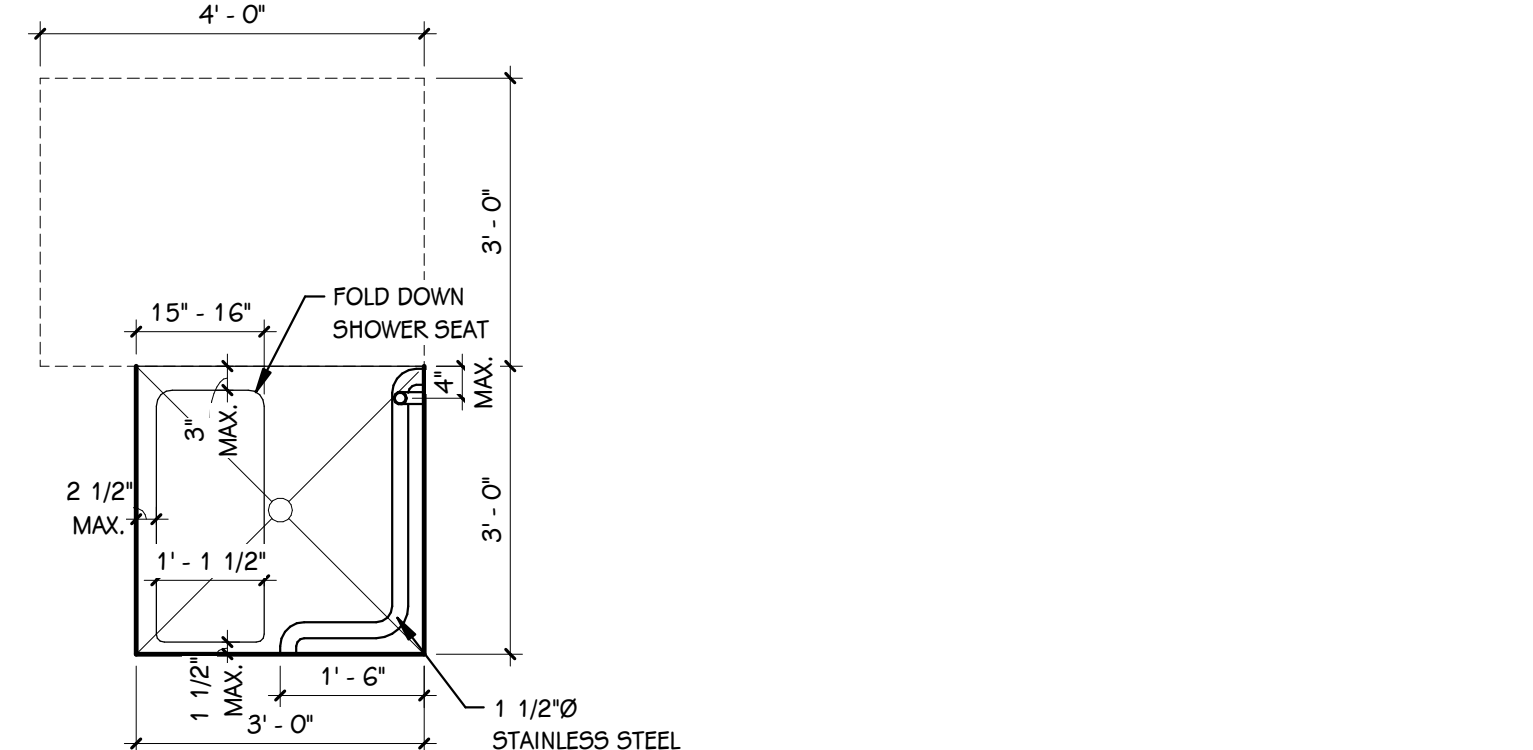
**7 ENLARGED PLAN**  
1/4" = 1'-0"



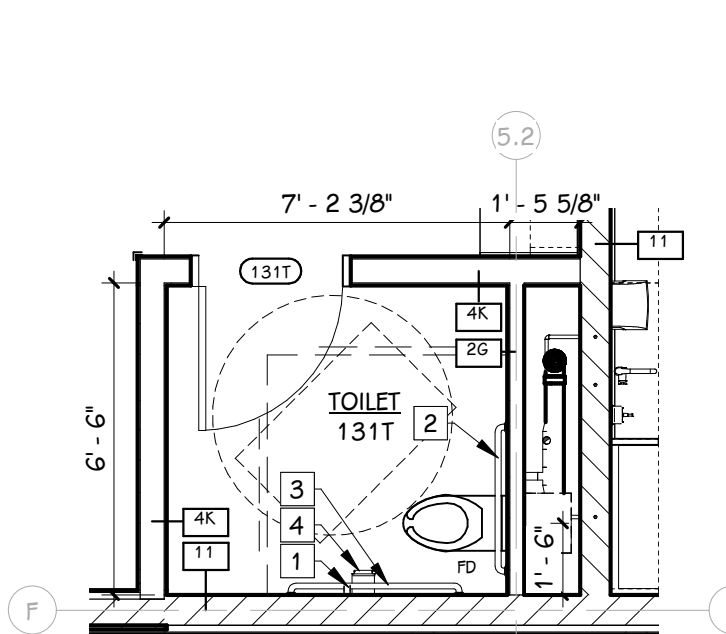
**8 ENLARGED PLAN**  
1/4" = 1'-0"



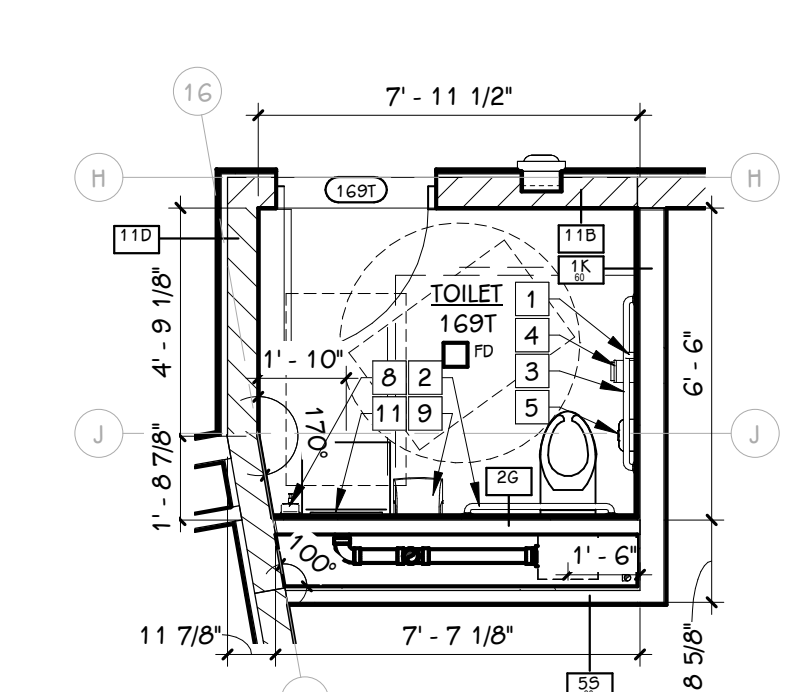
**TYPICAL MOUNTING HEIGHTS**  
1/2" = 1'-0"



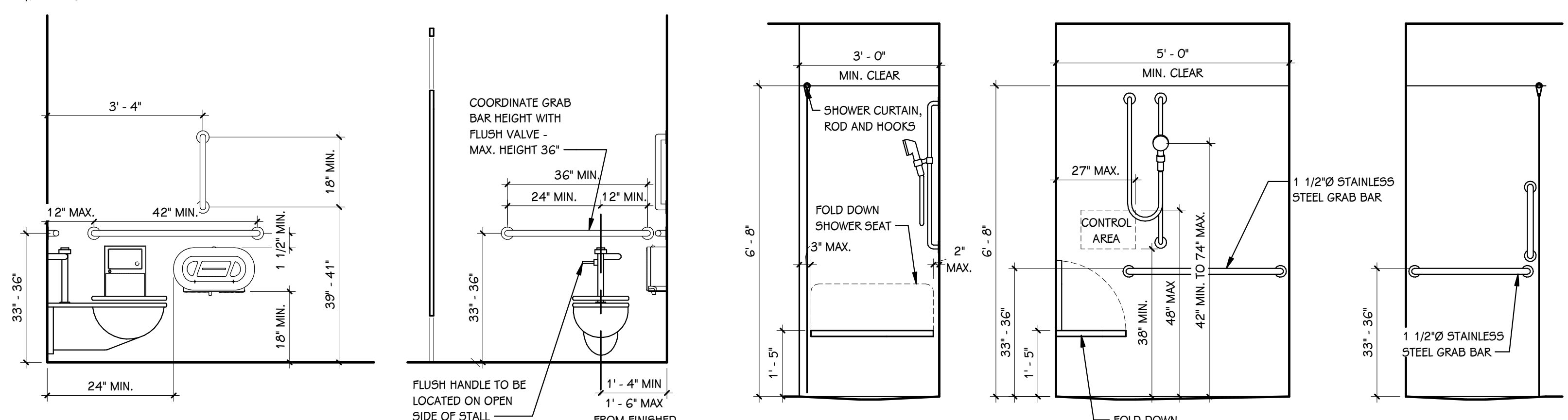
**TYPICAL BARRIER-FREE SHOWER PLAN**  
1/2" = 1'-0"



**9 ENLARGED PLAN**  
1/4" = 1'-0"

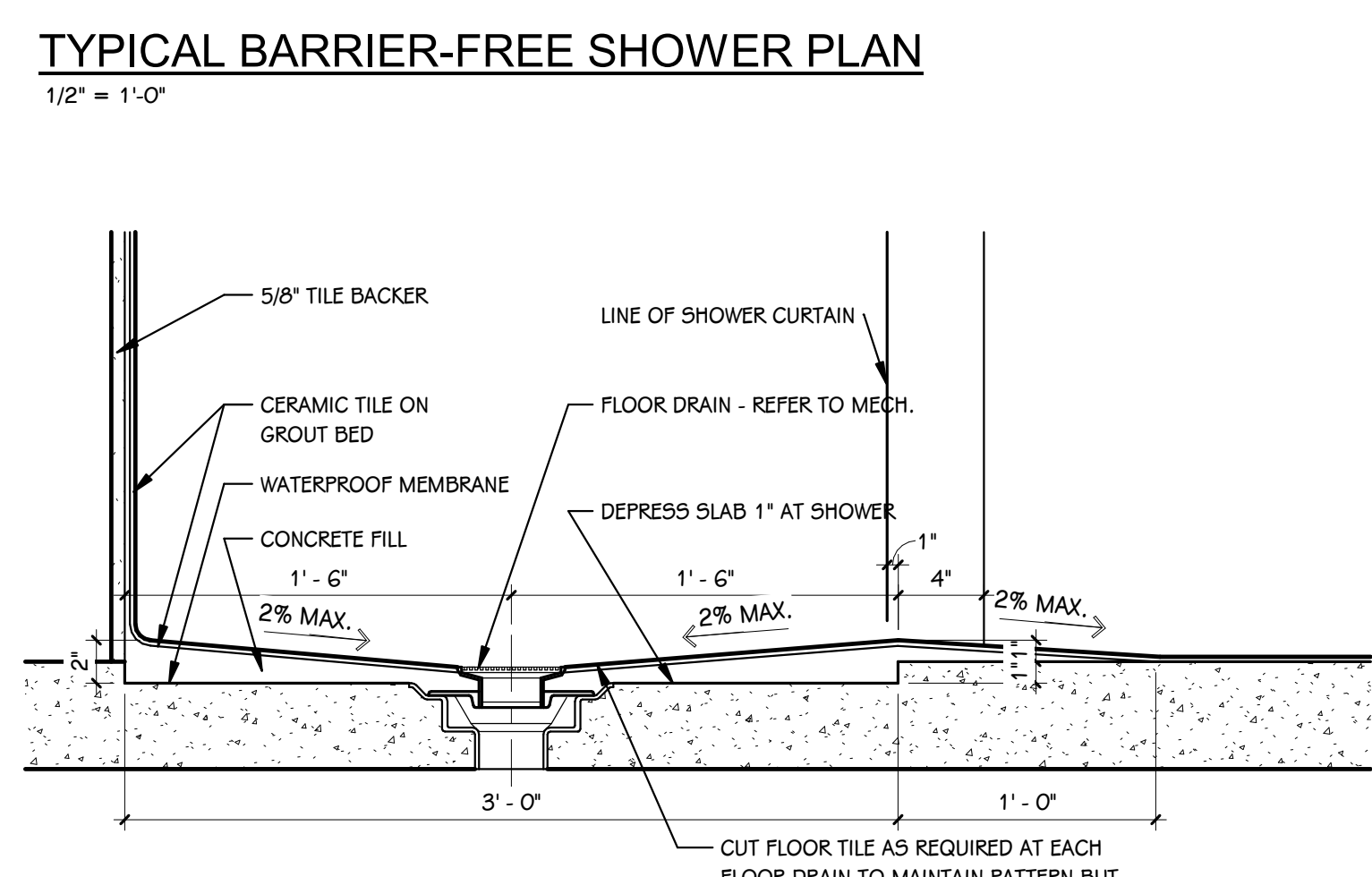


**10 ENLARGED PLAN**  
1/4" = 1'-0"

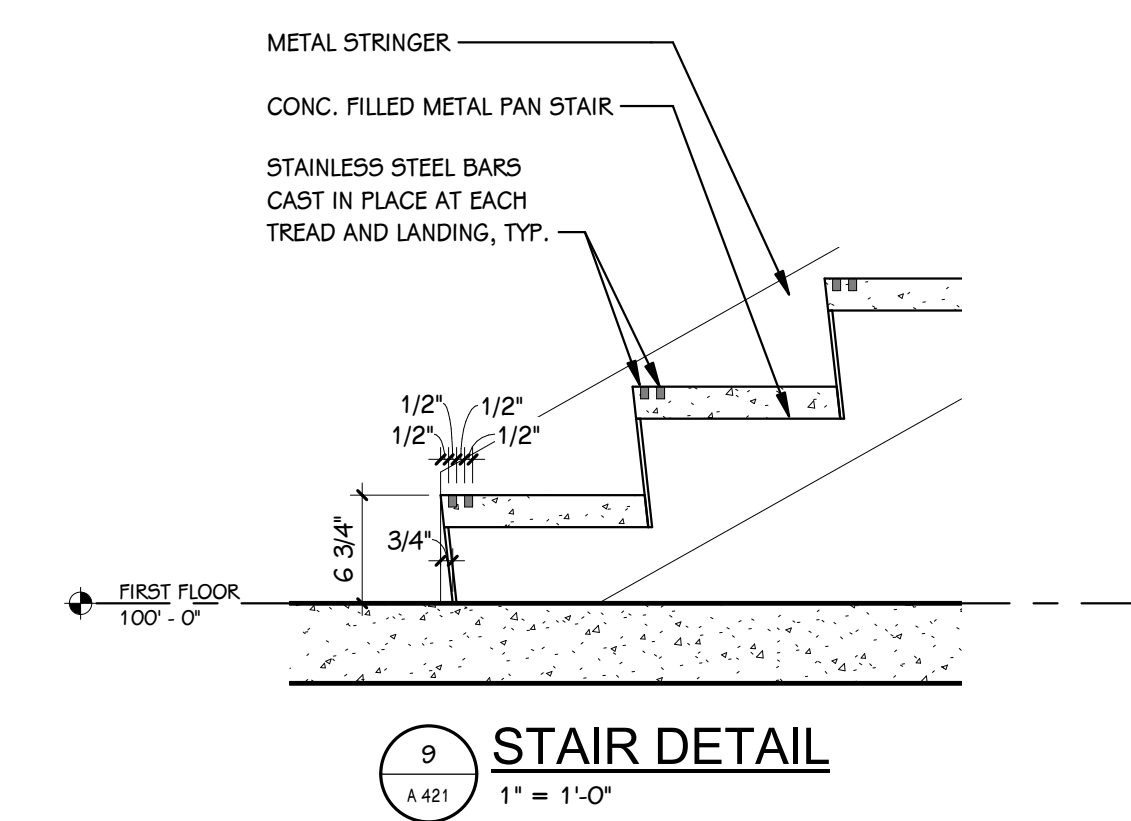
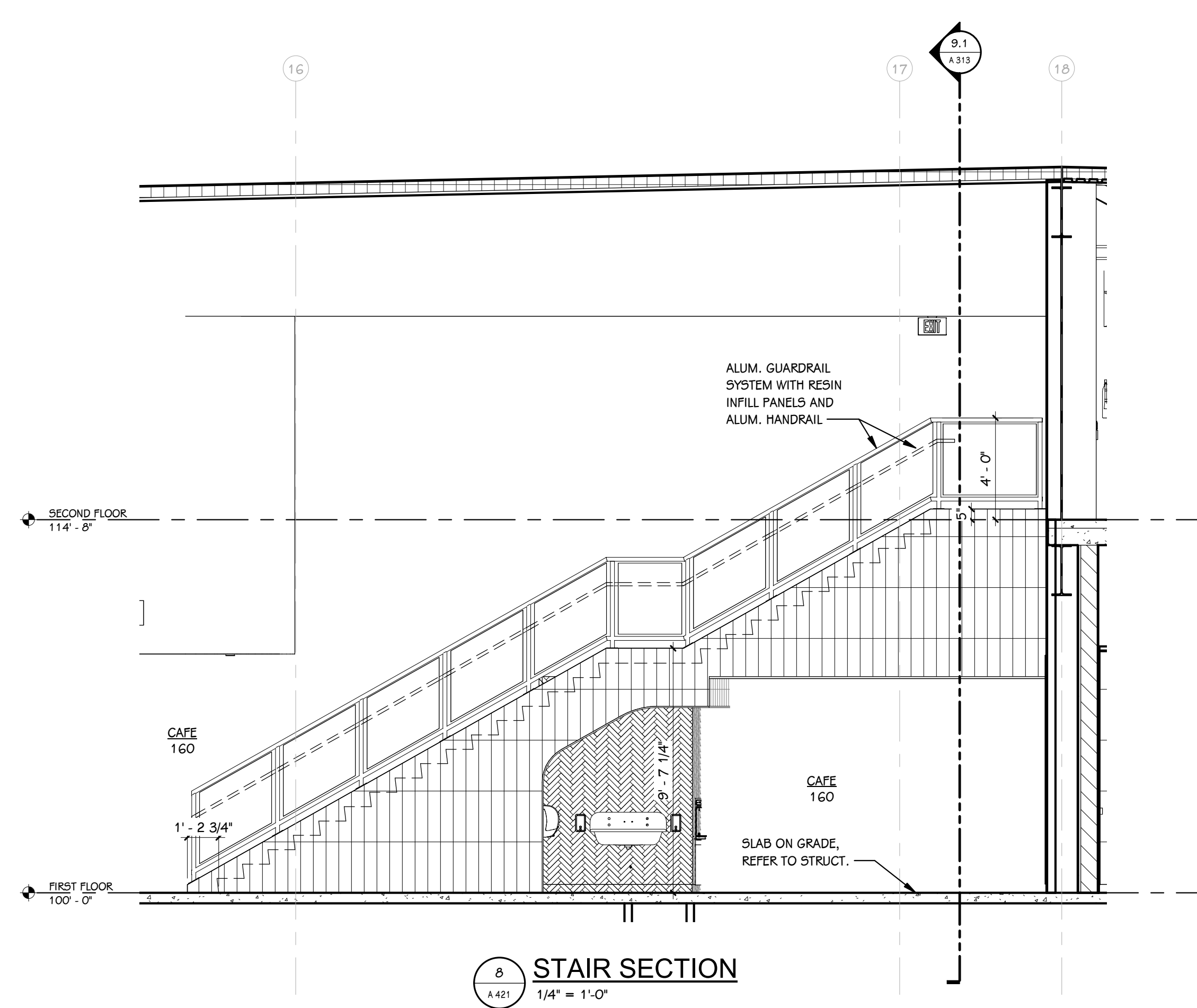
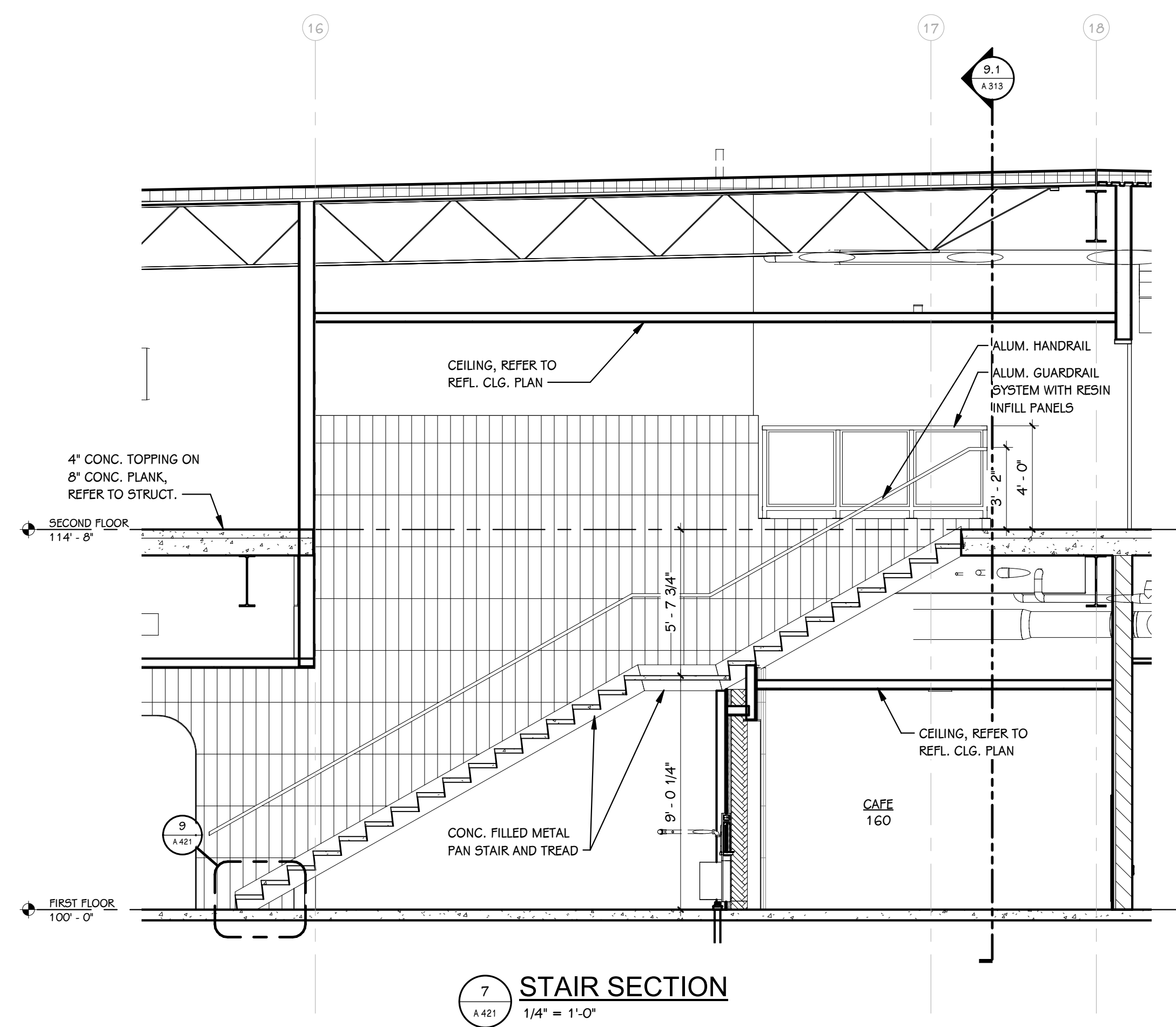
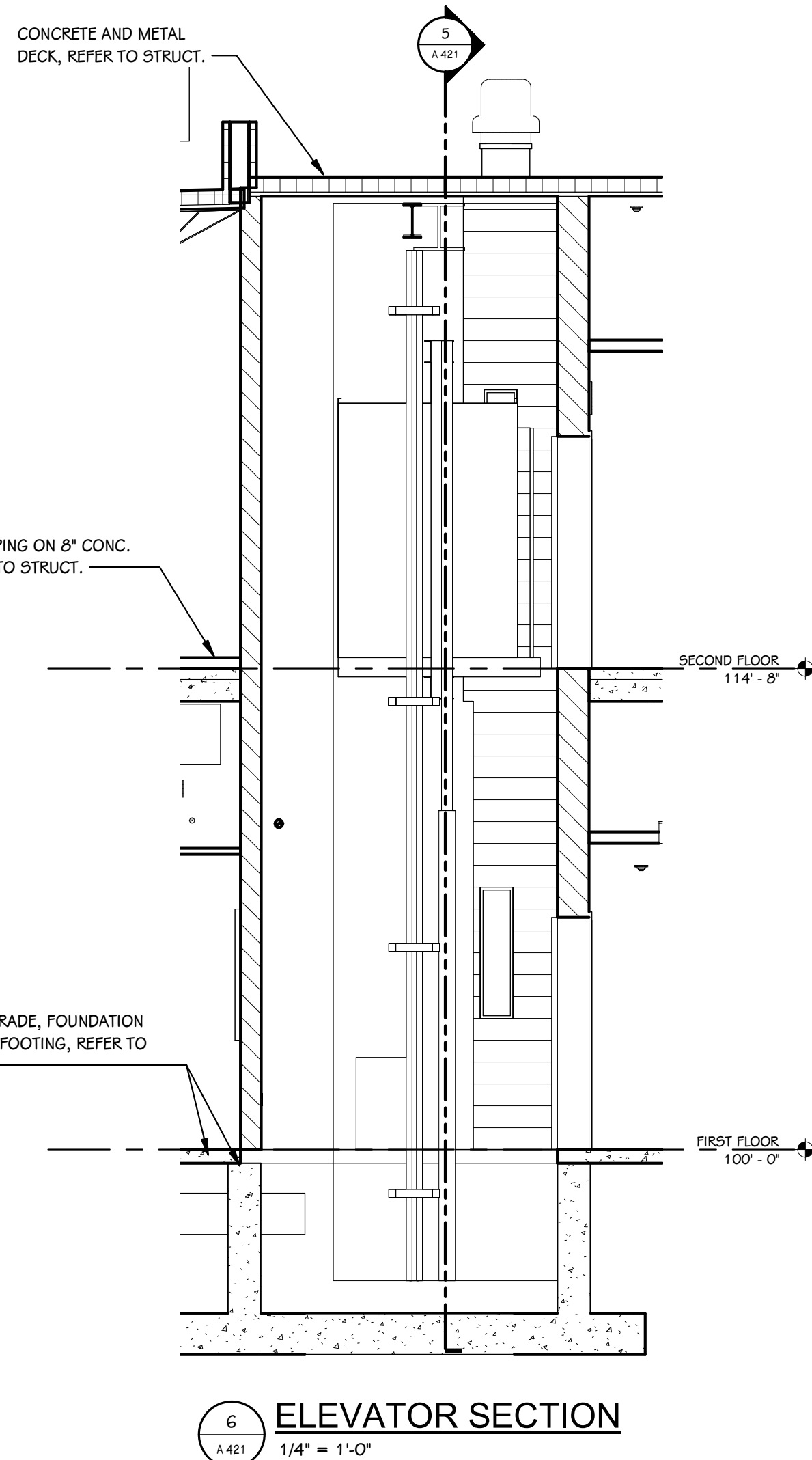
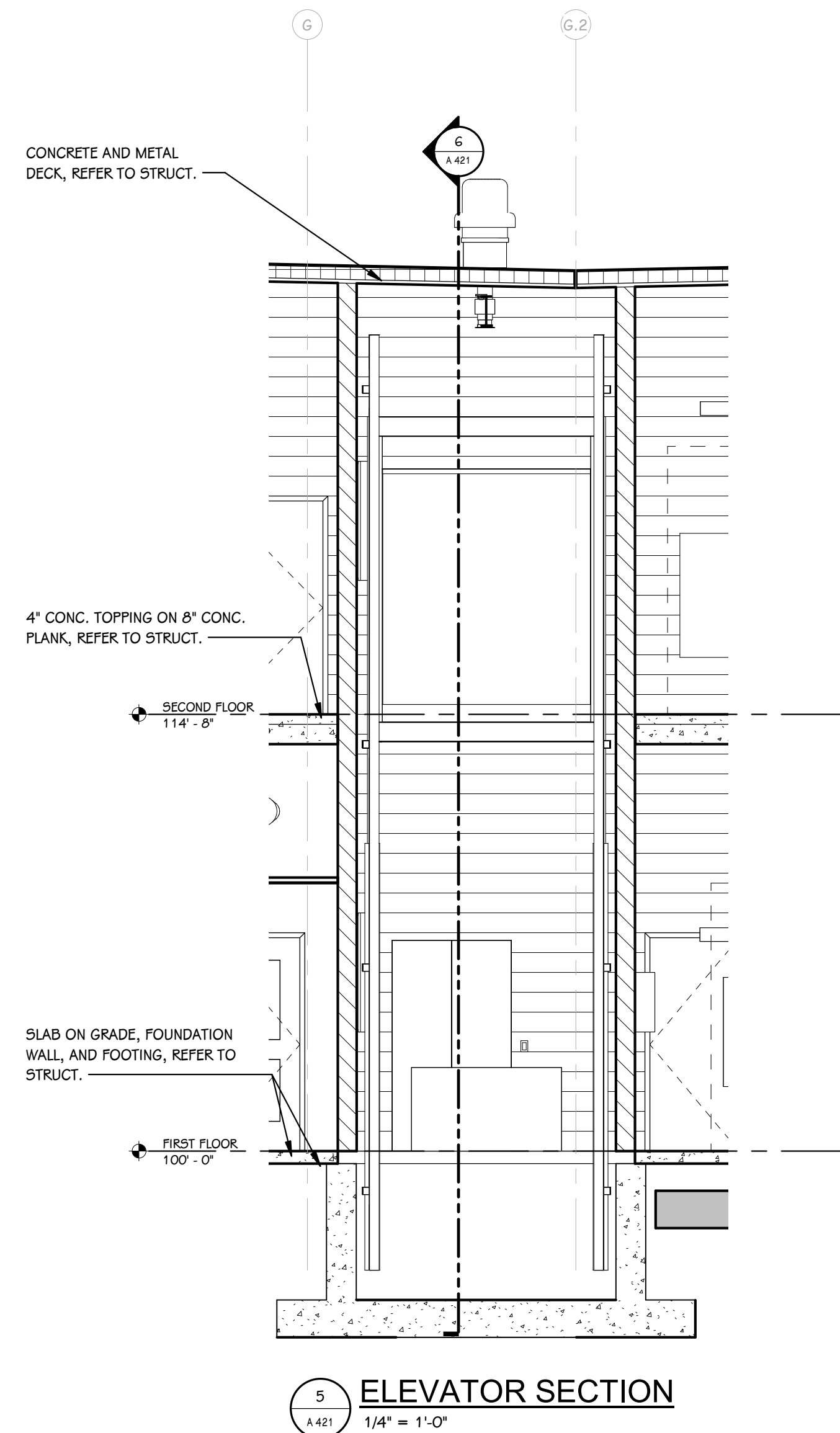
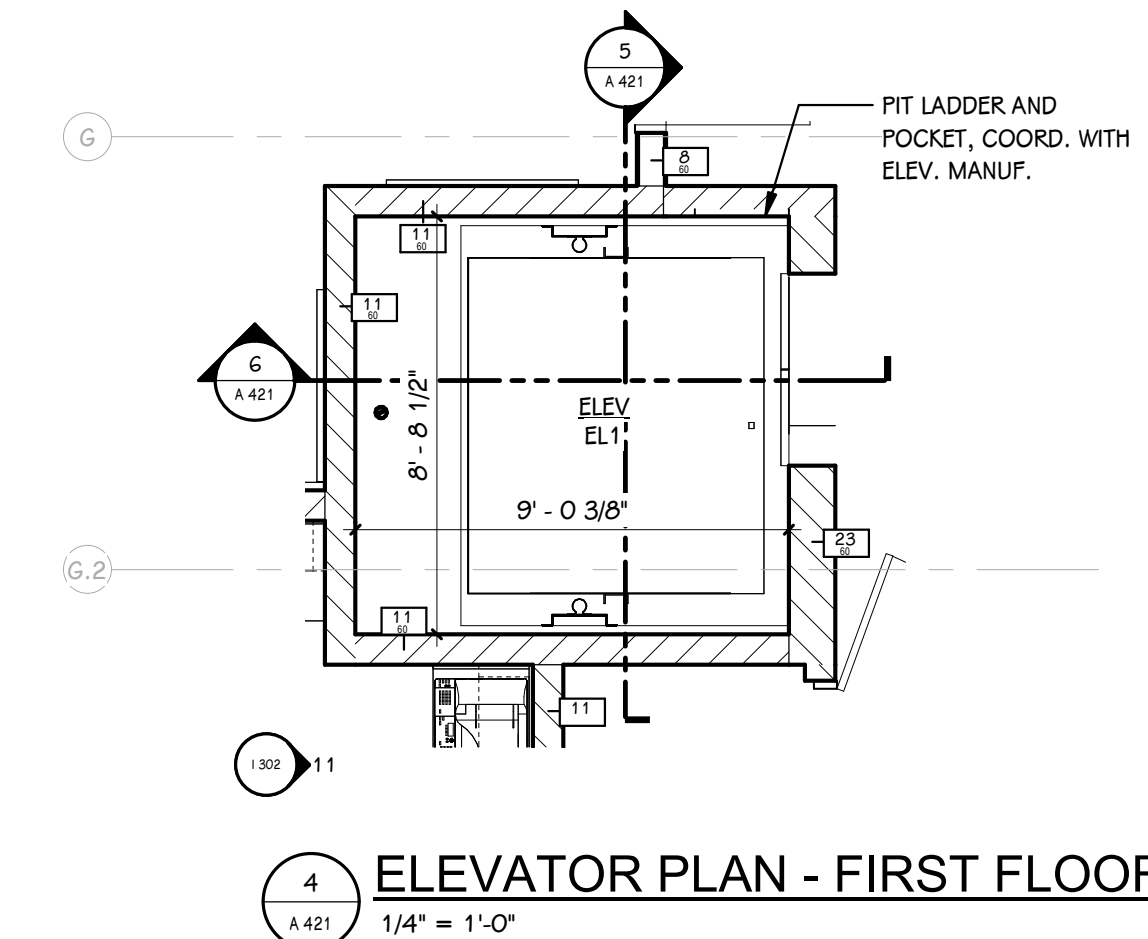
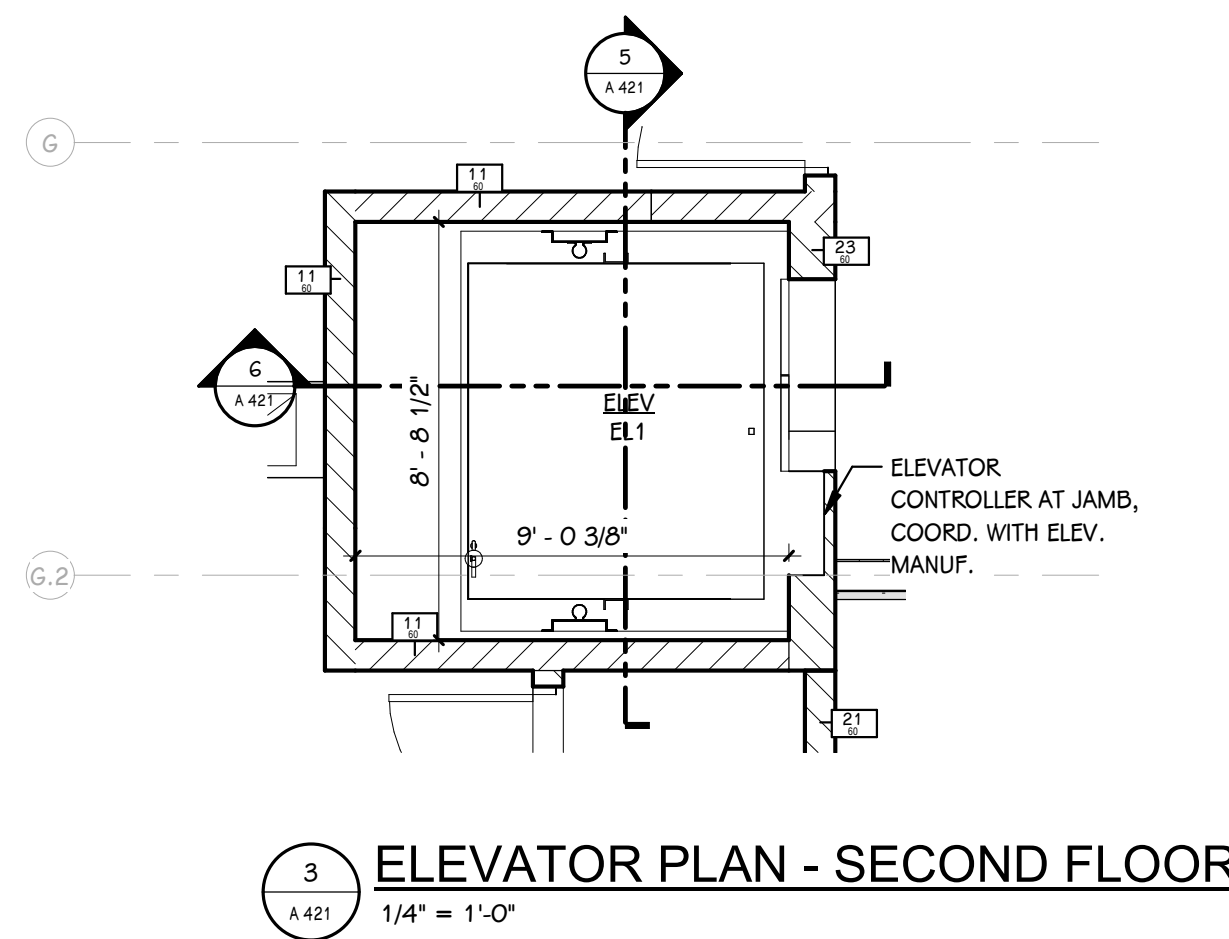
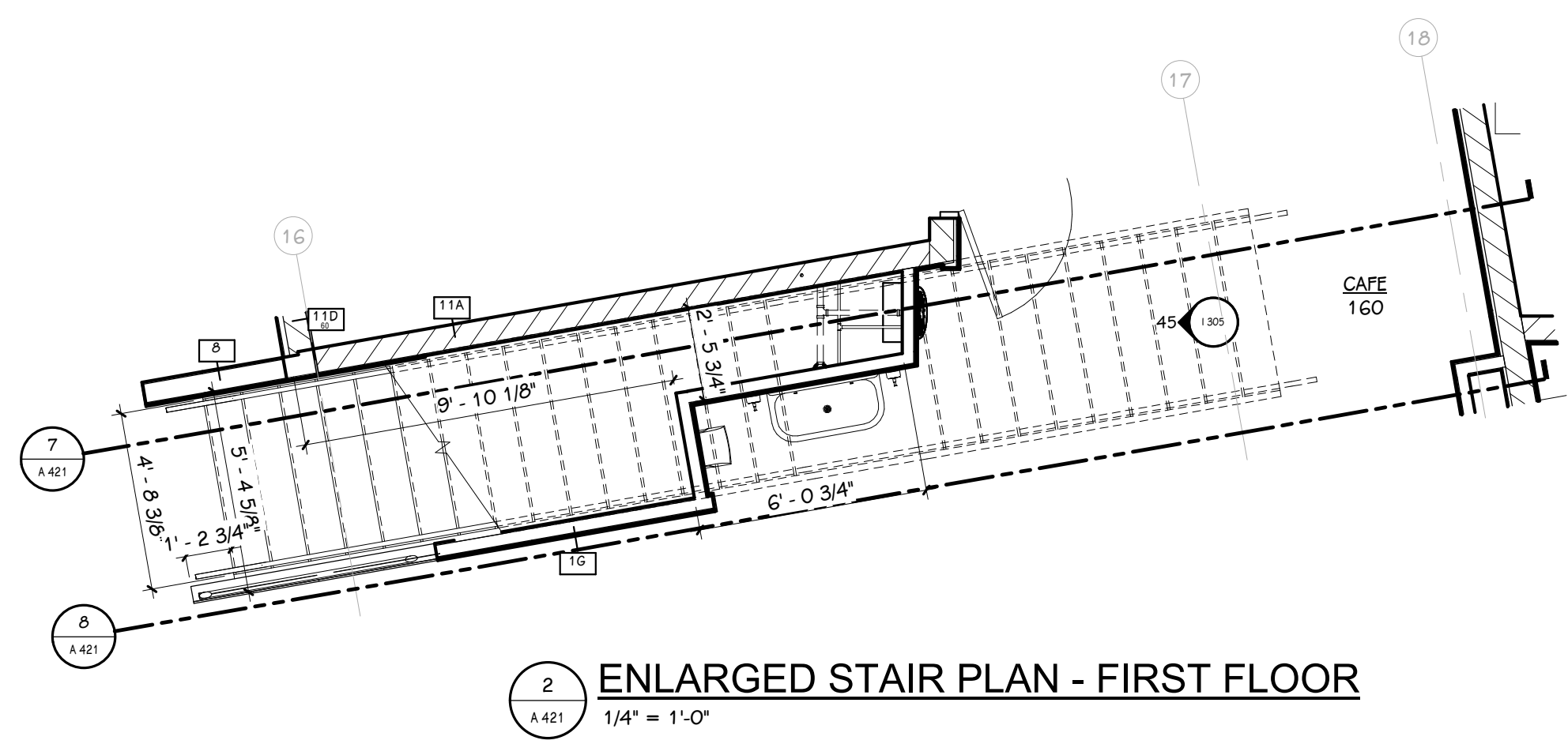
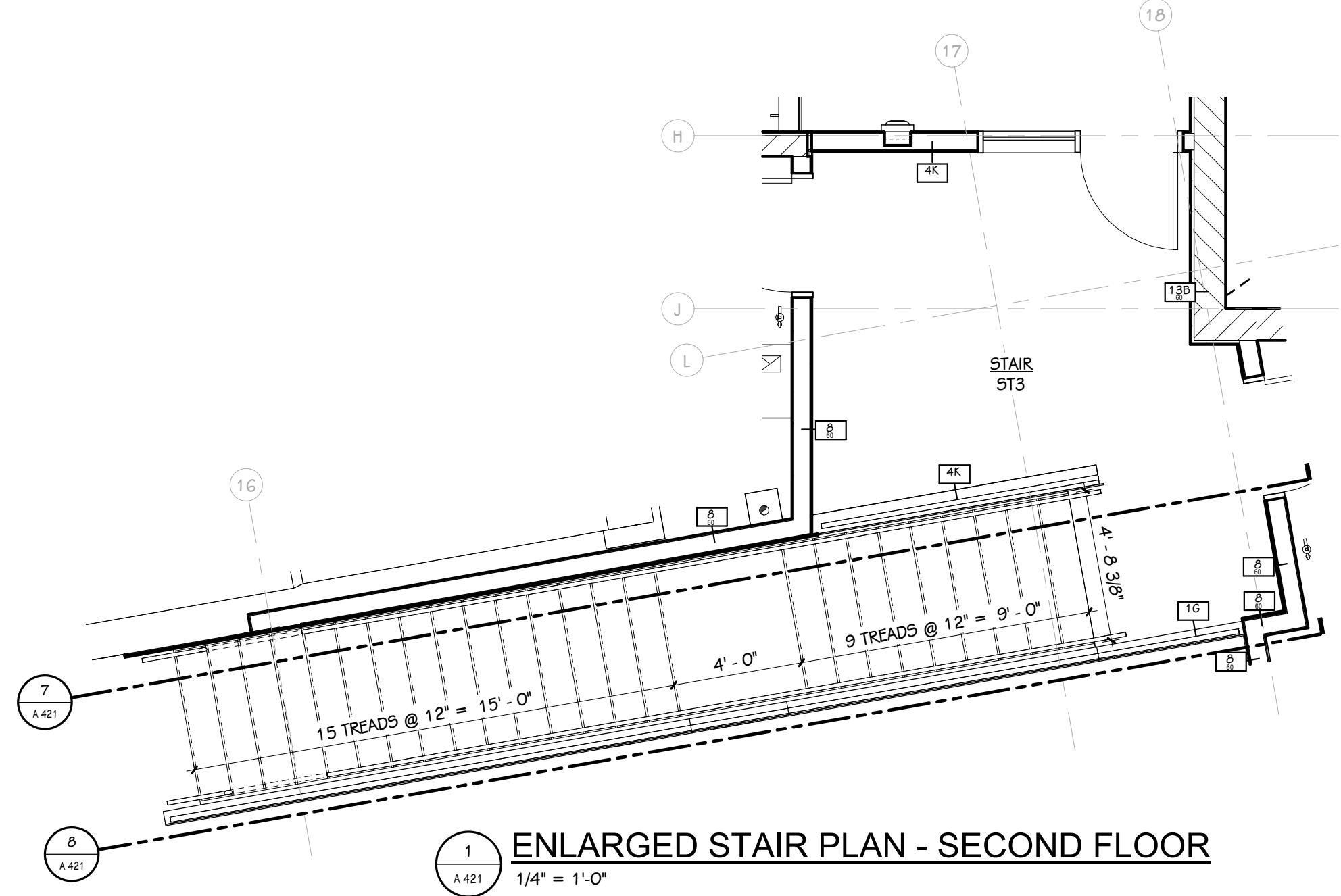


**TYPICAL BARRIER-FREE MOUNTING HEIGHTS**  
1/2" = 1'-0"

**TYPICAL BARRIER-FREE SHOWER MOUNTING HEIGHTS**  
1/2" = 1'-0"



**TYPICAL SHOWER FLOOR DETAIL**  
1 1/2" = 1'-0"



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

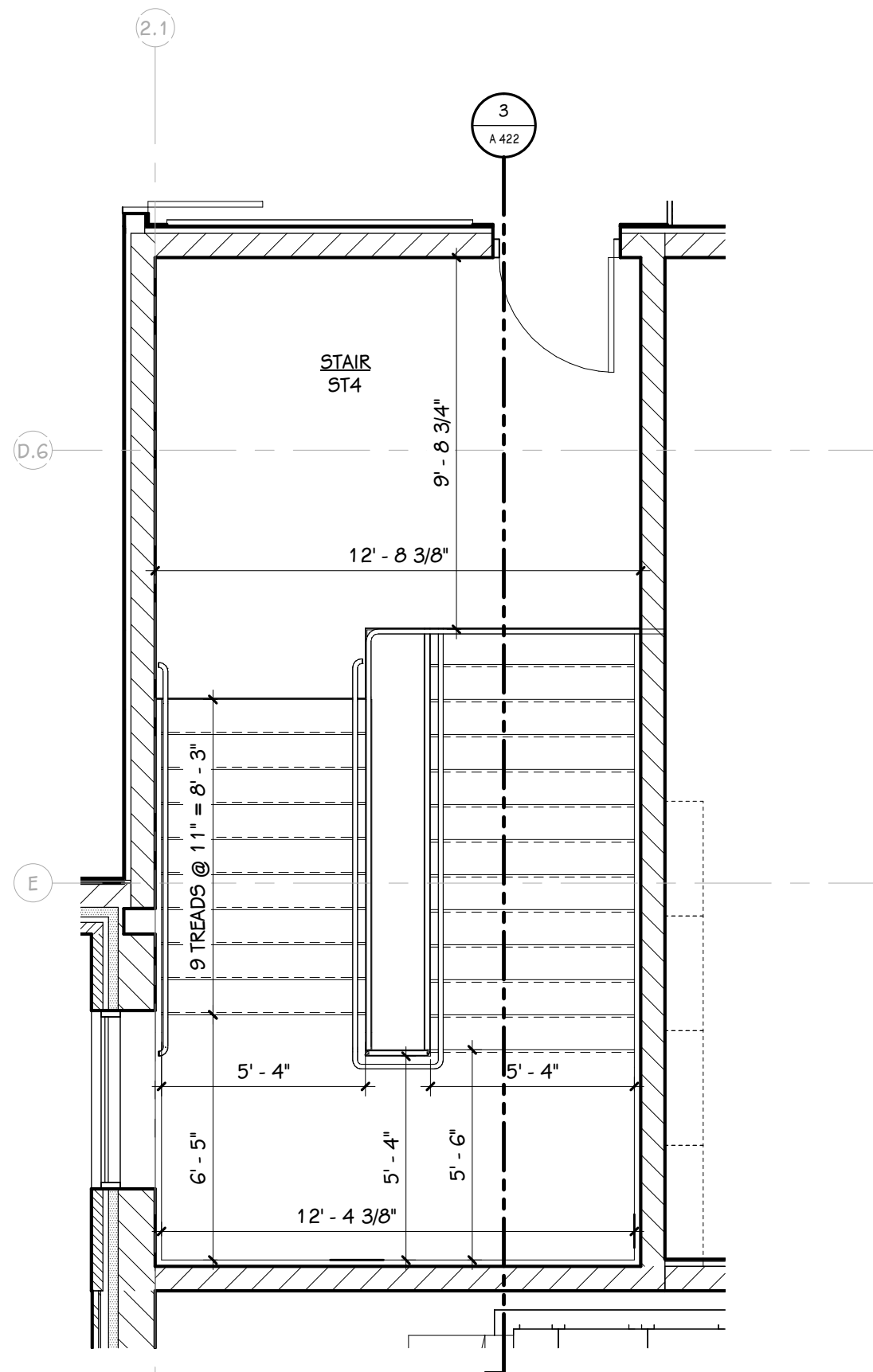
OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
ENLARGED STAIR AND ELEVATOR  
PLANS AND SECTIONS

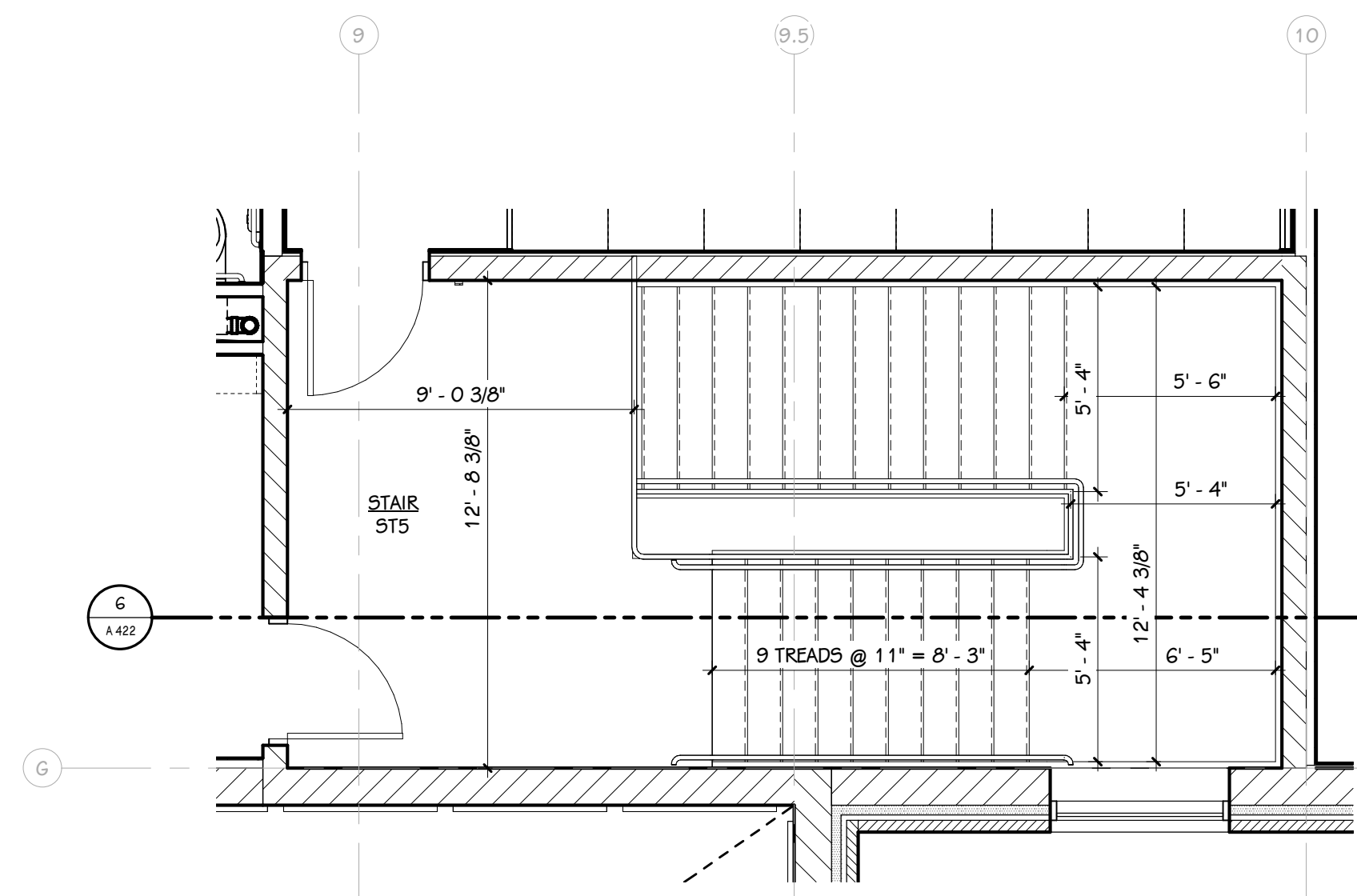
Portage, Michigan

DATE  
JUNE 30, 2023

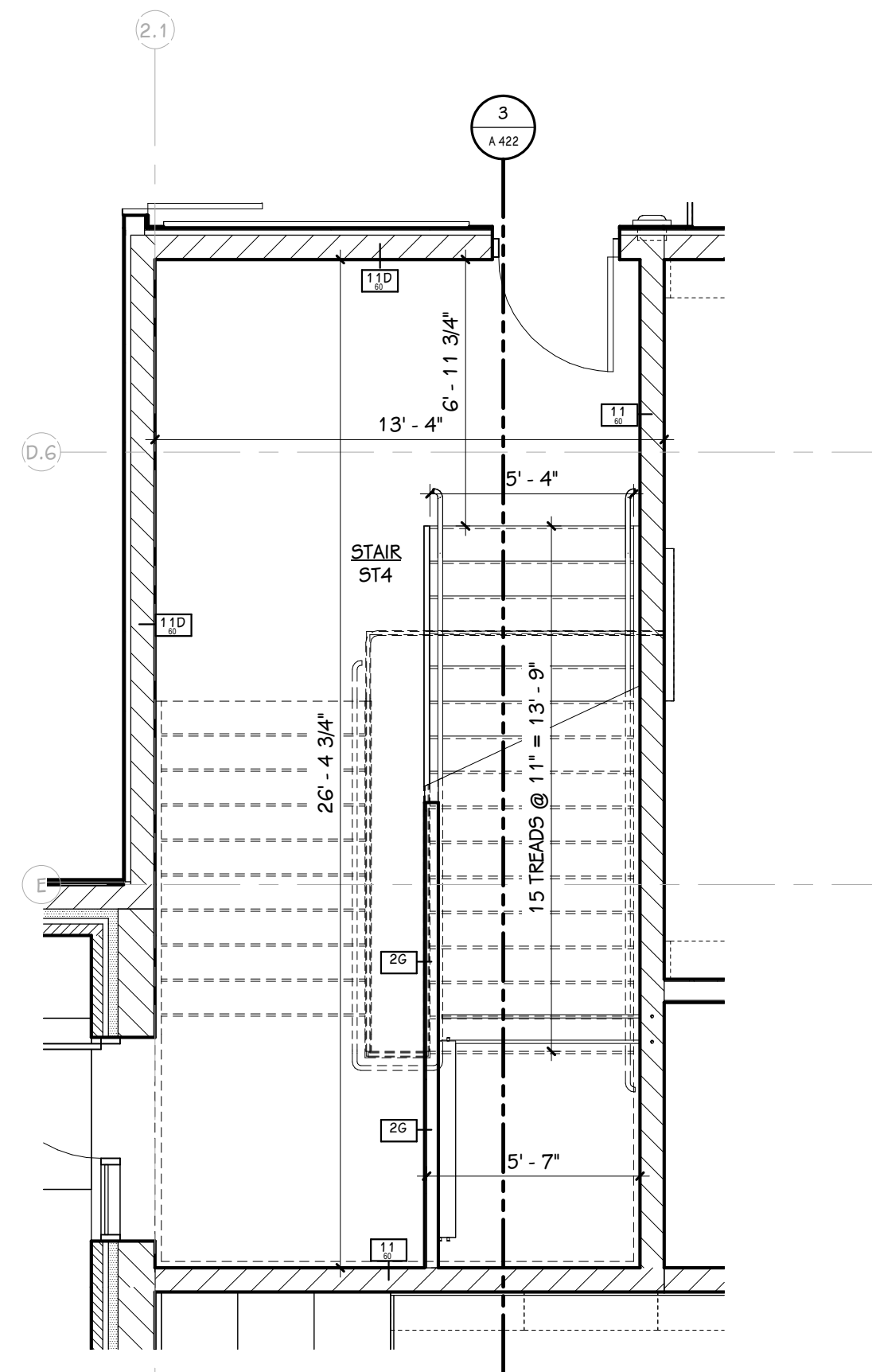
SHEET NUMBER  
A 421  
21-237.20



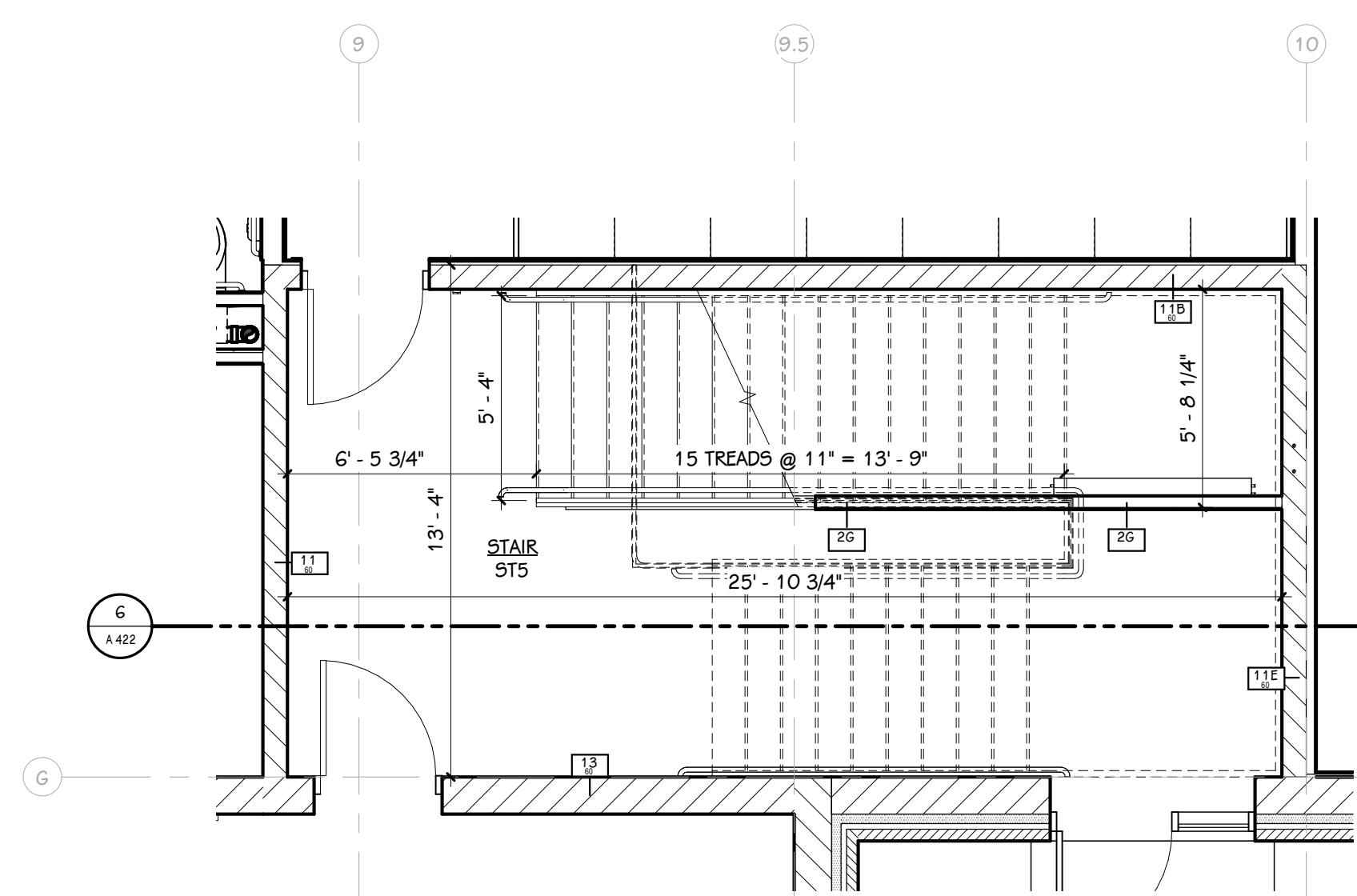
1 ENLARGED STAIR PLAN - SECOND FLOOR  
A.422 1/4" = 1'-0"



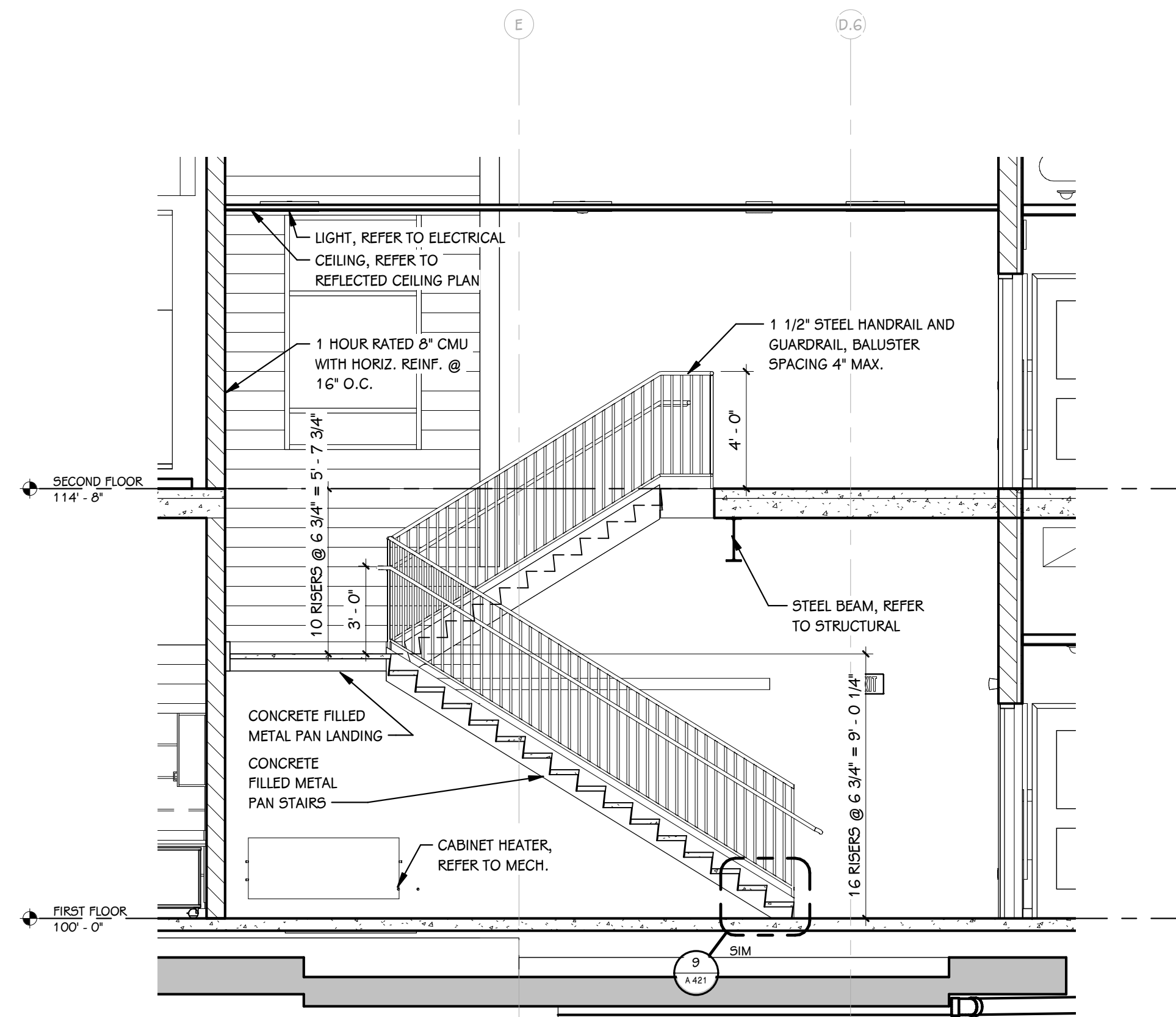
4 ENLARGED STAIR PLAN - SECOND FLOOR  
A.422 1/4" = 1'-0"



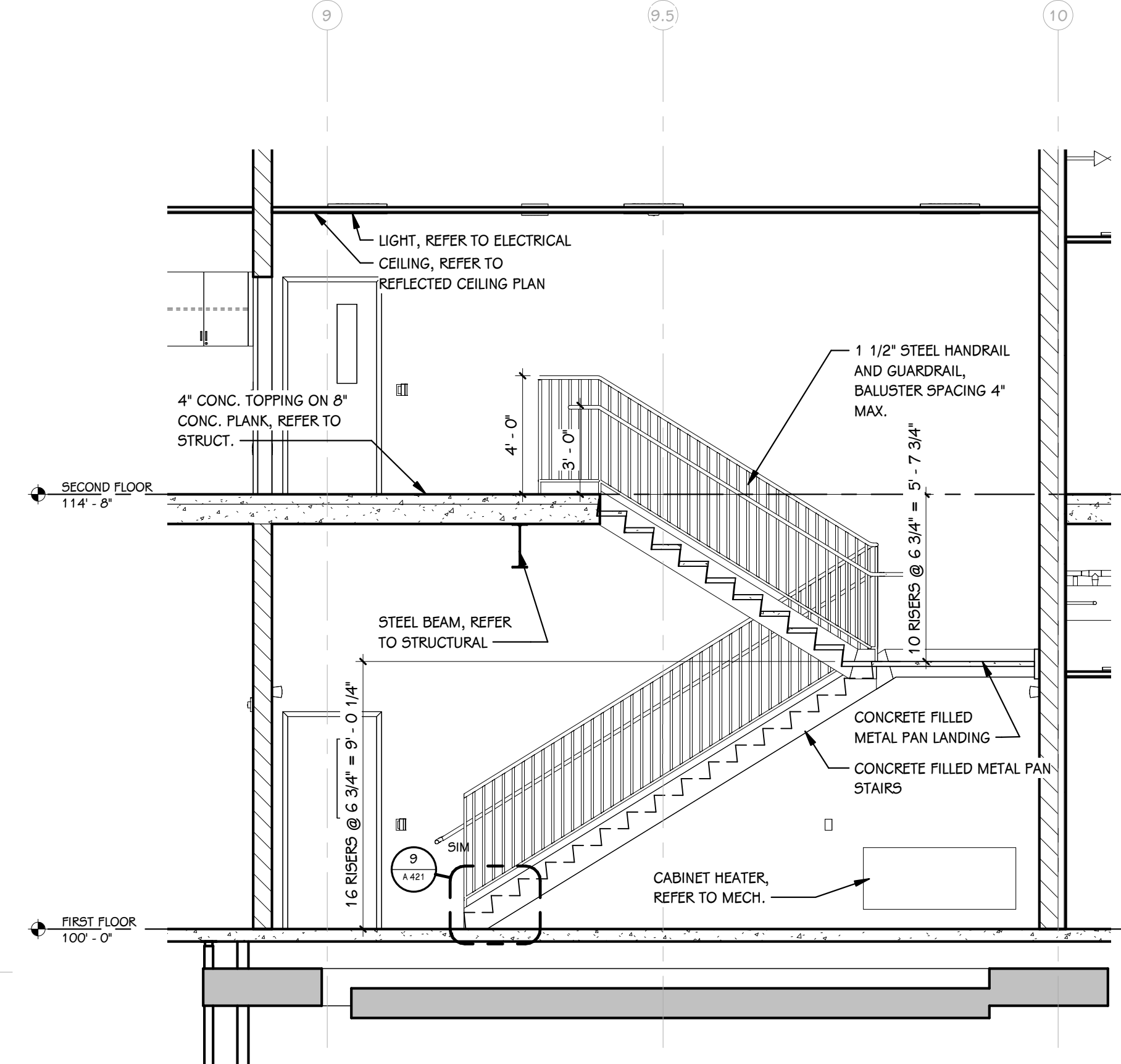
2 ENLARGED STAIR PLAN - FIRST FLOOR  
A.422 1/4" = 1'-0"



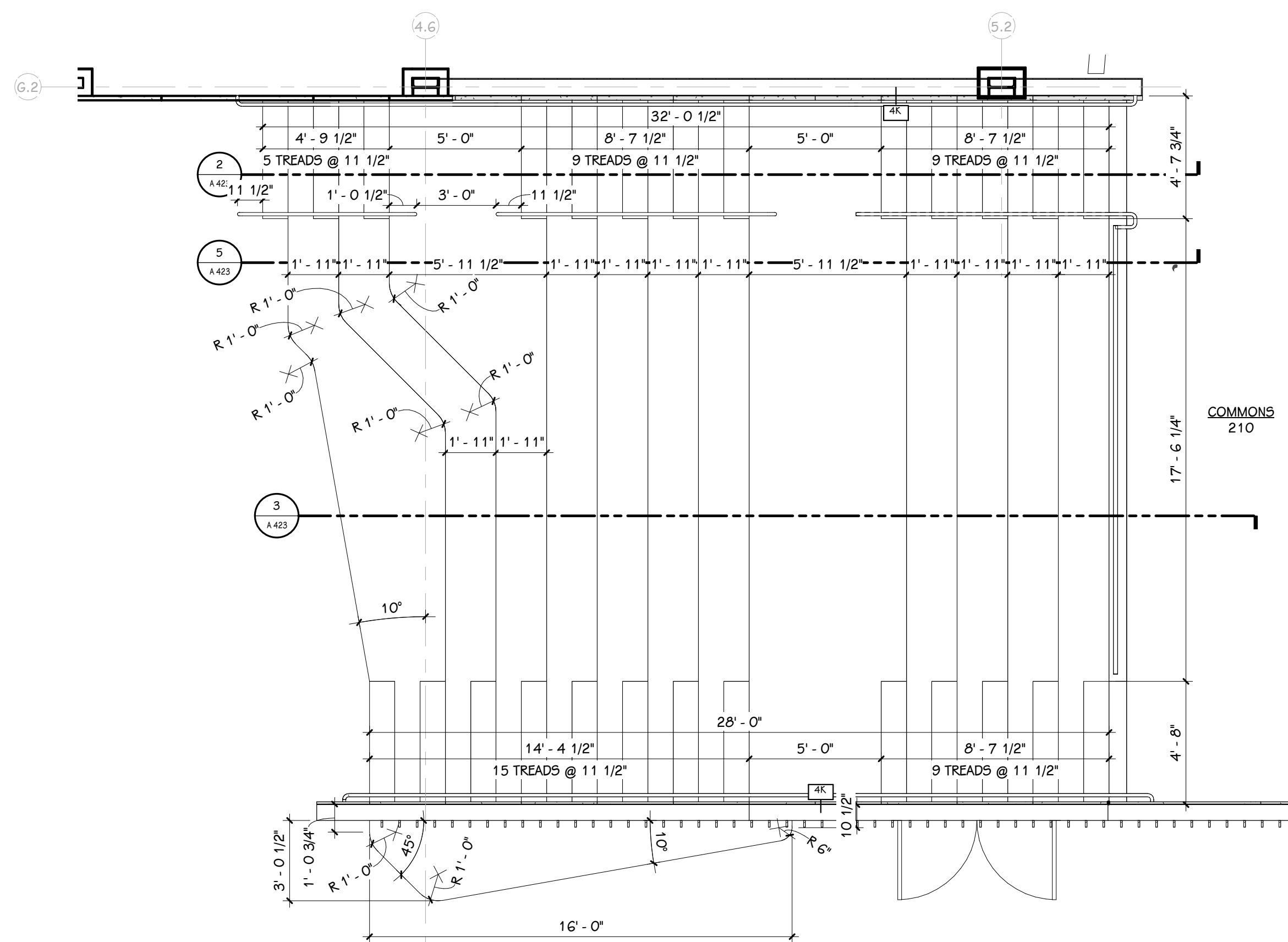
5 ENLARGED STAIR PLAN - FIRST FLOOR  
A.422 1/4" = 1'-0"



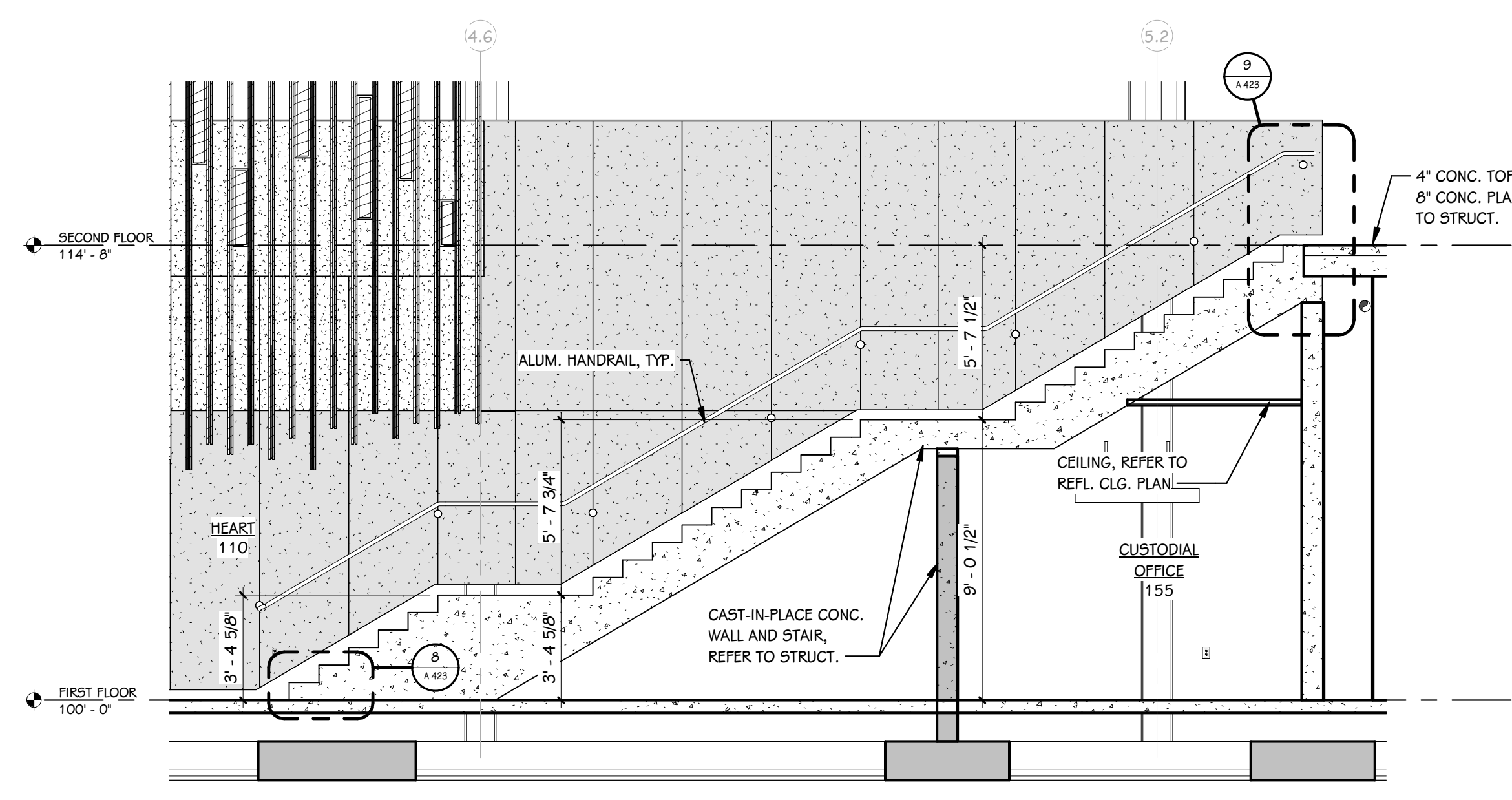
3 STAIR SECTION  
A.422 1/4" = 1'-0"



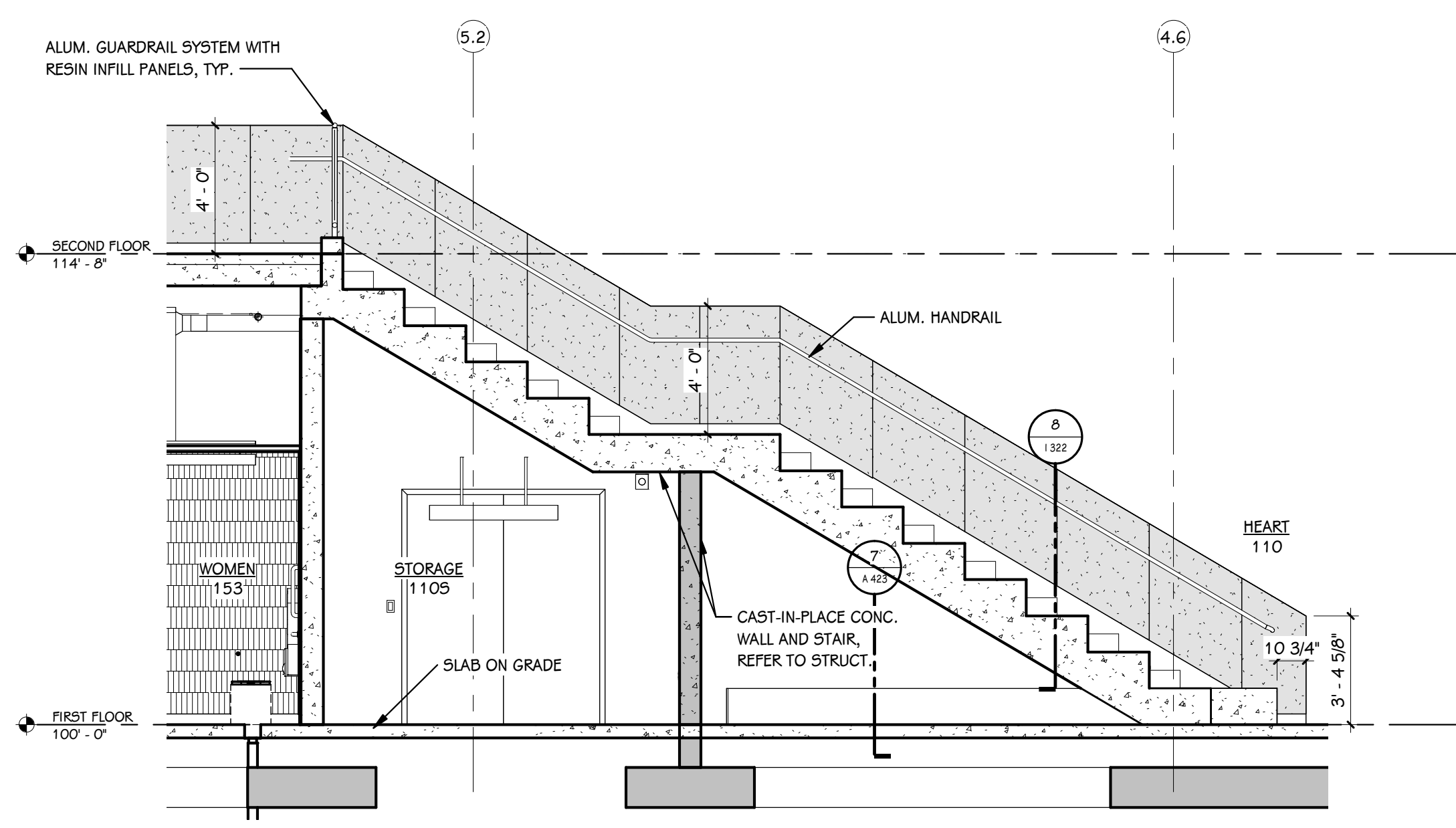
6 STAIR SECTION  
A.422 1/4" = 1'-0"



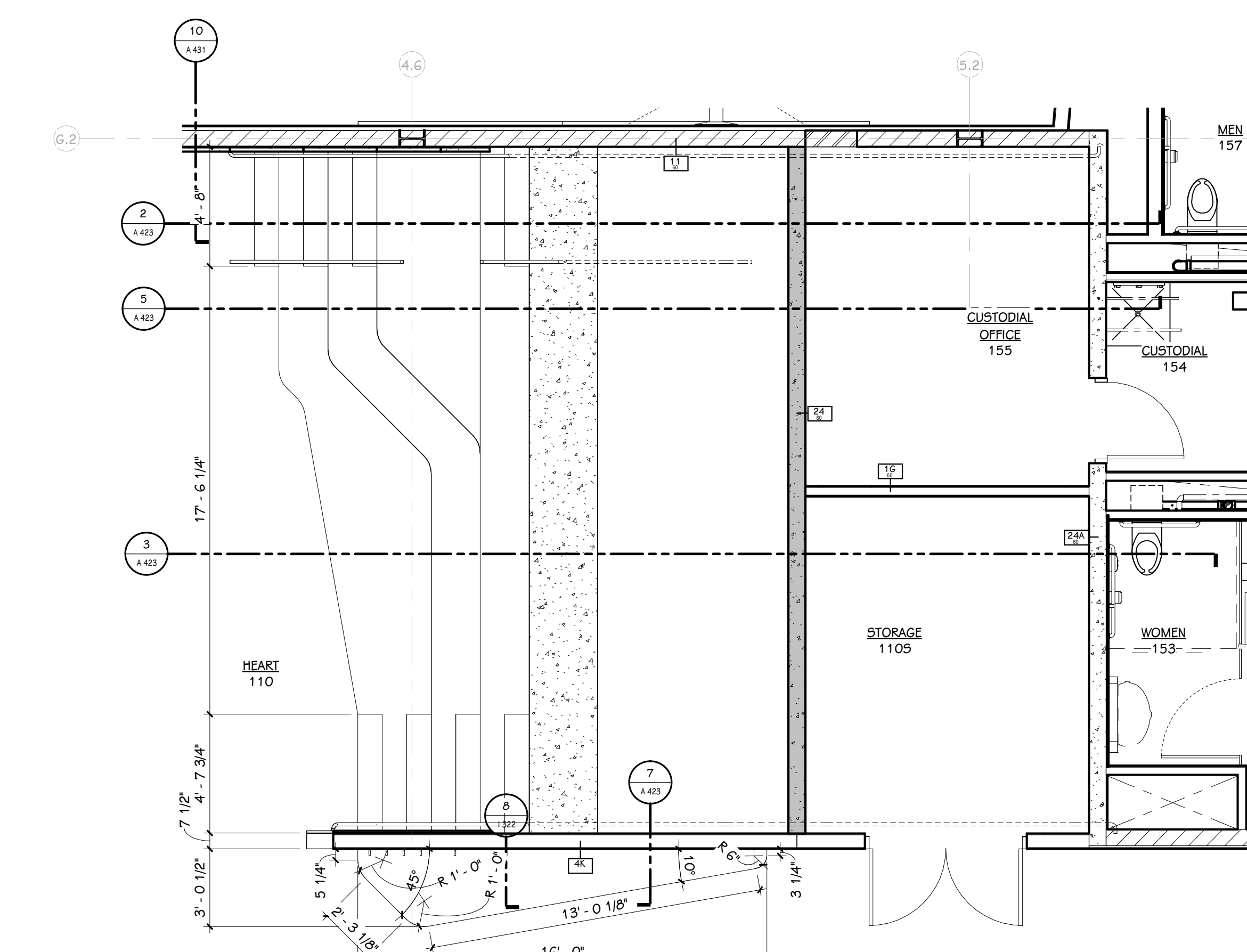
1 ENLARGED GATHERING STAIR PLAN - SECOND FLOOR  
1/4" = 1'-0"



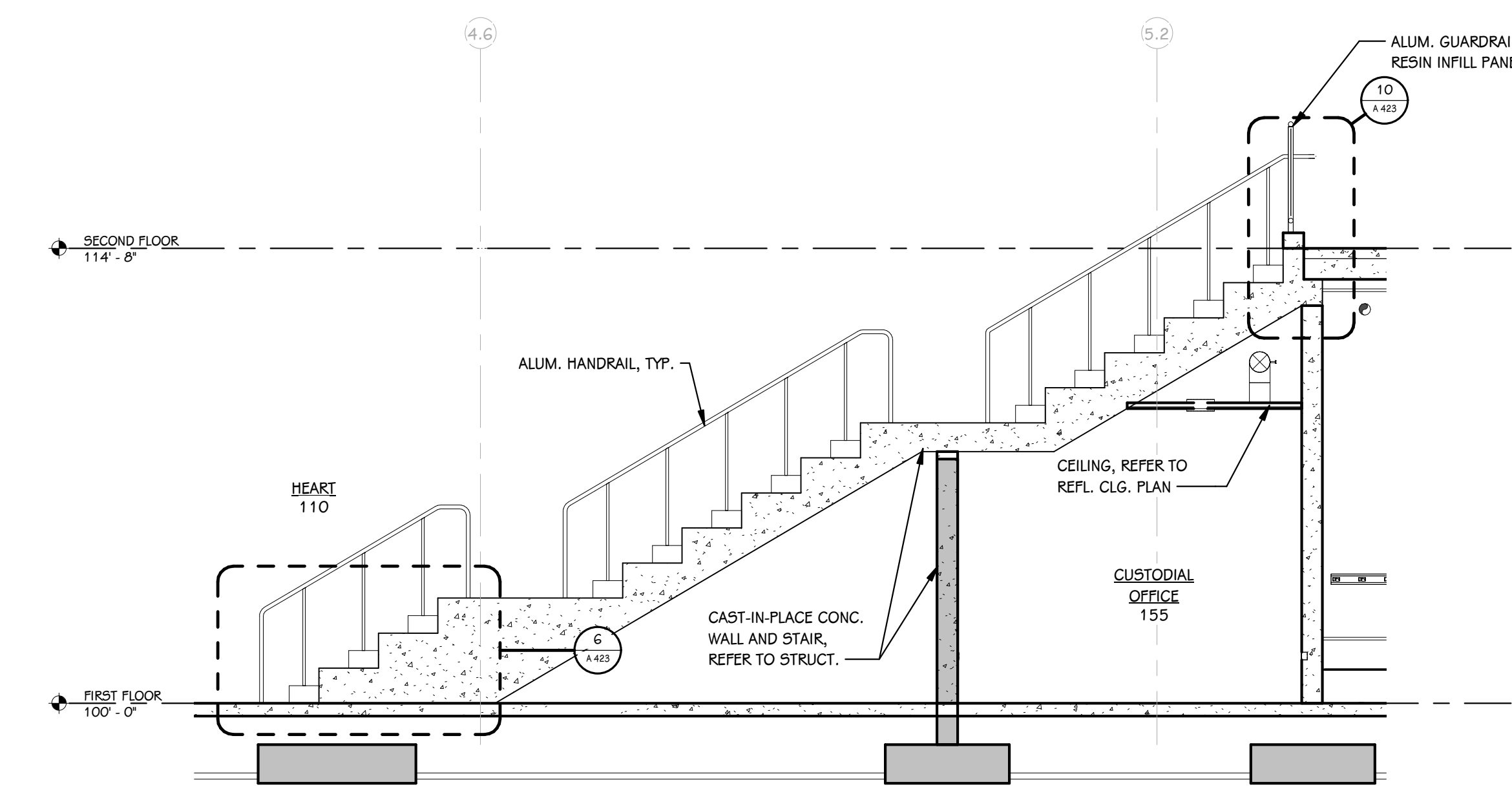
2 GATHERING STAIR SECTION  
1/4" = 1'-0"



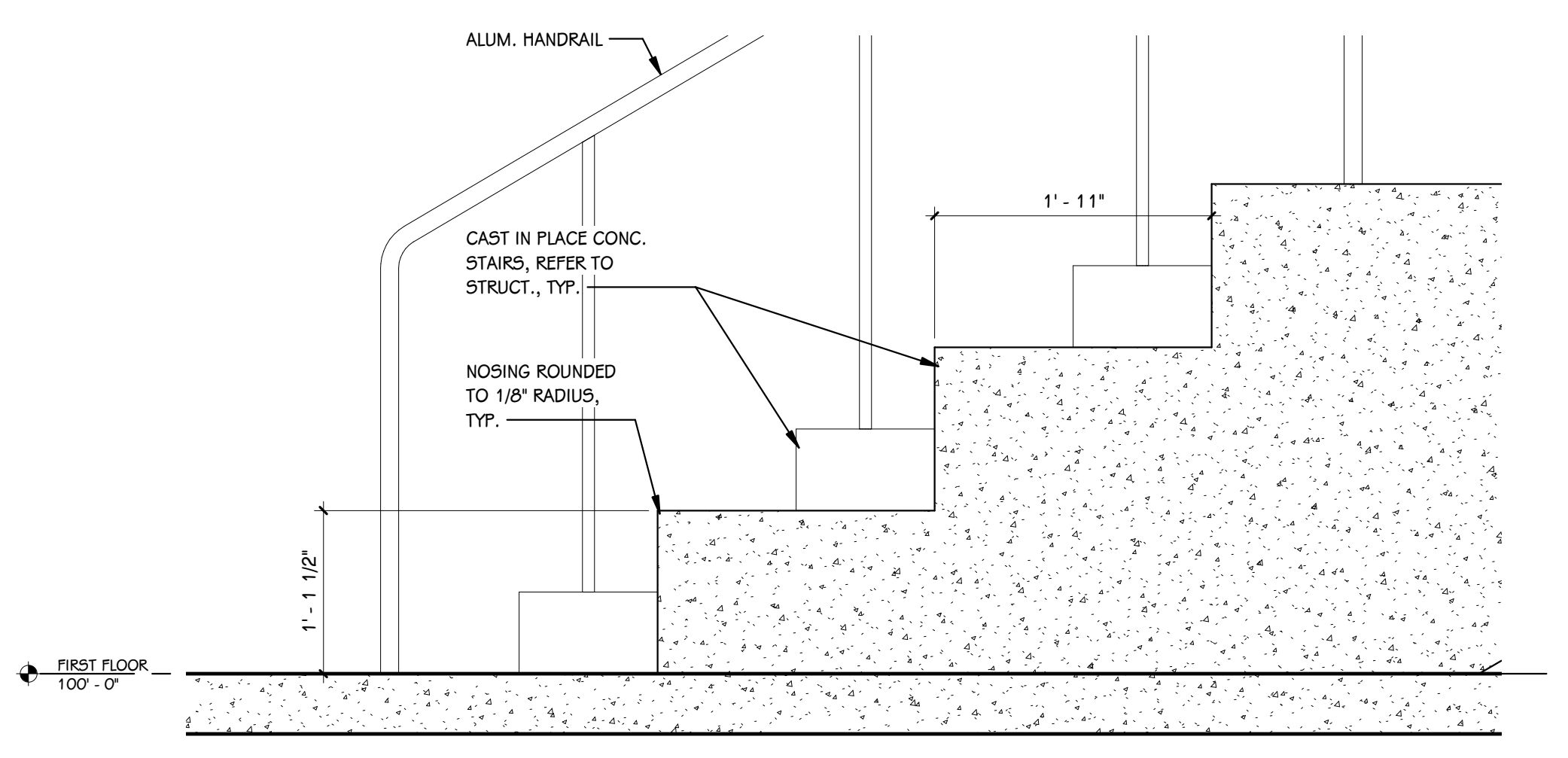
3 GATHERING STAIR SECTION  
1/4" = 1'-0"



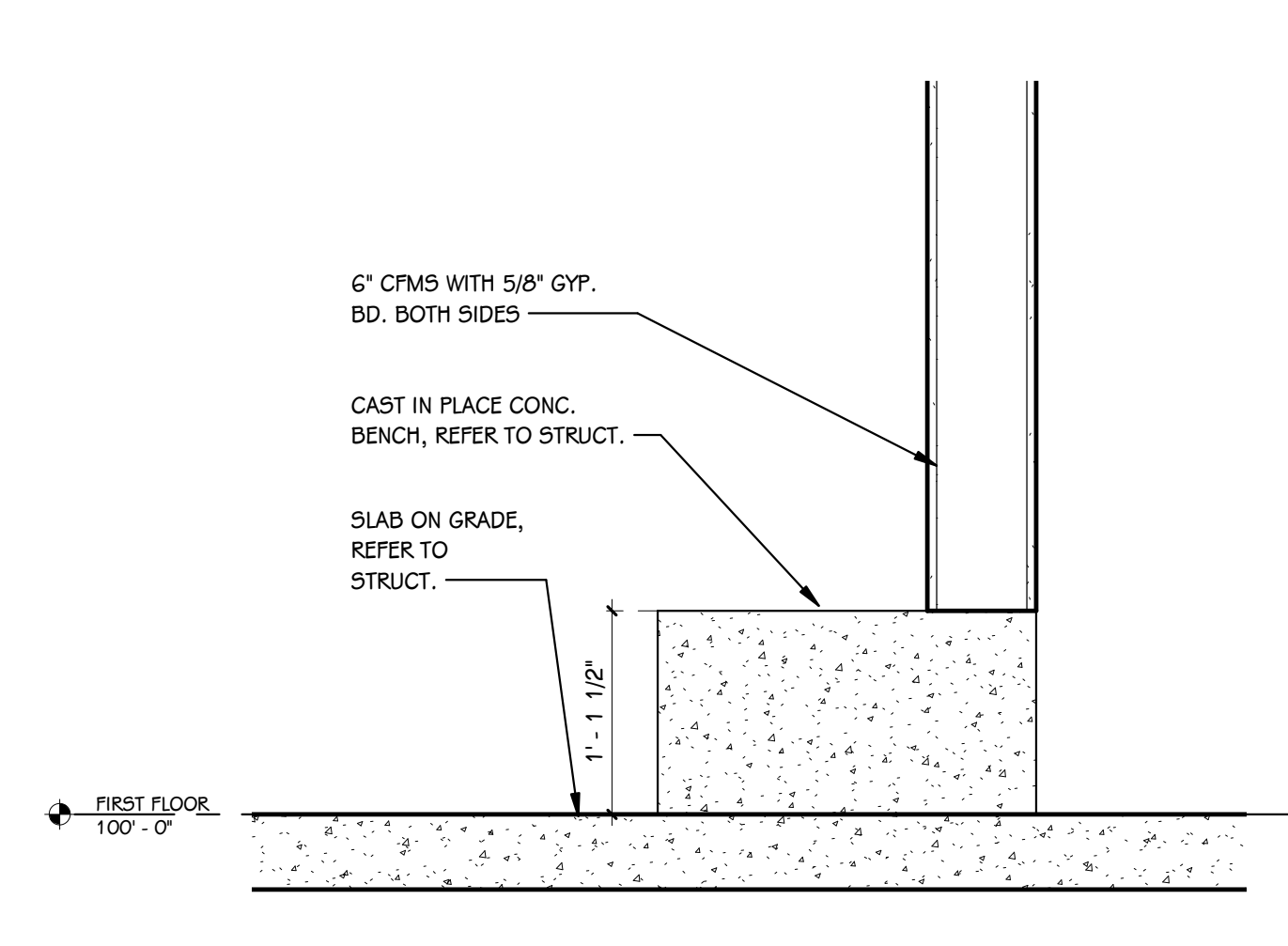
4 ENLARGED GATHERING STAIR PLAN - FIRST FLOOR  
1/4" = 1'-0"



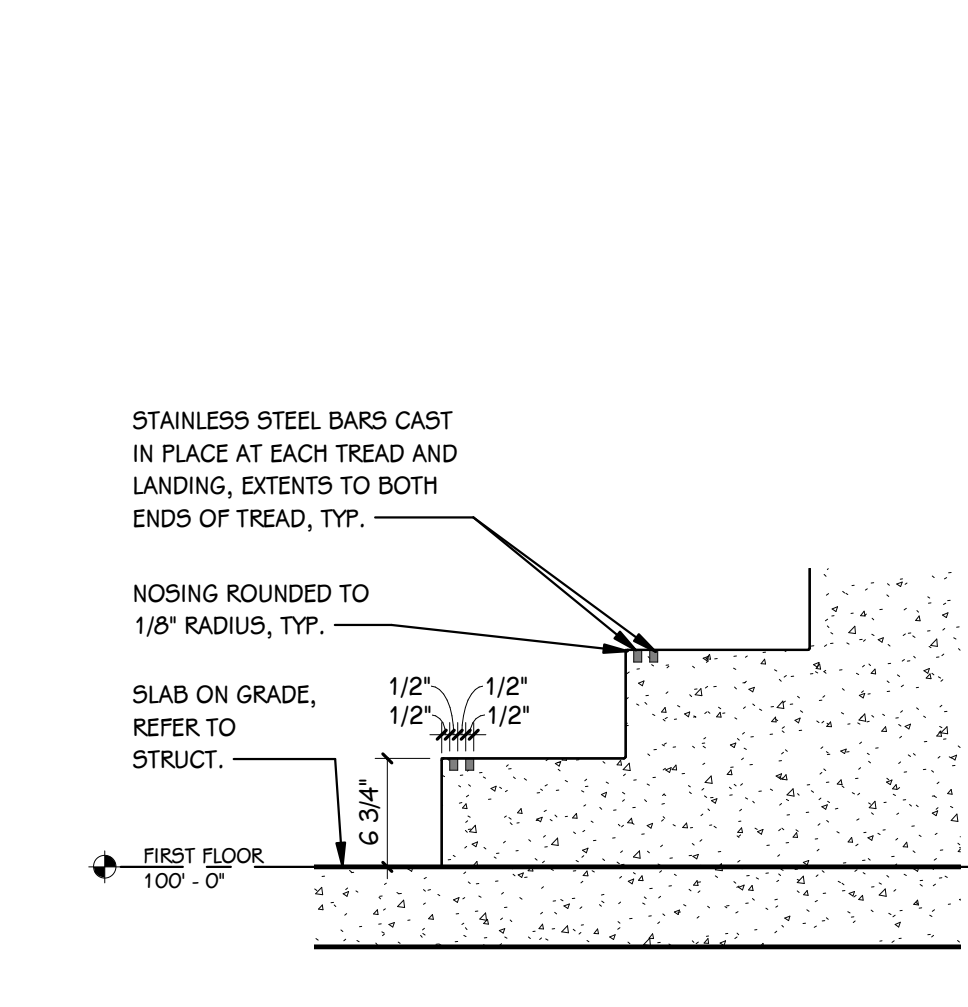
5 GATHERING STAIR SECTION  
1/4" = 1'-0"



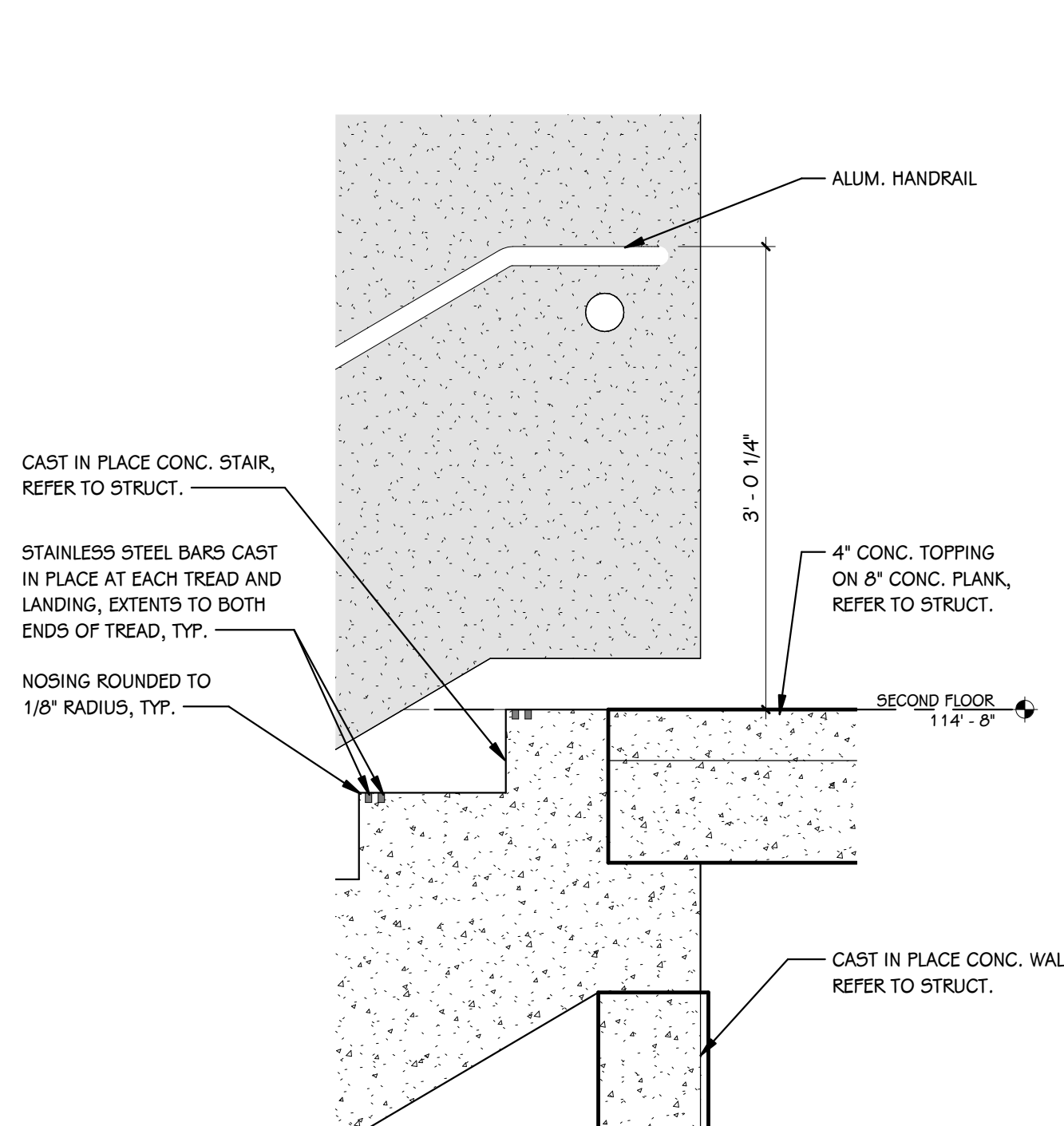
6 GATHERING STAIR DETAIL  
1" = 1'-0"



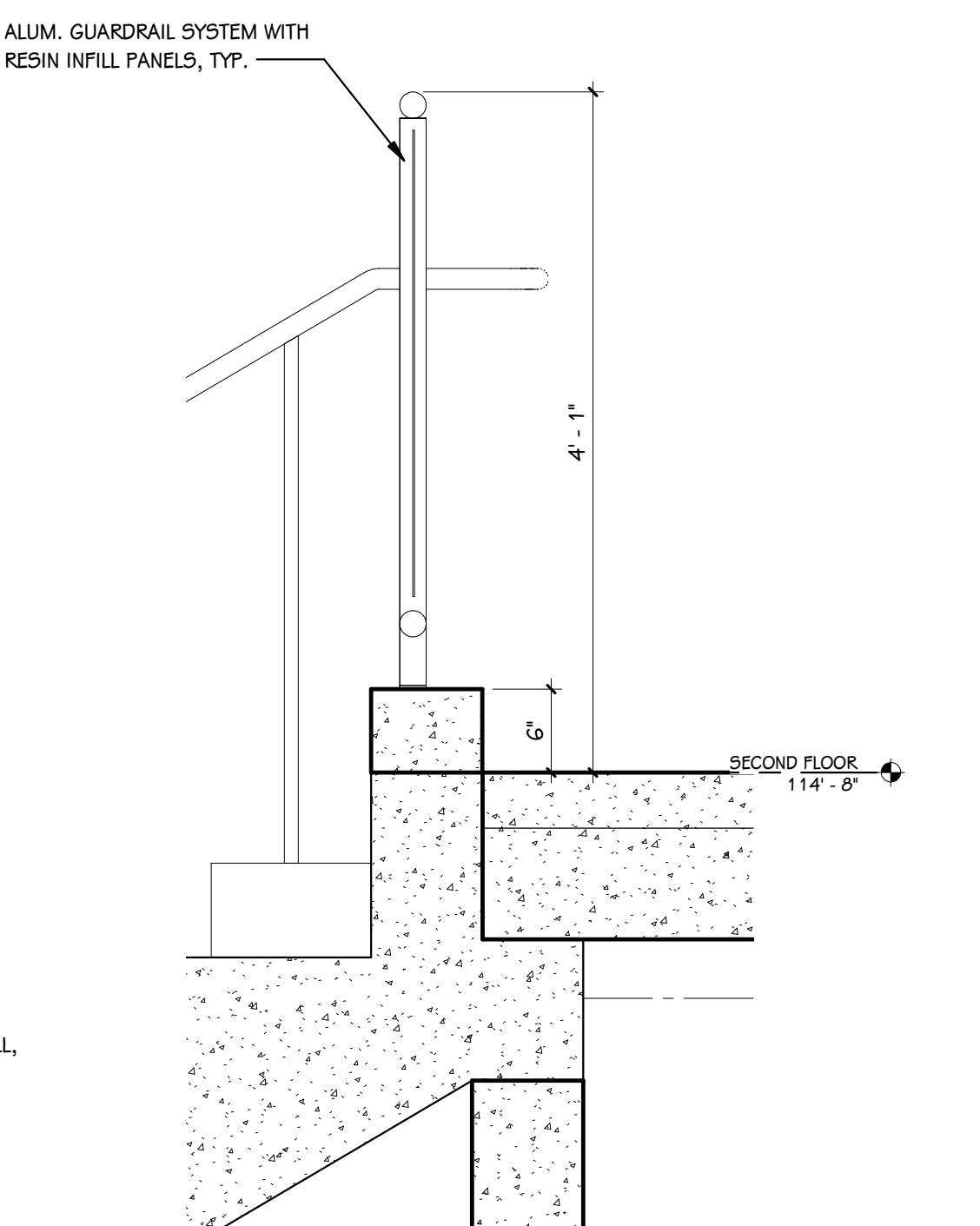
7 GATHERING STAIR DETAIL  
1" = 1'-0"



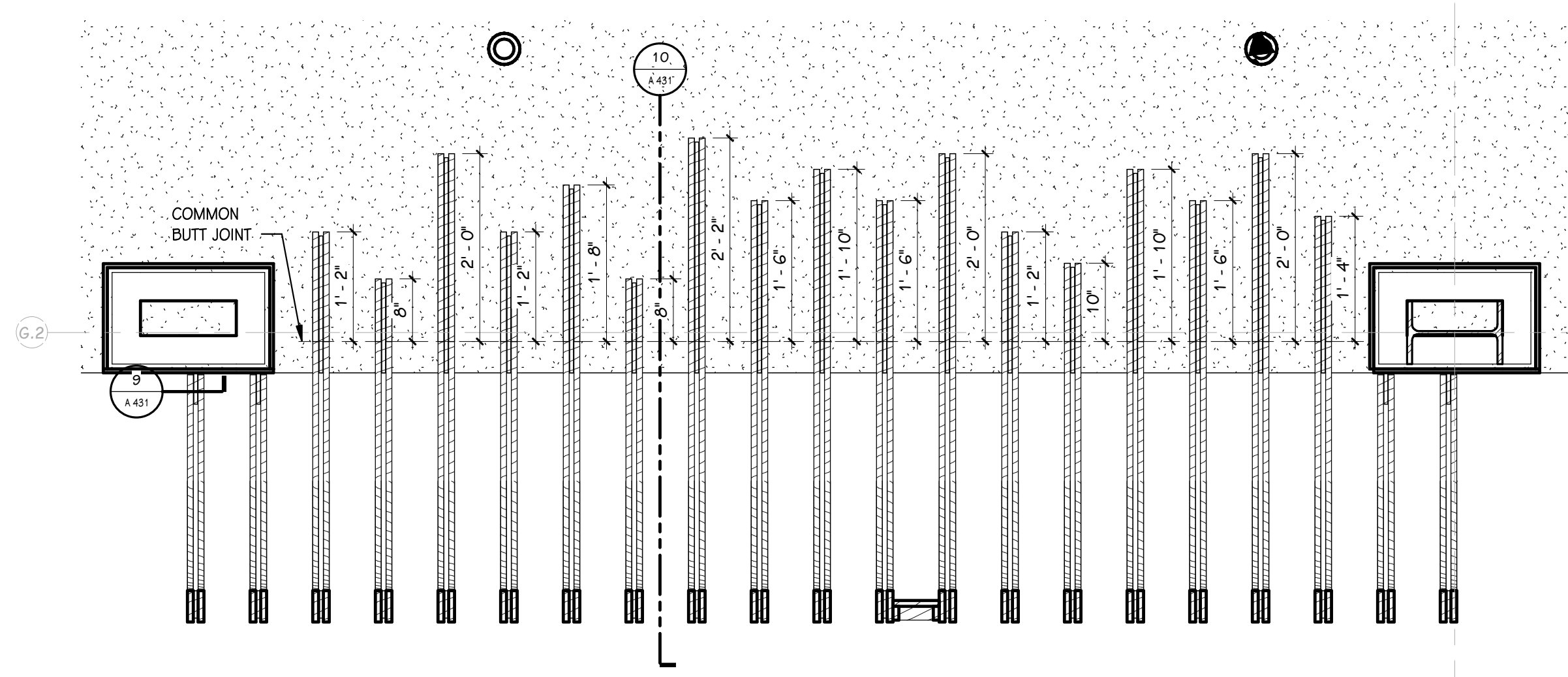
8 GATHERING STAIR DETAIL  
1" = 1'-0"



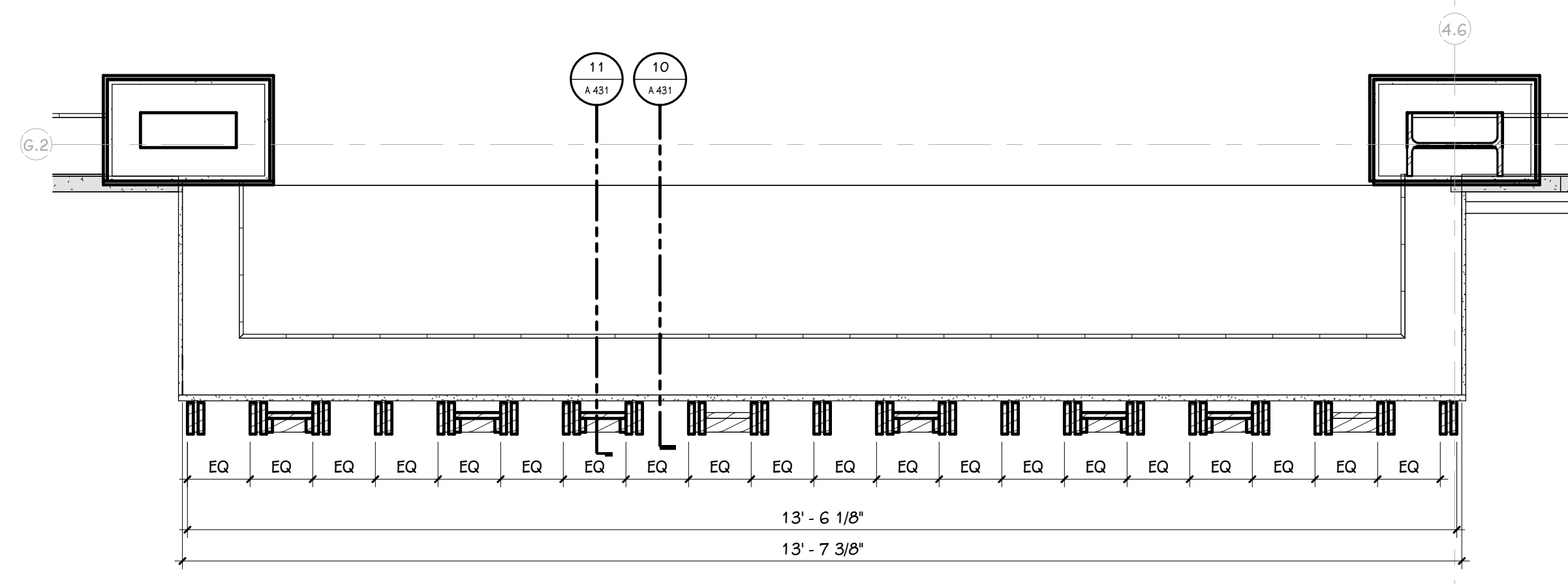
9 GATHERING STAIR DETAIL  
1" = 1'-0"



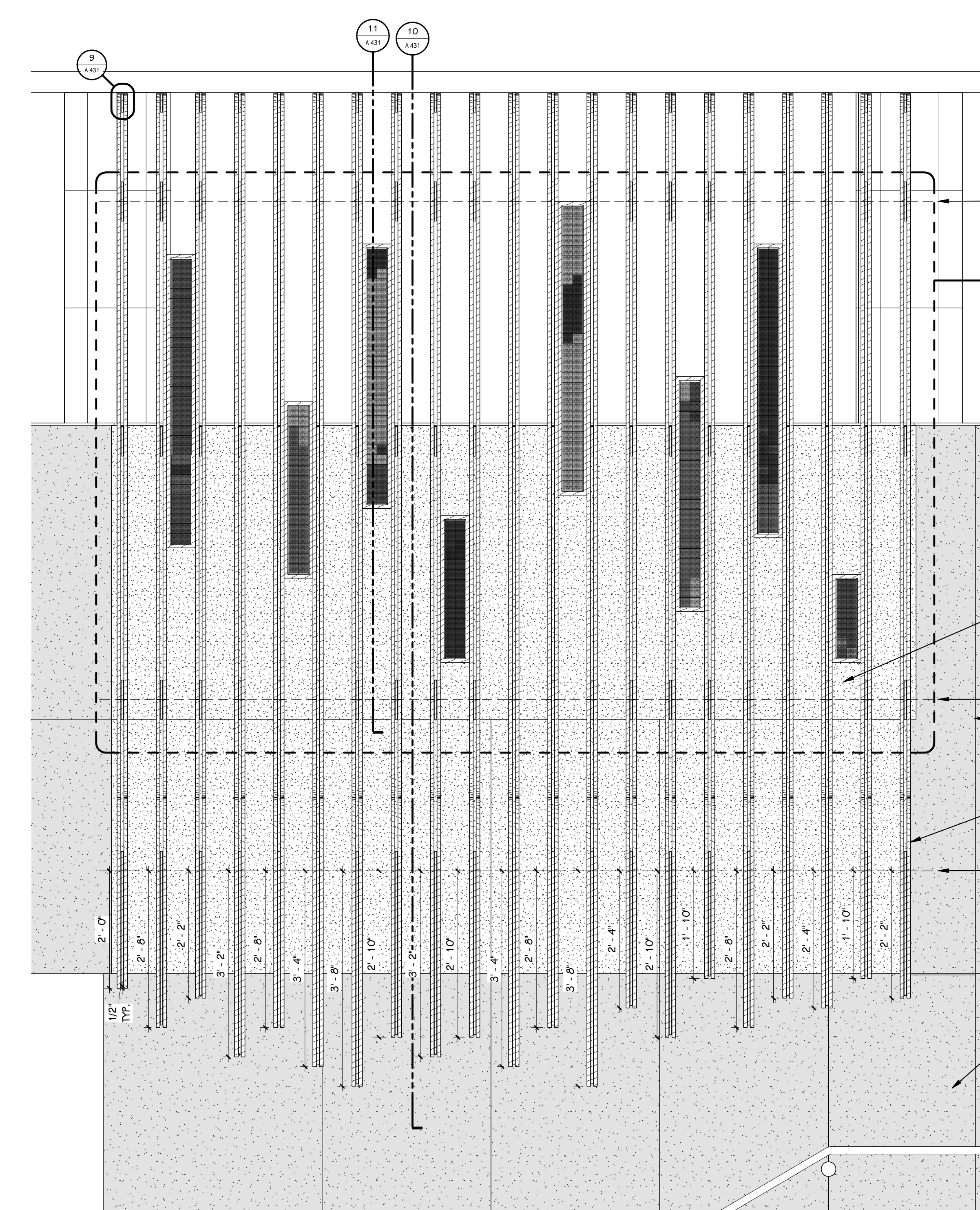
10 GATHERING STAIR DETAIL  
1" = 1'-0"



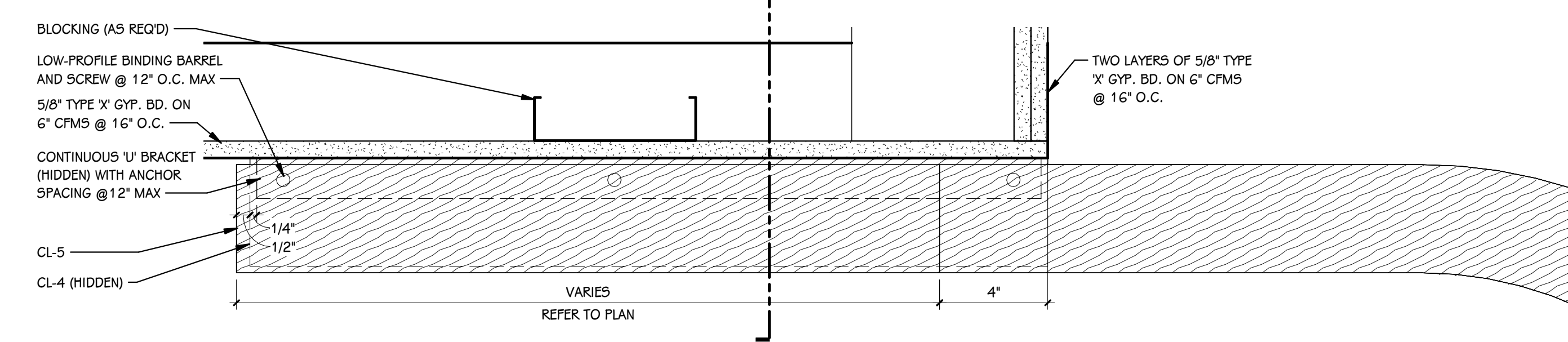
1 NEST REFLECTED CEILING PLAN  
3/4" = 1'-0"



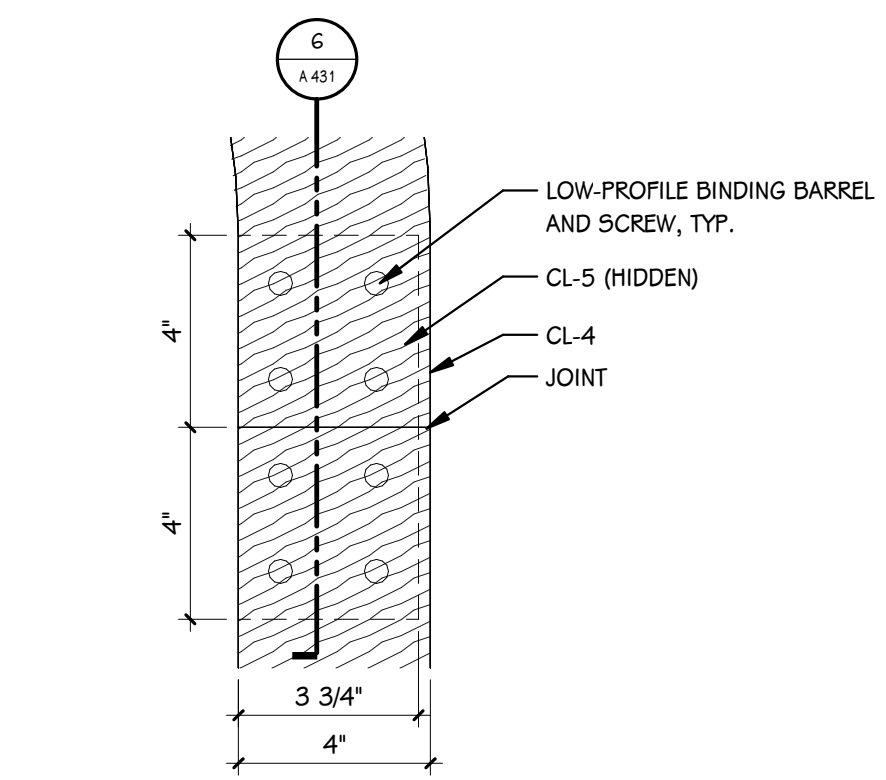
2 NEST ENLARGED FLOOR PLAN  
3/4" = 1'-0"



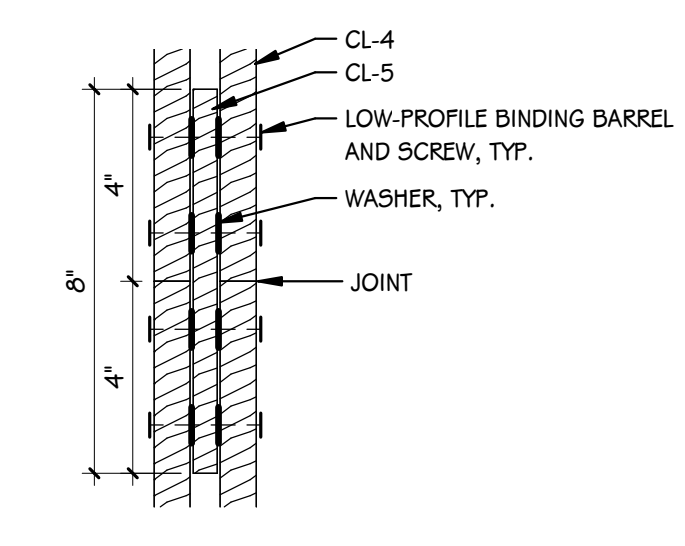
3 NEST ELEVATION  
3/4" = 1'-0"



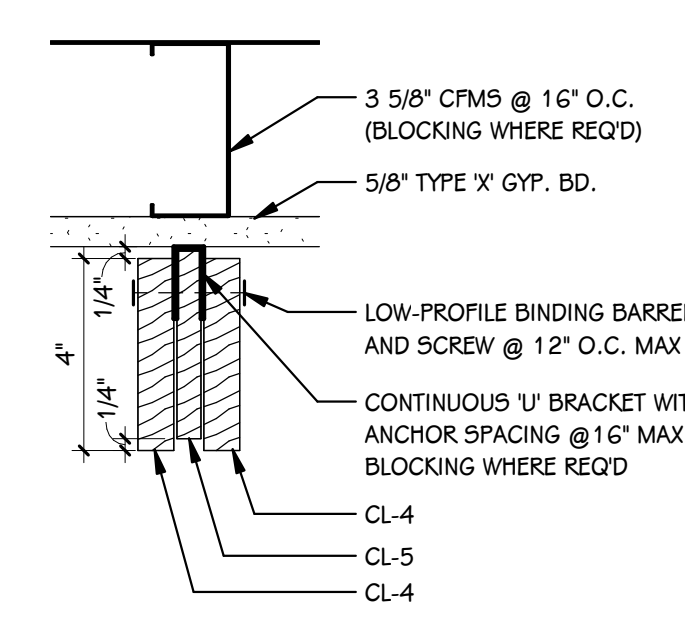
4 NEST DETAIL  
3" = 1'-0"



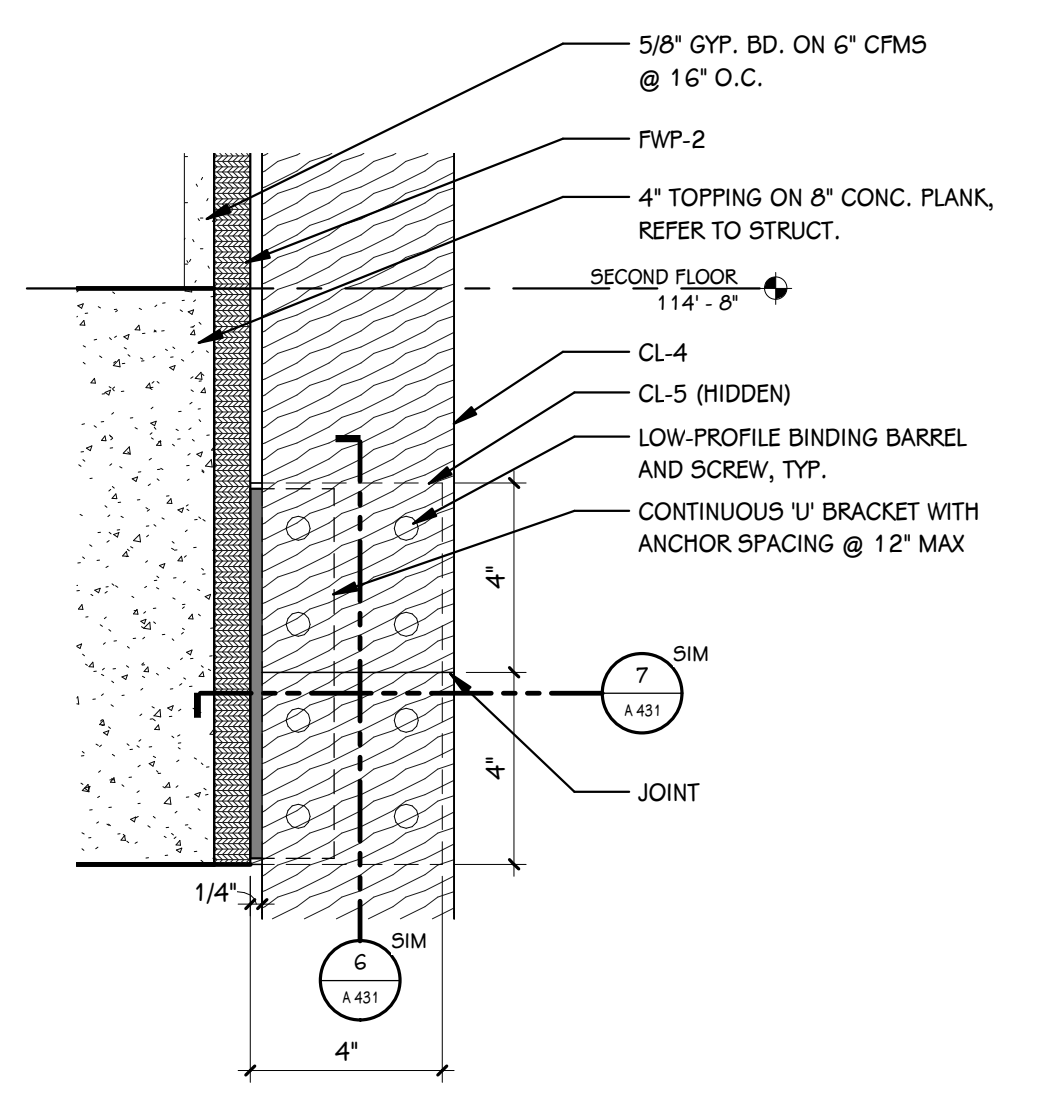
5 NEST DETAIL  
3" = 1'-0"



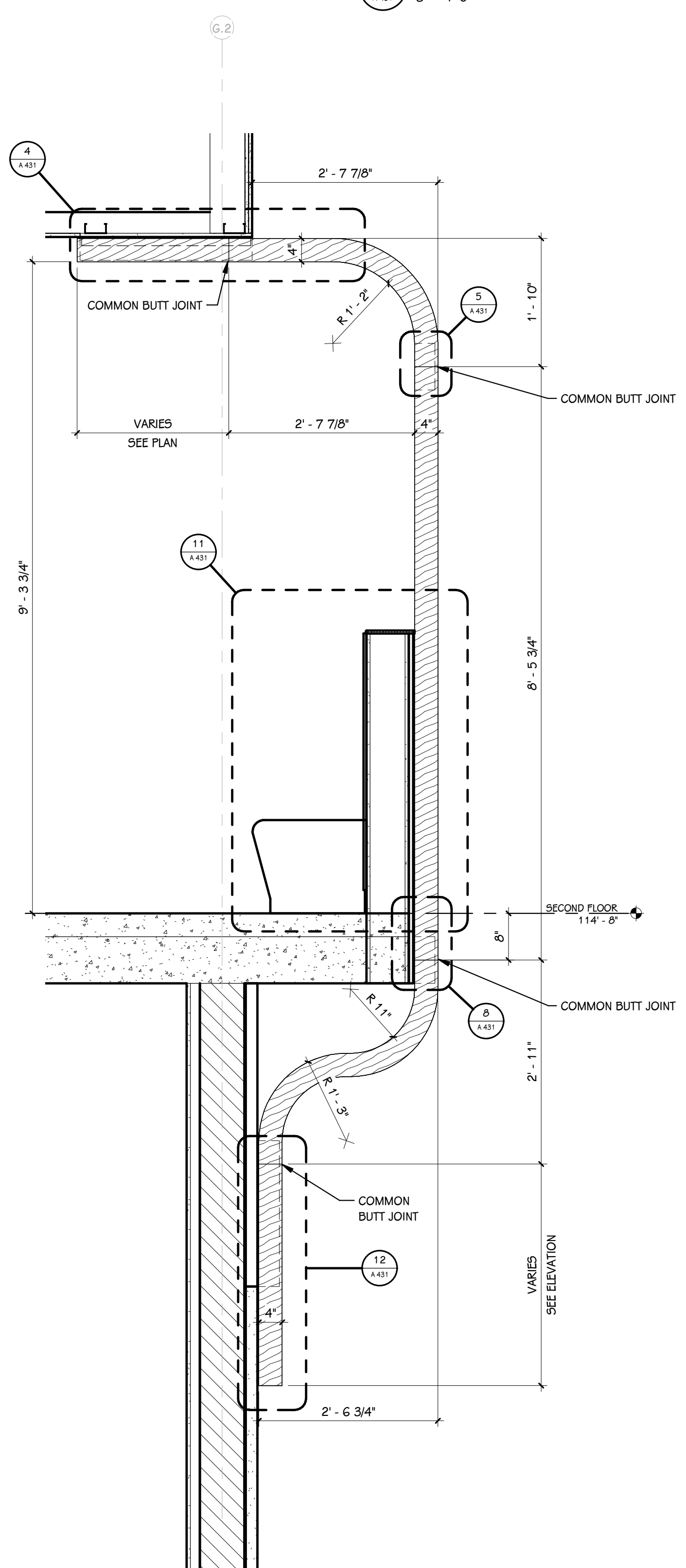
6 NEST DETAIL  
3" = 1'-0"



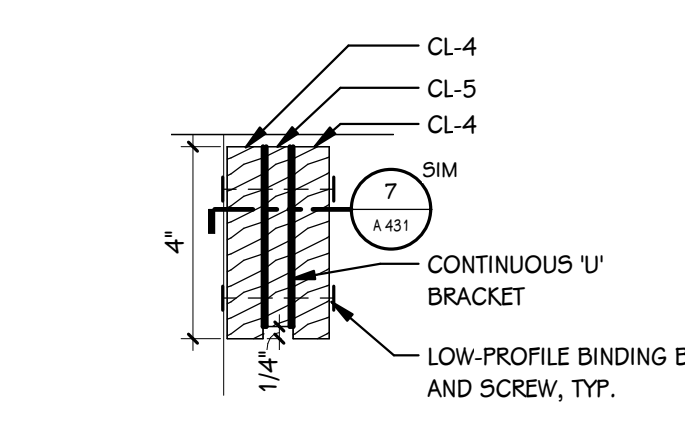
7 NEST DETAIL  
3" = 1'-0"



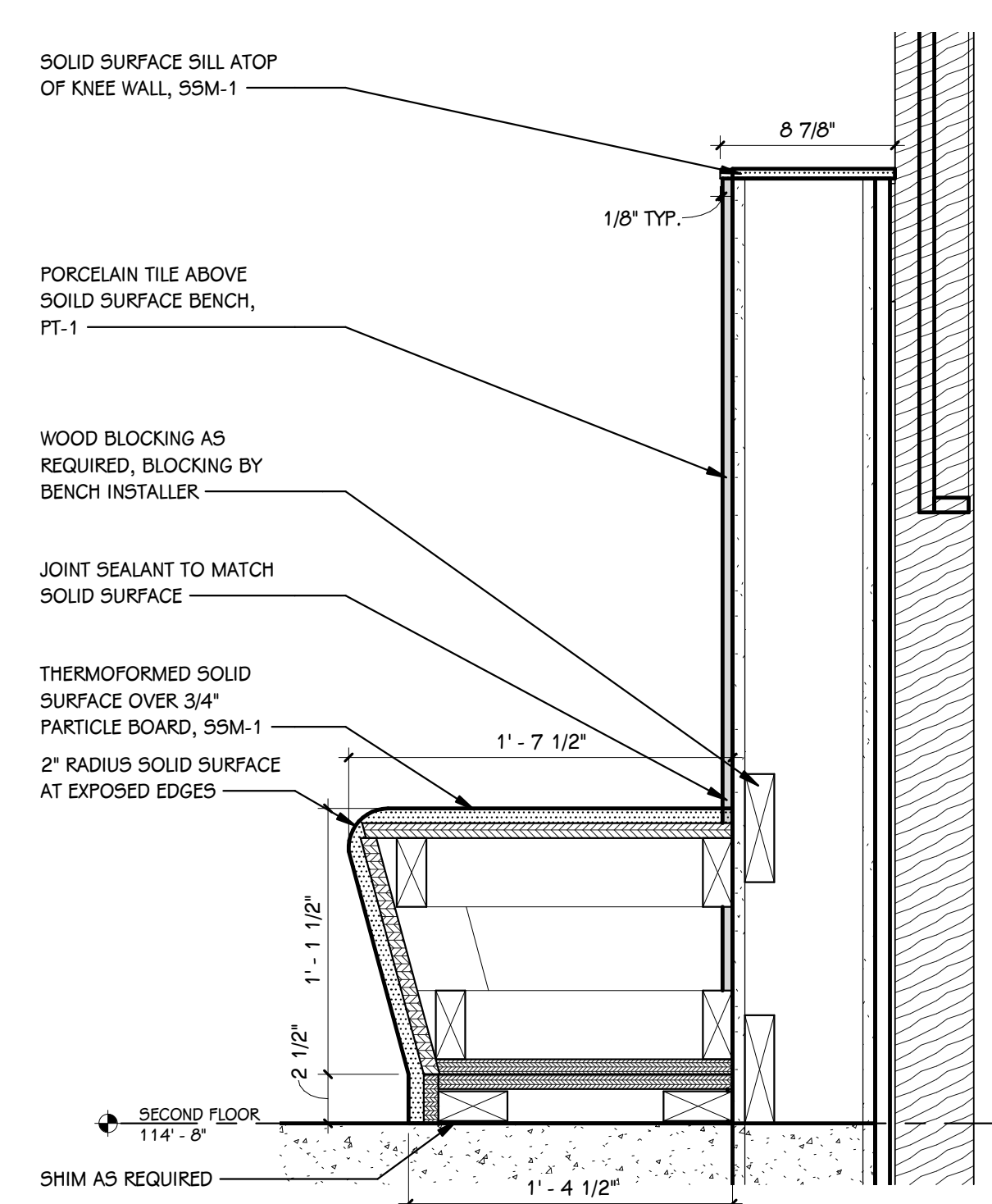
8 NEST DETAIL  
3" = 1'-0"



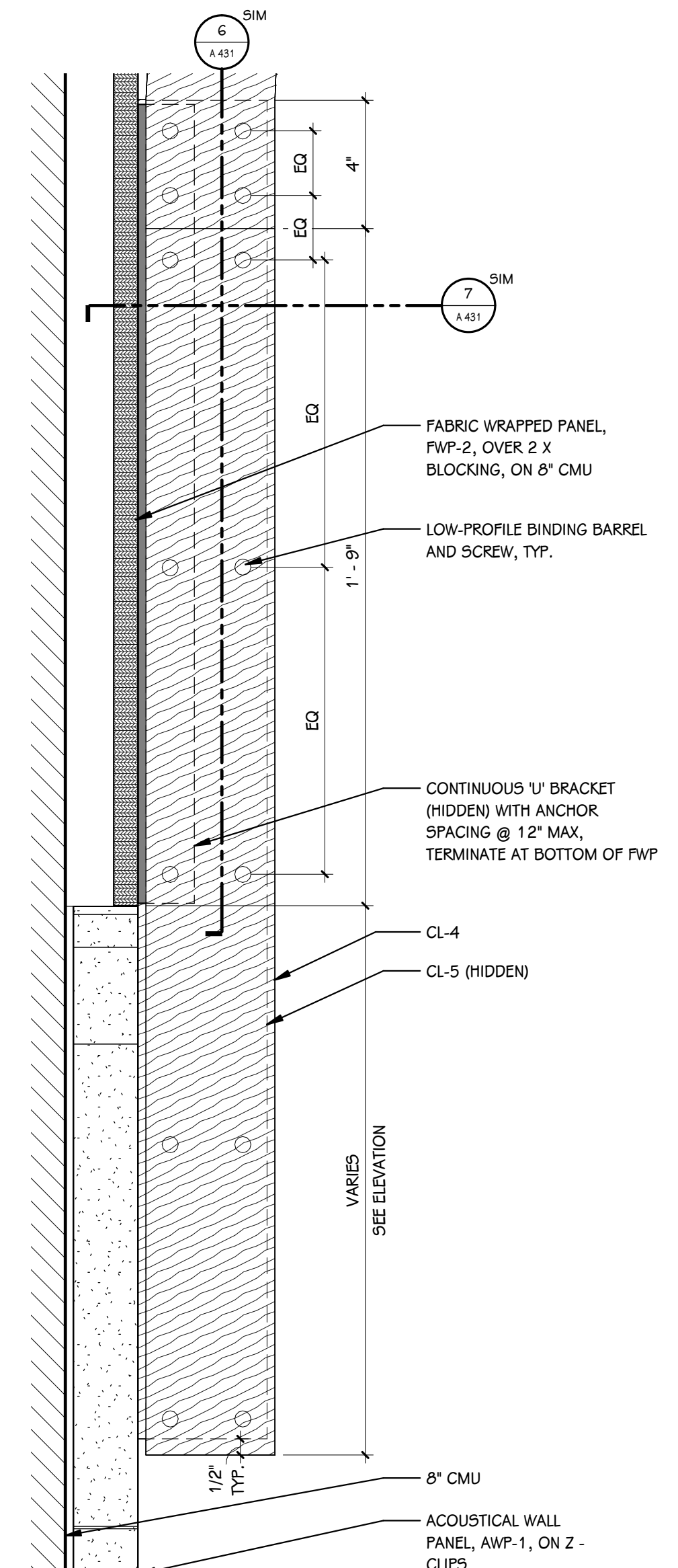
10 NEST SECTION  
3/4" = 1'-0"



9 NEST DETAIL  
3" = 1'-0"



11 NEST BENCH SECTION  
1 1/2" = 1'-0"



12 NEST DETAIL  
3" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

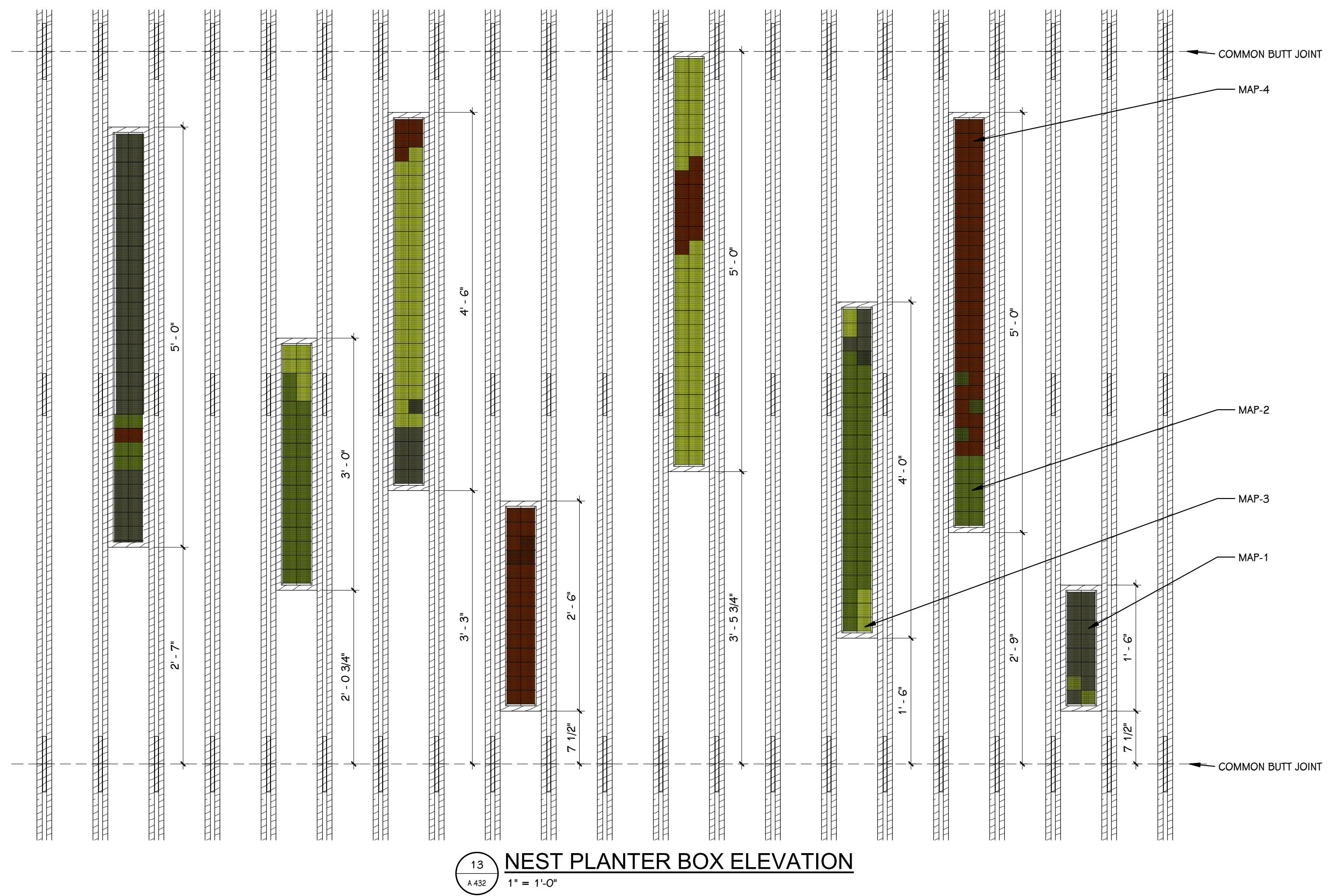
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

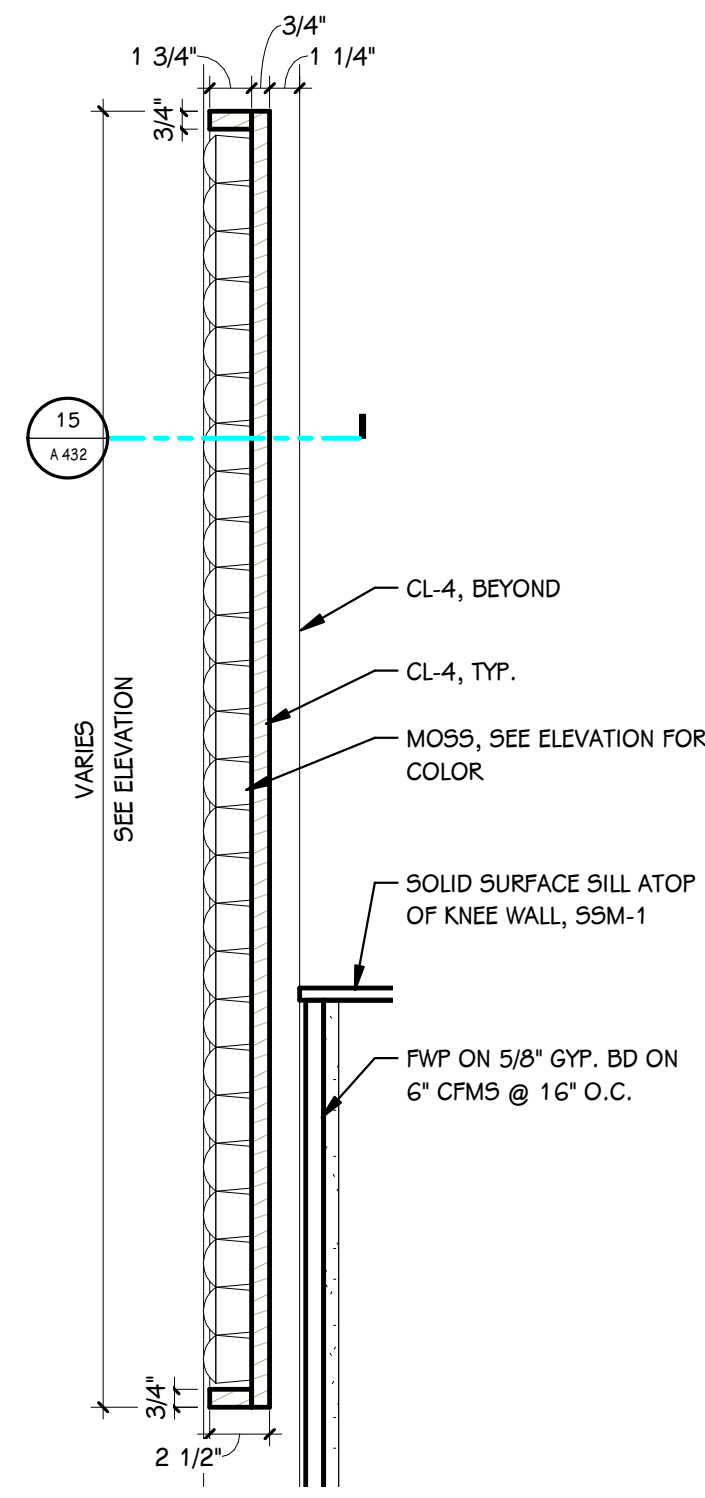
SHEET TITLE  
ENLARGED NEST PLANS, DETAILS AND  
ELEVATIONS

SHEET NUMBER  
**A 431**  
21-237.20

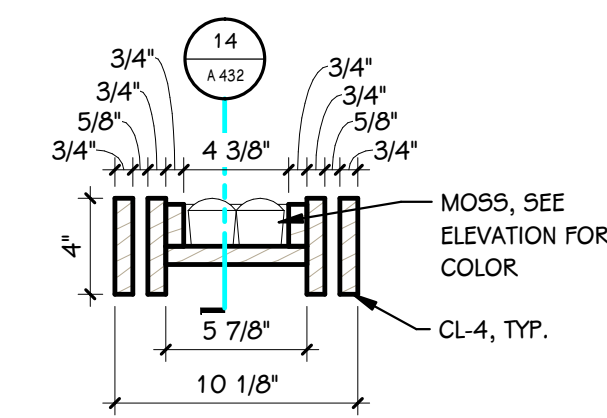
DATE  
JUNE 30, 2023



13  
A.432 NEST PLANTER BOX ELEVATION  
1" = 1'-0"



14  
A.432 TYPICAL NEST PLANTER BOX DETAIL  
1 1/2" = 1'-0"



15  
A.432 TYPICAL NEST PLANTER BOX DETAIL  
1 1/2" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING



**DOOR SCHEDULE - SECOND FLOOR**

NUMBER		ROOM NAME	FIRE RATING		DOOR			SIZE		FRAME			DETAILS			GLASS	ACCESS CONTROLS					HRDW. SET	REMARKS
DOOR	ROOM		DOOR	FRAME	TYPE	MAT	FIN	WIDTH	HEIGHT	ELEV	MAT	FIN	HEAD	JAMB	SILL		A-PHONE	BARRIER-FREE	CARD READER	ELEC. LOCK HDWR.	MAG HOLD		
211T	211T	STAFF TOILET	45 MIN	45 MIN	F	WD	PREFIN	3'-0"	7'-2"	1	HM	P-18	H-3	J-3	-	-	No	No	No	No	No	49.0	-
214	214	ESI SGR	45 MIN	45 MIN	F	WD	PREFIN	3'-0"	7'-2"	3	HM	P-18	H-1	J-1	-	-	No	No	No	No	No	46.0	1
215	215	ESI SGR	45 MIN	45 MIN	F	WD	PREFIN	3'-0"	7'-2"	3	HM	P-18	H-1	J-1	-	-	No	No	No	No	No	46.0	1
216	216	ESI SGR	45 MIN	45 MIN	F	WD	PREFIN	3'-0"	7'-2"	1	HM	P-18	H-1	J-1	-	-	No	No	No	No	No	36.0	-
219	219	ESI WORKSHOP	45 MIN	45 MIN	F	WD	PREFIN	3'-0"	7'-2"	3	HM	P-18	H-3	J-3	-	-	No	No	Yes	Yes	No	52.0	1
220H	220H	PASSAGEWAY	45 MIN	45 MIN	N	HM	P-17	8'-0"	7'-2"	2	HM	P-17	H-5	J-5	-	-	No	No	Yes	Yes	Yes	13.0	4B
221	221	EDUC WORKSHOP	-	-	-	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-3	J-3	-	-	No	No	No	No	No	43.0	1
222A	222	LEARNING STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	18.0	1
222B	222	LEARNING STUDIO	-	-	SUIDER	AL	P-17	12'-0"	7'-4"	15	AL	P-17	H-7	J-7	5-3	IG-2	No	No	No	No	No	59.0	1, 2
224	224	SGR	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	13	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	43.0	1
226	226	LEARNING STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	18.0	1
227-1T	227-1T	TLT-G	-	-	G1	WD	PREFIN	2'-8"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	31.0	-
227-2T	227-2T	TLT-G	-	-	G1	WD	PREFIN	2'-8"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	31.0	-
227-3T	227-3T	TLT-B	-	-	G1	WD	PREFIN	2'-8"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	31.0	-
227-4T	227-4T	TLT-B	-	-	G1	WD	PREFIN	2'-8"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	31.0	-
227-5T	227-5T	TOILET	-	-	G1	WD	PREFIN	3'-0"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	28.0	-
228A	228	LEARNING STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	43.0	1
231	231	FLEX STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	10A	HM	P-17	H-6	J-6	-	-	No	No	No	No	No	43.0	1
232A	232	LEARNING STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	18.0	1
232B	232	LEARNING STUDIO	-	-	SUIDER	AL	P-17	12'-0"	7'-4"	15	AL	P-17	H-7	J-7	5-3	IG-2	No	No	No	No	No	59.0	1, 2
233	233	EDUC WORKSHOP	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-3	J-3	-	-	No	No	No	No	No	45.0	1
234A	234	LEARNING STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	18.0	1
236A	236	LEARNING STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	43.0	1
237	237	ESI STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	17B	HM	P-17	H-6	J-6	-	-	No	No	No	No	No	45.0	1
238	238	SGR	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	13	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	43.0	1
240H	240H	PASSAGEWAY	45 MIN	45 MIN	N	HM	P-17	8'-0"	7'-2"	2	HM	P-17	H-5	J-5	-	-	No	No	Yes	Yes	Yes	13.0	4B
241	241	CUSTODIAL	45 MIN	45 MIN	F	WD	PREFIN	3'-0"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	33.0	-
242A	242	LEARNING STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	43.0	1
243-1T	243-1T	TLT-G	-	-	G1	WD	PREFIN	2'-8"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	31.0	-
243-2T	243-2T	TLT-G	-	-	G1	WD	PREFIN	2'-8"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	31.0	-
243-3T	243-3T	TLT-B	-	-	G1	WD	PREFIN	2'-8"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	31.0	-
243-4T	243-4T	TLT-B	-	-	G1	WD	PREFIN	2'-8"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	31.0	-
243-5T	243-5T	TOILET	-	-	G1	WD	PREFIN	3'-0"	7'-2"	1	HM	P-17	H-5	J-5	-	-	No	No	No	No	No	28.0	-
244A	244	LEARNING STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	18.0	1
244B	244	LEARNING STUDIO	-	-	SUIDER	AL	P-17	12'-0"	7'-4"	15	AL	P-17	H-7	J-7	5-3	IG-2	No	No	No	No	No	59.0	1, 2
246	246	LEARNING STUDIO	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	18.0	1
D216	D216	DATA / IT	45 MIN	45 MIN	F	WD	PREFIN	3'-0"	7'-2"	1	HM	P-18	H-5	J-5	-	-	No	No	Yes	Yes	No	30.1	-
E217	E217	ELEC	45 MIN	45 MIN	F	WD	PREFIN	3'-0"	7'-2"	1	HM	P-18	H-5	J-5	-	-	No	No	No	No	No	33.0	-
E245	E245	ELEC	-	-	F	WD	PREFIN	6'-0"	7'-2"	2	HM	P-17	H-1	J-1	-	-	No	No	No	No	No	21.0	-
E271	E271	ELEC	-	-	F	HM	P-18	3'-0"	7'-2"	1	HM	P-18	H-3	J-3	-	-	No	No	No	No	No	35.0	-
M260A	M260	MECHANICAL	45 MIN	45 MIN	F	WD	PREFIN	3'-6"	7'-2"	1	HM	P-18	H-1	J-1	-	-	No	No	No	No	No	34.0	3
M260B	M260	MECHANICAL	-	-	F	FRP	DB, ANCO	3'-0"	7'-2"	1	AL	DB, ANCO	15A322	31A323	-	-	No	No	No	No	No	66.0	-
M261	M261	MECHANICAL	45 MIN	45 MIN	F	WD	PREFIN	3'-6"	7'-2"	1	HM	P-18	H-1	J-1	-	-	No	No	No	No	No	34.0	3
M270	M270	MECHANICAL	45 MIN	45 MIN	F	WD	PREFIN	3'-6"	7'-2"	1	HM	P-18	H-3	J-3	-	-	No	No	No	No	No	34.0	1
ST3E	ST3	STAIR	-	-	FG2	WD	PREFIN	3'-0"	7'-2"	3	HM	P-18	H-5	J-5	-	-	No	No	No	No	No	17.1	4A
ST4C	ST4	STAIR	45 MIN	45 MIN	N	WD	PREFIN	3'-0"	7'-2"	1	HM	PAINT (REFER TO REMARKS)	H-3	J-3	-	-	FRG-1	No	No	No	No	17.0	5B
ST5D	ST5	STAIR	45 MIN	45 MIN	N	WD	PREFIN	3'-0"	7'-2"	1	HM	PAINT (REFER TO REMARKS)	H-3	J-3	-	-	FRG-1	No	Yes	Yes	No	65.0	5B
ST5E	ST5	STAIR	45 MIN	45 MIN	N	WD	PREFIN	3'-0"	7'-2"	1	HM	P-18	H-3	J-3	-	-	FRG-1	No	No	No	No	64.0	-

**REMARKS:**  
 1. SOUNDS SEAL  
 2. FACTORY POWDER COATED  
 3. ACOUSTICAL SOUND DOOR AND SOUND SEAL  
 4. DOORS ASSOCIATED WITH SMOKE EVAC. SYSTEM  
 4A - OPEN  
 4B - CLOSED  
 5. PAINT SCHEDULE  
 5A - P-17 CORRIDOR SIDE / P-18 GYM SIDE  
 5B - P-17 CORRIDOR SIDE / P-18 STAIR SIDE

**GENERAL DOOR NOTES**

1. REFER TO A 500 SHEETS FOR ADDITIONAL ACCESS CONTROL INFORMATION NOT NOTED ON THIS SHEET.

**ACCESS PANEL SCHEDULE**

CA.# = CEILING PANEL WA.# = WALL PANEL

MARK	RATING	SIZE		FINISH
		WIDTH	HEIGHT	

ISSUED FOR: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

SHEET NUMBER  
**SECOND FLOOR DOOR SCHEDULE**

Portage, Michigan

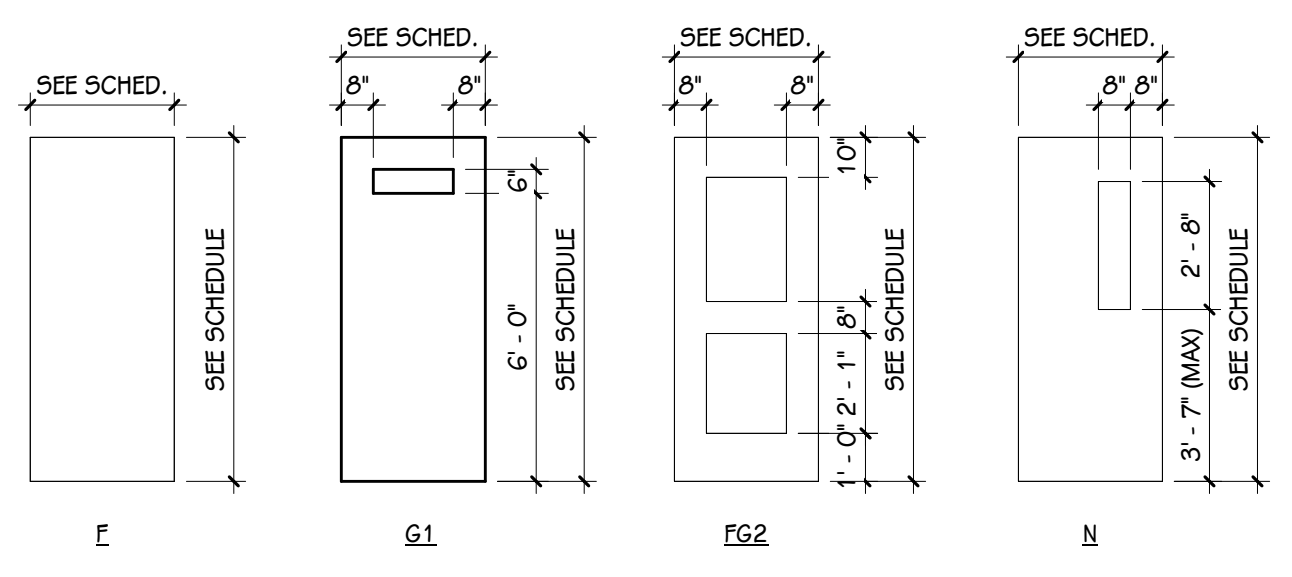
DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**A 512**  
 21-237.20

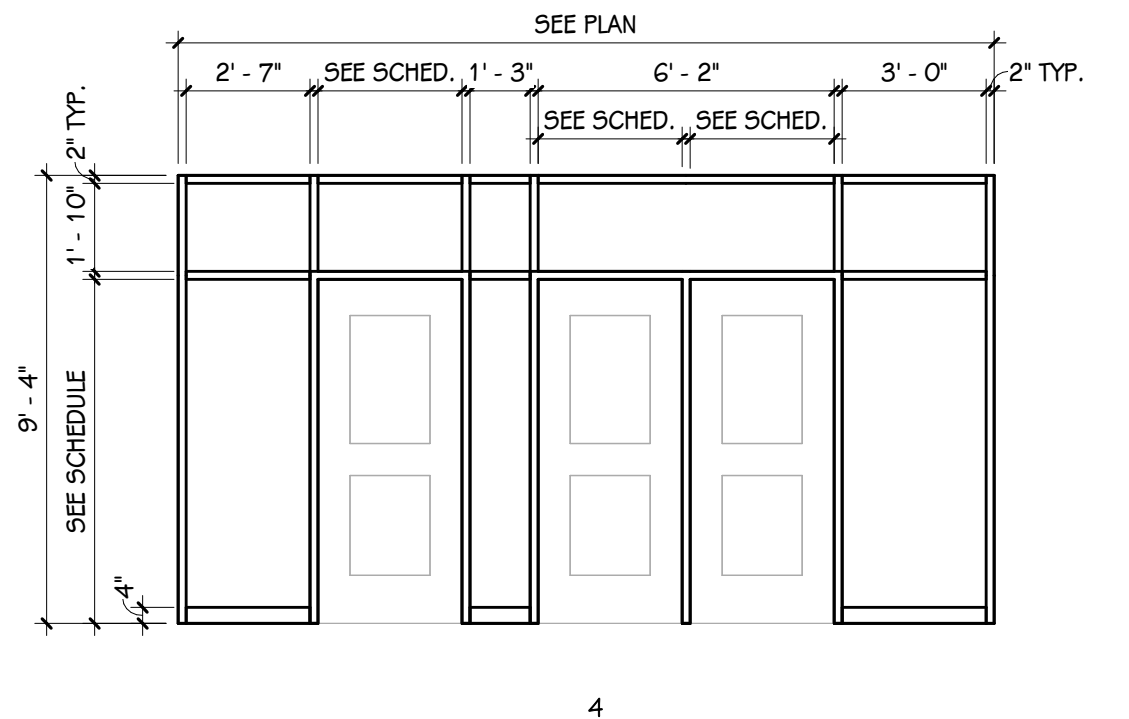
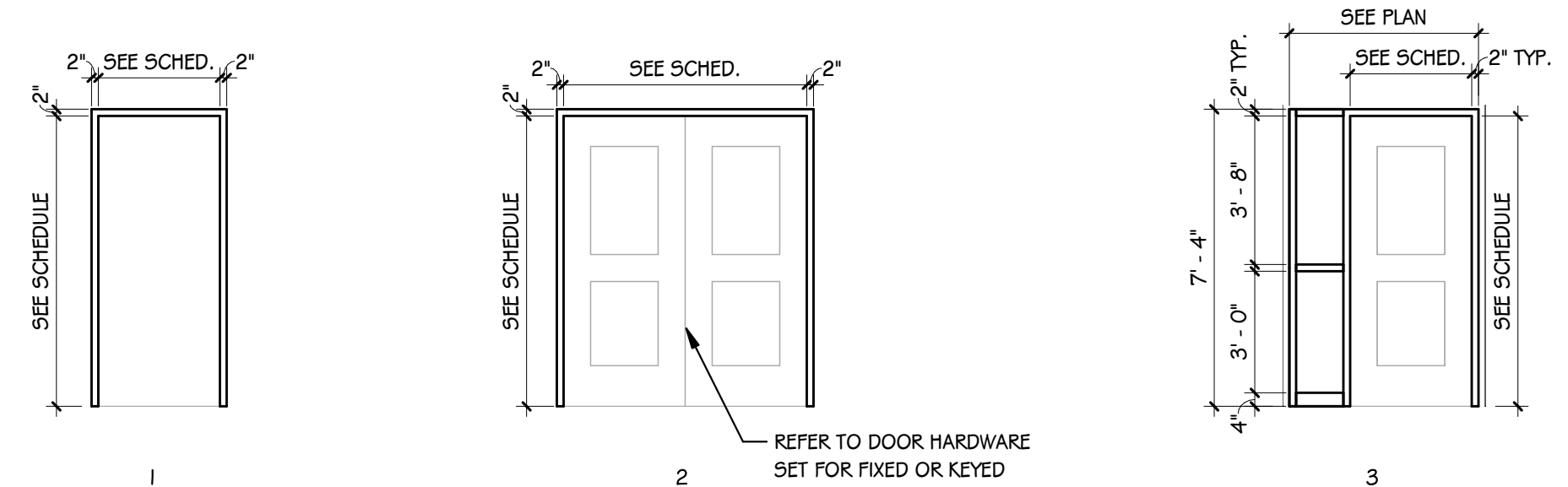


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**DOOR TYPES**  
1/4" = 1'-0"

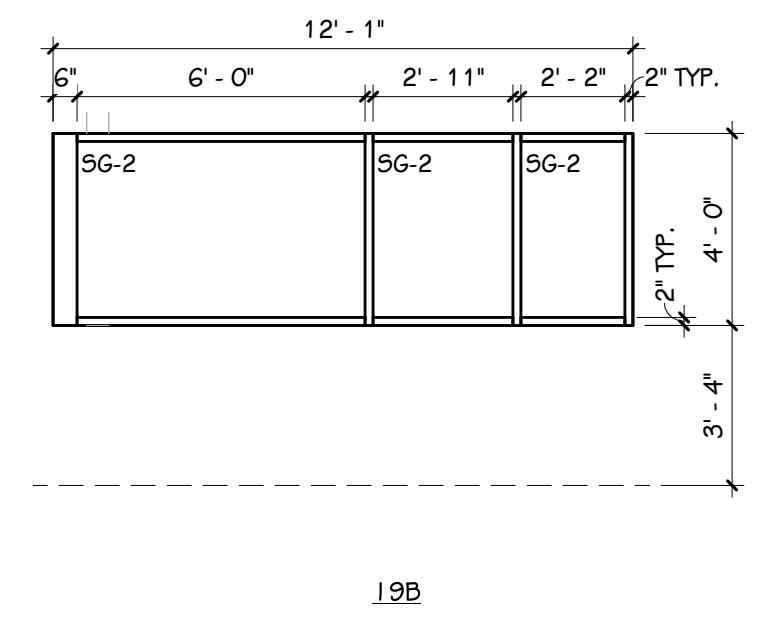
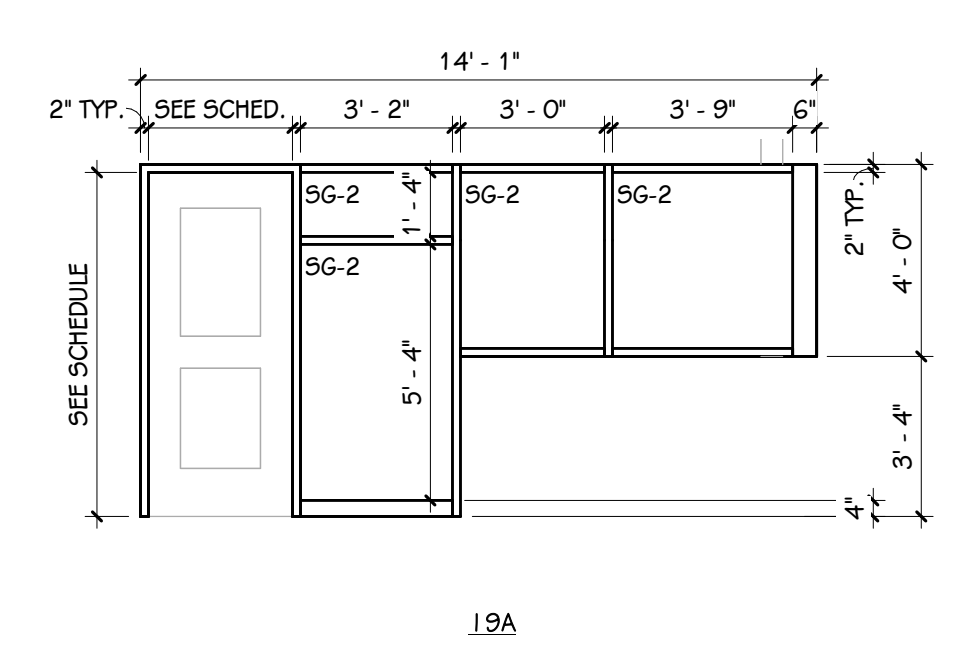
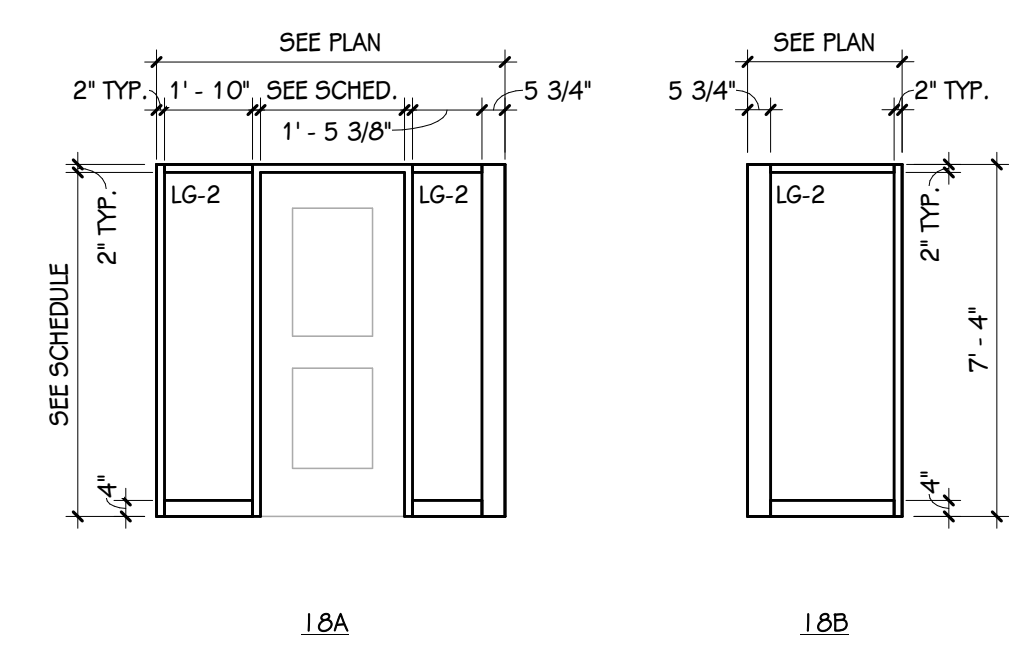
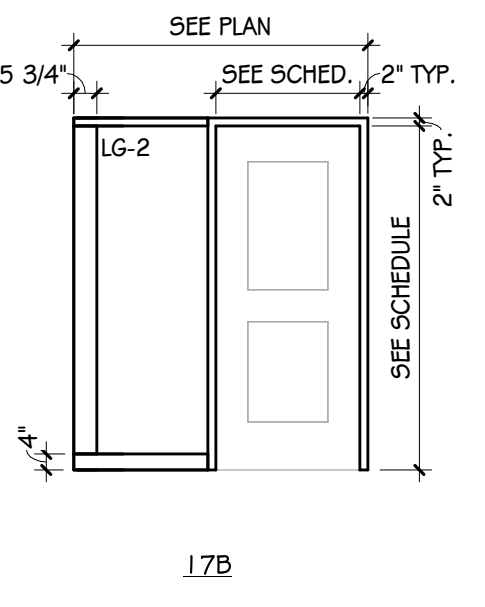
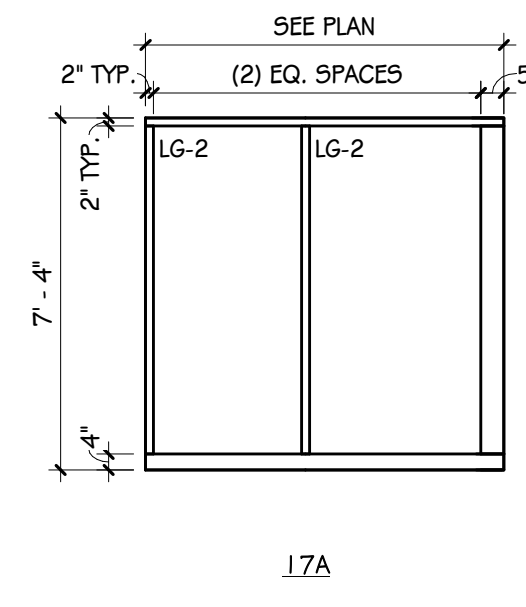
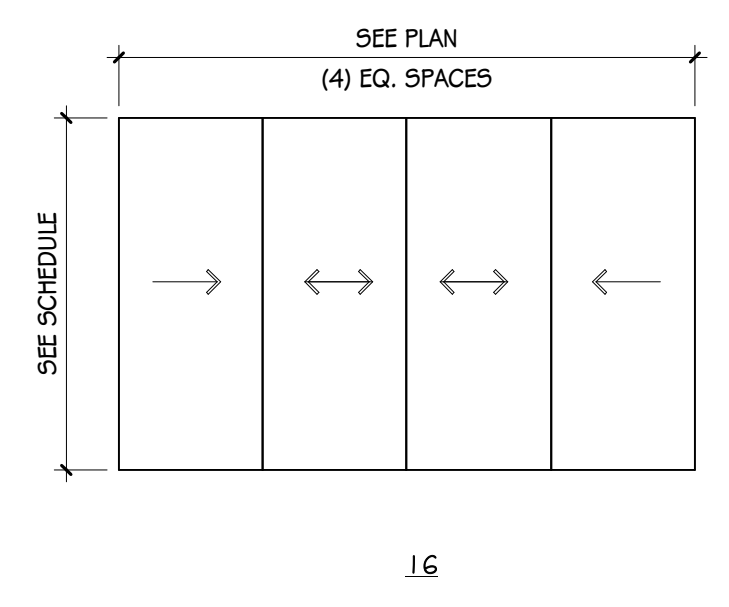
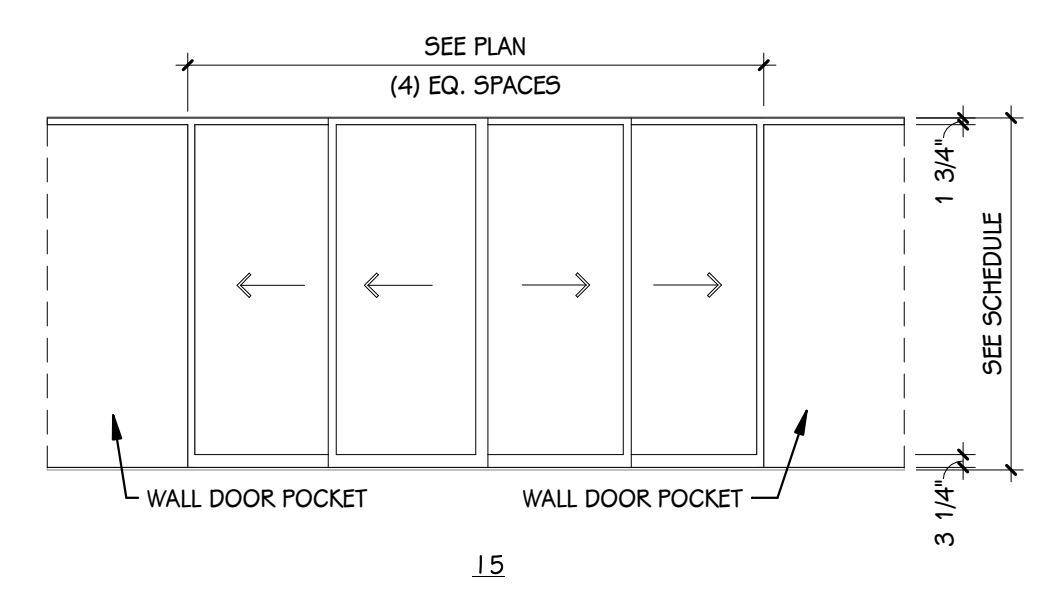
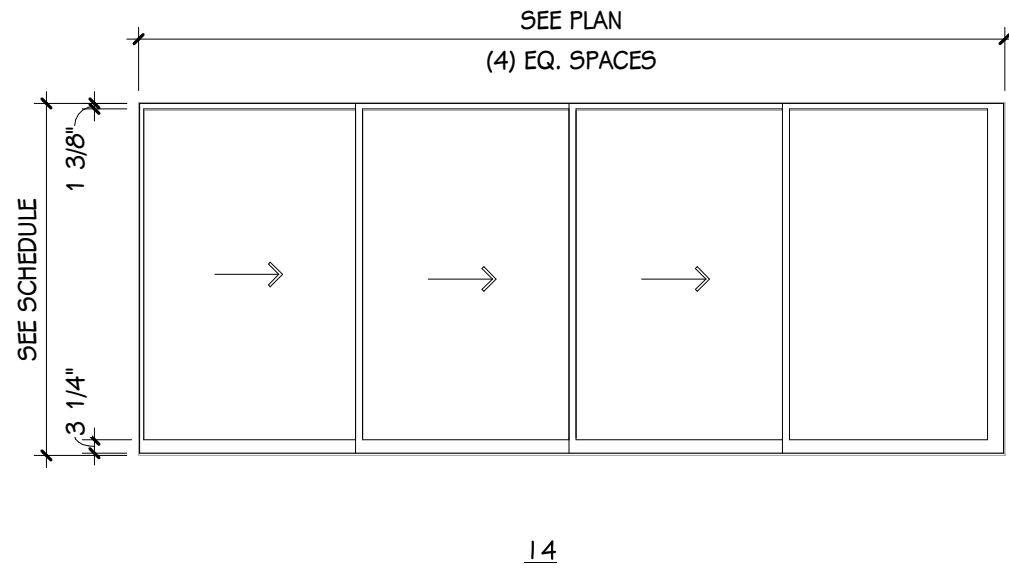
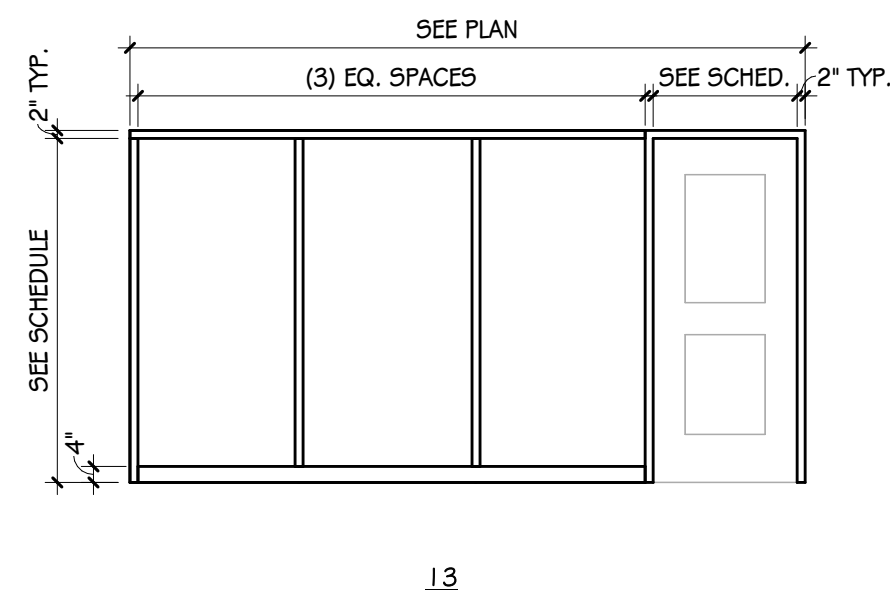
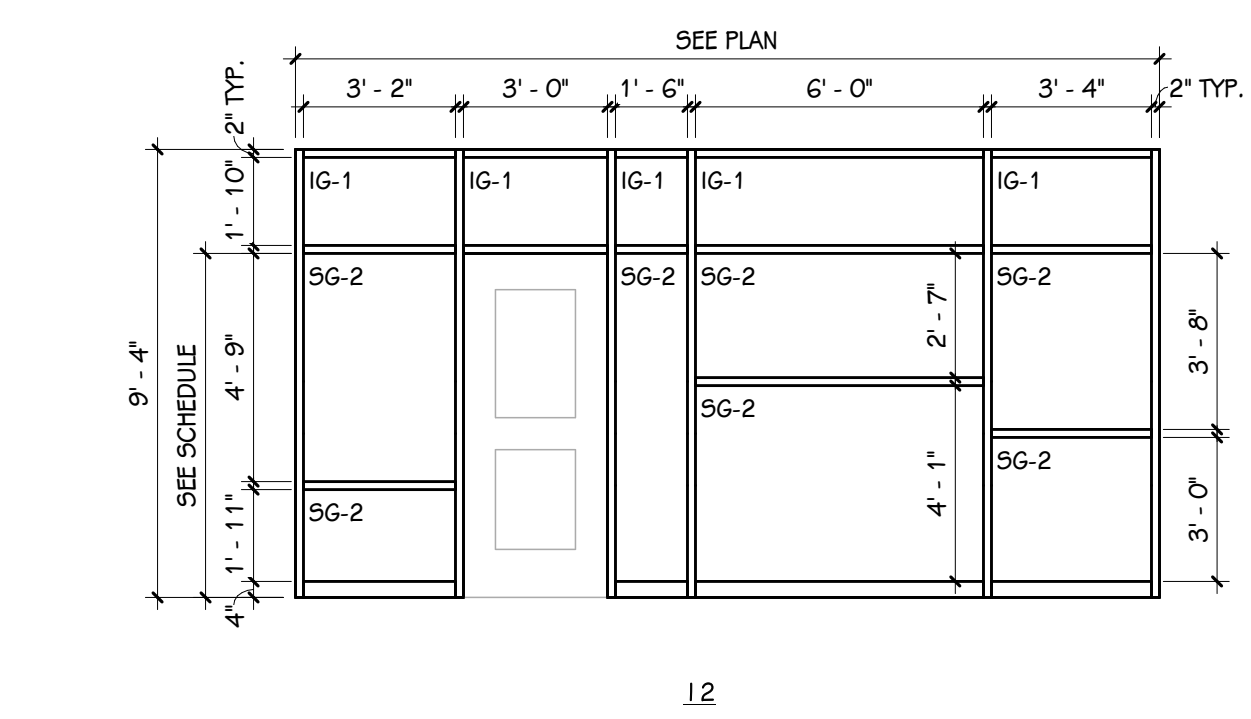
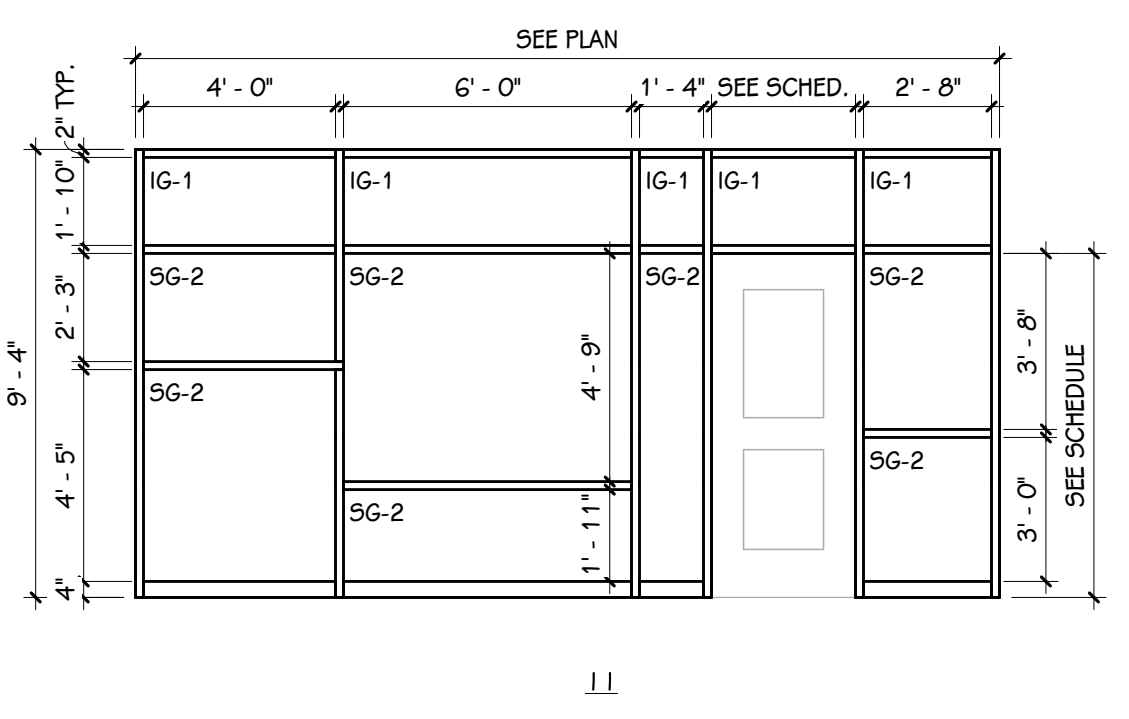
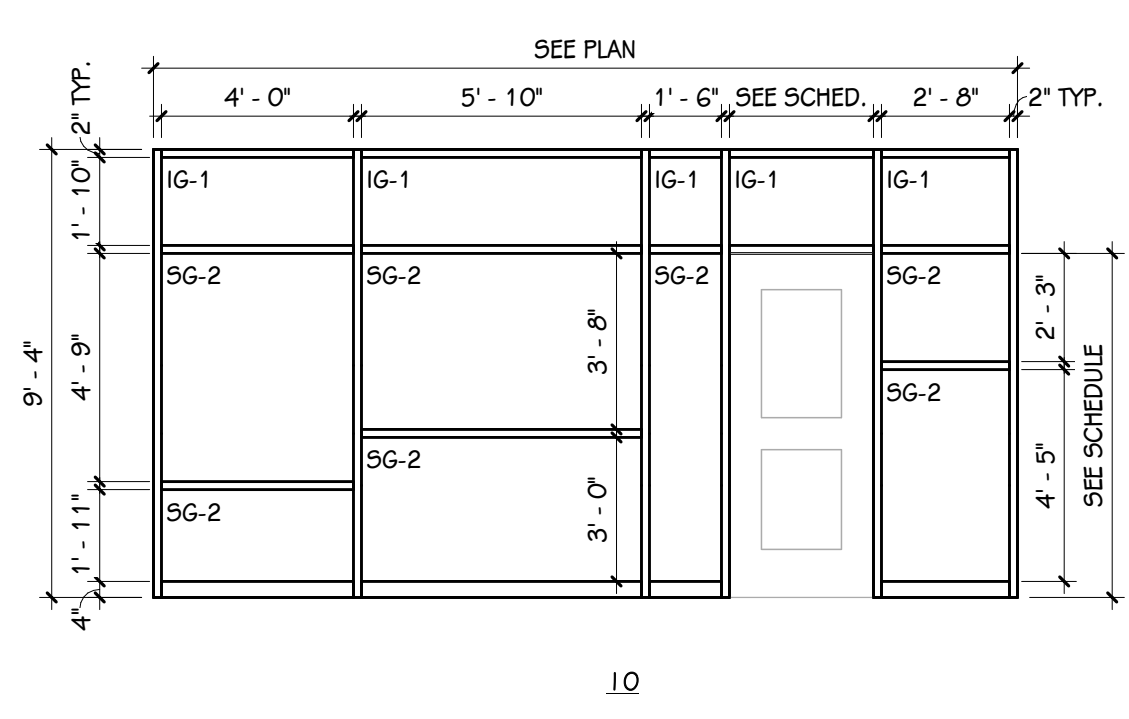
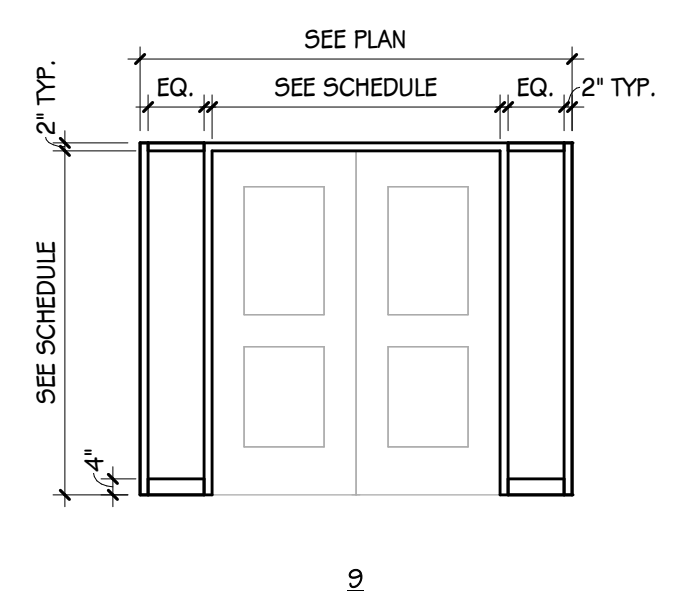
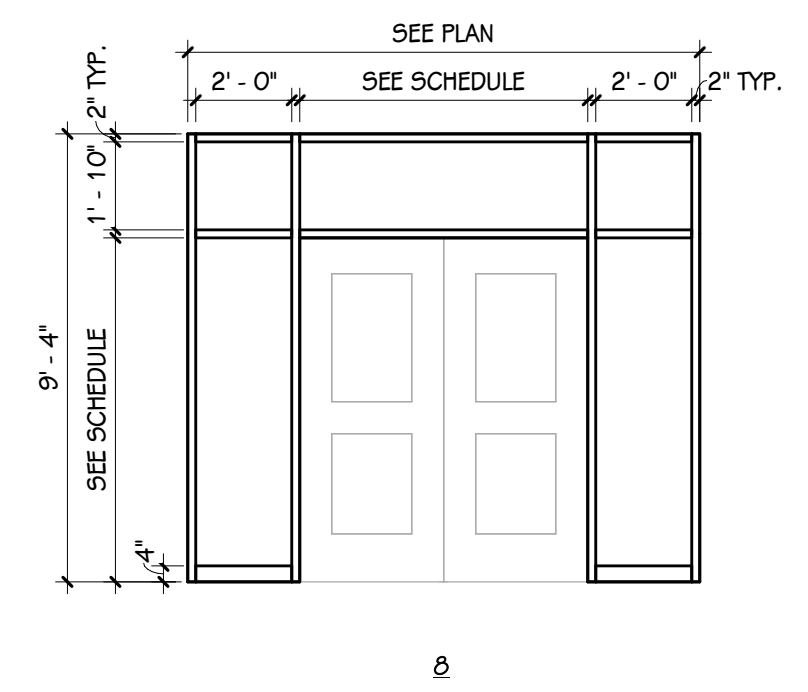
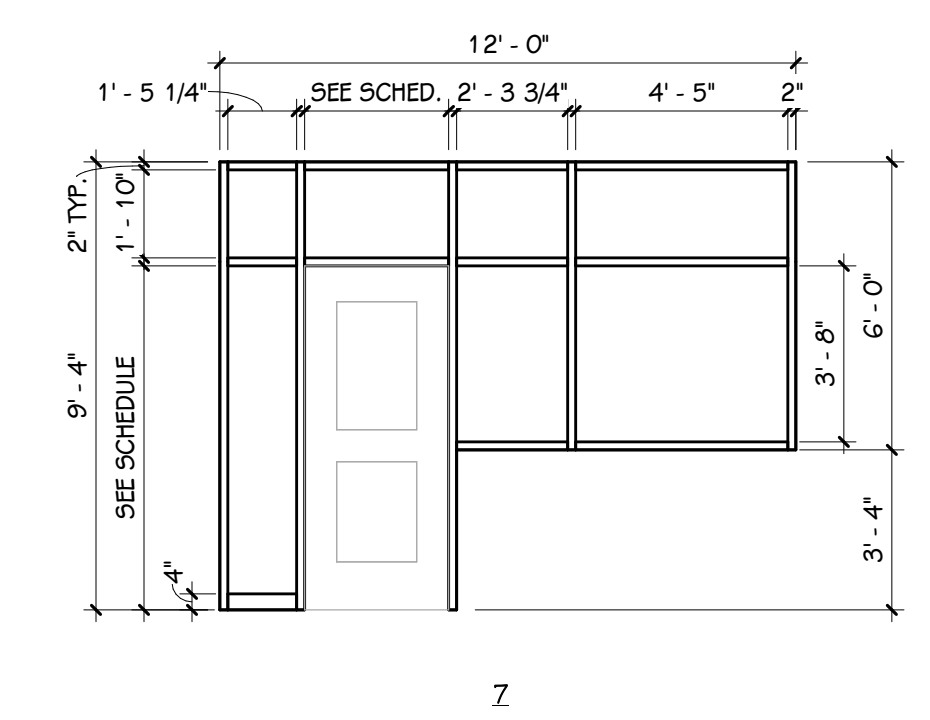
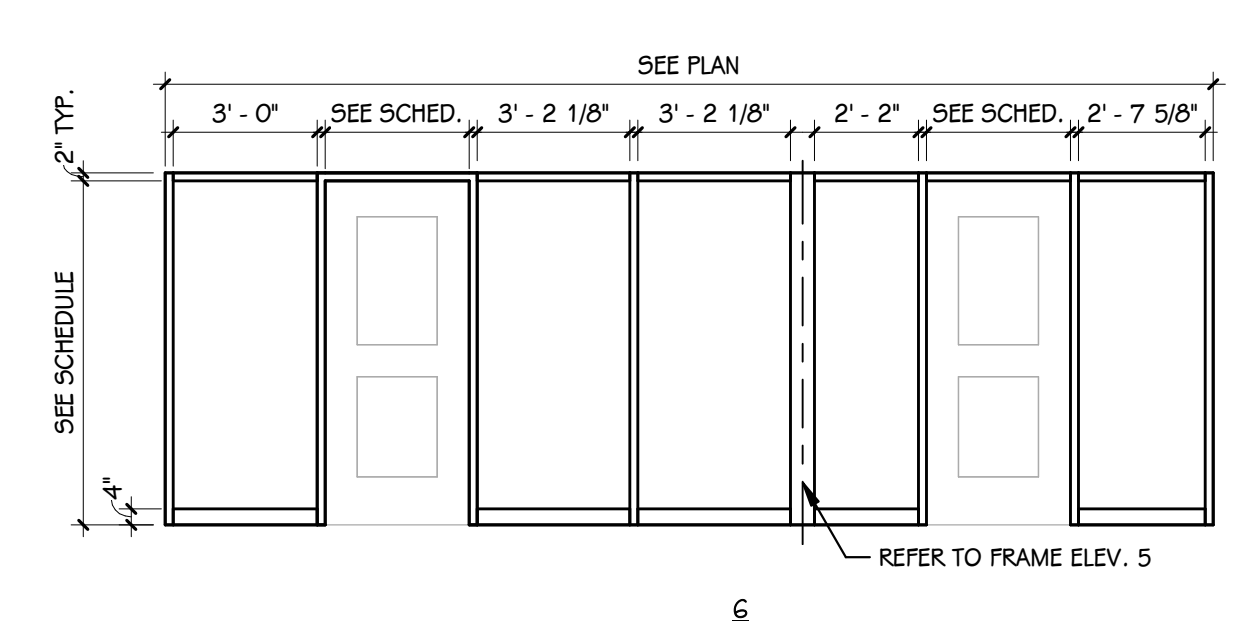
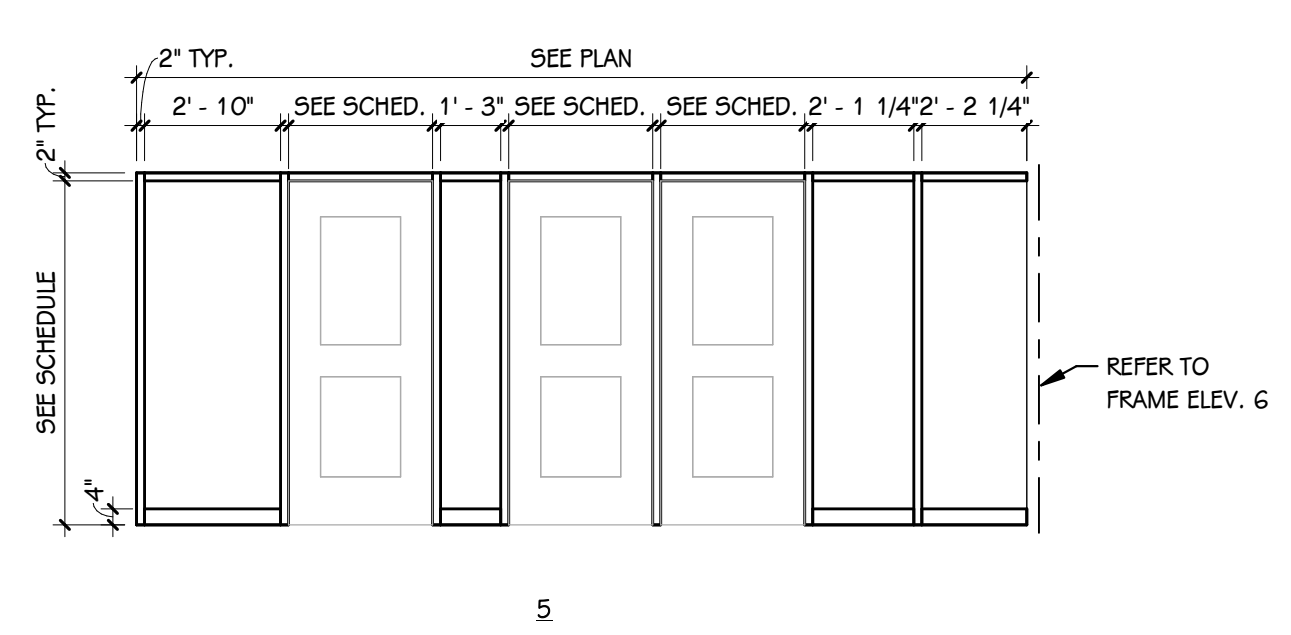


**FRAME ELEVATION KEY**

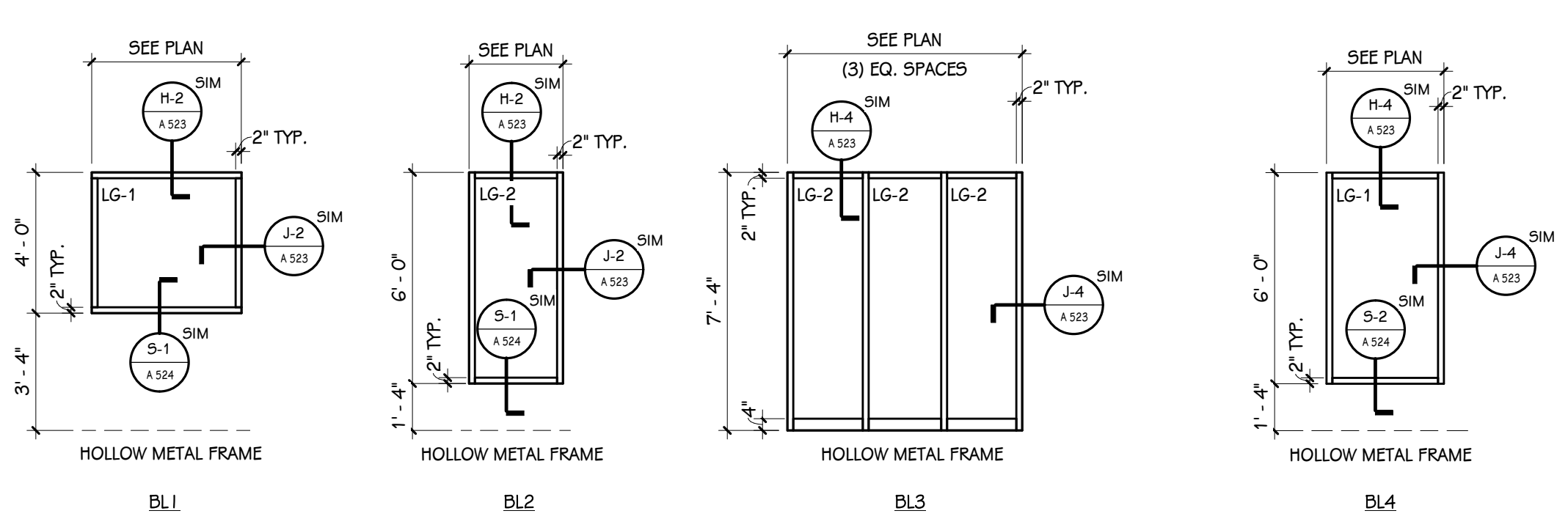
IG-1:	INSULATED GLAZING
IG-2:	INSULATED LAMINATED GLAZING
IG-3:	INSULATED "FROSTED" GLAZING
SG-1:	INTERIOR SECURITY RESISTANT GLAZING
SG-2:	EXTERIOR INSULATED SECURITY RESISTANT GLAZING
SG-3:	SECURITY BULLET RESISTANT GLAZING
FFSG-1:	INTERIOR FIRE-PROTECTION SECURITY RESISTANT GLAZING
FFSG-2:	NOT USED
FFSG-3:	FIRE-PROTECTION SECURITY BULLET RESISTANT GLAZING
FFG-1:	FIRE-PROTECTION GLAZING
FRG-1:	FIRE-RESISTANCE GLAZING
GL-1 / LG-1:	SAFETY GLAZING
LG-2:	SAFETY SOUND GLAZING

**GENERAL NOTE**

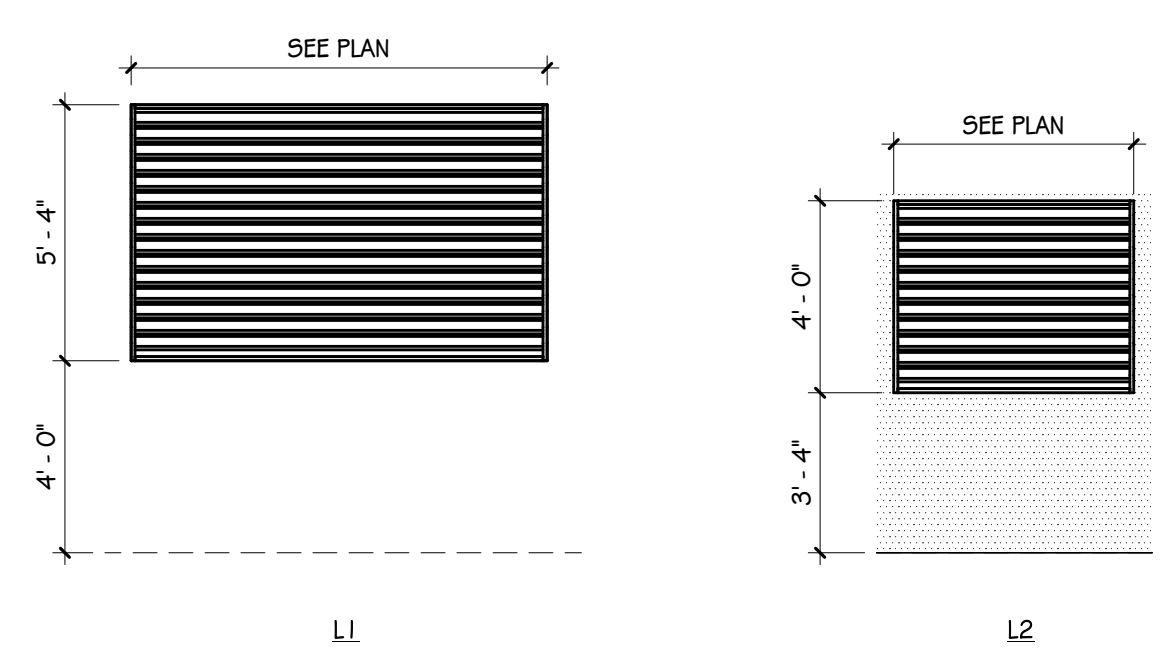
- HARDWARE GENERAL NOTE: FIXED OR KEYED REMOVABLE MULLION REFER TO HARDWARE SET
- FINISH ABBREVIATIONS: DB, ANOD. - DARK BRONZE ANOIZED



**FRAME ELEVATIONS**



**BORROWED LITE ELEVATIONS**



**LOUVER ELEVATIONS**

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

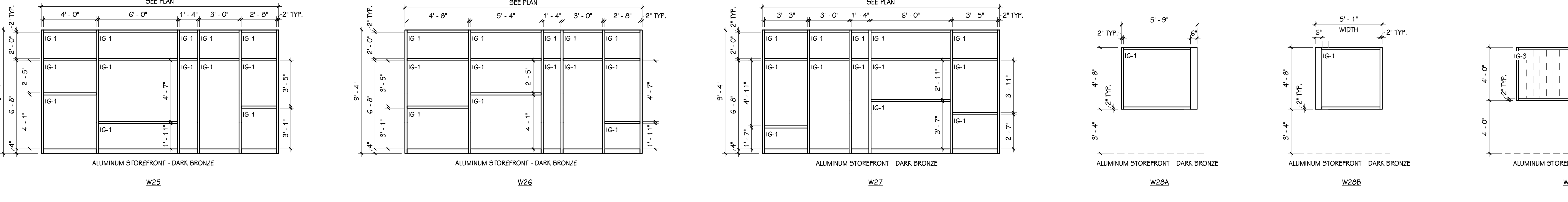
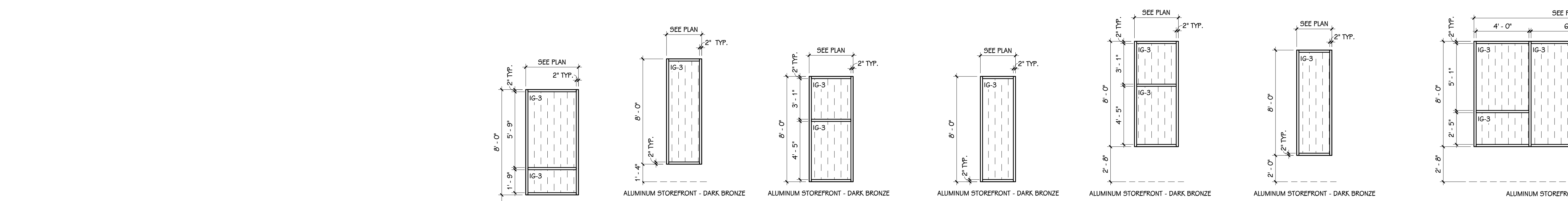
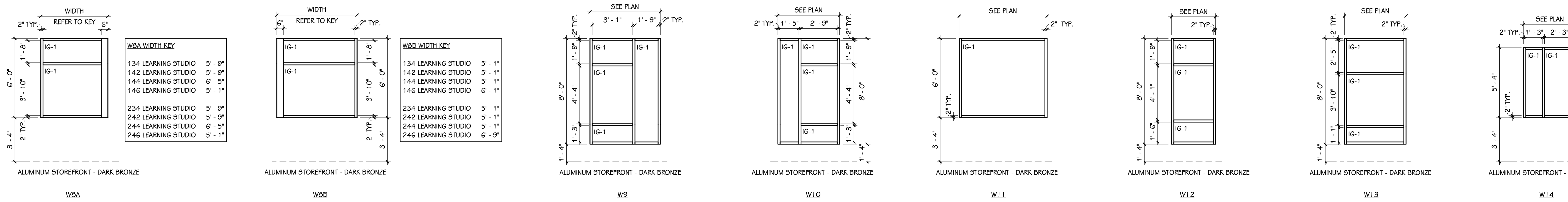
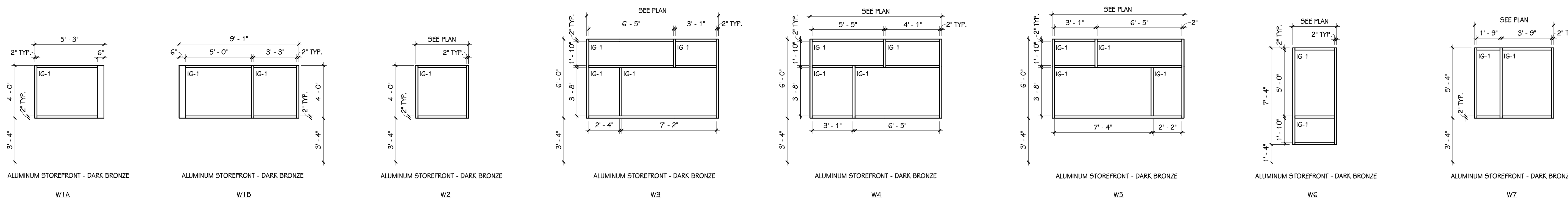
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

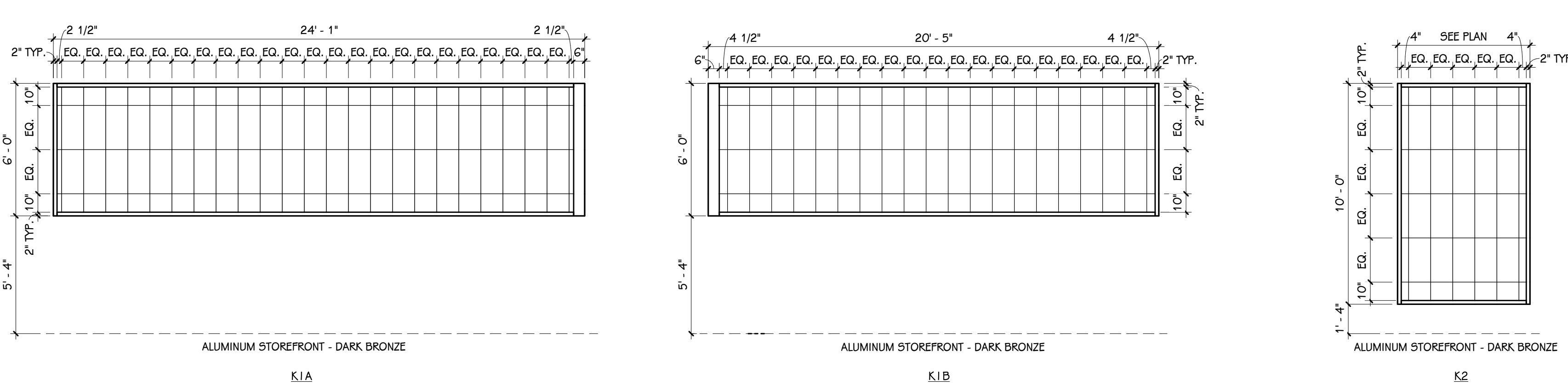
SHEET TITLE  
DOOR TYPES AND FRAME ELEVATIONS

DATE  
JUNE 30, 2023

SHEET NUMBER  
A 521  
21-237.20



**WINDOW ELEVATIONS**



**FIBERGLASS SANDWICH-PANEL ASSEMBLY ELEVATIONS**

**FRAME ELEVATION KEY**

- IG-1: INSULATED GLAZING
- IG-2: INSULATED LAMINATED GLAZING
- IG-3: INSULATED "FROSTED" GLAZING
- SG-1: INTERIOR SECURITY RESISTANT GLAZING
- SG-2: EXTERIOR INSULATED SECURITY RESISTANT GLAZING
- SG-3: SECURITY BULLET RESISTANT GLAZING
- FFSG-1: INTERIOR FIRE-PROTECTION SECURITY RESISTANT GLAZING
- FFSG-2: NOT USED
- FFSG-3: FIRE-PROTECTION SECURITY BULLET RESISTANT GLAZING
- FRG-1: FIRE-RESISTANCE GLAZING
- GL-1 / LG-1: SAFETY GLAZING
- LG-2: SAFETY SOUND GLAZING

**GENERAL NOTE**

1. HARDWARE GENERAL NOTE: FIXED OR KEYED REMOVEABLE MULLION REFER TO HARDWARE SET
2. FINISH ABBREVIATIONS: DB, ANOD. - DARK BRONZE ANODIZED

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
FRAME ELEVATIONS

SHEET NUMBER  
**A 522**  
21-237.20

DATE  
JUNE 30, 2023

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

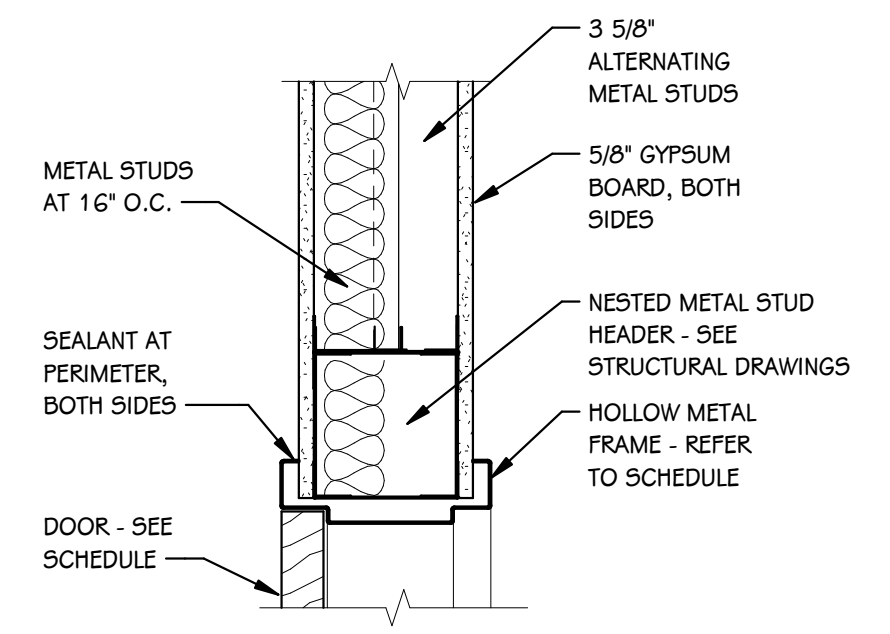
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

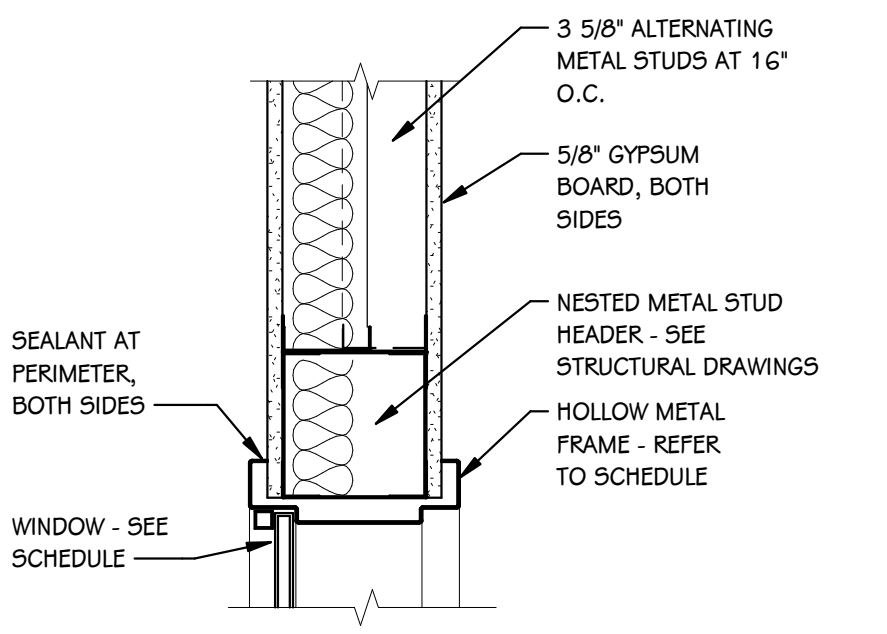
SHEET TITLE  
HEAD AND JAMB DETAILS

DATE  
JUNE 30, 2023

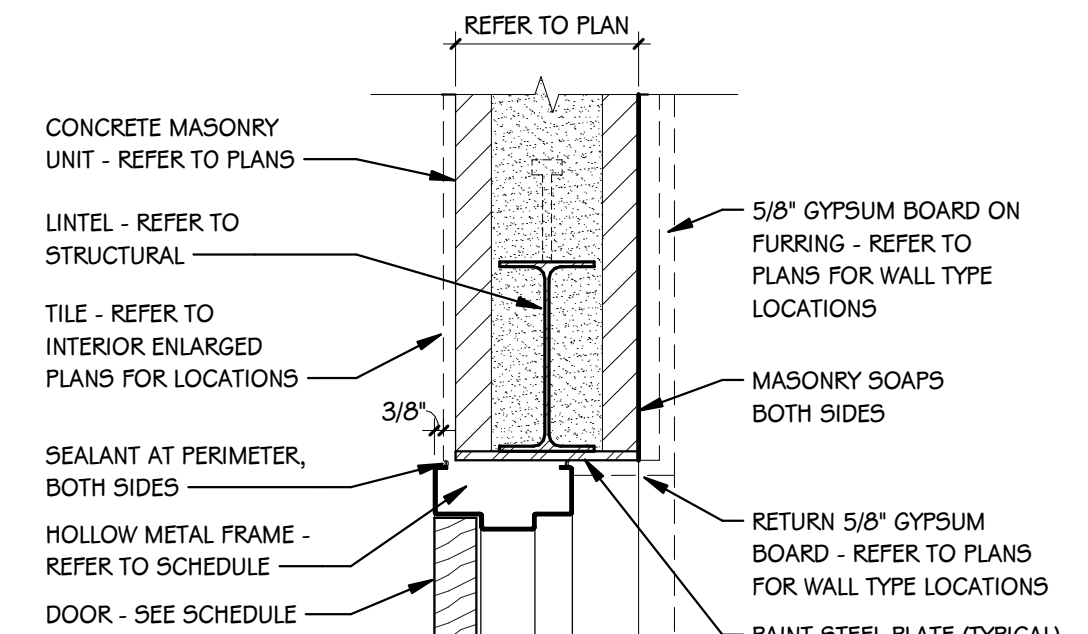
SHEET NUMBER  
A 523  
21-237.20



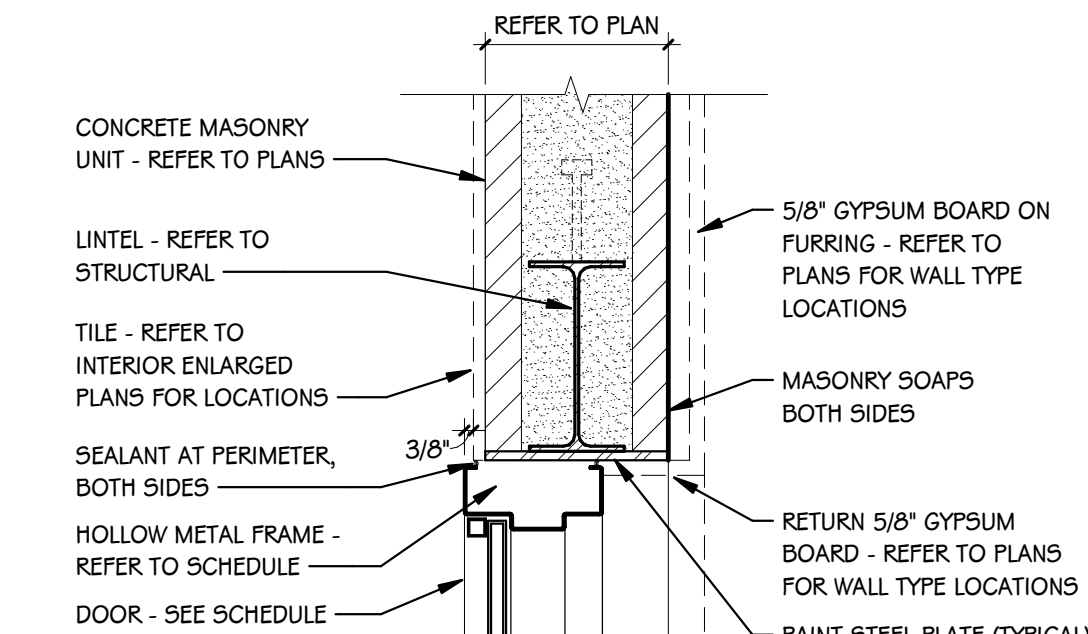
H-1  
1 1/2" = 1'-0"



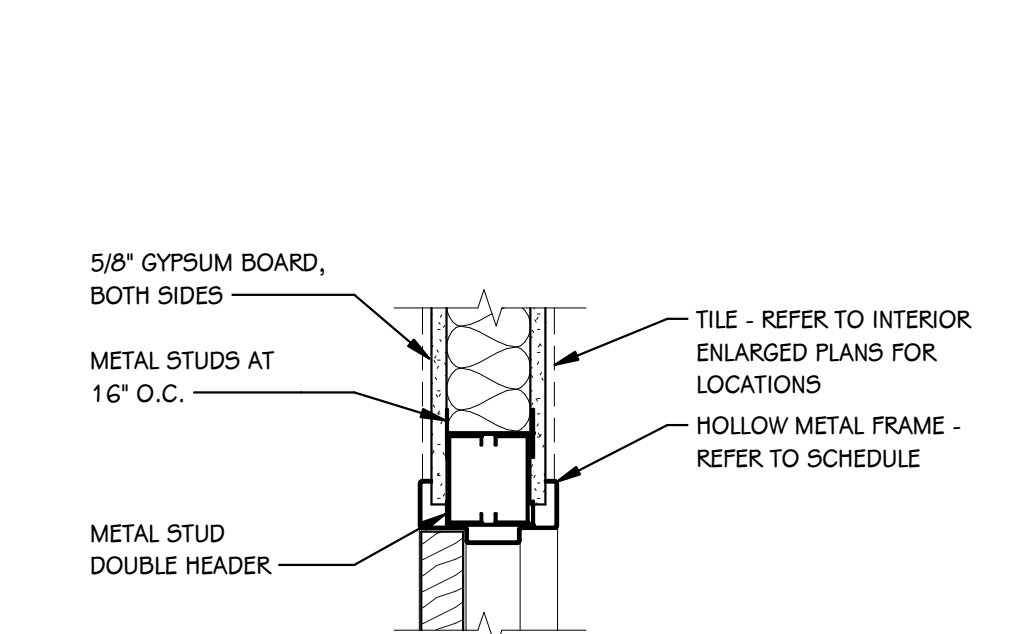
H-2  
1 1/2" = 1'-0"



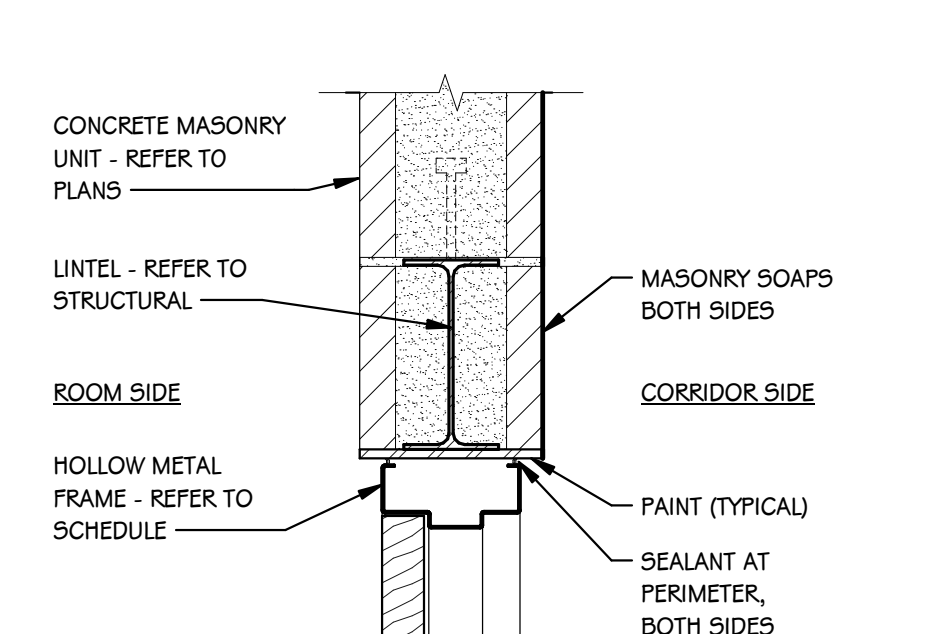
H-3  
1 1/2" = 1'-0"



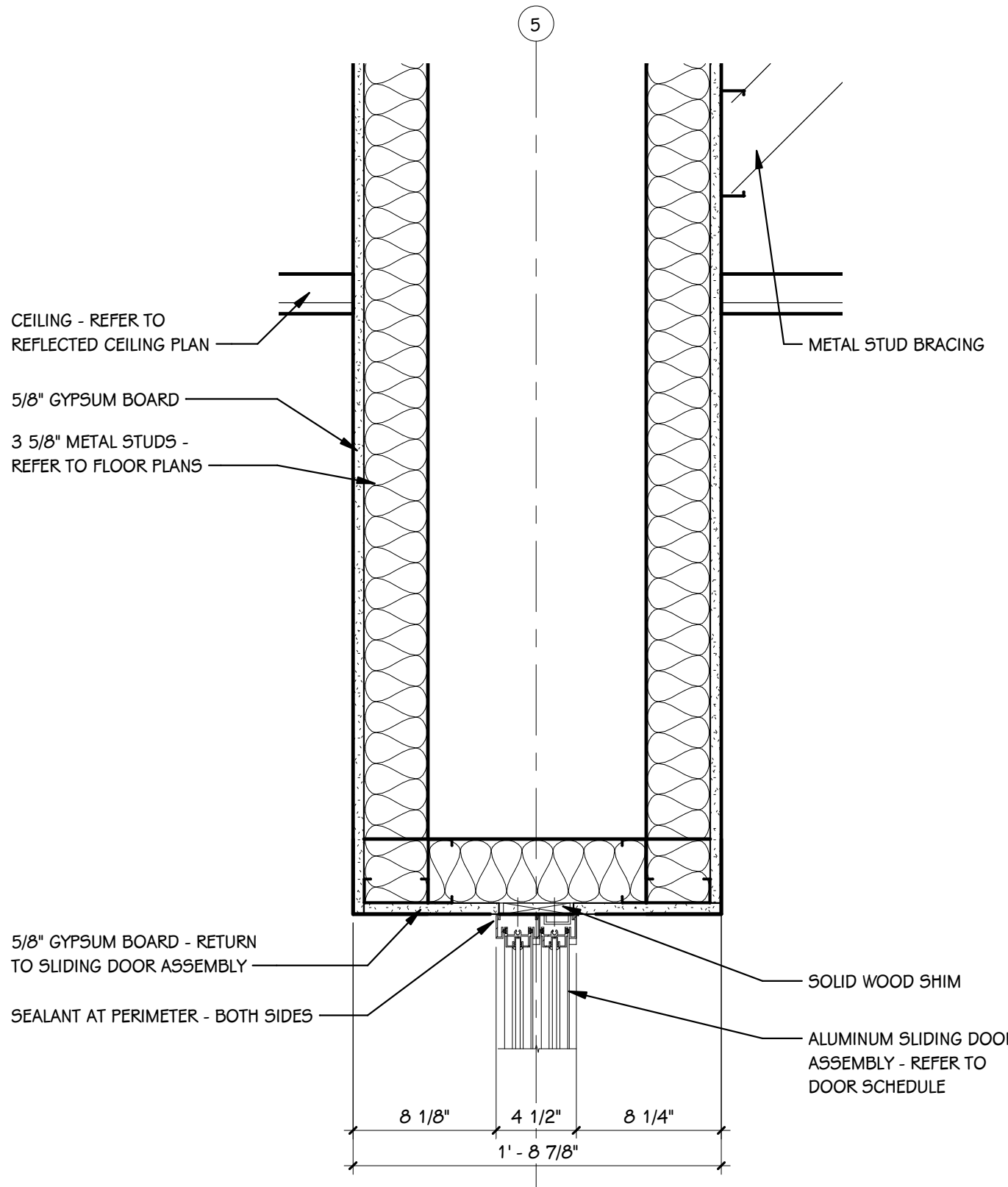
H-4  
1 1/2" = 1'-0"



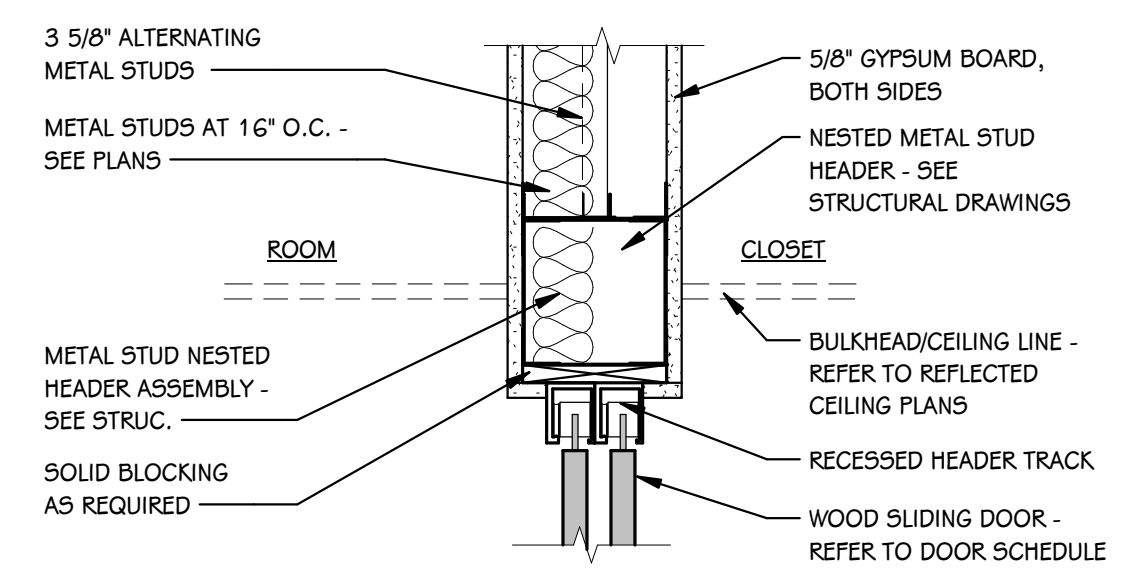
H-5  
1 1/2" = 1'-0"



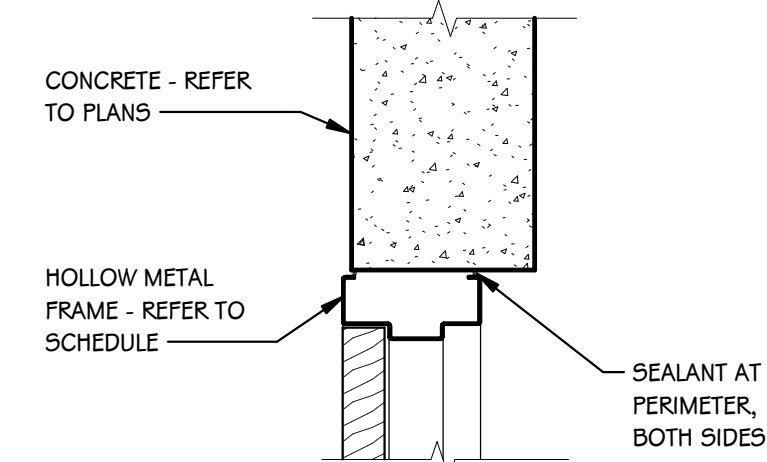
H-6  
1 1/2" = 1'-0"



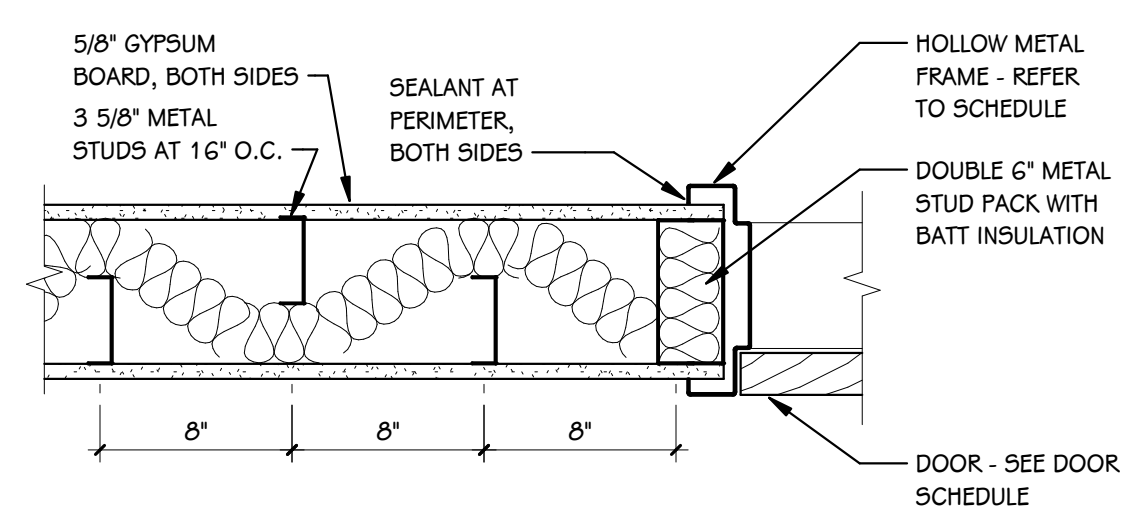
H-8  
1 1/2" = 1'-0"



H-9  
1 1/2" = 1'-0"

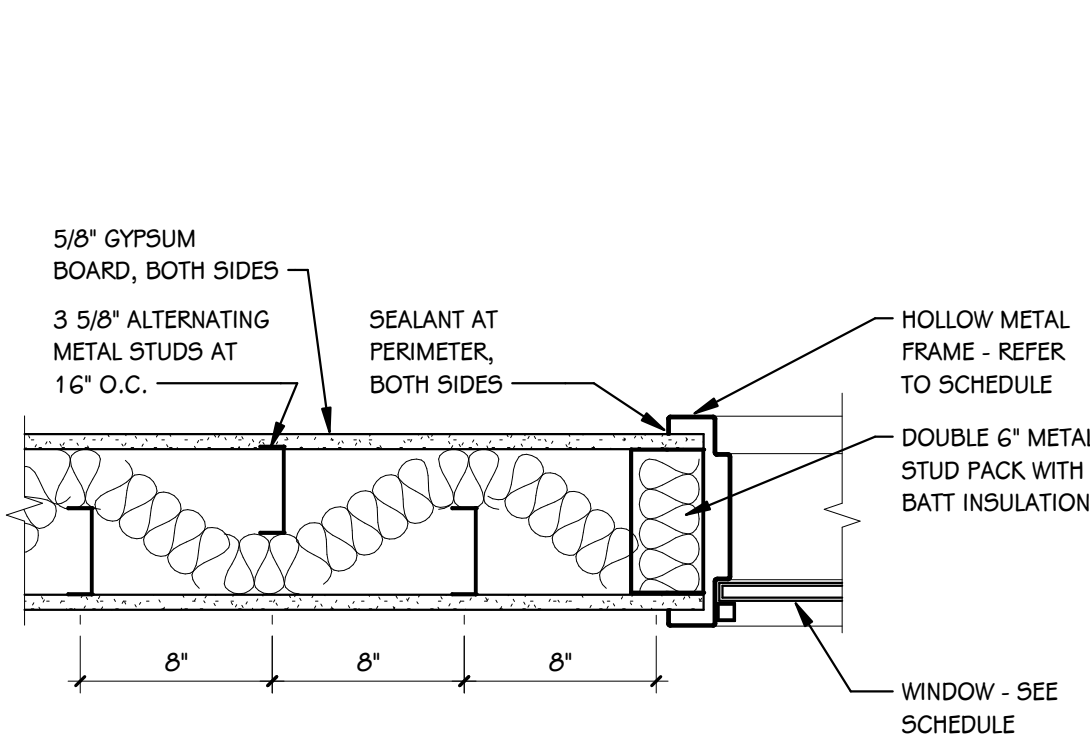


H-10  
1 1/2" = 1'-0"

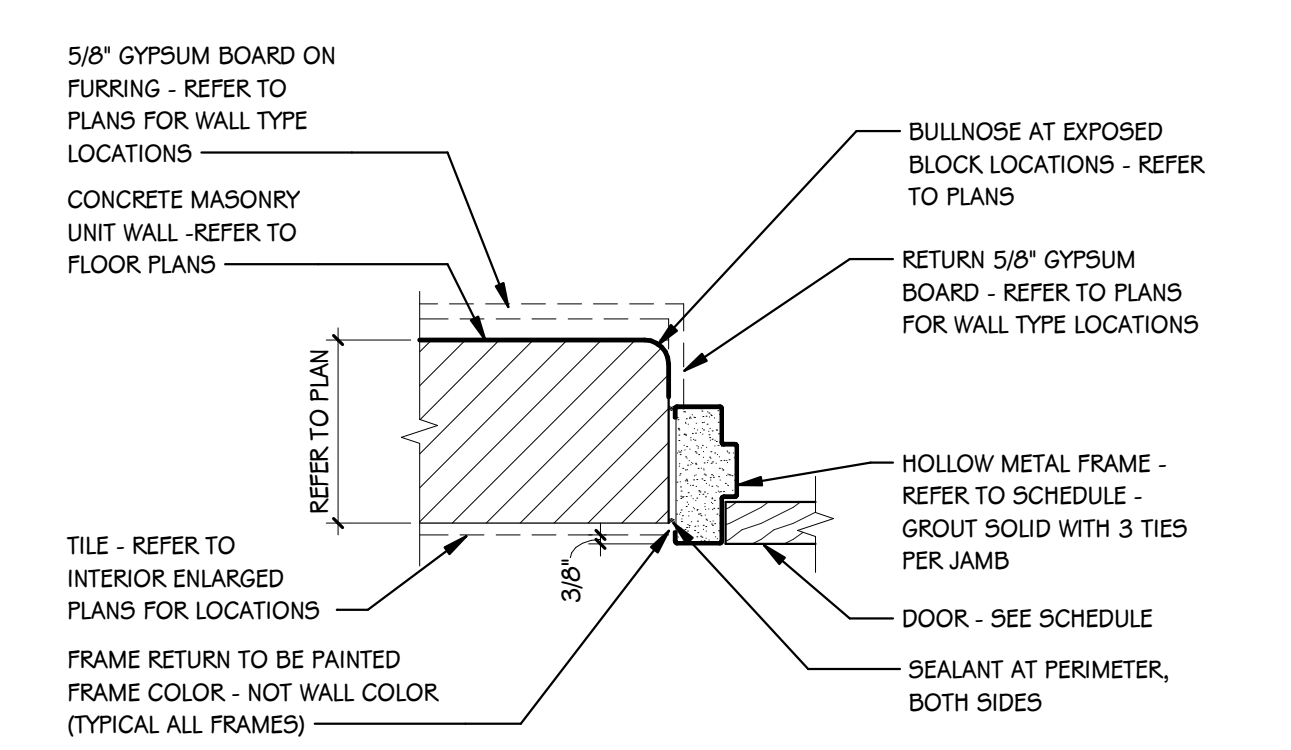


J-1  
1 1/2" = 1'-0"

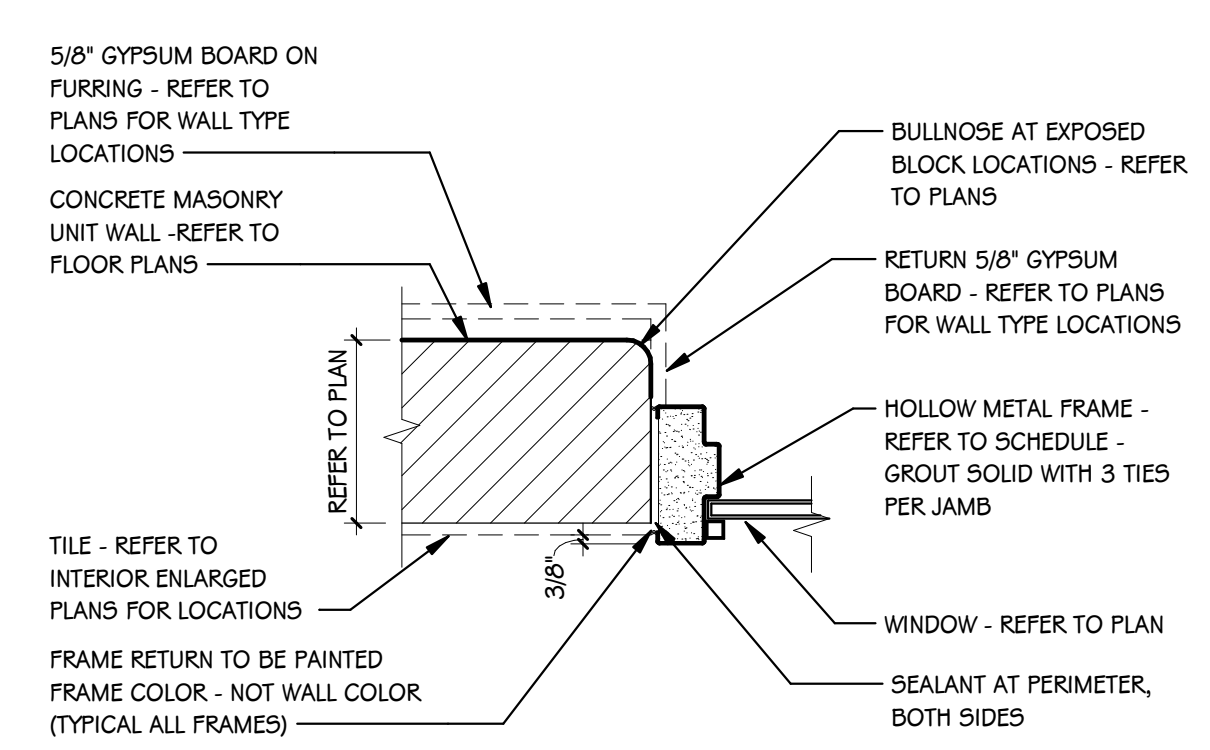
H-7  
1 1/2" = 1'-0"



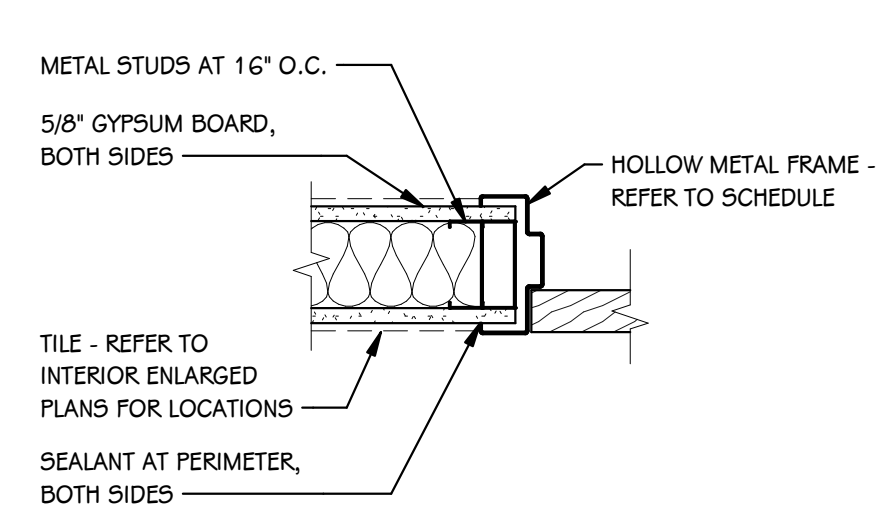
J-2  
1 1/2" = 1'-0"



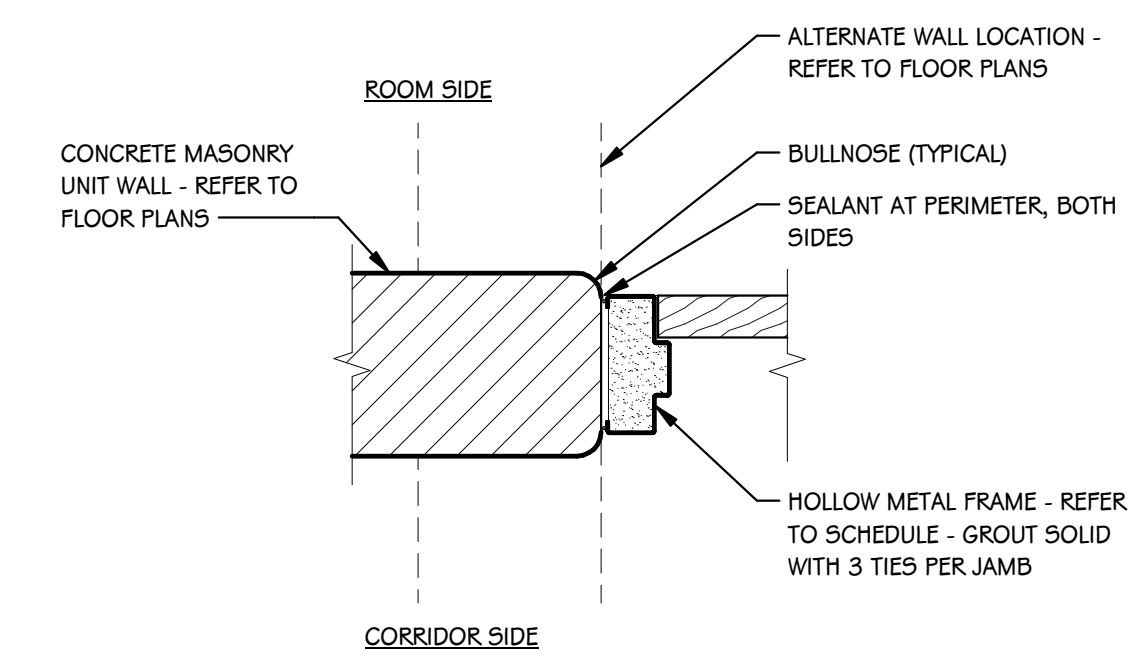
J-3  
1 1/2" = 1'-0"



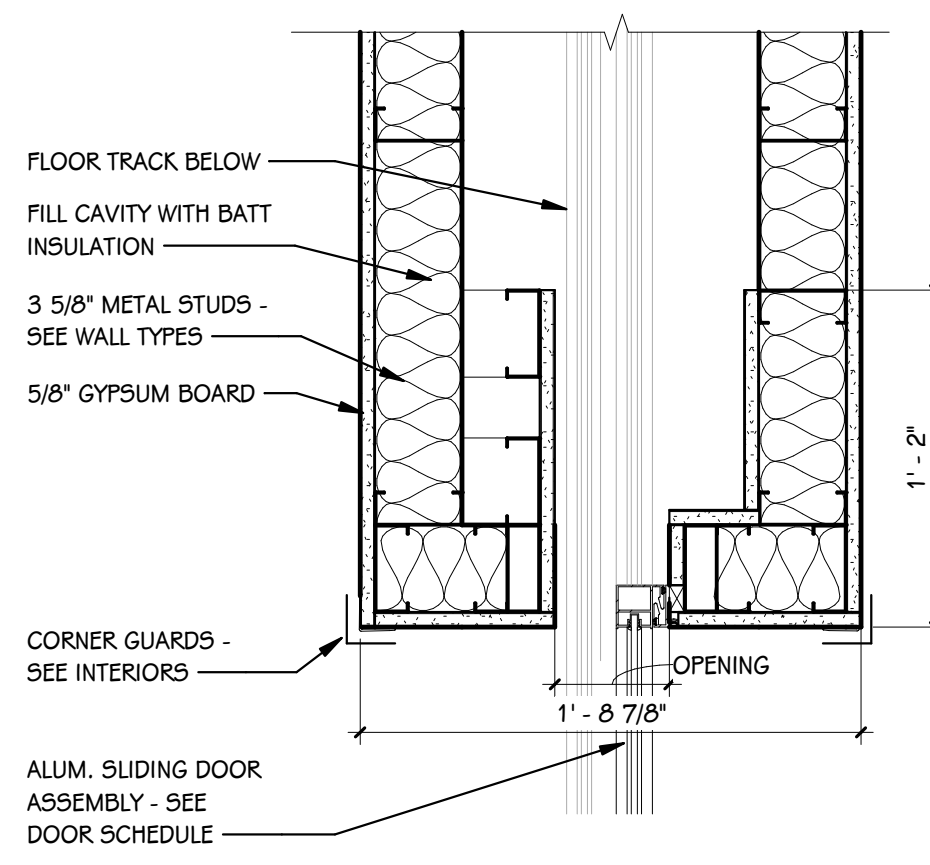
J-4  
1 1/2" = 1'-0"



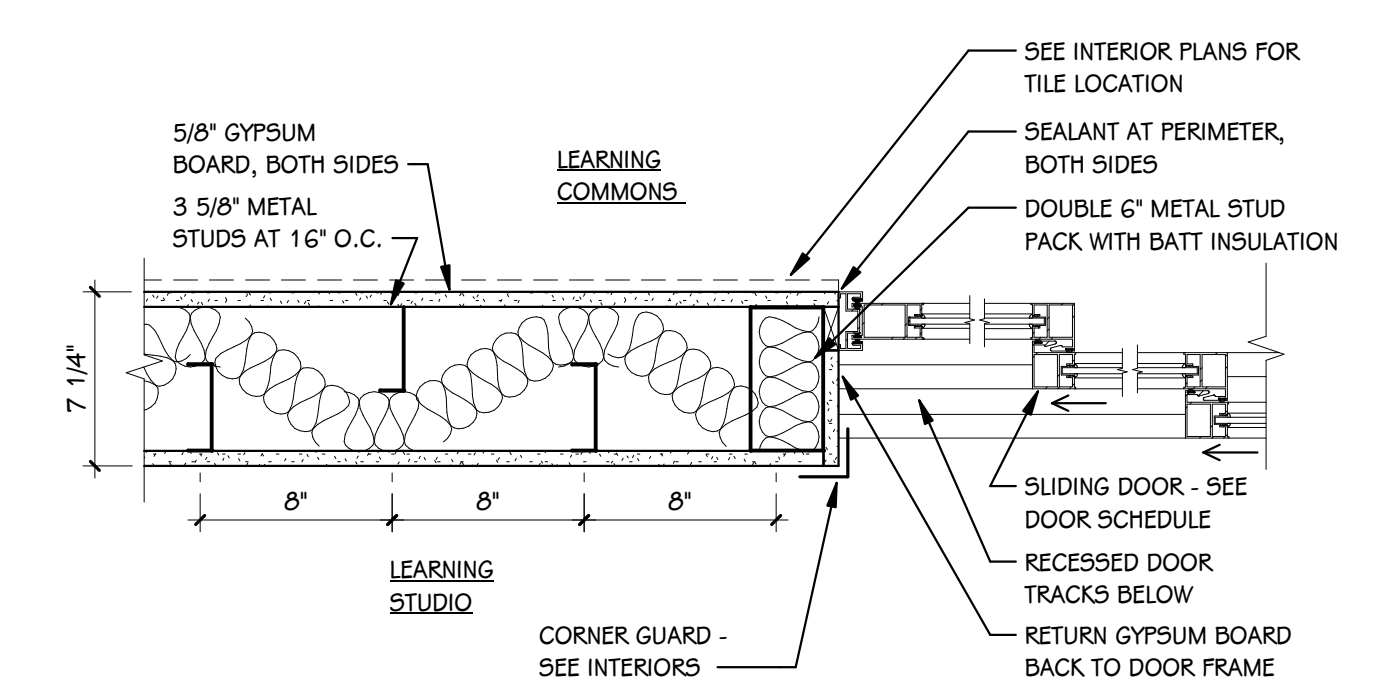
J-5  
1 1/2" = 1'-0"



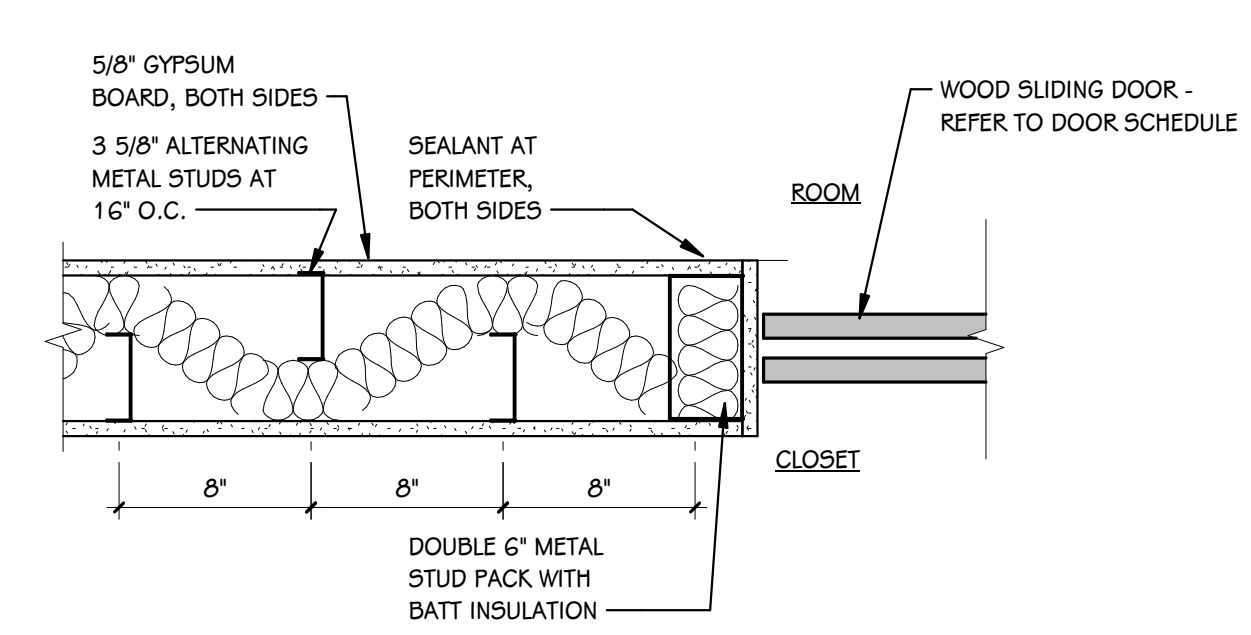
J-6  
1 1/2" = 1'-0"



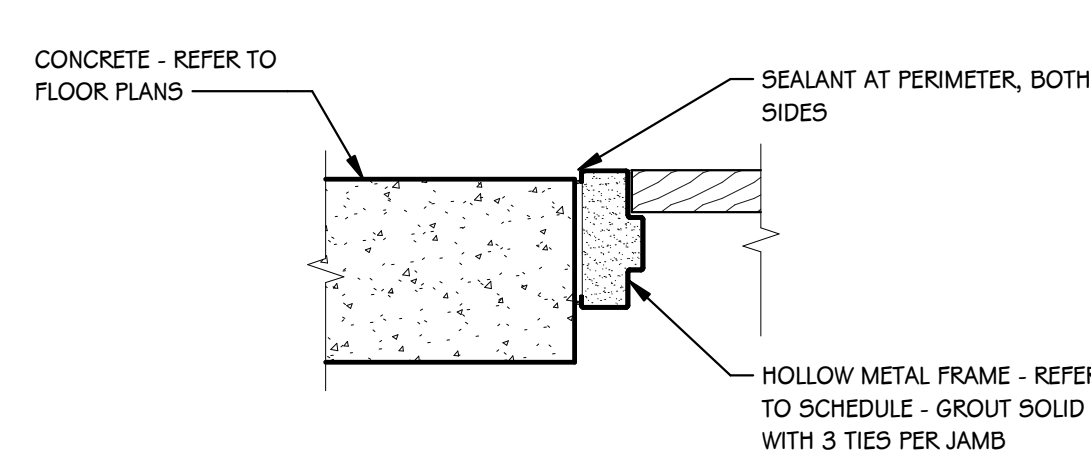
J-7  
1 1/2" = 1'-0"



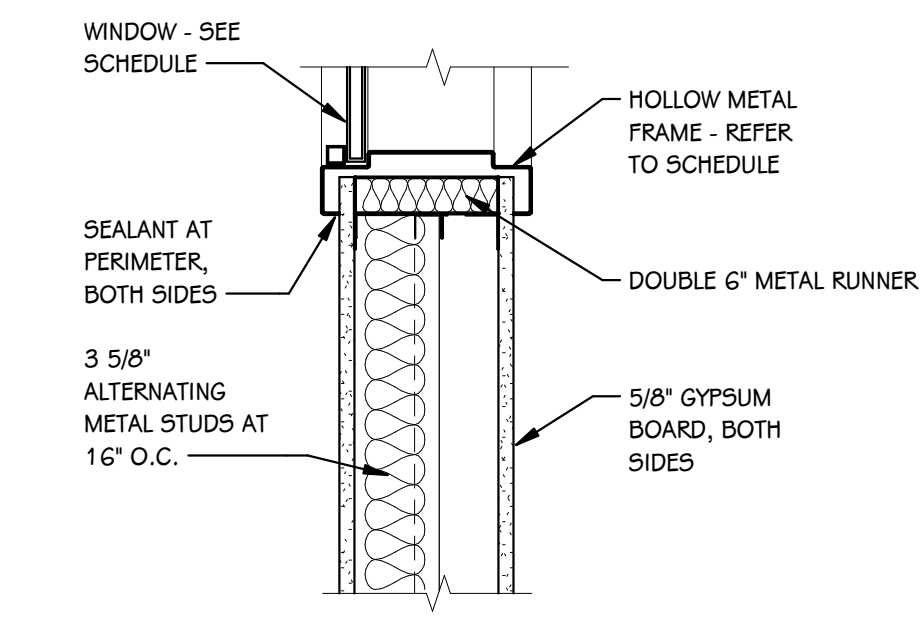
J-8  
1 1/2" = 1'-0"



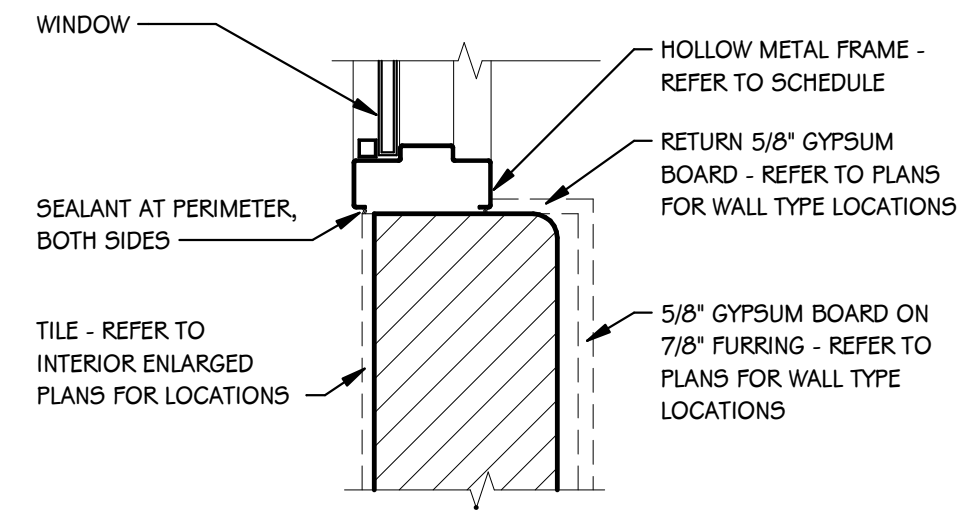
J-9  
1 1/2" = 1'-0"



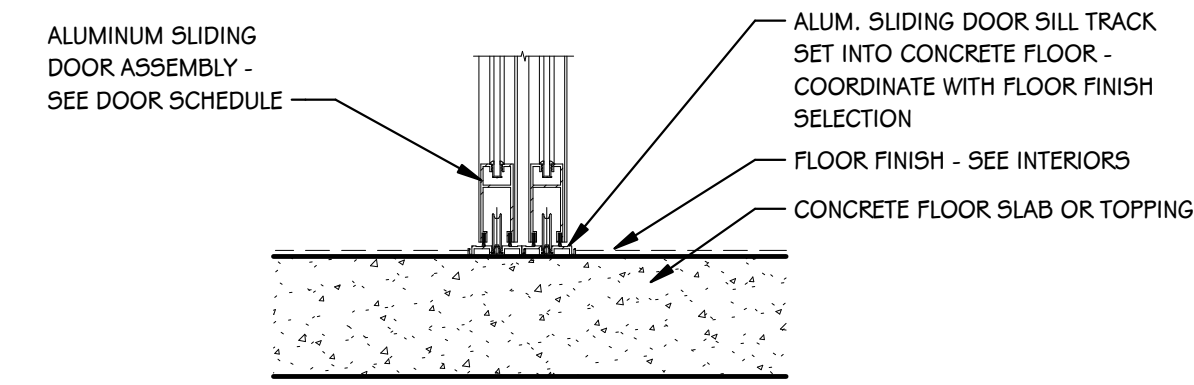
J-10  
1 1/2" = 1'-0"



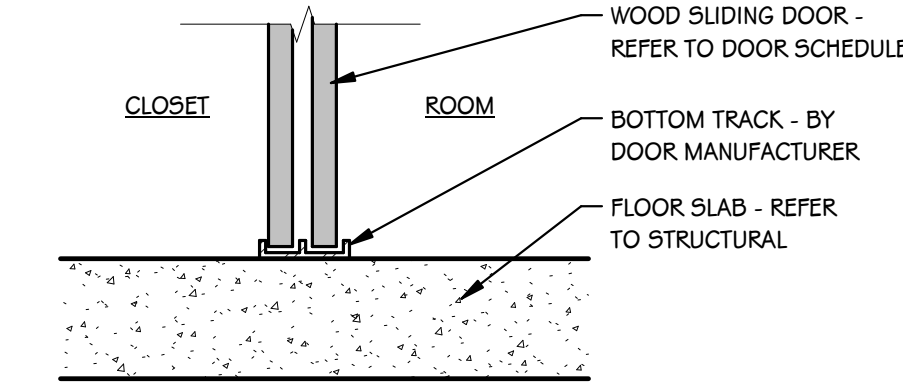
9-1 SILL DETAIL (WINDOW)  
A 524 1 1/2" = 1'-0"



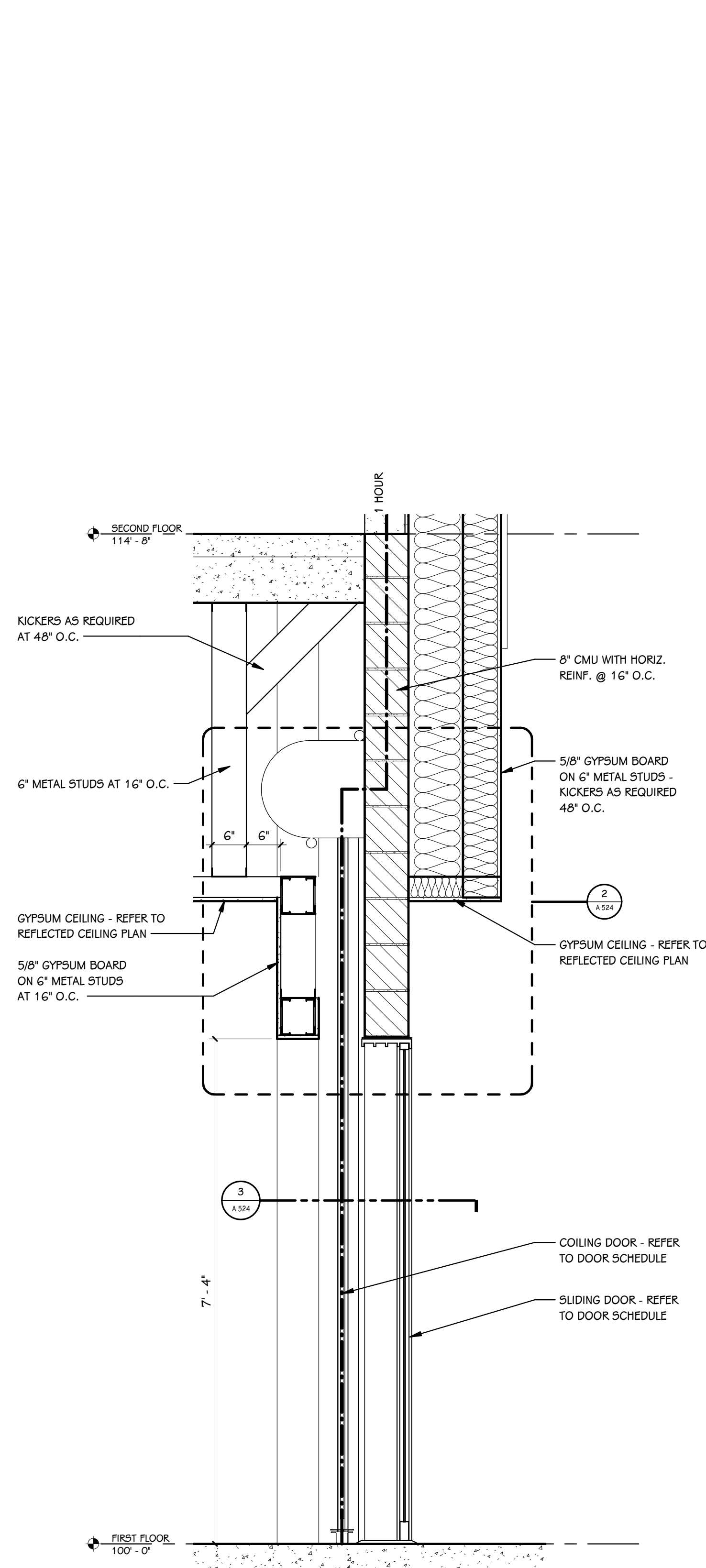
9-2 SILL DETAIL (WINDOW)  
A 524 1 1/2" = 1'-0"



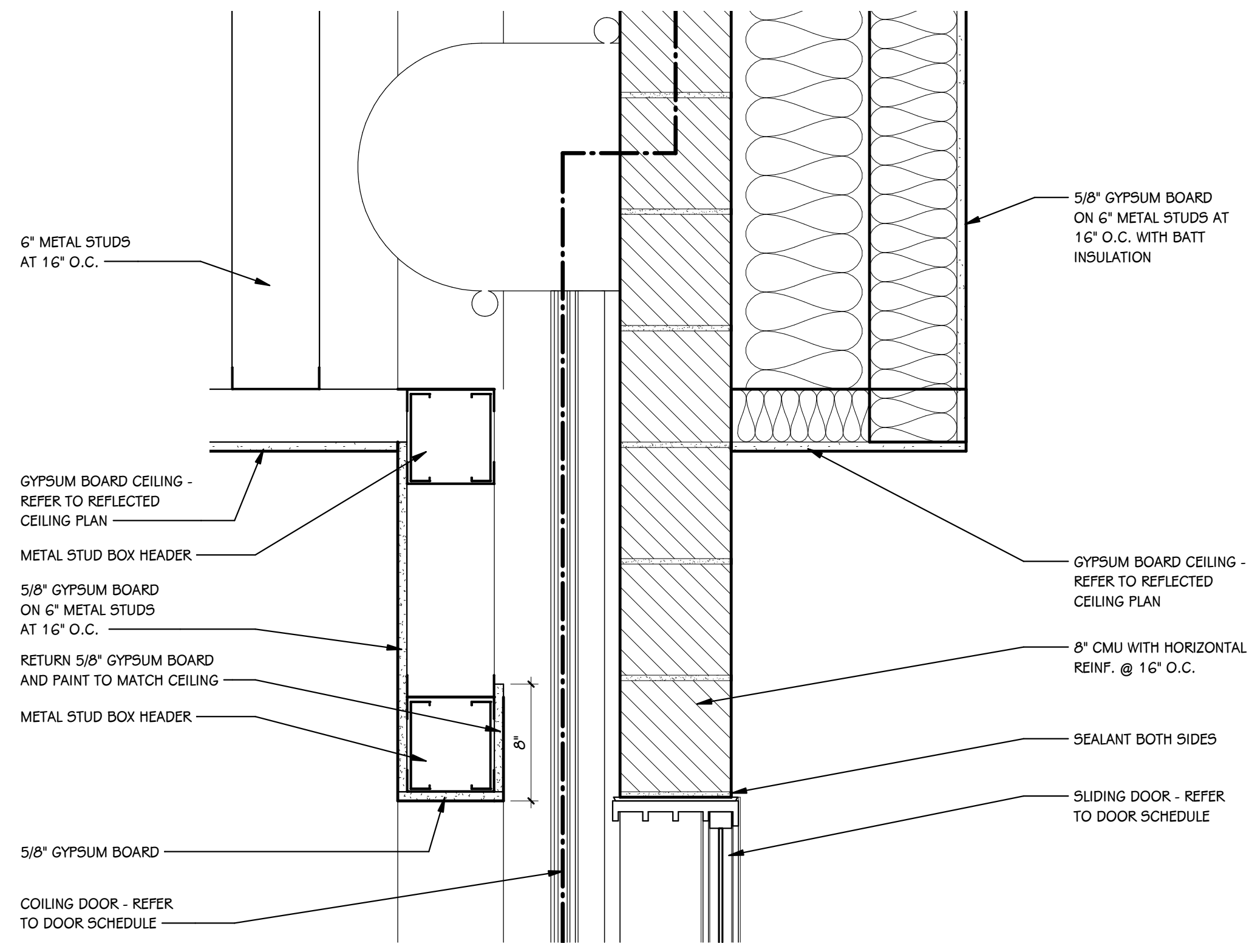
9-3 SILL DETAIL AT SLIDING DOOR  
A 524 1 1/2" = 1'-0"



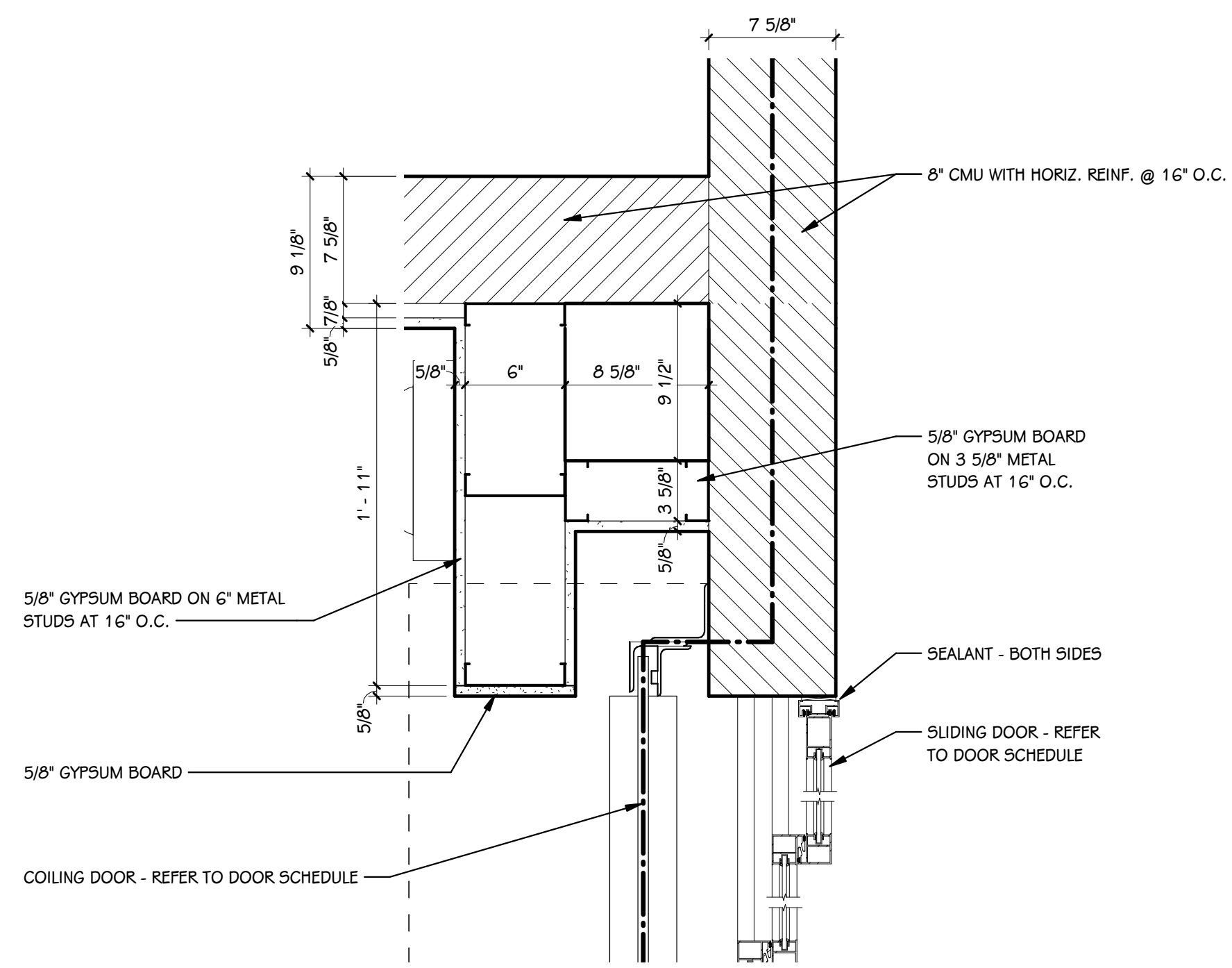
9-4 SILL DETAIL AT SLIDING DOOR  
A 524 1 1/2" = 1'-0"



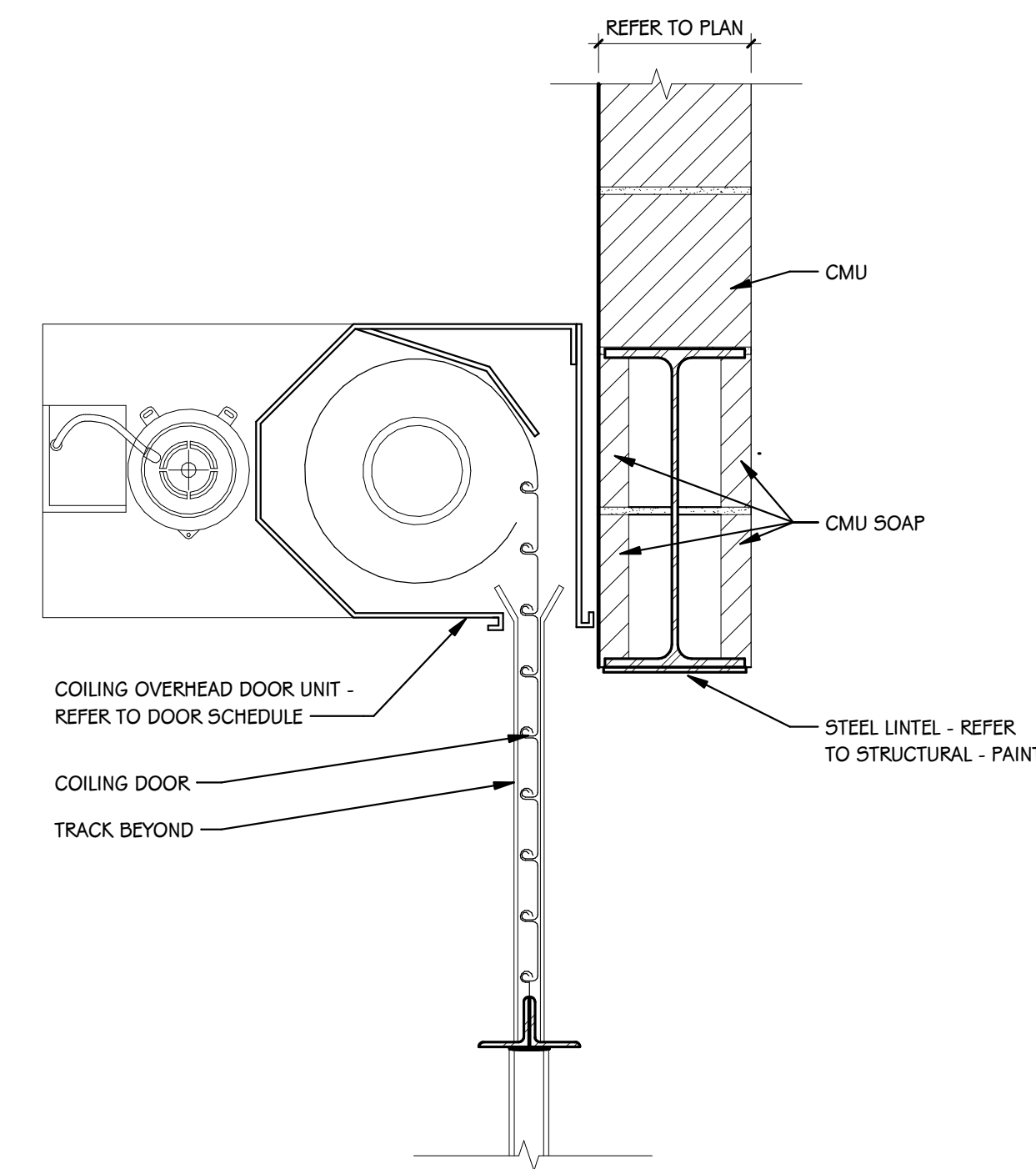
1 WALL SECTION  
A 524 3/4" = 1'-0"



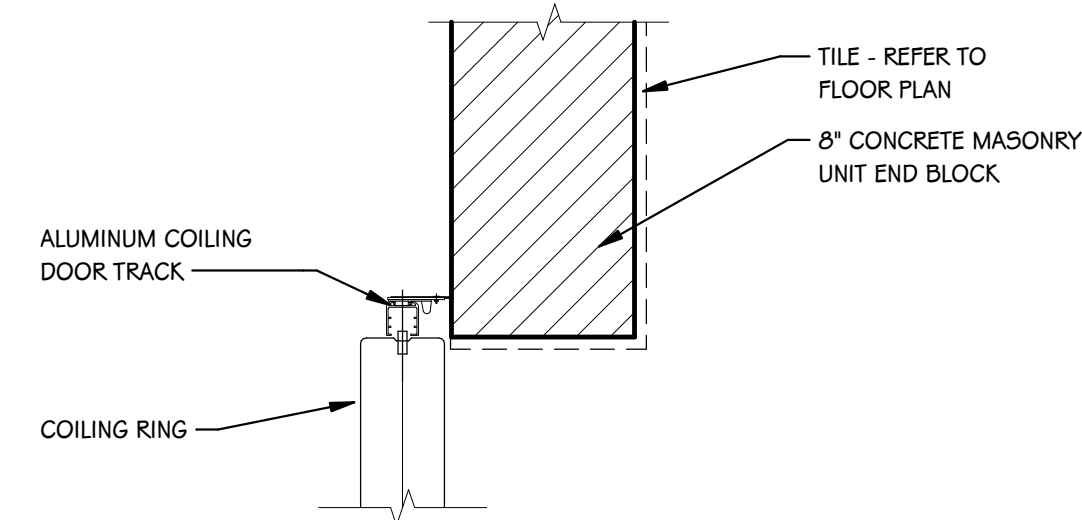
2 WALL DETAIL  
A 524 1 1/2" = 1'-0"



3 JAMB DETAIL  
A 524 1 1/2" = 1'-0"



4 HEAD DETAIL  
A 524 1 1/2" = 1'-0"



5 JAMB DETAIL  
A 524 1 1/2" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

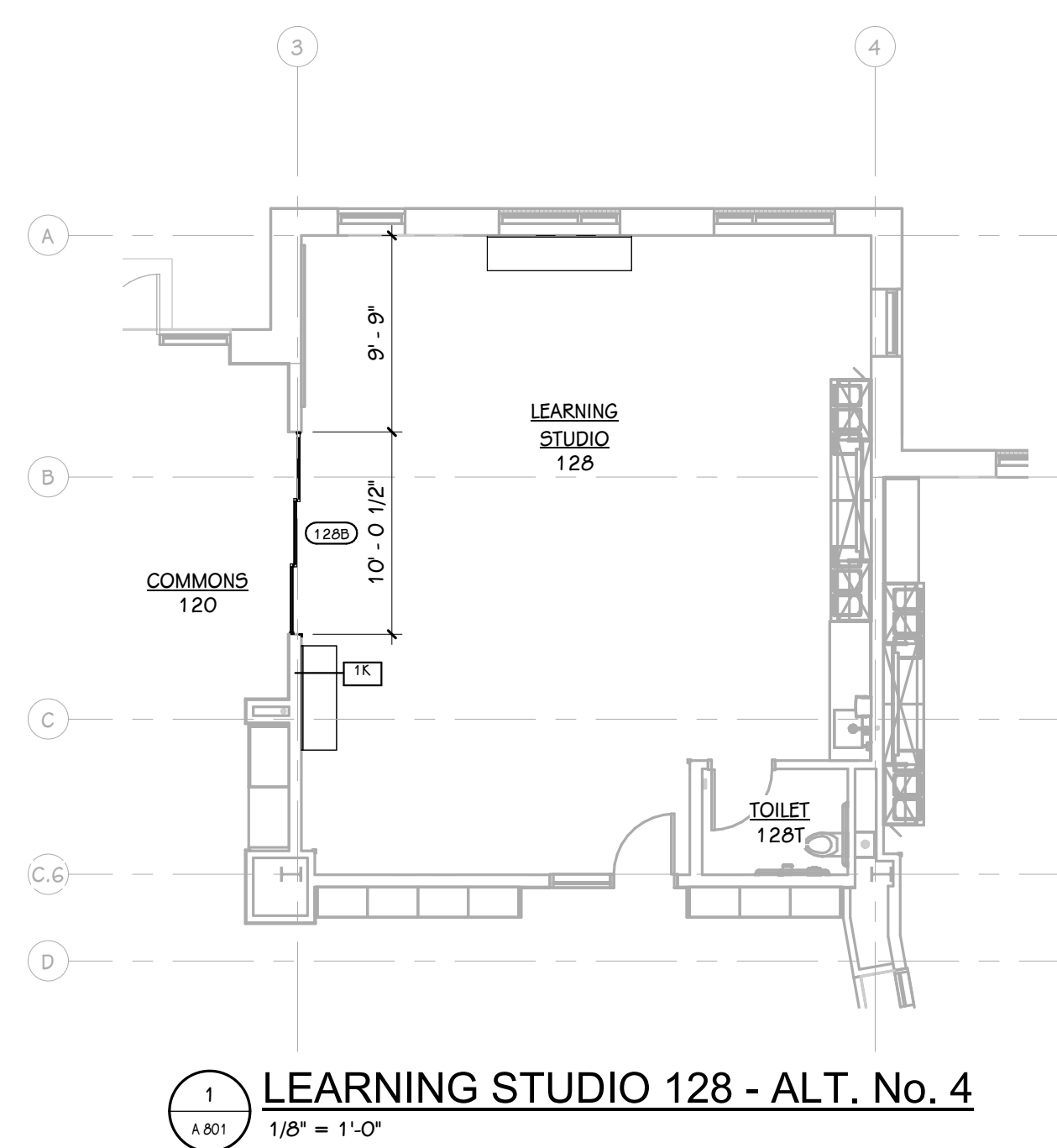
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

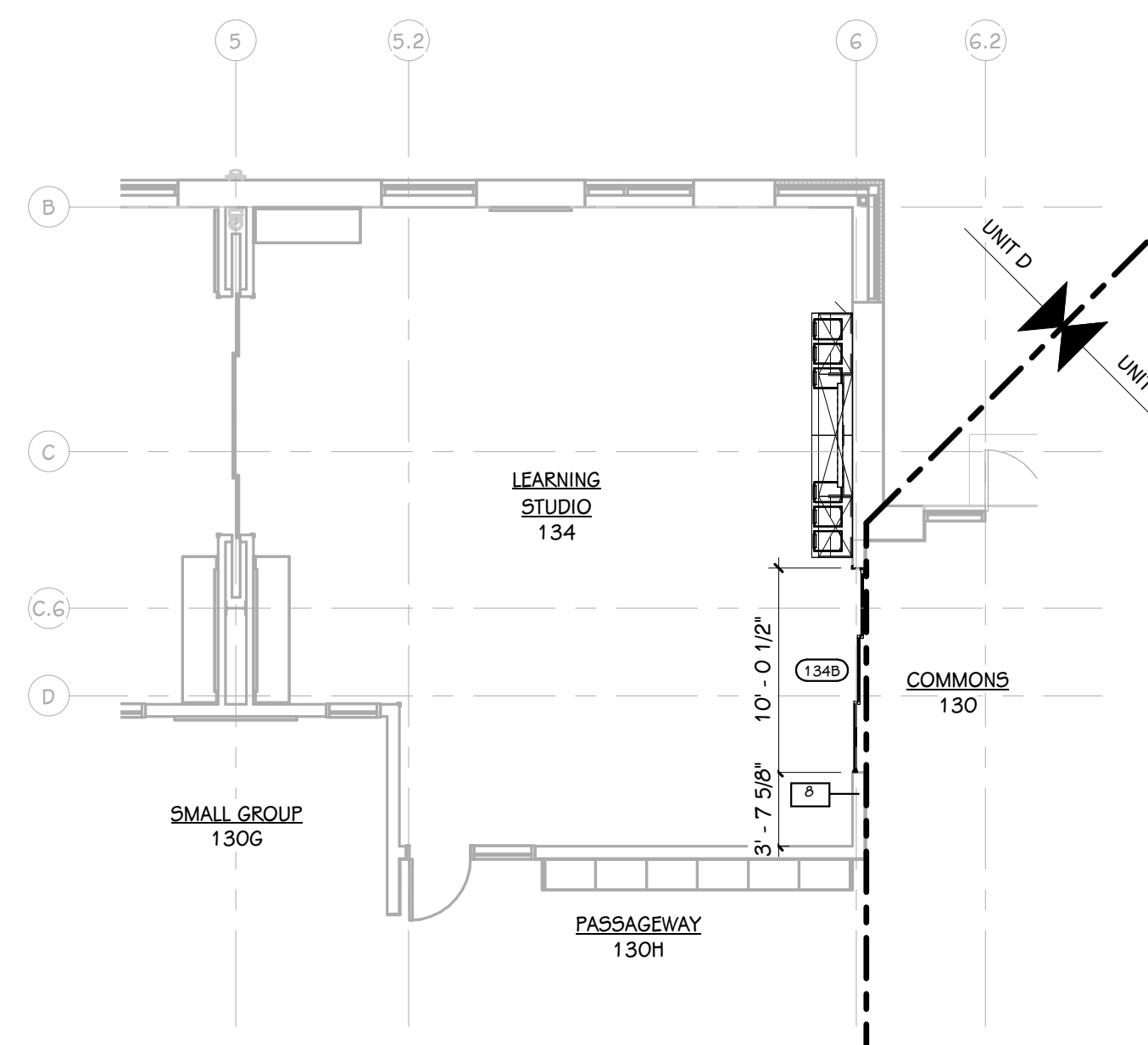
SHEET TITLE  
HEAD AND JAMB DETAILS

DATE  
JUNE 30, 2023

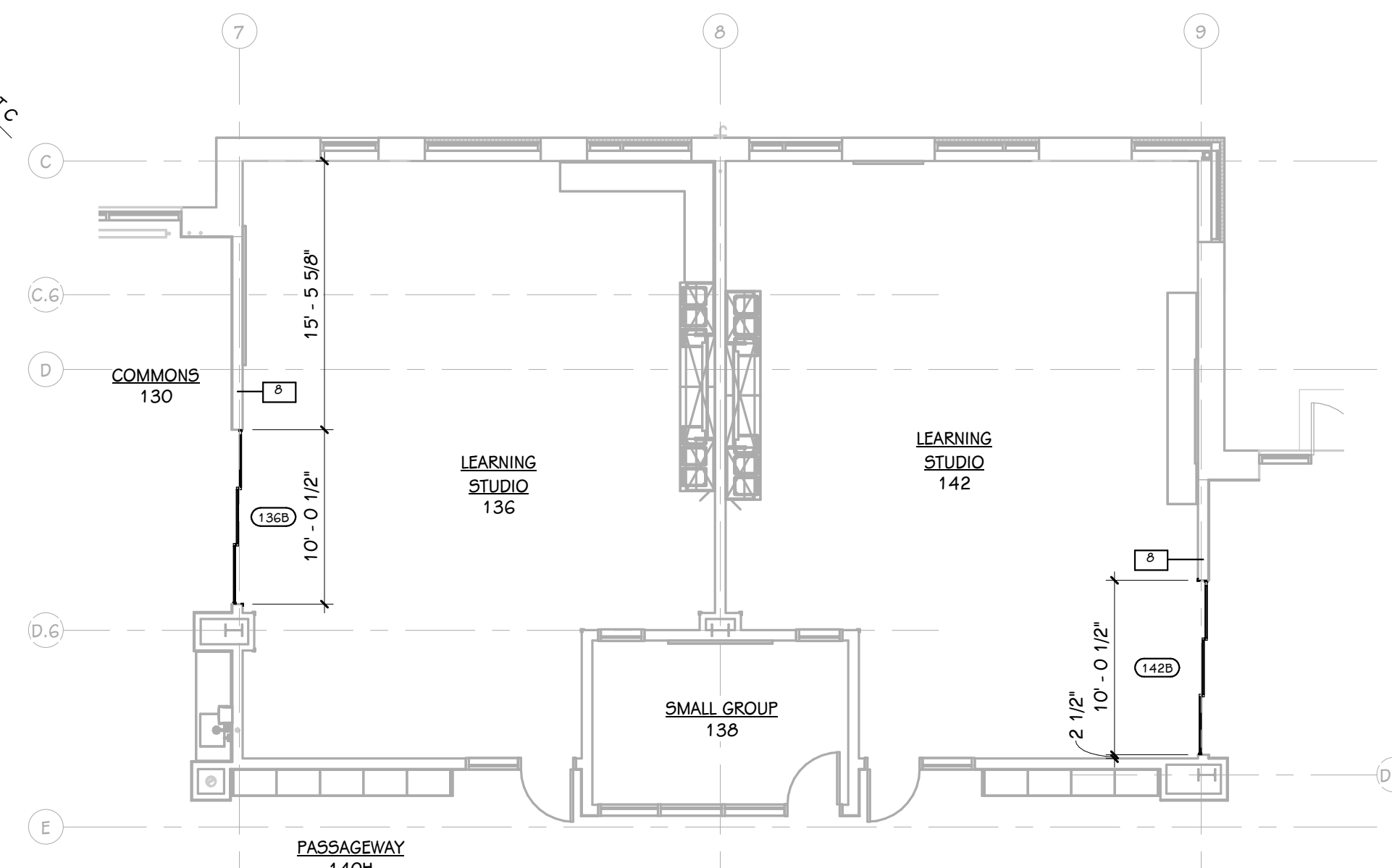
SHEET NUMBER  
A 524  
21-237.20



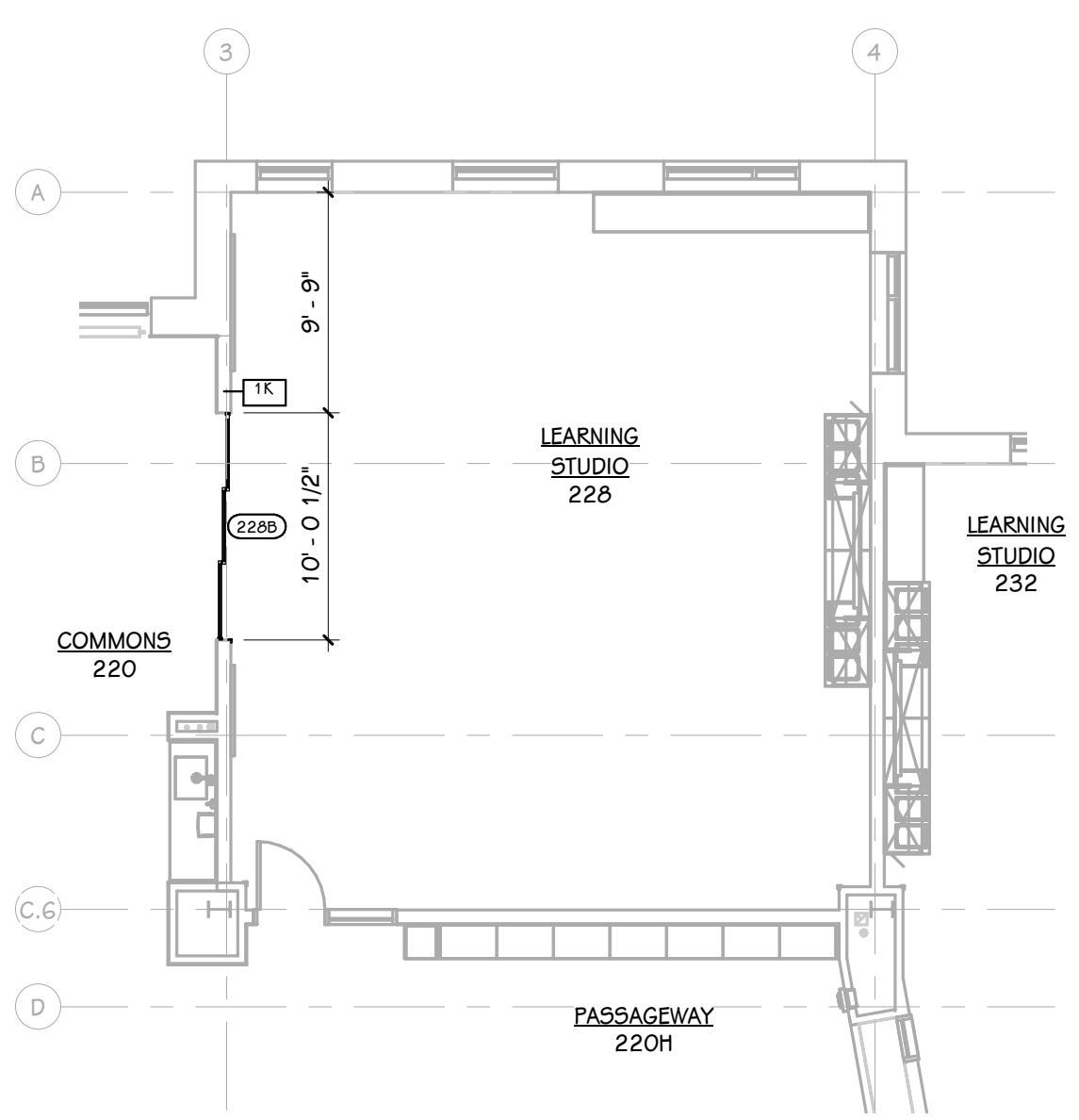
1  
A.801  
1/8" = 1'-0"



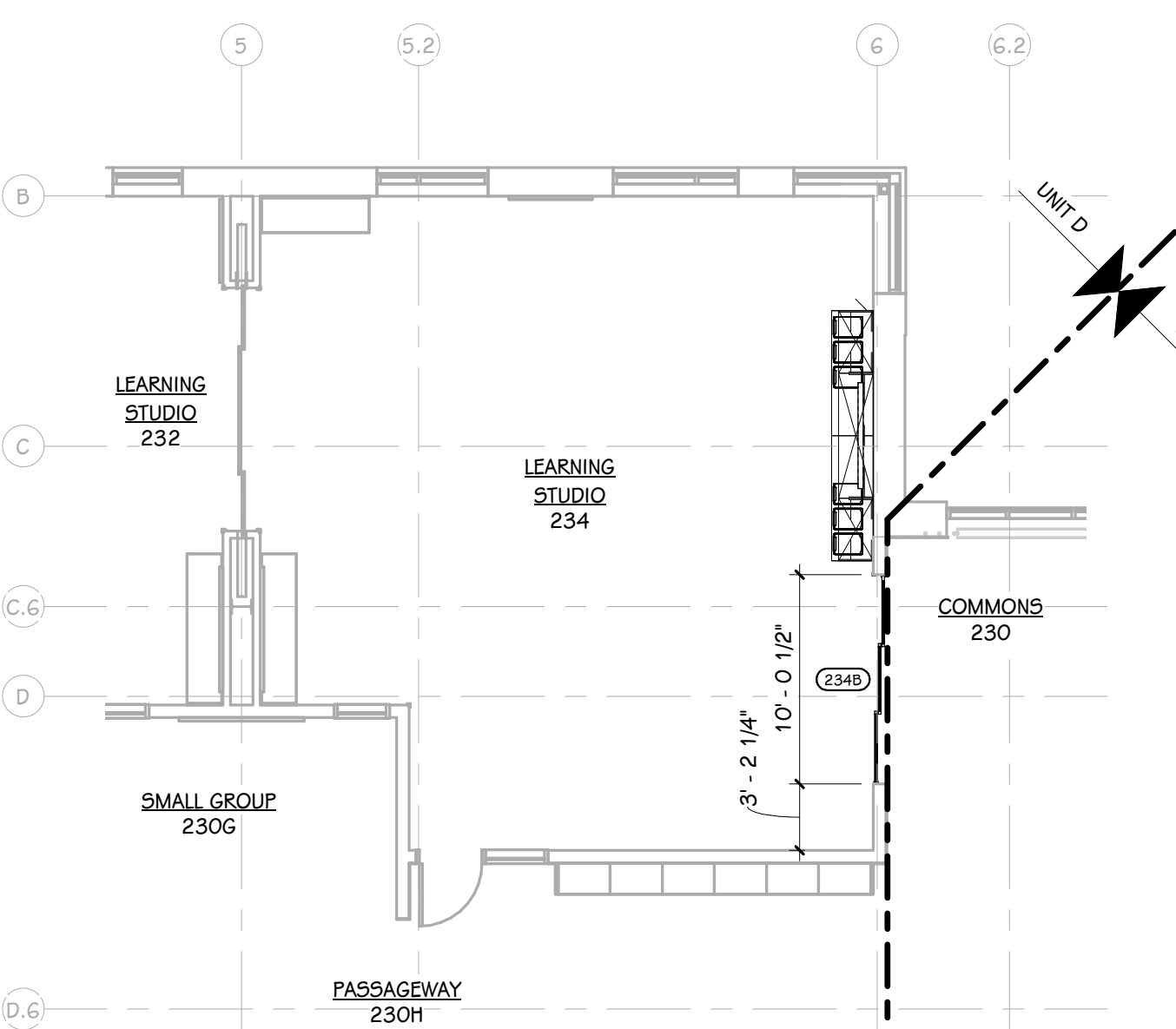
2  
A.801  
1/8" = 1'-0"



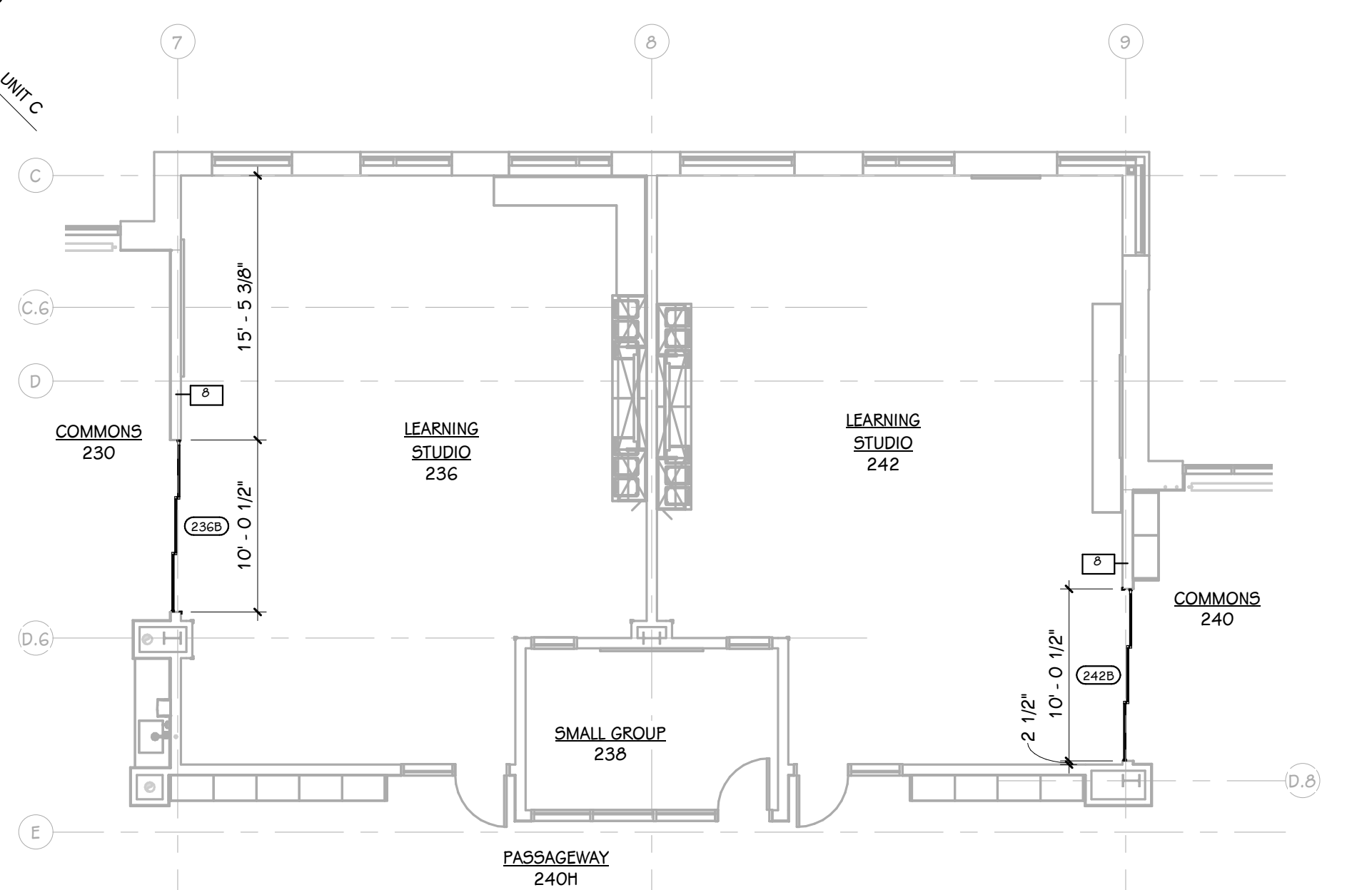
3  
A.801  
1/8" = 1'-0"



4  
A.801  
1/8" = 1'-0"



5  
A.801  
1/8" = 1'-0"



6  
A.801  
1/8" = 1'-0"

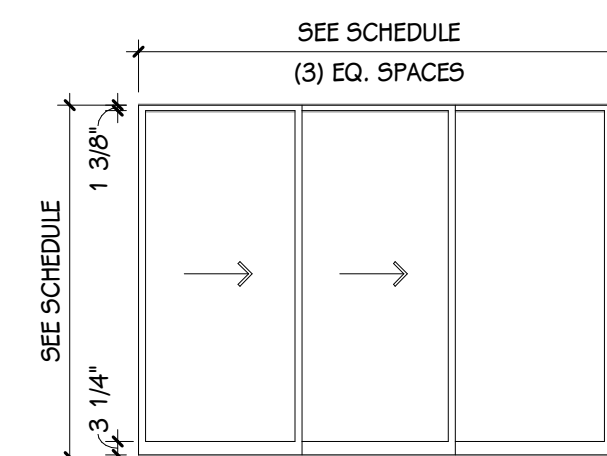
**DOOR SCHEDULE - FIRST FLOOR - ALT. No. 4 AND 5**

NUMBER		ROOM NAME	FIRE RATING		DOOR			SIZE			FRAME			DETAILS			GLASS	ACCESS CONTROLS					HDWR.	REMARKS
DOOR	ROOM		DOOR	FRAME	TYPE	MAT	FIN	WIDTH	HEIGHT	ELEV	MAT	FIN	HEAD	JAMB	SILL		A-PHONE	BARRIER-FREE	CARD READER	ELEC. LOCK HDWR.	MAG HOLD	SET		
128B	128	LEARNING STUDIO	-	-	SLIDER	AL	P-17	10'-0"	7'-4"	7/A.801	AL	P-17	H-8	J-8	5-3	IG-2	No	No	No	No	No	No	59.0	1, 2
134B	134	LEARNING STUDIO	-	-	SLIDER	AL	P-17	10'-0"	7'-4"	7/A.801	AL	P-17	H-8	J-8	5-3	IG-2	No	No	No	No	No	No	59.0	1, 2
136B	136	LEARNING STUDIO	-	-	SLIDER	AL	P-17	10'-0"	7'-4"	7/A.801	AL	P-17	H-8	J-8	5-3	IG-2	No	No	No	No	No	No	59.0	1, 2
142B	142	LEARNING STUDIO	-	-	SLIDER	AL	P-17	10'-0"	7'-4"	7/A.801	AL	P-17	H-8	J-8	5-3	IG-2	No	No	No	No	No	No	59.0	1, 2

**DOOR SCHEDULE - SECOND FLOOR - ALT. No. 4 AND 5**

NUMBER		ROOM NAME	FIRE RATING		DOOR			SIZE			FRAME			DETAILS			GLASS	ACCESS CONTROLS					HDWR.	REMARKS
DOOR	ROOM		DOOR	FRAME	TYPE	MAT	FIN	WIDTH	HEIGHT	ELEV	MAT	FIN	HEAD	JAMB	SILL		A-PHONE	BARRIER-FREE	CARD READER	ELEC. LOCK HDWR.	MAG HOLD	SET		
228B	228	LEARNING STUDIO	-	-	SLIDER	AL	P-17	10'-0"	7'-4"	7/A.801	AL	P-17	H-8	J-8	5-3	IG-2	No	No	No	No	No	No	59.0	1, 2
234B	234	LEARNING STUDIO	-	-	SLIDER	AL	P-17	10'-0"	7'-4"	7/A.801	AL	P-17	H-8	J-8	5-3	IG-2	No	No	No	No	No	No	59.0	1, 2
236B	236	LEARNING STUDIO	-	-	SLIDER	AL	P-17	10'-0"	7'-4"	7/A.801	AL	P-17	H-8	J-8	5-3	IG-2	No	No	No	No	No	No	59.0	1, 2
242B	242	LEARNING STUDIO	-	-	SLIDER	AL	P-17	10'-0"	7'-4"	7/A.801	AL	P-17	H-8	J-8	5-3	IG-2	No	No	No	No	No	No	59.0	1, 2

- REMARKS:
- SOUNDS SEAL
  - FACTORY POWDER COATED
  - ACOUSTICAL SOUND DOOR AND SOUND SEAL
  - DOORS ASSOCIATED WITH SMOKE EVAC. SYSTEM
    - 4A - OPEN
    - 4B - CLOSED
  - PAINT SCHEDULE
    - 5A - P-17 CORRIDOR SIDE / P-18 GYM SIDE
    - 5B - P-17 CORRIDOR SIDE / P-18 STAIR SIDE



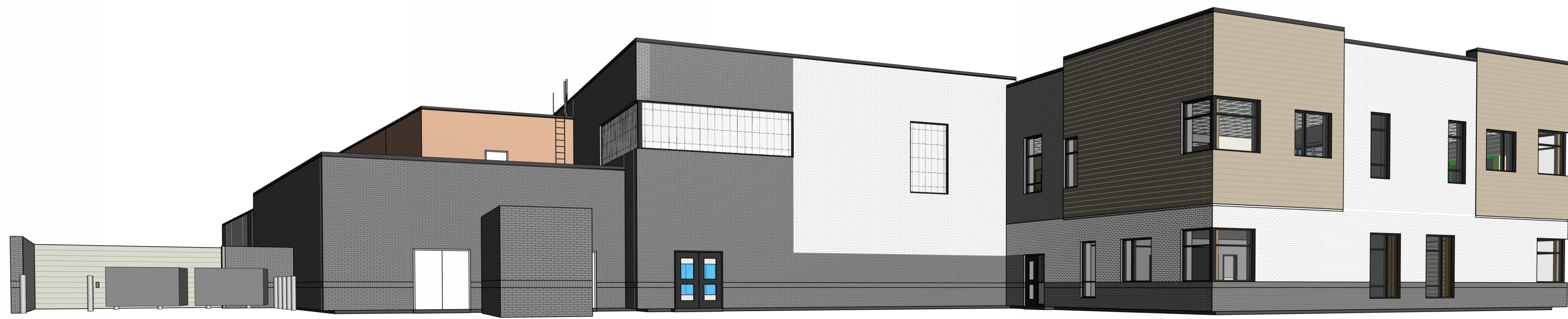
7  
A.801  
1/4" = 1'-0"



1 3D EXTERIOR - WEST VIEW  
A 901



2 3D EXTERIOR - SOUTH VIEW  
A 901



3 3D EXTERIOR - EAST VIEW  
A 901



4 3D EXTERIOR - NORTH VIEW  
A 901



5 3D EXTERIOR - ENTRANCE VIEW  
A 901



6 3D EXTERIOR - LEARNING COMMONS VIEW  
A 901

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
EXTERIOR 3D VIEWS

DATE  
JUNE 30, 2023

SHEET NUMBER  
A 901  
21-237.20

MATERIAL SELECTION SCHEDULE

Table with columns: ABBREV, ITEM, MANUFACTURER, PATTERN, COLOR, PRODUCT NO., SIZE, SINGLE SOURCE, BASIS OF DESIGN, ADDITIONAL MANUFACTURERS, REMARKS. Rows include items like ACB-1, ACB-2, ACB-3, ACB-4, ACB-5, ACC-1, ACC-2, ACC-3, ACC-4, ACC-5, ACC-6, ACP-1, ACP-2, ACP-3, ACP-4, ACP-5, ACP-6, AWC-1, AWC-2, AWC-3, AWC-4, AWC-5, AWP-1, AWP-2, AWP-3, AWP-4, AWP-5, AWP-6, BEC-1, BEC-2, CC-1, CC-2, CC-3, CL-1, CL-2, CL-3, CL-4, CL-5, CPTL-1, CPTL-2, CPTL-3, CPTL-4, CPTL-5, CPTL-6, ECPTL-1, FL-1, FRP-1, FWP-1, FWP-2, GCP-1, GF-1, GF-2, IRWC-1, IRWC-2, IRWC-3, IRWP-1, IRWT-1, LMC-1, LVT-1, MAP-1, MAP-2, MAP-3, MAP-4, P-1, P-2, P-3, P-4, P-5, P-6, P-7, P-8, P-9, P-10, P-11, P-12, P-13, P-14, P-15, P-16, P-17, P-18, P-19, P-20, P-21, PC-1, PC-2, PL-1, PL-2, PL-3, PL-4, PL-5, PL-6, PR-1, PR-2, PT-1, PT-2, PT-3, PT-4, PT-5, PT-6, PT-7, PT-8, PT-9, PTM-1, RAF-1, RB-1, RB-2, RB-3, RB-4, RB-5, RP-1, RS-1, RSF-1, RSF-2, RSF-3, RSF-4, RSF-5, SC, SSM-1, TCF-1, VWC-1, VWC-2, VWC-3, VWC-4, VWC-5, WD-1.

GENERAL NOTES: - NO COMPARABLE PRODUCTS WILL BE REVIEWED FOR PRODUCTS DESIGNATED AS SINGLE SOURCE. - COMPARABLE PRODUCTS WILL BE REVIEWED FOR ITEMS LISTED AS BASIS OF DESIGN. COMPARABLE PRODUCTS ARE REQUIRED TO MEET ANY MINIMUM PERFORMANCE REQUIREMENTS LISTED IN REMARKS AND DESIGN ATTRIBUTES OF SPECIFIED PRODUCT. - REFER TO PRODUCT SPECIFICATION FOR TRIMS AND ACCESSORIES ASSOCIATED WITH SPECIFIED PRODUCTS ABOVE.

ISSUED FOR DATE

PROJECT TITLE HAVERHILL ELEMENTARY SCHOOL BID PACKAGE 6: CONSTRUCTION

OWNER PORTAGE PUBLIC SCHOOLS

SHEET NUMBER MATERIAL SELECTION SCHEDULE

DATE JUNE 30, 2023 SHEET NUMBER IG 001 21-237.20



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**MARKERBOARD SCHEDULE**

MARK	QTY	SIZE (W x H)	MATERIAL	FRAME MATERIAL	REMARKS
MB-1	18	6'-0" x 4'-0"	LOW-GLOSS PORCELAIN ENAMEL STEEL	ANODIZED ALUMINUM FRAME	
MB-2	9	4'-0" x 4'-0"	LOW-GLOSS PORCELAIN ENAMEL STEEL	ANODIZED ALUMINUM FRAME	
MB-3	6	6'-0" x 6'-0"	LOW-GLOSS PORCELAIN ENAMEL STEEL	ANODIZED ALUMINUM FRAME	OVERSIZED HEIGHT BOARD TO BE FABRICATED WITHOUT JOINT
MB-4	13	4'-0" x 6'-0"	LOW-GLOSS PORCELAIN ENAMEL STEEL	ANODIZED ALUMINUM FRAME	OVERSIZED HEIGHT BOARD TO BE FABRICATED WITHOUT JOINT
MB-5	5	12'-0" x 4'-0"	LOW-GLOSS PORCELAIN ENAMEL STEEL	ANODIZED ALUMINUM FRAME	
MB-6	8	8'-0" x 6'-0"	LOW-GLOSS PORCELAIN ENAMEL STEEL	ANODIZED ALUMINUM FRAME	OVERSIZED HEIGHT BOARD TO BE FABRICATED WITHOUT JOINT
MB-7	1	8'-0" x 4'-0"	LOW-GLOSS PORCELAIN ENAMEL STEEL	ANODIZED ALUMINUM FRAME	
MB-8	1	8'-0" x 4'-0"	LOW-GLOSS PORCELAIN ENAMEL STEEL	ANODIZED ALUMINUM FRAME	MARKERBOARD SURFACE WITH STAFF LINES FOR MUSIC EDUCATION.
MB-9	1	6'-0" x 4'-0"	LOW-GLOSS PORCELAIN ENAMEL STEEL	ANODIZED ALUMINUM FRAME	GYMNASIUM MARKERBOARD - DO NOT INCLUDE MARKERBOARD TRAY/RAIL

**TACKBOARD SCHEDULE**

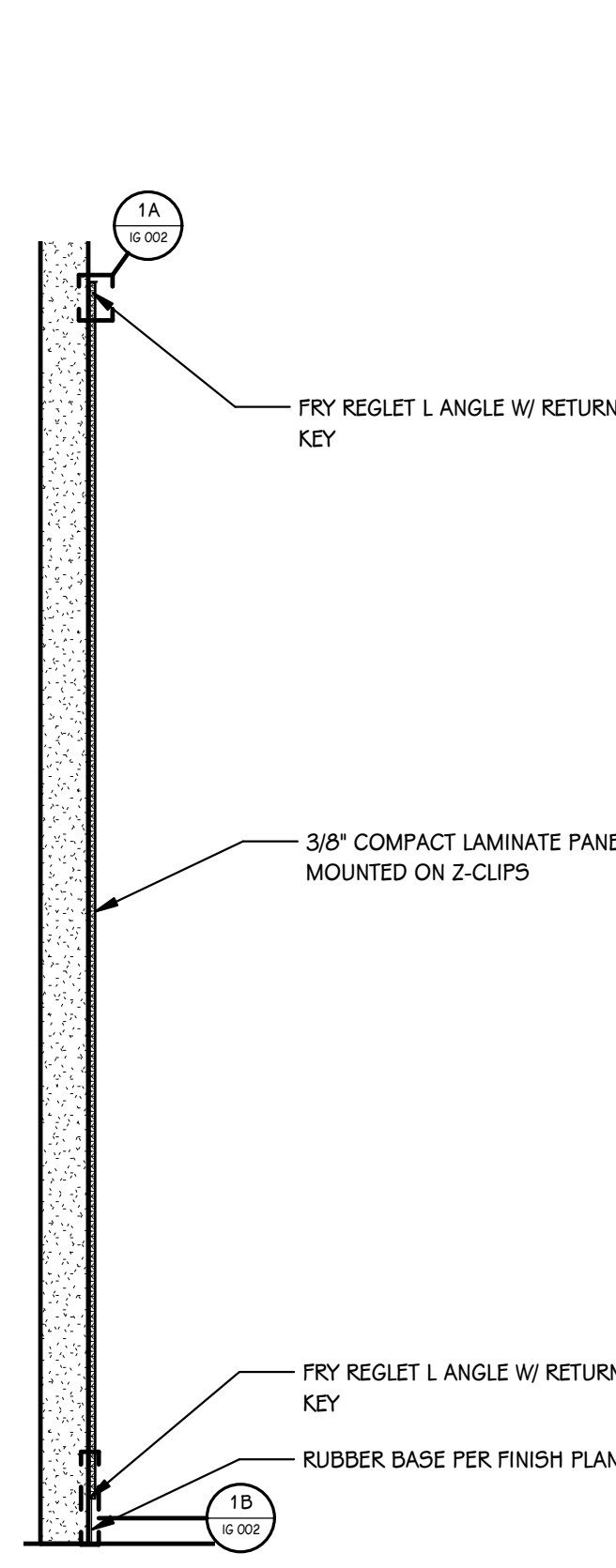
MARK	QTY	SIZE (W x H)	MATERIAL	FRAME MATERIAL	REMARKS
TB-2	3	4'-0" x 4'-0"	COLOR-IMPREGNATED CORK	ANODIZED ALUMINUM FRAME	
TB-3	1	6'-0" x 4'-0"	COLOR-IMPREGNATED CORK	ANODIZED ALUMINUM FRAME	
TB-4	2	4'-0" x 6'-0"	COLOR-IMPREGNATED CORK	ANODIZED ALUMINUM FRAME	
TB-5	1	8'-0" x 4'-0"	COLOR-IMPREGNATED CORK	ANODIZED ALUMINUM FRAME	
TB-6	2	8'-0" x 6'-0"	COLOR-IMPREGNATED CORK	ANODIZED ALUMINUM FRAME	
TB-7	2	8'-0" x 6'-0"	COLOR-IMPREGNATED CORK	ANODIZED ALUMINUM FRAME	
TB-8	2	8'-0" x 6'-0"	COLOR-IMPREGNATED CORK	ANODIZED ALUMINUM FRAME	

**GENERAL NOTES - VISUAL DISPLAY BOARDS**

- REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
- VISUAL DISPLAY BOARD TAGS REPRESENT A SINGLE UNIT. COMBINATION BOARDS INCLUDE MORE THAN ONE MATERIAL TYPE IN THE OVERALL UNIT. (I.E., MARKERBOARDS WITH ATTACHED TACKBOARDS)
- TYPICAL MOUNTING HEIGHT WILL BE 7'-4" A.F.F. TO HEAD HEIGHT, UNLESS NOTED OTHERWISE.
- VISUAL DISPLAY BOARDS TO BE MOUNTED CENTERED ON WALL OR BETWEEN ARCHITECTURAL ELEMENTS AND CASEGOODS, UNLESS NOTED OTHERWISE
- COORDINATE MOUNTING LOCATION AND REQUIREMENTS WITH ANY TECHNOLOGY EQUIPMENT (PROJECTOR, SMART BOARDS, ETC.)

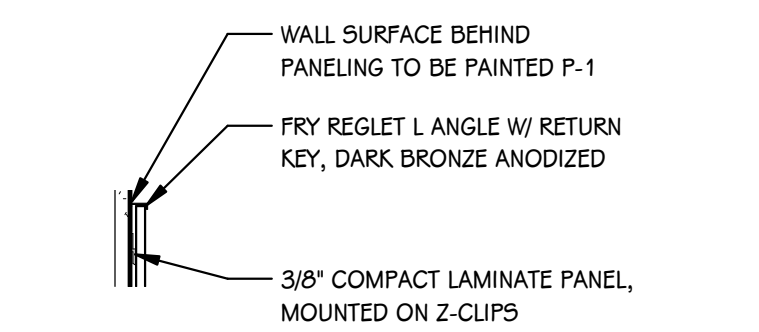
**GENERAL NOTES - INTERIORS**

- REFER TO MATERIAL SELECTION SCHEDULE FOR FINISH INFORMATION.
- REFER TO ARCHITECTURAL FLOOR PLANS AND SPECIFICATION FOR ADDITIONAL INFORMATION ON CONSTRUCTION MATERIALS.
- REFER TO REFLECTED CEILING PLANS FOR CEILING FINISH AND HEIGHTS.
- REFER TO DOOR SCHEDULE FOR FINISH ON DOORS AND FRAMES.
- REFER TO ARCHITECTURAL ENLARGED TOILET ROOM PLANS FOR TOILET ACCESSORIES, PARTITIONS, BARRIER-FREE REQUIREMENTS, ETC.
- REFER TO ARCHITECTURAL ENLARGED STAIR PLANS FOR RAILINGS, GUARDRAILS, FINISH COLORS OF ANY PAINTED METALS, ETC. COORDINATE STAIR DETAILS WITH FLOORING TYPES INDICATED ON FINISH PLANS.
- REFER TO INTERIORS TYPICAL DETAIL SHEETS FOR TILE TRIM DETAILS, FLOORING TRANSITIONS, WAINSCOT DETAILS, AND TYPICAL TILE PATTERN REQUIREMENTS.
- REFER TO INTERIOR ELEVATION SHEETS FOR REQUIREMENTS, GENERAL NOTES, ABBREVIATIONS, AND HARDWARE/ACCESSORY SELECTIONS FOR CASEWORK.
- REFER TO FINISH PLANS FOR VISUAL DISPLAY BOARD LOCATIONS AND QUANTITIES.
- WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH THE ADJACENT WALL FINISH.
- CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.
- AT AREAS OF EXPOSED CEILING WHERE THE DUCTWORK AND DIFFUSERS ARE TO BE PAINTED, COORDINATE WITH MECHANICAL SPECIFICATIONS AND REFER TO THE REFLECTED CEILING PLAN KEY FOR PAINT COLORS.
- REFER TO ARCHITECTURAL FLOOR PLANS FOR LOCKER LOCATIONS, FINISHES, AND QUANTITIES.
- DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. FOR CONDITIONS NOT SHOWN, USE DETAILS CLOSEST TO CONDITION IN QUESTION.



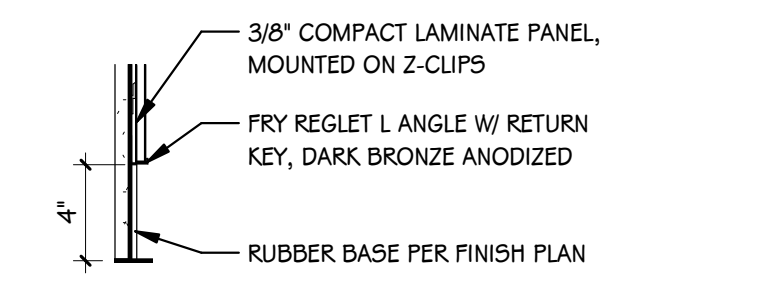
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3/4" = 1'-0"

**CAFE PANEL SECTION DETAIL 1**



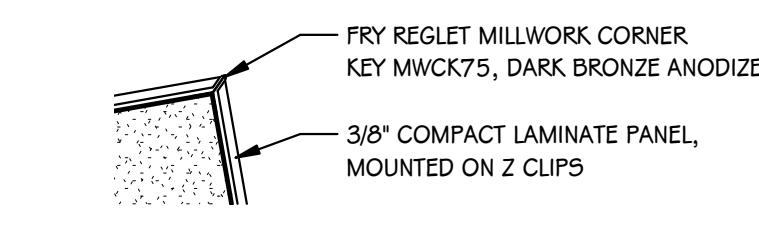
**1A**  
16.000  
1 1/2" = 1'-0"

**CAFE PANEL TOP DETAIL**



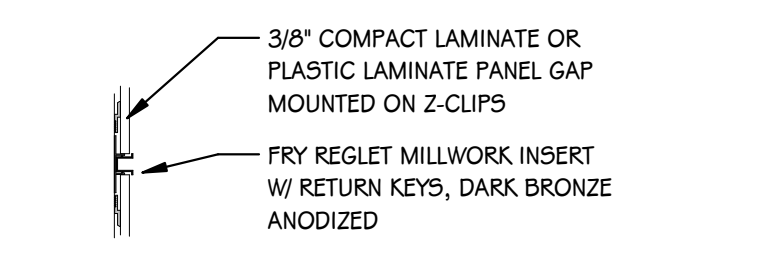
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**CAFE PANEL BASE DETAIL**



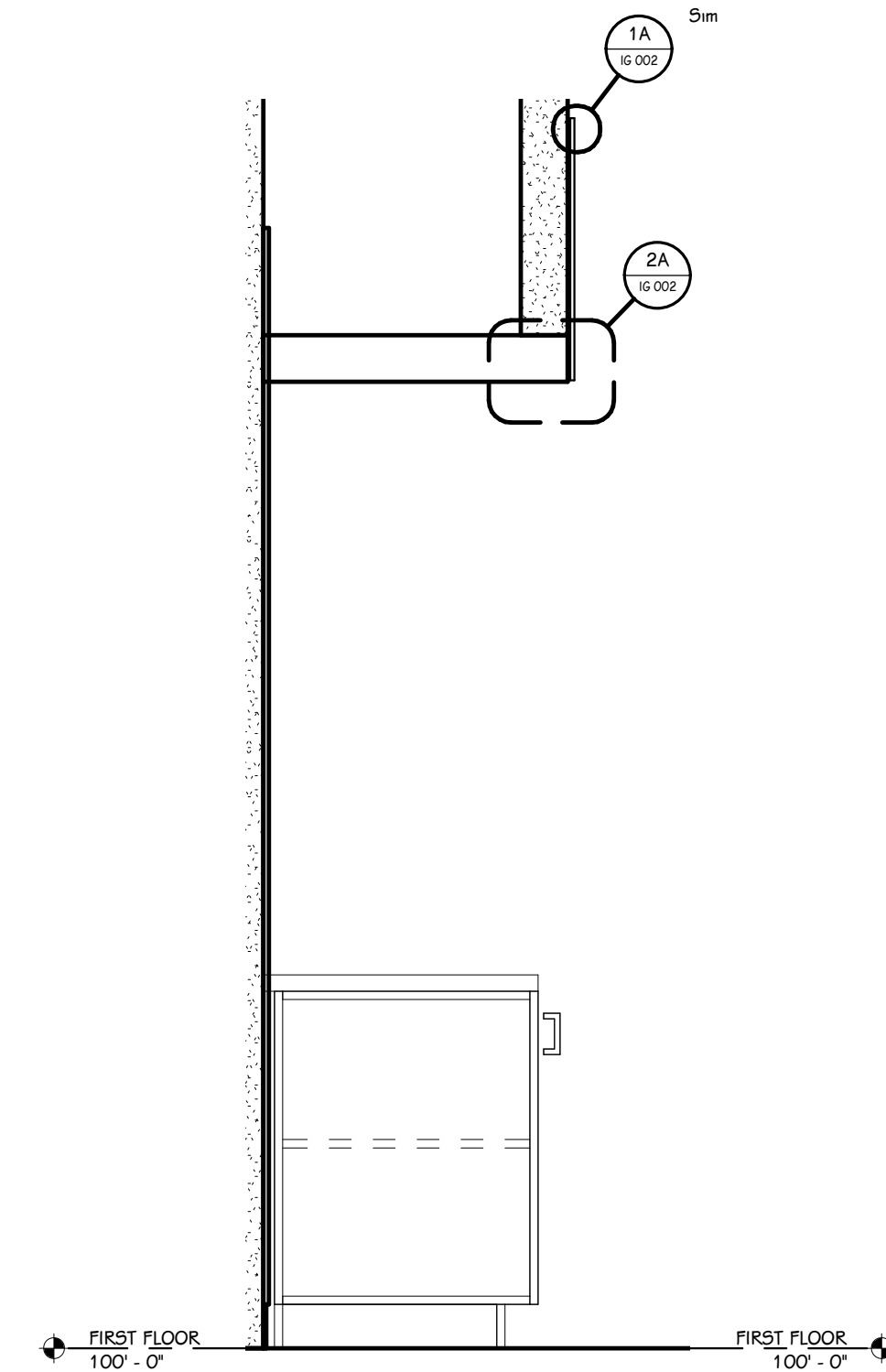
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1 1/2" = 1'-0"

**CAFE PANEL CORNER DETAIL**



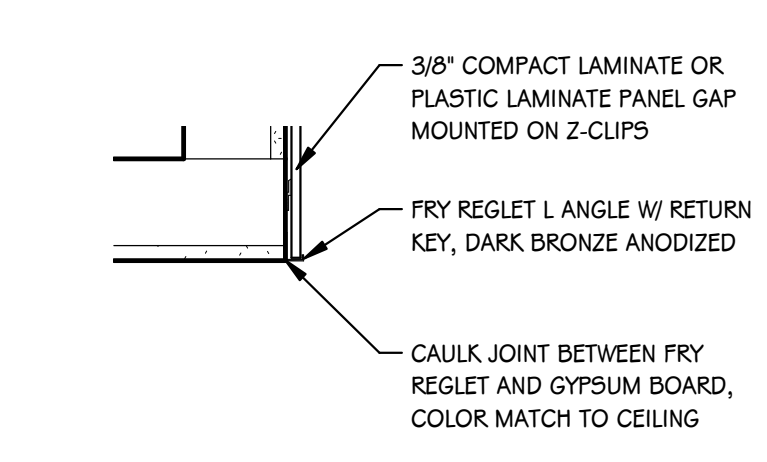
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**CAFE PANEL REVEAL DETAIL**



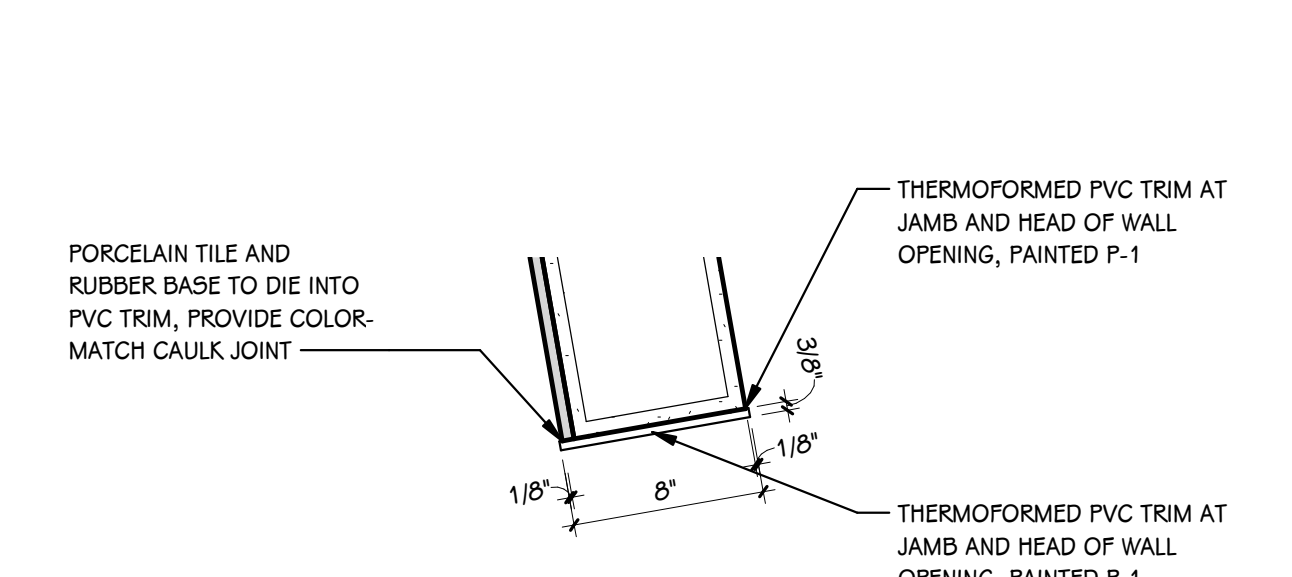
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3/4" = 1'-0"

**CAFE PANEL SECTION DETAIL 2**



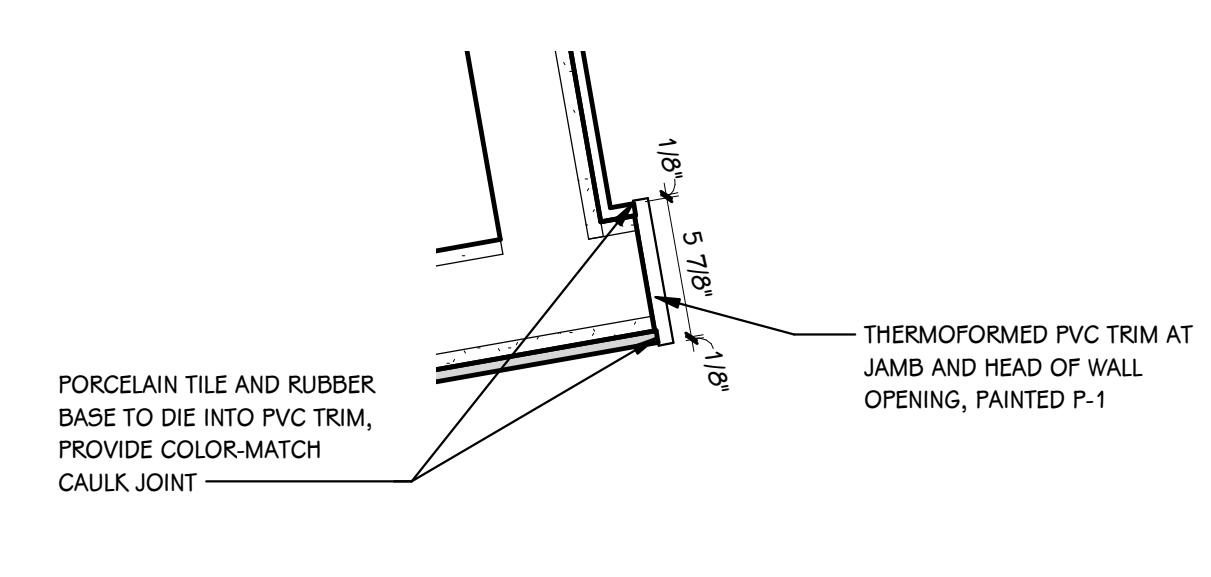
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1 1/2" = 1'-0"

**CAFE PANEL HEAD DETAIL**



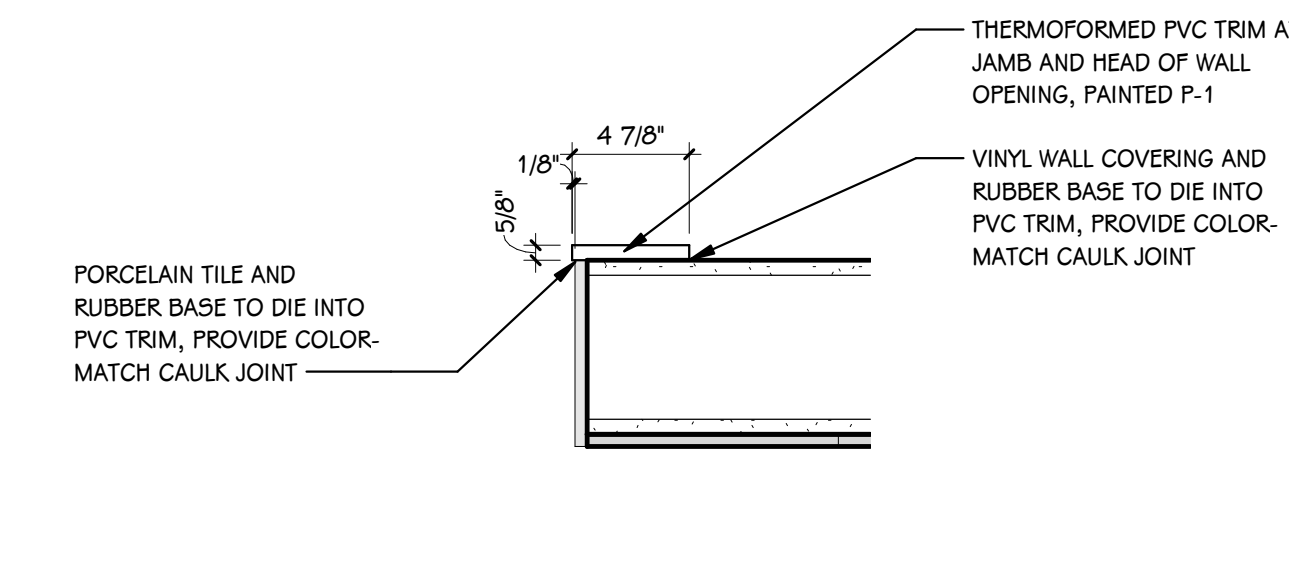
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**CAFE ALCOVE PVC TRIM DETAIL**



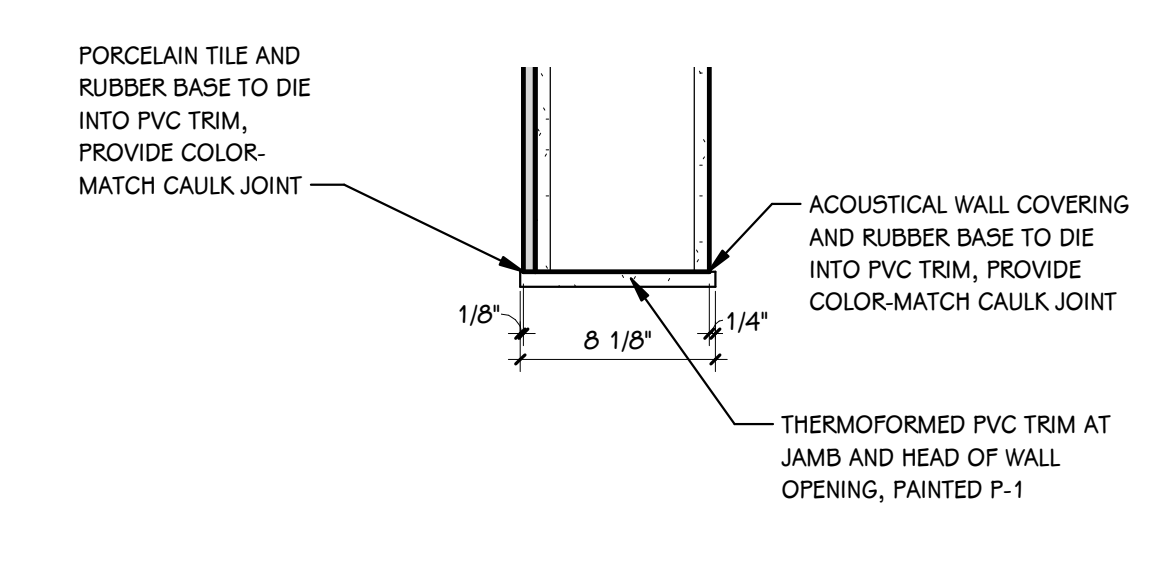
**4**  
16.000  
1 1/2" = 1'-0"

**CAFE SINK ALCOVE PVC TRIM DETAIL**



**5**  
16.000  
1 1/2" = 1'-0"

**SMALL GROUP ROOM PVC TRIM DETAIL**



**6**  
16.000  
1 1/2" = 1'-0"

**SEMINAR PVC TRIM DETAIL**

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

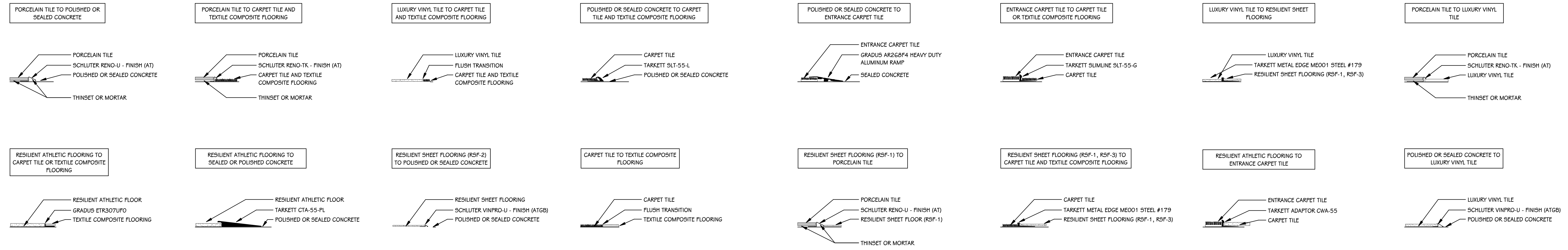
Portage, Michigan

SHEET TITLE  
VISUAL DISPLAY BOARD SCHEDULES &  
TYPICAL INTERIOR DETAILS

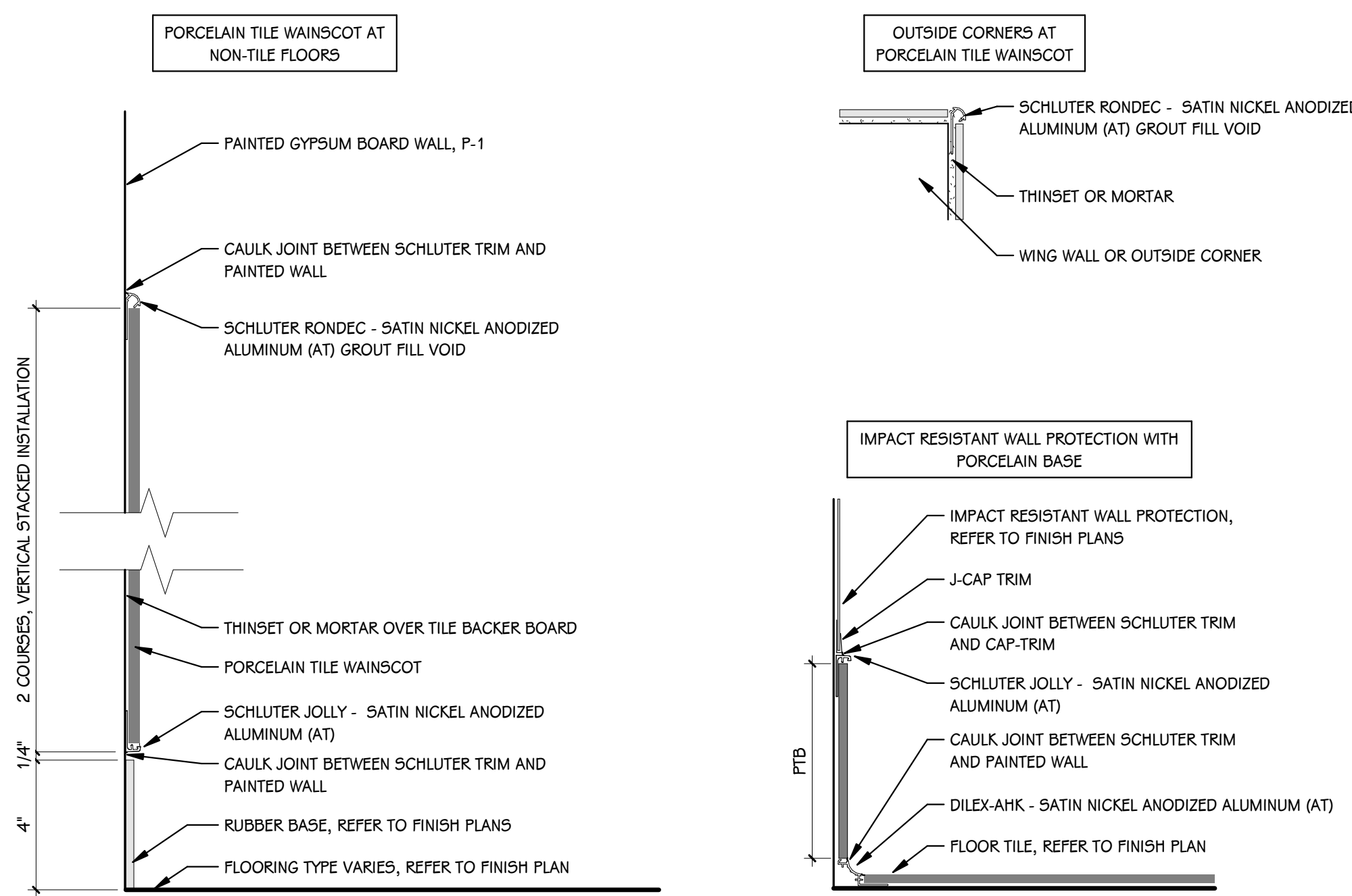
DATE  
JUNE 30, 2023

SHEET NUMBER  
IG 002  
21-237.20

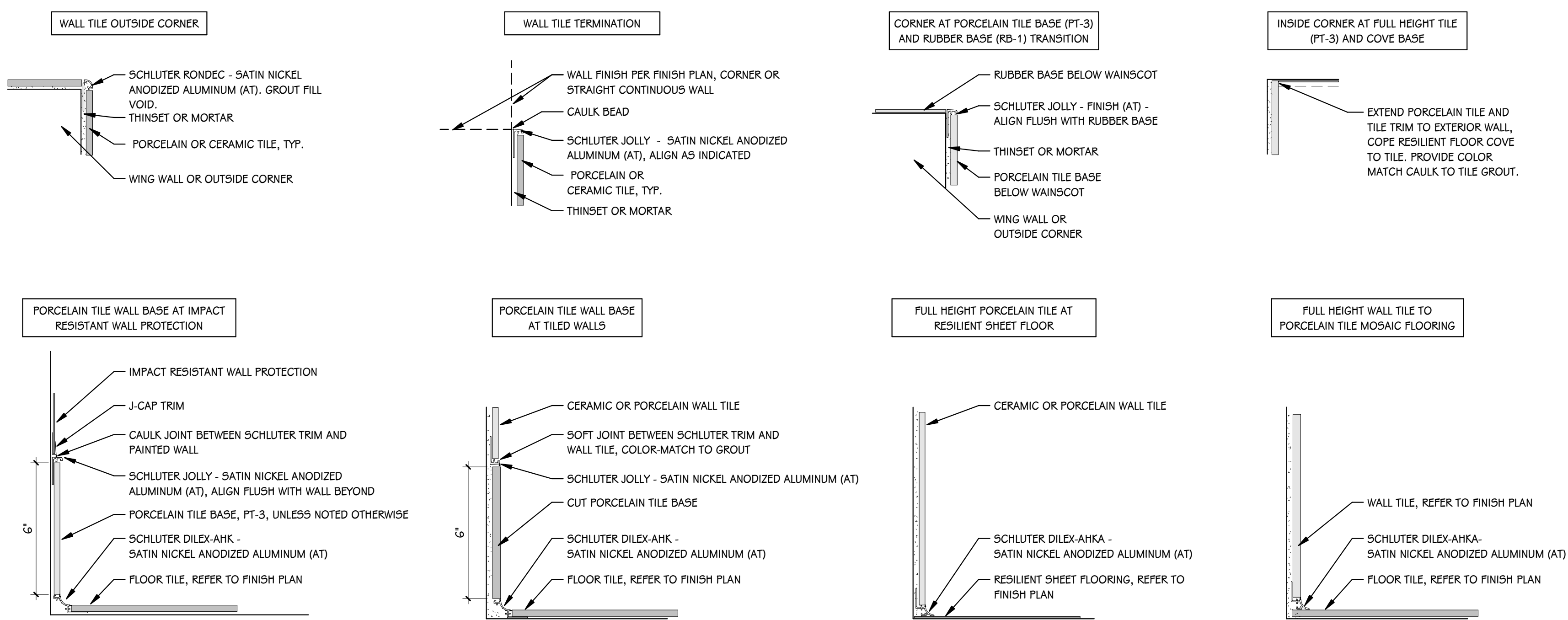




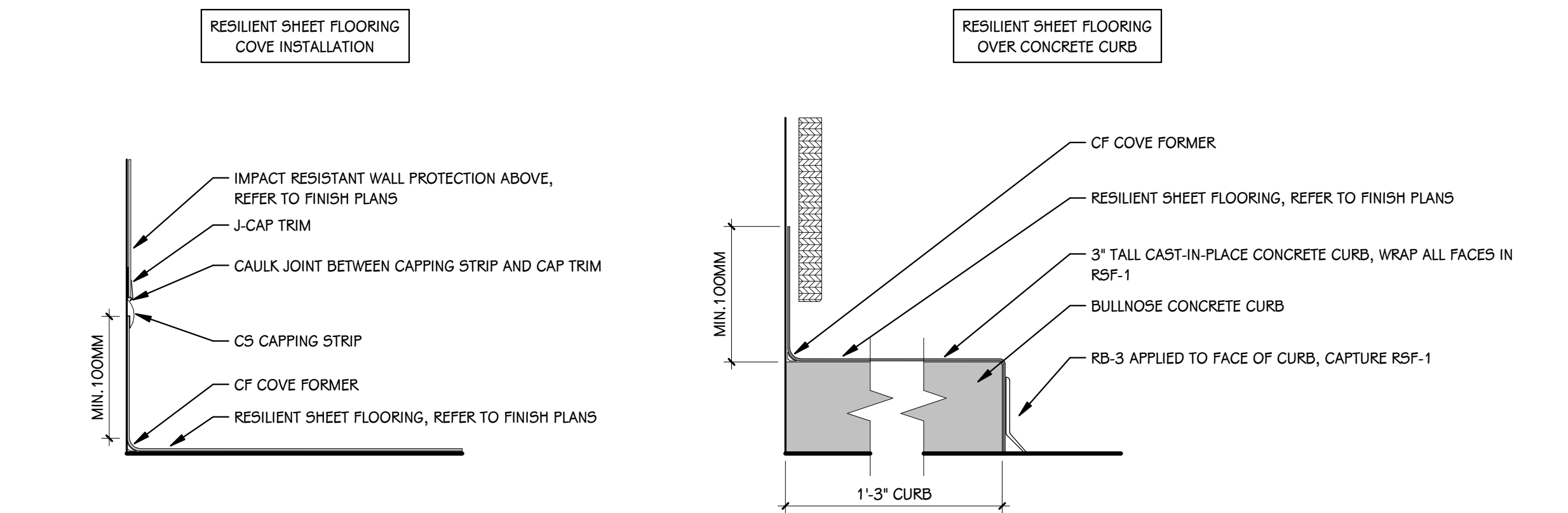
7  
6.003  
3" = 1'-0"



8  
6.003  
3" = 1'-0"



9  
6.003  
3" = 1'-0"



10  
6.003  
3" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
TYPICAL DETAILS - FLOOR  
TRANSITIONS, TILE TRIMS, WAJNSCOT  
AND RESILIENT COVE

SHEET NUMBER  
IG 003  
21-237.20

DATE  
JUNE 30, 2023

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

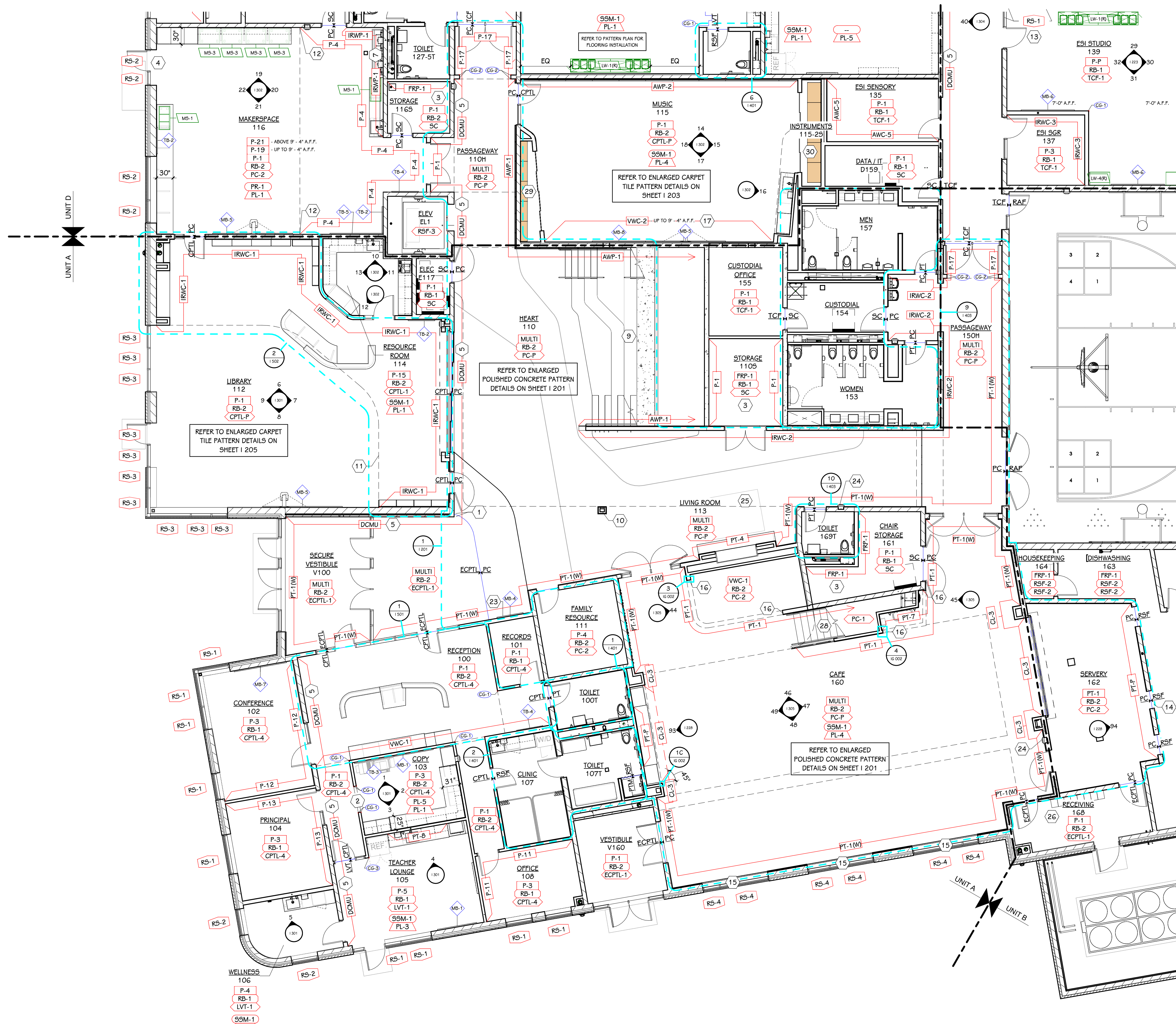
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
FIRST FLOOR FINISH PLAN - UNIT A

DATE  
JUNE 30, 2023

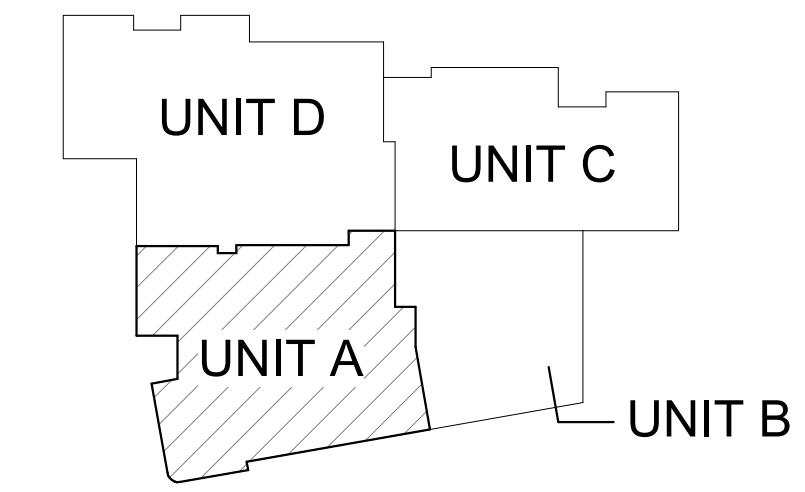
SHEET NUMBER  
1101A  
21-237.20



FIRST FLOOR FINISH PLAN - UNIT A  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

**FINISH PLAN KEY**

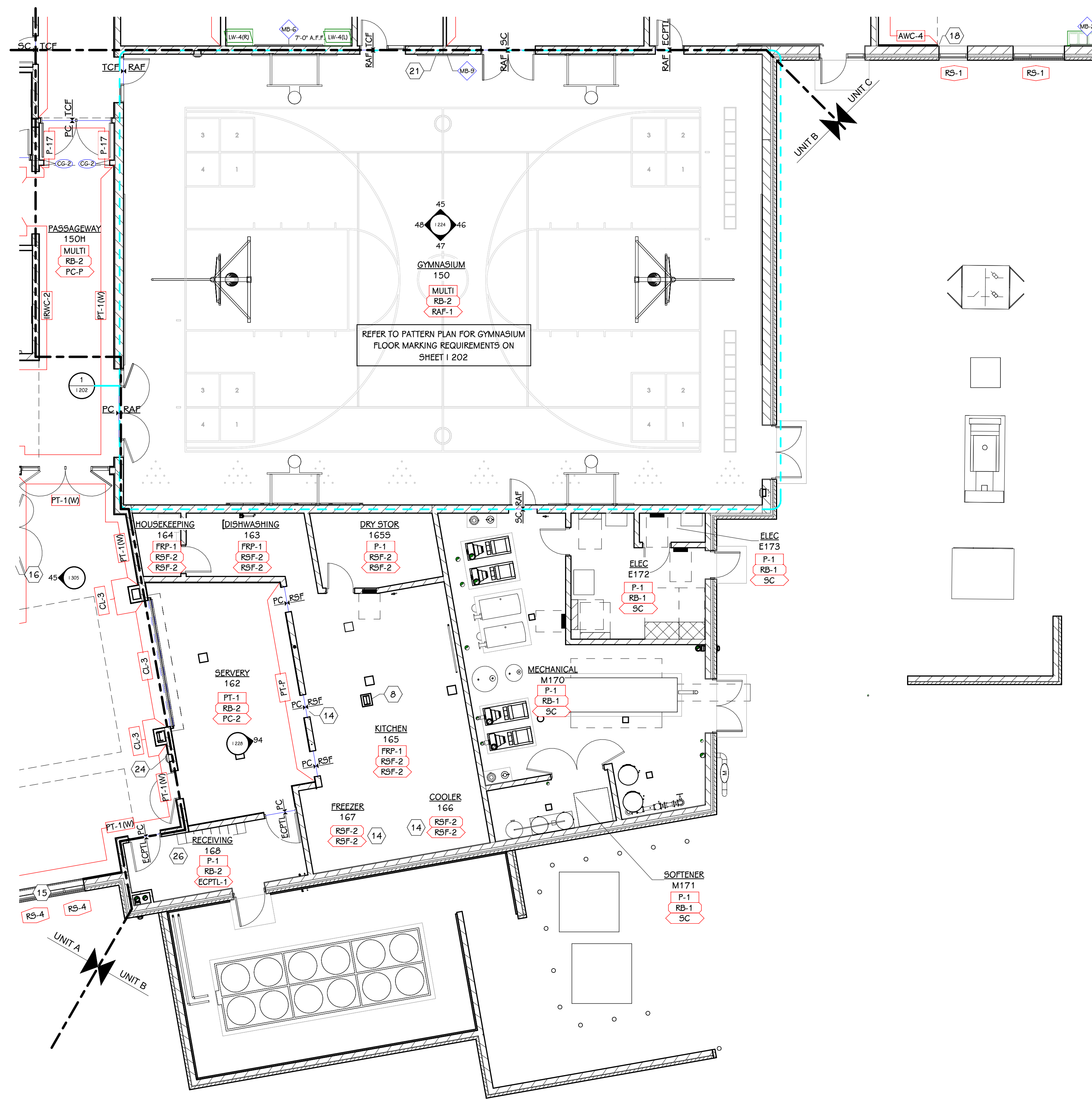
- X# → INDICATES MATERIAL TYPE
- X# → INDICATES CORRESPONDING SELECTION IN SCHEDULE
- Y# → WALL FINISH
- X# → BASE FINISH
- X# → FLOOR FINISH
- X# → COUNTER FINISH
- X# → CABINET FINISH (BASE AND UPPER)
- X# → INDICATES EXTENT OF ATYPICAL FINISH
- X# → INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- MULTI → INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- X.P(A) → INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION
- PT-#(W) → INDICATES PORCELAIN TILE WANSCOT, REFER TO DETAIL
- VB-# → INDICATES VISUAL DISPLAY BOARD, REFER TO SCHEDULES
- XX# → INDICATES PRE-FABRICATED EDUCATIONAL CASEGOODS, REFER TO SPECIFICATION
- INDICATES CUBBY TYPE - REFER TO TYPICAL DETAILS
- X# UNITS → INDICATES NUMBER OF MODULAR CUBBY UNITS PER RUN
- # STUDENTS → INDICATES TOTAL QUANTITY OF STUDENTS PER RUN
- CG-# → INDICATES CORNER GUARD, REFER TO SCHEDULE

- GENERAL NOTES - FINISH PLAN**
- 1 FINISH TAGS APPLY TO LIKE MATERIALS IN ENTIRE ROOM. I.E. CASEWORK TAG MAY ONLY CALLOUT ONE RUN OF CASEWORK, BUT ALL CASEWORK IN ROOM RECEIVE THE SAME FINISHES, UNLESS TAGGED DIFFERENTLY.
  - 2 REFER TO ENLARGED FINISH PLANS AND PATTERN PLANS FOR ADDITIONAL FINISH DETAILS.
  - 3 CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.
  - 4 CASEWORK FINISH TAGS DO NOT APPLY TO EDUCATIONAL CASEGOOD PIECES. REFER TO TAGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON TYPE AND FINISH.
  - 5 WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH THE ADJACENT WALL FINISH.
  - 6 CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.
  - 7 REFER TO VISUAL DISPLAY BOARD SCHEDULE AND GENERAL NOTES FOR MORE INFORMATION.
  - 8 PORCELAIN TILE WANSCOT IS NOT REQUIRED BEHIND STUDENT CUBBIES.

- KEYED NOTES - FINISH PLANS**
- 1 ALIGN FLOORING TRANSITION BEYOND RADIUS OF BULLNOSE BLOCK.
  - 2 PAINT WALL RETURNS AND HORIZONTAL FACE OF BULKHEAD P-1.
  - 3 FRP PANELS TO BE INSTALLED ABOVE RUBBER BASE, INSTALL FULL SHEET VERTICALLY ORIENTED.
  - 4 INSTALL ROLLER SHADES OVER DOOR AND SIDELITE, ART ROOM ONLY.
  - 5 DO NOT APPLY PAINT OR PORCELAIN TILE WANSCOT TO DECORATIVE CONCRETE MASONRY WALLS, TYPICAL.
  - 6 RETURN PORCELAIN TILE WANSCOT BACK TO STOREFRONT.
  - 7 SKIMCOAT CMU WALL AS REQUIRED FOR SMOOTH IRWP-1 INSTALLATION, REFER TO ELEVATION FOR EXTENTS.
  - 8 PROVIDE FRP-1 ALL FACES OF COLUMN WRAP - PROVIDE ALL TRIMS AND OUTSIDE CORNER PIECES AS NECESSARY TO COMPLETE INSTALLATION.
  - 9 MEDIUM-GRIND POLISHED CONCRETE STAIR - SEE ARCHITECTURAL STAIR DRAWINGS FOR MORE INFORMATION.
  - 10 PT-1 VERTICALLY STACKED, ALL FACES OF COLUMN WRAP.
  - 11 REFER TO SECOND FLOOR FINISH PLAN AND PATTERN ELEVATIONS FOR BULKHEAD PAINTING SCOPE.
  - 12 ALIGN PAINT TRANSITION TO BULKHEAD.
  - 13 INSTALL THREE WINDOW TREATMENTS.
  - 14 VERIFY FINISH EXTENTS WITH FOOD SERVICE EQUIPMENT PRIOR TO INSTALLATION.
  - 15 ROLLER SHADE TO BE RECESSED WITHIN CEILING HEADBOX, REFER TO ARCHITECTURAL.
  - 16 THERMOFORMED PVC TRIM AT JAMB AND HEAD OF WALL OPENING, REFER TO DETAILS.
  - 17 TERMINATE WALLCOVERING AT HEIGHT INDICATED, PROVIDE FRP REGLET ALUMINUM WALLCOVERING BASE/TERMINATION TRIM OR SIMILAR - CLEAR ANODIZED FINISH.
  - 18 ALIGN WALL FINISH MATERIAL TRANSITION TO BULKHEAD, REFER TO ELEVATIONS.
  - 19 ALIGN FLOORING TRANSITION TO CORNER.
  - 20 PROVIDE LEVEL 5 GYPSUM BOARD WALL FINISH.
  - 21 ABUSE RESISTANT GYPSUM BOARD PROJECTION SURFACE WITH LEVEL 5 FINISH WITH MITERED DARK BRONZE ANODIZED J-CANNEL FRAME, REFER TO ELEVATION.
  - 22 PROVIDE CONTINUOUS, MITERED PURRING STRIPS ABOVE WANSCOT FOR FLUSH AND FLAT TACKBOARD INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
  - 23 PROVIDE CONTINUOUS, MITERED PURRING STRIPS ABOVE WANSCOT FOR FIRE EXTINGUISHER CABINET INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
  - 24 AREA RUG, BY FURNITURE.
  - 25 METAL LOCKERS, REFER TO ARCHITECTURAL.
  - 26 STAGGER EDGE OF FLOORING TRANSITION, CUT CARPET TILE TO COPE TO FULL WIDTH OF LVT PLANK.
  - 27 MEDIUM-GRIND POLISHED CONCRETE INFILL IN METAL PAN STAIRS, PROVIDE (2) INSET STAINLESS STEEL BARS AT NOSING OF EACH STAIR TREAD.
  - 28 36" WIDE X 12" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
  - 29 36" WIDE X 24" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
  - 30 PVC TRIM WHERE INDICATED, REFER TO DETAILS.
  - 31 WALL FINISH VARIES, REFER TO ELEVATIONS AND DETAILS.

**WINDOW TREATMENT KEY**

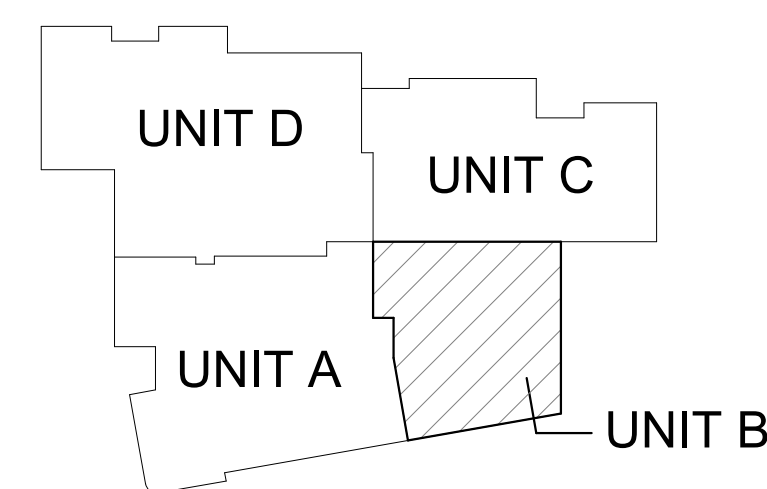
- RS-1 ROLLER SHADE, SINGLE MANUAL SHADE(CLOTHES); 3% LIGHT-FILTERING
  - RS-2 ROLLER SHADE, DUAL MANUAL (INCLUDING DOOR & SIDELITE) SHADE(CLOTHES); 3% LIGHT-FILTERING & BLACKOUT PROVIDE JAMB-MOUNTED CHANNELS FOR LIGHT-BLOCKING
  - RS-3 ROLLER SHADE, DUAL MANUAL SHADE(CLOTHES); 3% LIGHT-FILTERING & BLACKOUT
  - RS-4 ROLLER SHADE, DUAL MOTORIZED SHADE(CLOTHES); 3% LIGHT-FILTERING & BLACKOUT
- 1 REFER TO SPECIFICATION FOR MORE INFORMATION.
  - 2 WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
  - 3 TREATMENT TAGS SHOWN ON EXTERIOR OF WALL FOR CLARITY - AT INTERIOR LOCATIONS, TAG SHOWN INSIDE ROOM FOR MOUNTING.
  - 4 REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
  - 5 WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
  - 6 VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.



**FIRST FLOOR FINISH PLAN - UNIT B**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

**FINISH PLAN KEY**

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- WALL FINISH
- BASE FINISH
- FLOOR FINISH
- COUNTER FINISH
- CABINET FINISH (BASE AND UPPER)
- INDICATES EXTENT OF ATYPICAL FINISH
- INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION
- INDICATES PORCELAIN TILE WAINSCOT, REFER TO DETAIL
- INDICATES VISUAL DISPLAY BOARD, REFER TO SCHEDULES
- INDICATES PRE-FABRICATED EDUCATIONAL CASEGOODS, REFER TO SPECIFICATION
- INDICATES CUBBY TYPE - REFER TO TYPICAL DETAILS
- INDICATES NUMBER OF MODULAR CUBBY UNITS PER RUN
- INDICATES TOTAL QUANTITY OF STUDENTS PER RUN
- INDICATES CORNER GUARD, REFER TO SCHEDULE

**GENERAL NOTES - FINISH PLAN**

- 1 FINISH TAGS APPLY TO LIKE MATERIALS IN ENTIRE ROOM. I.E. CASEWORK TAG MAY ONLY CALLOUT ONE RUN OF CASEWORK, BUT ALL CASEWORK IN ROOM RECEIVE THE SAME FINISHES, UNLESS TAGGED DIFFERENTLY.
- 2 REFER TO ENLARGED FINISH PLANS AND PATTERN PLANS FOR ADDITIONAL FINISH DETAILS.
- 3 CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.
- 4 CASEWORK FINISH TAGS DO NOT APPLY TO EDUCATIONAL CASEGOOD PIECES. REFER TO TAGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON TYPE AND FINISH.
- 5 WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH THE ADJACENT WALL FINISH.
- 6 CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.
- 7 REFER TO VISUAL DISPLAY BOARD SCHEDULE AND GENERAL NOTES FOR MORE INFORMATION.
- 8 PORCELAIN TILE WAINSCOT IS NOT REQUIRED BEHIND STUDENT CUBBIES.

**KEYED NOTES - FINISH PLANS**

- 1 ALIGN FLOORING TRANSITION BEYOND RADIUS OF BULLNOSE BLOCK.
- 2 PAINT WALL RETURNS AND HORIZONTAL FACE OF BULKHEAD P-1.
- 3 FRP PANELS TO BE INSTALLED ABOVE RUBBER BASE, INSTALL FULL SHEET VERTICALLY ORIENTED.
- 4 INSTALL ROLLER SHADES OVER DOOR AND SIDELITE, ART ROOM ONLY.
- 5 DO NOT APPLY PAINT OR PORCELAIN TILE WAINSCOT TO DECORATIVE CONCRETE MASONRY WALLS, TYPICAL.
- 6 RETURN PORCELAIN TILE WAINSCOT BACK TO STOREFRONT.
- 7 SKIMCOAT CMU WALL AS REQUIRED FOR SMOOTH IRWP-1 INSTALLATION, REFER TO ELEVATION FOR EXTENTS.
- 8 PROVIDE FRP-1 ALL FACES OF COLUMN WRAP - PROVIDE ALL TRIMS AND OUTSIDE CORNER PIECES AS NECESSARY TO COMPLETE INSTALLATION.
- 9 MEDIUM-GRIND POLISHED CONCRETE STAIR - SEE ARCHITECTURAL STAIR DRAWINGS FOR MORE INFORMATION.
- 10 FT-1 VERTICALLY STACKED, ALL FACES OF COLUMN WRAP.
- 11 REFER TO SECOND FLOOR FINISH PLAN AND PATTERN ELEVATIONS FOR BULKHEAD PAINTING SCOPE.
- 12 ALIGN PAINT TRANSITION TO BULKHEAD.
- 13 INSTALL THREE WINDOW TREATMENTS.
- 14 VERIFY FINISH EXTENTS WITH FOOD SERVICE EQUIPMENT PRIOR TO INSTALLATION.
- 15 ROLLER SHADE TO BE RECESSED WITHIN CEILING HEADBOX, REFER TO ARCHITECTURAL.
- 16 THERMOFORMED PVC TRIM AT JAMB AND HEAD OF WALL OPENING, REFER TO DETAILS.
- 17 TERMINATE WALLCOVERING AT HEIGHT INDICATED, PROVIDE FRY REGLET ALUMINUM WALLCOVERING BASE/TERMINATION TRIM OR SIMILAR. CLEAR ANODIZED FINISH.
- 18 ALIGN WALL FINISH MATERIAL TRANSITION TO BULKHEAD, REFER TO ELEVATIONS.
- 19 ALIGN FLOORING TRANSITION TO CORNER.
- 20 PROVIDE LEVEL 5 GYPSUM BOARD WALL FINISH.
- 21 ABUSE RESISTANT GYPSUM BOARD PROJECTION SURFACE WITH LEVEL 5 FINISH WITH MITERED DARK BRONZE ANODIZED J-CANAL FRAME, REFER TO ELEVATION.
- 22 PROVIDE CONTINUOUS MITERED PURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT TACKBOARD INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- 23 PROVIDE CONTINUOUS MITERED PURRING STRIPS ABOVE WAINSCOT FOR FIRE EXTINGUISHER CABINET INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- 24 AREA RUG, BY FURNITURE.
- 25 METAL LOCKERS, REFER TO ARCHITECTURAL.
- 26 STAGGER EDGE OF FLOORING TRANSITION, CUT CARPET TILE TO COPE TO FULL WIDTH OF LVT FLANK.
- 27 MEDIUM-GRIND POLISHED CONCRETE INFILL IN METAL PAN STAIRS, PROVIDE (2) INSET STAINLESS STEEL BARS AT NOSING OF EACH STAIR TREAD.
- 28 36" WIDE X 12" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- 29 36" WIDE X 24" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- 30 PVC TRIM WHERE INDICATED, REFER TO DETAILS.
- 31 WALL FINISH VARIES, REFER TO ELEVATIONS AND DETAILS.

**WINDOW TREATMENT KEY**

- RS-1 ROLLER SHADE, SINGLE MANUAL SHADE/CLOTHES; 3% LIGHT-FILTERING
- RS-2 ROLLER SHADE, DUAL MANUAL (INCLUDING DOOR & SIDELITE) SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT PROVIDE JAMB-MOUNTED CHANNELS FOR LIGHT-BLOCKING
- RS-3 ROLLER SHADE, DUAL MANUAL SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT
- RS-4 ROLLER SHADE, DUAL MOTORIZED SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT

- 1 REFER TO SPECIFICATION FOR MORE INFORMATION.
- 2 WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
- 3 TREATMENT TAGS SHOWN ON EXTERIOR OF WALL FOR CLARITY - AT INTERIOR LOCATIONS, TAG SHOWN INSIDE ROOM FOR MOUNTING.
- 4 REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
- 5 WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
- 6 VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.

ISSUED FOR DATE

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION**

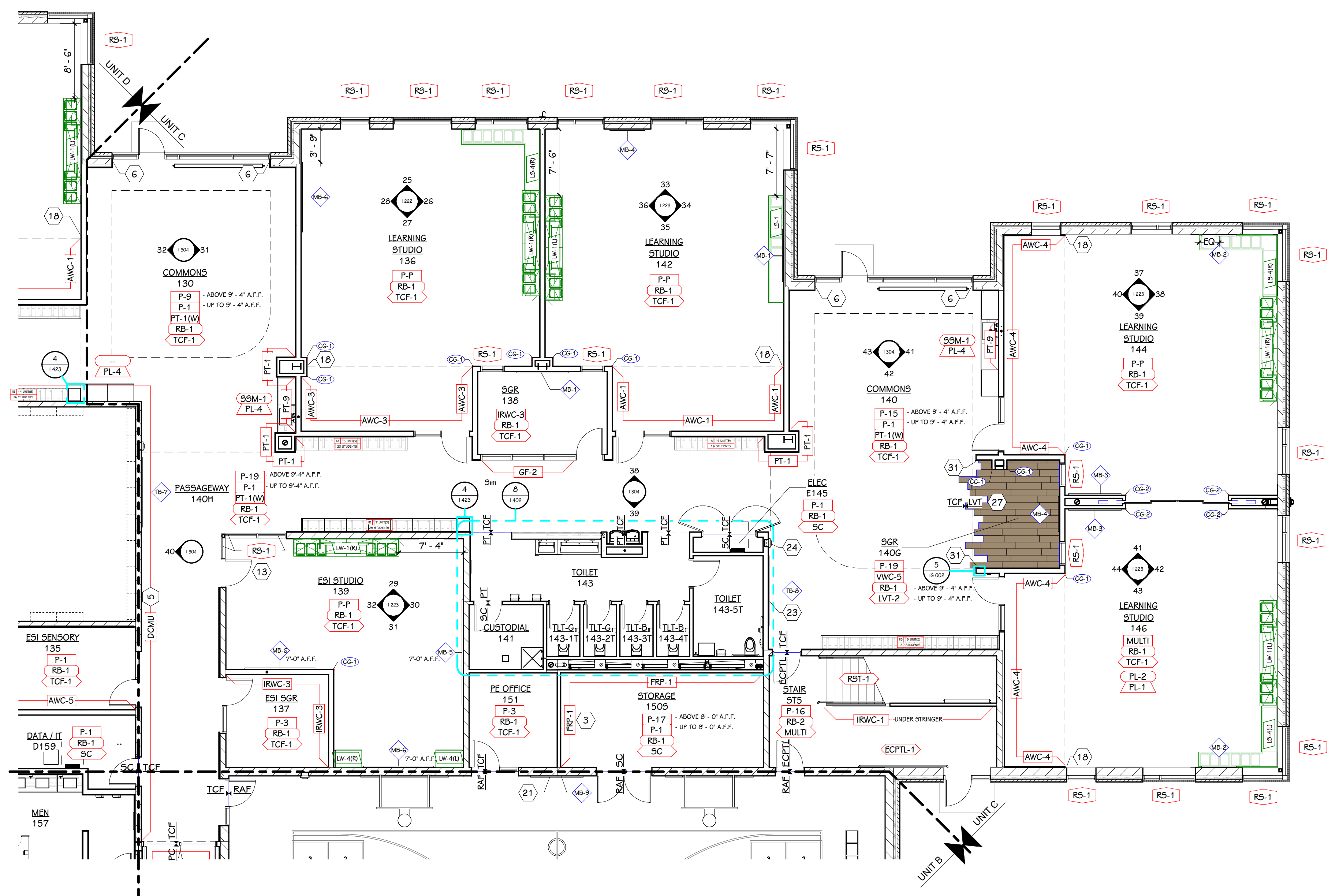
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**FIRST FLOOR FINISH PLAN - UNIT B**

DATE  
**JUNE 30, 2023**

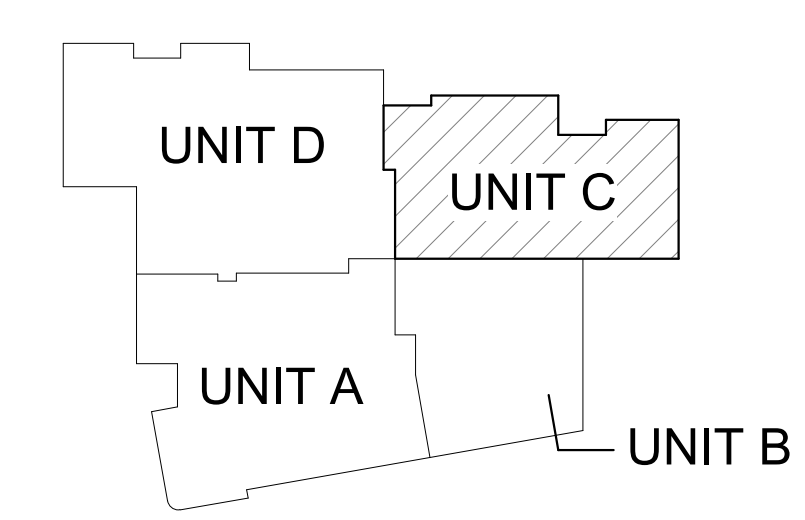
SHEET NUMBER  
**I 101B**  
21-237.20



**FIRST FLOOR FINISH PLAN - UNIT C**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

**FINISH PLAN KEY**

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- WALL FINISH
- BASE FINISH
- FLOOR FINISH
- COUNTER FINISH
- CABINET FINISH (BASE AND UPPER)
- INDICATES EXTENT OF ATYPICAL FINISH
- INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION
- INDICATES PORCELAIN TILE WANSCOT, REFER TO DETAIL
- INDICATES VISUAL DISPLAY BOARD, REFER TO SCHEDULES
- INDICATES PRE-FABRICATED EDUCATIONAL CASEGOODS, REFER TO SPECIFICATION
- INDICATES CUBBY TYPE - REFER TO TYPICAL DETAILS
- INDICATES NUMBER OF MODULAR CUBBY UNITS PER RUN
- INDICATES TOTAL QUANTITY OF STUDENTS PER RUN
- INDICATES CORNER GUARD, REFER TO SCHEDULE

**GENERAL NOTES - FINISH PLAN**

- 1 FINISH TAGS APPLY TO LIKE MATERIALS IN ENTIRE ROOM. I.E. CASEWORK TAG MAY ONLY CALLOUT ONE RUN OF CASEWORK, BUT ALL CASEWORK IN ROOM RECEIVE THE SAME FINISHES, UNLESS TAGGED DIFFERENTLY.
- 2 REFER TO ENLARGED FINISH PLANS AND PATTERN PLANS FOR ADDITIONAL FINISH DETAILS.
- 3 CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.
- 4 CASEWORK FINISH TAGS DO NOT APPLY TO EDUCATIONAL CASEGOOD PIECES. REFER TO TAGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON TYPE AND FINISH.
- 5 WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH ADJACENT WALL FINISH.
- 6 CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.
- 7 REFER TO VISUAL DISPLAY BOARD SCHEDULE AND GENERAL NOTES FOR MORE INFORMATION.
- 8 PORCELAIN TILE WANSCOT IS NOT REQUIRED BEHIND STUDENT CUBBIES.

**KEYED NOTES - FINISH PLANS**

- 1 ALIGN FLOORING TRANSITION BEYOND RADIUS OF BULLNOSE BLOCK.
- 2 PAINT WALL RETURNS AND HORIZONTAL FACE OF BULKHEAD P-1.
- 3 PEP PANELS TO BE INSTALLED ABOVE RUBBER BASE, INSTALL FULL SHEET VERTICALLY ORIENTED.
- 4 INSTALL ROLLER SHADES OVER DOOR AND SIDELITE, ART ROOM ONLY.
- 5 DO NOT APPLY PAINT OR PORCELAIN TILE WANSCOT TO DECORATIVE CONCRETE MASONRY WALLS, TYPICAL.
- 6 RETURN PORCELAIN TILE WANSCOT BACK TO STOREFRONT.
- 7 SKIMCOAT CMU WALL AS REQUIRED FOR SMOOTH IRWP-1 INSTALLATION, REFER TO ELEVATION FOR EXTENTS.
- 8 PROVIDE PEP-1 ALL FACES OF COLUMN WRAP - PROVIDE ALL TRIMS AND OUTSIDE CORNER PIECES AS NECESSARY TO COMPLETE INSTALLATION.
- 9 MEDIUM-GRIND POLISHED CONCRETE STAIR - SEE ARCHITECTURAL STAIR DRAWINGS FOR MORE INFORMATION.
- 10 PFT-1 VERTICALLY STACKED, ALL FACES OF COLUMN WRAP.
- 11 REFER TO SECOND FLOOR FINISH PLAN AND PATTERN ELEVATIONS FOR BULKHEAD PAINTING SCOPE.
- 12 ALIGN PAINT TRANSITION TO BULKHEAD.
- 13 INSTALL THREE WINDOW TREATMENTS.
- 14 VERIFY FINISH EXTENTS WITH FOOD SERVICE EQUIPMENT PRIOR TO INSTALLATION.
- 15 ROLLER SHADE TO BE RECESSED WITHIN CEILING HEADBOX, REFER TO ARCHITECTURAL.
- 16 THERMOFORMED PVC TRIM AT JAMB AND HEAD OF WALL OPENING, REFER TO DETAILS.
- 17 TERMINATE WALLCOVERING AT HEIGHT INDICATED, PROVIDE FRY REGLET ALUMINUM WALLCOVERING BASE/TERMINATION TRIM OR SIMILAR. CLEAR ANODIZED FINISH.
- 18 ALIGN WALL FINISH MATERIAL TRANSITION TO BULKHEAD, REFER TO ELEVATIONS.
- 19 ALIGN FLOORING TRANSITION TO CORNER.
- 20 PROVIDE LEVEL 5 GYPSUM BOARD WALL FINISH.
- 21 ABUSE RESISTANT GYPSUM BOARD PROJECTION SURFACE WITH LEVEL 5 FINISH WITH MITERED DARK BRONZE ANODIZED J-CANAL FRAME, REFER TO ELEVATION.
- 22 PROVIDE CONTINUOUS MITERED FURRING STRIPS ABOVE WANSCOT FOR FLUSH AND FLAT TACKBOARD INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- 23 PROVIDE CONTINUOUS MITERED FURRING STRIPS ABOVE WANSCOT FOR FIRE EXTINGUISHER CABINET INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- 24 AREA RUG, BY FURNITURE.
- 25 METAL LOCKERS, REFER TO ARCHITECTURAL.
- 26 STAGGER EDGE OF FLOORING TRANSITION, CUT CARPET TILE TO COPE TO FULL WIDTH OF LVT PLANK.
- 27 MEDIUM-GRIND POLISHED CONCRETE INFILL IN METAL PAN STAIRS, PROVIDE (2) INSET STAINLESS STEEL BARS AT NOSING OF EACH STAIR TREAD.
- 28 36" WIDE X 12" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- 29 36" WIDE X 24" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- 30 PVC TRIM WHERE INDICATED, REFER TO DETAILS.
- 31 WALL FINISH VARIES, REFER TO ELEVATIONS AND DETAILS.

**WINDOW TREATMENT KEY**

- RS-1 ROLLER SHADE, SINGLE MANUAL SHADE/CLOTHES; 3% LIGHT-FILTERING
  - RS-2 ROLLER SHADE, DUAL MANUAL (INCLUDING DOOR & SIDELITE) SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT PROVIDE JAMB-MOUNTED CHANNELS FOR LIGHT-BLOCKING
  - RS-3 ROLLER SHADE, DUAL MANUAL SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT
  - RS-4 ROLLER SHADE, DUAL MOTORIZED SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT
- 1 REFER TO SPECIFICATION FOR MORE INFORMATION.
  - 2 WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
  - 3 TREATMENT TAGS SHOWN ON EXTERIOR OF WALL FOR CLARITY - AT INTERIOR LOCATIONS, TAG SHOWN INSIDE ROOM FOR MOUNTING.
  - 4 REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
  - 5 WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
  - 6 VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION**

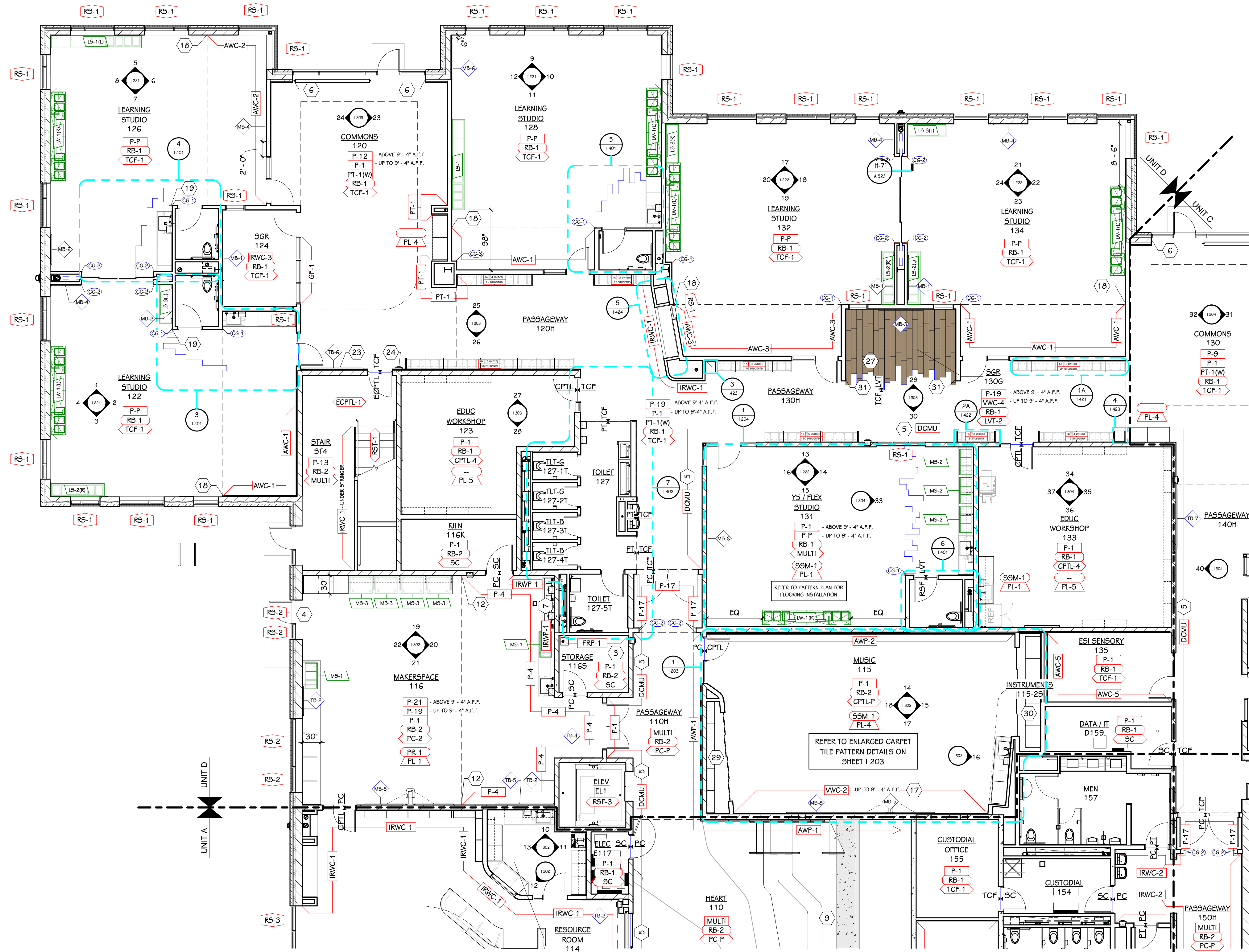
OWNER  
**PORTAGE PUBLIC SCHOOLS**

SHEET TITLE  
**FIRST FLOOR FINISH PLAN - UNIT C**

Portage, Michigan

DATE  
**JUNE 30, 2023**

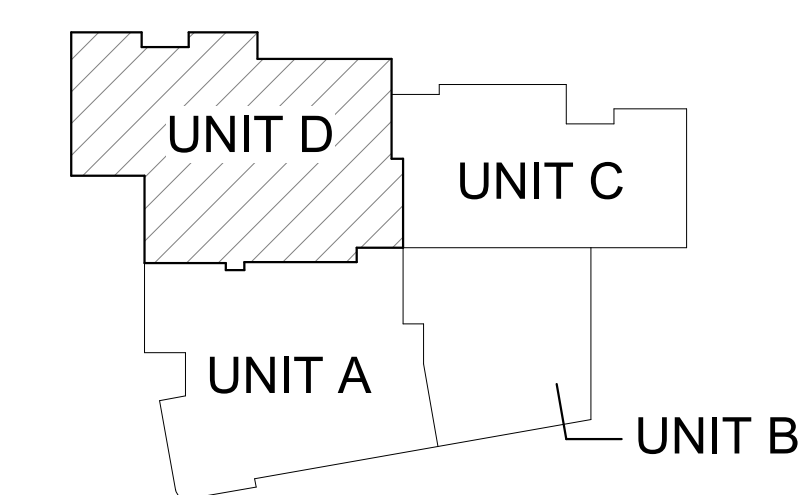
SHEET NUMBER  
**I101C**  
21-237.20



**FIRST FLOOR FINISH PLAN - UNIT D**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

**FINISH PLAN KEY**

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- WALL FINISH
- BASE FINISH
- FLOOR FINISH
- COUNTER FINISH
- CABINET FINISH (BASE AND UPPER)
- INDICATES EXTENT OF ATYPICAL FINISH
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- INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
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- INDICATES PREFABRICATED EDUCATIONAL CASEGOODS, REFER TO SPECIFICATION
- INDICATES CUBBY TYPE - REFER TO TYPICAL DETAILS
- INDICATES NUMBER OF MODULAR CUBBY UNITS PER RUN
- INDICATES TOTAL QUANTITY OF STUDENTS PER RUN
- INDICATES CORNER GUARD, REFER TO SCHEDULE

**GENERAL NOTES - FINISH PLAN**

- 1 FINISH TAGS APPLY TO LIKE MATERIALS IN ENTIRE ROOM. I.E. CASEWORK TAG MAY ONLY CALLOUT ONE RUN OF CASEWORK, BUT ALL CASEWORK IN ROOM RECEIVE THE SAME FINISHES, UNLESS TAGGED DIFFERENTLY.
- 2 REFER TO ENLARGED FINISH PLANS AND PATTERN PLANS FOR ADDITIONAL FINISH DETAILS.
- 3 CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.
- 4 CASEWORK FINISH TAGS DO NOT APPLY TO EDUCATIONAL CASEGOOD PIECES. REFER TO TAGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON TYPE AND FINISH.
- 5 WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH THE ADJACENT WALL FINISH.
- 6 CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.
- 7 REFER TO VISUAL DISPLAY BOARD SCHEDULE AND GENERAL NOTES FOR MORE INFORMATION.
- 8 PORCELAIN TILE WAINSCOT IS NOT REQUIRED BEHIND STUDENT CUBBIES.

**KEYED NOTES - FINISH PLANS**

- 1 ALIGN FLOORING TRANSITION BEYOND RADIUS OF BULLNOSE BLOCK.
- 2 PAINT WALL RETURNS AND HORIZONTAL FACE OF BULKHEAD P-1.
- 3 PFP PANELS TO BE INSTALLED ABOVE RUBBER BASE, INSTALL FULL SHEET VERTICALLY ORIENTED.
- 4 INSTALL ROLLER SHADES OVER DOOR AND SIDELITE, ART ROOM ONLY.
- 5 DO NOT APPLY PAINT OR PORCELAIN TILE WAINSCOT TO DECORATIVE CONCRETE MASONRY WALLS, TYPICAL.
- 6 RETURN PORCELAIN TILE WAINSCOT BACK TO STOREFRONT.
- 7 SKIMCOAT CMU WALL AS REQUIRED FOR SMOOTH IRWP-1 INSTALLATION, REFER TO ELEVATION FOR EXTENTS.
- 8 PROVIDE PFP-1 ALL FACES OF COLUMN WRAP - PROVIDE ALL TRIMS AND OUTSIDE CORNER PIECES AS NECESSARY TO COMPLETE INSTALLATION.
- 9 MEDIUM-GRIND POLISHED CONCRETE STAIR - SEE ARCHITECTURAL STAIR DRAWINGS FOR MORE INFORMATION.
- 10 PFT-1 VERTICALLY STACKED, ALL FACES OF COLUMN WRAP.
- 11 REFER TO SECOND FLOOR FINISH PLAN AND PATTERN ELEVATIONS FOR BULKHEAD PAINTING SCOPE.
- 12 ALIGN PAINT TRANSITION TO BULKHEAD.
- 13 INSTALL THREE WINDOW TREATMENTS.
- 14 VERIFY FINISH EXTENTS WITH FOOD SERVICE EQUIPMENT PRIOR TO INSTALLATION.
- 15 ROLLER SHADE TO BE RECESSED WITHIN CEILING HEADBOX, REFER TO ARCHITECTURAL.
- 16 THERMOFORMED PVC TRIM AT JAMB AND HEAD OF WALL OPENING, REFER TO DETAILS.
- 17 TERMINATE WALLCOVERING AT HEIGHT INDICATED, PROVIDE FRY REGLET ALUMINUM WALLCOVERING BASE/TERMINATION TRIM OR SIMILAR - CLEAR ANODIZED FINISH.
- 18 ALIGN WALL FINISH MATERIAL TRANSITION TO BULKHEAD, REFER TO ELEVATIONS.
- 19 ALIGN FLOORING TRANSITION TO CORNER.
- 20 PROVIDE LEVEL 5 GYPSUM BOARD WALL FINISH.
- 21 ABUSE RESISTANT GYPSUM BOARD PROJECTION SURFACE WITH LEVEL 5 FINISH WITH MITERED DARK BRONZE ANODIZED J-CANAL FRAME, REFER TO ELEVATION.
- 22 PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT TACKBOARD INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- 23 PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FIRE EXTINGUISHER CABINET INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- 24 AREA RUG, BY FURNITURE.
- 25 METAL LOCKERS, REFER TO ARCHITECTURAL.
- 26 STAGGER EDGE OF FLOORING TRANSITION, CUT CARPET TILE TO COPE TO FULL WIDTH OF LVT PLANK.
- 27 MEDIUM-GRIND POLISHED CONCRETE INFILL IN METAL PAN STAIRS, PROVIDE (2) INSET STAINLESS STEEL BARS AT NOSING OF EACH STAIR TREAD.
- 28 36" WIDE X 12" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- 29 36" WIDE X 24" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- 30 PVC TRIM WHERE INDICATED, REFER TO DETAILS.
- 31 WALL FINISH VARIES, REFER TO ELEVATIONS AND DETAILS.

**WINDOW TREATMENT KEY**

- RS-1 ROLLER SHADE, SINGLE MANUAL SHADE/CLOTHES; 3% LIGHT-FILTERING
- RS-2 ROLLER SHADE, DUAL MANUAL (INCLUDING DOOR & SIDELITE) SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT PROVIDE JAMB-MOUNTED CHANNELS FOR LIGHT-BLOCKING
- RS-3 ROLLER SHADE, DUAL MANUAL SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT
- RS-4 ROLLER SHADE, DUAL MOTORIZED SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT

- 1 REFER TO SPECIFICATION FOR MORE INFORMATION.
- 2 WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
- 3 TREATMENT TAGS SHOWN ON EXTERIOR OF WALL FOR CLARITY - AT INTERIOR LOCATIONS, TAG SHOWN INSIDE ROOM FOR MOUNTING.
- 4 REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
- 5 WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
- 6 VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

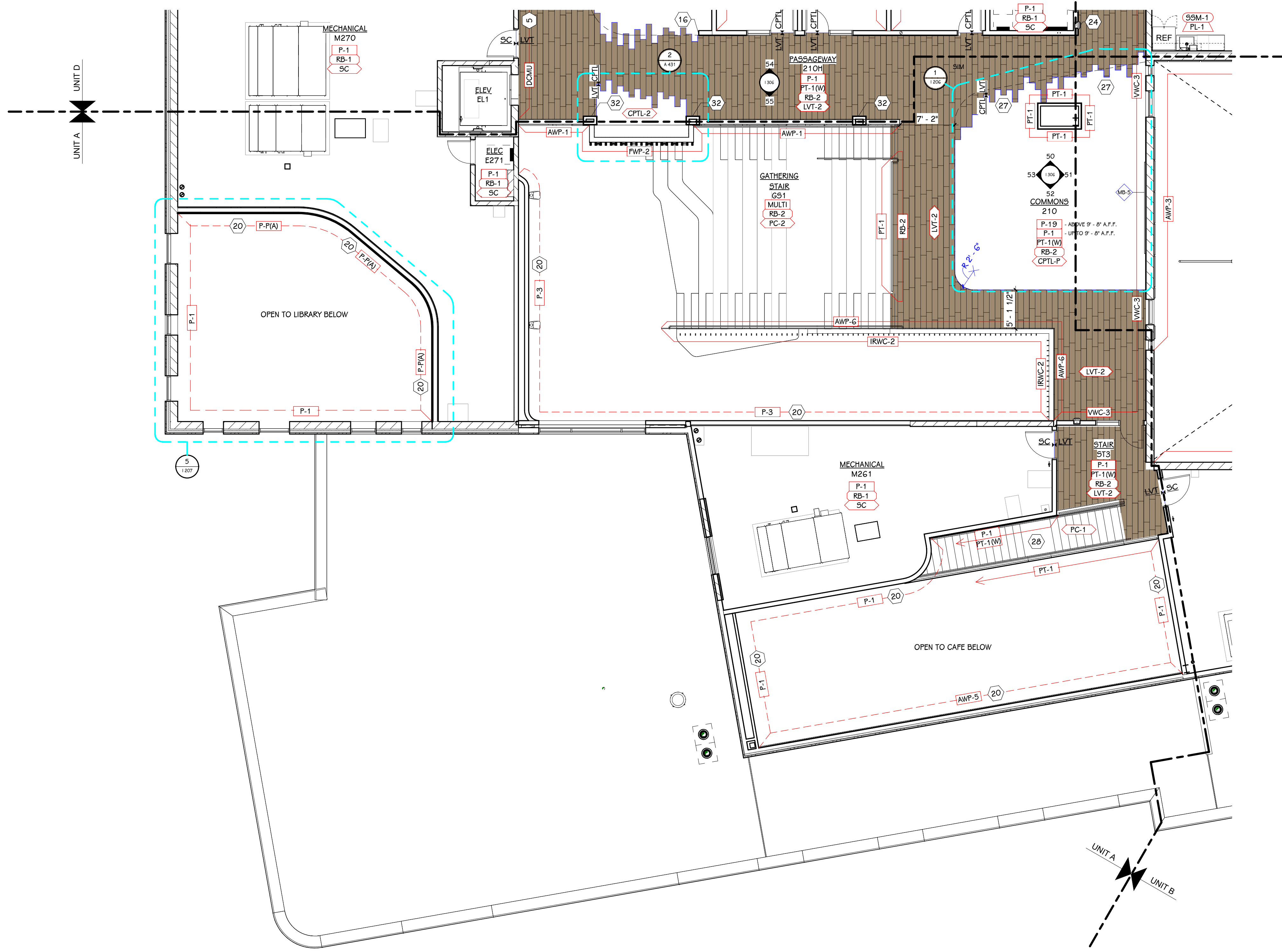
OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
FIRST FLOOR FINISH PLAN - UNIT D

Portage, Michigan

DATE  
JUNE 30, 2023

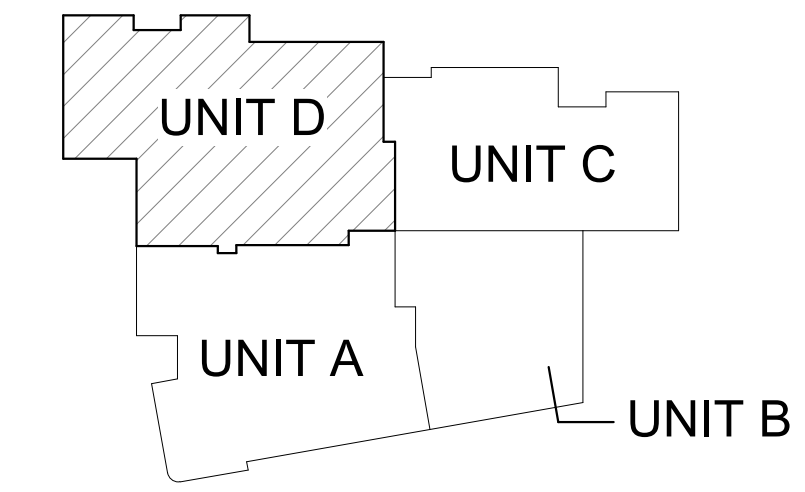
SHEET NUMBER  
I 101D  
21-237.20



**SECOND FLOOR FINISH PLAN - UNIT A**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

**FINISH PLAN KEY**

- X.# → INDICATES MATERIAL TYPE
- X.# → INDICATES CORRESPONDING SELECTION IN SCHEDULE
- Y.# → WALL FINISH
- X.# → BASE FINISH
- X.# → FLOOR FINISH
- X.# → COUNTER FINISH
- X.# → CABINET FINISH (BASE AND UPPER)
- X.# → INDICATES EXTENT OF ATYPICAL FINISH
- X / Y → INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- MULTI → INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- X.PAT → INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- X.PAT → INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION
- PT-#W → INDICATES PORCELAIN TILE WAINSCOT, REFER TO DETAIL
- VB-# → INDICATES VISUAL DISPLAY BOARD, REFER TO SCHEDULES
- XX-# → INDICATES PRE-FABRICATED EDUCATIONAL CASEGOODS, REFER TO SPECIFICATION
- INDICATES CUBBY TYPE - REFER TO TYPICAL DETAILS
- X / # UNITS → INDICATES NUMBER OF MODULAR CUBBY UNITS PER RUN
- # STUDENTS → INDICATES TOTAL QUANTITY OF STUDENTS PER RUN
- CG-# → INDICATES CORNER GUARD, REFER TO SCHEDULE

**GENERAL NOTES - FINISH PLAN**

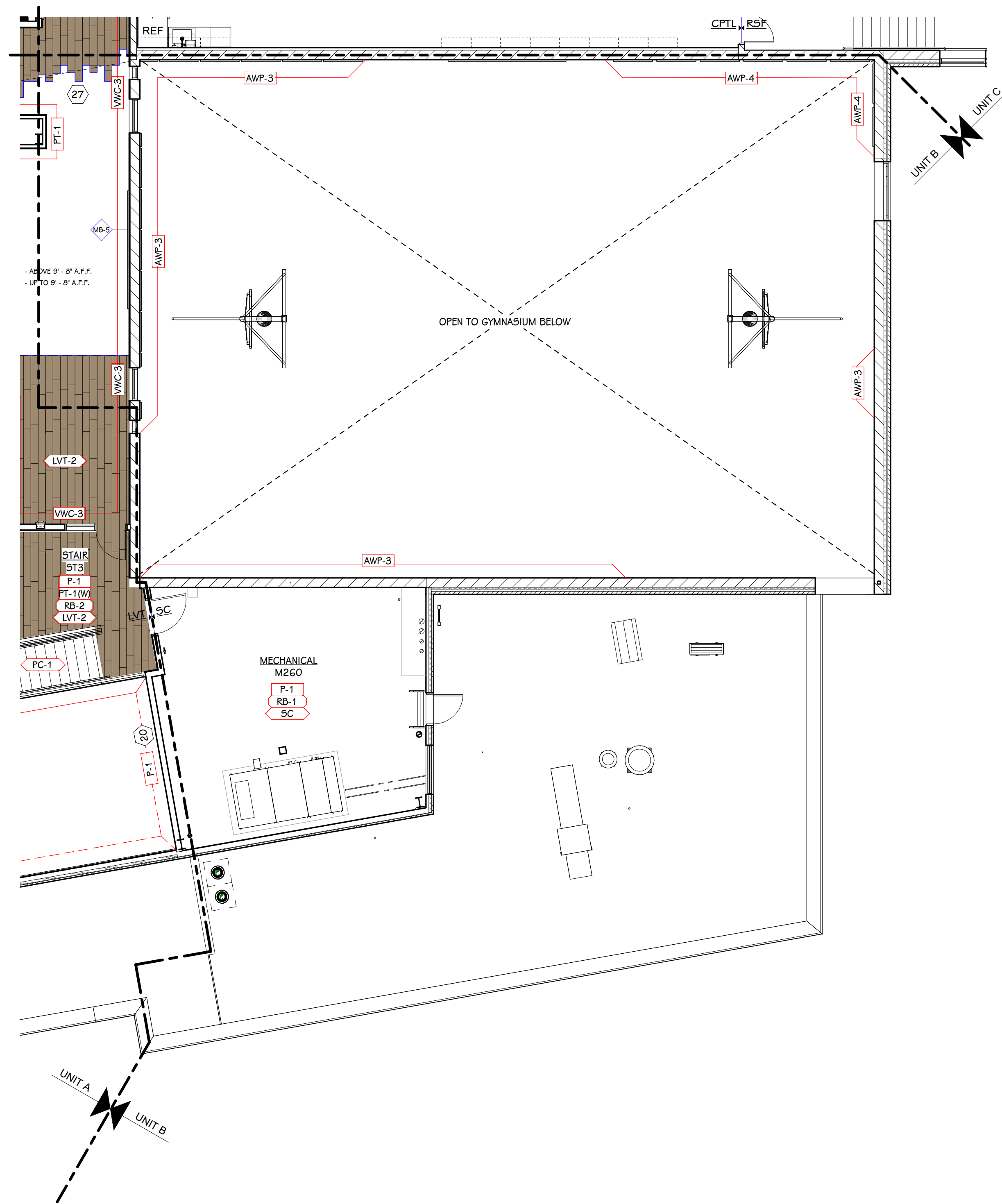
- FINISH TAGS APPLY TO LIKE MATERIALS IN ENTIRE ROOM. I.E. CASEWORK TAG MAY ONLY CALLOUT ONE RUN OF CASEWORK, BUT ALL CASEWORK IN ROOM RECEIVE THE SAME FINISHES, UNLESS TAGGED DIFFERENTLY.
- REFER TO ENLARGED FINISH PLANS AND PATTERN PLANS FOR ADDITIONAL FINISH DETAILS.
- CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.
- CASEWORK FINISH TAGS DO NOT APPLY TO EDUCATIONAL CASEGOOD PIECES. REFER TO TAGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON TYPE AND FINISH.
- WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH THE ADJACENT WALL FINISH.
- CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.
- REFER TO VISUAL DISPLAY BOARD SCHEDULE AND GENERAL NOTES FOR MORE INFORMATION.
- PORCELAIN TILE WAINSCOT IS NOT REQUIRED BEHIND STUDENT CUBBIES.

**KEYED NOTES - FINISH PLANS**

- ALIGN FLOORING TRANSITION BEYOND RADIUS OF BULLNOSE BLOCK.
- PAINT WALL RETURNS AND HORIZONTAL FACE OF BULKHEAD P-1.
- PEP PANELS TO BE INSTALLED ABOVE RUBBER BASE, INSTALL FULL SHEET VERTICALLY ORIENTED.
- INSTALL ROLLER SHADES OVER DOOR AND SIDELITE, ART ROOM ONLY.
- DO NOT APPLY PAINT OR PORCELAIN TILE WAINSCOT TO DECORATIVE CONCRETE MASONRY WALLS, TYPICAL.
- RETURN PORCELAIN TILE WAINSCOT BACK TO STOREFRONT.
- SKIMCOAT CMU WALL AS REQUIRED FOR SMOOTH IRW-1 INSTALLATION, REFER TO ELEVATION FOR EXTENTS.
- PROVIDE PEP-1 ALL FACES OF COLUMN WRAP - PROVIDE ALL TRIMS AND OUTSIDE CORNER PIECES AS NECESSARY TO COMPLETE INSTALLATION.
- MEDIUM-GRIND POLISHED CONCRETE STAIR - SEE ARCHITECTURAL STAIR DRAWINGS FOR MORE INFORMATION.
- PT-1 VERTICALLY STACKED, ALL FACES OF COLUMN WRAP.
- REFER TO SECOND FLOOR FINISH PLAN AND PATTERN ELEVATIONS FOR BULKHEAD PAINTING SCOPE.
- ALIGN PAINT TRANSITION TO BULKHEAD.
- INSTALL THREE WINDOW TREATMENTS.
- VERIFY FINISH EXTENTS WITH FOOD SERVICE EQUIPMENT PRIOR TO INSTALLATION.
- ROLLER SHADE TO BE RECESSED WITHIN CEILING HEADBOX, REFER TO ARCHITECTURAL.
- TERMINATED PVC TRIM AT JAMB AND HEAD OF WALL OPENING, REFER TO DETAILS.
- TERMINATE WALLCOVERING AT HEIGHT INDICATED, PROVIDE FRY REGLET ALUMINUM WALLCOVERING BASE/TERMINATION TRIM OR SIMILAR. CLEAR ANODIZED FINISH.
- ALIGN WALL FINISH MATERIAL TRANSITION TO BULKHEAD, REFER TO ELEVATIONS.
- ALIGN FLOORING TRANSITION TO CORNER.
- PROVIDE LEVEL 5 GYPSUM BOARD WALL FINISH.
- ABUSE RESISTANT GYPSUM BOARD PROJECTION SURFACE WITH LEVEL 5 FINISH WITH MITERED DARK BRONZE ANODIZED J-CANNEL FRAME, REFER TO ELEVATION.
- PROVIDE CONTINUOUS, MITERED PURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT TACKBOARD INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- PROVIDE CONTINUOUS, MITERED PURRING STRIPS ABOVE WAINSCOT FOR FIRE EXTINGUISHER CABINET INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- AREA RUG, BY FURNITURE.
- METAL LOCKERS, REFER TO ARCHITECTURAL.
- STAGGER EDGE OF FLOORING TRANSITION, CUT CARPET TILE TO COPE TO FULL WIDTH OF LVT PLANK.
- MEDIUM-GRIND POLISHED CONCRETE INFILL IN METAL PAN STAIRS, PROVIDE (2) INSET STAINLESS STEEL BARS AT NOSING OF EACH STAIR TREAD.
- 36" WIDE X 12" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- 36" WIDE X 24" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- PVC TRIM WHERE INDICATED, REFER TO DETAILS.
- WALL FINISH VARIES, REFER TO ELEVATIONS AND DETAILS.

**WINDOW TREATMENT KEY**

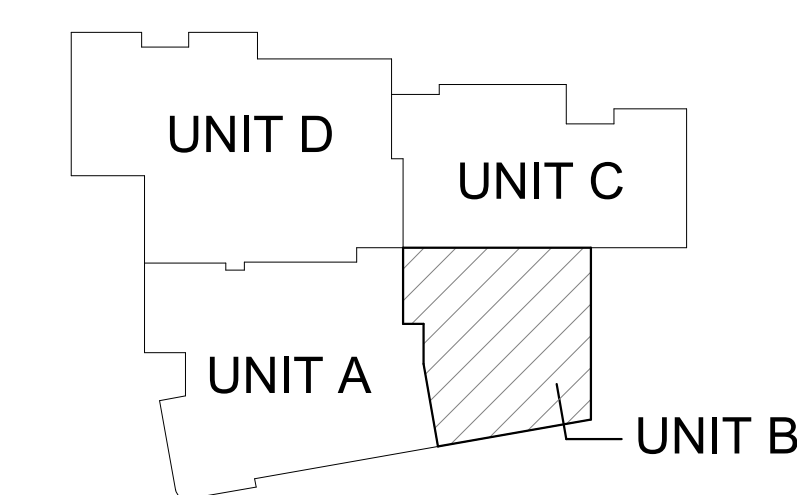
- RS-1 ROLLER SHADE, SINGLE MANUAL SHADE/CLOTHES; 3% LIGHT-FILTERING
  - RS-2 ROLLER SHADE, DUAL MANUAL (INCLUDING DOOR & SIDELITE) SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT PROVIDE JAMB-MOUNTED CHANNELS FOR LIGHT-BLOCKING
  - RS-3 ROLLER SHADE, DUAL MANUAL SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT
  - RS-4 ROLLER SHADE, DUAL MOTORIZED SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT
- REFER TO SPECIFICATION FOR MORE INFORMATION.
  - WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
  - TREATMENT TAGS SHOWN ON EXTERIOR OF WALL FOR CLARITY - AT INTERIOR LOCATIONS, TAG SHOWN INSIDE ROOM FOR MOUNTING.
  - REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
  - WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
  - VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.



**SECOND FLOOR FINISH PLAN - UNIT B**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

**FINISH PLAN KEY**

- X-# INDICATES MATERIAL TYPE
- X-# INDICATES CORRESPONDING SELECTION IN SCHEDULE
- Y-# WALL FINISH
- X-# BASE FINISH
- X-# FLOOR FINISH
- X-# COUNTER FINISH
- X-# CABINET FINISH (BASE AND UPPER)
- X-# INDICATES EXTENT OF ATYPICAL FINISH
- X-# INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- MULTI INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- X-PT# INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION
- PT-#W INDICATES PORCELAIN TILE WAINSCOT, REFER TO DETAIL
- VB-# INDICATES VISUAL DISPLAY BOARD, REFER TO SCHEDULES
- XX-# INDICATES PRE-FABRICATED EDUCATIONAL CASEGOODS, REFER TO SPECIFICATION
- INDICATES CUBBY TYPE - REFER TO TYPICAL DETAILS
- X-# UNITS # STUDENTS INDICATES NUMBER OF MODULAR CUBBY UNITS PER RUN
- INDICATES TOTAL QUANTITY OF STUDENTS PER RUN
- CG-# INDICATES CORNER GUARD, REFER TO SCHEDULE

**GENERAL NOTES - FINISH PLAN**

- 1 FINISH TAGS APPLY TO LIKE MATERIALS IN ENTIRE ROOM. I.E. CASEWORK TAG MAY ONLY CALLOUT ONE RUN OF CASEWORK, BUT ALL CASEWORK IN ROOM RECEIVE THE SAME FINISHES, UNLESS TAGGED DIFFERENTLY.
- 2 REFER TO ENLARGED FINISH PLANS AND PATTERN PLANS FOR ADDITIONAL FINISH DETAILS.
- 3 CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.
- 4 CASEWORK FINISH TAGS DO NOT APPLY TO EDUCATIONAL CASEGOOD PIECES. REFER TO TAGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON TYPE AND FINISH.
- 5 WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH THE ADJACENT WALL FINISH.
- 6 CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.
- 7 REFER TO VISUAL DISPLAY BOARD SCHEDULE AND GENERAL NOTES FOR MORE INFORMATION.
- 8 PORCELAIN TILE WAINSCOT IS NOT REQUIRED BEHIND STUDENT CUBBIES.

**KEYED NOTES - FINISH PLANS**

- 1 ALIGN FLOORING TRANSITION BEYOND RADIUS OF BULLNOSE BLOCK.
- 2 PAINT WALL RETURNS AND HORIZONTAL FACE OF BULKHEAD P-1.
- 3 PEP PANELS TO BE INSTALLED ABOVE RUBBER BASE, INSTALL FULL SHEET VERTICALLY ORIENTED.
- 4 INSTALL ROLLER SHADES OVER DOOR AND SIDELITE, ART ROOM ONLY.
- 5 DO NOT APPLY PAINT OR PORCELAIN TILE WAINSCOT TO DECORATIVE CONCRETE MASONRY WALLS, TYPICAL.
- 6 RETURN PORCELAIN TILE WAINSCOT BACK TO STOREFRONT.
- 7 SKIMCOAT CMU WALL AS REQUIRED FOR SMOOTH IRWP-1 INSTALLATION, REFER TO ELEVATION FOR EXTENTS.
- 8 PROVIDE PRP-1 ALL FACES OF COLUMN WRAP - PROVIDE ALL TRIMS AND OUTSIDE CORNER PIECES AS NECESSARY TO COMPLETE INSTALLATION.
- 9 MEDIUM-GRIND POLISHED CONCRETE STAIR - SEE ARCHITECTURAL STAIR DRAWINGS FOR MORE INFORMATION.
- 10 FT-1 VERTICALLY STACKED, ALL FACES OF COLUMN WRAP.
- 11 REFER TO SECOND FLOOR FINISH PLAN AND PATTERN ELEVATIONS FOR BULKHEAD PAINTING SCOPE.
- 12 ALIGN PAINT TRANSITION TO BULKHEAD.
- 13 INSTALL THREE WINDOW TREATMENTS.
- 14 VERIFY FINISH EXTENTS WITH FOOD SERVICE EQUIPMENT PRIOR TO INSTALLATION.
- 15 ROLLER SHADE TO BE RECESSED WITHIN CEILING HEADBOX, REFER TO ARCHITECTURAL.
- 16 THERMOFORMED PVC TRIM AT JAMB AND HEAD OF WALL OPENING, REFER TO DETAILS.
- 17 TERMINATE WALLCOVERING AT HEIGHT INDICATED, PROVIDE FRY REGLET ALUMINUM WALLCOVERING BASE/TERMINATION TRIM OR SIMILAR. CLEAR ANODIZED FINISH.
- 18 ALIGN WALL FINISH MATERIAL TRANSITION TO BULKHEAD, REFER TO ELEVATIONS.
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- 22 PROVIDE CONTINUOUS, MITERED PURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT TACKBOARD INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
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- 24 AREA RUG, BY FURNITURE.
- 25 METAL LOCKERS, REFER TO ARCHITECTURAL.
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- 30 PVC TRIM WHERE INDICATED, REFER TO DETAILS.
- 31 WALL FINISH VARIES, REFER TO ELEVATIONS AND DETAILS.

**WINDOW TREATMENT KEY**

- RS-1 ROLLER SHADE, SINGLE MANUAL SHADE/CLOTHES); 3% LIGHT-FILTERING
- RS-2 ROLLER SHADE, DUAL MANUAL (INCLUDING DOOR & SIDELITE SHADE/CLOTHES); 3% LIGHT-FILTERING & BLACKOUT PROVIDE JAMB-MOUNTED CHANNELS FOR LIGHT-BLOCKING
- RS-3 ROLLER SHADE, DUAL MANUAL SHADE/CLOTHES); 3% LIGHT-FILTERING & BLACKOUT
- RS-4 ROLLER SHADE, DUAL MOTORIZED SHADE/CLOTHES); 3% LIGHT-FILTERING & BLACKOUT

- 1 REFER TO SPECIFICATION FOR MORE INFORMATION.
- 2 WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
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- 4 REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
- 5 WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
- 6 VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR FINISH PLAN - UNIT B

DATE  
JUNE 30, 2023

SHEET NUMBER  
I 102B  
21-237.20

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

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BID PACKAGE 6: CONSTRUCTION**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**SECOND FLOOR FINISH PLAN - UNIT C**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**I 102C**  
21-237.20

**FINISH PLAN KEY**

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- WALL FINISH
- BASE FINISH
- FLOOR FINISH
- COUNTER FINISH
- CABINET FINISH (BASE AND UPPER)
- INDICATES EXTENT OF ATYPICAL FINISH
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- INDICATES VISUAL DISPLAY BOARD, REFER TO SCHEDULES
- INDICATES PRE-FABRICATED EDUCATIONAL CASEGOODS, REFER TO SPECIFICATION
- INDICATES CUBBY TYPE - REFER TO TYPICAL DETAILS
- INDICATES NUMBER OF MODULAR CUBBY UNITS PER RUN
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**GENERAL NOTES - FINISH PLAN**

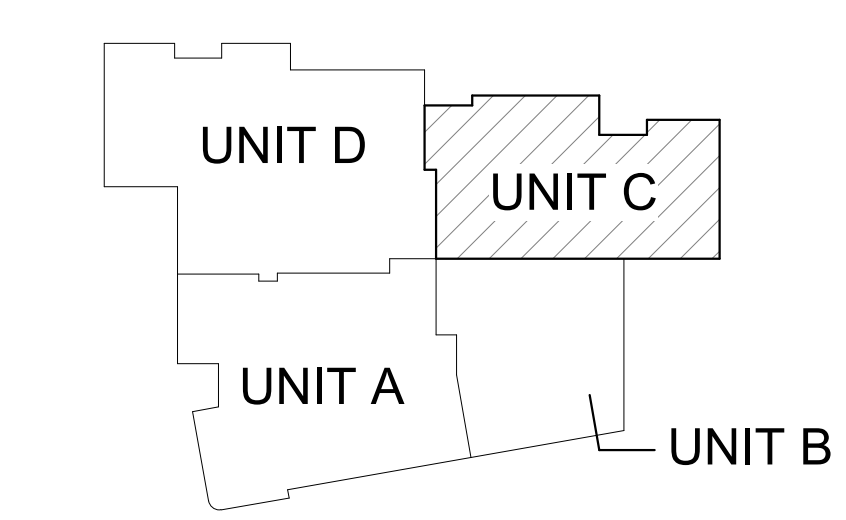
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- 32

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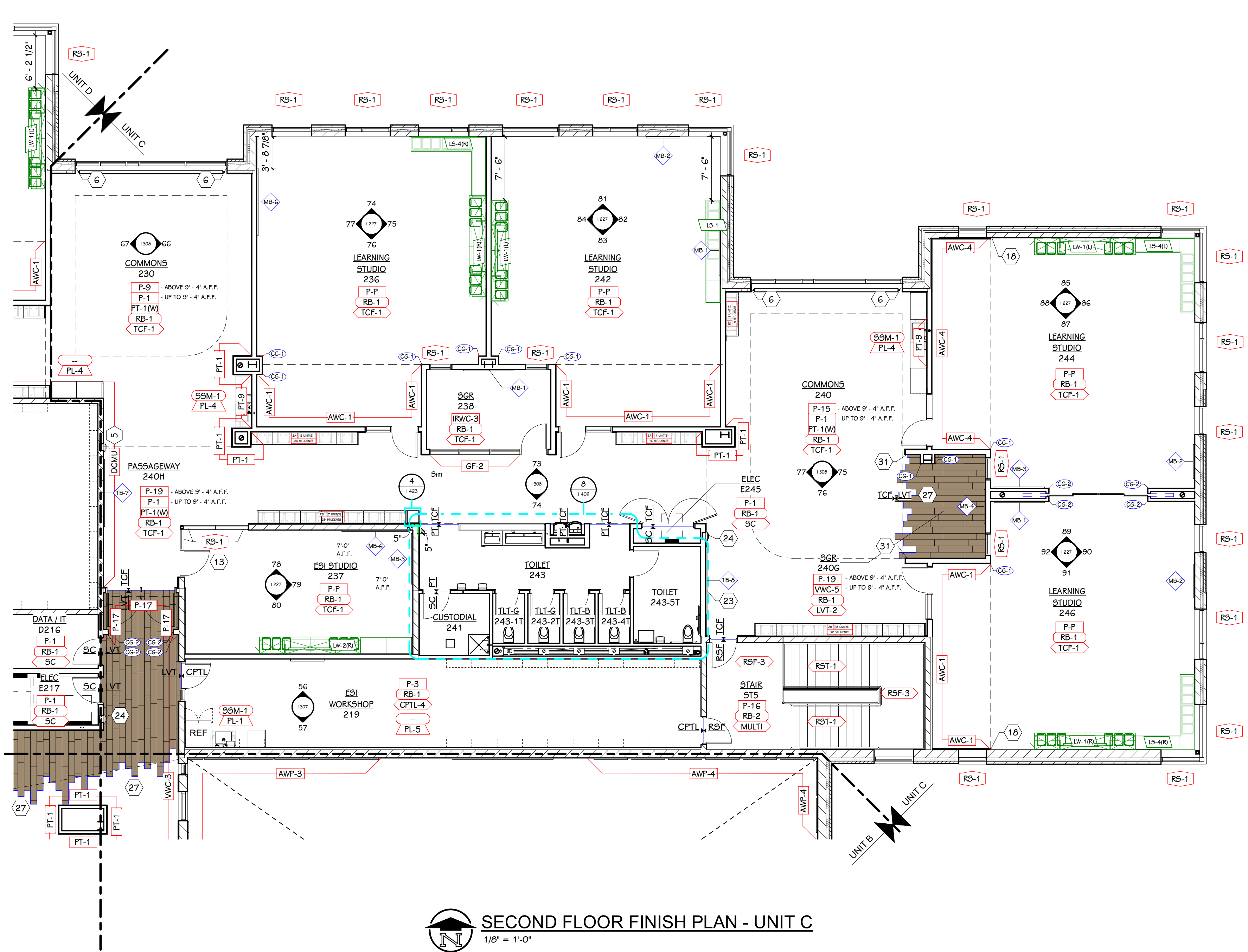
**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

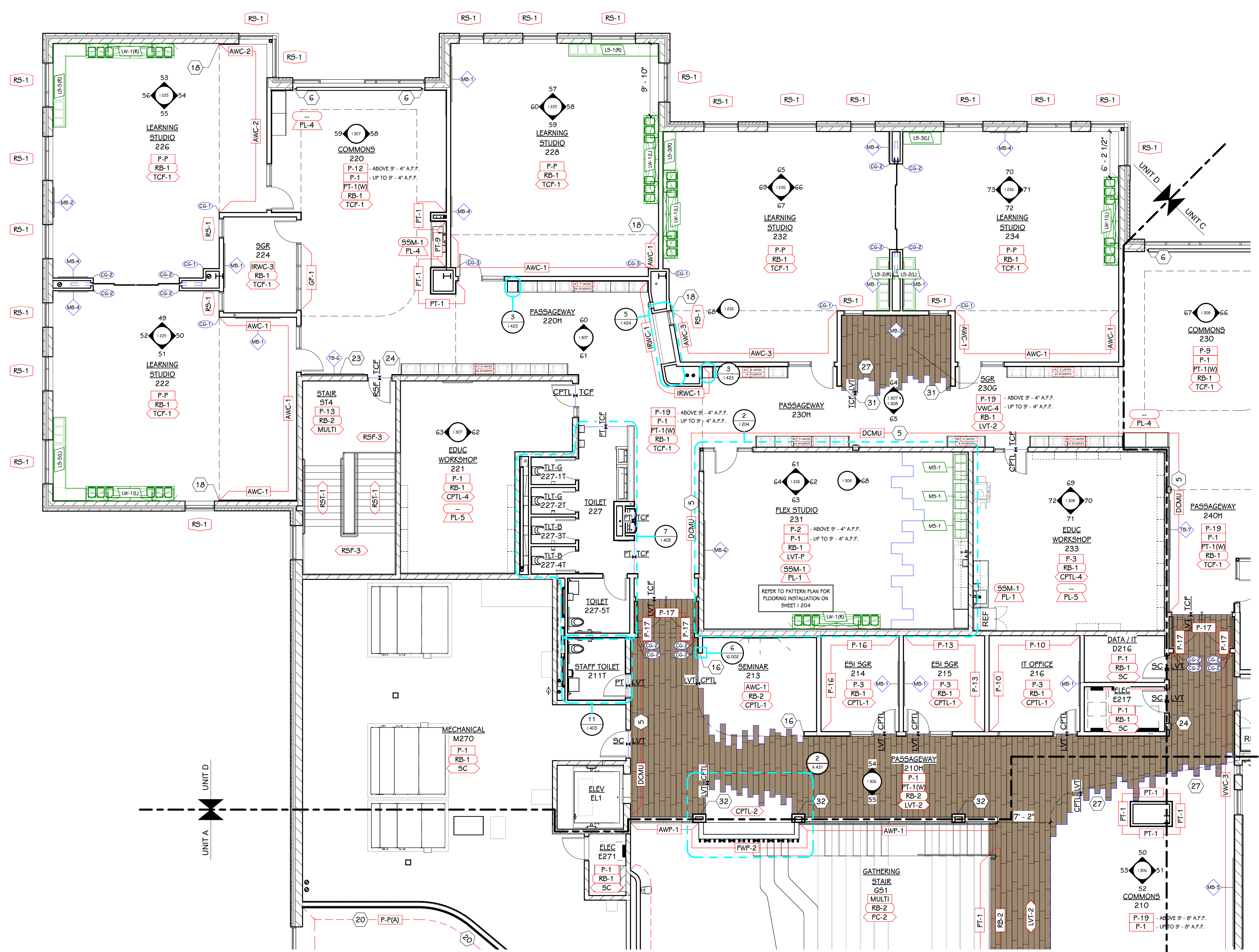
**WINDOW TREATMENT KEY**

- RS-1** ROLLER SHADE, SINGLE MANUAL SHADE/CLOTHES; 3% LIGHT-FILTERING
  - RS-2** ROLLER SHADE, DUAL MANUAL (INCLUDING DOOR & SIDELITE) SHADE/CLOTHES; 3% LIGHT-FILTERING & BLACKOUT PROVIDE JAMB-MOUNTED CHANNELS FOR LIGHT-BLOCKING
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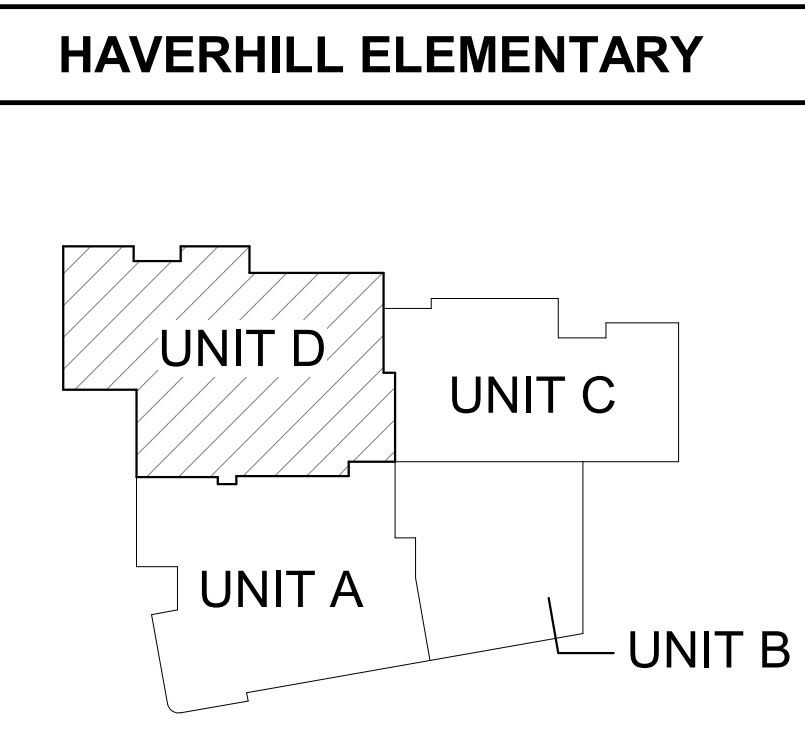
**SECOND FLOOR FINISH PLAN - UNIT C**  
1/8" = 1'-0"





SECOND FLOOR FINISH PLAN - UNIT D  
1/8" = 1'-0"

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KEY PLAN  
SCALE: NO SCALE

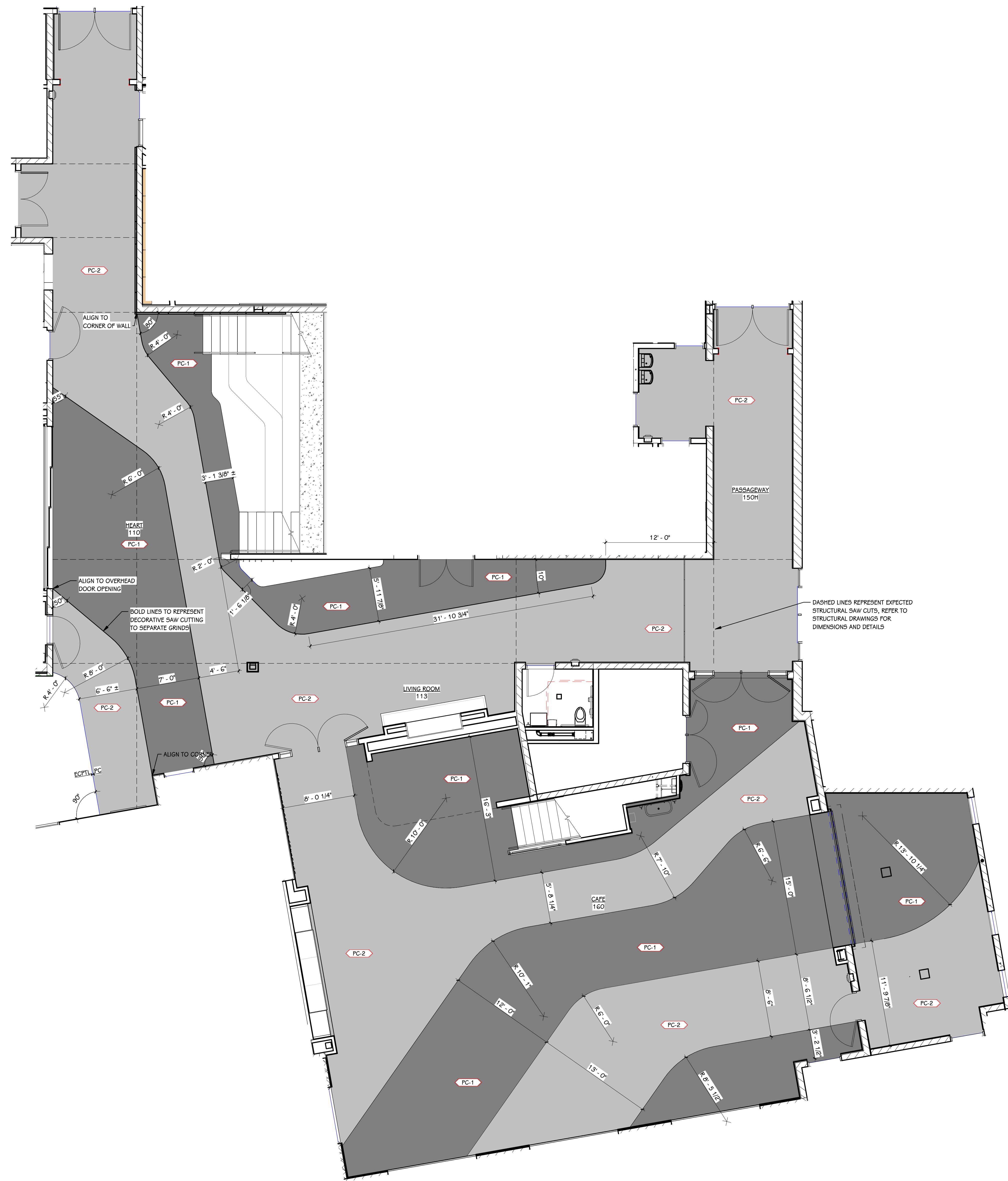
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WINDOW TREATMENT KEY	
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	ROLLER SHADE, DUAL MOTORIZED SHADE/CLOTHES); 3% LIGHT-FILTERING & BLACKOUT

- REFER TO SPECIFICATION FOR MORE INFORMATION.
- WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
- TREATMENT TAGS SHOWN ON EXTERIOR OF WALL FOR CLARITY - AT INTERIOR LOCATIONS, TAG SHOWN INSIDE ROOM FOR MOUNTING.
- REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
- WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
- VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.



FINISH PLAN KEY	
	FLOOR FINISH
FLOOR PATTERN LEGEND	
	PC-1: CPAA CLASS D FINISH (DEEP GRIND), NATURAL
	PC-2: CPAA CLASS C FINISH (MEDIUM GRIND), NATURAL

1 PATTERN PLAN - POLISHED CONCRETE  
3/16" = 1'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

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 Architecture · Engineering · Interiors  
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PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION**

---

OWNER  
**PORTAGE PUBLIC SCHOOLS**  
 Portage, Michigan

---

SHEET NUMBER  
**1201**  
 21-237.20

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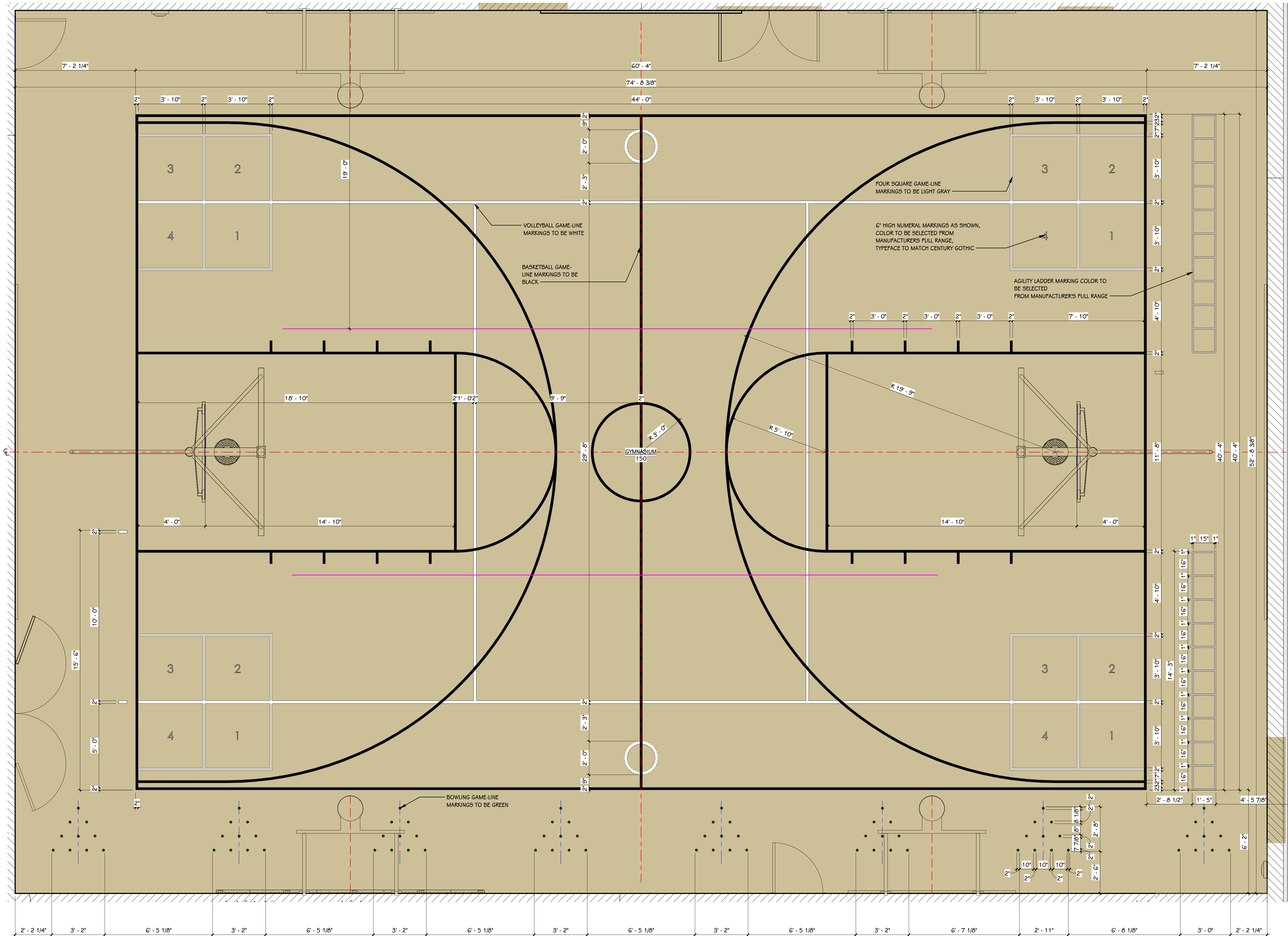
DATE  
**JUNE 30, 2023**

---

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

---

SHEET TITLE  
**PATTERN PLAN - POLISHED CONCRETE**



- GENERAL NOTES - GYMNASIUM FLOOR MARKINGS**
1. REFER TO FINISH PLANS AND MATERIAL SELECTION SCHEDULE FOR MATERIAL TYPES, ALTERNATES, ETC.
  2. VERIFY ALL DIMENSIONS IN THE FIELD AND ALERT ARCHITECT OF ANY CONFLICTS PRIOR TO STRIPING.
  3. COORDINATE MARKING DIMENSIONS WITH FINAL APPROVED GYMNASIUM EQUIPMENT SUBMITTALS AND OFFICIAL STATE-RECOGNIZED COMPETITION MARKING STANDARDS.
  4. ARCHITECT TO SELECT MARKING COLORS FROM MANUFACTURER'S FULL RANGE OF STANDARD, DESIGNER, AND CUSTOM COLOR OFFERINGS.

1 GYM 150 STRIPING PLAN  
3/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
PATTERN PLAN - MUSIC CARPET TILE  
INSTALLATION

DATE  
JUNE 30, 2023

SHEET NUMBER  
**1203**  
21-237.20

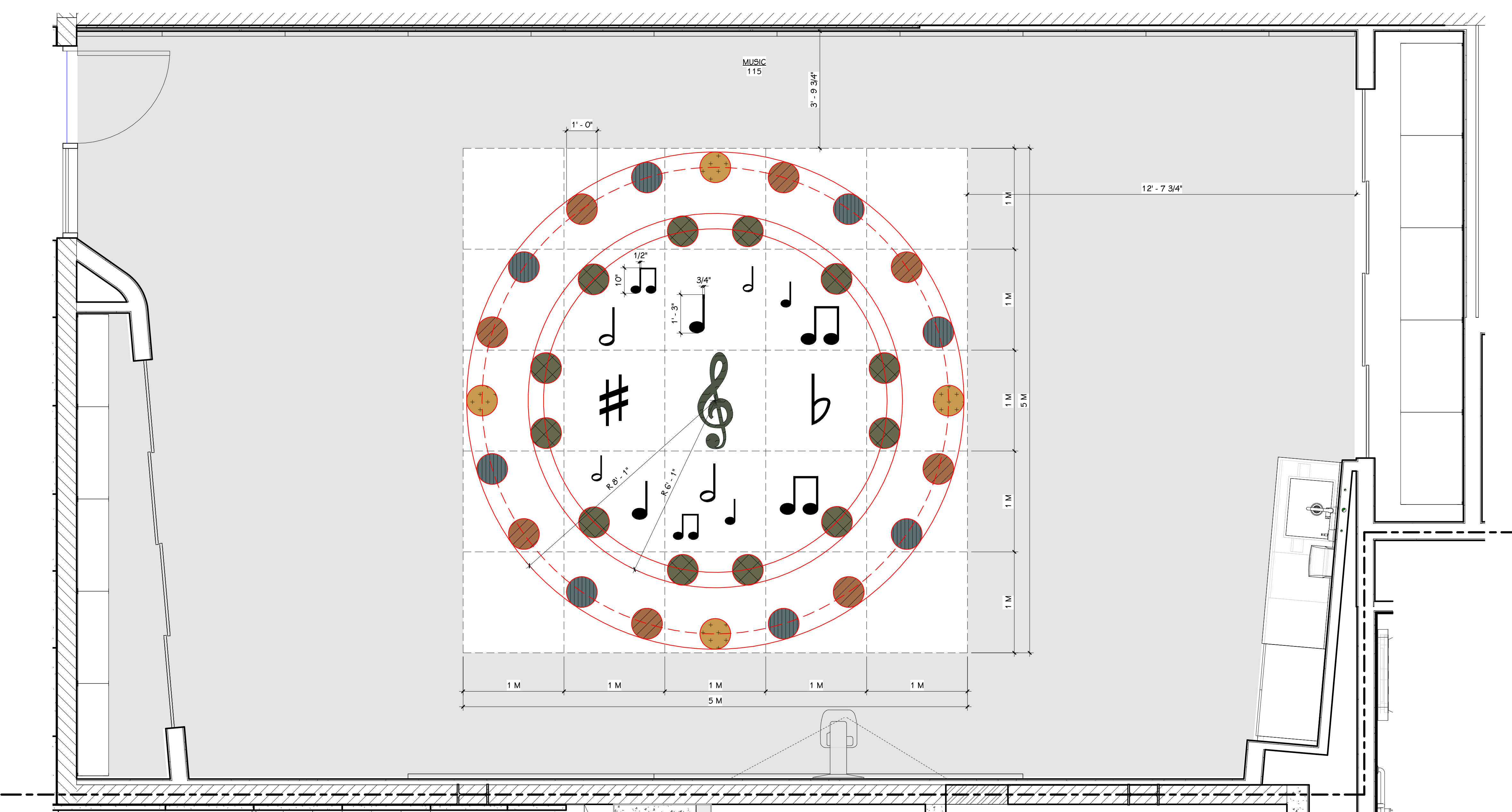
GENERAL NOTES - MUSIC CARPET TILE INSTALLATION	
1.	REFER TO MATERIAL SELECTION SCHEDULE FOR MATERIAL TYPE DESIGNATIONS AND RELATED SCOPE REQUIREMENTS.
2.	MANUFACTURER'S REFERENCE NUMBER PROVIDED IN MATERIAL SELECTION SCHEDULE FOR CUSTOM GRAPHIC PRINTED CPTL-G.
3.	VERIFY ALL DIMENSIONS IN THE FIELD AND ALERT ARCHITECT OF ANY CONFLICTS PRIOR TO INSTALLATION.
4.	PATTERN ORIENTATION INSTALLED ALIGNED TO SOUTH TEACHING WALL.

GRAPHIC LEGEND - MUSIC CARPET TILE INSTALLATION			
	BRANDYWINE		RIVERWAY
	VOGUE GREEN		ALCHEMY
	OAKMOSS		AGREEABLE GRAY

SELECTION LEGEND - MUSIC CARPET TILE INSTALLATION			
	CPTL-5		CPTL-6



1 MUSIC ROOM CUSTOM CARPET  
1/2" = 1'-0"

Design: T230G60ML  
Version: \*T230G60ML-A23003\*  
Date: 28-JUN-2023  
Approved by: *Miliken*

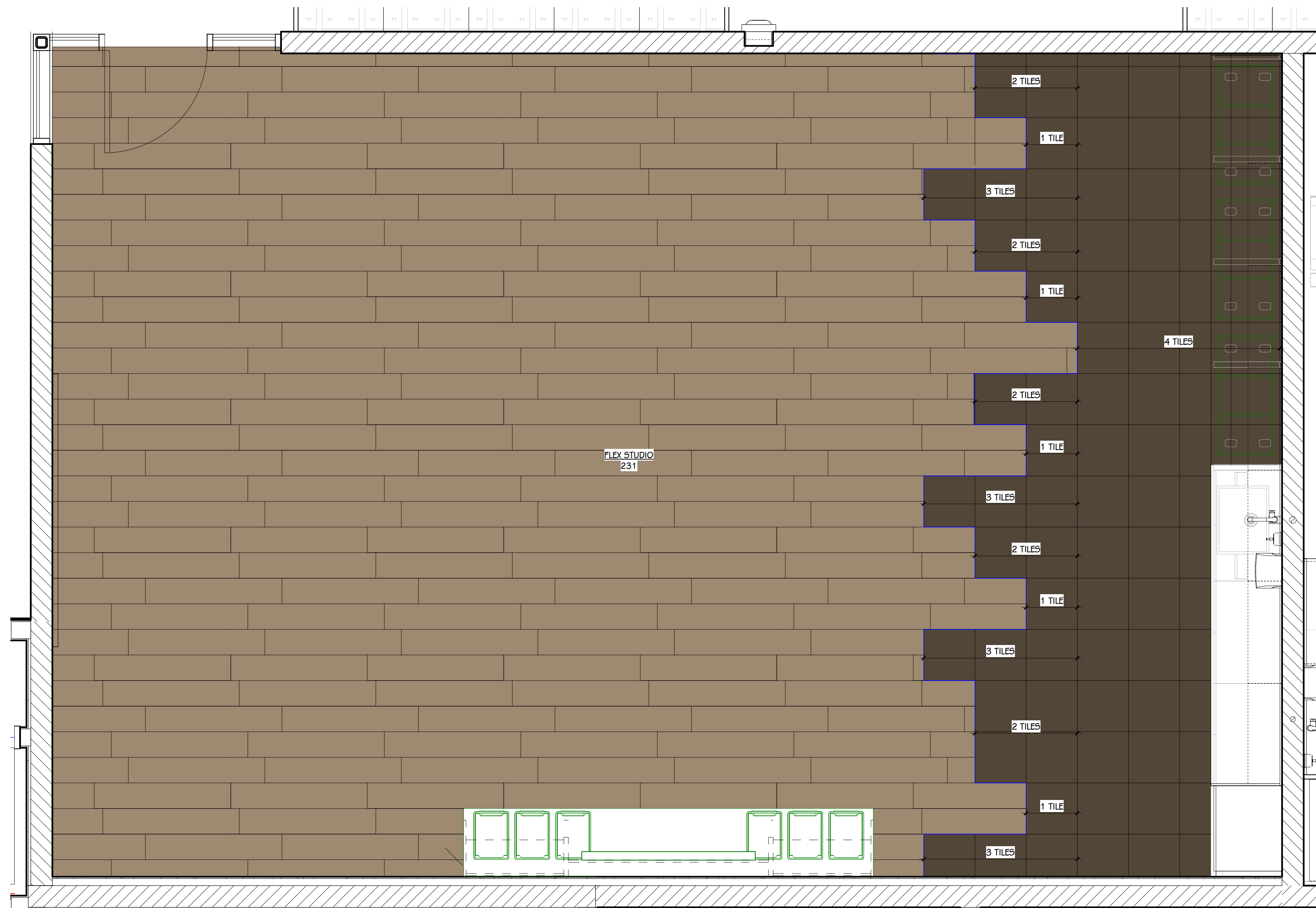


CUSTOM CARPET MANUFACTURER DESIGN  
12" = 1'-0"

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1  
1204  
PATTERN PLAN - Y5 / FLEX STUDIO 131  
1/2" = 1'-0"



2  
1204  
PATTERN PLAN - FLEX STUDIO 231  
1/2" = 1'-0"

FINISH PLAN KEY	
	FLOOR FINISH
GENERAL NOTES - CARPET TILE PATTERN INSTALLATION	
1. REFER TO FINISH PLANS AND MATERIAL SELECTION SCHEDULE FOR MATERIAL TYPE DESIGNATIONS AND RELATED SCOPE REQUIREMENTS.	
2. PATTERN TO EXTEND UNDER WALL MOUNTER COUNTERTOPS.	
3. VERIFY ALL DIMENSIONS IN THE FIELD AND ALERT ARCHITECT OF ANY CONFLICTS PRIOR TO INSTALLATION.	
4. STAGGER PATTERN REPRESENTED ALLOWS FOR FULL TILE AT T.C.F.	
LVT COLOR LEGEND	
	LVT-1
	LVT-2

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# Haverhill Elementary School - Portage, MI

Finish Plan 1 - 05.30.23

## Kerbstone

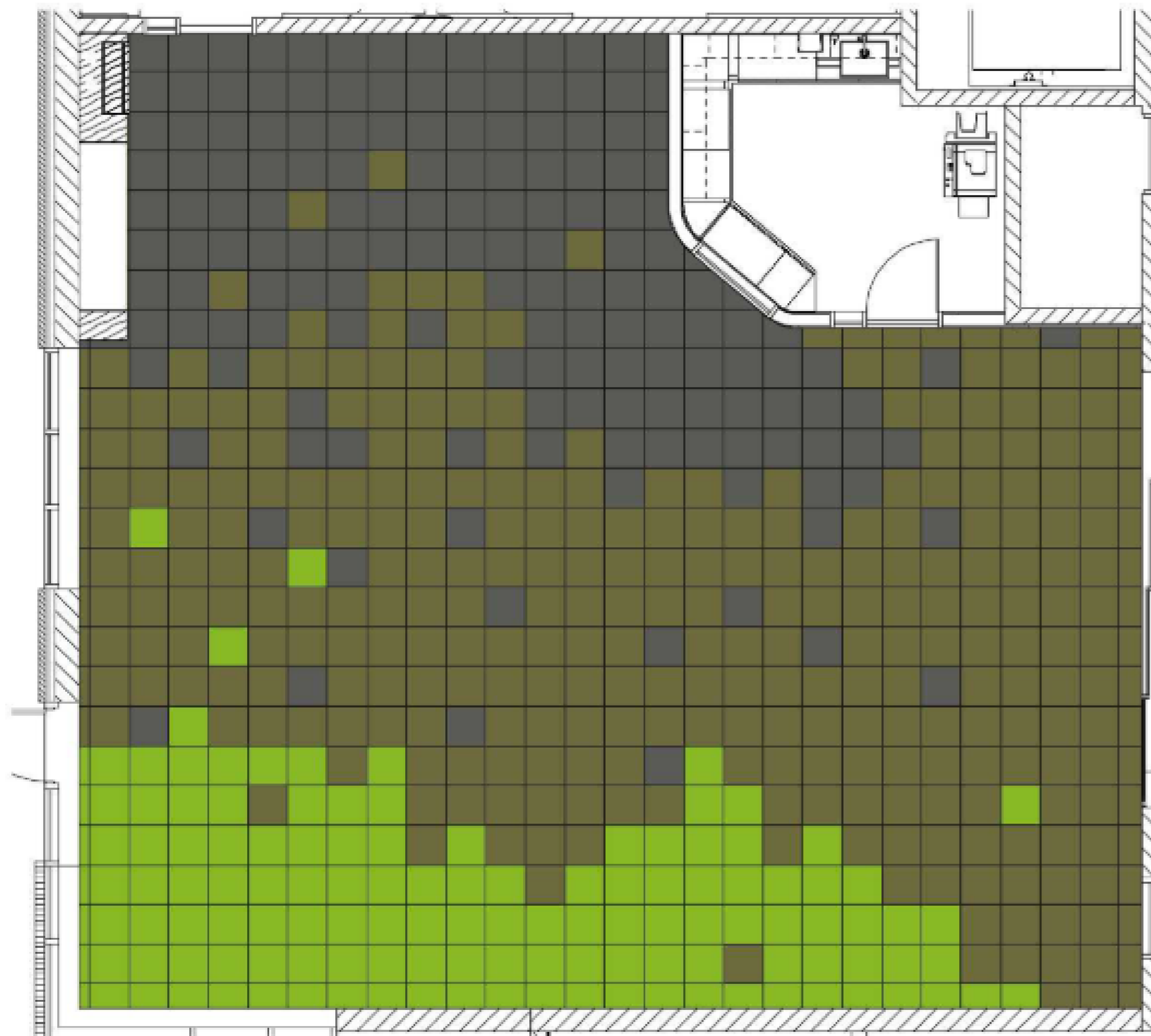
105574 Flint <CPL-1>  
500 x 500 mm

## Moss

105562 Flint/Moss <CPL-3>  
500 x 500 mm

## Moss In Stone

105566 Flint Edge <CPL-2>  
500 x 500 mm



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LIBRARY CARPET INSTALLATION  
SCALE: NONE

### FINISH PLAN KEY

 FLOOR FINISH

### GENERAL NOTES - CARPET TILE PATTERN INSTALLATION

1. REFER TO FINISH PLANS AND MATERIAL SELECTION SCHEDULE FOR MATERIAL TYPE DESIGNATIONS AND RELATED SCOPE REQUIREMENTS.
2. MANUFACTURER'S INSTALLATION DIAGRAM PROVIDED FOR REFERENCE ONLY. VALIDATE PLAN CONDITIONS MATCH ARCHITECTURAL DRAWINGS PRIOR TO ORDERING.
3. VERIFY ALL DIMENSIONS IN THE FIELD AND ALERT ARCHITECT OF ANY CONFLICTS PRIOR TO INSTALLATION.

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ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
PATTERN PLAN - LIBRARY CARPET TILE  
INSTALLATION

DATE  
JUNE 30, 2023

SHEET NUMBER  
I 205  
21-237.20

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# Haverhill Elementary School - Portage, MI

Finish Plan 1 - 05.30.23

## Kerbstone

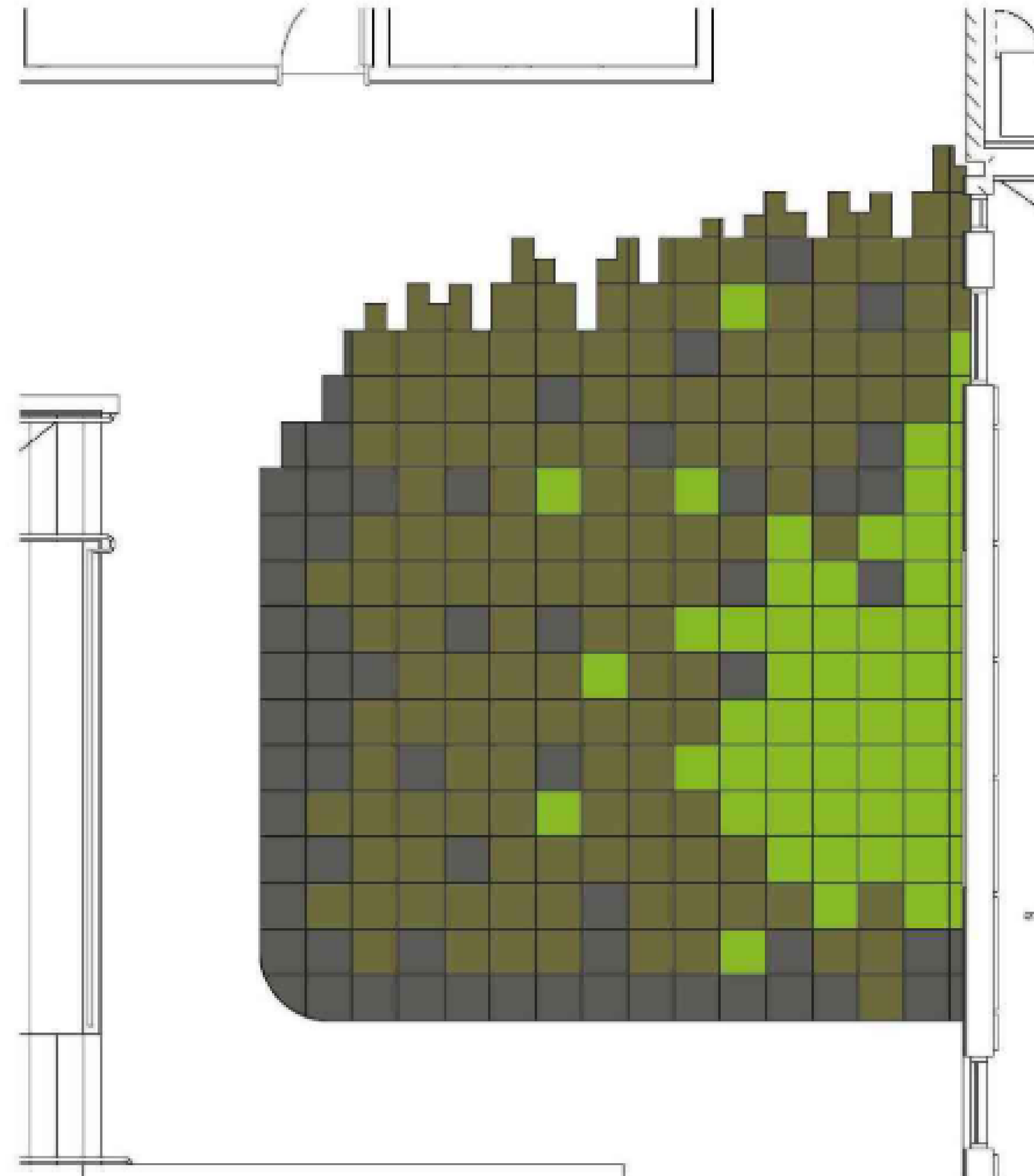
105574 Flint <opt.1>  
500 x 500 mm

## Moss

105562 Flint/Moss <opt.3>  
500 x 500 mm

## Moss In Stone

105566 Flint Edge <opt.2>  
500 x 500 mm



FINISH PLAN KEY	
	FLOOR FINISH
GENERAL NOTES - CARPET TILE PATTERN INSTALLATION	
1.	REFER TO FINISH PLANS AND MATERIAL SELECTION SCHEDULE FOR MATERIAL TYPE DESIGNATIONS AND RELATED SCOPE REQUIREMENTS.
2.	MANUFACTURERS INSTALLATION DIAGRAM PROVIDED FOR REFERENCE ONLY. VALIDATE PLAN CONDITIONS MATCH ARCHITECTURAL DRAWINGS PRIOR TO ORDERING.
3.	VERIFY ALL DIMENSIONS IN THE FIELD AND ALERT ARCHITECT OF ANY CONFLICTS PRIOR TO INSTALLATION.

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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
PATTERN PLAN - COMMONS CARPET  
TILE INSTALLATION

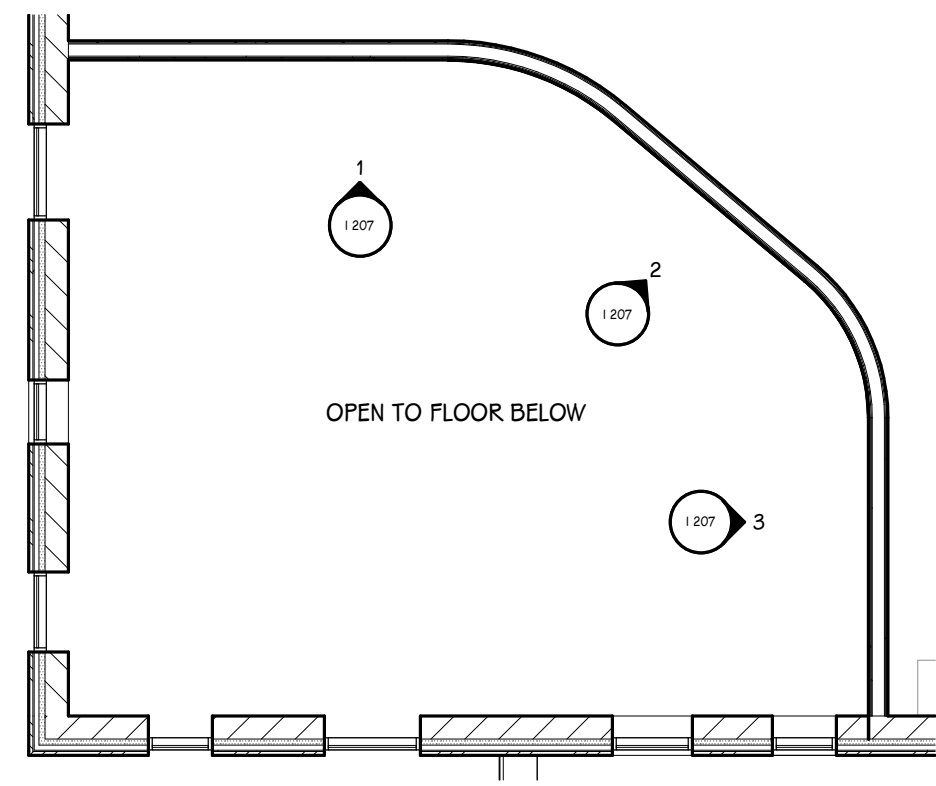
DATE  
JUNE 30, 2023

SHEET NUMBER  
I 206  
21-237.20

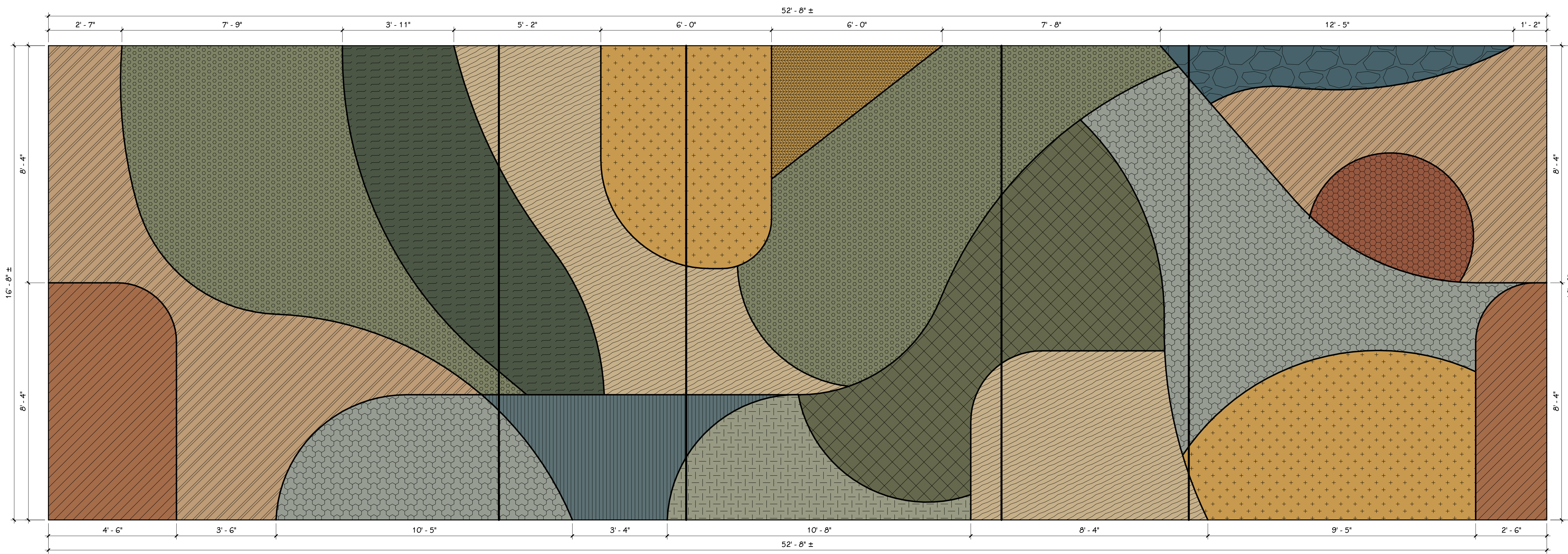
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COMMONS CARPET INSTALLATION  
SCALE: NONE

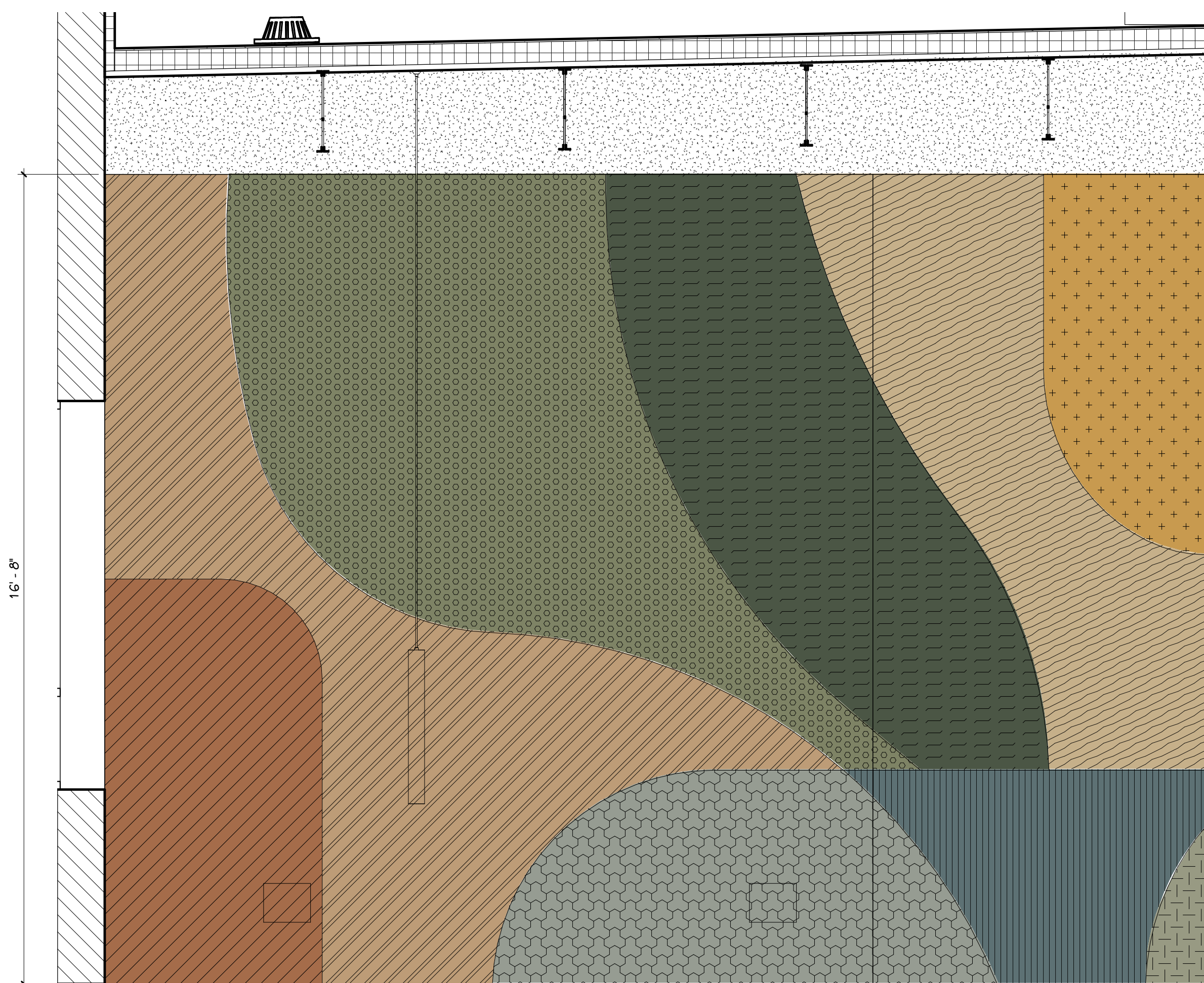
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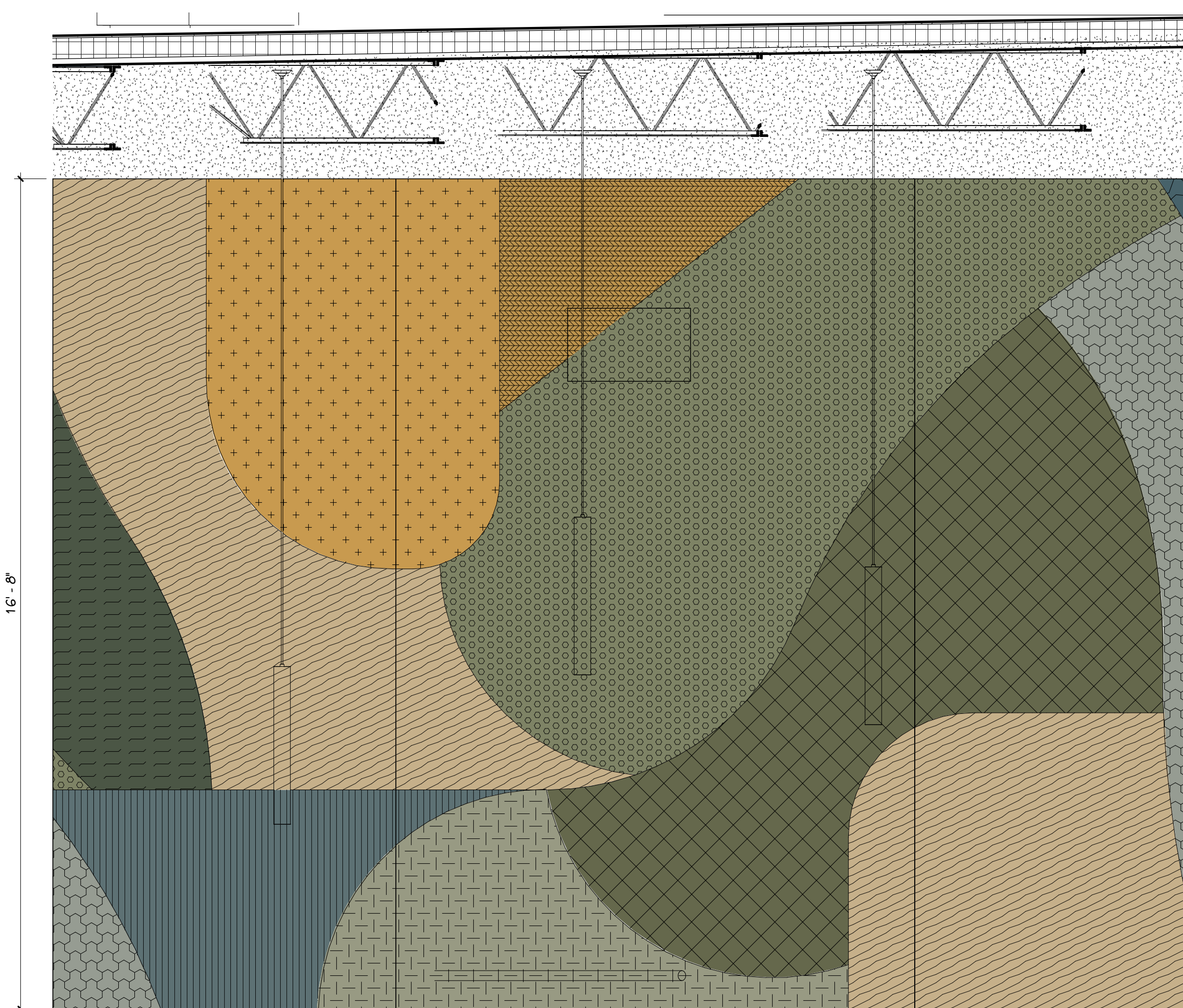
**LIBRARY BULKHEAD KEY PLAN**  
1/8" = 1'-0"



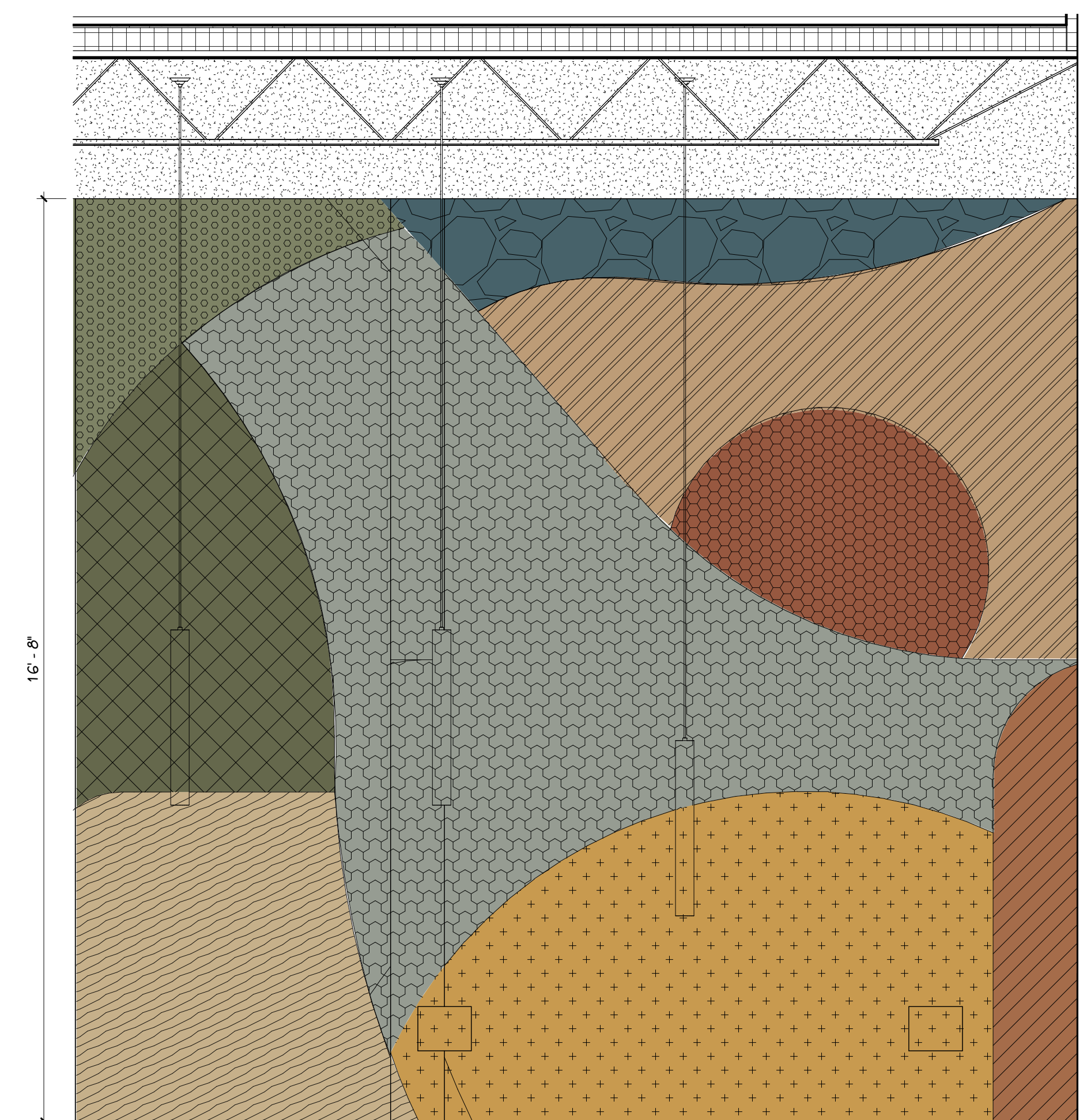
**LIBRARY BULKHEAD OVERALL PAINT DESIGN P-P(A)**  
1/2" = 1'-0"



**1 LIBRARY BULKHEAD 112 - NORTH**  
1/2" = 1'-0"



**2 LIBRARY BULKHEAD 112 - NORTHEAST**  
1/2" = 1'-0"



**3 LIBRARY BULKHEAD 112 - EAST**  
1/2" = 1'-0"

**GENERAL NOTES - PAINT COLOR**

1. DETAILED DIMENSIONS WILL BE PROVIDED TO THE AWARDED CONTRACTOR.
2. PAINTED EXPOSED CEILING, REFER TO REFLECTED CEILING PLAN.
3. PAINT ALL EXPOSED WALL SURFACE, STRUCTURE, MECHANICAL, ELECTRICAL AND PLUMBING - REFER TO REFLECTED CEILING PLANS.
4. LEGEND IS NOT INCLUSIVE OF ALL NON-PAINTED ACCENT MATERIALS, REFER TO FINISH PLANS AND ELEVATIONS FOR ALL SCOPE.

**COLOR LEGEND - BULKHEAD ELEVATIONS**

	P-4: GREEN ONYX		P-11: HARMONIC TAN
	P-5: ARTICHOKE		P-12: ALCHEMY
	P-6: OAK MOSS		P-13: DIFFERENT GOLD
	P-7: VOGUE GREEN		P-14: MESA TAN
	P-8: ACACIA HAZE		P-15: BRANDYWINE
	P-9: RIVERWAY		P-16: ROOKWOOD TERRA COTTA
	P-10: TEMPE STAR		

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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

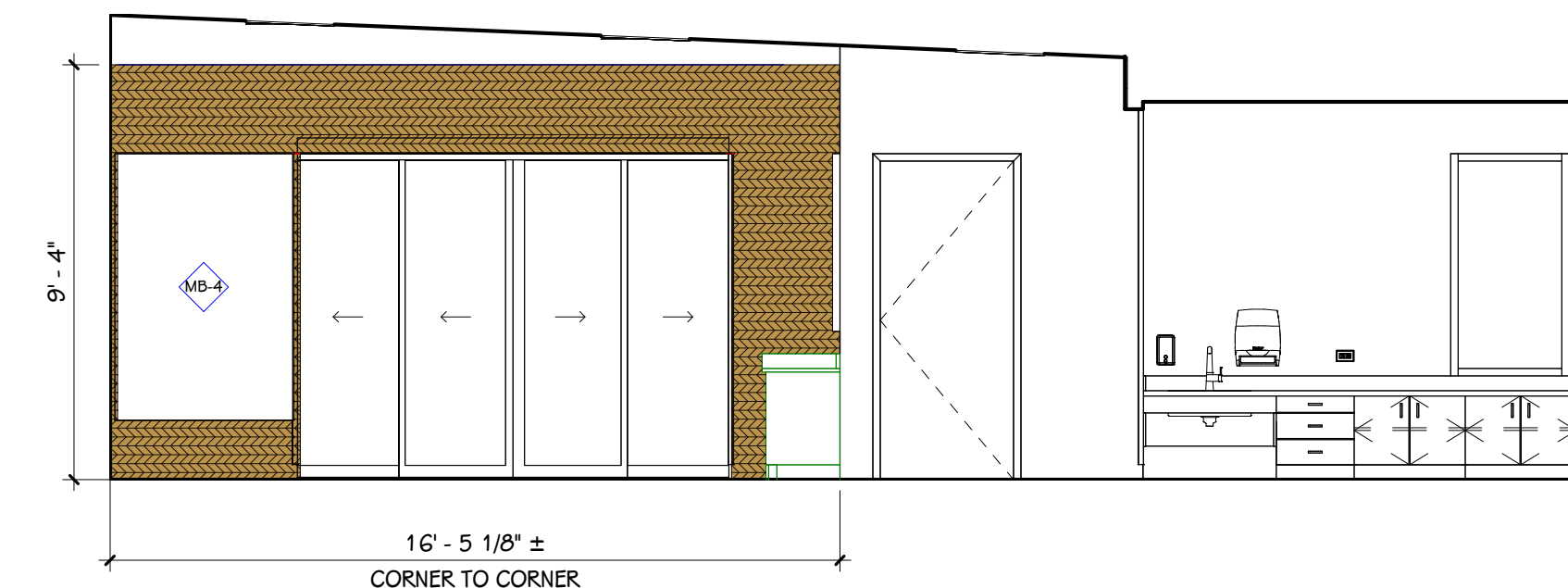
OWNER  
PORTAGE PUBLIC SCHOOLS  
Portage, Michigan

SHEET TITLE  
PATTERN PLAN - LIBRARY BULKHEAD  
PAINT INSTALLATION

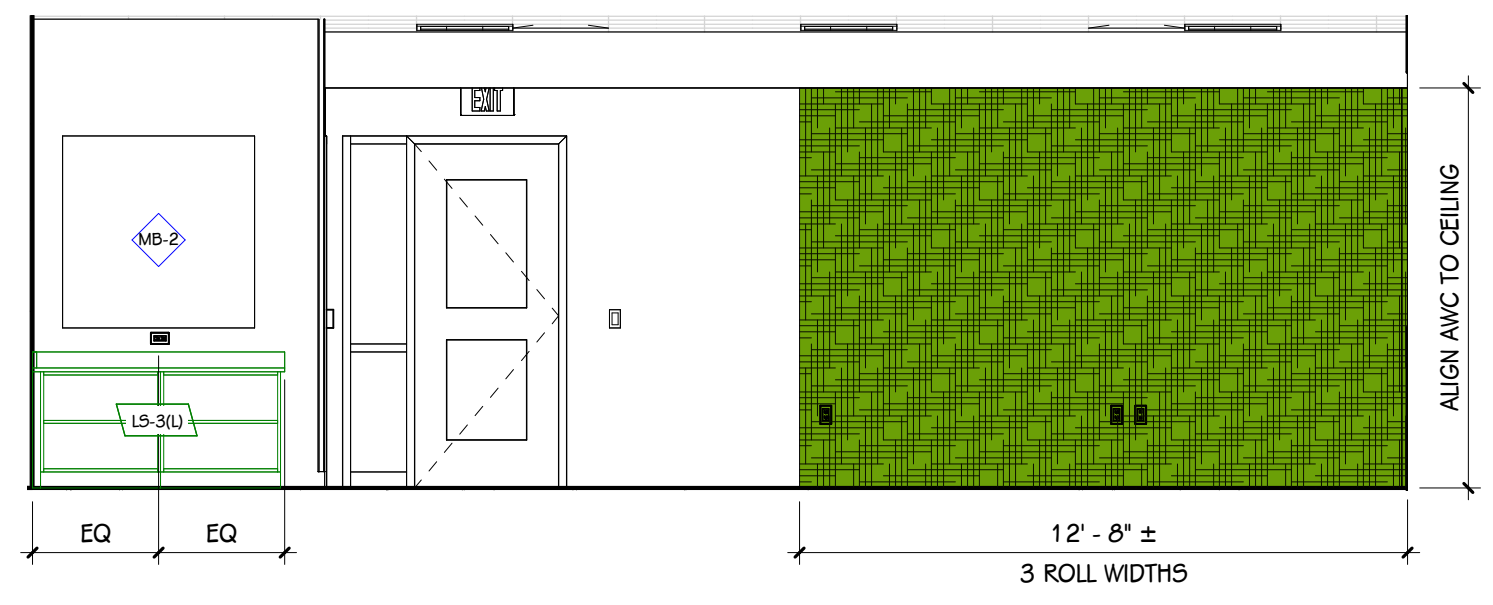
DATE  
JUNE 30, 2023

SHEET NUMBER  
**1207**  
21-237.20

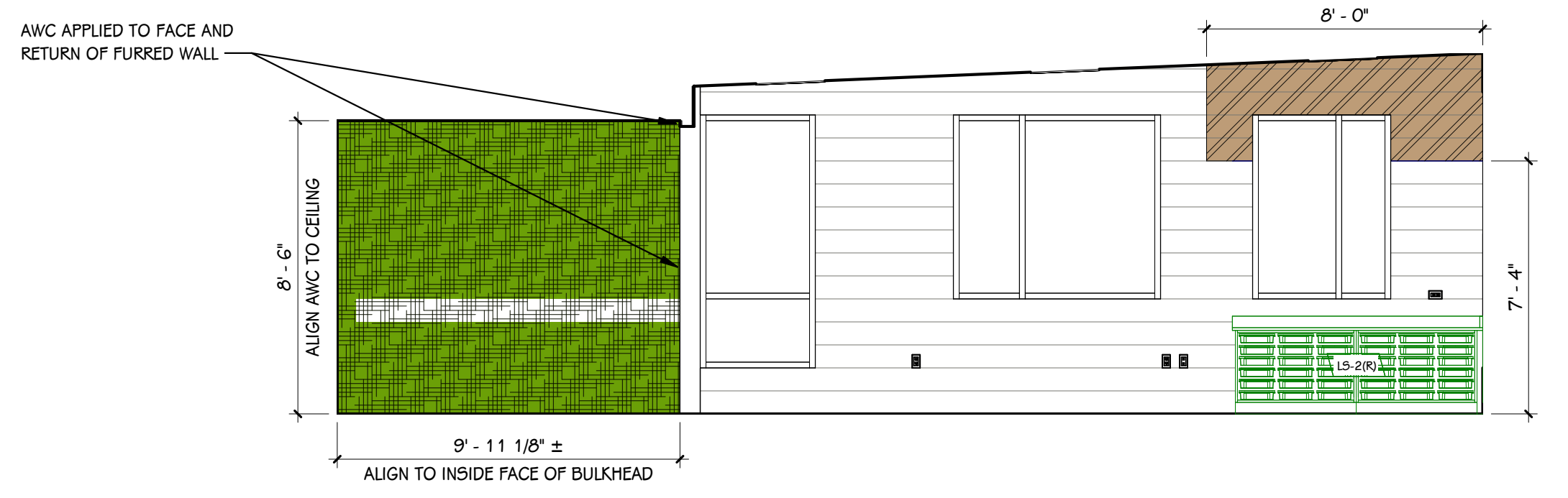




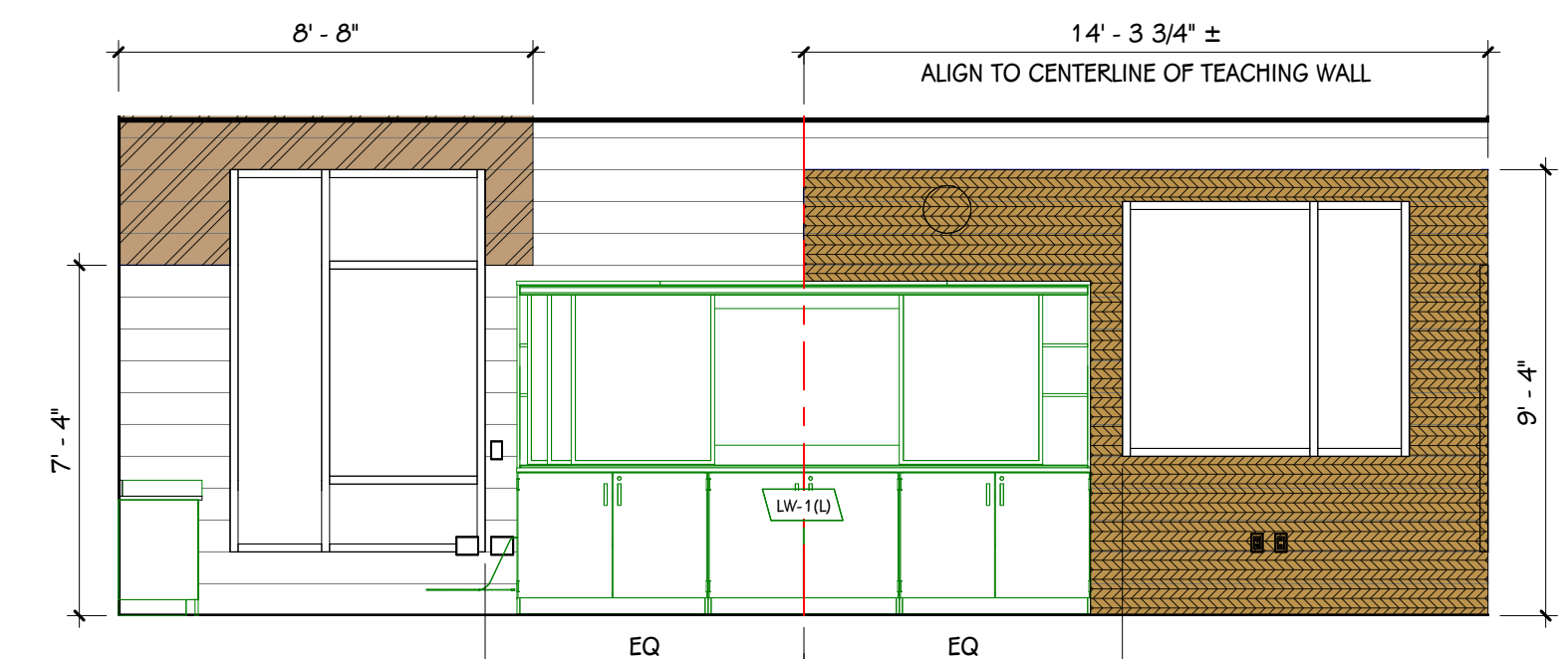
1 LEARNING STUDIO 122 - NORTH  
1/4" = 1'-0"



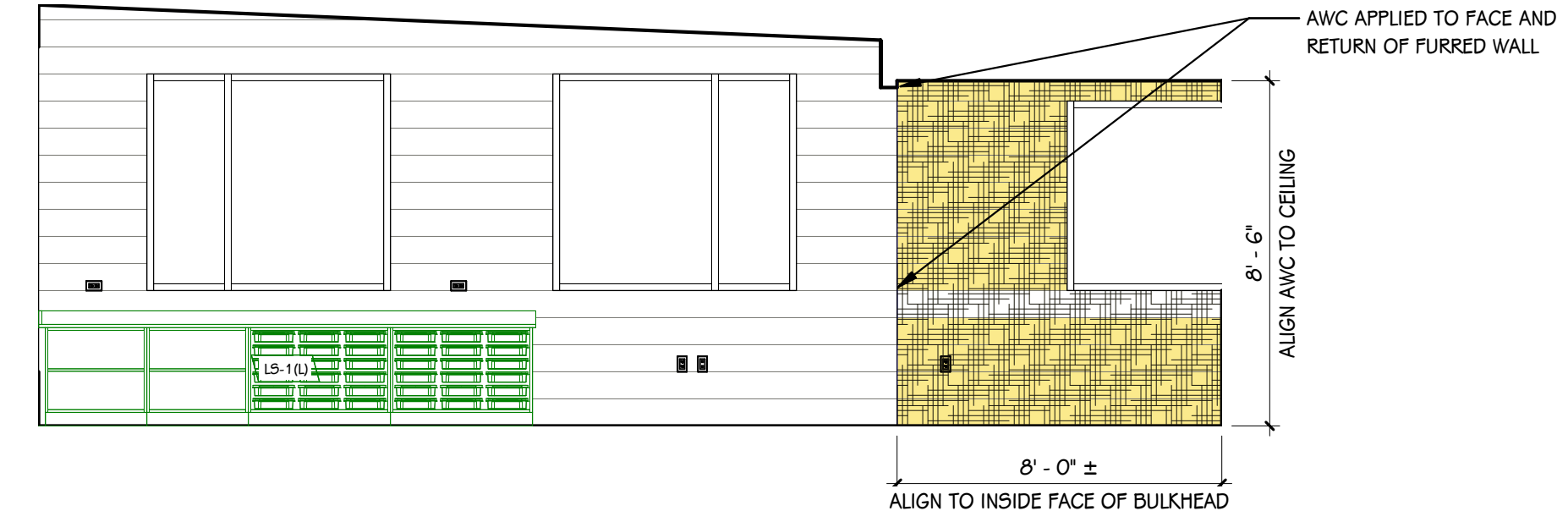
2 LEARNING STUDIO 122 - EAST  
1/4" = 1'-0"



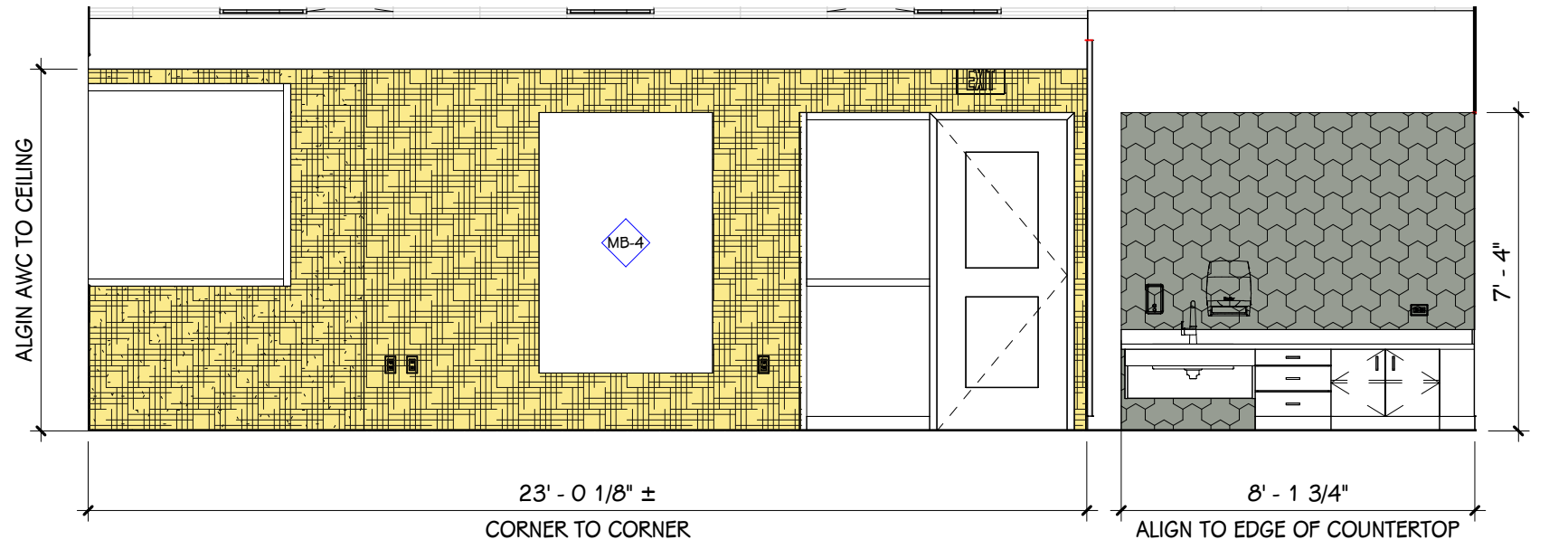
3 LEARNING STUDIO 122 - SOUTH  
1/4" = 1'-0"



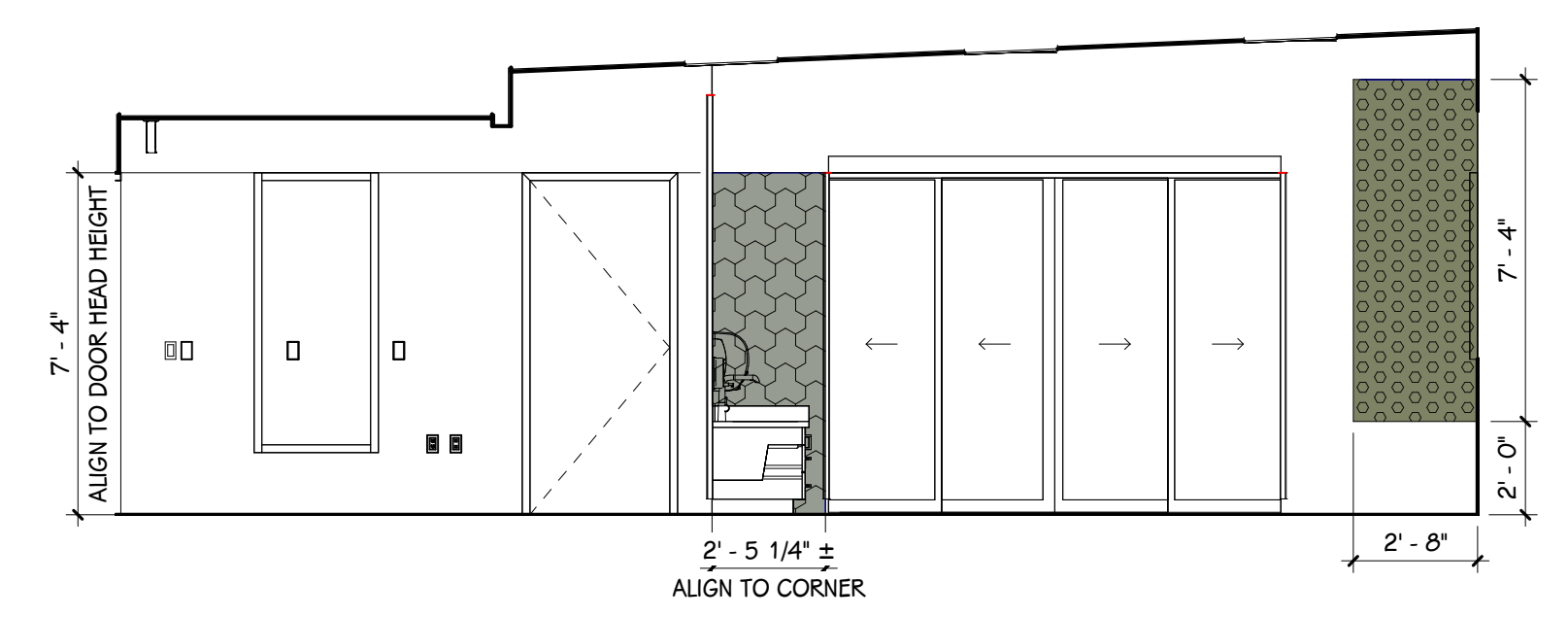
4 LEARNING STUDIO 122 - WEST  
1/4" = 1'-0"



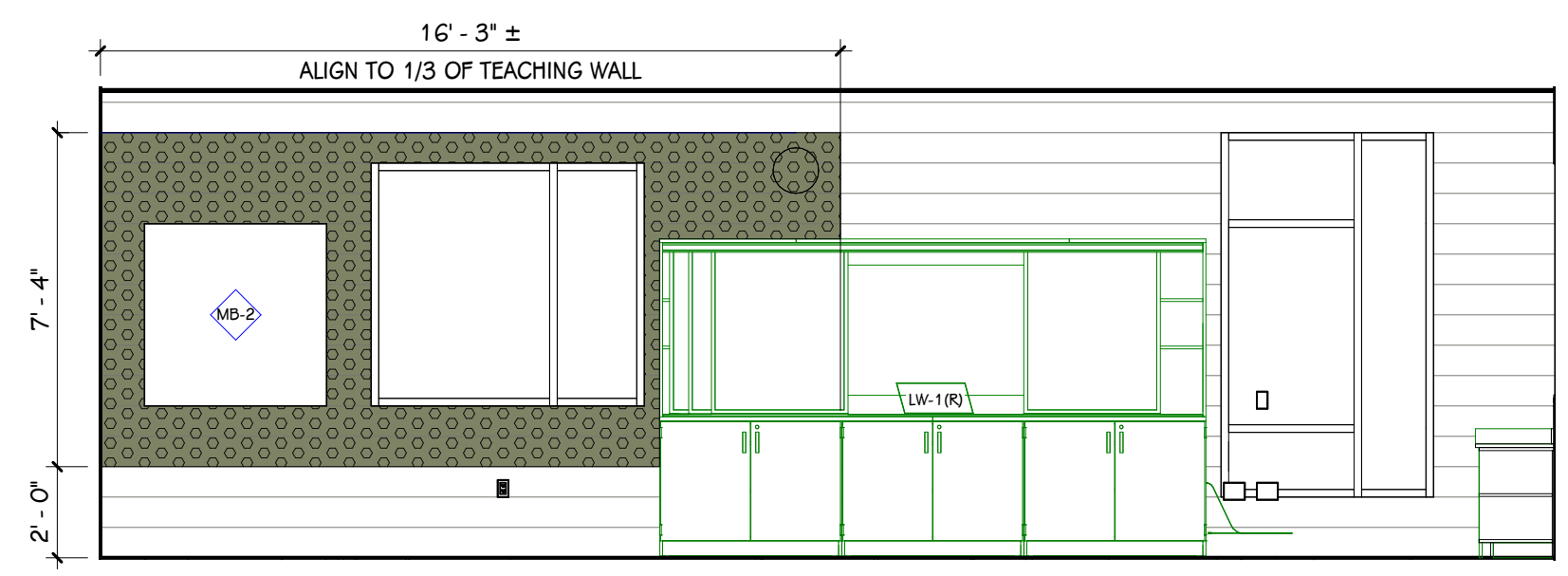
5 LEARNING STUDIO 126 - NORTH  
1/4" = 1'-0"



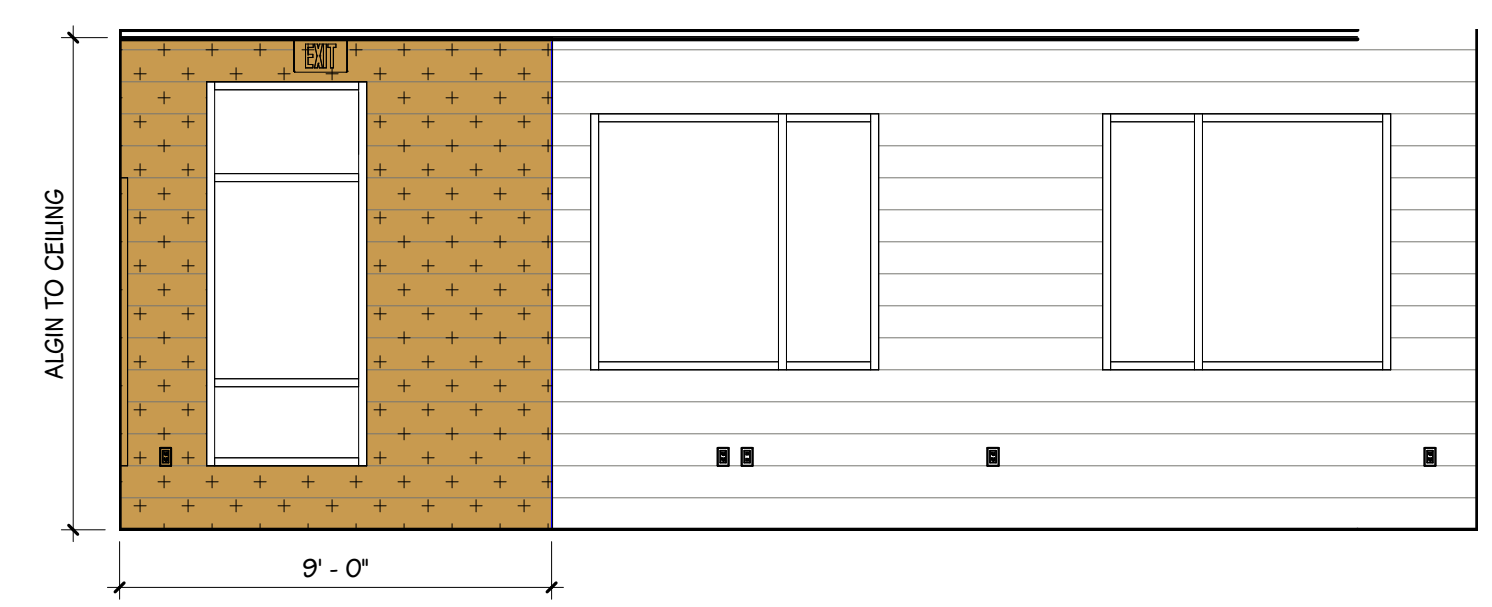
6 LEARNING STUDIO 126 - EAST  
1/4" = 1'-0"



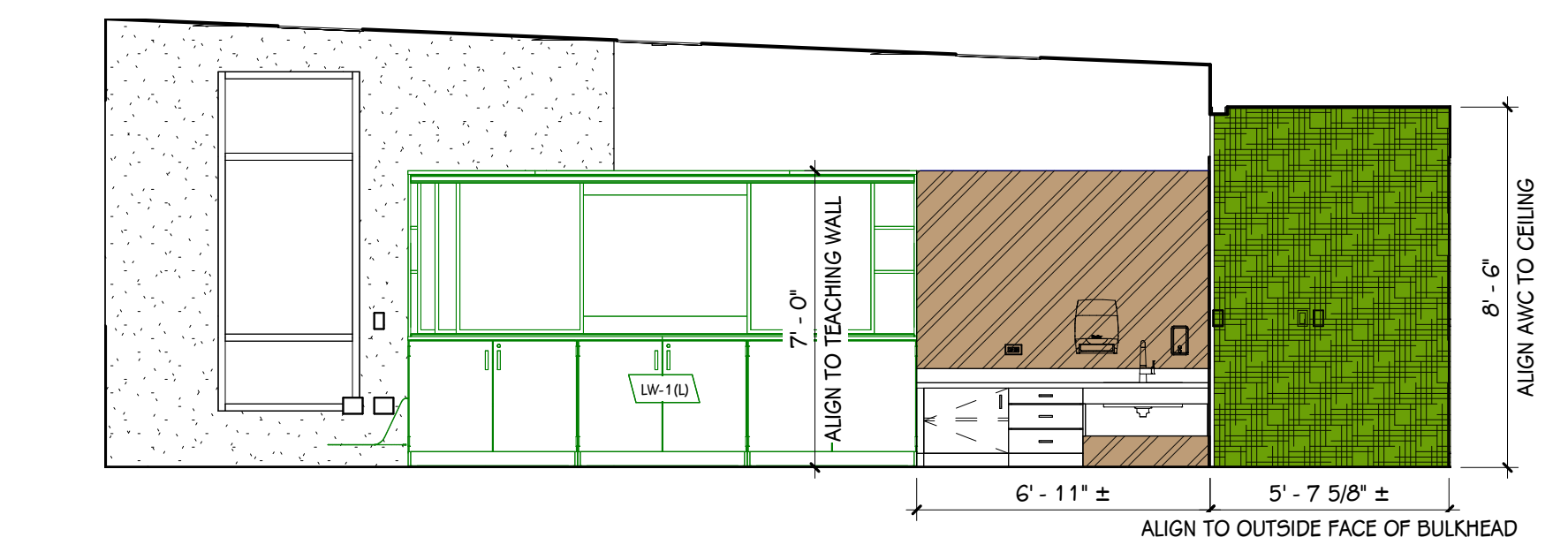
7 LEARNING STUDIO 126 - SOUTH  
1/4" = 1'-0"



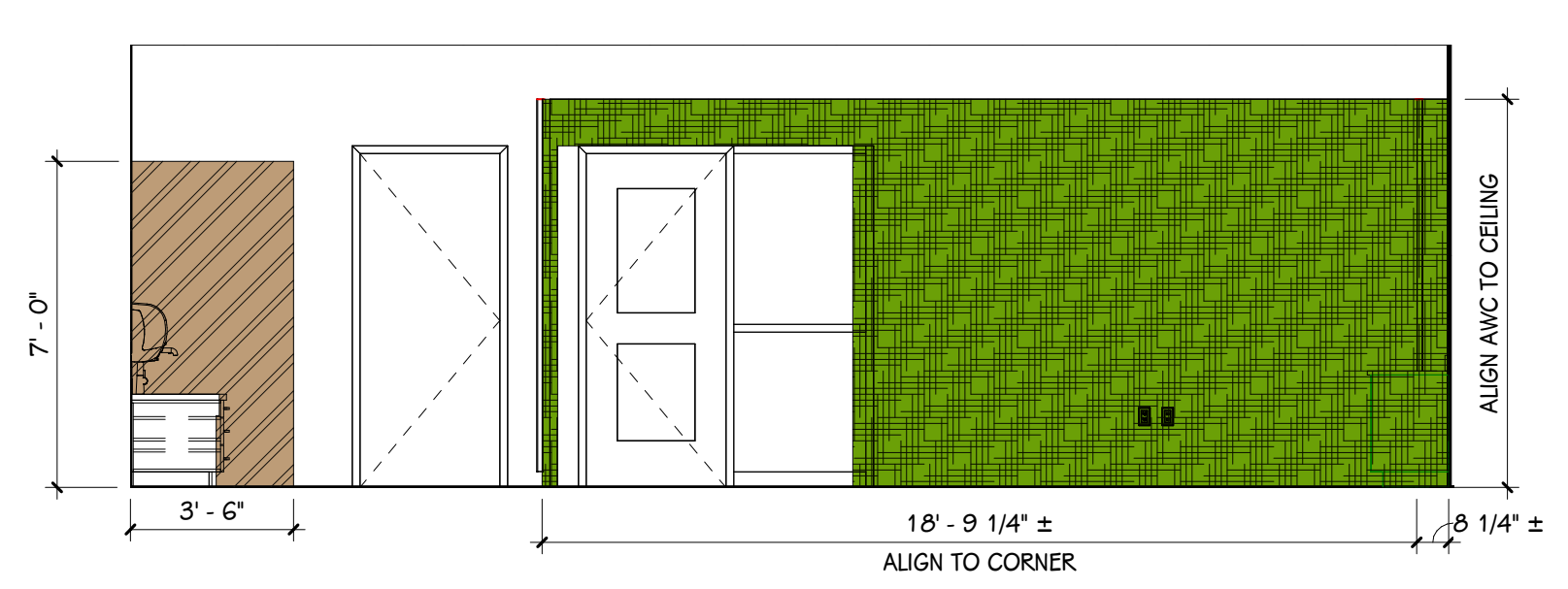
8 LEARNING STUDIO 126 - WEST  
1/4" = 1'-0"



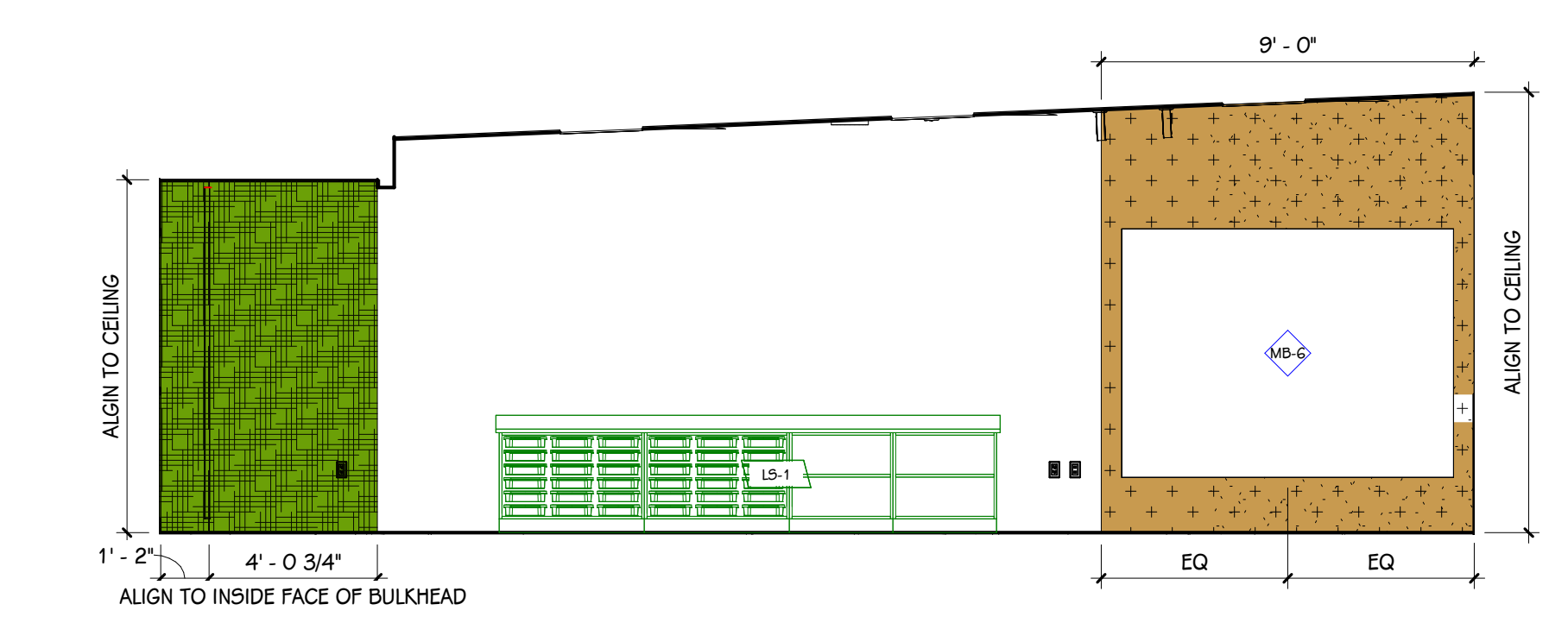
9 LEARNING STUDIO 128 - NORTH  
1/4" = 1'-0"



10 LEARNING STUDIO 128 - EAST  
1/4" = 1'-0"



11 LEARNING STUDIO 128 - SOUTH  
1/4" = 1'-0"



12 LEARNING STUDIO 128 - WEST  
1/4" = 1'-0"

GENERAL NOTES - PATTERN ELEVATIONS

- 1 REFER TO FINISH PLANS FOR INTERIOR ELEVATIONS OF CASEWORK AND NON-PATTERNED FINISH DETAILS.
- 2 REFER TO MATERIAL SELECTION SCHEDULE, FINISH PLANS, AND SPECIFICATION FOR ADDITIONAL FINISH INFORMATION.
- 3 REFER TO REFLECTED CEILING PLANS FOR CEILING AND BULKHEAD HEIGHTS AND FINISHES.
- 4 NOT ALL MATERIALS ARE ILLUSTRATED. REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION. (E. RUBBER BASE NOT INDICATED, INSTALL PER FINISH PLAN)
- 5 ALIGN PATTERN TO NEAREST HORIZONTAL MASONRY JOINT, UNLESS NOTED OTHERWISE.
- 6 WHERE PATTERNS ARE INDICATED TO ALIGN TO CASEWORK OR SHELVING, COORDINATE WITH APPROVED SHOP DRAWINGS.

COLOR LEGEND - PATTERN ELEVATIONS

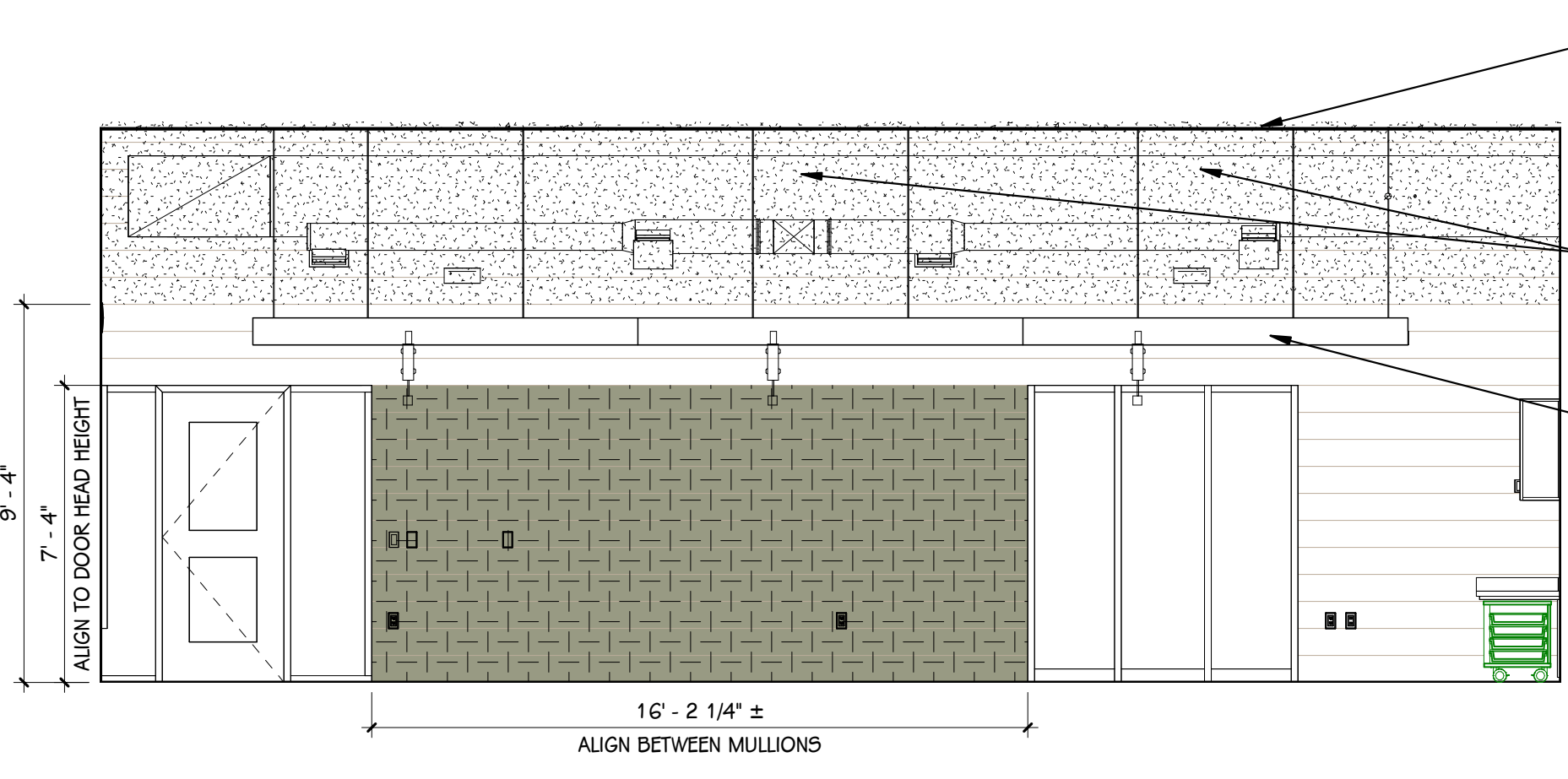
	AWC-1: GHERKIN		P-9: RIVERWAY
	AWC-2: BEEHIVE		P-10: TEMPE STAR
	AWC-3: MURALLA		P-11: HARMONIC TAN
	AWC-4: VINTAGE		P-12: ALCHEMY
	P-4: GREEN ONYX		P-13: DIFFERENT GOLD
	P-5: ARTICHOKE		P-14: MESA TAN
	P-6: OAKMOSS		P-15: BRANDYWINE
	P-7: VOGUE GREEN		P-16: ROCKWOOD TERRA COTTA
	P-8: ACACIA HAZE		

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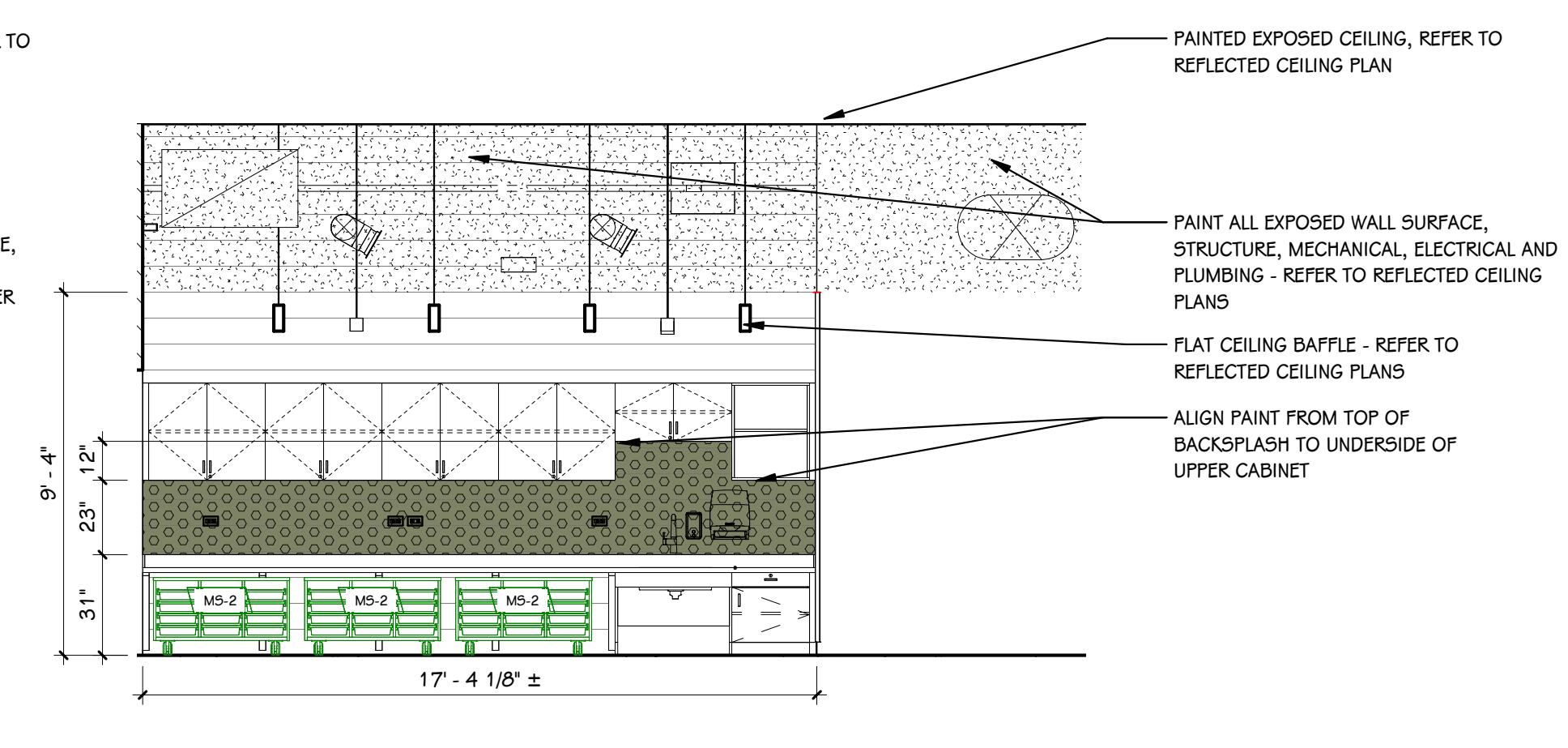
**GENERAL NOTES - PATTERN ELEVATIONS**

- 1 REFER TO FINISH PLANS FOR INTERIOR ELEVATIONS OF CASEWORK AND NON-PATTERNED FINISH DETAILS.
- 2 REFER TO MATERIAL SELECTION SCHEDULE, FINISH PLANS, AND SPECIFICATION FOR ADDITIONAL FINISH INFORMATION.
- 3 REFER TO REFLECTED CEILING PLANS FOR CEILING AND BULKHEAD HEIGHTS AND FINISHES.
- 4 NOT ALL MATERIALS ARE ILLUSTRATED. REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION. (E. RUBBER BASE NOT INDICATED, INSTALL PER FINISH PLAN)
- 5 ALIGN PATTERN TO NEAREST HORIZONTAL MASONRY JOINT, UNLESS NOTED OTHERWISE.
- 6 WHERE PATTERNS ARE INDICATED TO ALIGN TO CASEWORK OR SHELVING, COORDINATE WITH APPROVED SHOP DRAWINGS.

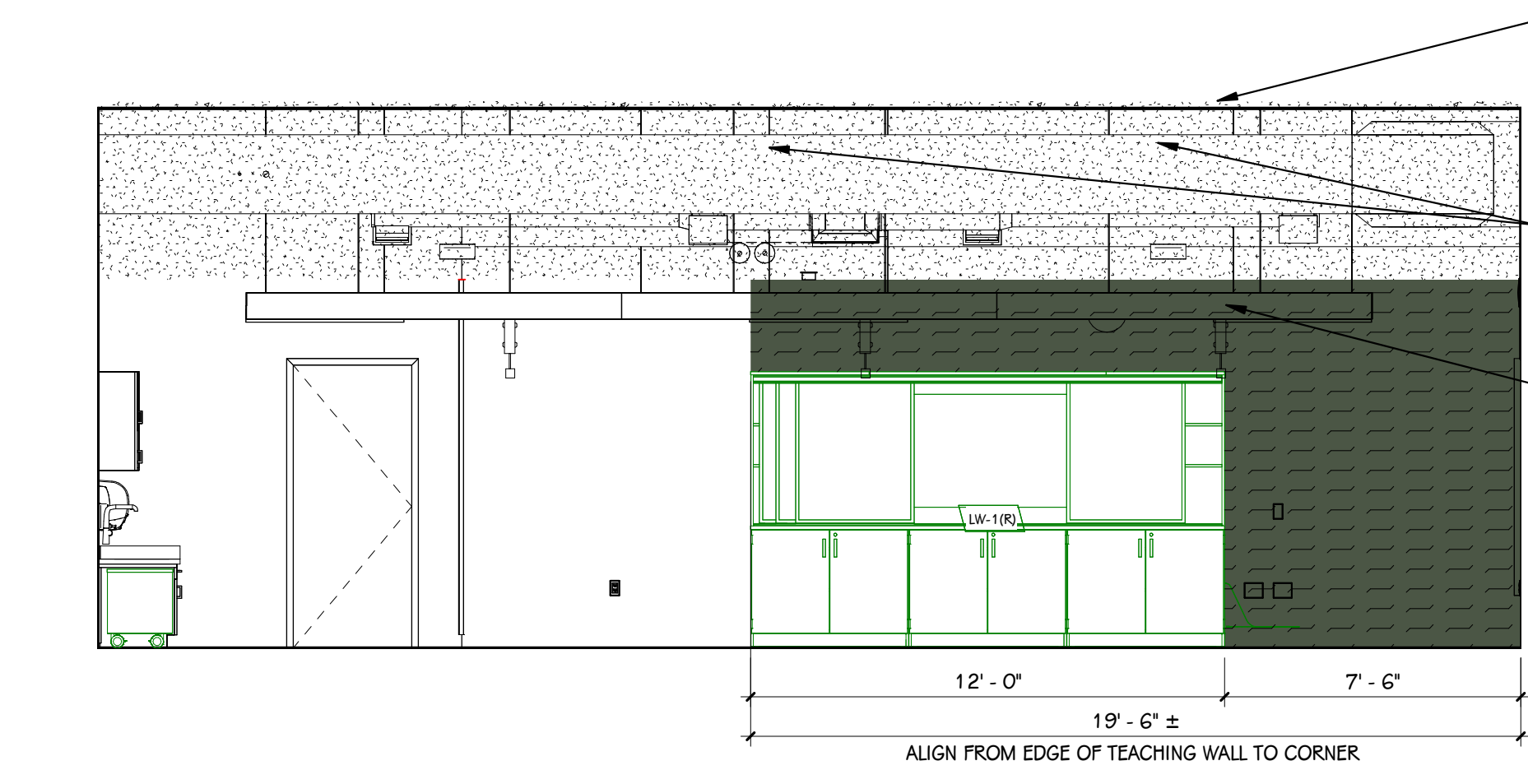
**COLOR LEGEND - PATTERN ELEVATIONS**

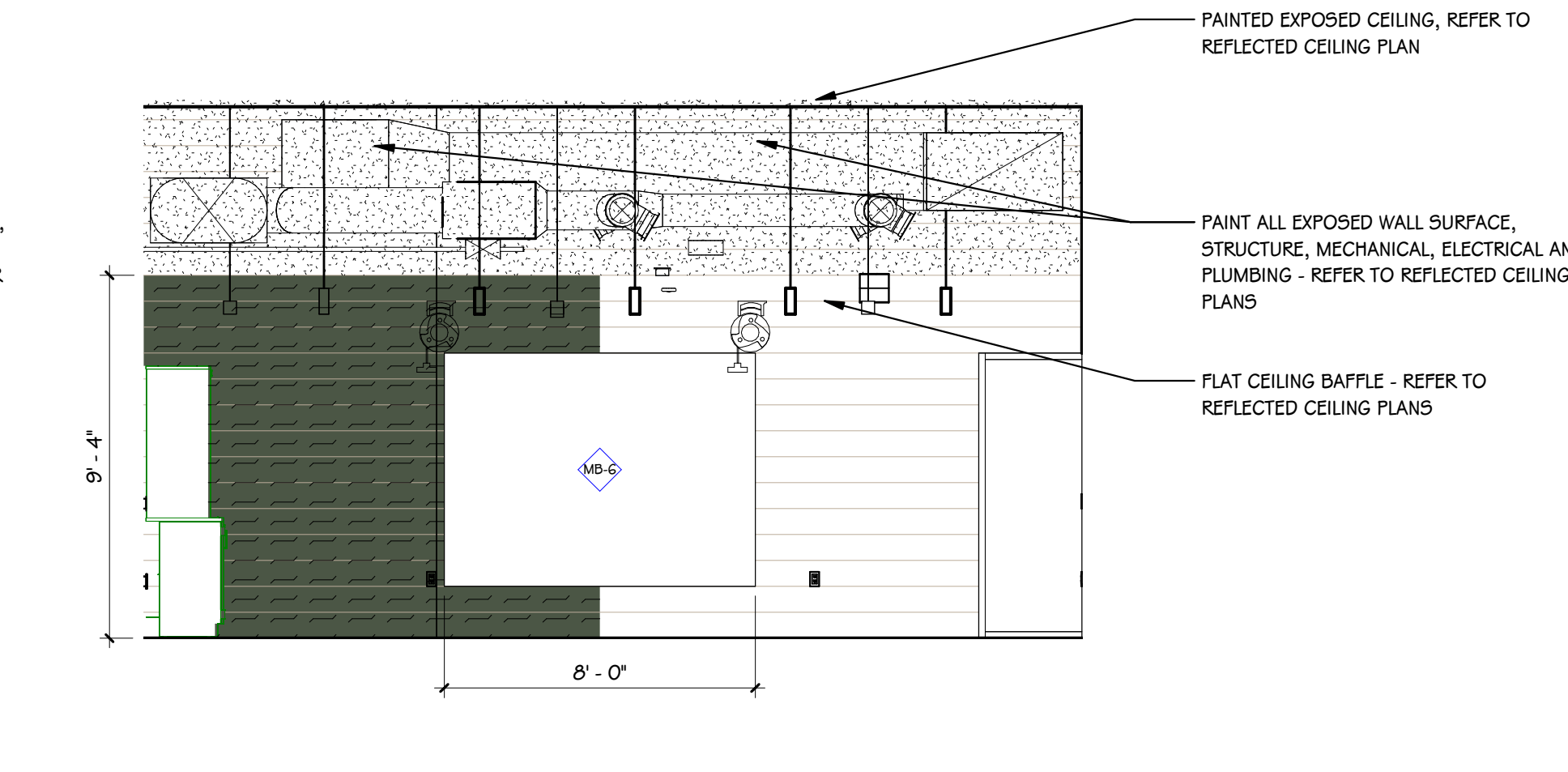
13 Y5/FLEX STUDIO 131 - NORTH  
1/4" = 1'-0"



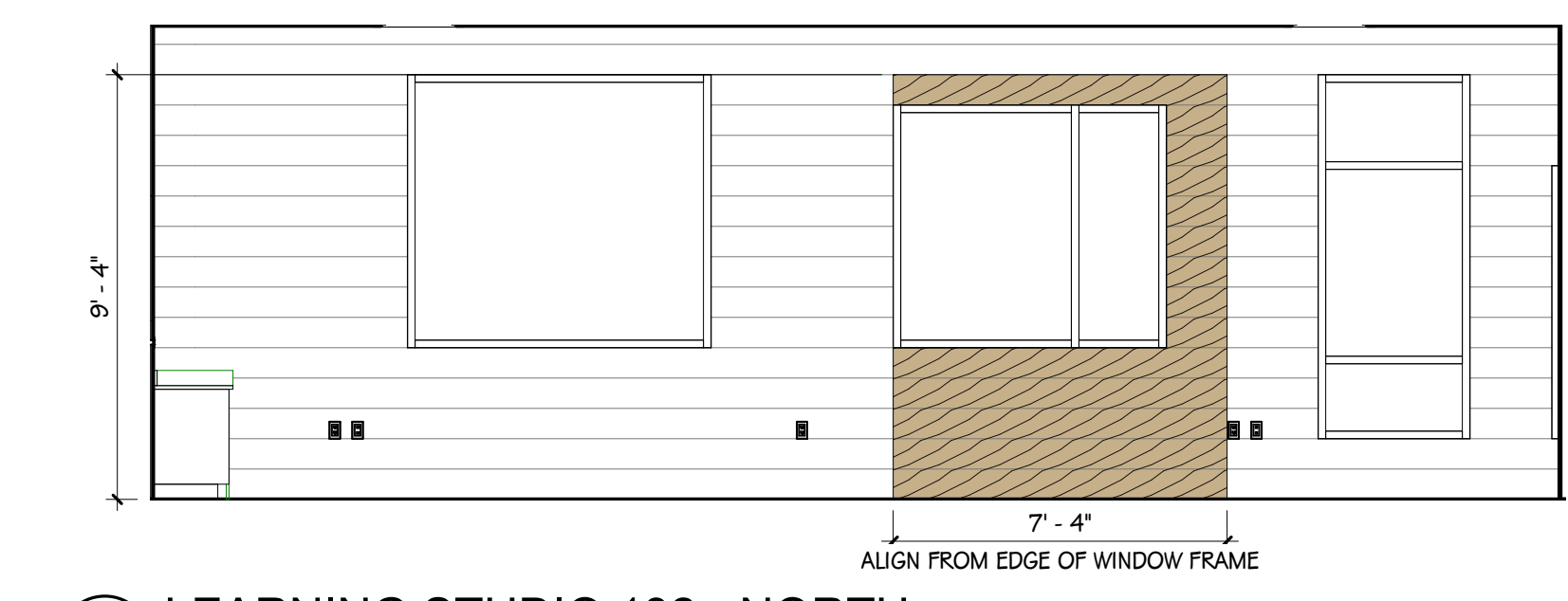
14 Y5/FLEX STUDIO 131 - EAST  
1/4" = 1'-0"



15 Y5/FLEX STUDIO 131 - SOUTH  
1/4" = 1'-0"



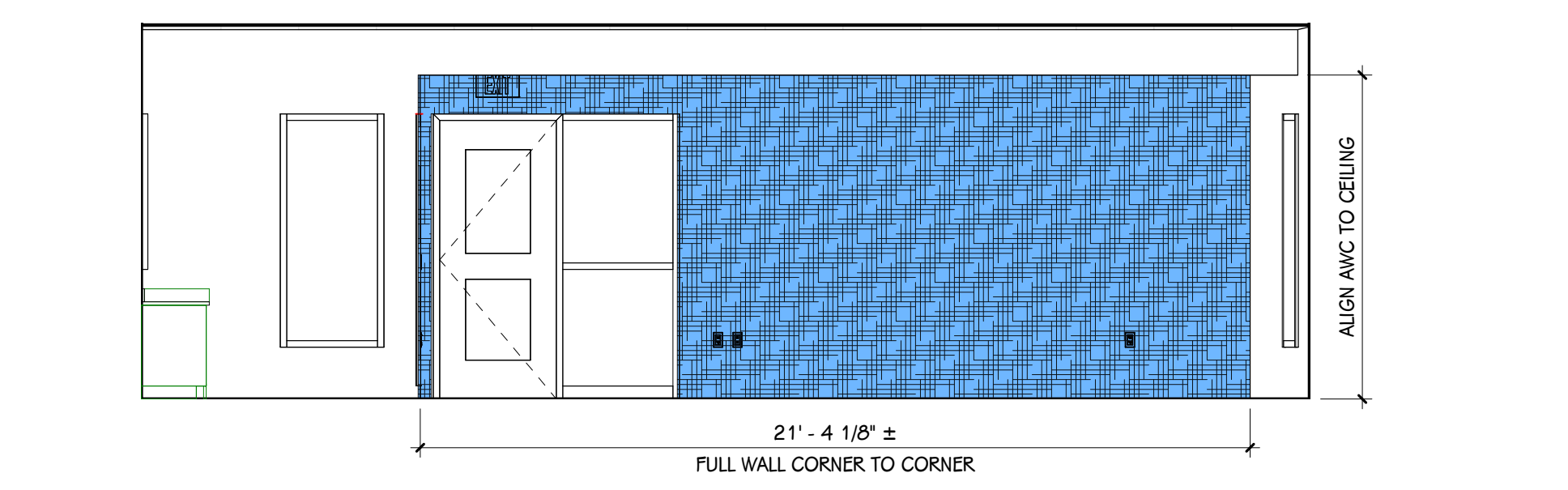
16 Y5/FLEX STUDIO 131 - WEST  
1/4" = 1'-0"



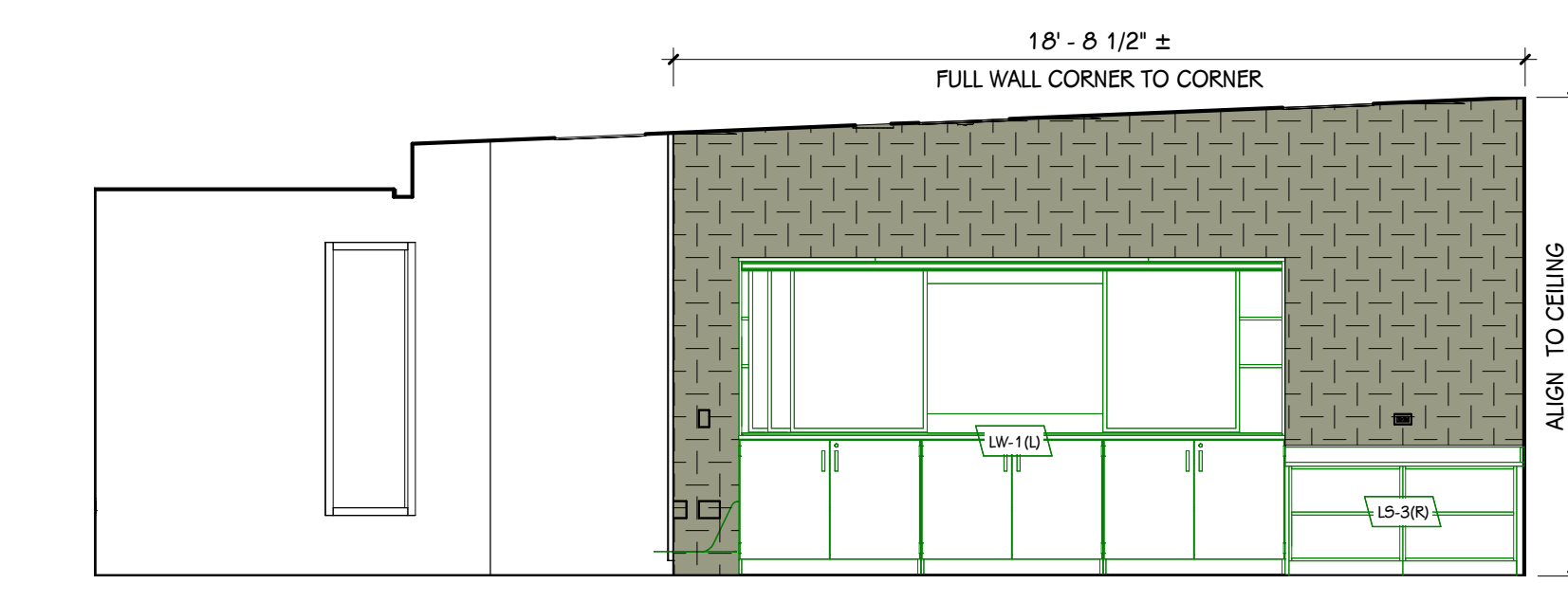
17 LEARNING STUDIO 132 - NORTH  
1/4" = 1'-0"



18 LEARNING STUDIO 132 - EAST  
1/4" = 1'-0"



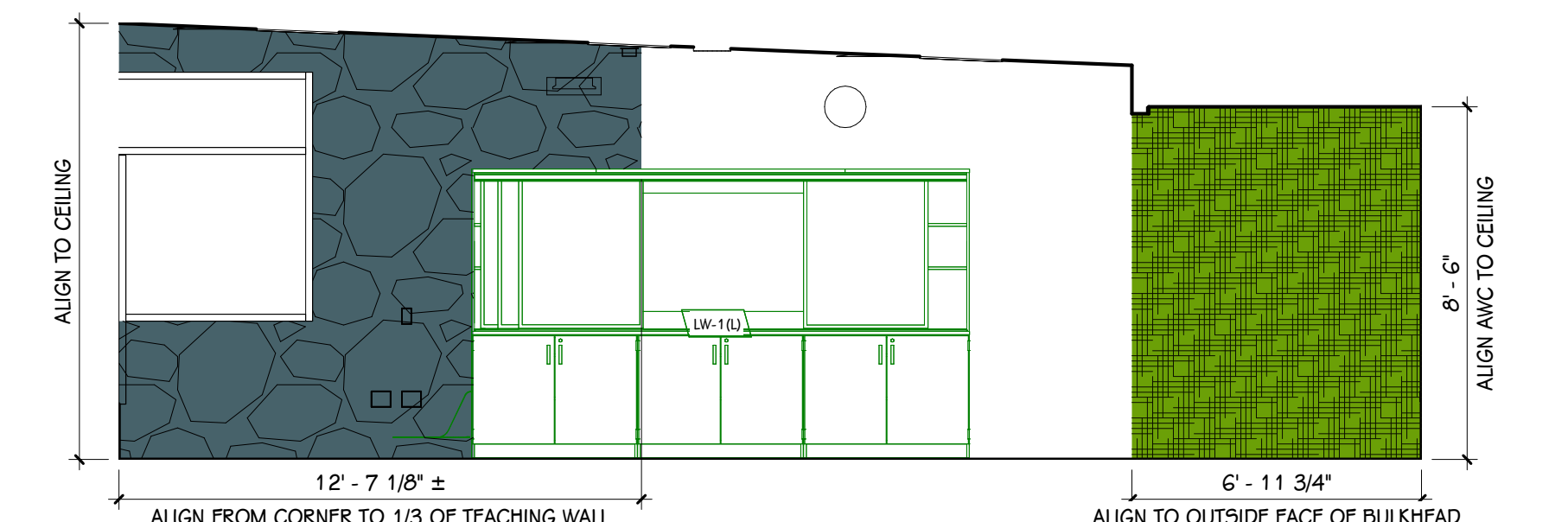
19 LEARNING STUDIO 132 - SOUTH  
1/4" = 1'-0"



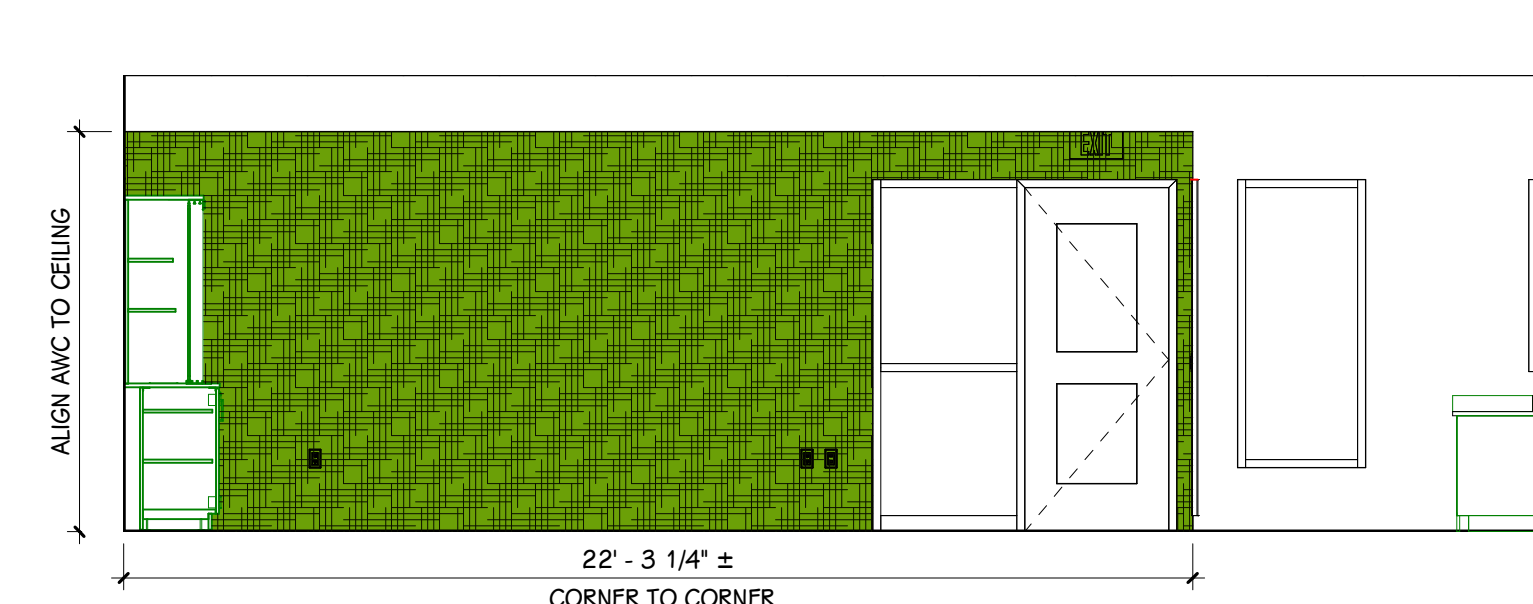
20 LEARNING STUDIO 132 - WEST  
1/4" = 1'-0"



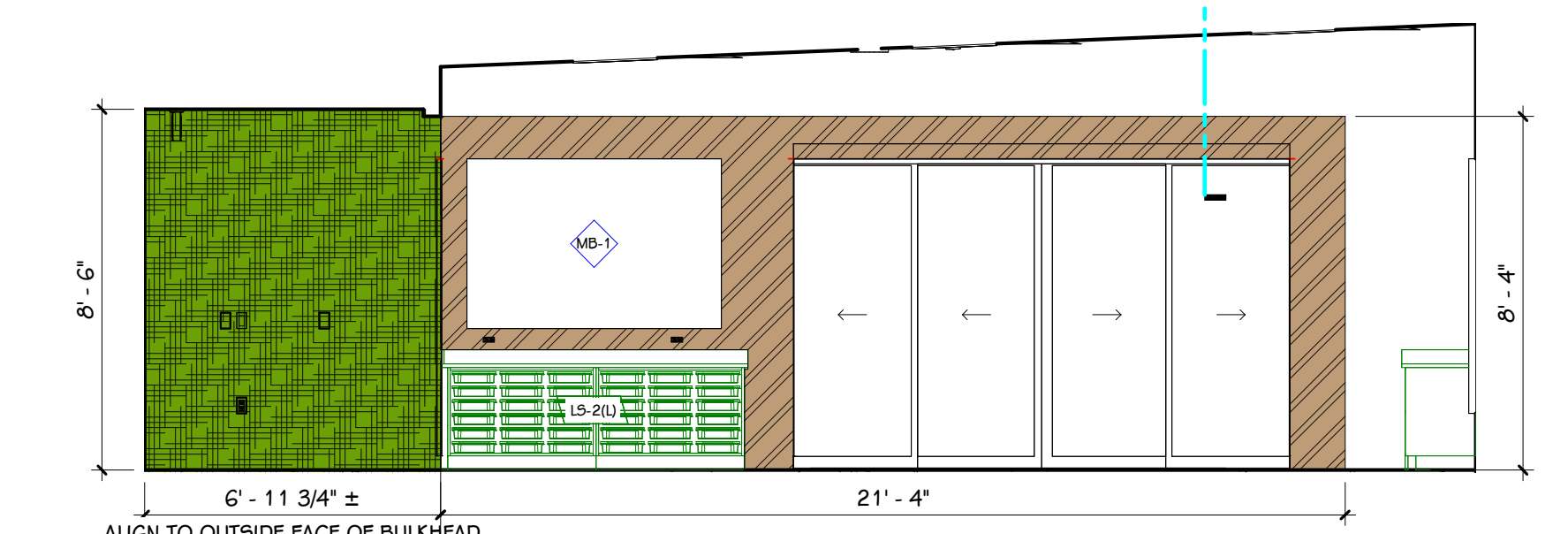
21 LEARNING STUDIO 134 - NORTH  
1/4" = 1'-0"



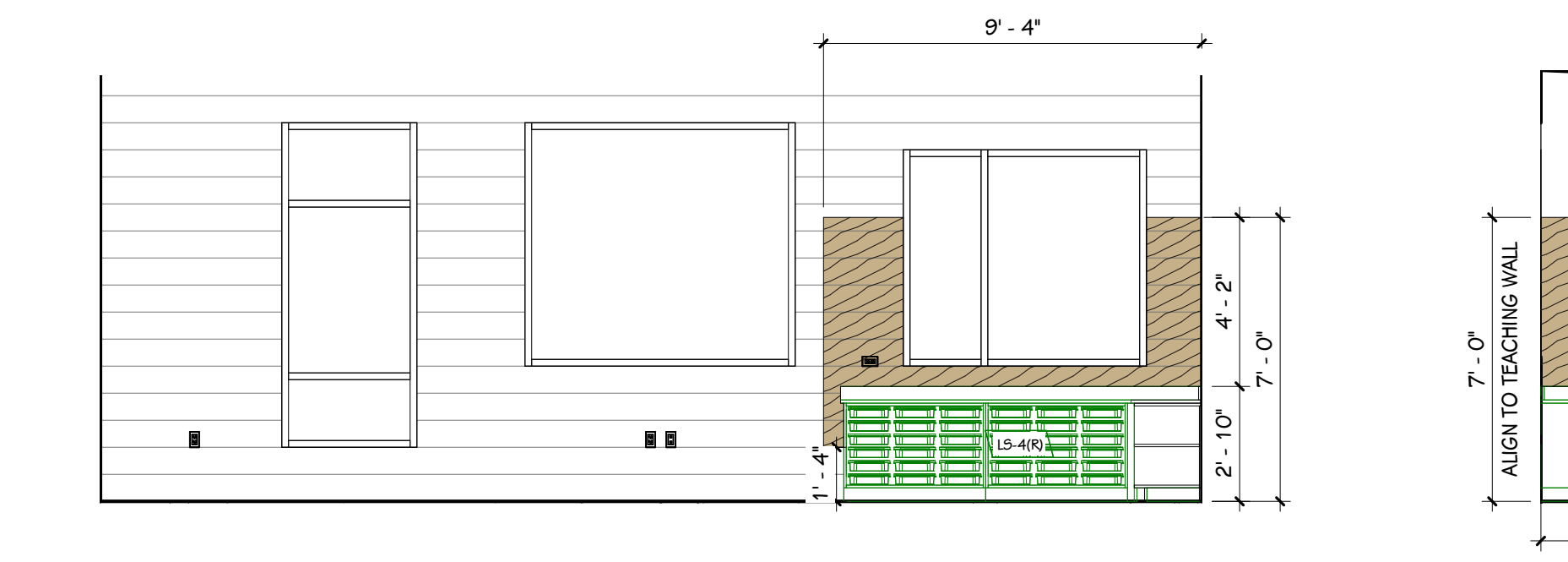
22 LEARNING STUDIO 134 - EAST  
1/4" = 1'-0"



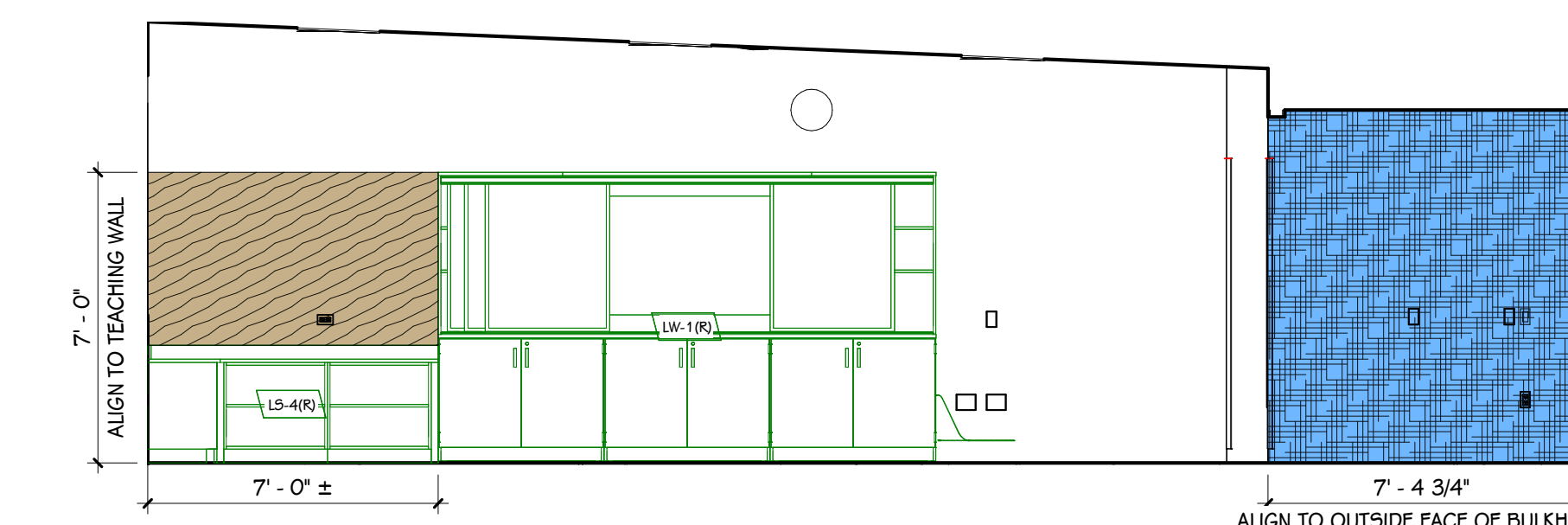
23 LEARNING STUDIO 134 - SOUTH  
1/4" = 1'-0"



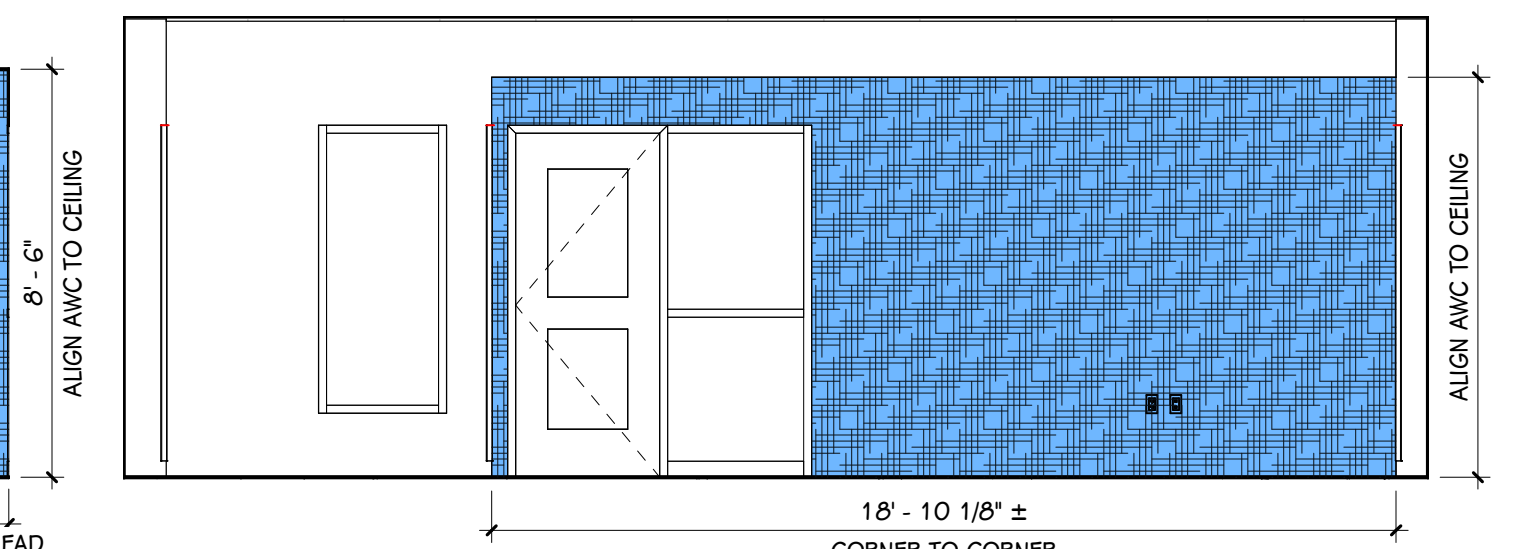
24 LEARNING STUDIO 134 - WEST  
1/4" = 1'-0"



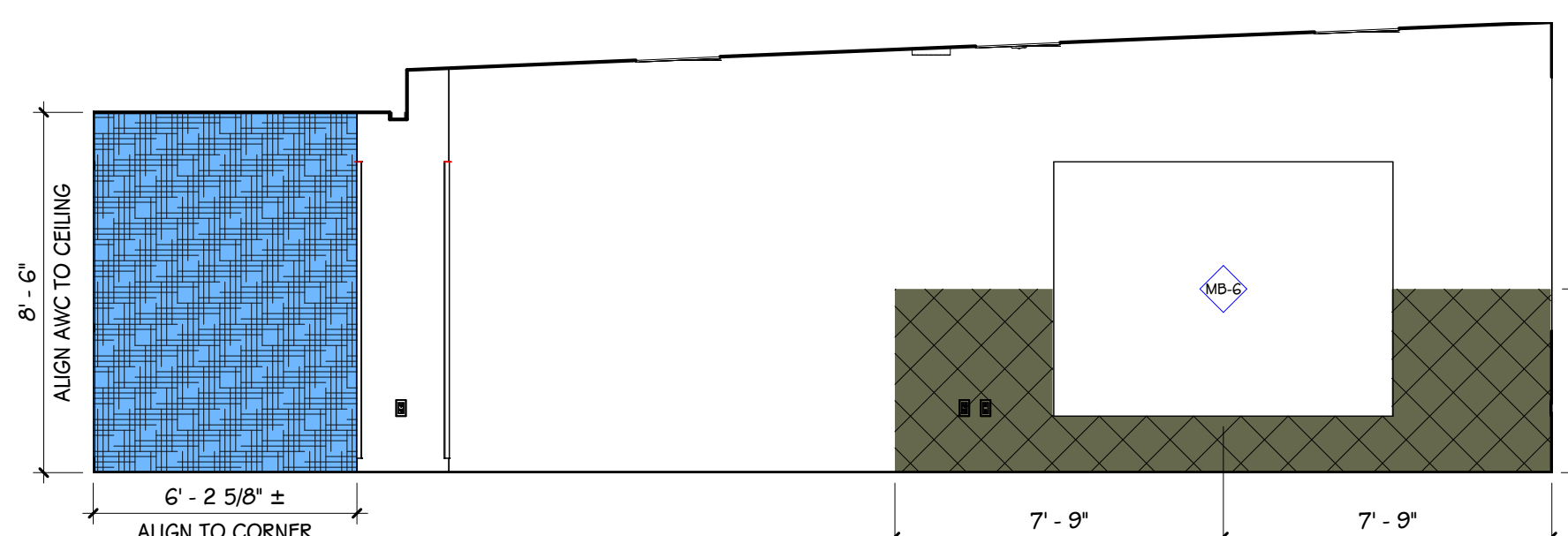
25 LEARNING STUDIO 136 - NORTH  
1/4" = 1'-0"



26 LEARNING STUDIO 136 - EAST  
1/4" = 1'-0"



27 LEARNING STUDIO 136 - SOUTH  
1/4" = 1'-0"



28 LEARNING STUDIO 136 - WEST  
1/4" = 1'-0"

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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

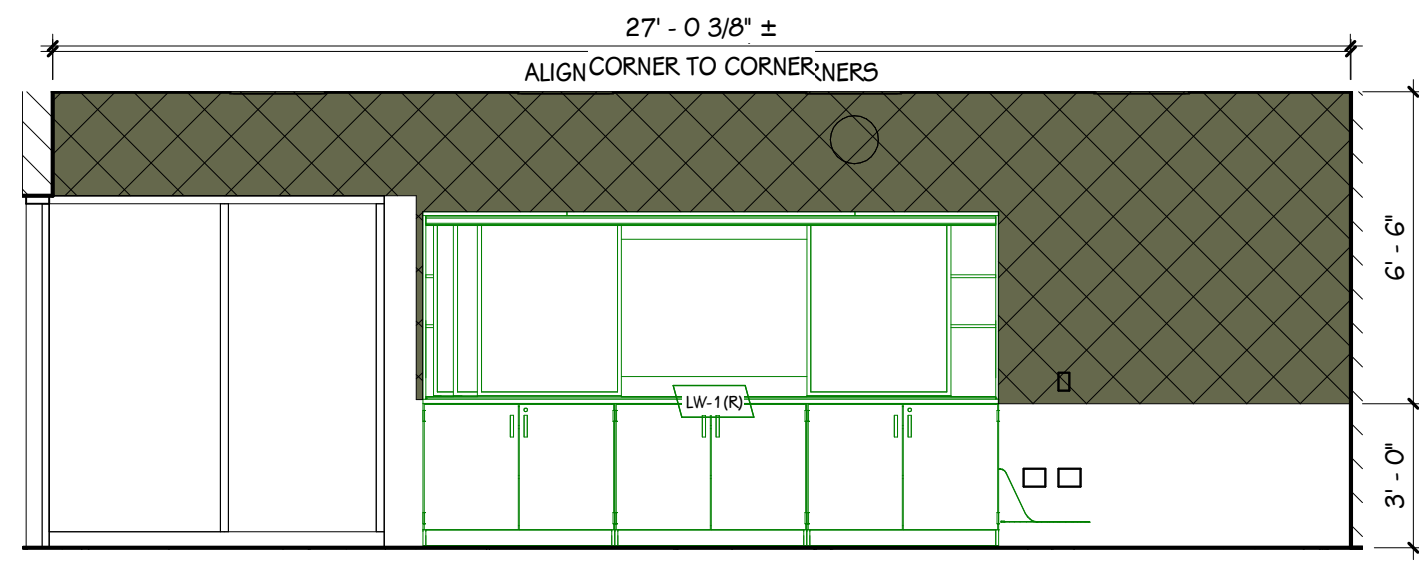
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PORTAGE PUBLIC SCHOOLS

Portage, Michigan

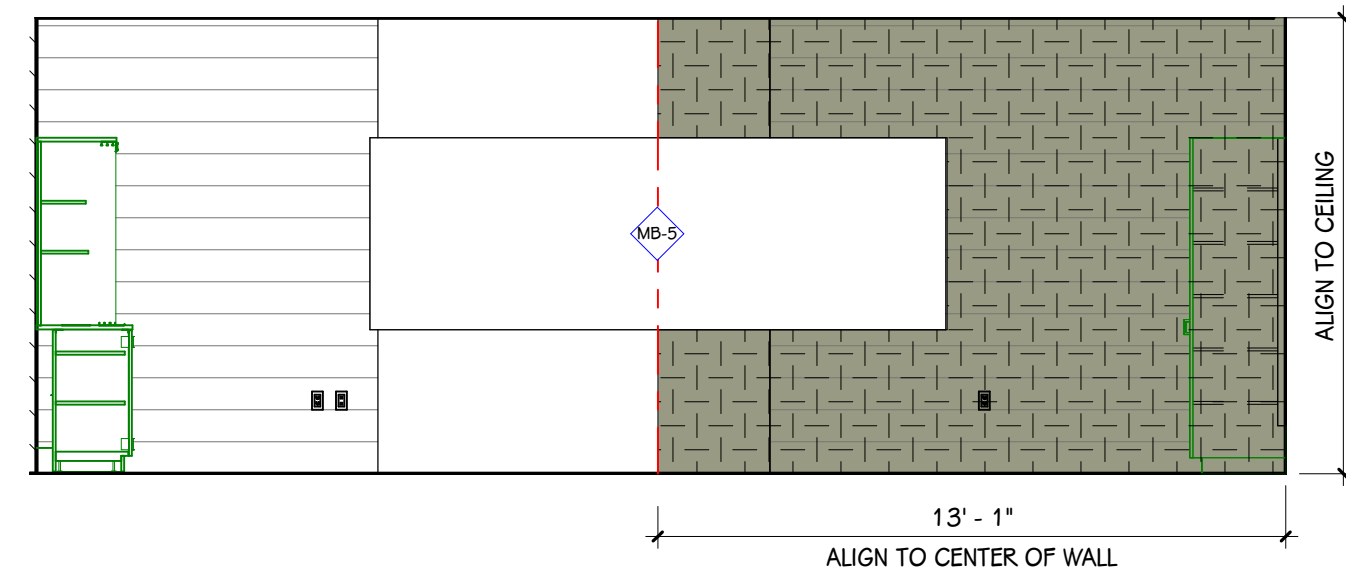
SHEET TITLE  
PATTERN ELEVATIONS

DATE  
JUNE 30, 2023

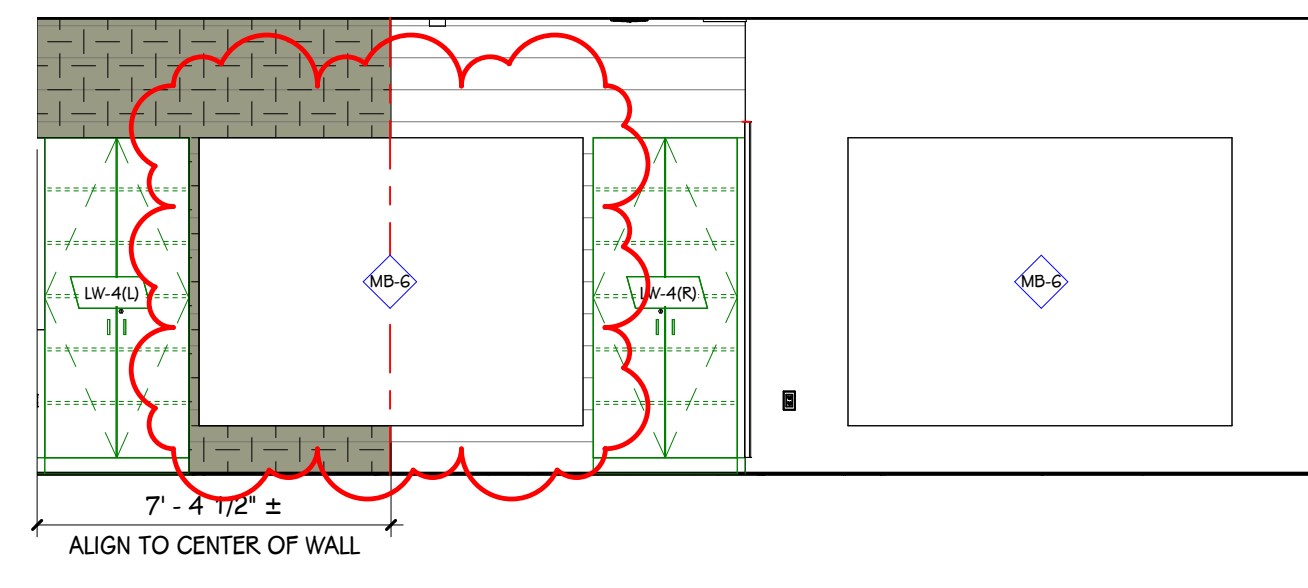
SHEET NUMBER  
1222  
21-237.20



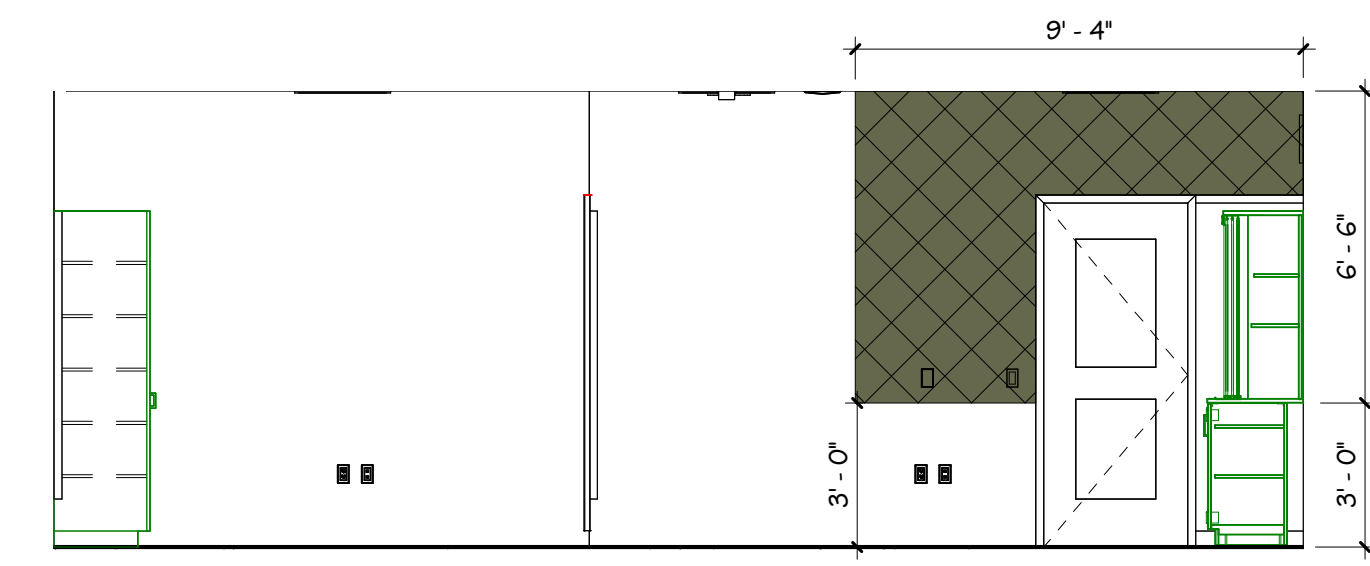
29 ESI STUDIO 139 - NORTH  
1/4" = 1'-0"



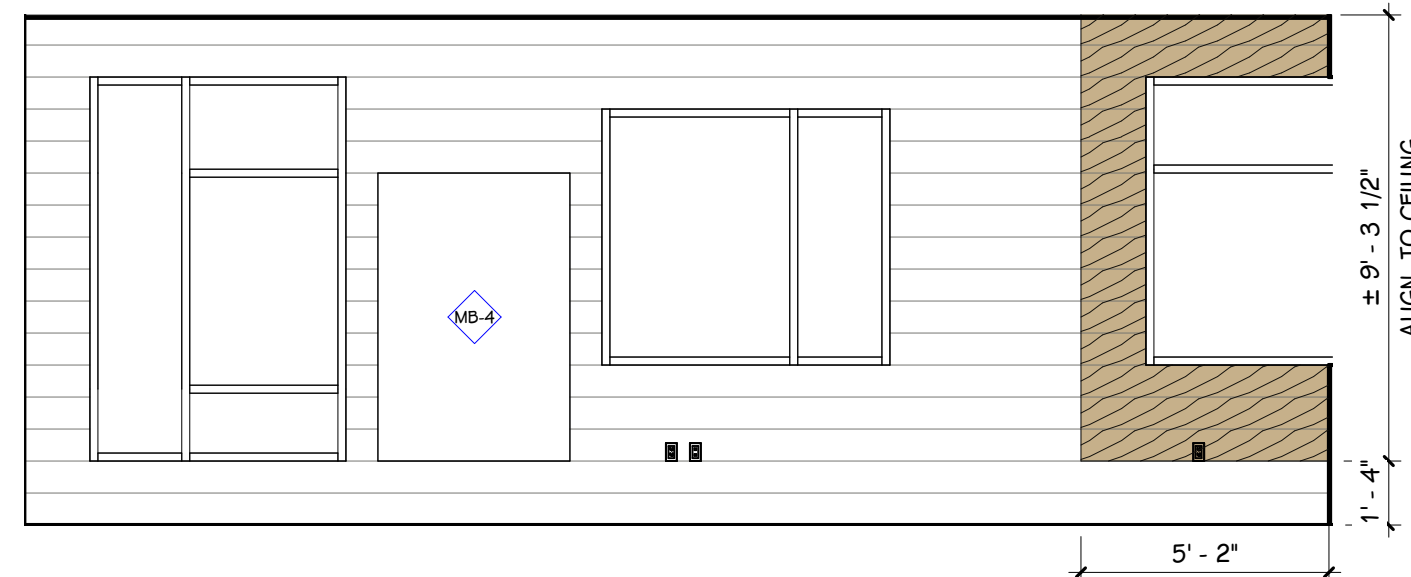
30 ESI STUDIO 139 - EAST  
1/4" = 1'-0"



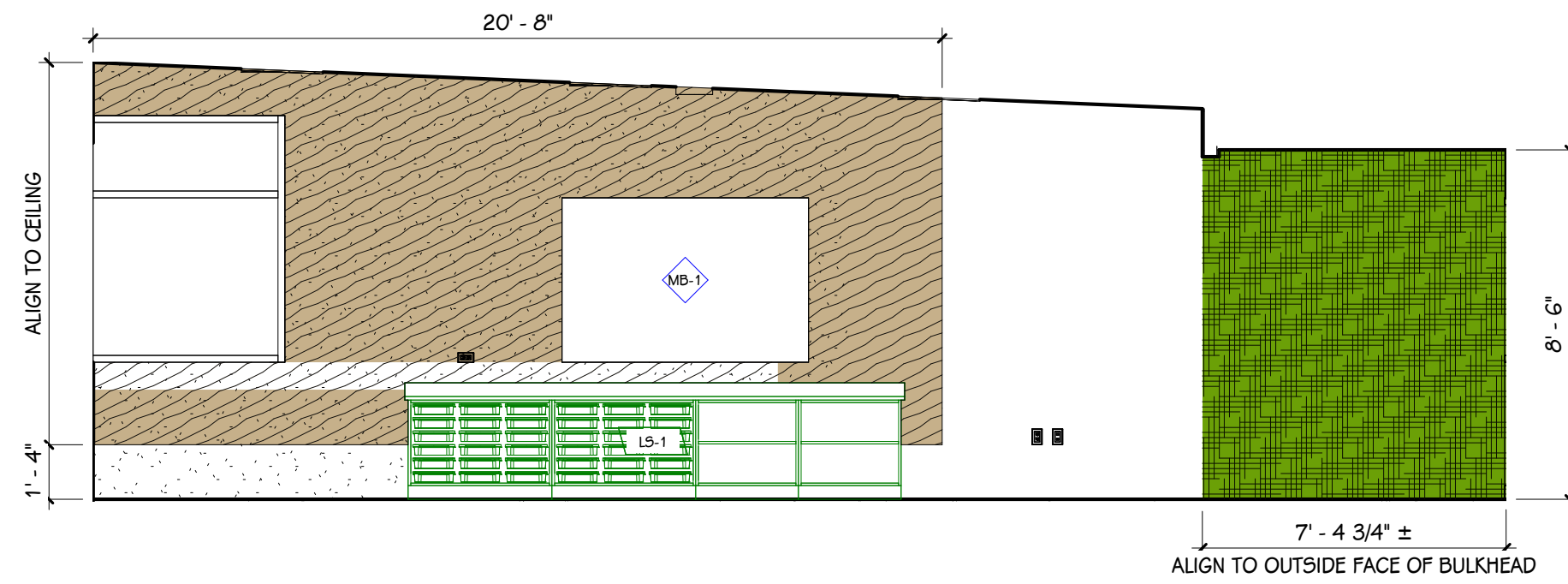
31 ESI STUDIO 139 - SOUTH  
1/4" = 1'-0"



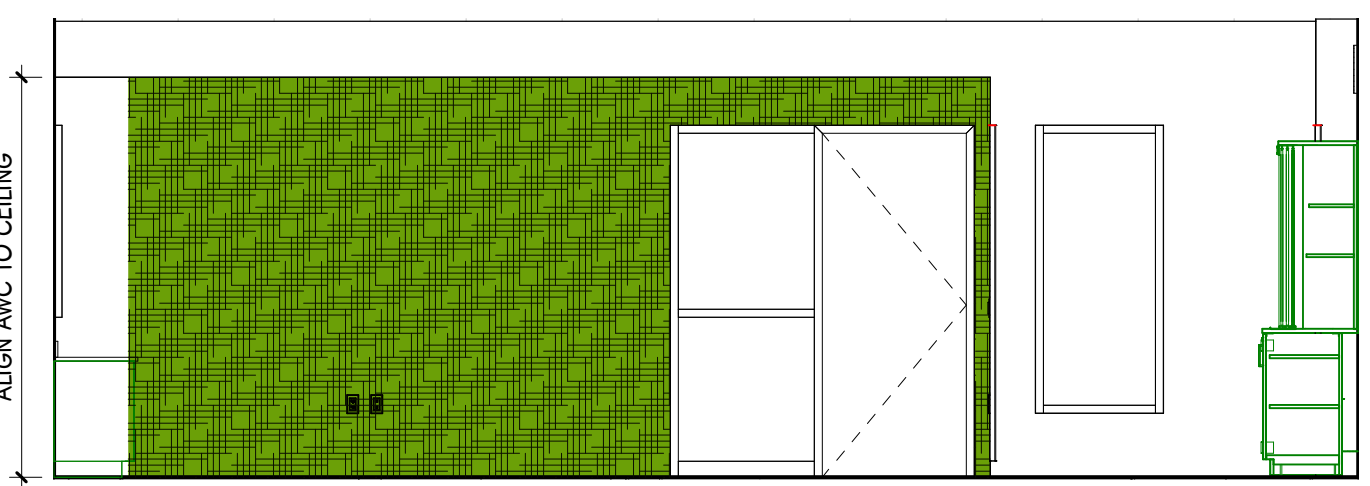
32 ESI STUDIO 139 - WEST  
1/4" = 1'-0"



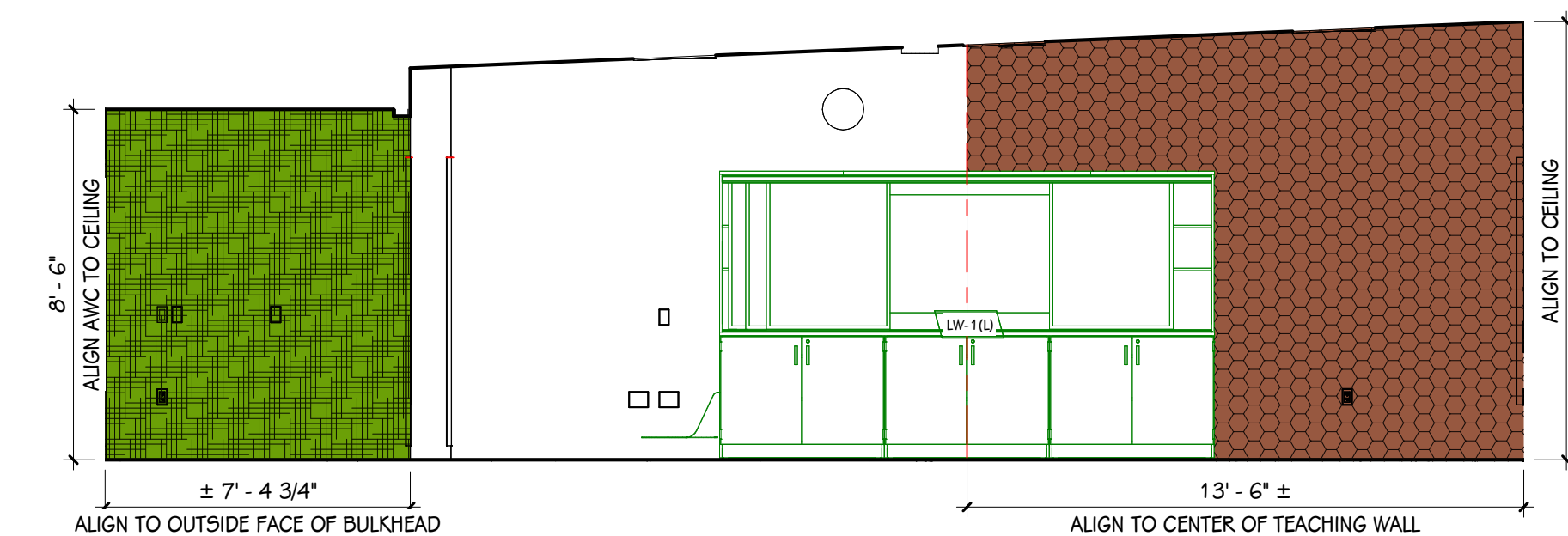
33 LEARNING STUDIO 142 - NORTH  
1/4" = 1'-0"



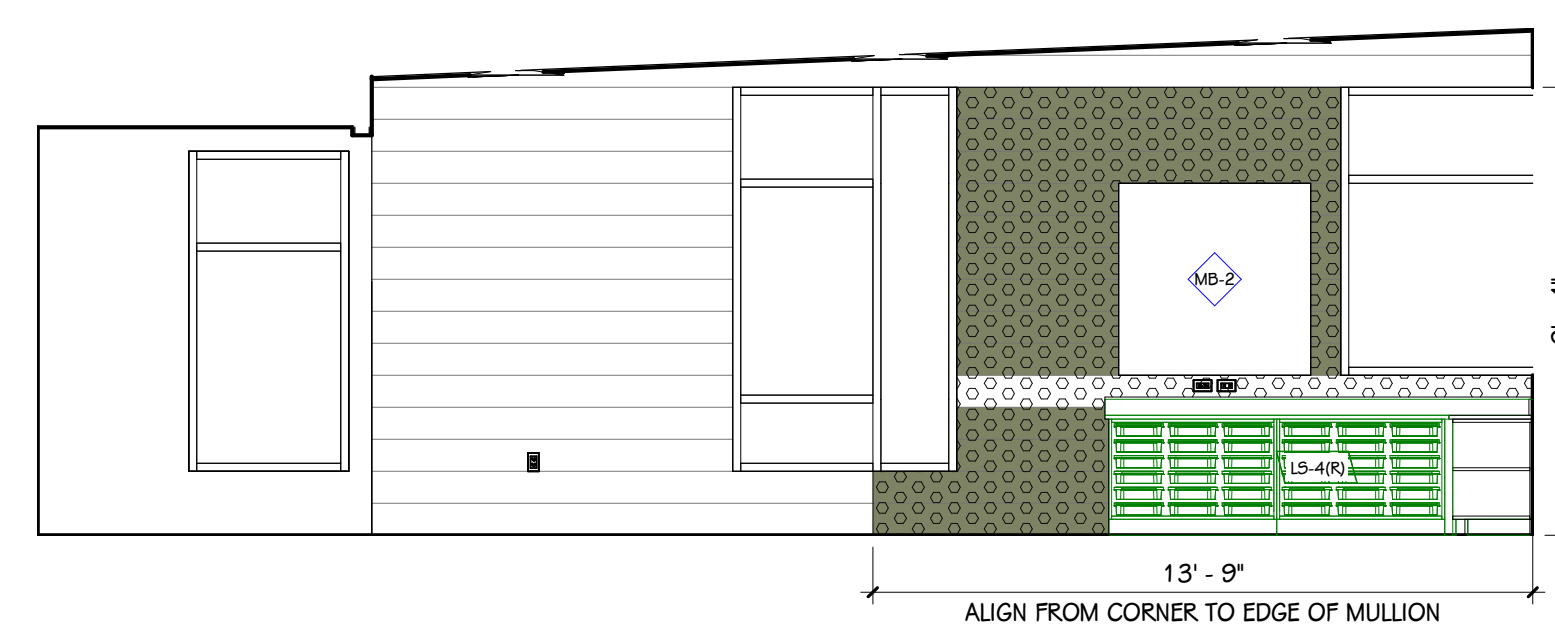
34 LEARNING STUDIO 142 - EAST  
1/4" = 1'-0"



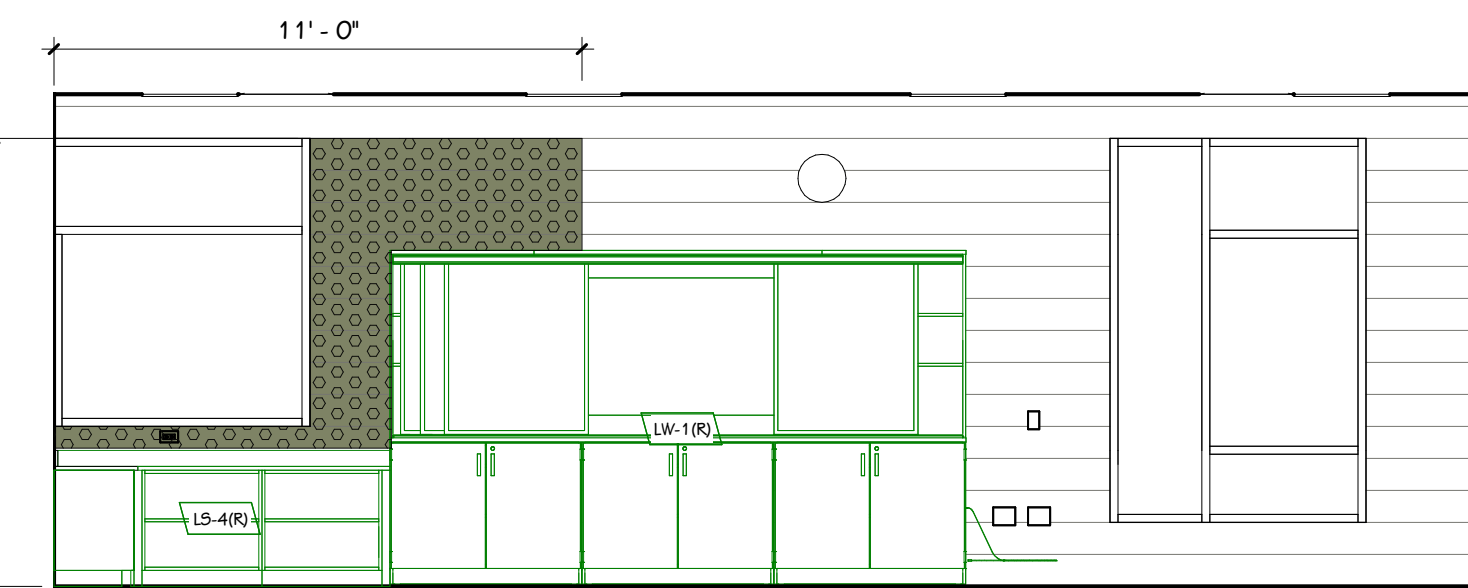
35 LEARNING STUDIO 142 - SOUTH  
1/4" = 1'-0"



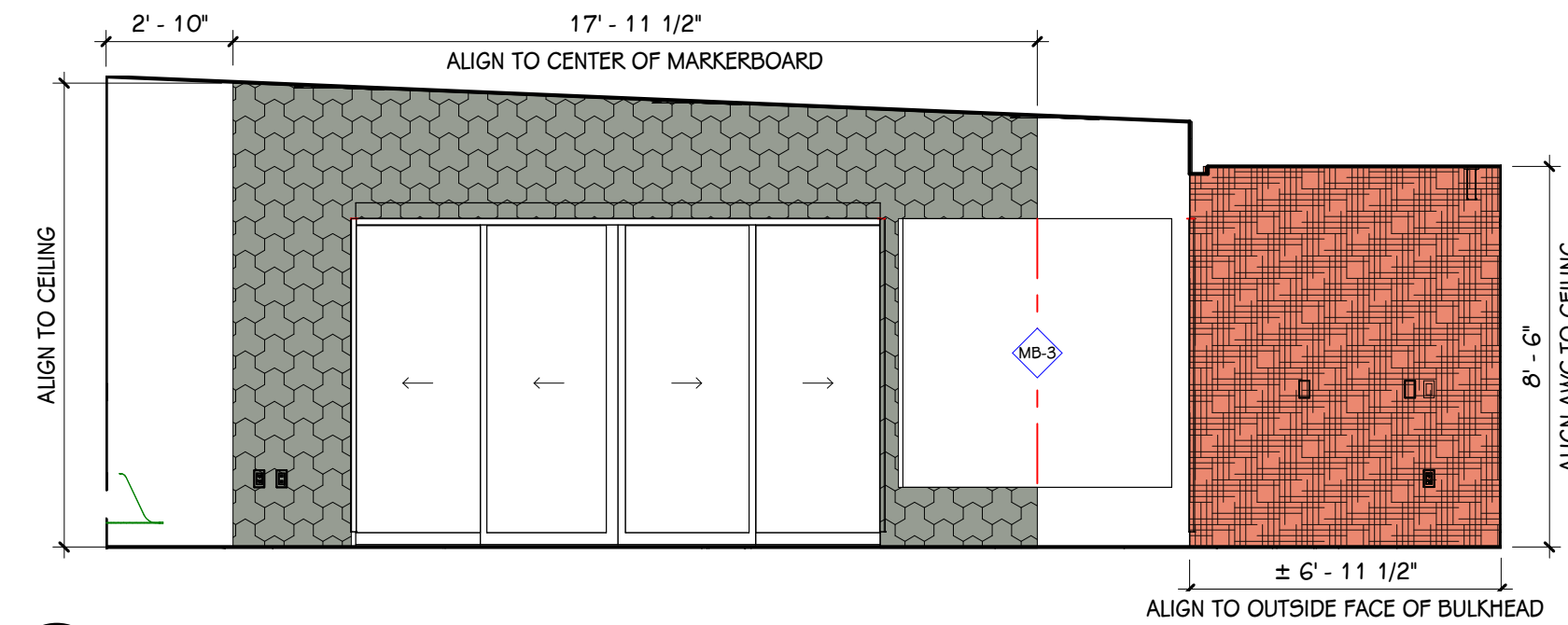
36 LEARNING STUDIO 142 - WEST  
1/4" = 1'-0"



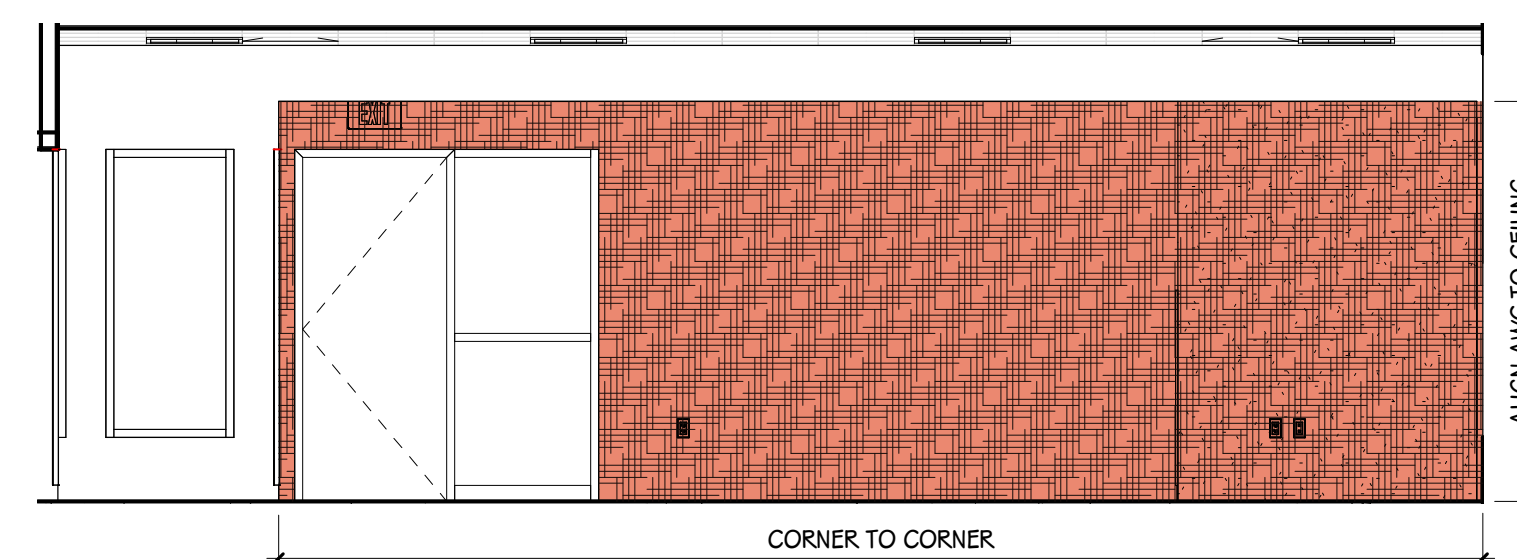
37 LEARNING STUDIO 144 - NORTH  
1/4" = 1'-0"



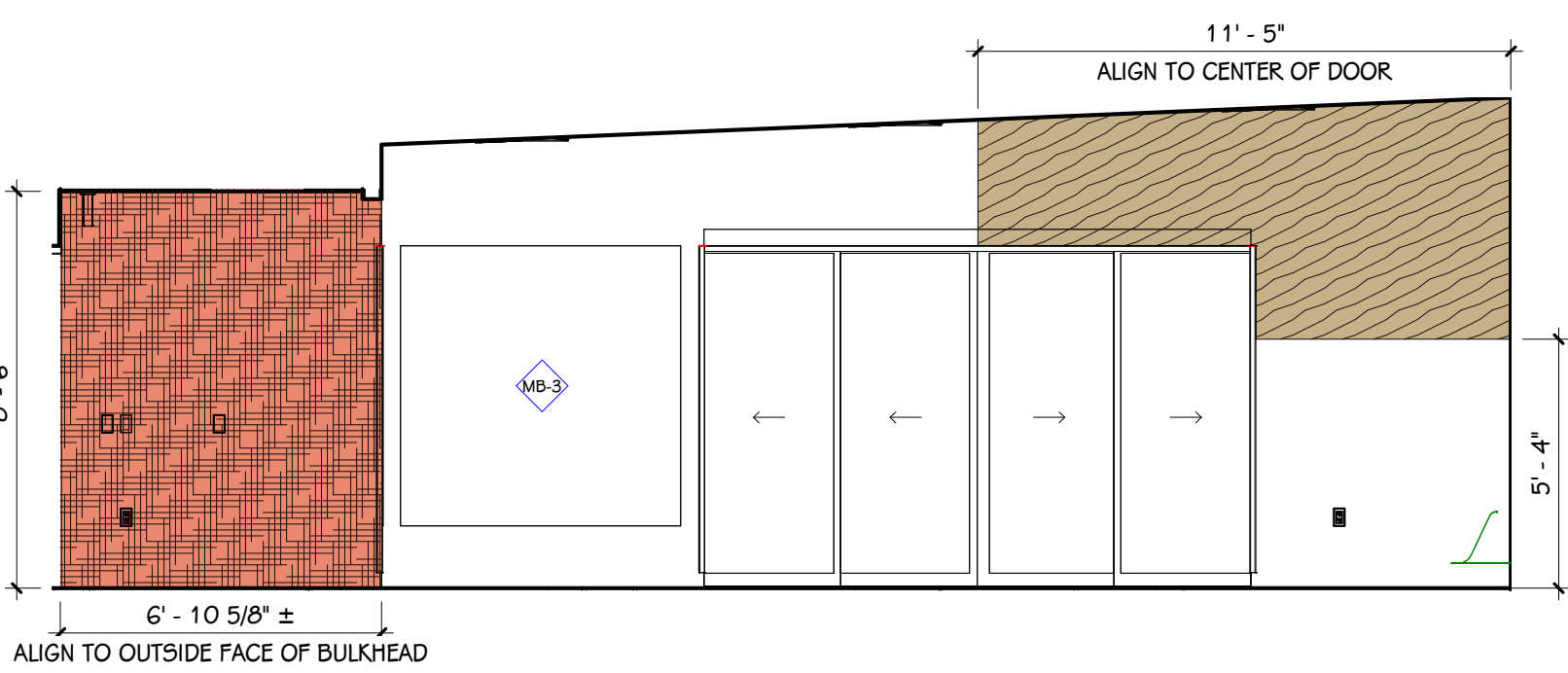
38 LEARNING STUDIO 144 - EAST  
1/4" = 1'-0"



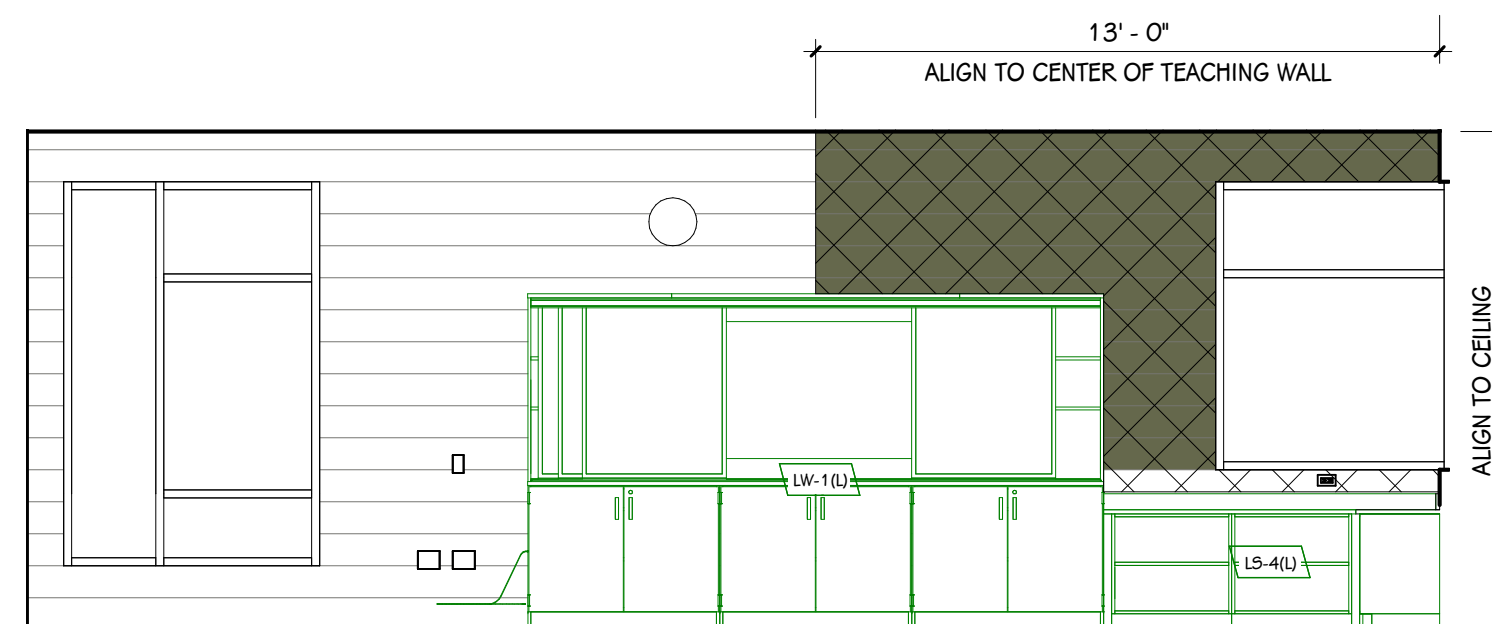
39 LEARNING STUDIO 144 - SOUTH  
1/4" = 1'-0"



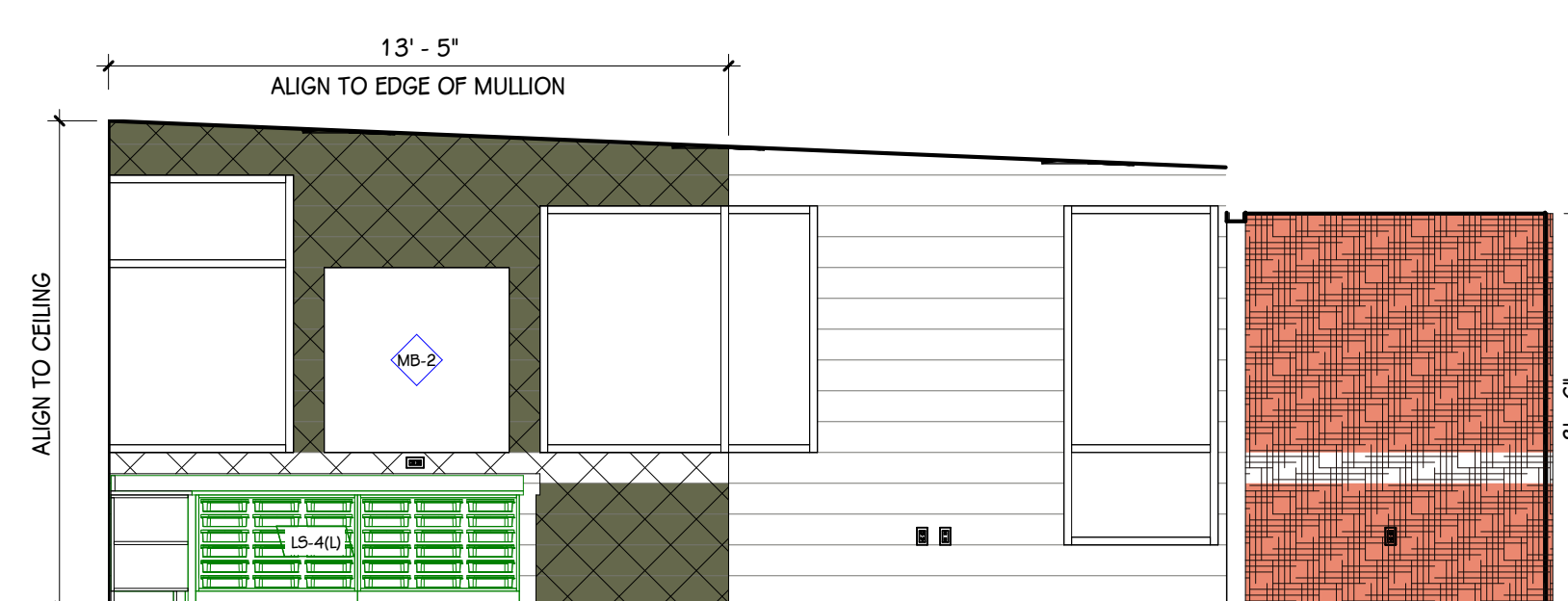
40 LEARNING STUDIO 144 - WEST  
1/4" = 1'-0"



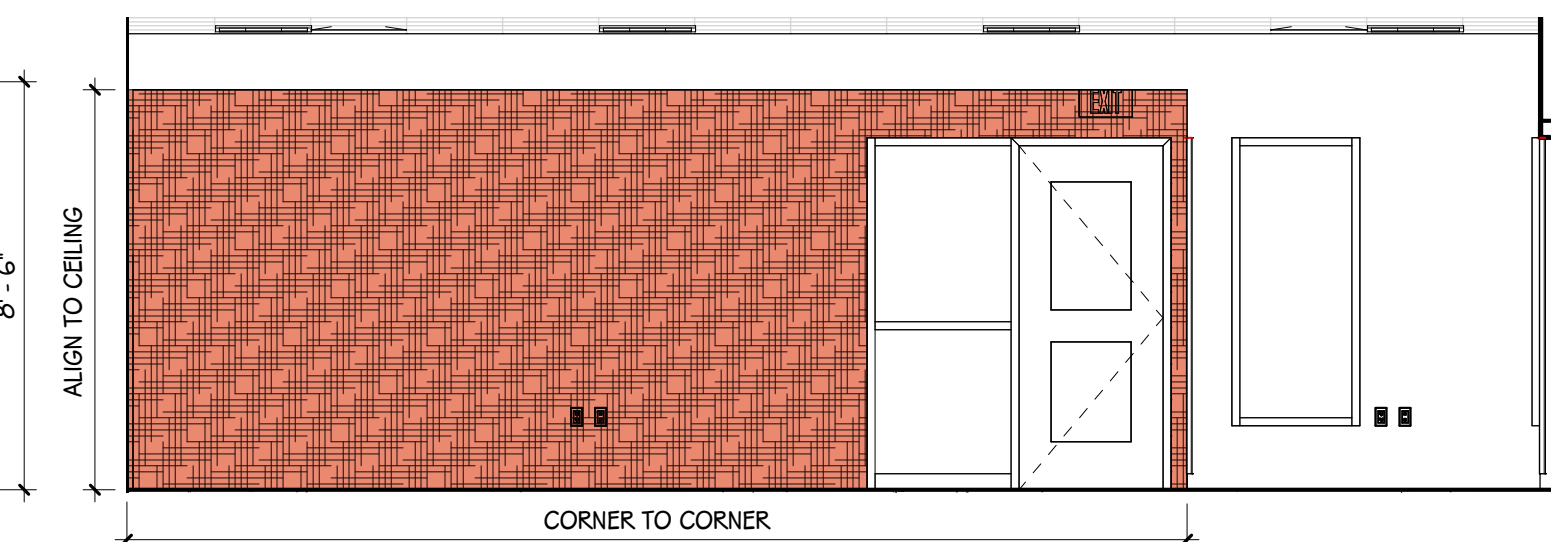
41 LEARNING STUDIO 146 - NORTH  
1/4" = 1'-0"



42 LEARNING STUDIO 146 - EAST  
1/4" = 1'-0"



43 LEARNING STUDIO 146 - SOUTH  
1/4" = 1'-0"



44 LEARNING STUDIO 146 - WEST  
1/4" = 1'-0"

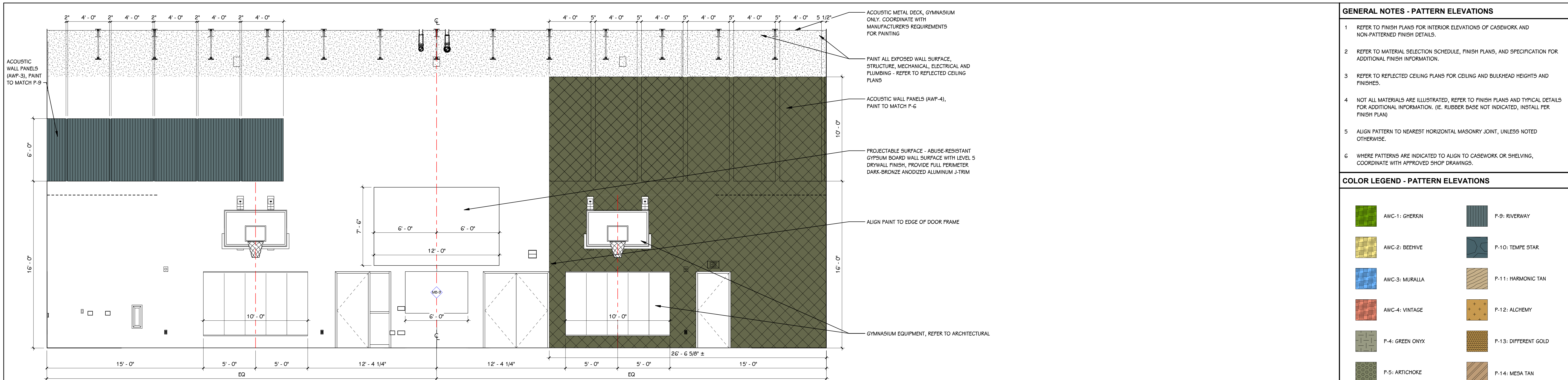
GENERAL NOTES - PATTERN ELEVATIONS

- 1 REFER TO FINISH PLANS FOR INTERIOR ELEVATIONS OF CASEWORK AND NON-PATTERNED FINISH DETAILS.
- 2 REFER TO MATERIAL SELECTION SCHEDULE, FINISH PLANS, AND SPECIFICATION FOR ADDITIONAL FINISH INFORMATION.
- 3 REFER TO REFLECTED CEILING PLANS FOR CEILING AND BULKHEAD HEIGHTS AND FINISHES.
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- 5 ALIGN PATTERN TO NEAREST HORIZONTAL MASONRY JOINT, UNLESS NOTED OTHERWISE.
- 6 WHERE PATTERNS ARE INDICATED TO ALIGN TO CASEWORK OR SHELVING, COORDINATE WITH APPROVED SHOP DRAWINGS.

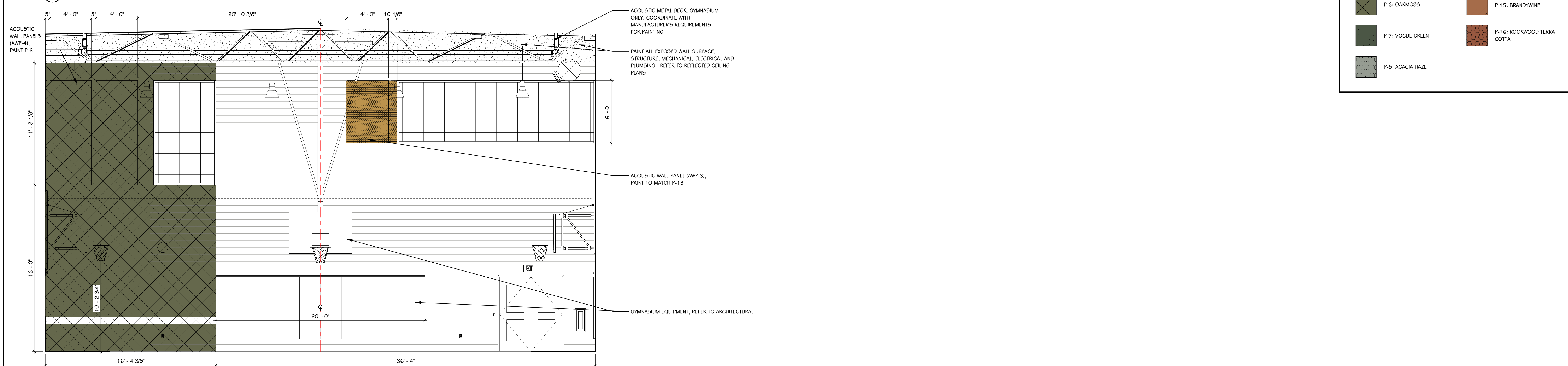
COLOR LEGEND - PATTERN ELEVATIONS

	AWC-1: GHERKIN		P-9: RIVERWAY
	AWC-2: BEEHIVE		P-10: TEMPE STAR
	AWC-3: MURALLA		P-11: HARMONIC TAN
	AWC-4: VINTAGE		P-12: ALCHEMY
	P-4: GREEN ONYX		P-13: DIFFERENT GOLD
	P-5: ARTICHOKE		P-14: MESA TAN
	P-6: OASMOSS		P-15: BRANDYWINE
	P-7: VOGUE GREEN		P-16: ROCKWOOD TERRA COTTA
	P-8: ACACIA HAZE		

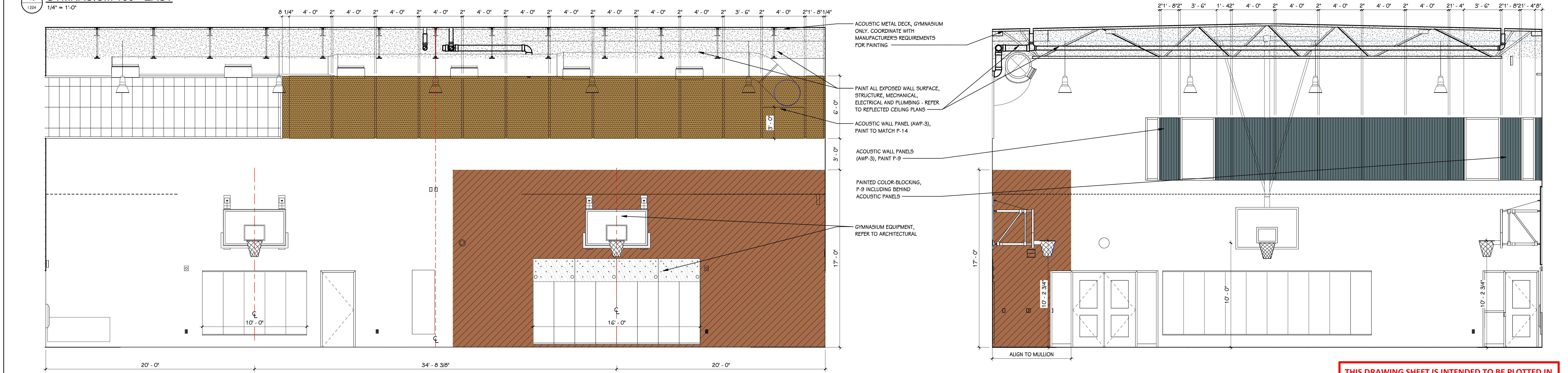
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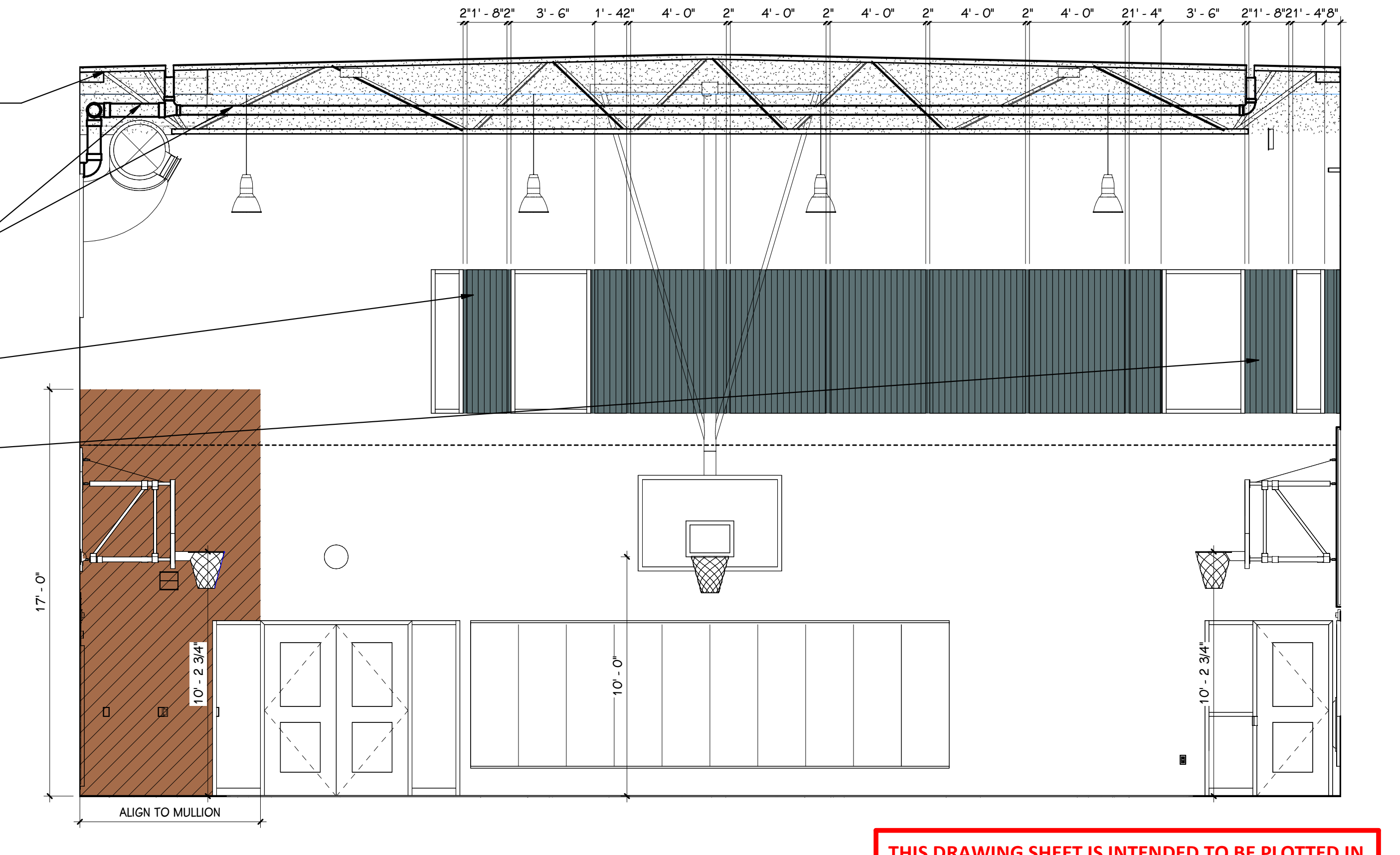
45 GYMNASIUM 150 - NORTH  
1/4" = 1'-0"



46 GYMNASIUM 150 - EAST  
1/4" = 1'-0"



47 GYMNASIUM 150 - SOUTH  
1/4" = 1'-0"



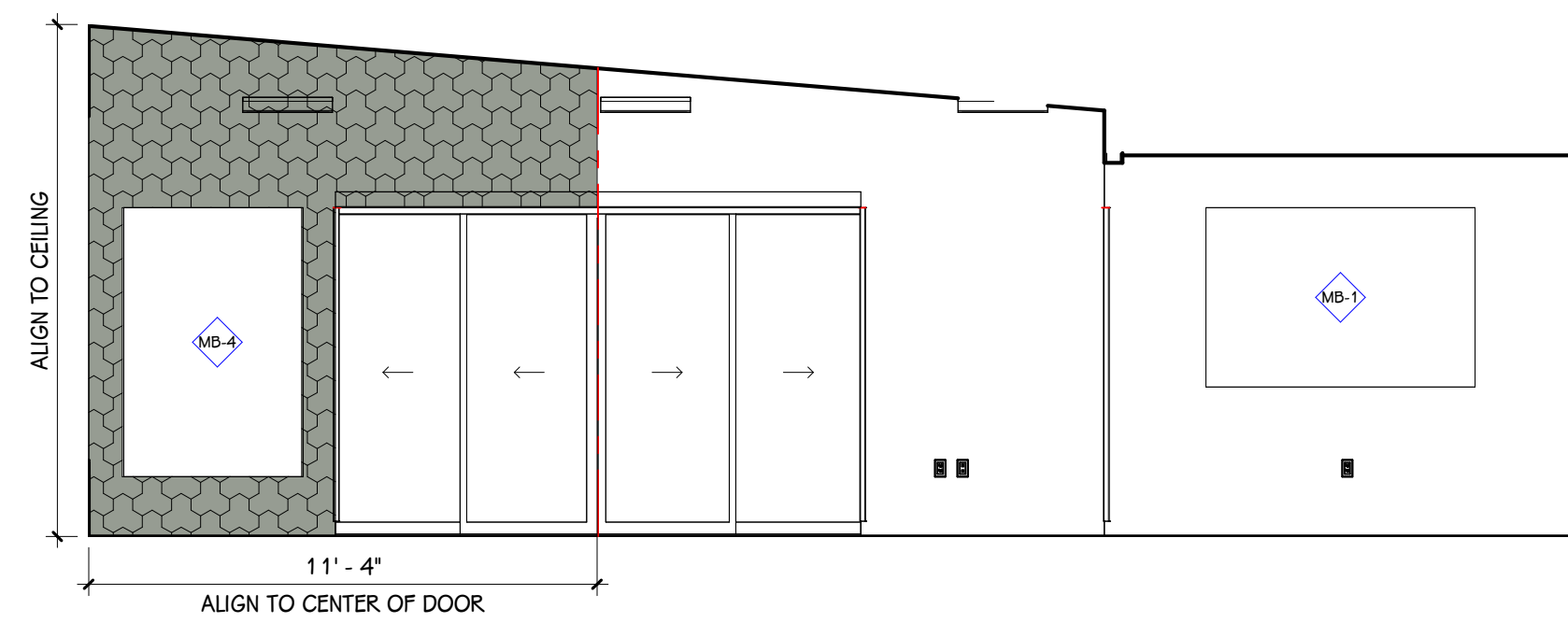
48 GYMNASIUM 150 - WEST  
1/4" = 1'-0"

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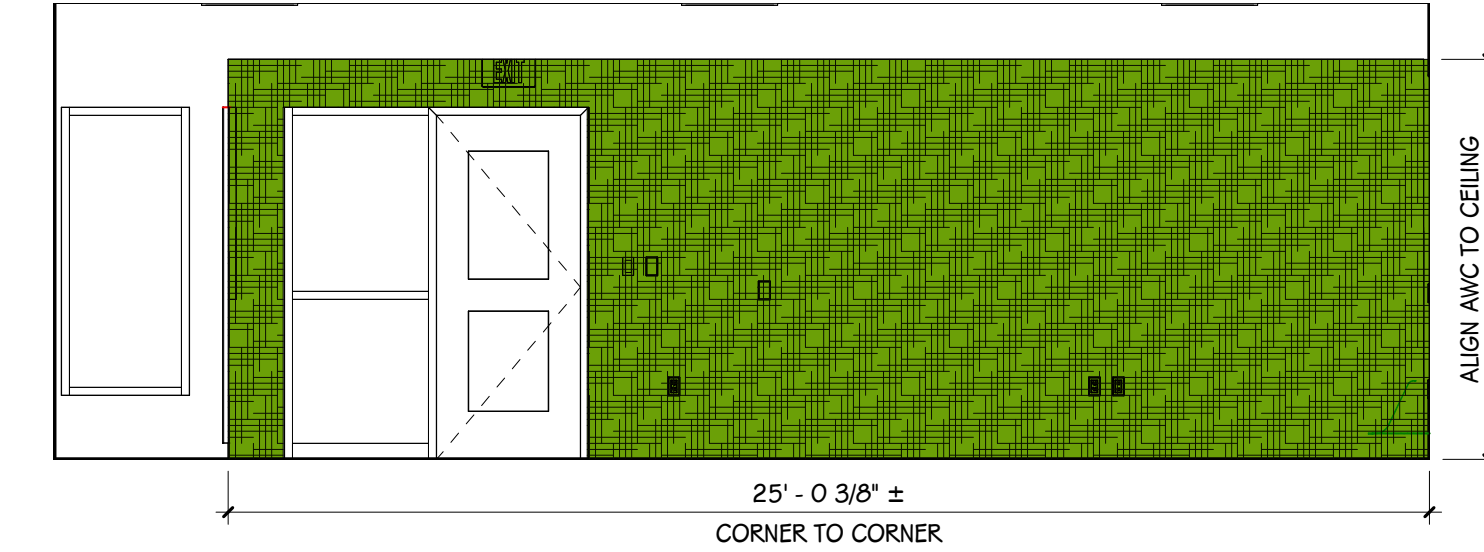
**COLOR LEGEND - PATTERN ELEVATIONS**

AWC-1: GHERKIN	P-9: RIVERWAY
AWC-2: BEEHIVE	P-10: TEMPE STAR
AWC-3: MURALLA	P-11: HARMONIC TAN
AWC-4: VINTAGE	P-12: ALCHEMY
P-4: GREEN ONYX	P-13: DIFFERENT GOLD
P-5: ARTICHOKE	P-14: MESA TAN
P-6: OAKMOSS	P-15: BRANDYWINE
P-7: VOGUE GREEN	P-16: ROCKWOOD TERRA COTTA
P-8: ACACIA HAZE	

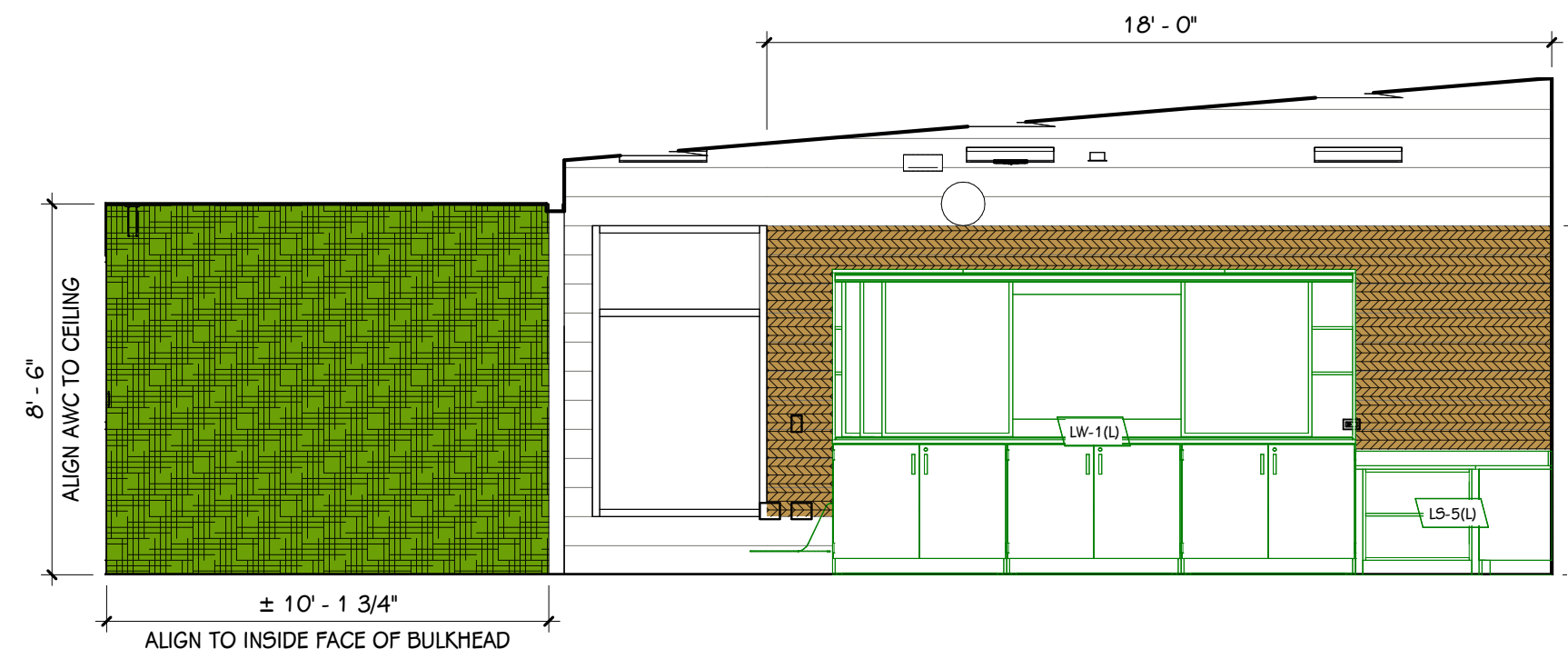
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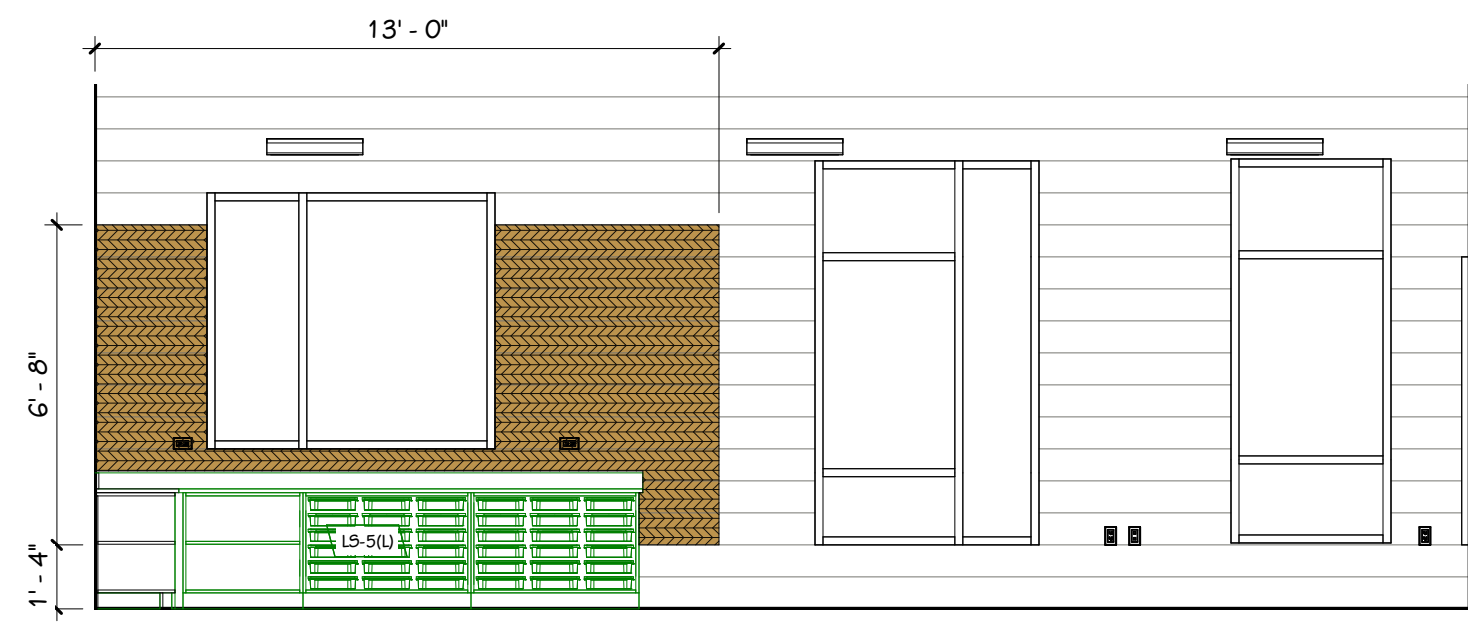
49 LEARNING STUDIO 222 - NORTH  
1/4" = 1'-0"



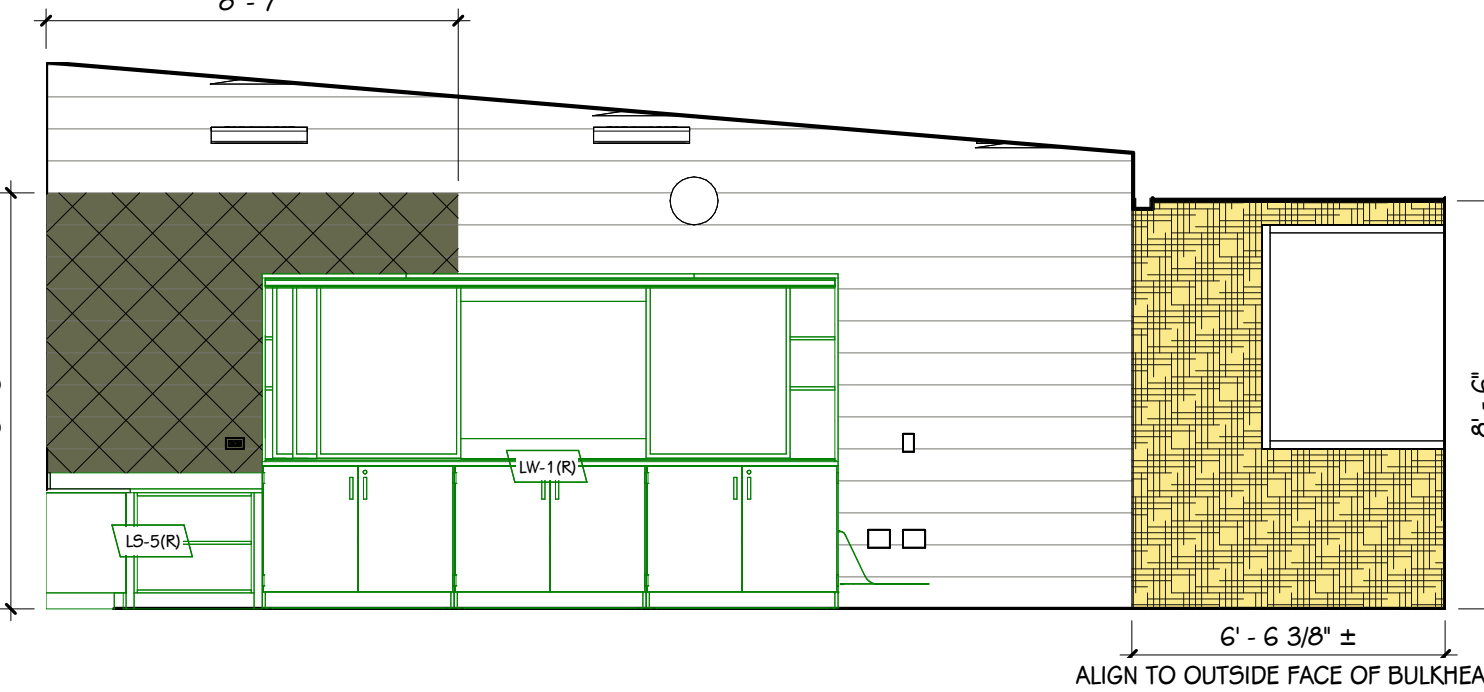
50 LEARNING STUDIO 222 - EAST  
1/4" = 1'-0"



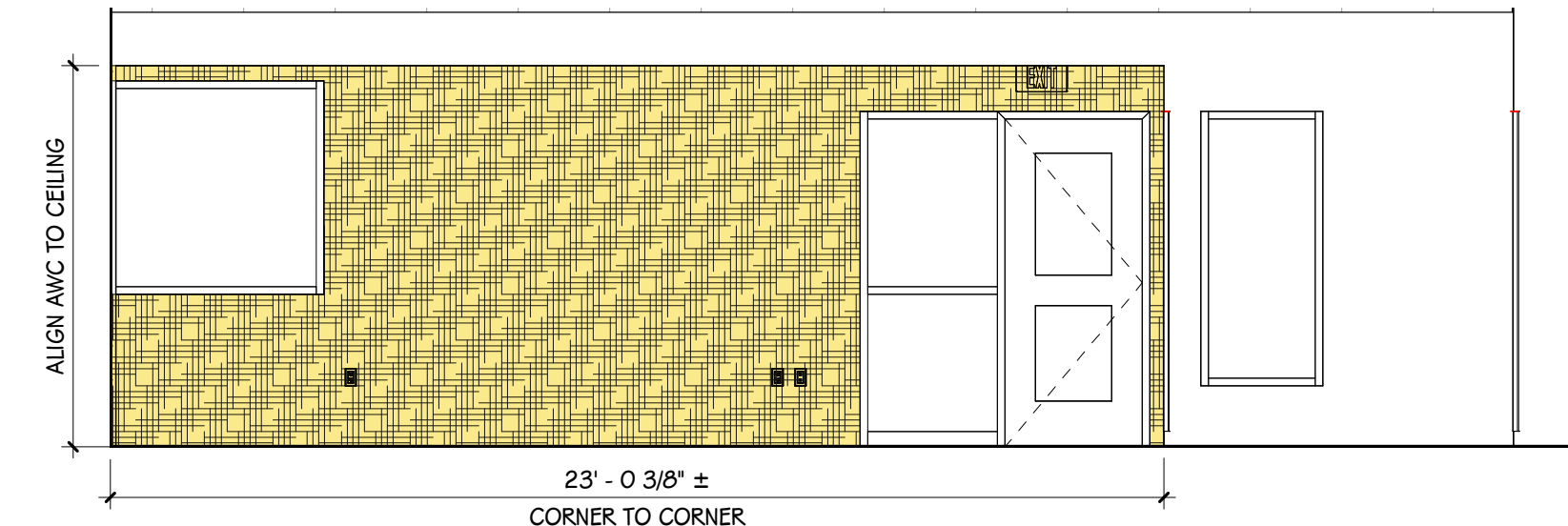
51 LEARNING STUDIO 222 - SOUTH  
1/4" = 1'-0"



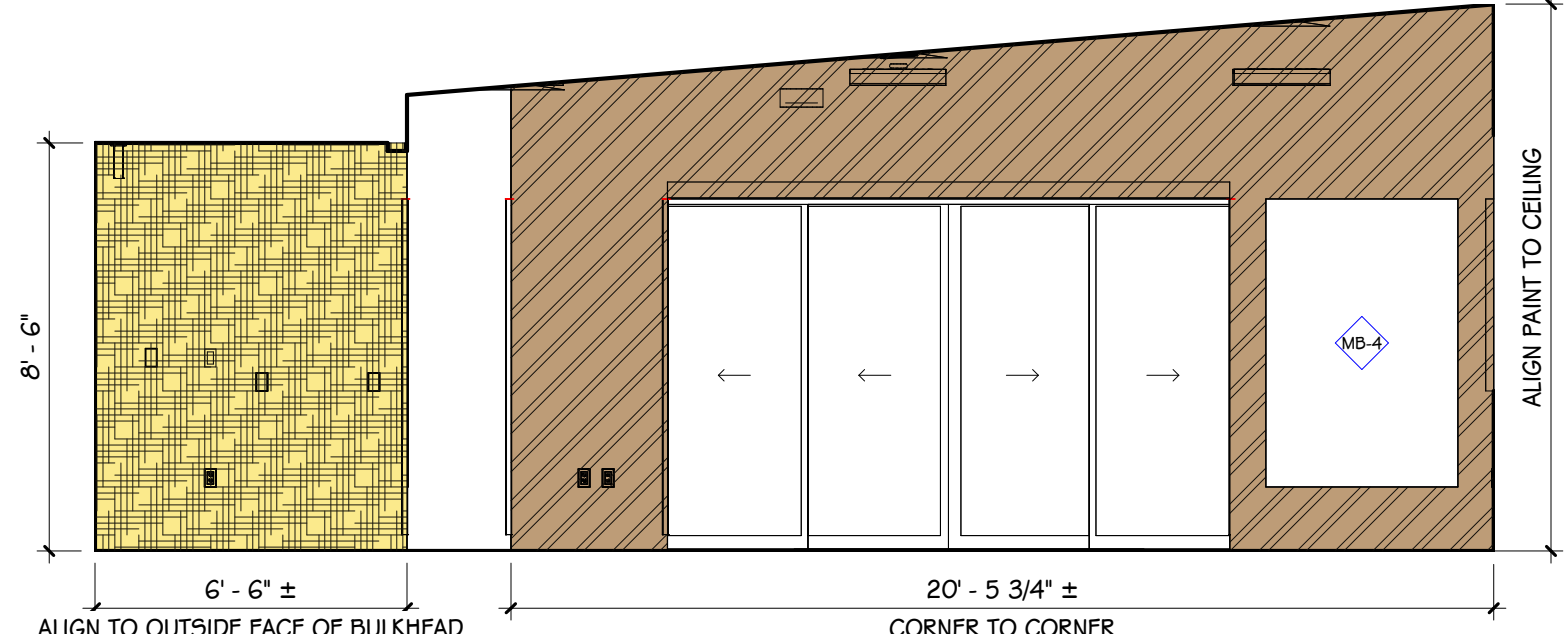
52 LEARNING STUDIO 222 - WEST  
1/4" = 1'-0"



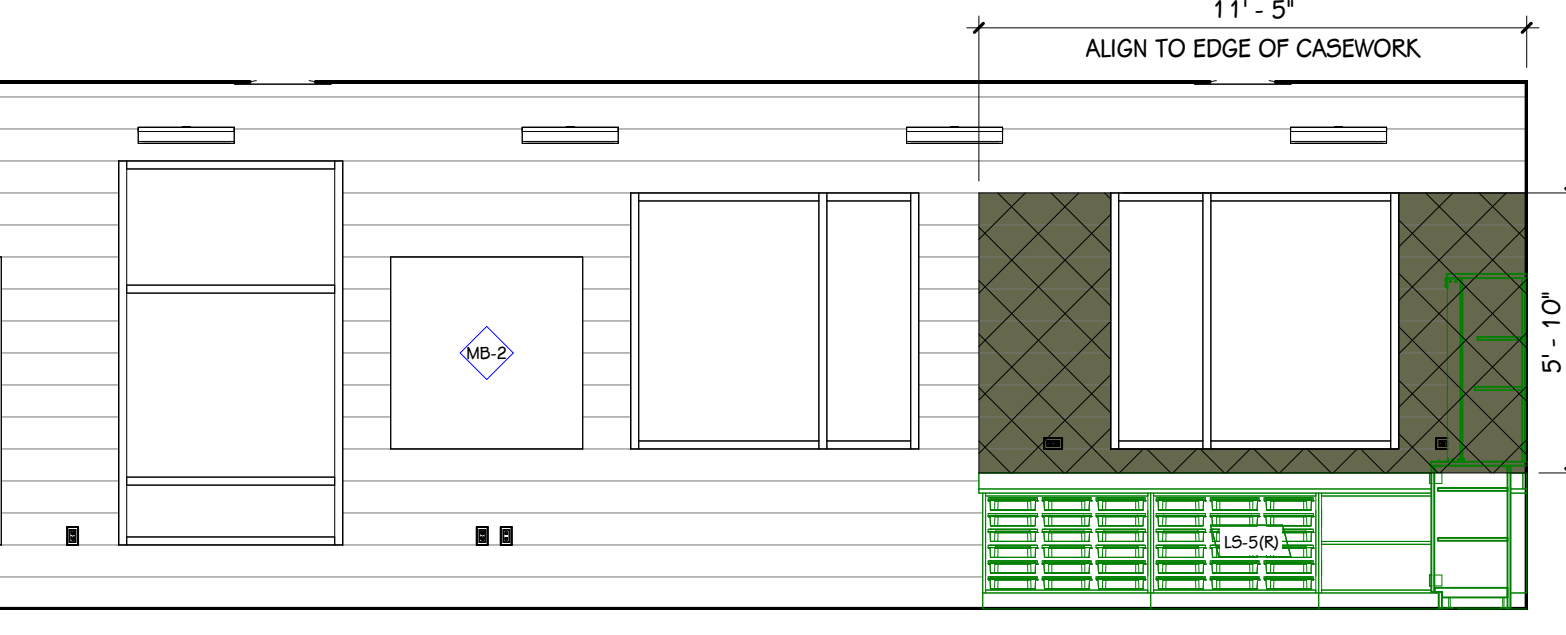
53 LEARNING STUDIO 226 - NORTH  
1/4" = 1'-0"



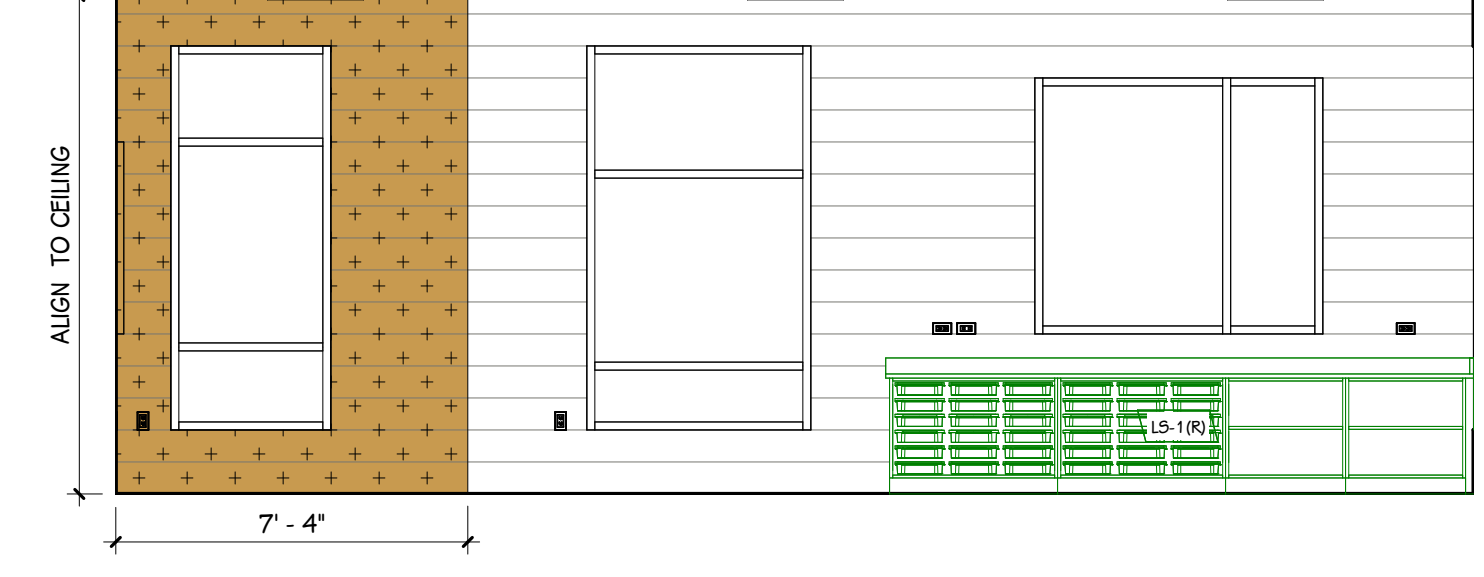
54 LEARNING STUDIO 226 - EAST  
1/4" = 1'-0"



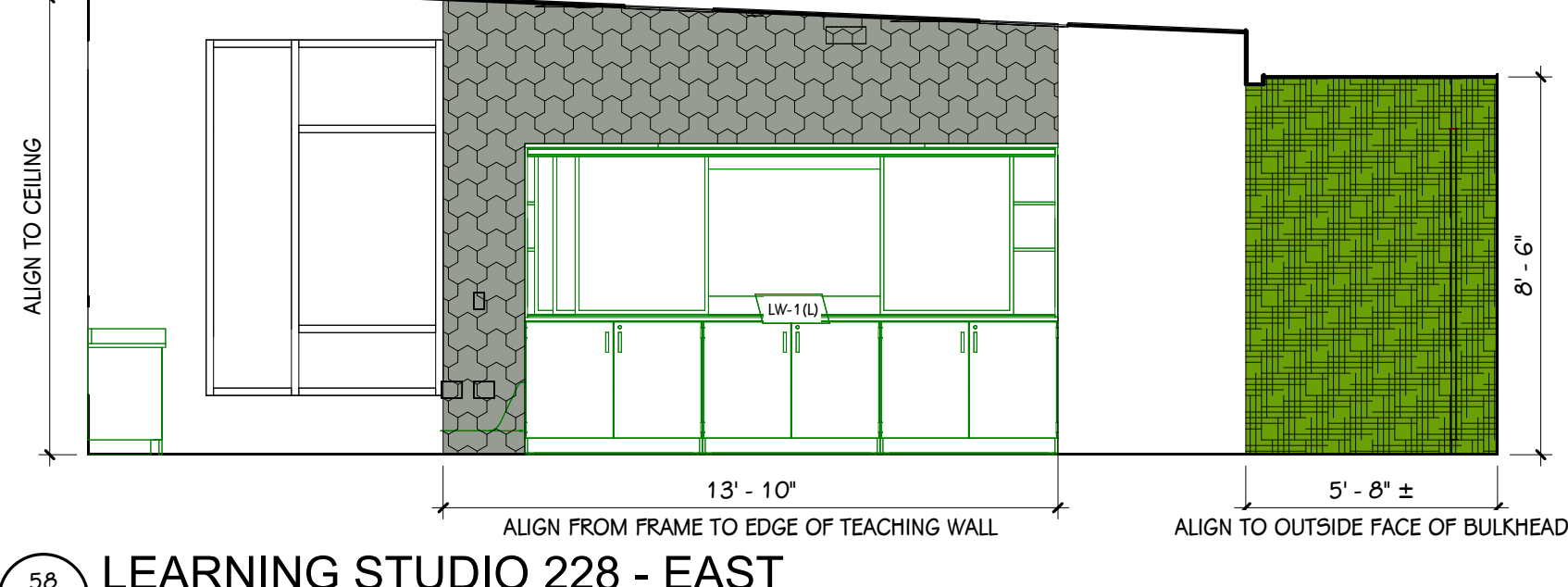
55 LEARNING STUDIO 226 - SOUTH  
1/4" = 1'-0"



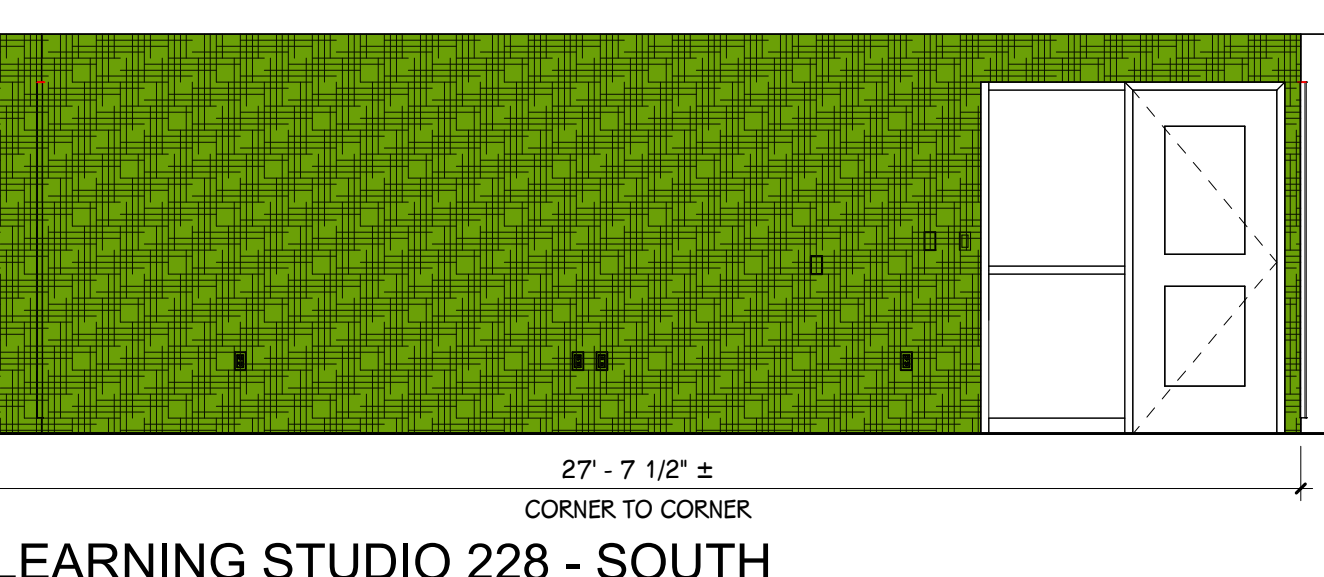
56 LEARNING STUDIO 226 - WEST  
1/4" = 1'-0"



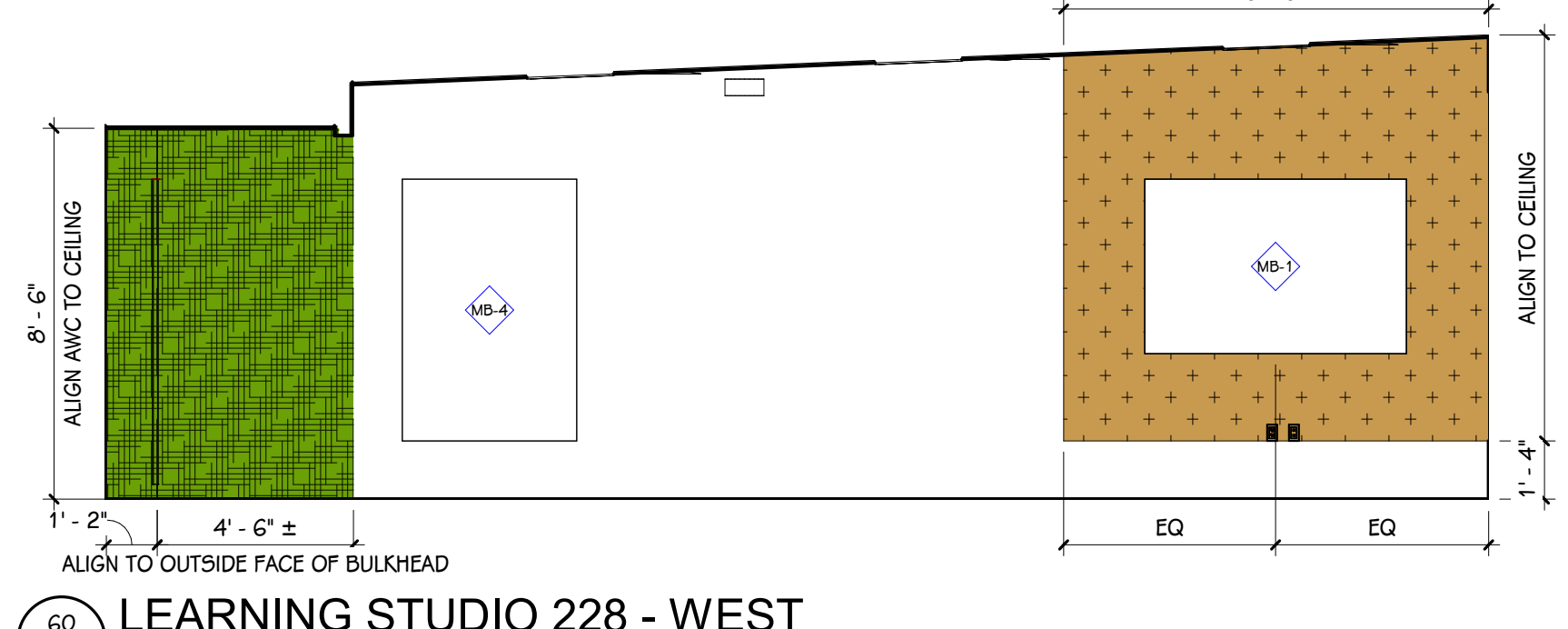
57 LEARNING STUDIO 228 - NORTH  
1/4" = 1'-0"



58 LEARNING STUDIO 228 - EAST  
1/4" = 1'-0"



59 LEARNING STUDIO 228 - SOUTH  
1/4" = 1'-0"



60 LEARNING STUDIO 228 - WEST  
1/4" = 1'-0"

GENERAL NOTES - PATTERN ELEVATIONS

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COLOR LEGEND - PATTERN ELEVATIONS

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	AWC-3: MURALLA		P-11: HARMONIC TAN
	AWC-4: VINTAGE		P-12: ALCHEMY
	P-4: GREEN ONYX		P-13: DIFFERENT GOLD
	P-5: ARTICHOKE		P-14: MESA TAN
	P-6: OASMOSS		P-15: BRANDYWINE
	P-7: VOGUE GREEN		P-16: ROOKWOOD TERRA COTTA
	P-8: ACACIA HAZE		

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

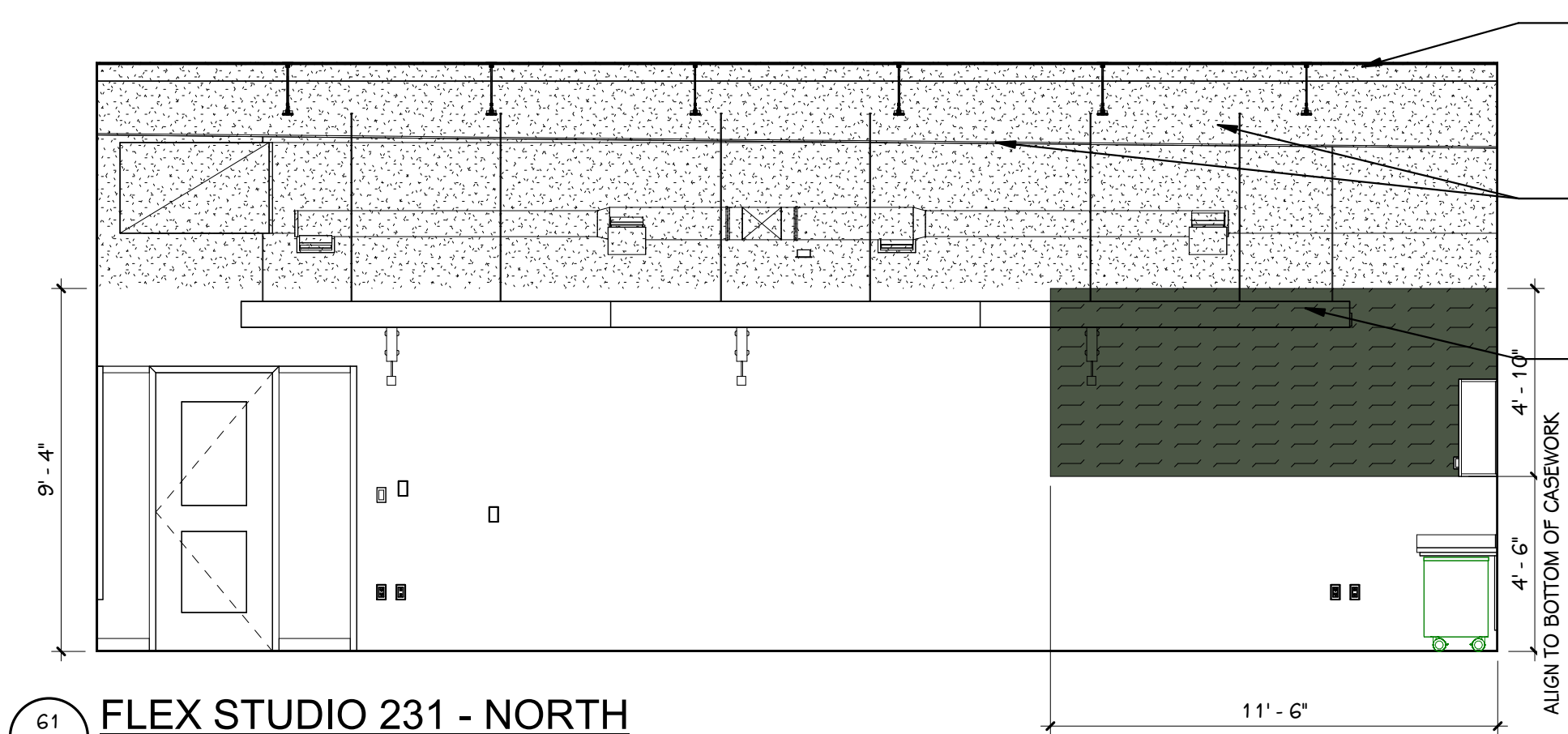
Portage, Michigan

SHEET NUMBER  
PATTERN ELEVATIONS

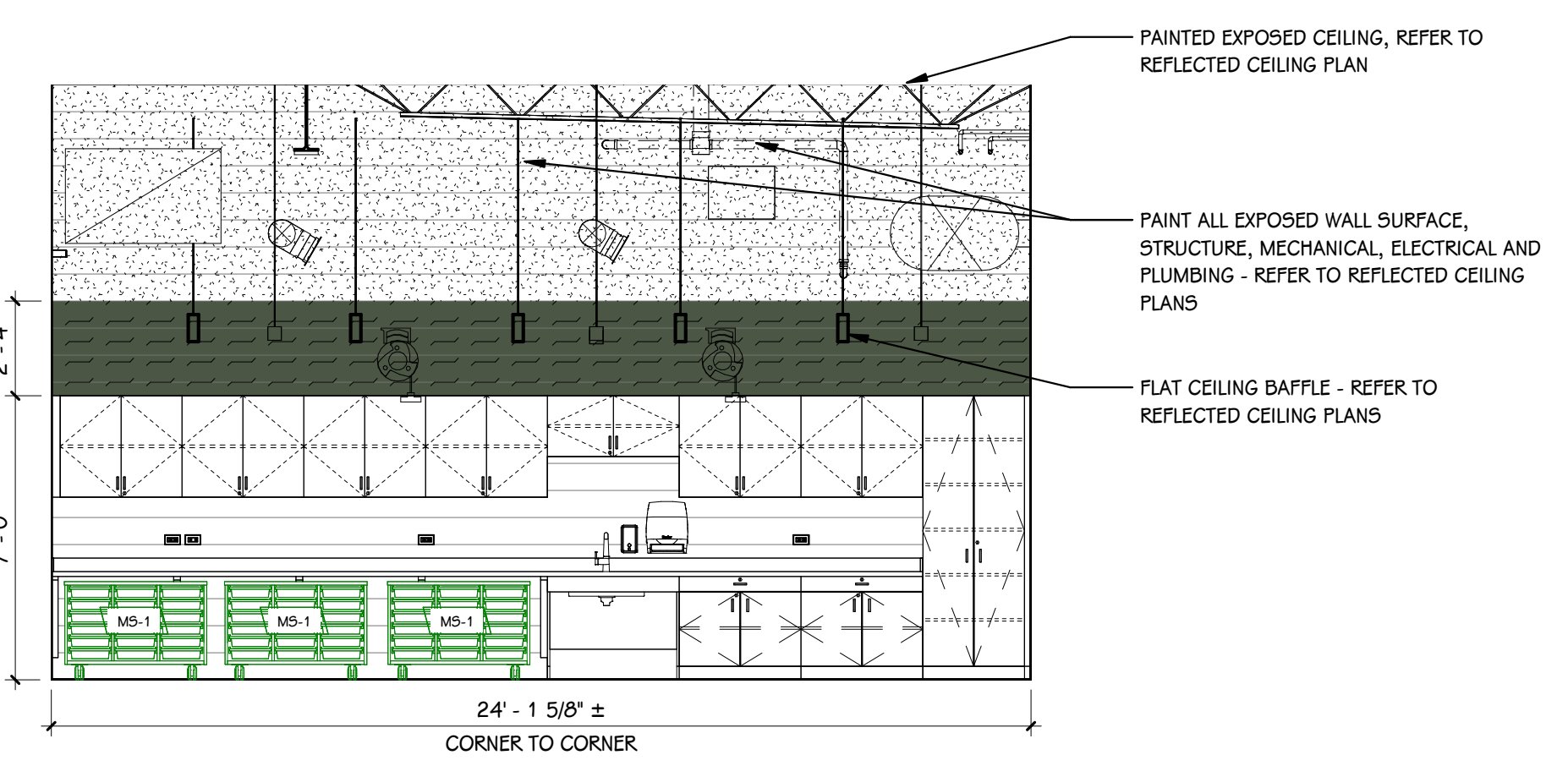
DATE  
JUNE 30, 2023

SHEET NUMBER  
1225  
21-237.20

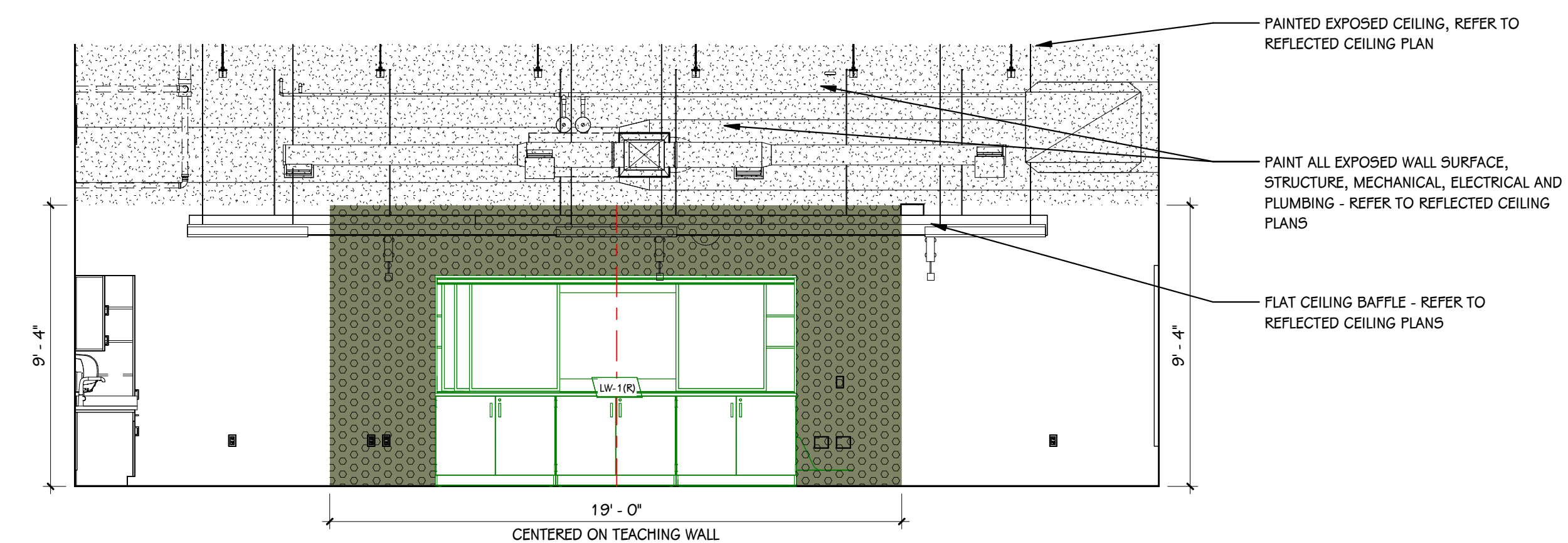
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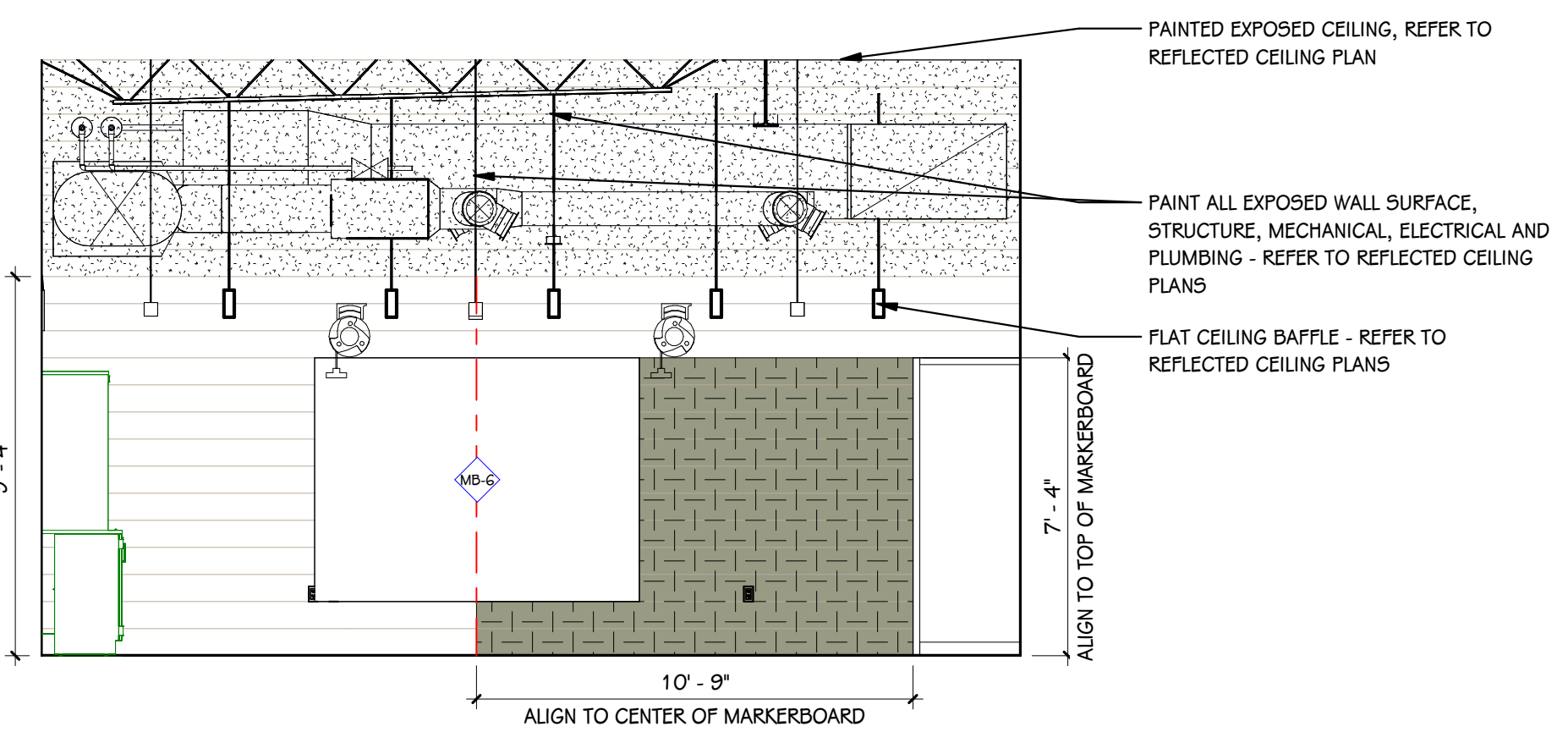
61 FLEX STUDIO 231 - NORTH  
1/4" = 1'-0"



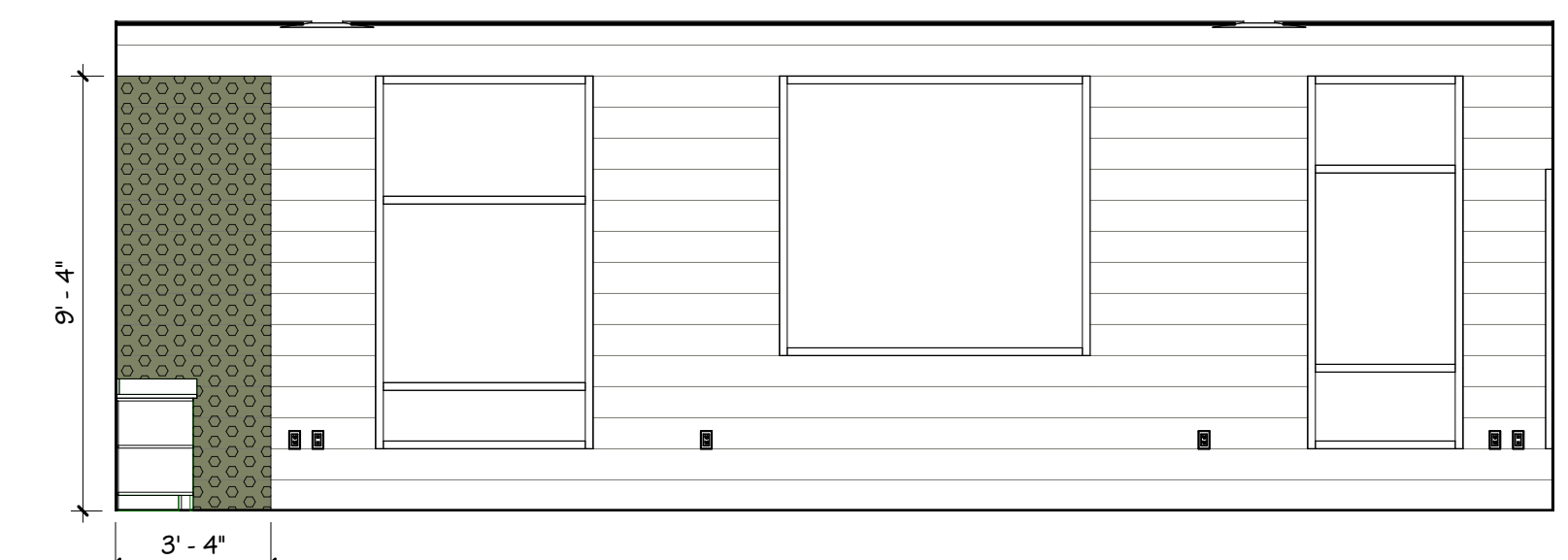
62 FLEX STUDIO 231 - EAST  
1/4" = 1'-0"



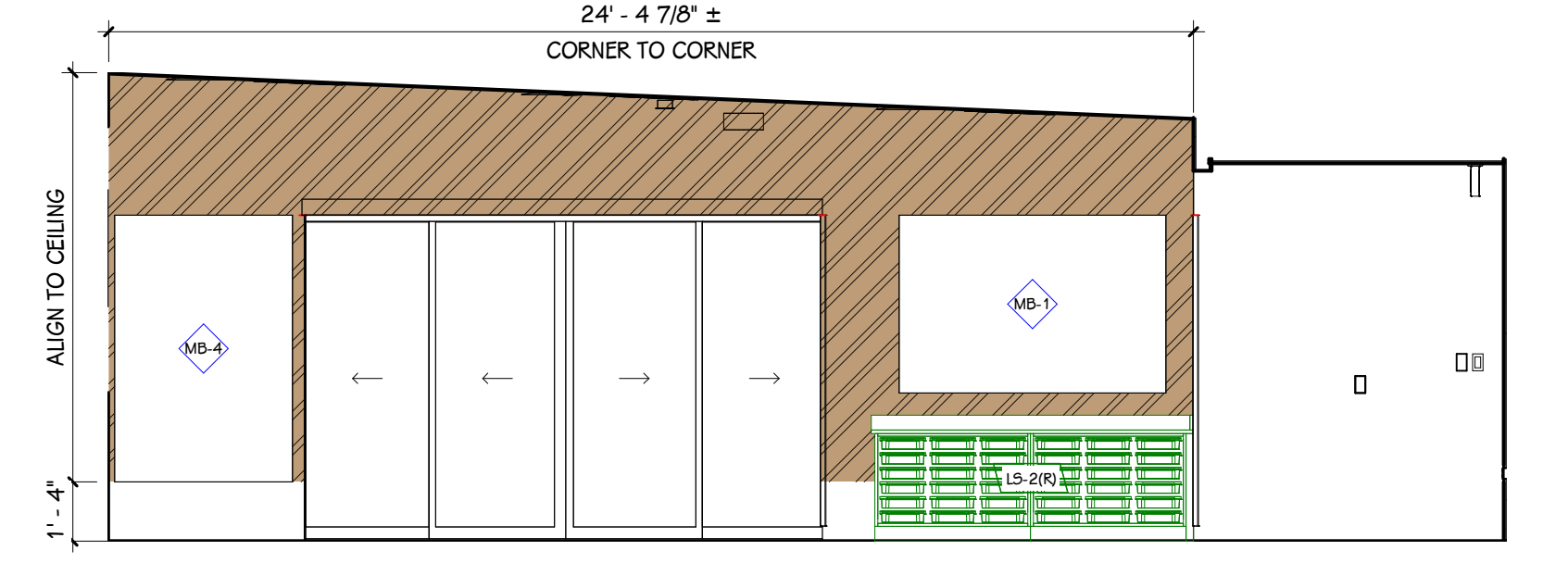
63 FLEX STUDIO 231 - SOUTH  
1/4" = 1'-0"



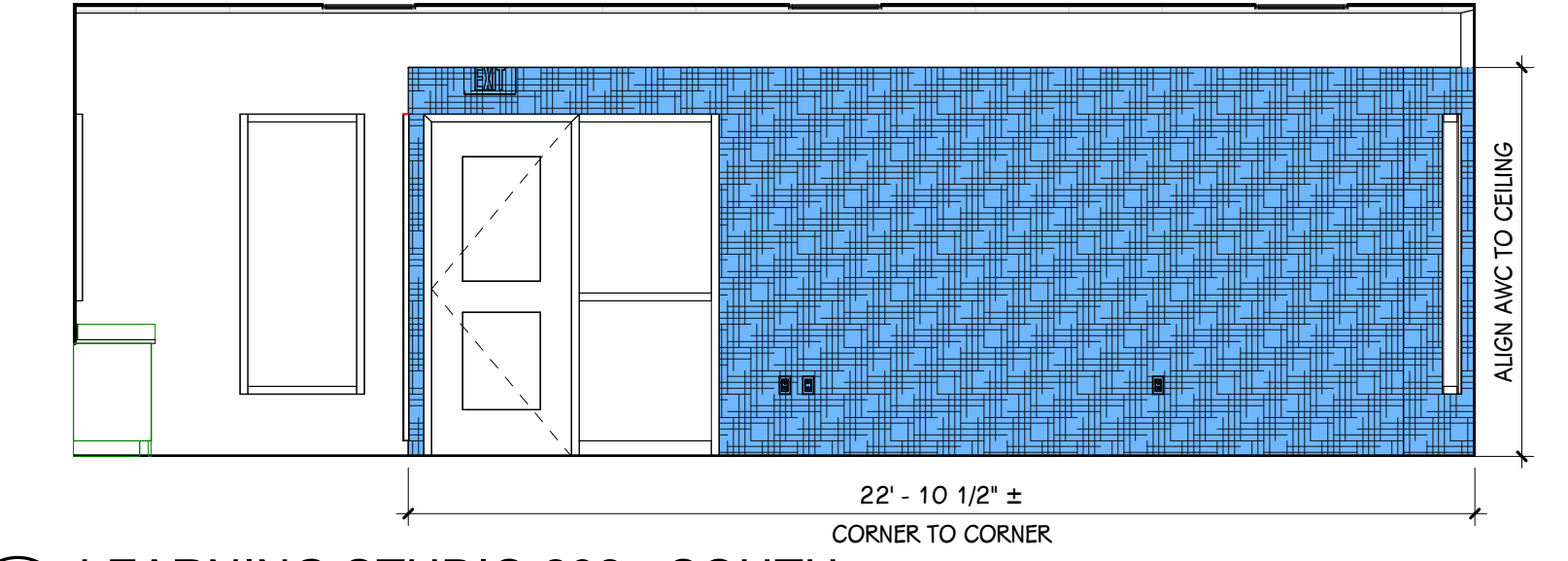
64 FLEX STUDIO 231 - WEST  
1/4" = 1'-0"



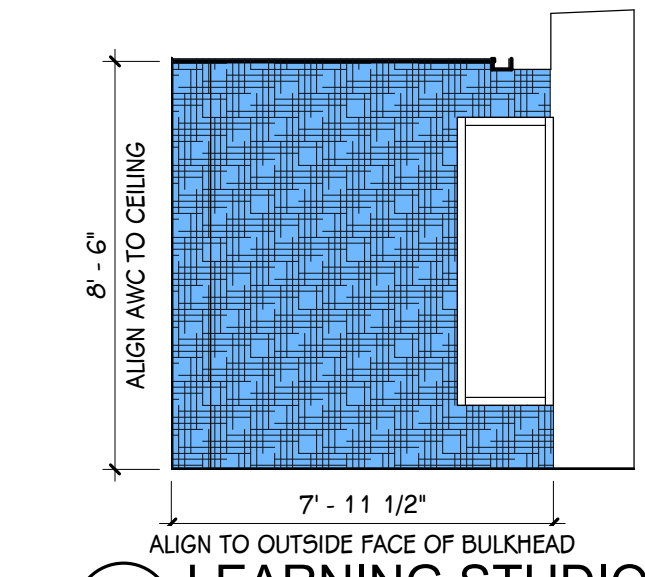
65 LEARNING STUDIO 232 - NORTH  
1/4" = 1'-0"



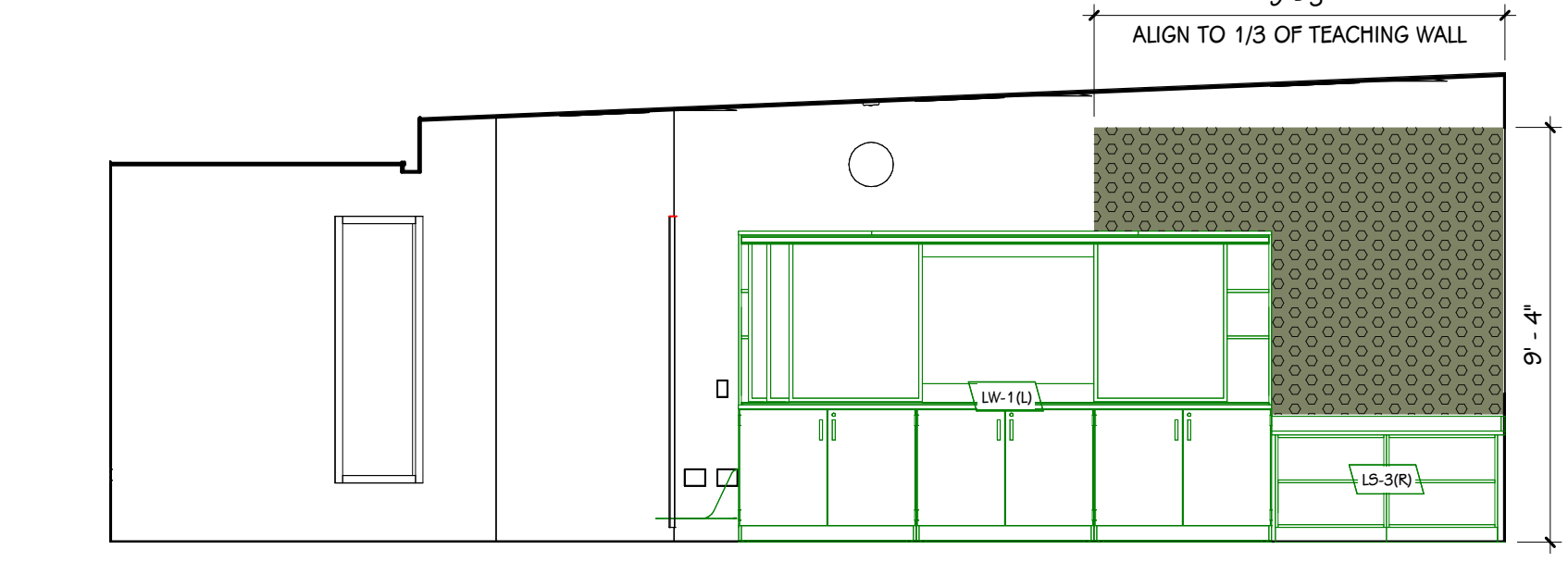
66 LEARNING STUDIO 232 - EAST  
1/4" = 1'-0"



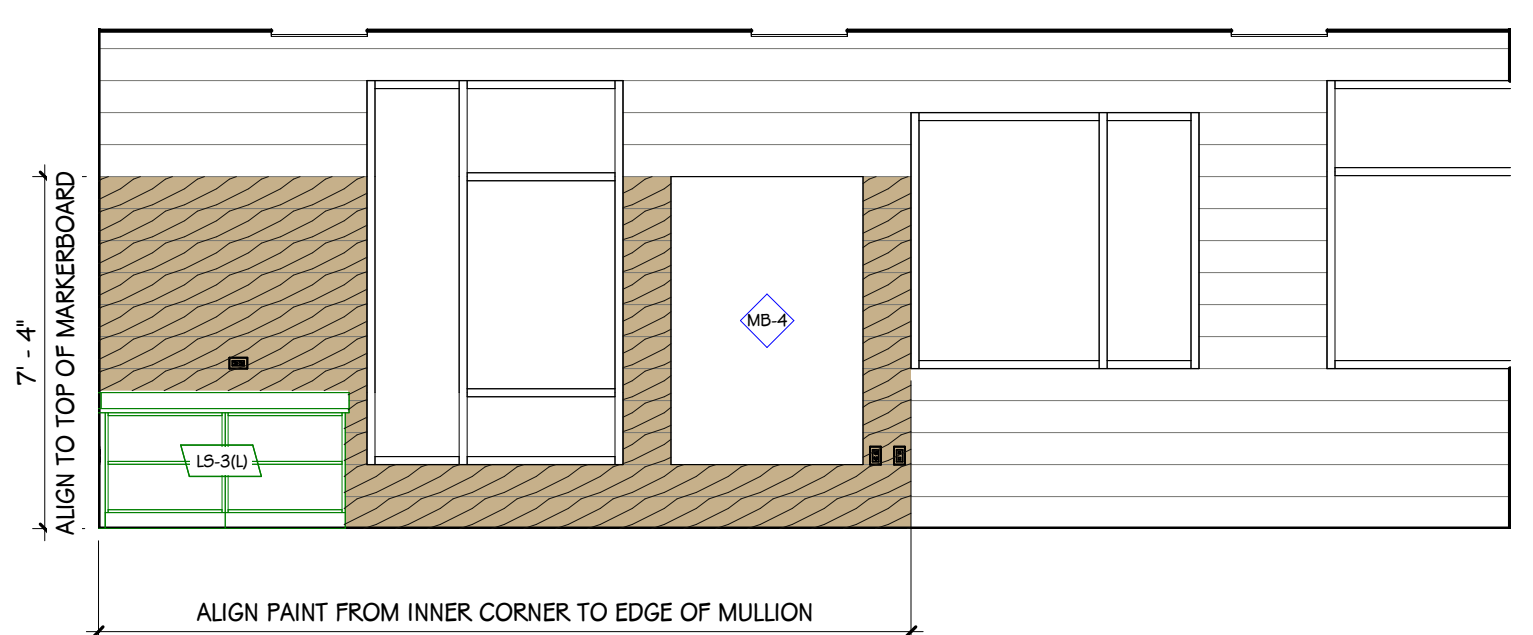
67 LEARNING STUDIO 232 - SOUTH  
1/4" = 1'-0"



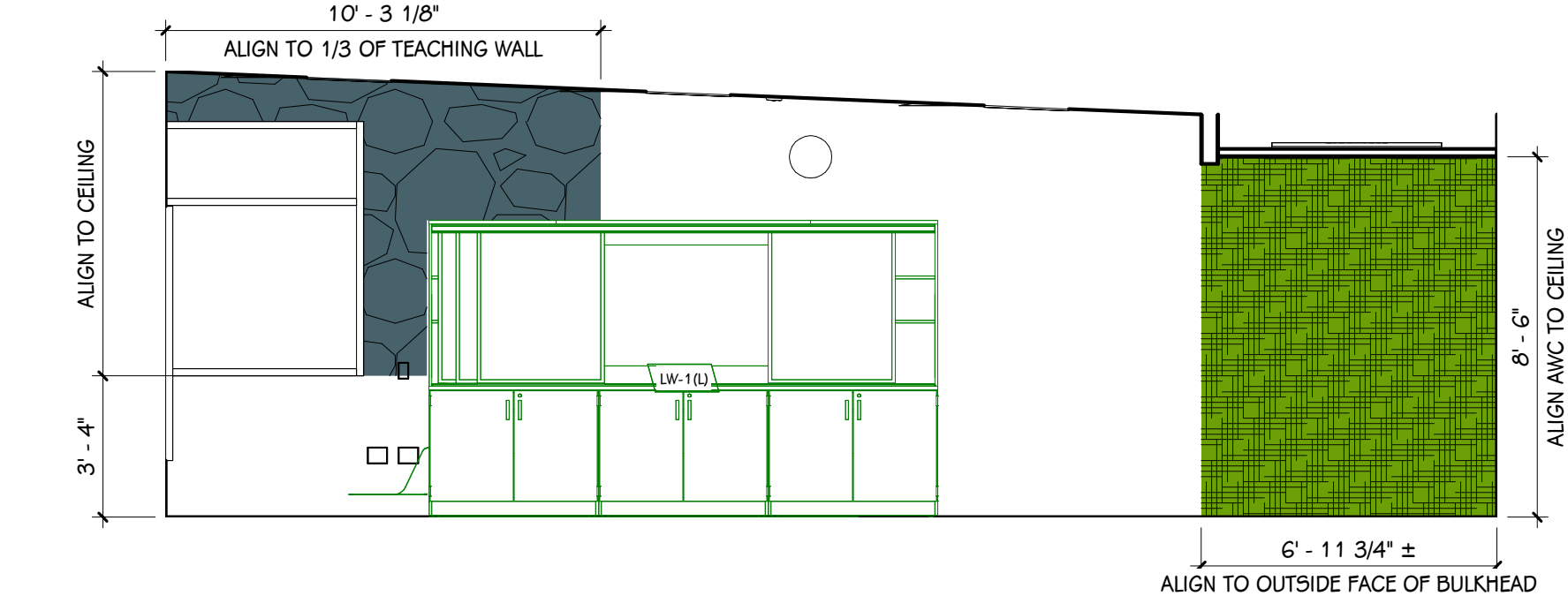
68 LEARNING STUDIO 232 - SOUTHWEST  
1/4" = 1'-0"



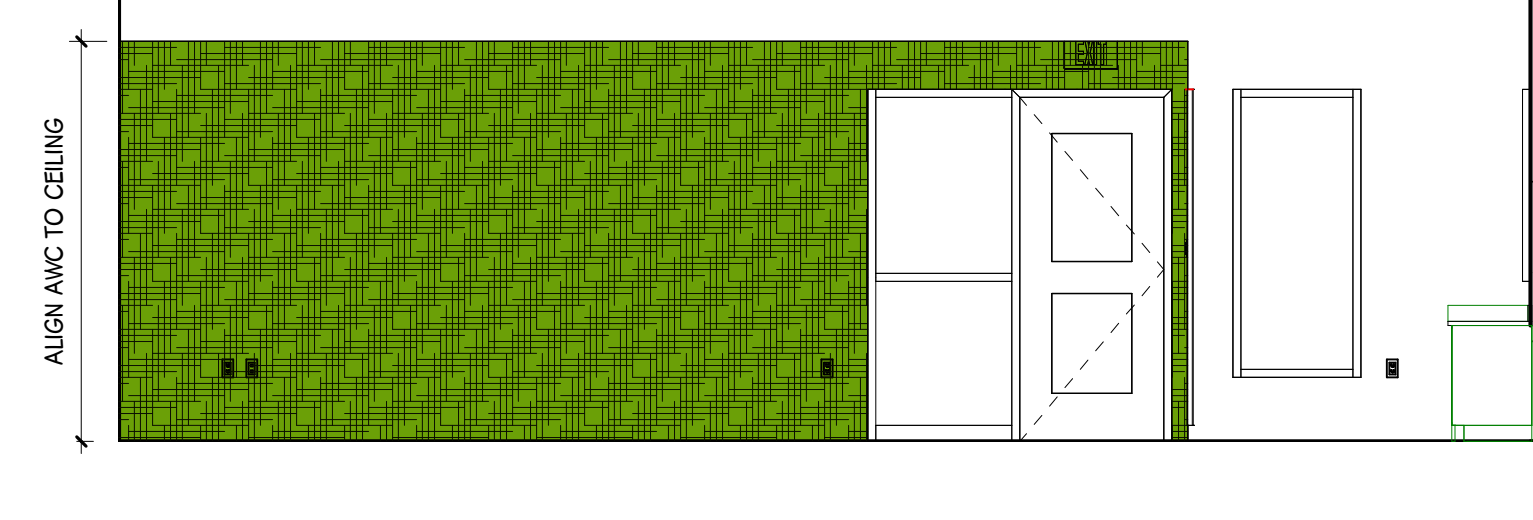
69 LEARNING STUDIO 232 - WEST  
1/4" = 1'-0"



70 LEARNING STUDIO 234 - NORTH  
1/4" = 1'-0"



71 LEARNING STUDIO 234 - EAST  
1/4" = 1'-0"



72 LEARNING STUDIO 234 - SOUTH  
1/4" = 1'-0"



73 LEARNING STUDIO 234 - WEST  
1/4" = 1'-0"

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COLOR LEGEND - PATTERN ELEVATIONS

AWC-1: GHERKIN	P-9: RIVERWAY
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AWC-3: MURALLA	P-11: HARMONIC TAN
AWC-4: VINTAGE	P-12: ALCHEMY
P-4: GREEN ONYX	P-13: DIFFERENT GOLD
P-5: ARTICHOKE	P-14: MESA TAN
P-6: OASMOSS	P-15: BRANDYWINE
P-7: VOGUE GREEN	P-16: ROOKWOOD TERRA COTTA
P-8: ACACIA HAZE	

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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

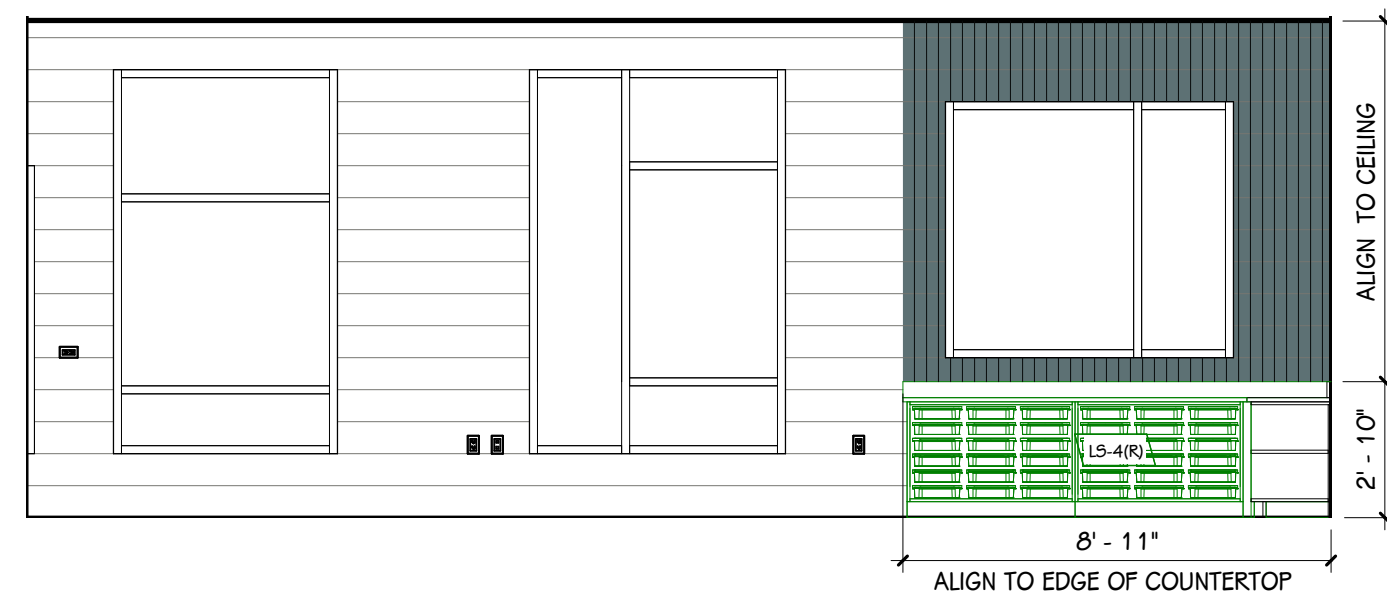
Portage, Michigan

SHEET TITLE  
PATTERN ELEVATIONS

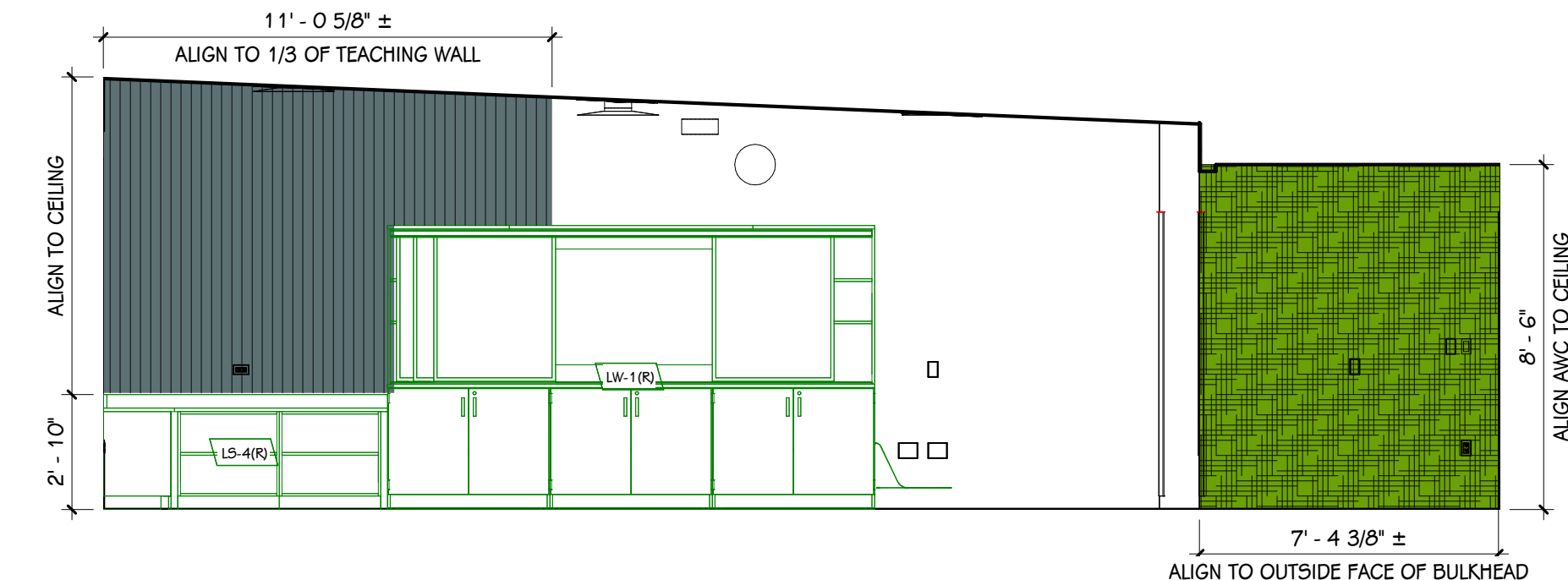
DATE  
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SHEET NUMBER  
1226  
21-237.20

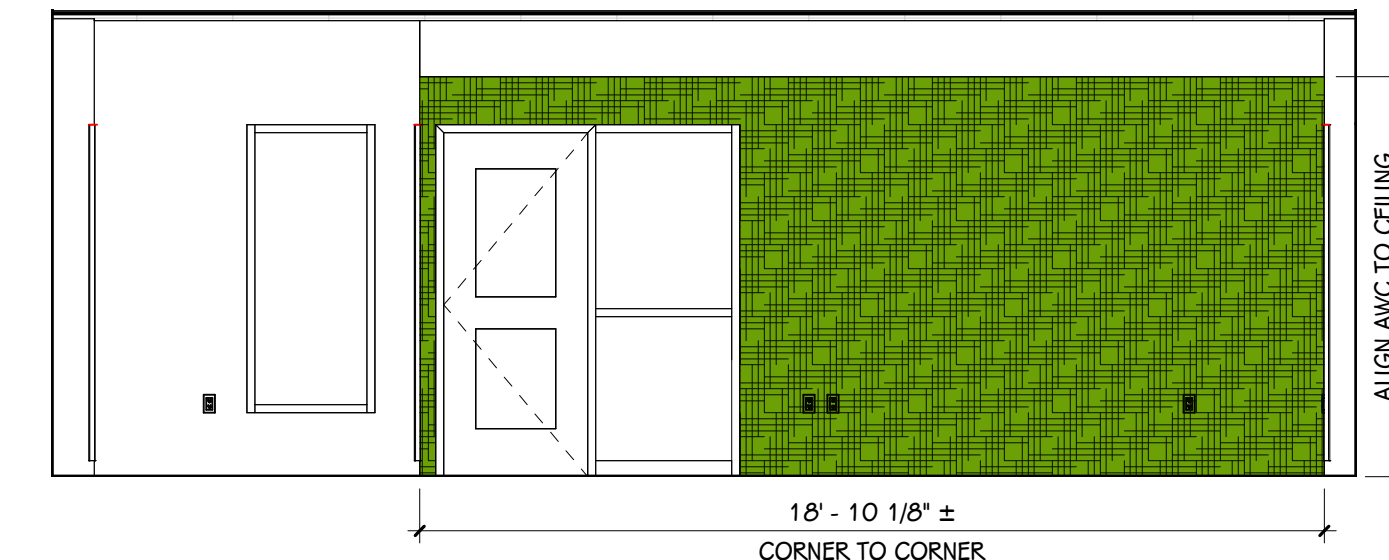
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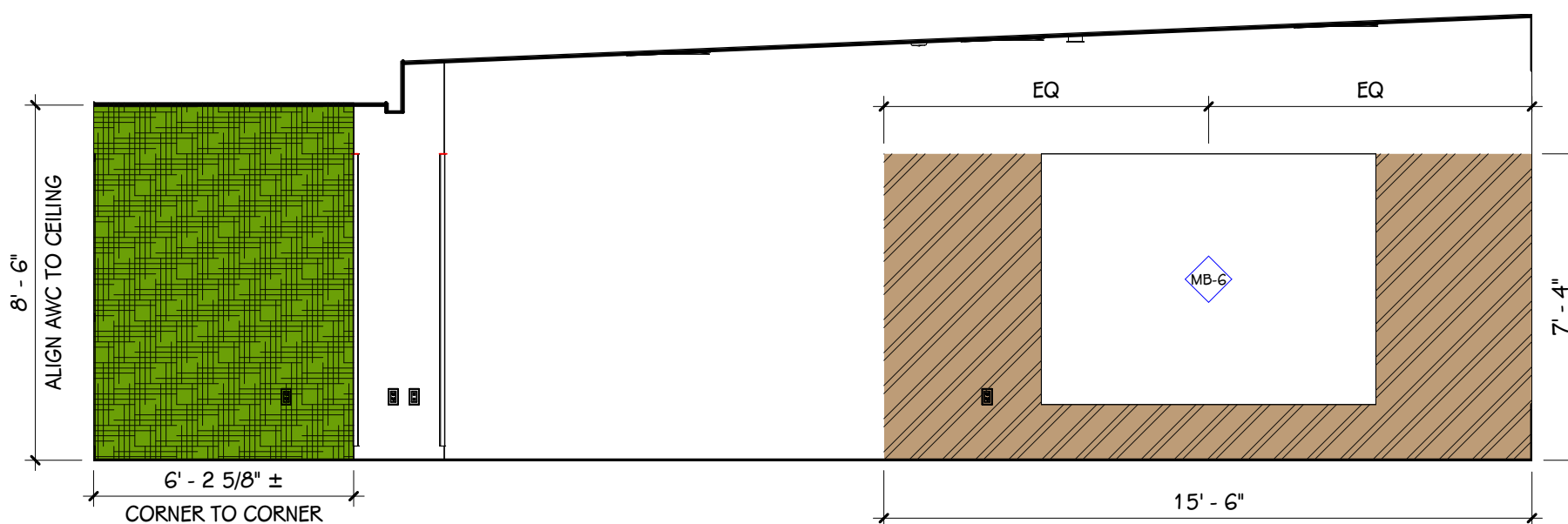
74 LEARNING STUDIO 236 - NORTH  
1/4" = 1'-0"



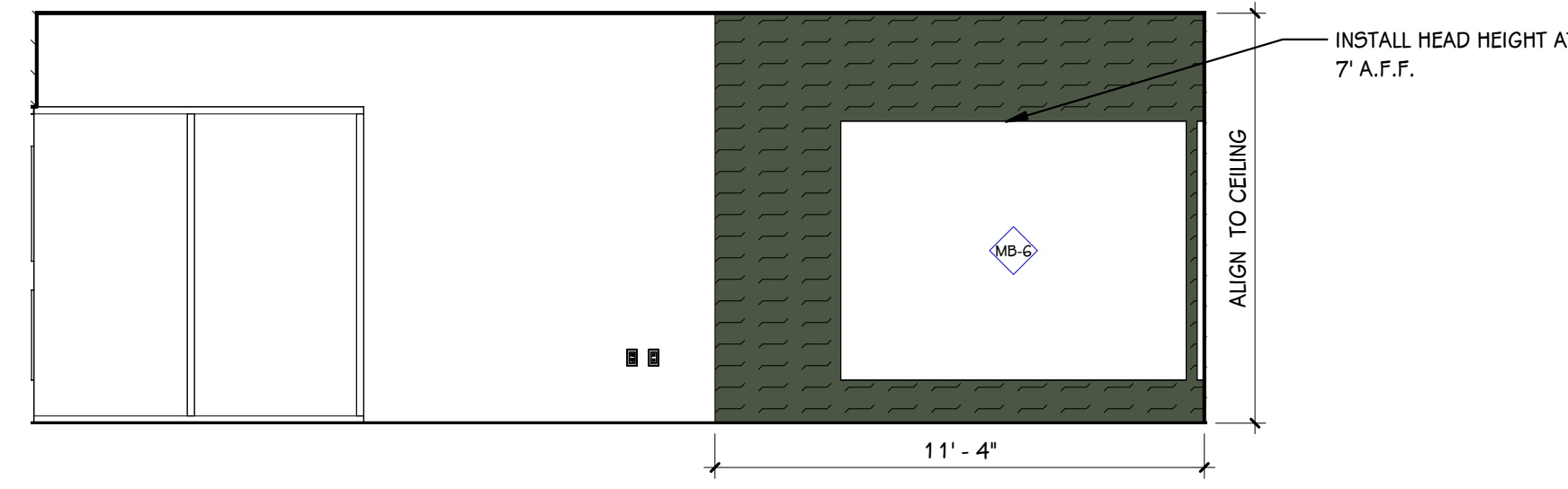
75 LEARNING STUDIO 236 - EAST  
1/4" = 1'-0"



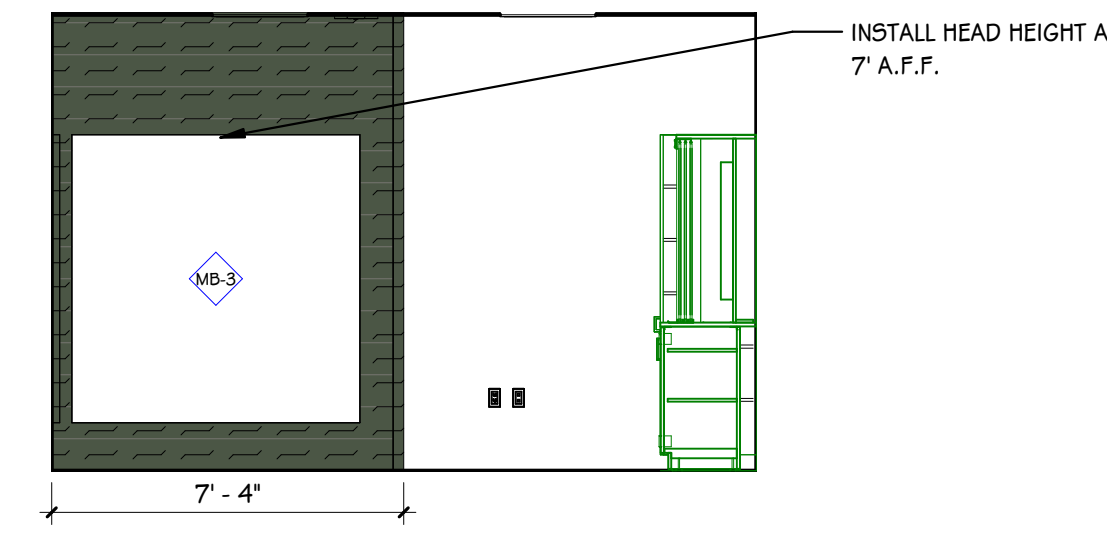
76 LEARNING STUDIO 236 - SOUTH  
1/4" = 1'-0"



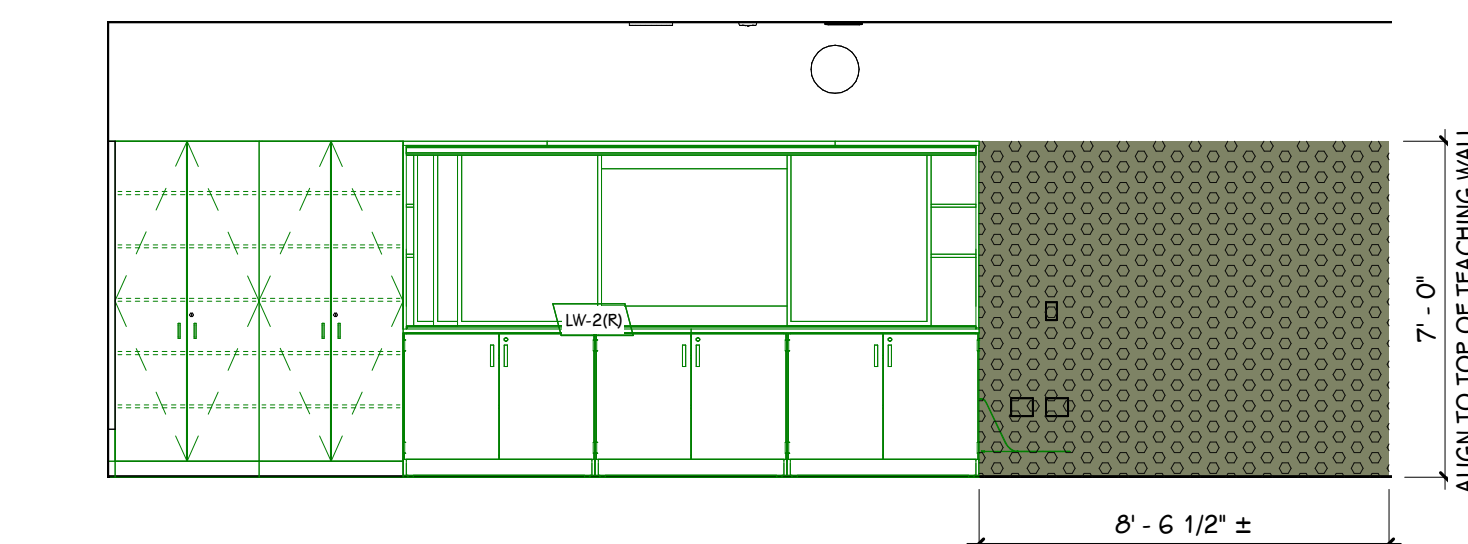
77 LEARNING STUDIO 236 - WEST  
1/4" = 1'-0"



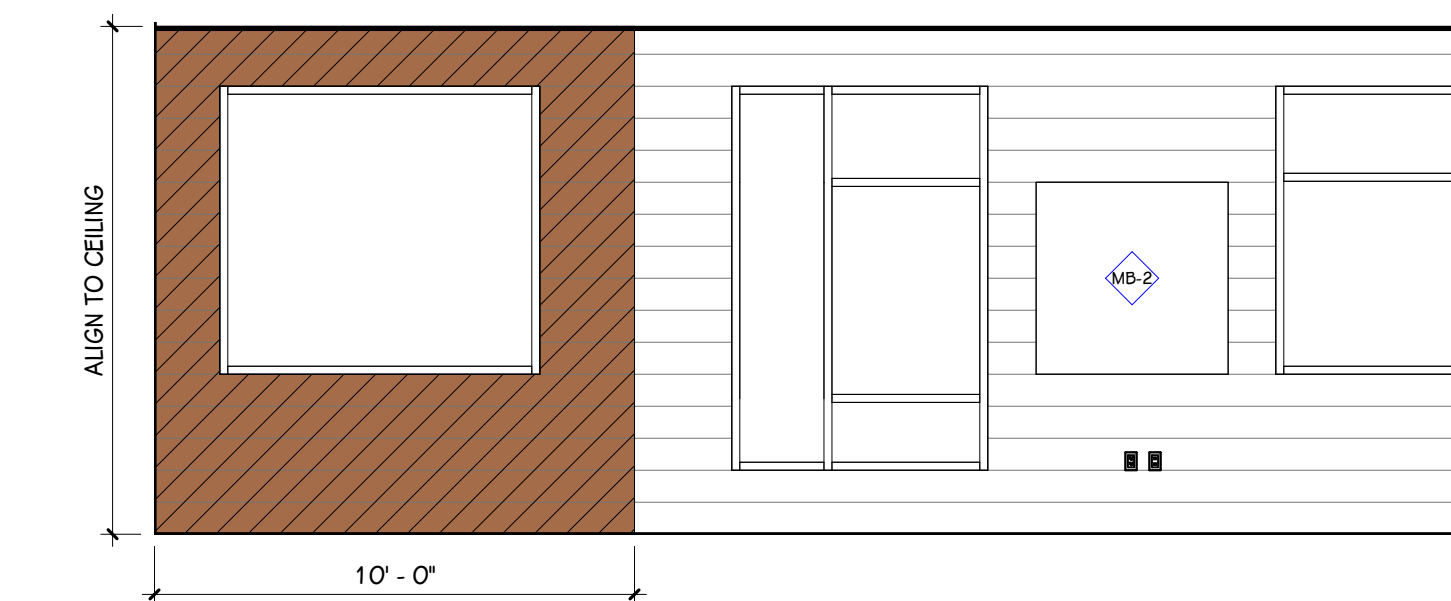
78 ESI STUDIO 237 - NORTH  
1/4" = 1'-0"



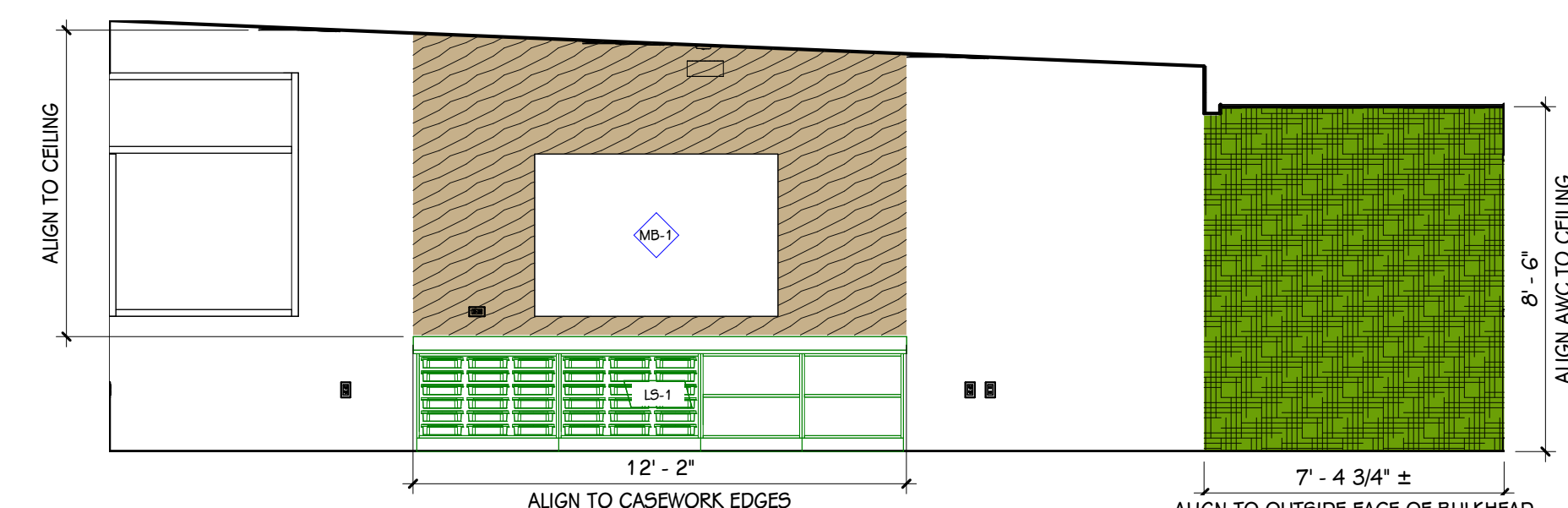
79 ESI STUDIO 237 - EAST  
1/4" = 1'-0"



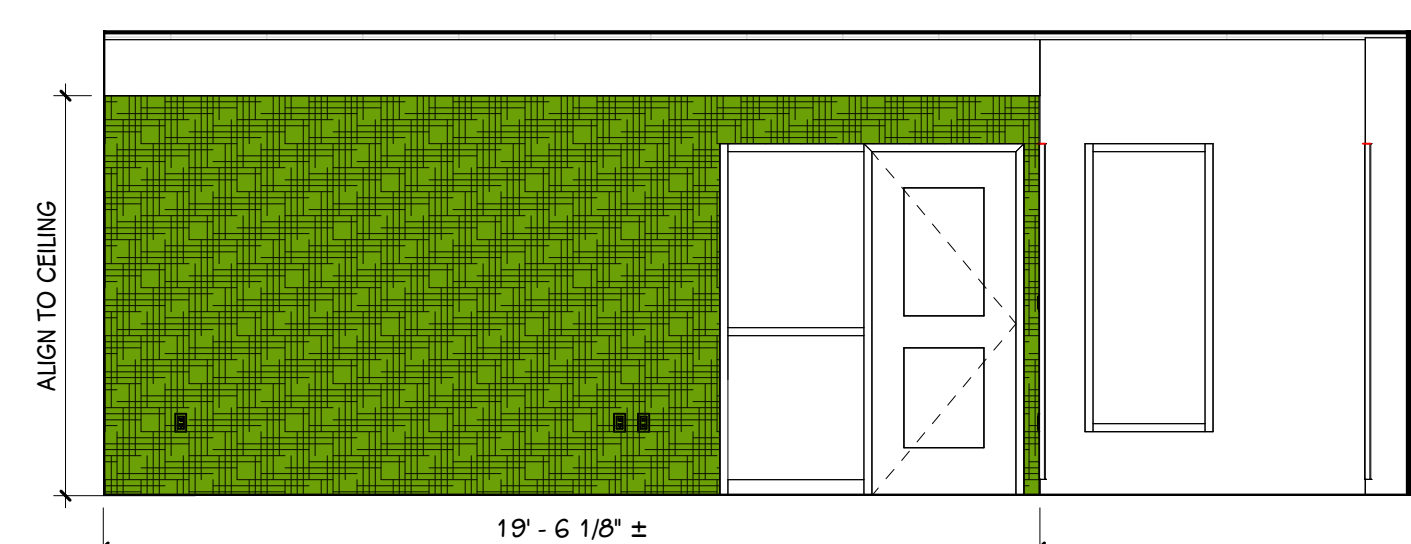
80 ESI STUDIO 237 - SOUTH  
1/4" = 1'-0"



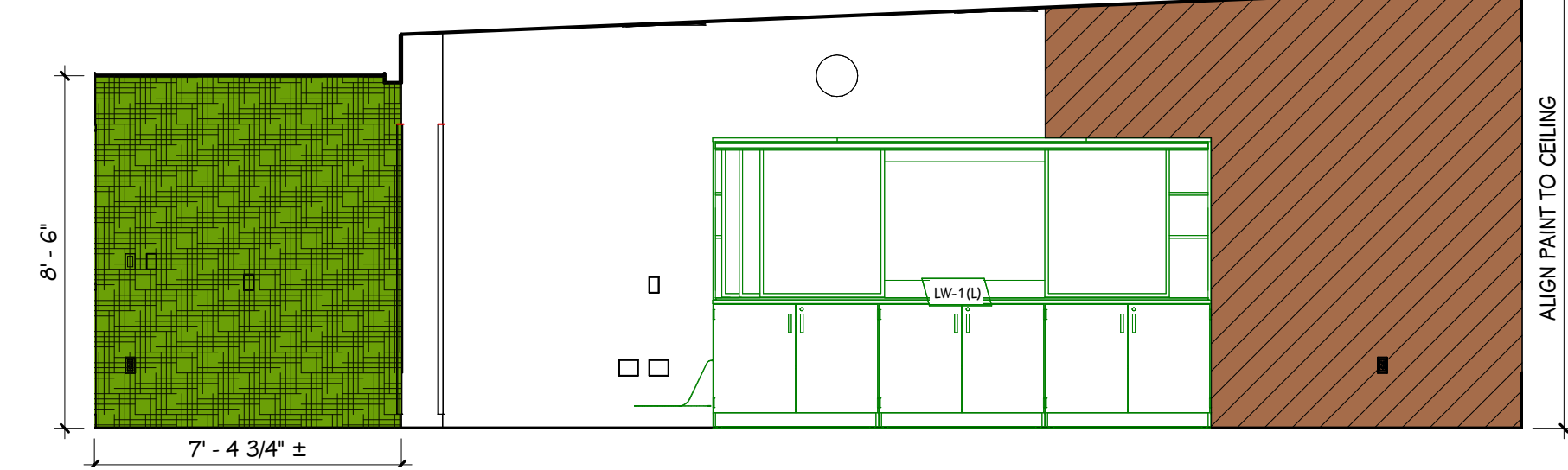
81 LEARNING STUDIO 242 - NORTH  
1/4" = 1'-0"



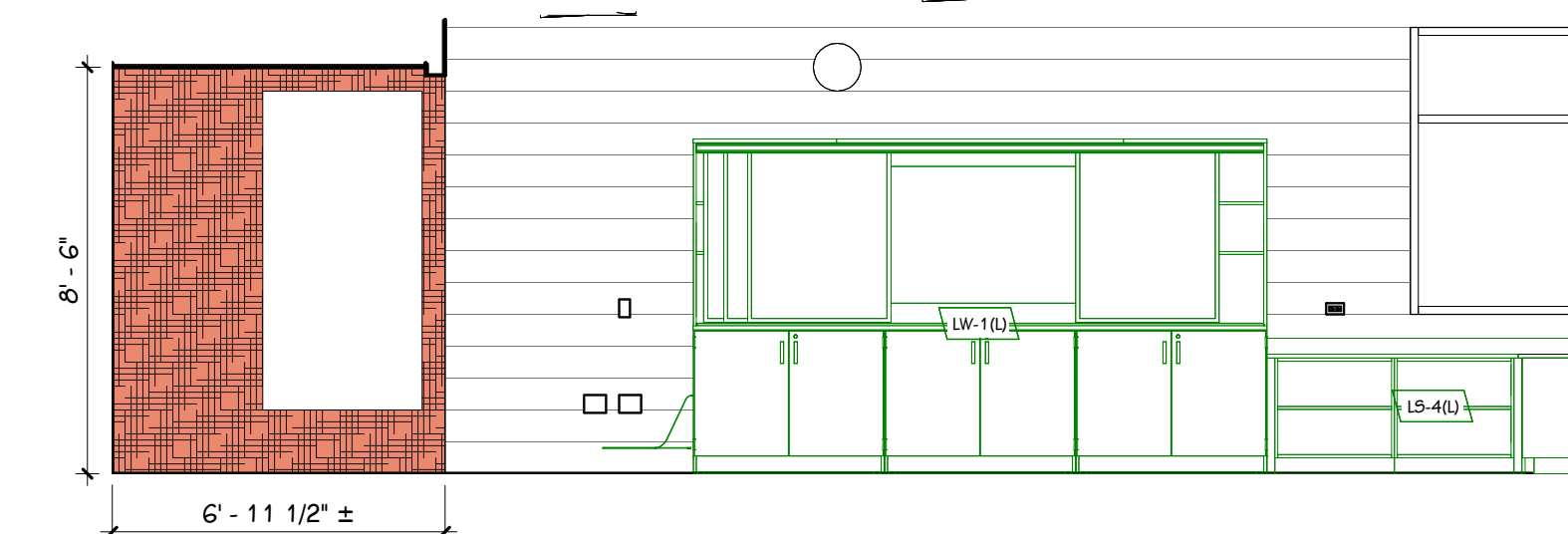
82 LEARNING STUDIO 242 - EAST  
1/4" = 1'-0"



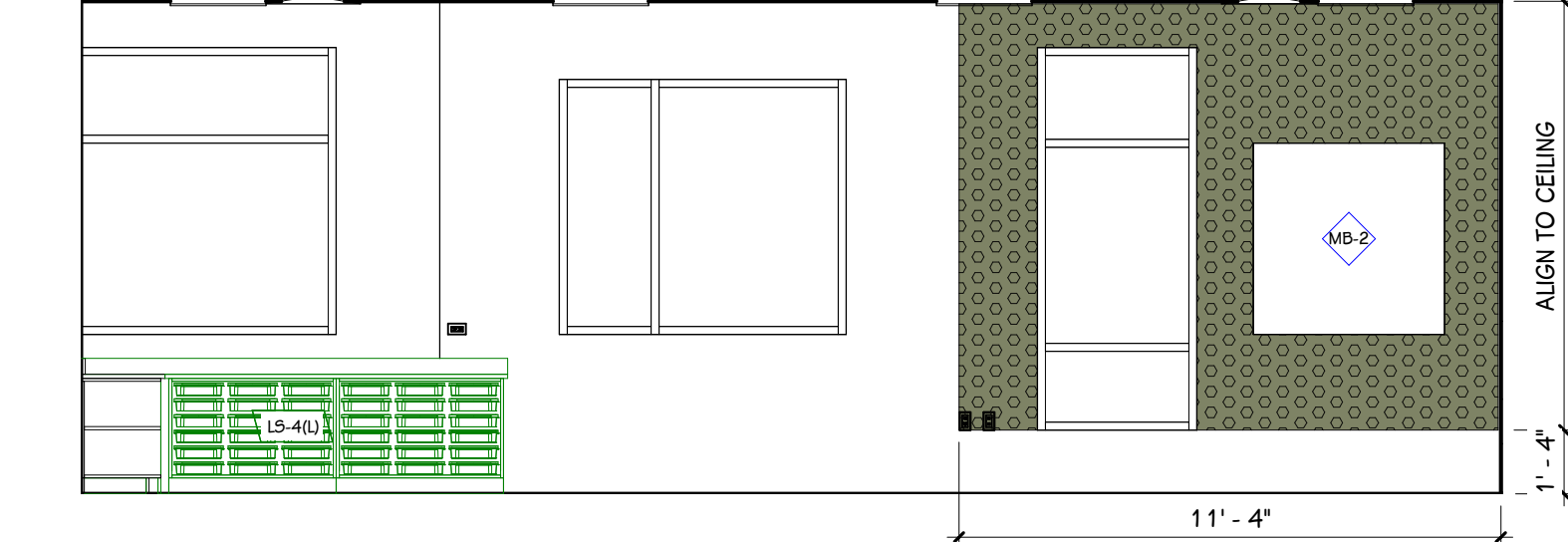
83 LEARNING STUDIO 242 - SOUTH  
1/4" = 1'-0"



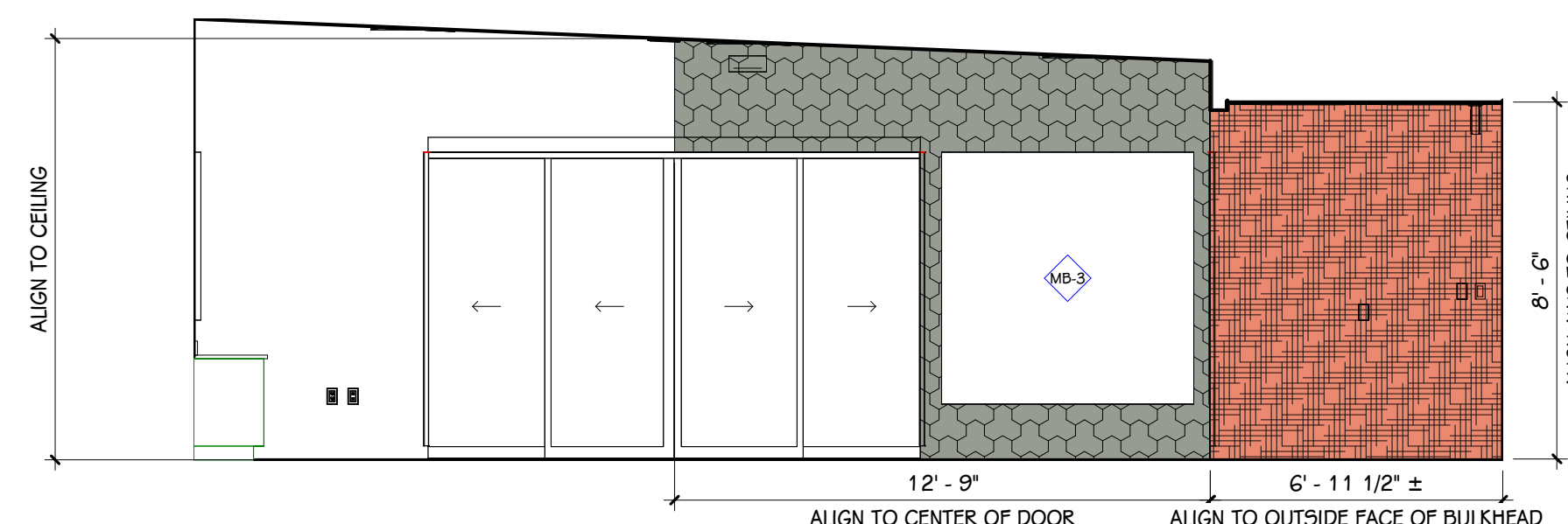
84 LEARNING STUDIO 242 - WEST  
1/4" = 1'-0"



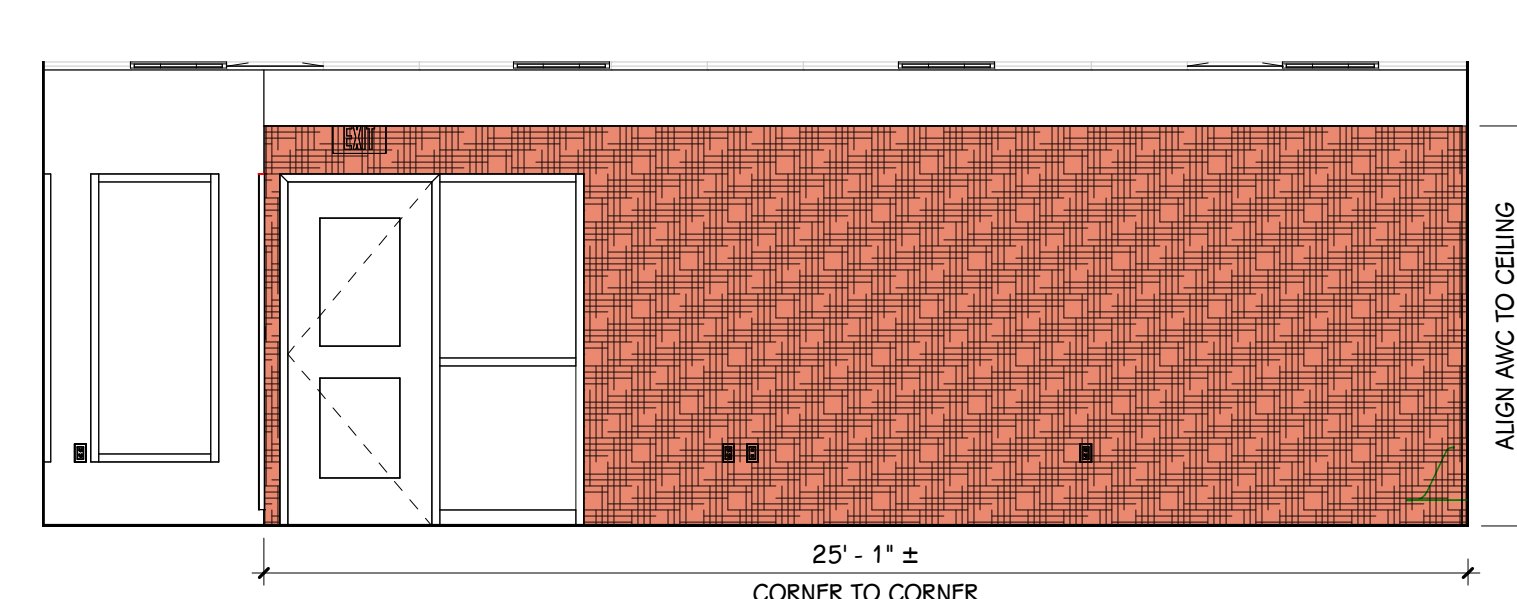
85 LEARNING STUDIO 244 - NORTH  
1/4" = 1'-0"



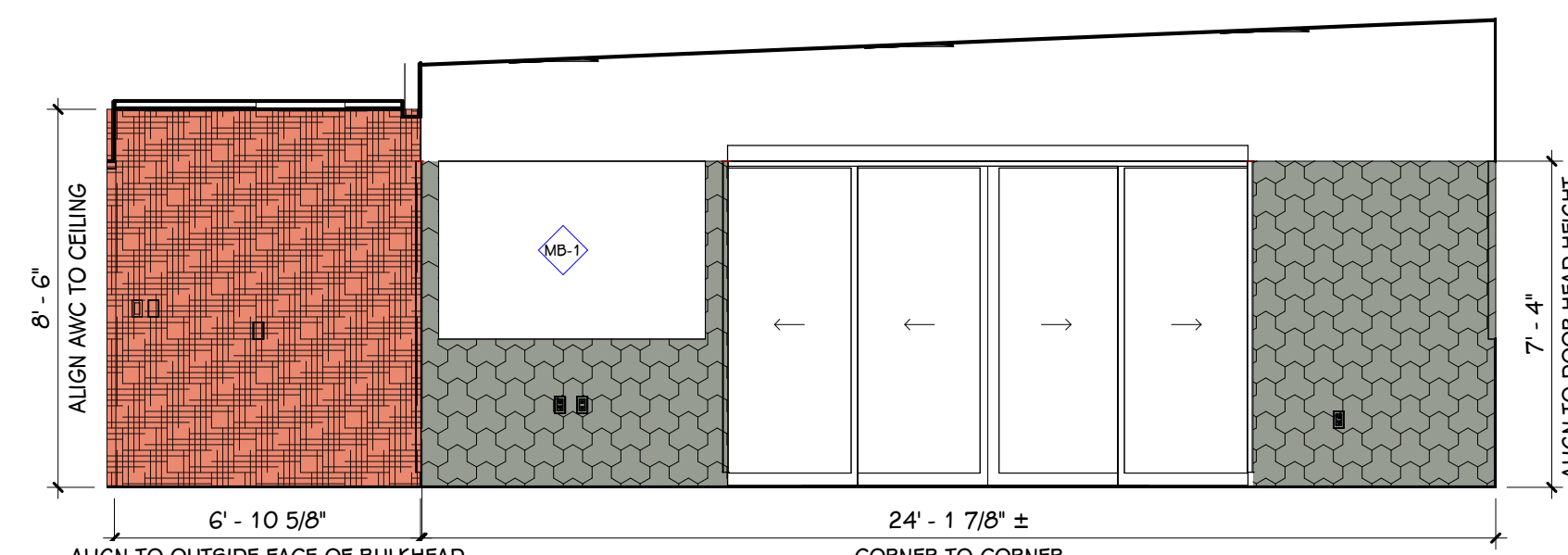
86 LEARNING STUDIO 244 - EAST  
1/4" = 1'-0"



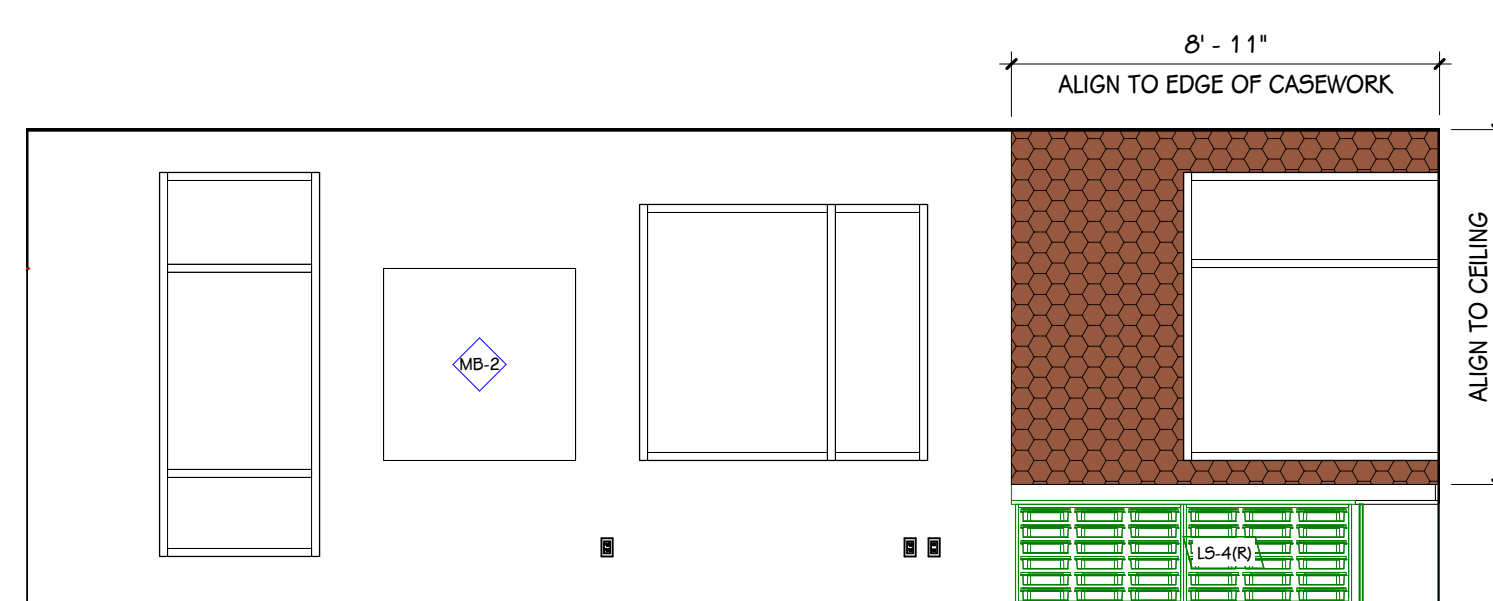
87 LEARNING STUDIO 244 - SOUTH  
1/4" = 1'-0"



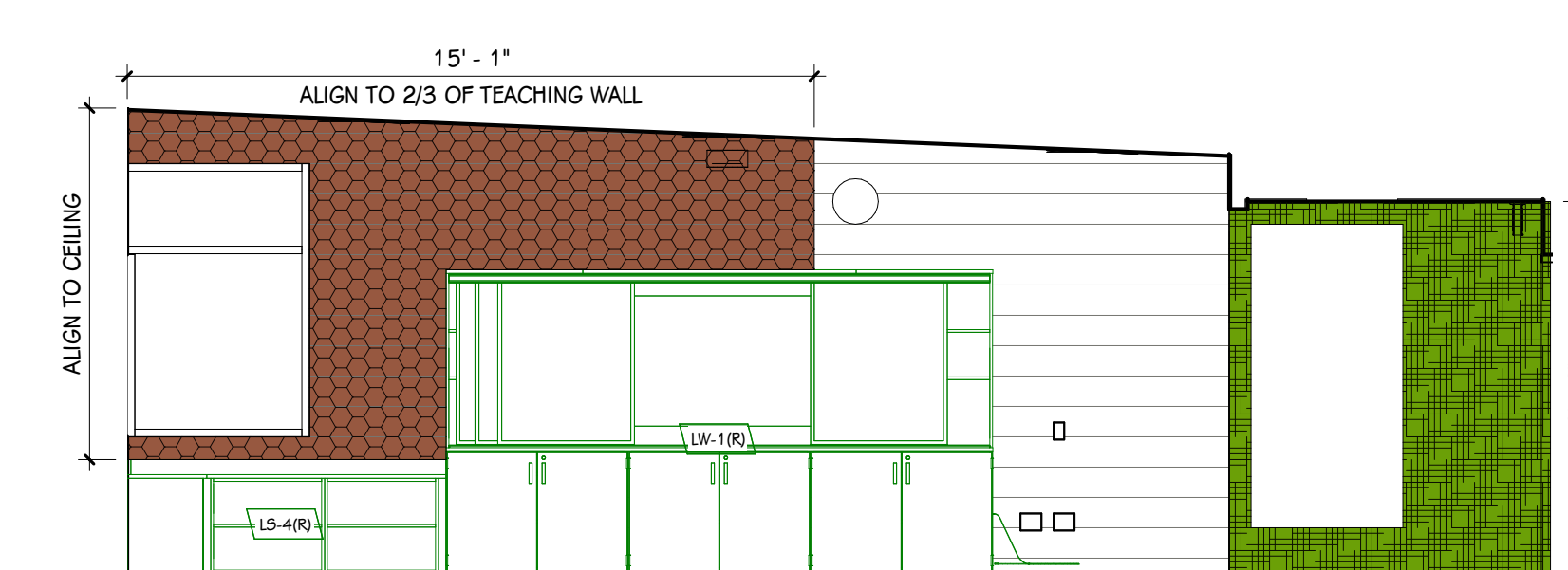
88 LEARNING STUDIO 244 - WEST  
1/4" = 1'-0"



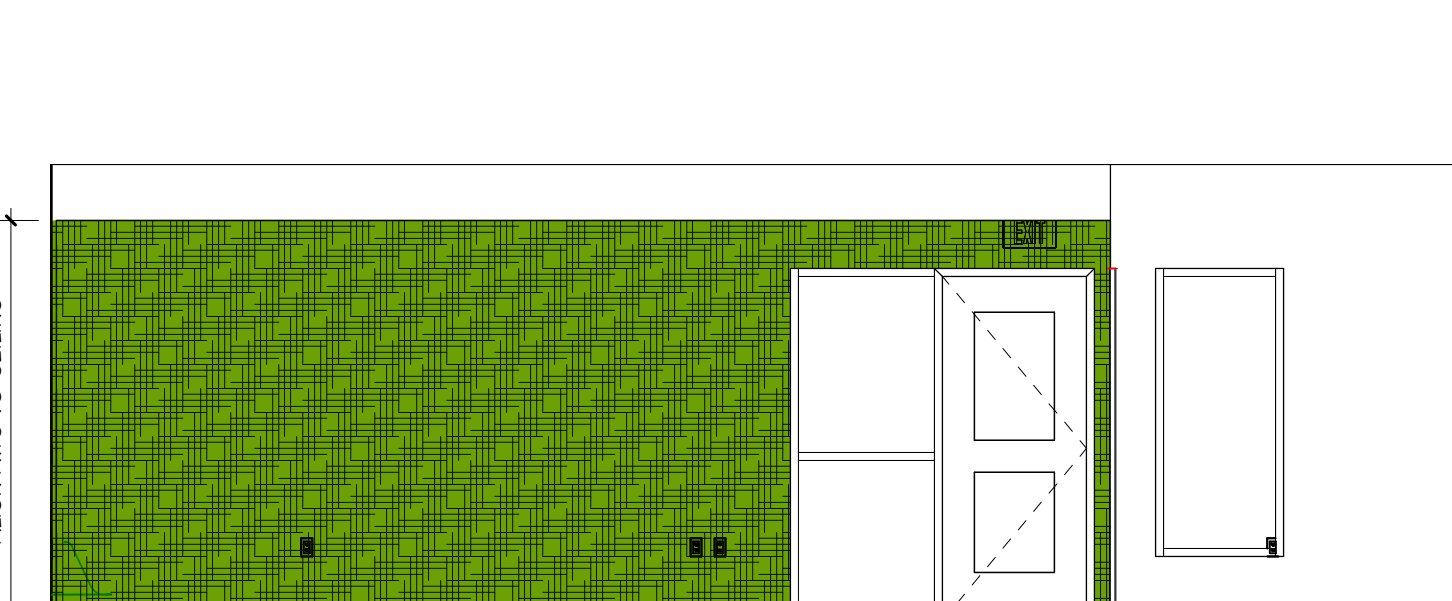
89 LEARNING STUDIO 246 - NORTH  
1/4" = 1'-0"



90 LEARNING STUDIO 246 - EAST  
1/4" = 1'-0"



91 LEARNING STUDIO 246 - SOUTH  
1/4" = 1'-0"



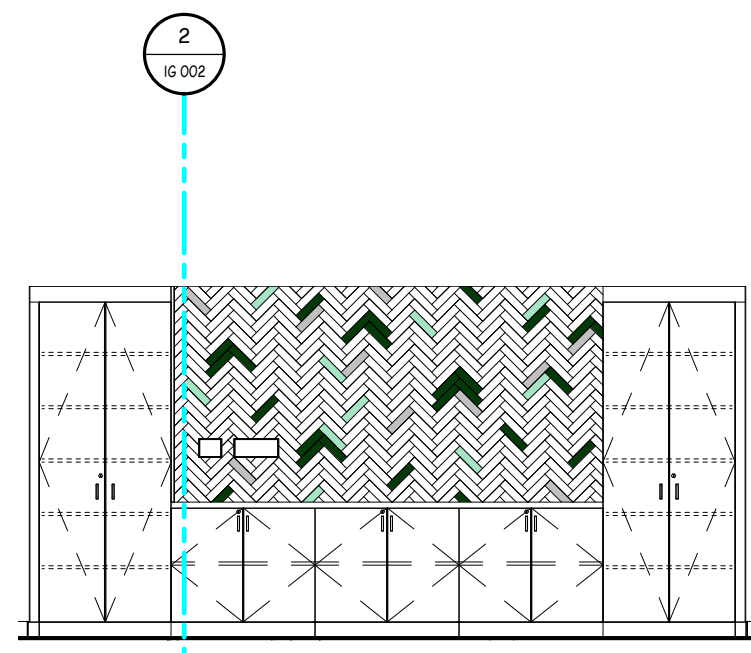
92 LEARNING STUDIO 246 - WEST  
1/4" = 1'-0"

GENERAL NOTES - PATTERN ELEVATIONS

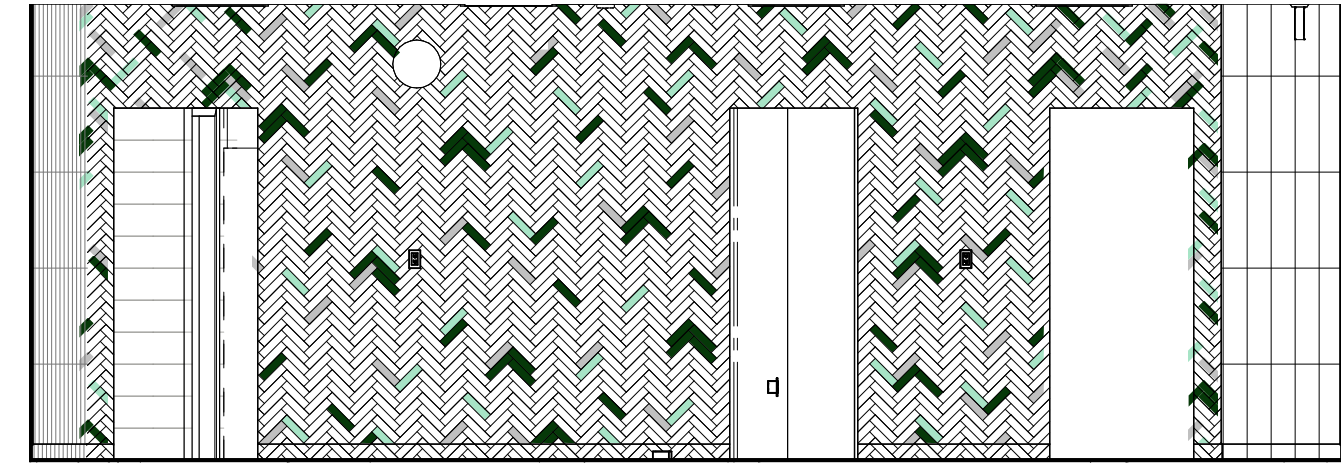
- 1 REFER TO FINISH PLANS FOR INTERIOR ELEVATIONS OF CASEWORK AND NON-PATTERNED FINISH DETAILS.
- 2 REFER TO MATERIAL SELECTION SCHEDULE, FINISH PLANS, AND SPECIFICATION FOR ADDITIONAL FINISH INFORMATION.
- 3 REFER TO REFLECTED CEILING PLANS FOR CEILING AND BULKHEAD HEIGHTS AND FINISHES.
- 4 NOT ALL MATERIALS ARE ILLUSTRATED. REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION. (E. RUBBER BASE NOT INDICATED, INSTALL PER FINISH PLAN)
- 5 ALIGN PATTERN TO NEAREST HORIZONTAL MASONRY JOINT, UNLESS NOTED OTHERWISE.
- 6 WHERE PATTERNS ARE INDICATED TO ALIGN TO CASEWORK OR SHELVING, COORDINATE WITH APPROVED SHOP DRAWINGS.

COLOR LEGEND - PATTERN ELEVATIONS


THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING



93  
128 CAFE 160 - WEST - TILE PATTERN  
1/4" = 1'-0"



94  
128 SERVERY 162 - EAST - TILE PATTERN  
1/4" = 1'-0"

**GENERAL NOTES - PATTERN ELEVATIONS**

- 1 REFER TO FINISH PLANS FOR INTERIOR ELEVATIONS OF CASEWORK AND NON-PATTERNED FINISH DETAILS.
- 2 REFER TO MATERIAL SELECTION SCHEDULE, FINISH PLANS, AND SPECIFICATION FOR ADDITIONAL FINISH INFORMATION.
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- 5 ALIGN PATTERN TO NEAREST HORIZONTAL MASONRY JOINT, UNLESS NOTED OTHERWISE.
- 6 WHERE PATTERNS ARE INDICATED TO ALIGN TO CASEWORK OR SHELVING, COORDINATE WITH APPROVED SHOP DRAWINGS.

**TILE LEGEND**

	PT-1: INSTALLED VERTICAL STACKED BOND, UNLESS NOTED OTHERWISE		PT-F: PATTERN INSTALLED HERRINGBONE, REFER TO TYPICAL DETAILS
	PT-5: INSTALLED VERTICAL 1/2 OFFSET, UNLESS NOTED OTHERWISE		PT-6: INSTALLED HERRINGBONE, UNLESS NOTED OTHERWISE
	PT-7: INSTALLED VERTICAL 1/2 OFFSET, UNLESS NOTED OTHERWISE		PT-8: INSTALLED VERTICAL 1/2 OFFSET, UNLESS NOTED OTHERWISE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

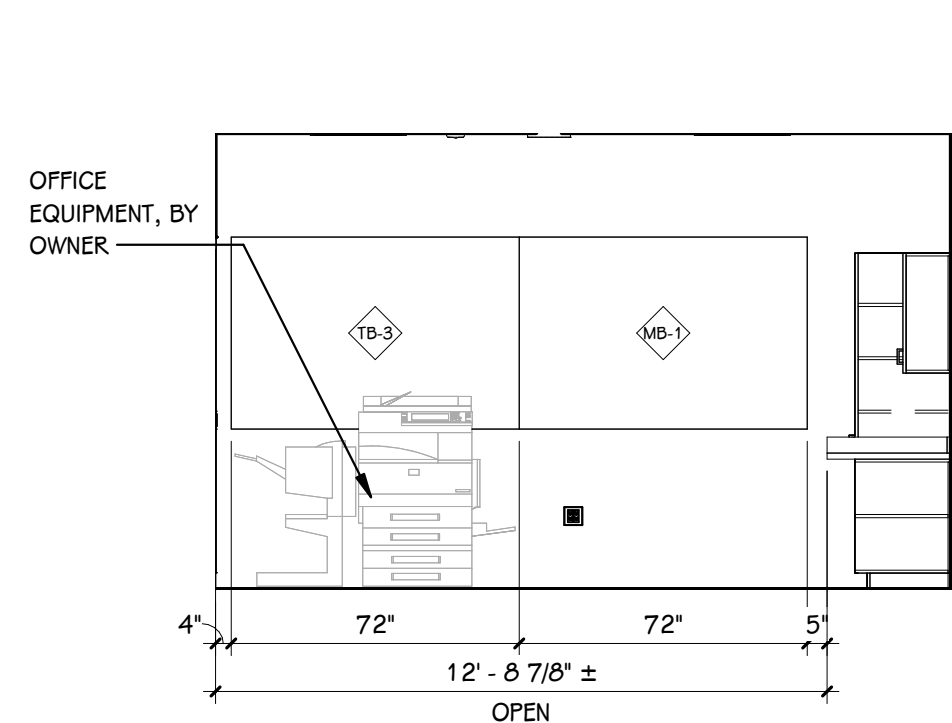
SHEET TITLE  
PATTERN ELEVATIONS

DATE  
JUNE 30, 2023

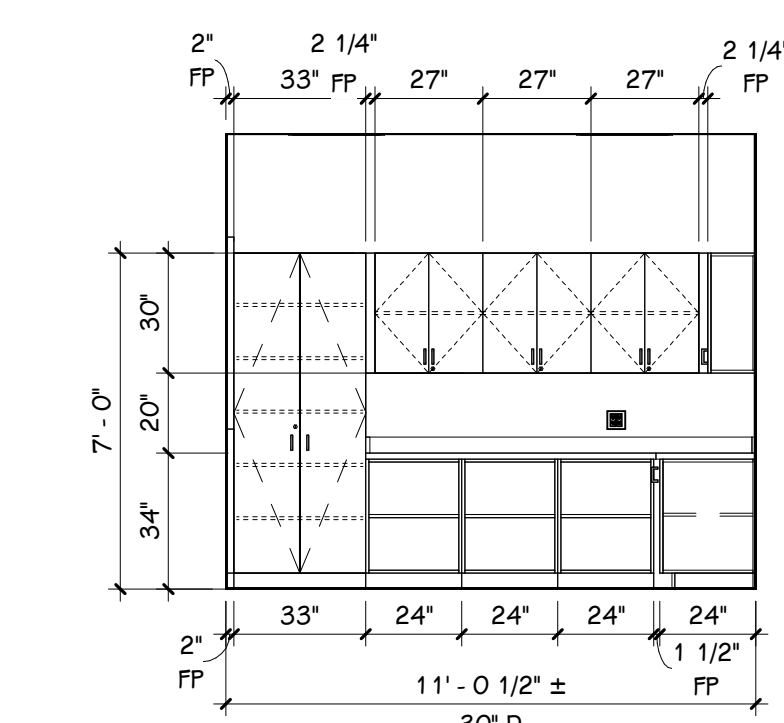
SHEET NUMBER  
1228  
21-237.20

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

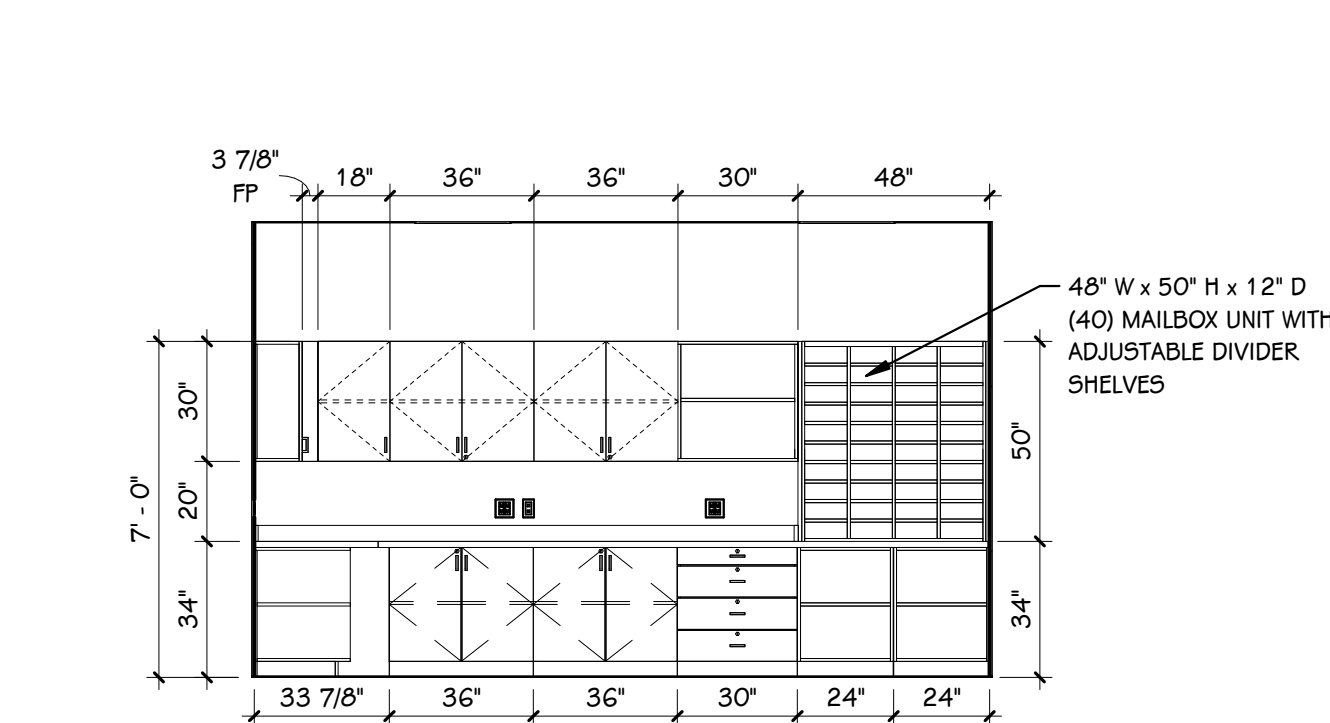




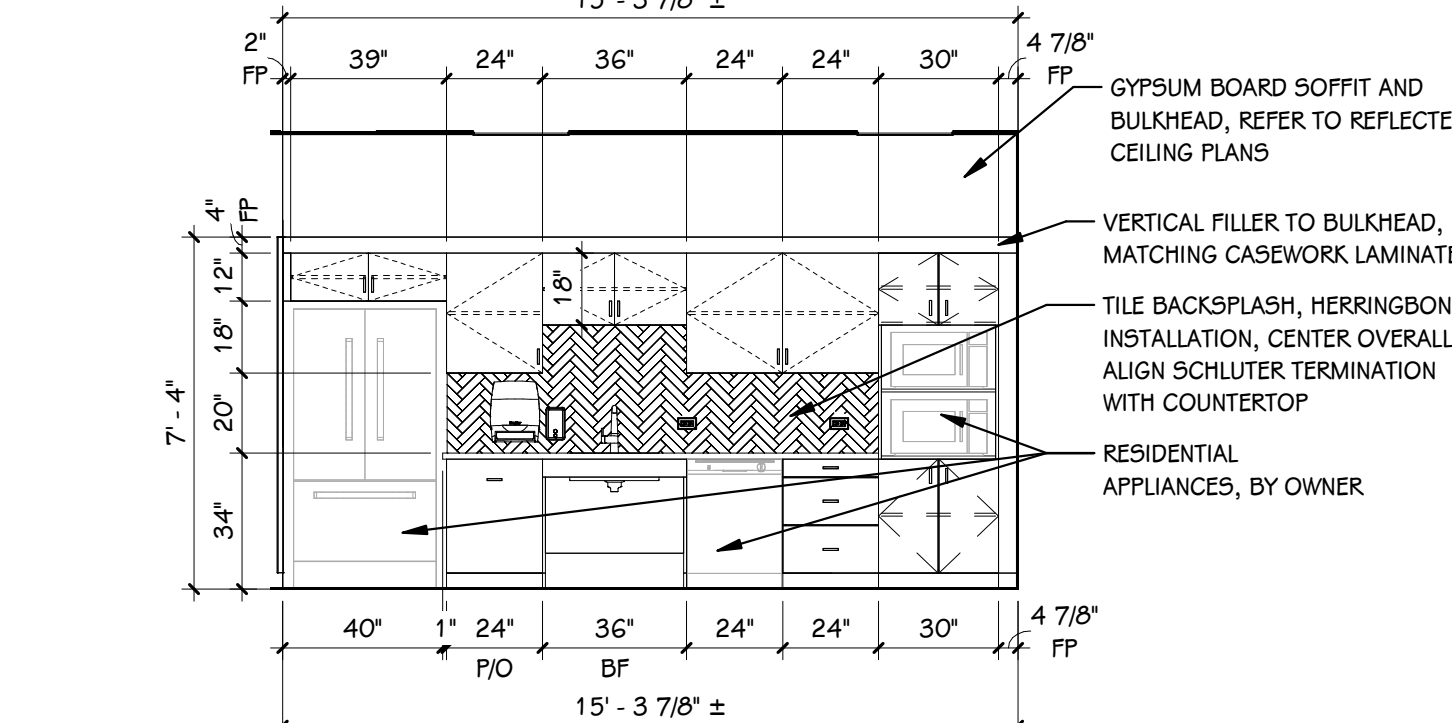
1 COPY 103 - NORTH  
1/4" = 1'-0"



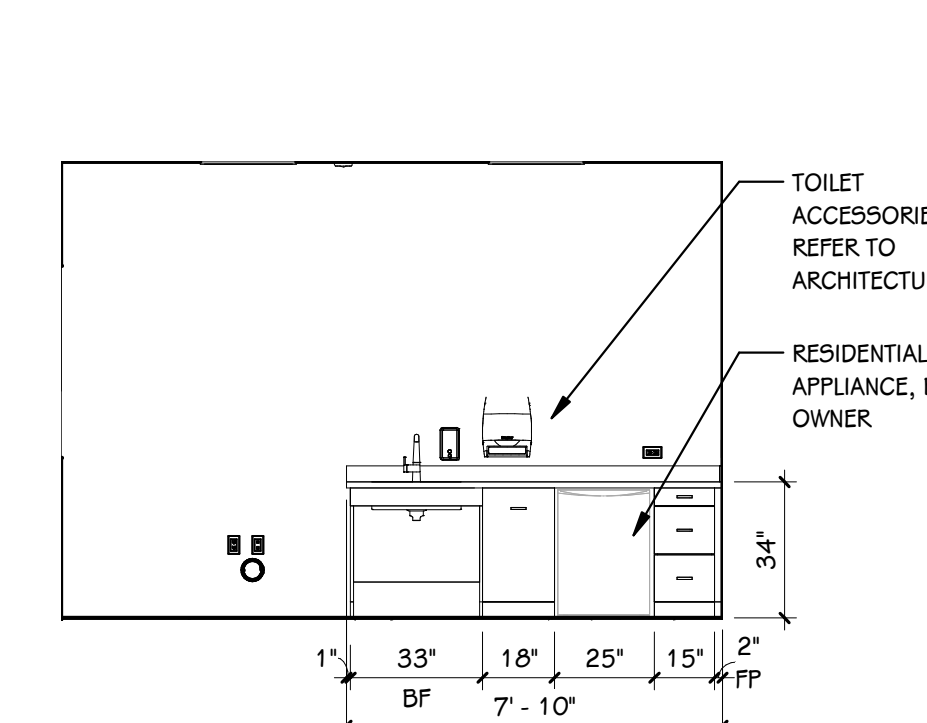
2 COPY 103 - EAST  
1/4" = 1'-0"



3 COPY 103 - SOUTH  
1/4" = 1'-0"

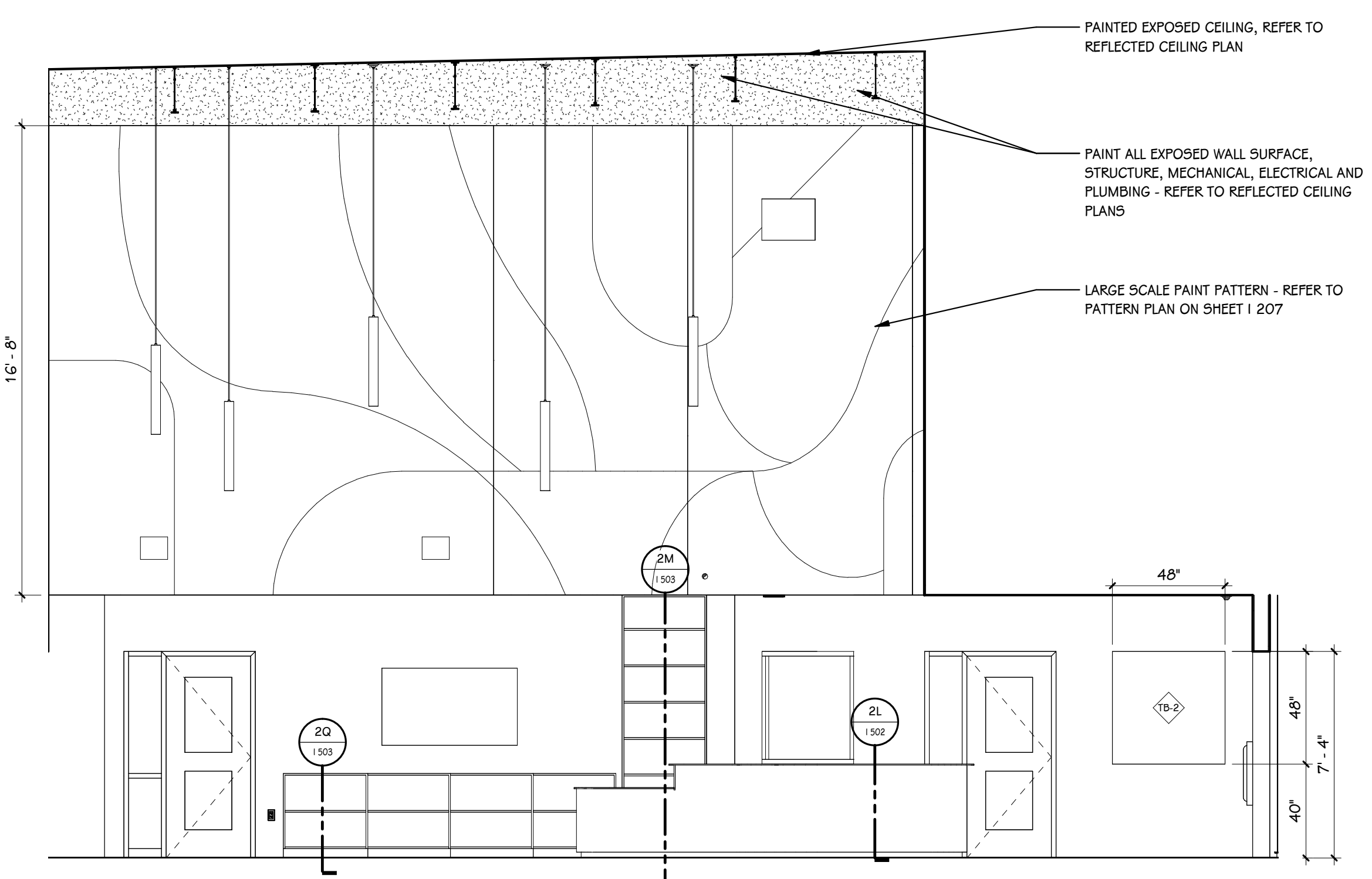


4 TEACHER LOUNGE 105 - NORTH  
1/4" = 1'-0"

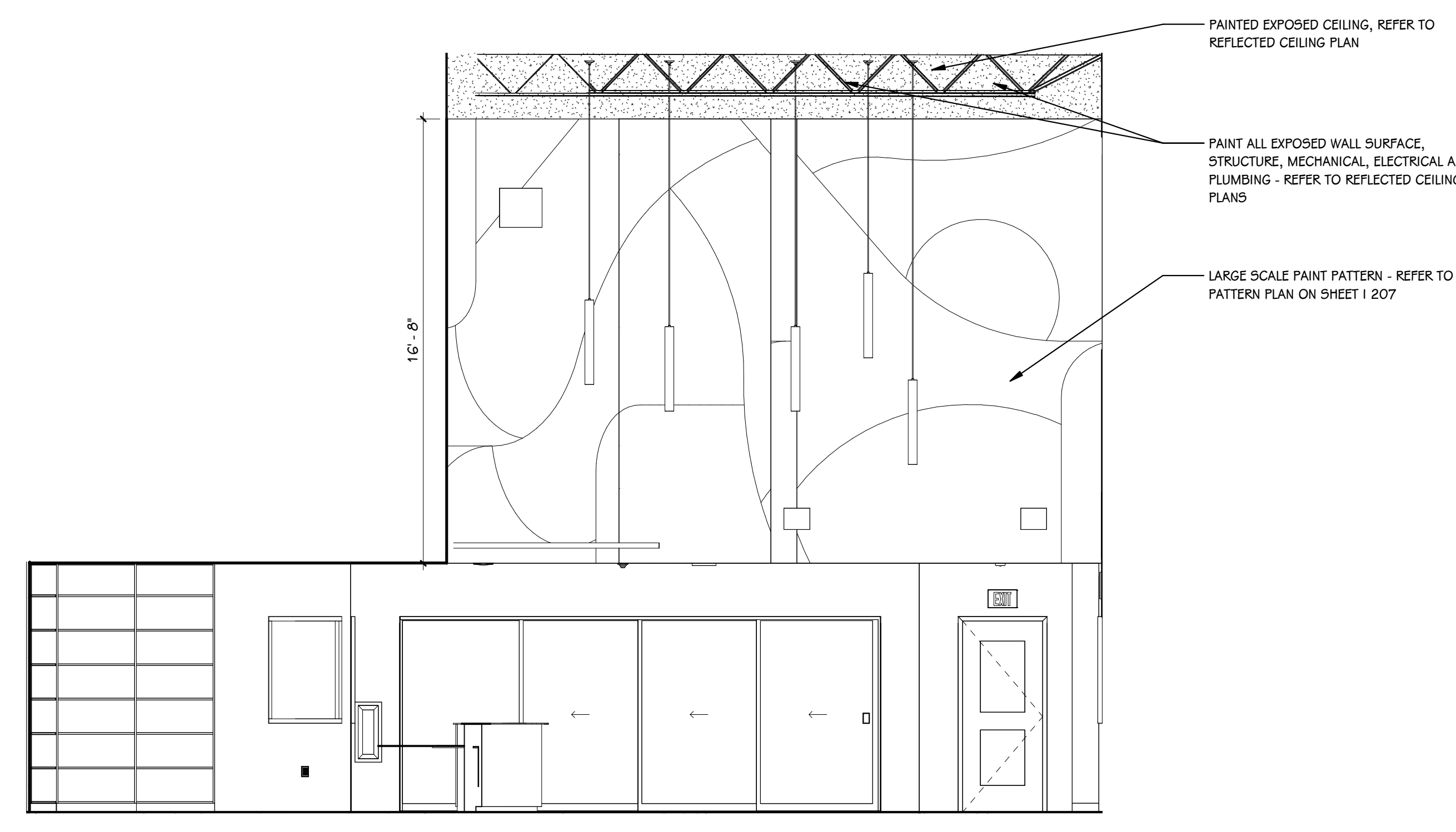


5 WELLNESS 106 - NORTH  
1/4" = 1'-0"

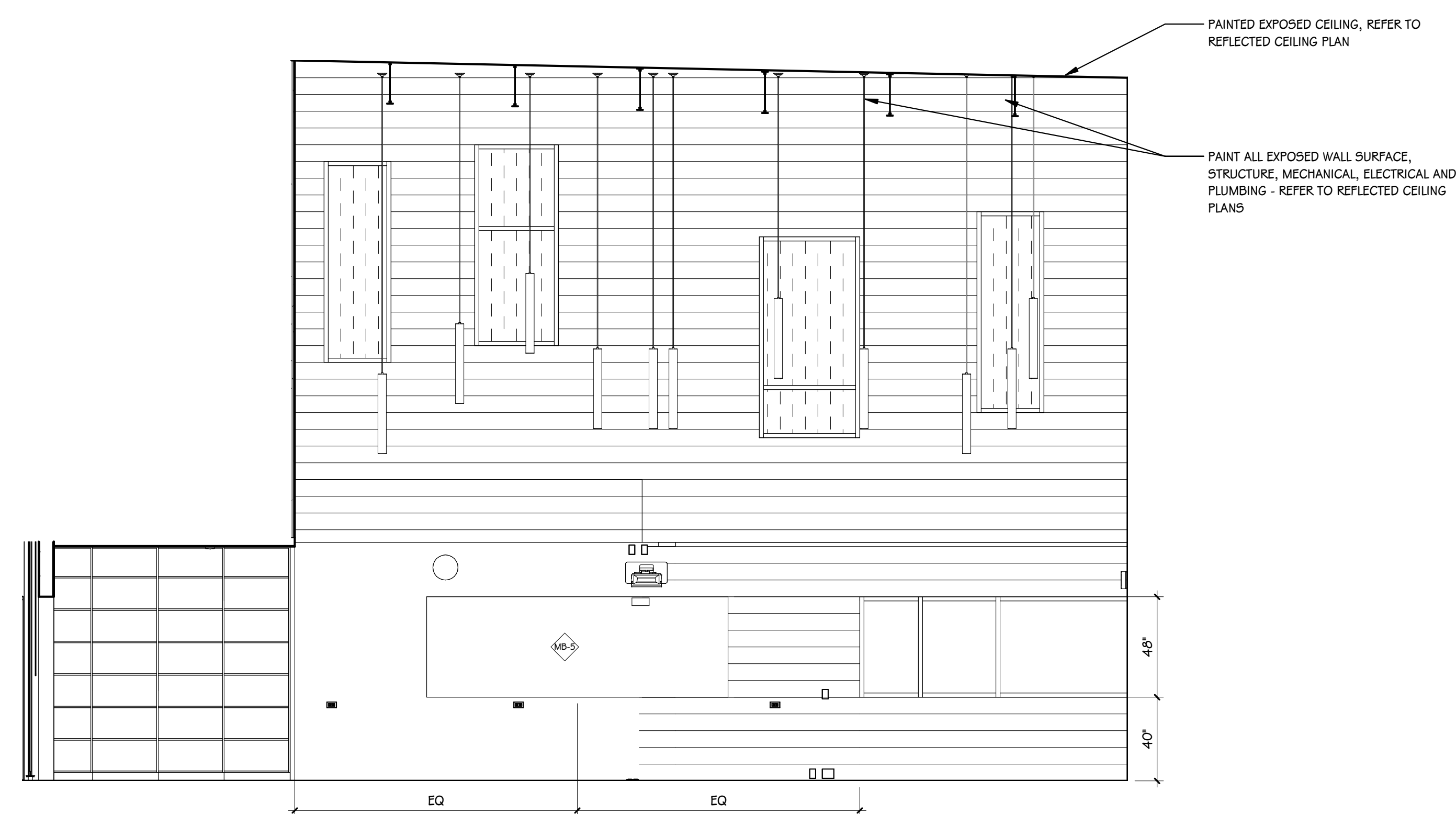
- GENERAL NOTES - INTERIOR ELEVATIONS**
- REFER TO FINISH PLANS FOR CALLOUTS OF MILLWORK OR ENLARGED FINISH PLANS FOR SCOPE NOT COVERED WITHIN INTERIOR ELEVATIONS.
  - REFER TO PATTERN ELEVATIONS FOR COLOR-BLOCKING AND PATTERNED INSTALLATION DETAILS OF PAINT AND ACOUSTICAL WALL PANELS.
  - REFER TO FINISH PLANS AND SPECIFICATION FOR EDUCATIONAL CASEGOODS NOT INCLUDED WITHIN CASEWORK PACKAGE.
  - REFER TO FINISH PLANS FOR VISUAL DISPLAY BOARD AND CORNER GUARD TAGS.
  - NOT ALL MATERIALS ARE ILLUSTRATED, REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
  - AT AREAS OF EXPOSED CEILING, WALL SURFACE SHALL BE PAINTED TO MATCH CEILING ABOVE HEIGHT INDICATED, REFER TO REFLECTED CEILING PLAN KEY FOR PAINT COLOR.
- GENERAL NOTES - CASEWORK**
- VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.
  - FILLER PANELS SHALL BE NO LESS THAN 2" WIDE, UNLESS NOTED OTHERWISE.
  - REFER TO FLOOR FINISH PLANS FOR CASEWORK AND COUNTERTOP FINISHES BY ROOM.
  - FINISH ANY EXPOSED END PANELS, UNDERSIDE OF CABINETS OR OPEN CABINETS, WITH PLASTIC LAMINATE SPECIFIED FOR FRONTS IN THAT ROOM.
  - ALL VERTICAL AND HORIZONTAL EXPOSED AND SEMI-EXPOSED SURFACES TO BE FINISHED WITH BODY PLASTIC LAMINATE.
  - SUPPORT BRACKETS ARE REQUIRED EVERY 36" O.C. AT AREAS WHERE COUNTERTOP IS OPEN UNDERNEATH. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING BRACKETS APPROPRIATELY SIZED BASED ON DEPTH OF COUNTER.
  - PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AIA STANDARDS, UNLESS NOTED OTHERWISE.
  - LOCKS SHALL BE PROVIDED WHERE ILLUSTRATED, KEYPED ALIKE BY ROOM, OR BY EACH GROUPING / RUN OF CUBBIES.
  - GROMMET LOCATIONS SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO INSTALLATION - COORDINATE WITH POWER & DATA LOCATIONS FOR ANY ADDITIONAL WIRE MANAGEMENT REQUIREMENTS.
  - "SLABSMITHING" WILL BE REQUIRED IN INSTANCES WHERE A PATTERNED SOLID SURFACE IS SPECIFIED.
  - WHERE CASEWORK IS INDICATED TO RECEIVE RESIDENTIAL APPLIANCES OR OWNER-FURNISHED EQUIPMENT, COORDINATE WITH FINAL OWNER-PROVIDED SELECTIONS.
- STANDARD ABBREVIATIONS - CASEWORK**
- |     |              |     |                       |
|-----|--------------|-----|-----------------------|
| ADJ | ADJUSTABLE   | FP  | FILLER PANEL          |
| BF  | BARRIER FREE | RP  | REMOVABLE PANEL       |
| EP  | END PANEL    | P/O | PULL OUT TRASH DRAWER |
- HARDWARE AND ACCESSORY SELECTIONS - CASEWORK**
- FULLS:  
BENTWIRE - NICKEL FINISH, OR SIMILAR
- COUNTERTOP EDGES:  
PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE.  
SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.
- SUPPORT BRACKETS:  
METAL STUD WALL CONSTRUCTION - AMM CONCEALED FLAT BRACKETS, OR A 4 M HEAVY-DUTY HYBRID BRACKETS (SIZE AS REQ'D.)  
CMU WALL CONSTRUCTION - AMM HEAVY-DUTY HYBRID BRACKETS (SIZE AS REQ'D.)
- FULL-OUT TRASH DRAWERS:  
RICHELIEU 53WC SERIES RECYCLING CENTER IN SILVER GRAY (INCLUDE 2 BINS), OR SIM.



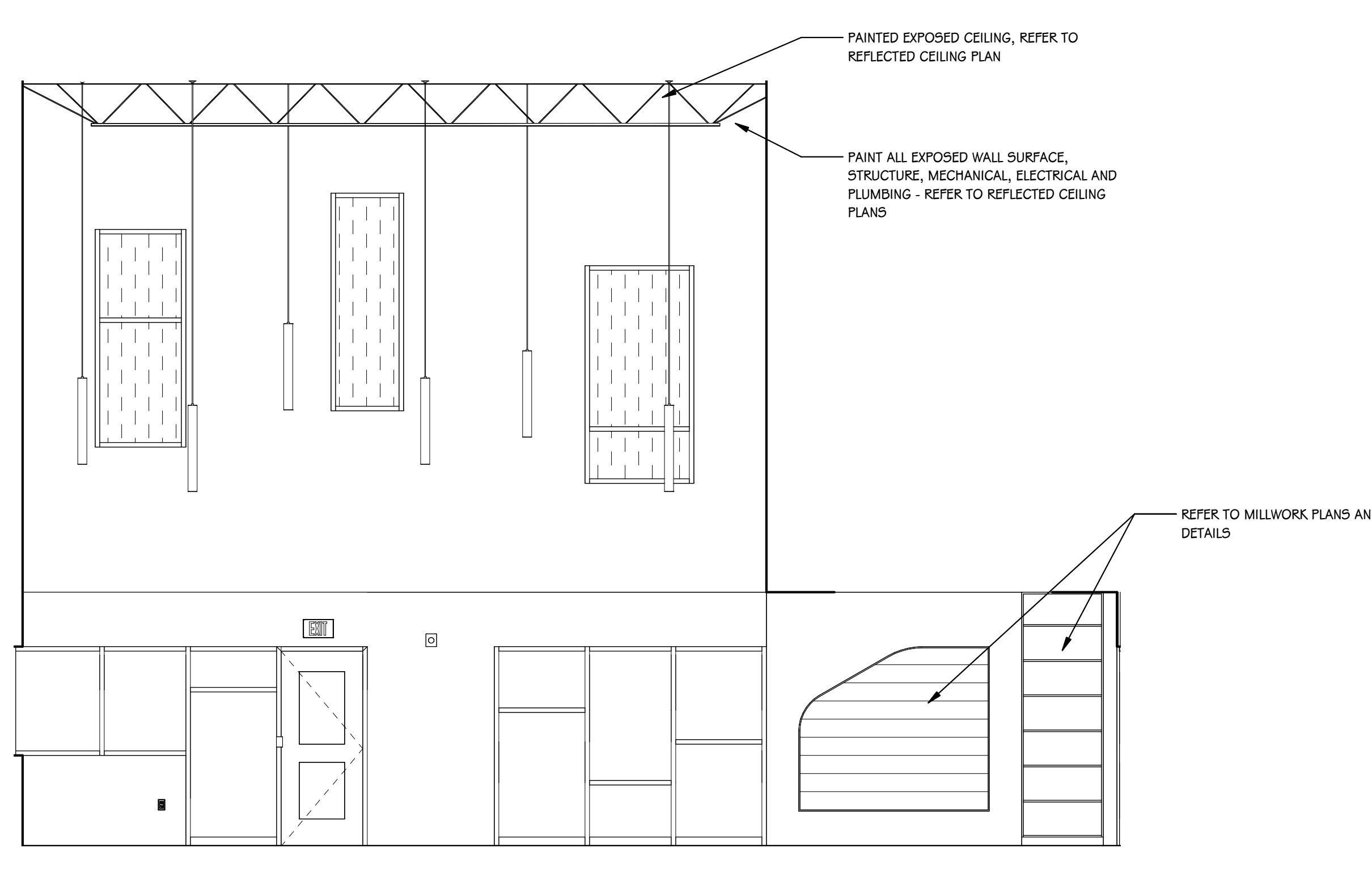
6 LIBRARY 112 - NORTH  
1/4" = 1'-0"



7 LIBRARY 112 - EAST  
1/4" = 1'-0"



8 LIBRARY 112 - SOUTH  
1/4" = 1'-0"



9 LIBRARY 112 - WEST  
1/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
INTERIOR ELEVATIONS

DATE  
JUNE 30, 2023

SHEET NUMBER  
1301  
21-237.20

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

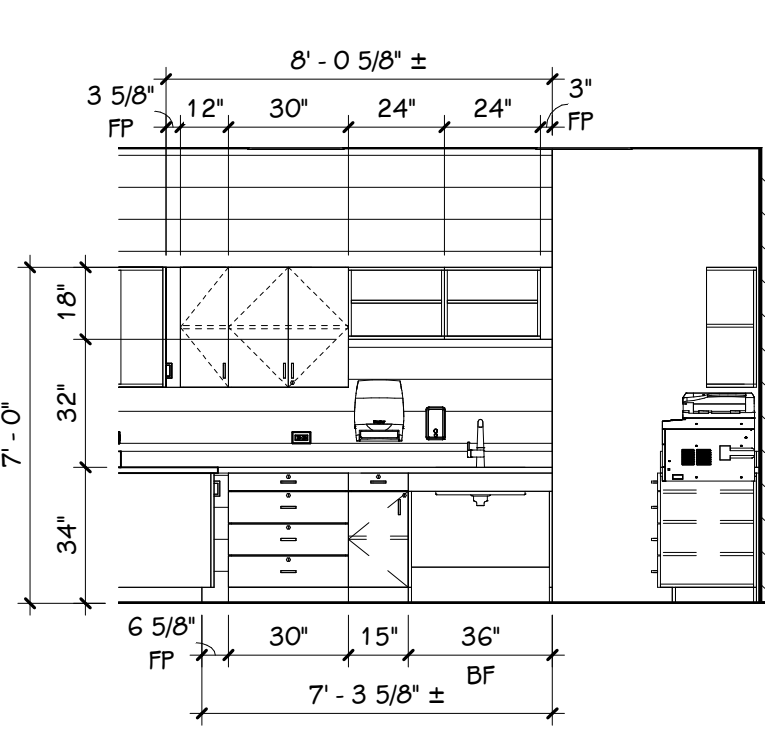
Portage, Michigan

SHEET TITLE  
INTERIOR ELEVATIONS

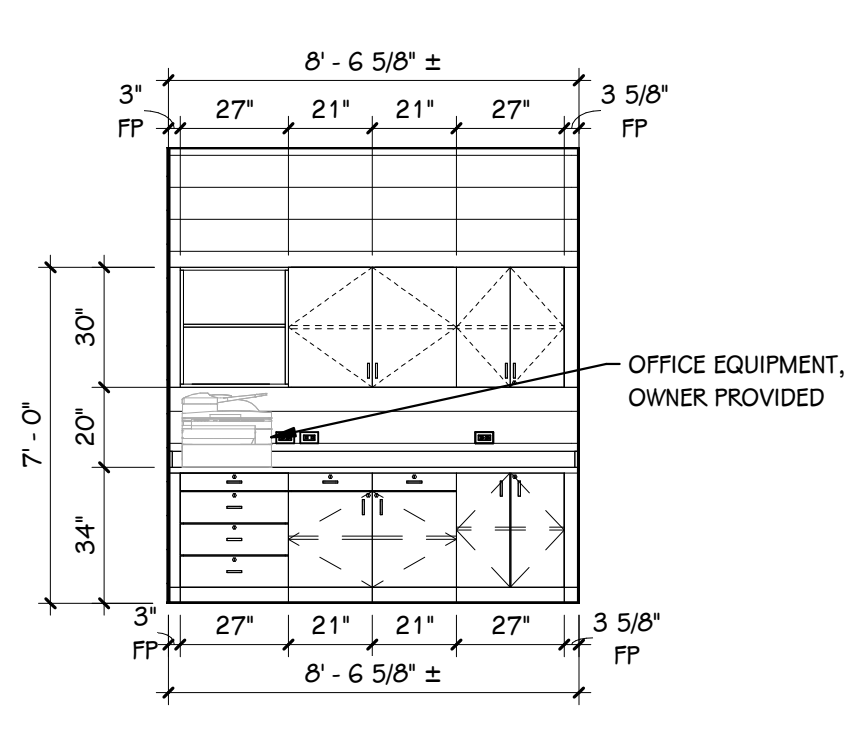
DATE  
JUNE 30, 2023

SHEET NUMBER  
1302  
21-237.20

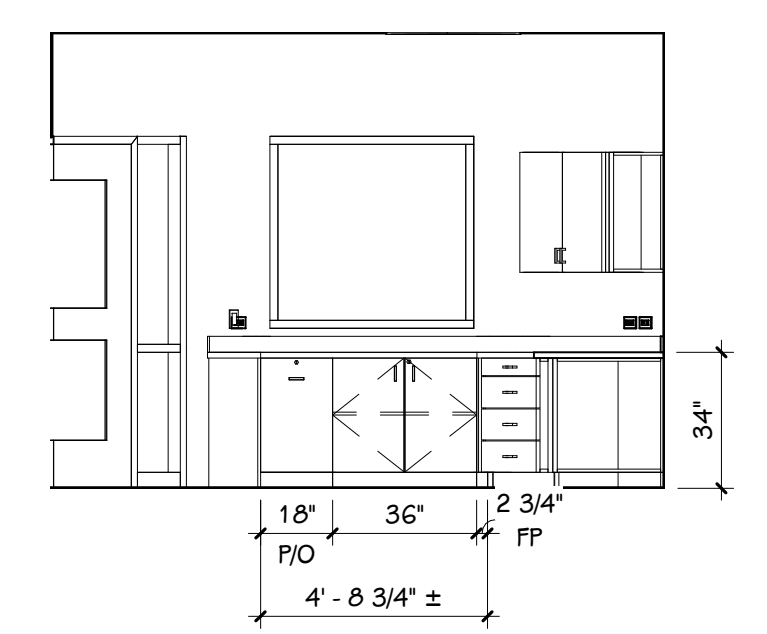
GENERAL NOTES - INTERIOR ELEVATIONS			
1.	REFER TO FINISH PLANS FOR CALLOUTS OF MILLWORK OR ENLARGED FINISH PLANS FOR SCOPE NOT COVERED WITHIN INTERIOR ELEVATIONS.		
2.	REFER TO PATTERN ELEVATIONS FOR COLOR-BLOCKING AND PATTERNED INSTALLATION DETAILS OF PAINT AND ACOUSTICAL WALL PANELS.		
3.	REFER TO FINISH PLANS AND SPECIFICATION FOR EDUCATIONAL CASEGOODS NOT INCLUDED WITHIN CASEWORK PACKAGE.		
4.	REFER TO FINISH PLANS FOR VISUAL DISPLAY BOARD AND CORNER GUARD TAGS.		
5.	NOT ALL MATERIALS ARE ILLUSTRATED, REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.		
6.	AT AREAS OF EXPOSED CEILING, WALL SURFACE SHALL BE PAINTED TO MATCH CEILING ABOVE HEIGHT INDICATED, REFER TO REFLECTED CEILING PLAN KEY FOR PAINT COLOR.		
GENERAL NOTES - CASEWORK			
1.	VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.		
2.	FILLER PANELS SHALL BE NO LESS THAN 2" WIDE, UNLESS NOTED OTHERWISE.		
3.	REFER TO FLOOR FINISH PLANS FOR CASEWORK AND COUNTERTOP FINISHES BY ROOM.		
4.	FINISH ANY EXPOSED END PANELS, UNDERSIDE OF CABINETS OR OPEN CABINETS, WITH LAMINATE SPECIFIED FOR FRONTS IN THAT ROOM.		
5.	ALL VERTICAL AND HORIZONTAL EXPOSED AND SEMI-EXPOSED SURFACES TO BE FINISHED WITH BODY PLASTIC LAMINATE.		
6.	SUPPORT BRACKETS ARE REQUIRED EVERY 36" O.C. AT AREAS WHERE COUNTERTOP IS OPEN UNDERNEATH. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING BRACKETS APPROPRIATELY SIZED BASED ON DEPTH OF COUNTERTOP.		
7.	PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AIA STANDARDS, UNLESS NOTED OTHERWISE.		
8.	LOCKS SHALL BE PROVIDED WHERE ILLUSTRATED, KEYS ALIKE BY ROOM, OR BY EACH GROUPING / RUN OF CUBBIES.		
9.	GROMMET LOCATIONS SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO INSTALLATION - COORDINATE WITH POWER & DATA LOCATIONS FOR ANY ADDITIONAL WIRE MANAGEMENT REQUIREMENTS.		
10.	'SLABSMITHING' WILL BE REQUIRED IN INSTANCES WHERE A PATTERNED SOLID SURFACE IS SPECIFIED.		
11.	WHERE CASEWORK IS INDICATED TO RECEIVE RESIDENTIAL APPLIANCES OR OWNER-FURNISHED EQUIPMENT, COORDINATE WITH FINAL OWNER-PROVIDED SELECTIONS.		
STANDARD ABBREVIATIONS - CASEWORK			
ADJ	ADJUSTABLE	FP	FILLER PANEL
BF	BARRIER FREE	RP	REMOVABLE PANEL
EP	END PANEL	P/O	PULL OUT TRASH DRAWER
HARDWARE AND ACCESSORY SELECTIONS - CASEWORK			
PULLS: BENTWIRE - NICKEL FINISH, OR SIMILAR			
COUNTERTOP EDGES: PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE. SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.			
SUPPORT BRACKETS: METAL STUD WALL CONSTRUCTION - AMM CONCEALED FLAT BRACKETS, OR A 4 M HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.) CMU WALL CONSTRUCTION - AMM HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.)			
PULL-OUT TRASH DRAWERS: RICHELIEU 53WC SERIES RECYCLING CENTER IN SILVER GRAY (INCLUDE 2 BINS), OR SIM.			



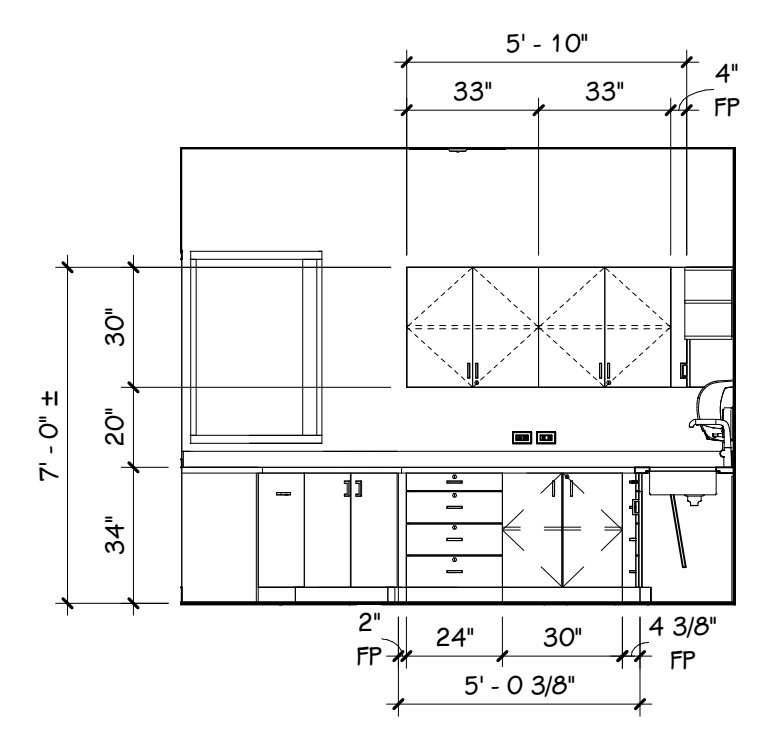
10 RESOURCE ROOM 114 - NORTH  
1/4" = 1'-0"



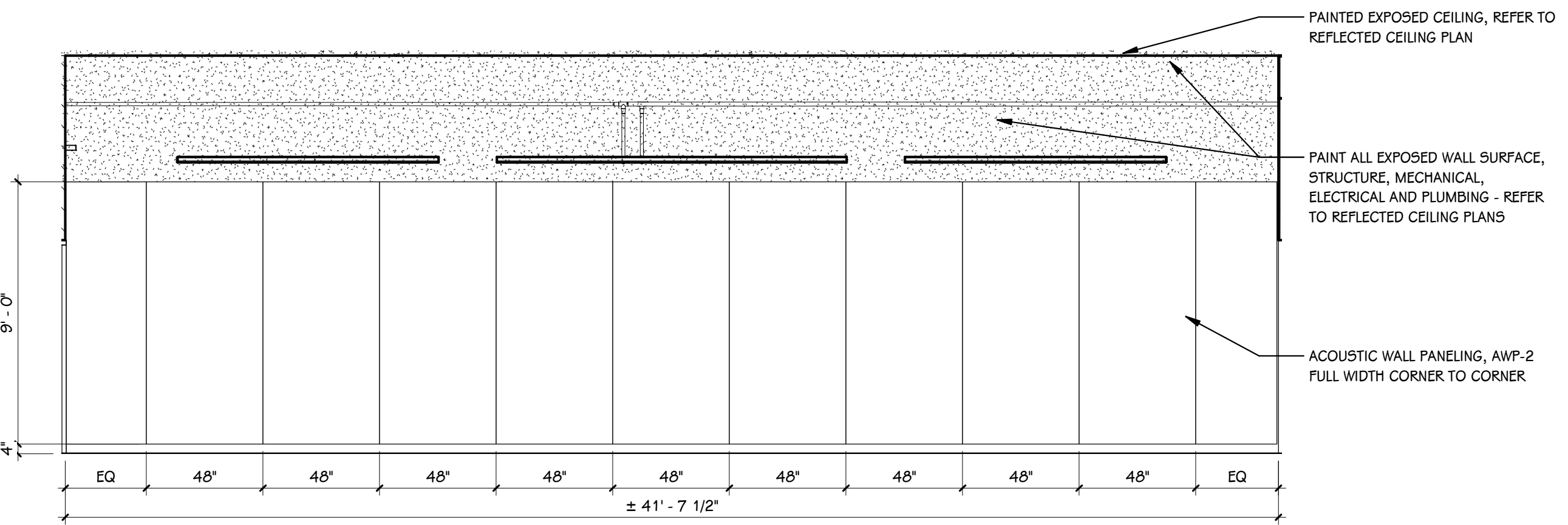
11 RESOURCE ROOM 114 - EAST  
1/4" = 1'-0"



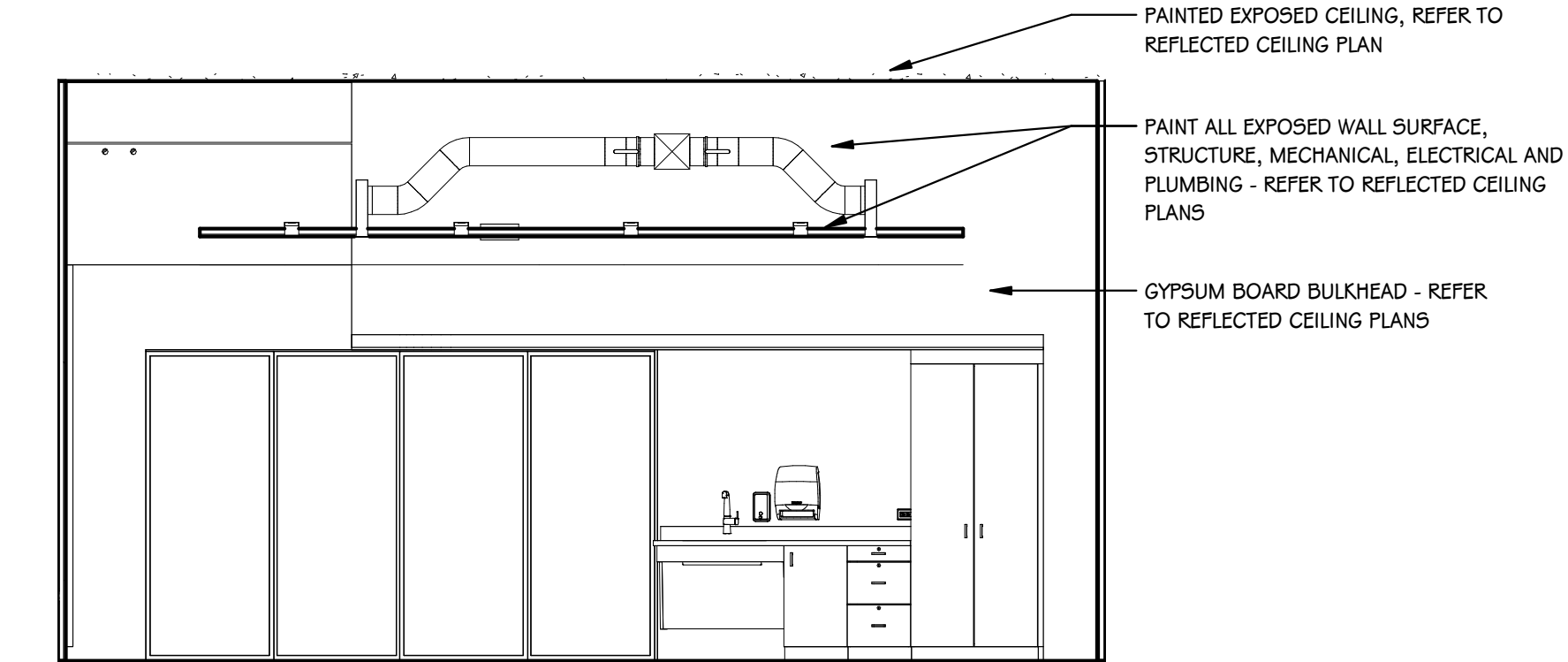
12 RESOURCE ROOM 114 - SOUTHWEST  
1/4" = 1'-0"



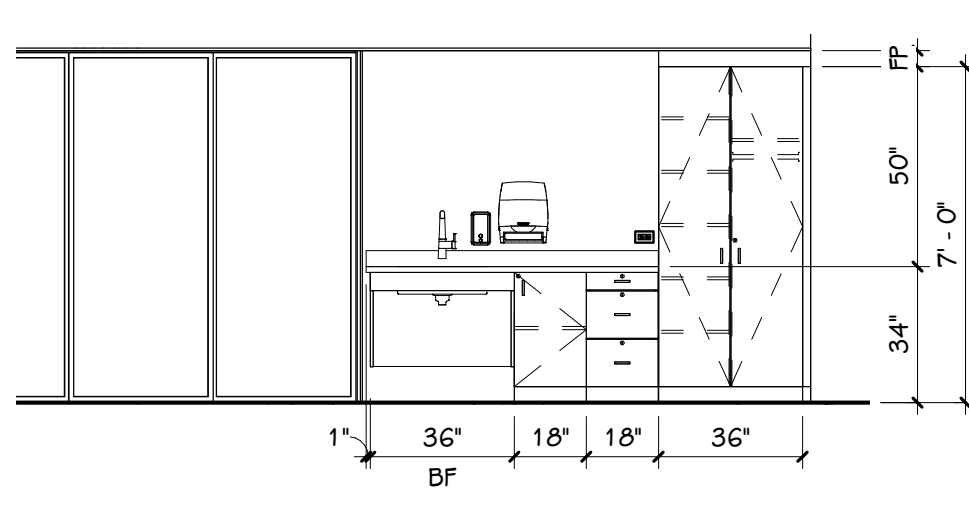
13 RESOURCE ROOM 114 - WEST  
1/4" = 1'-0"



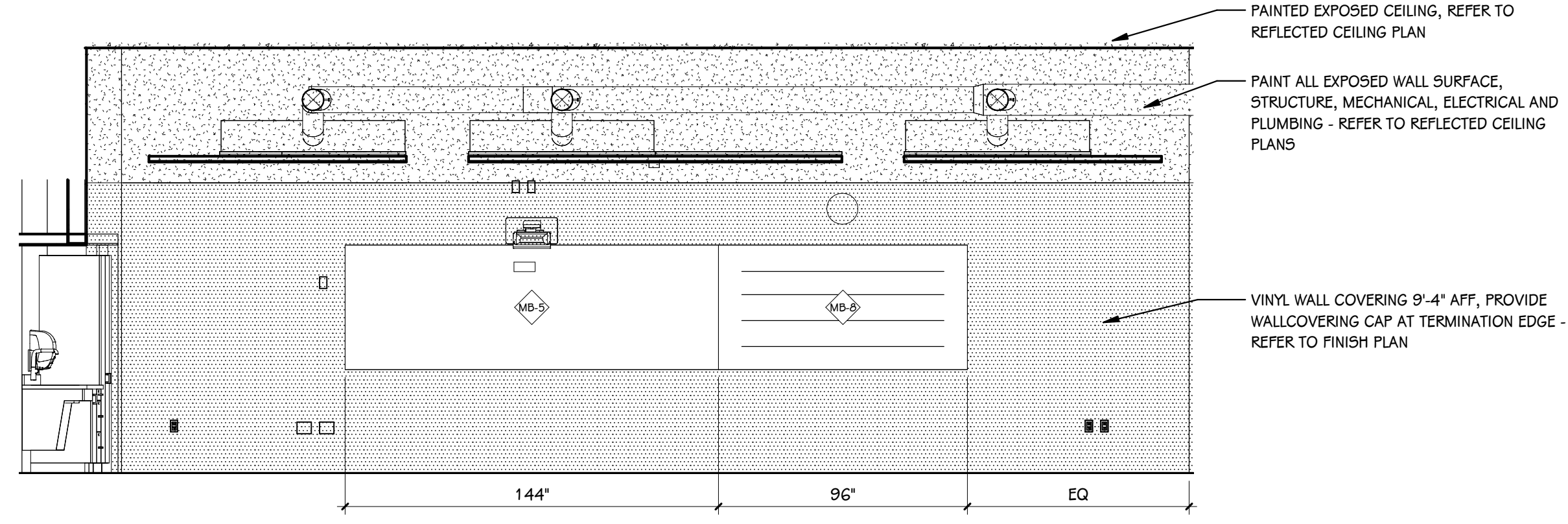
14 MUSIC 115 - NORTH  
1/4" = 1'-0"



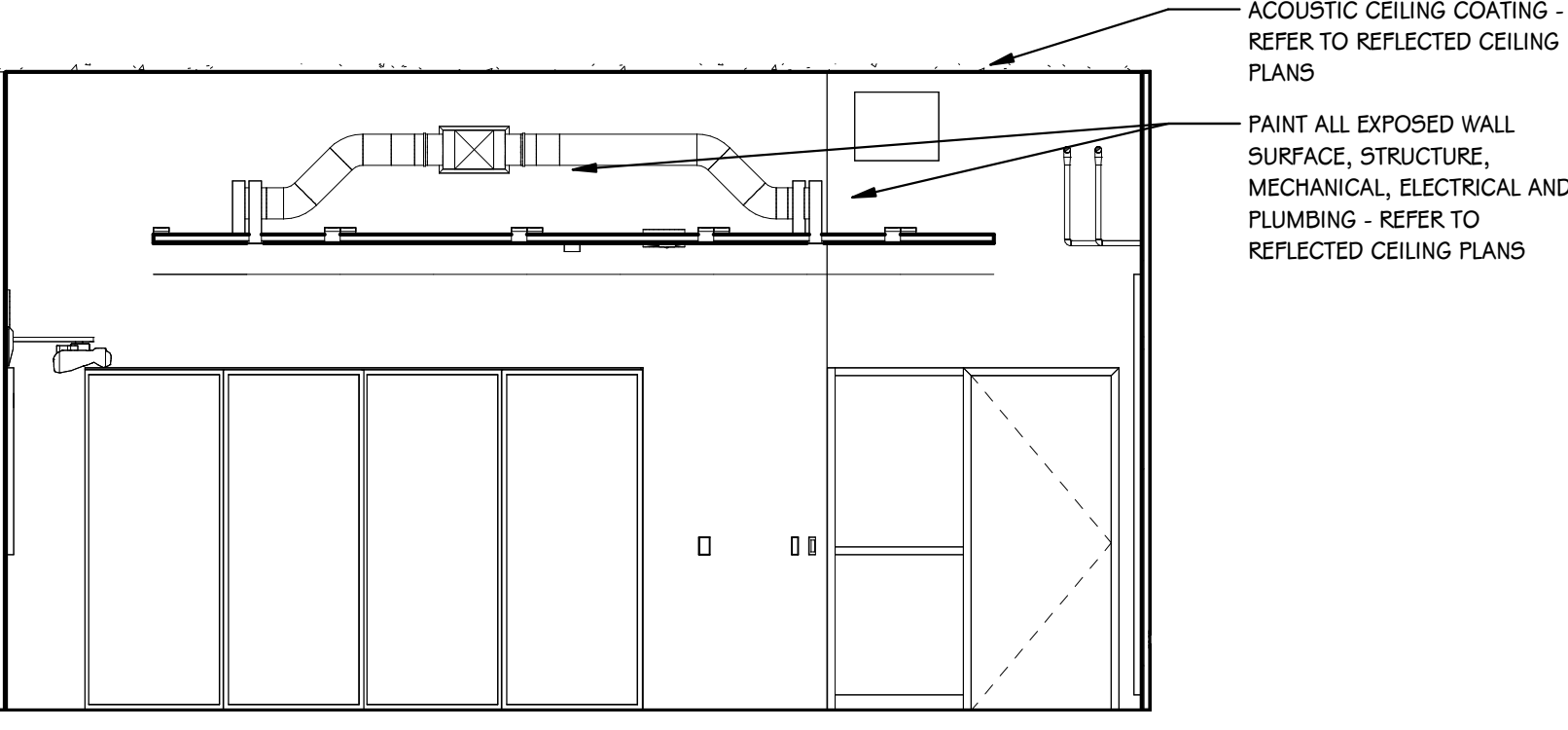
15 MUSIC 115 - EAST  
1/4" = 1'-0"



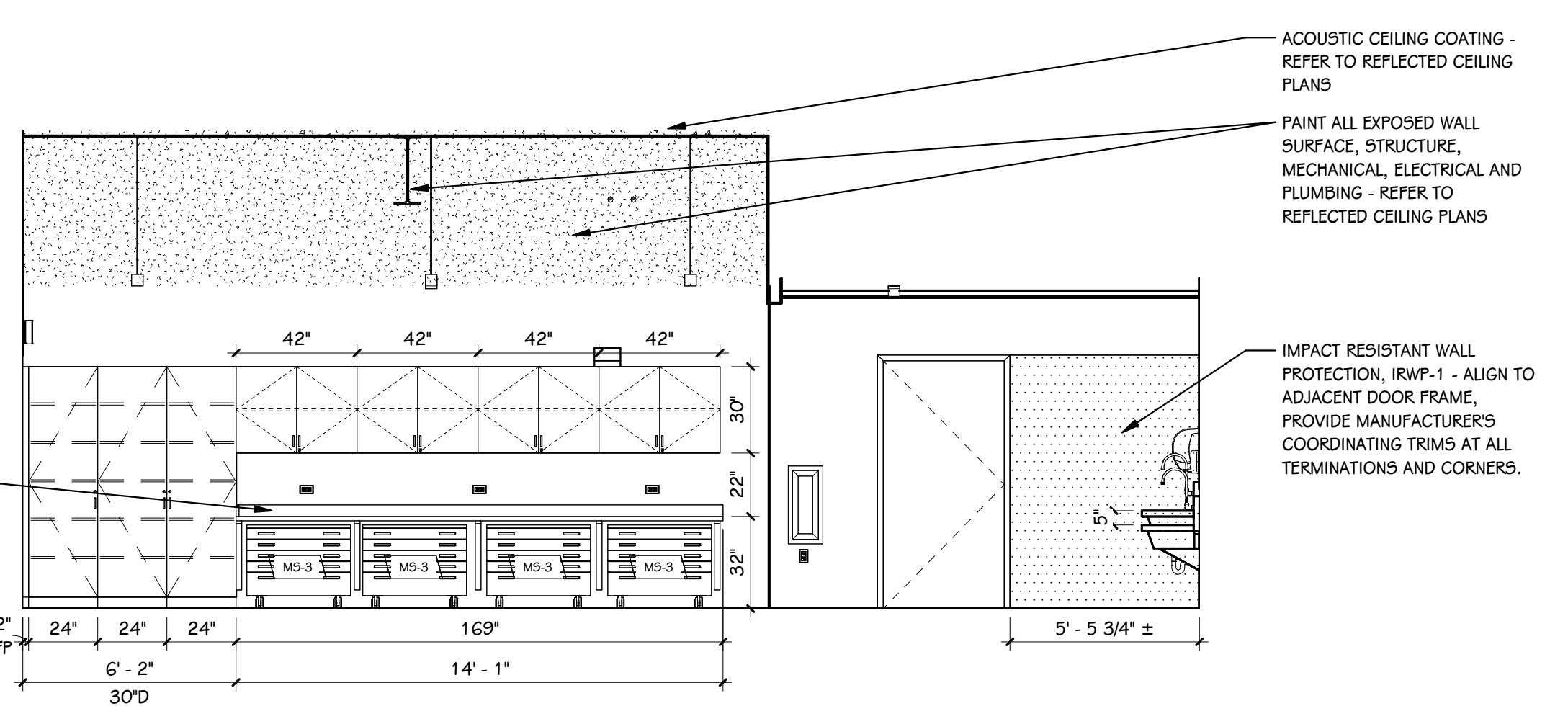
16 MUSIC 115 - EAST ANGULAR CASEWORK  
1/4" = 1'-0"



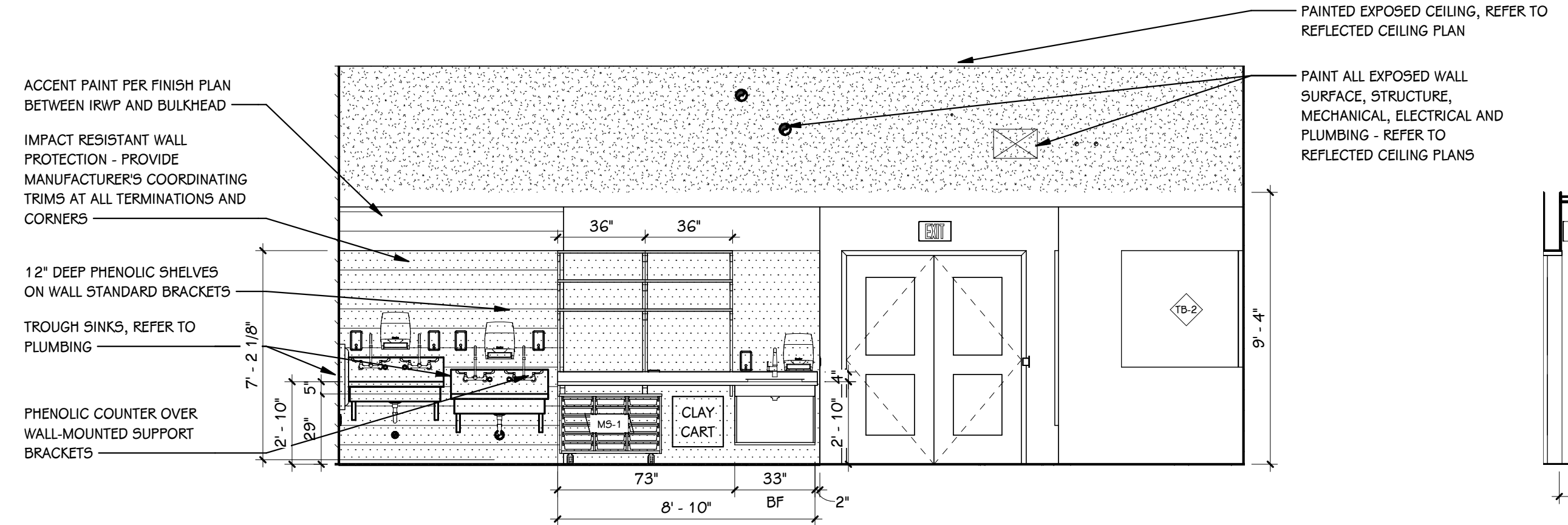
17 MUSIC 115 - SOUTH  
1/4" = 1'-0"



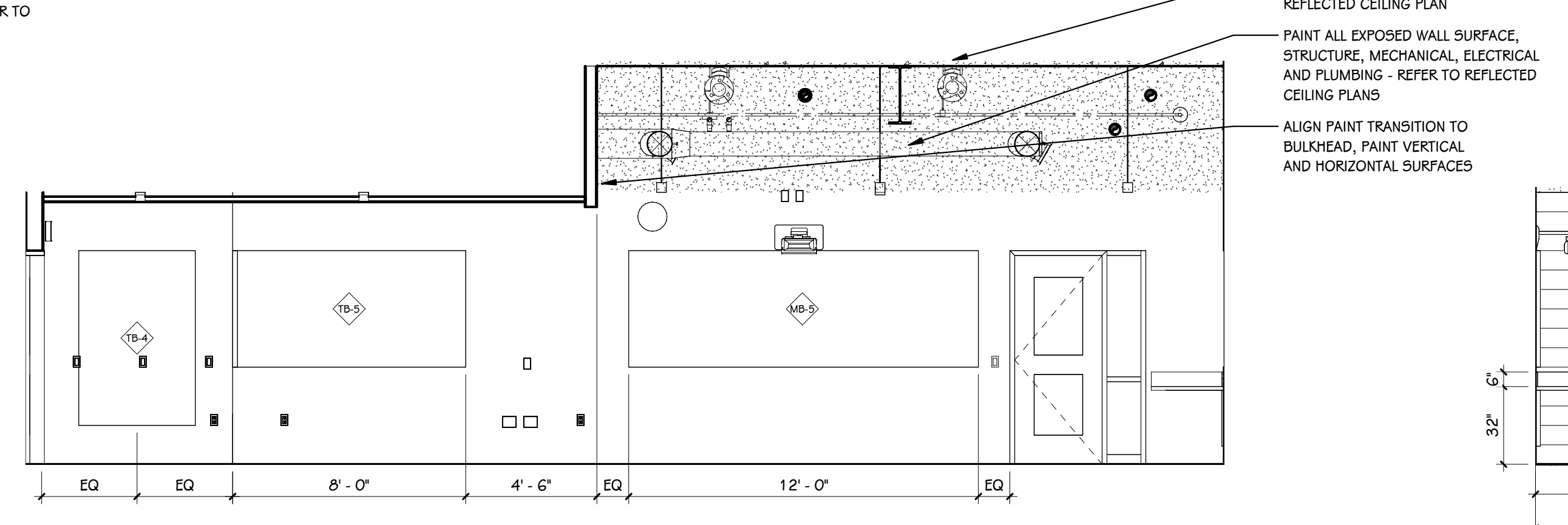
18 MUSIC 115 - WEST  
1/4" = 1'-0"



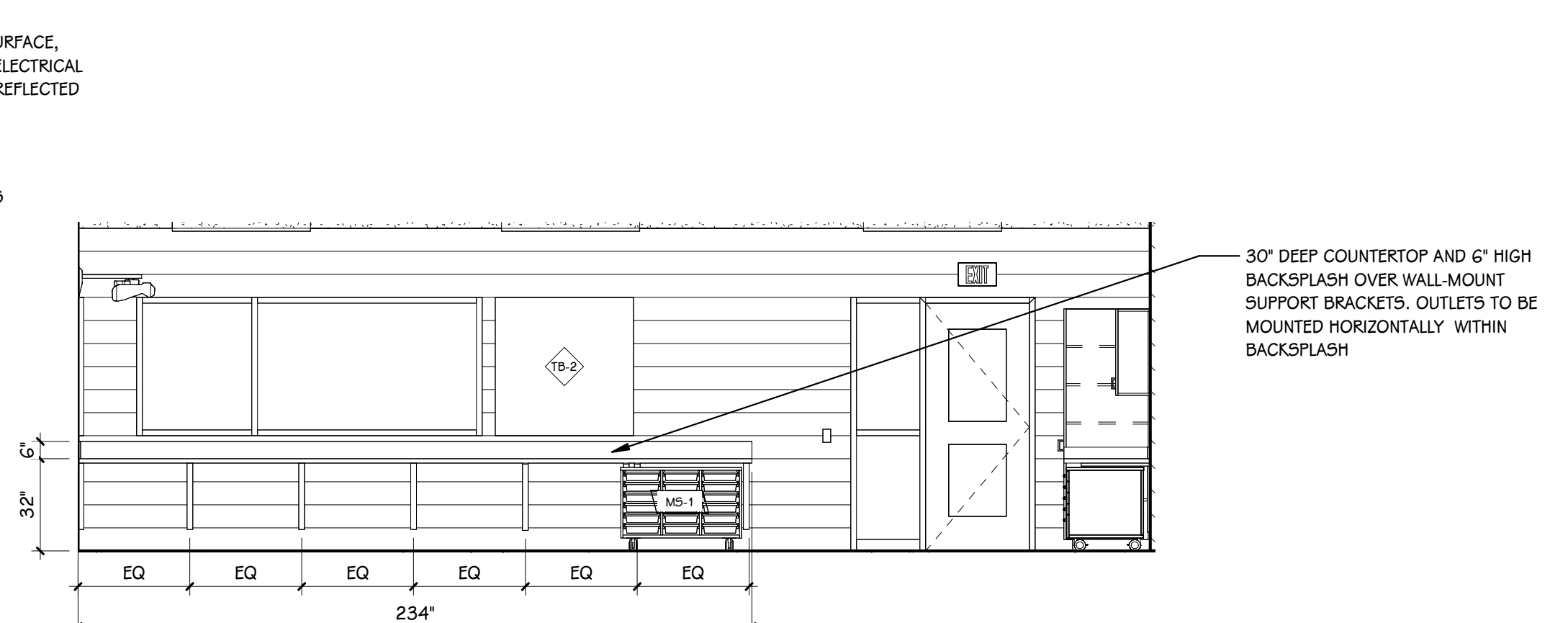
19 MAKERSPACE 116 - NORTH  
1/4" = 1'-0"



20 MAKERSPACE 116 - EAST  
1/4" = 1'-0"



21 MAKERSPACE 116 - SOUTH  
1/4" = 1'-0"



22 MAKERSPACE 116 - WEST  
1/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

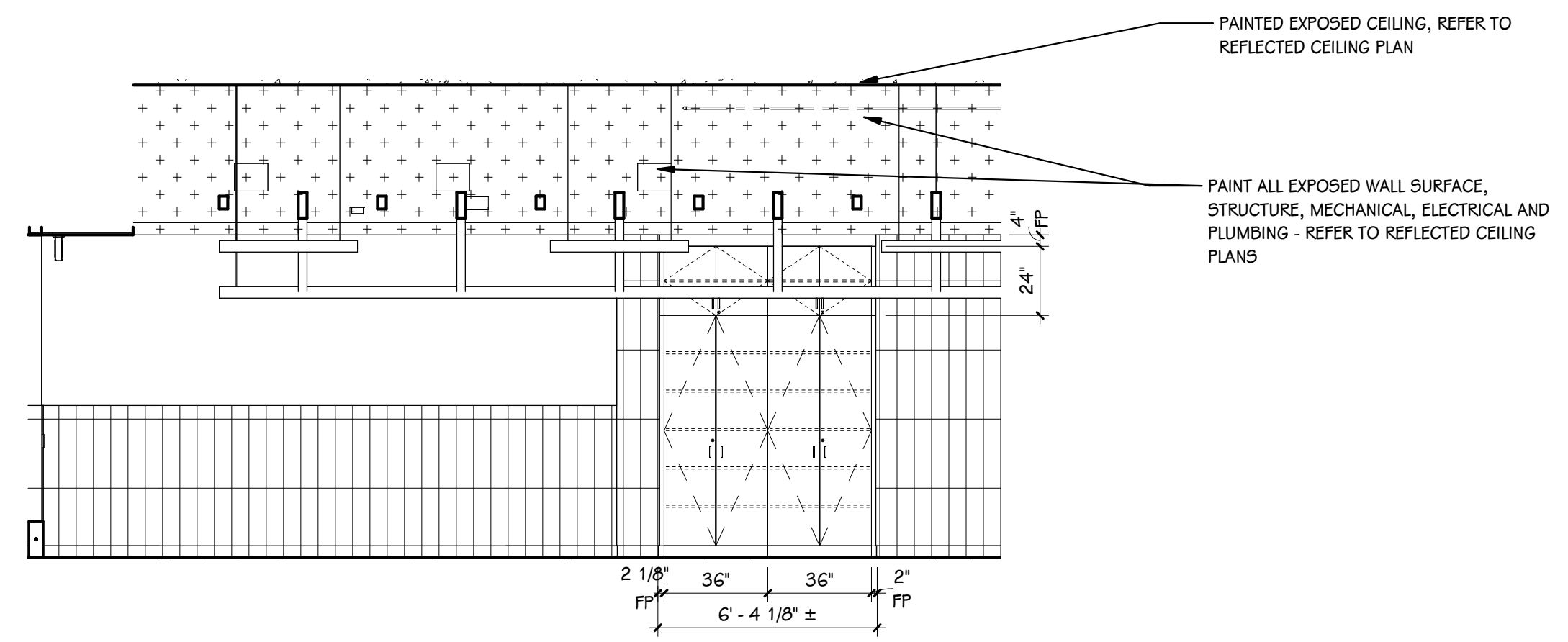
Portage, Michigan

SHEET TITLE  
INTERIOR ELEVATIONS

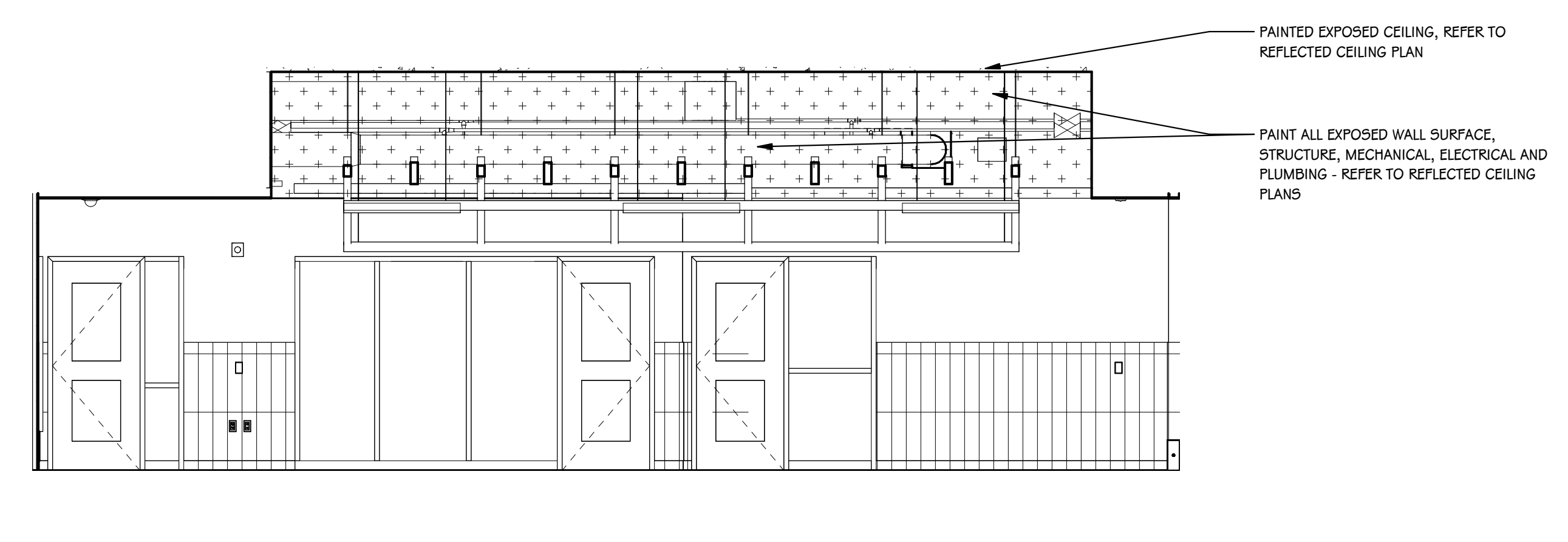
DATE  
JUNE 30, 2023

SHEET NUMBER  
**1303**  
21-237.20

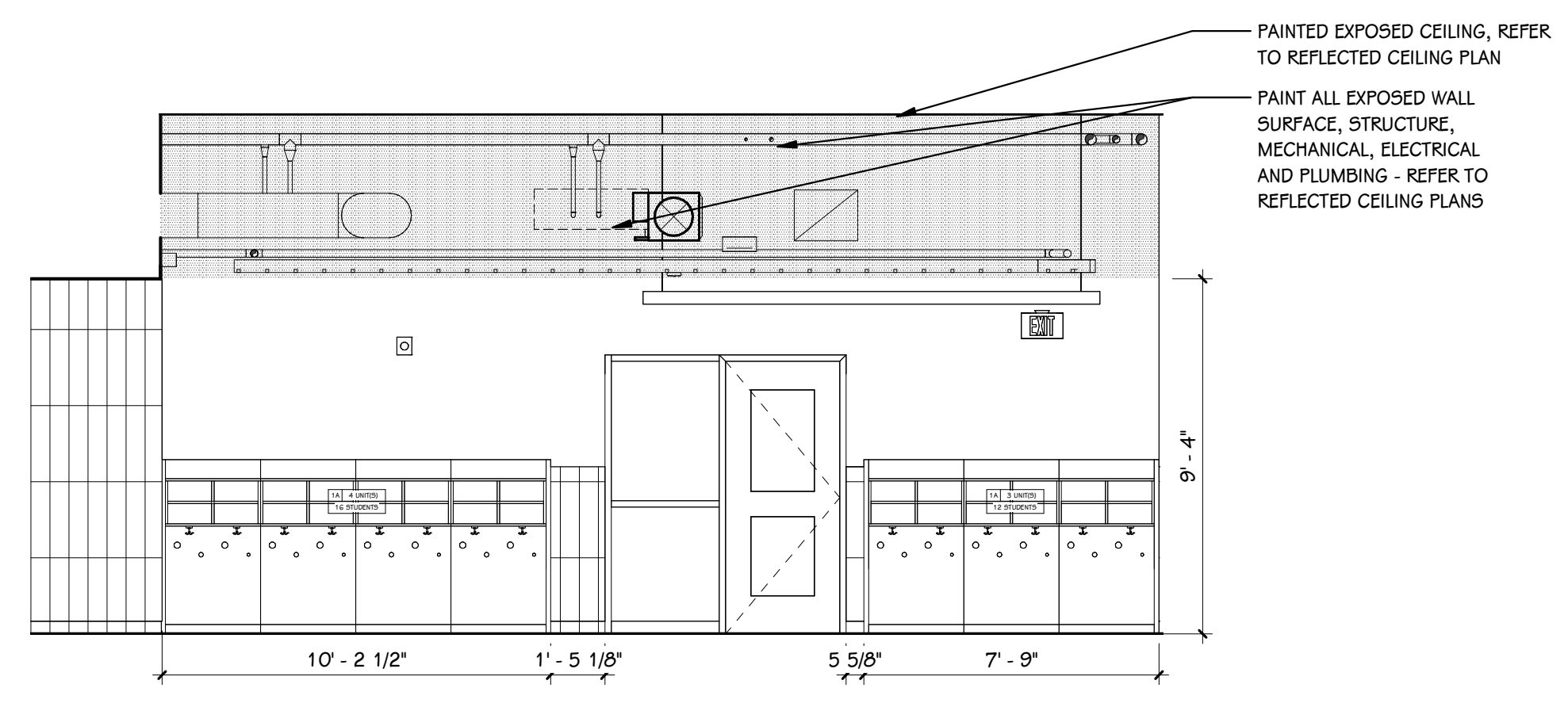
GENERAL NOTES - INTERIOR ELEVATIONS			
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2.	REFER TO PATTERN ELEVATIONS FOR COLOR-BLOCKING AND PATTERNED INSTALLATION DETAILS OF PAINT AND ACOUSTICAL WALL PANELS.		
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6.	AT AREAS OF EXPOSED CEILING, WALL SURFACE SHALL BE PAINTED TO MATCH CEILING ABOVE HEIGHT INDICATED, REFER TO REFLECTED CEILING PLAN KEY FOR PAINT COLOR.		
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BF	BARRIER FREE	RP	REMOVABLE PANEL
EP	END PANEL	P/O	PULL OUT TRASH DRAWER
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PULLS: BENTWIRE - NICKEL FINISH, OR SIMILAR			
COUNTERTOP EDGES: PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE. SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.			
SUPPORT BRACKETS: METAL STUD WALL CONSTRUCTION - AIA CONCEALED FLAT BRACKETS, OR A 4 M HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.) CMU WALL CONSTRUCTION - AIA HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.)			
PULL-OUT TRASH DRAWERS: RICHELIEU 53WC SERIES RECYCLING CENTER IN SILVER GRAY (INCLUDE 2 BINS), OR SIM.			



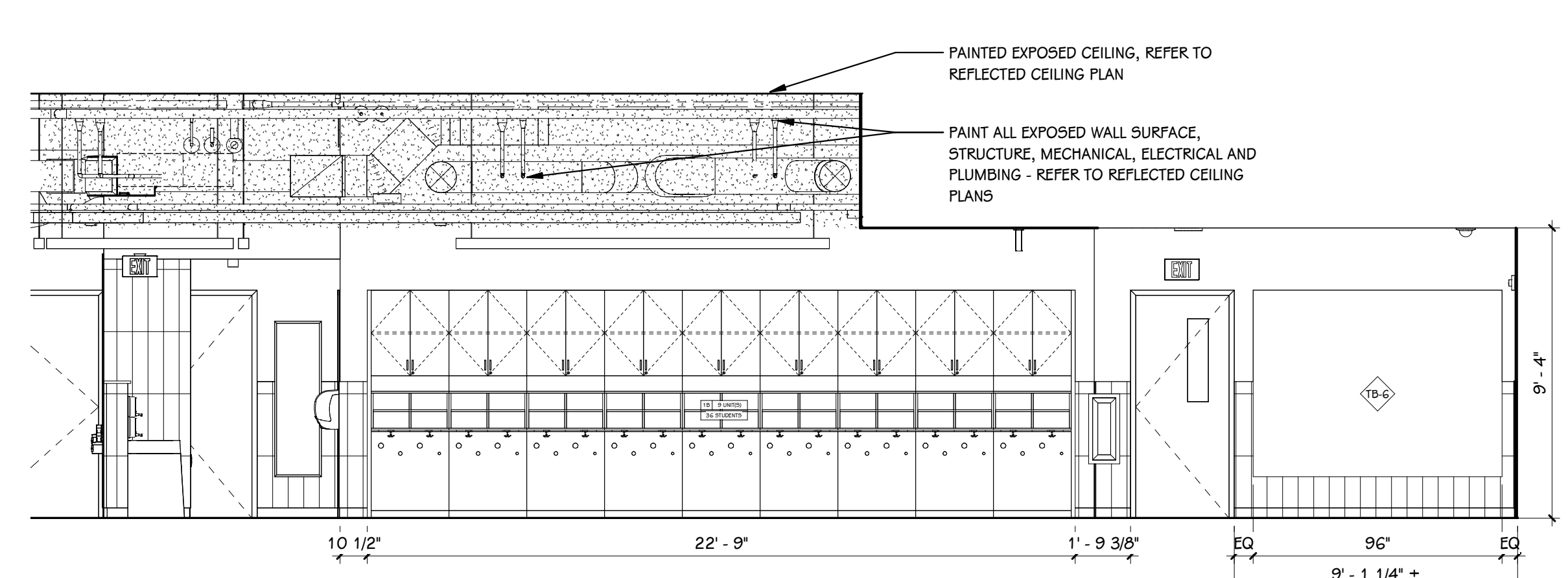
23 COMMONS 120 - EAST  
1/4" = 1'-0"



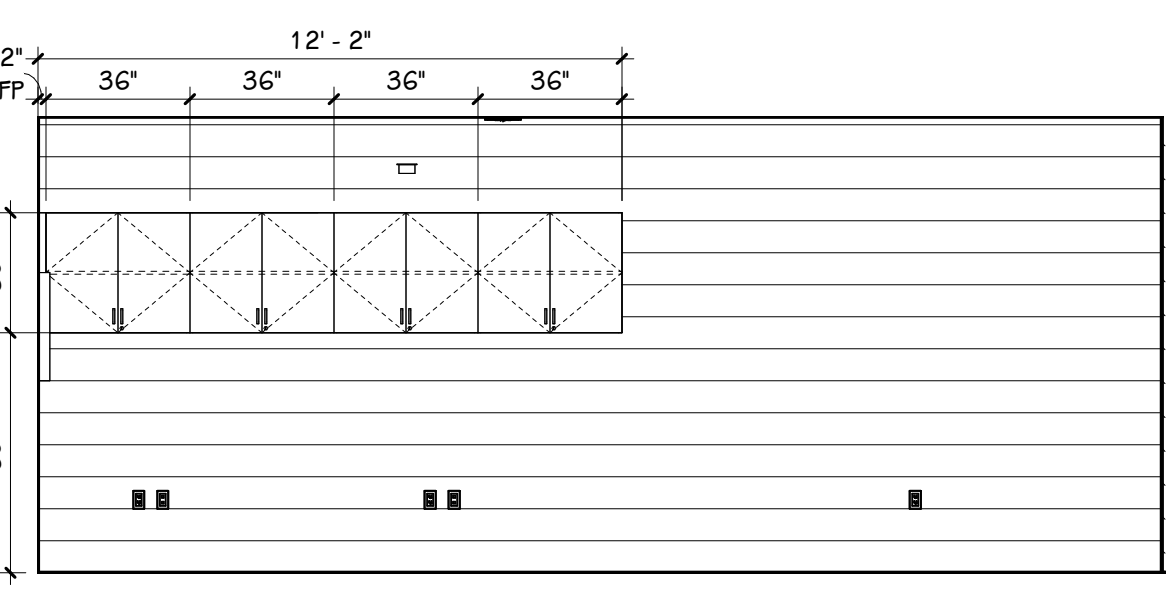
24 COMMONS 120 - WEST  
1/4" = 1'-0"



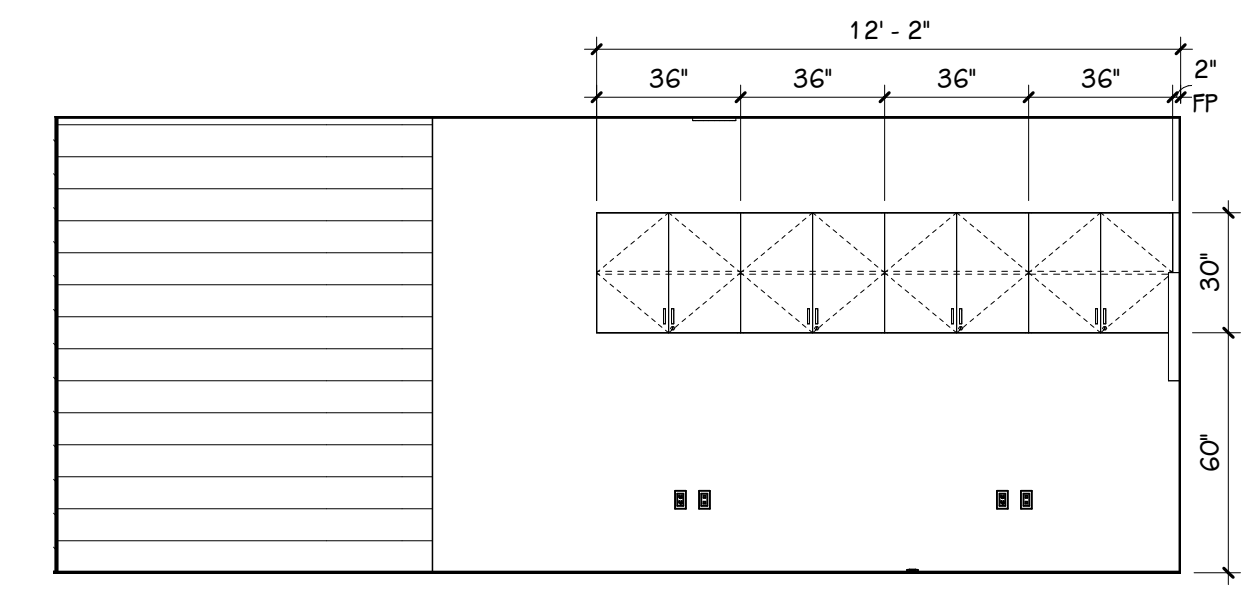
25 PASSAGEWAY 120H - NORTH  
1/4" = 1'-0"



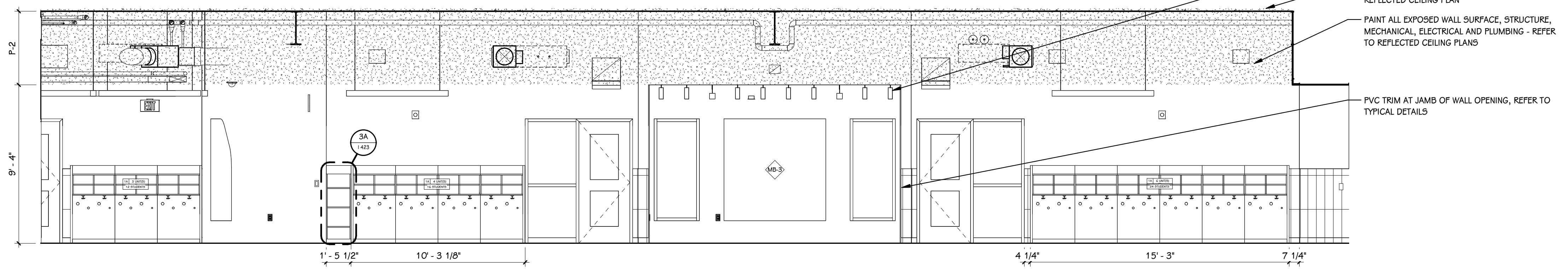
26 PASSAGEWAY 120H - SOUTH  
1/4" = 1'-0"



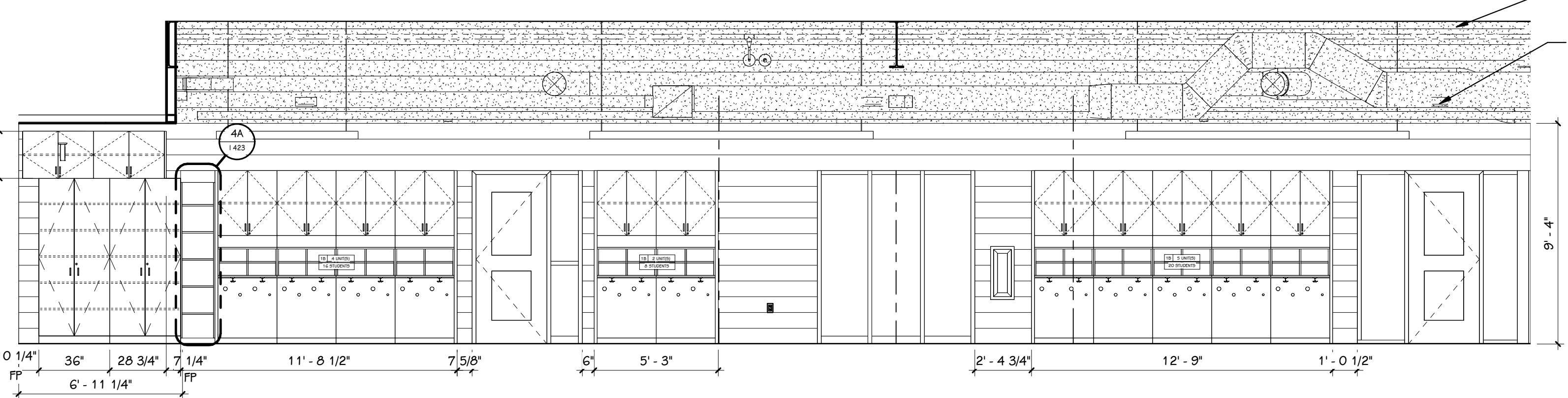
27 EDUC WORKSHOP 123 - NORTH  
1/4" = 1'-0"



28 EDUC WORKSHOP 123 - SOUTH  
1/4" = 1'-0"



29 PASSAGEWAY 130H - NORTH  
1/4" = 1'-0"



30 PASSAGEWAY 130H - SOUTH  
1/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

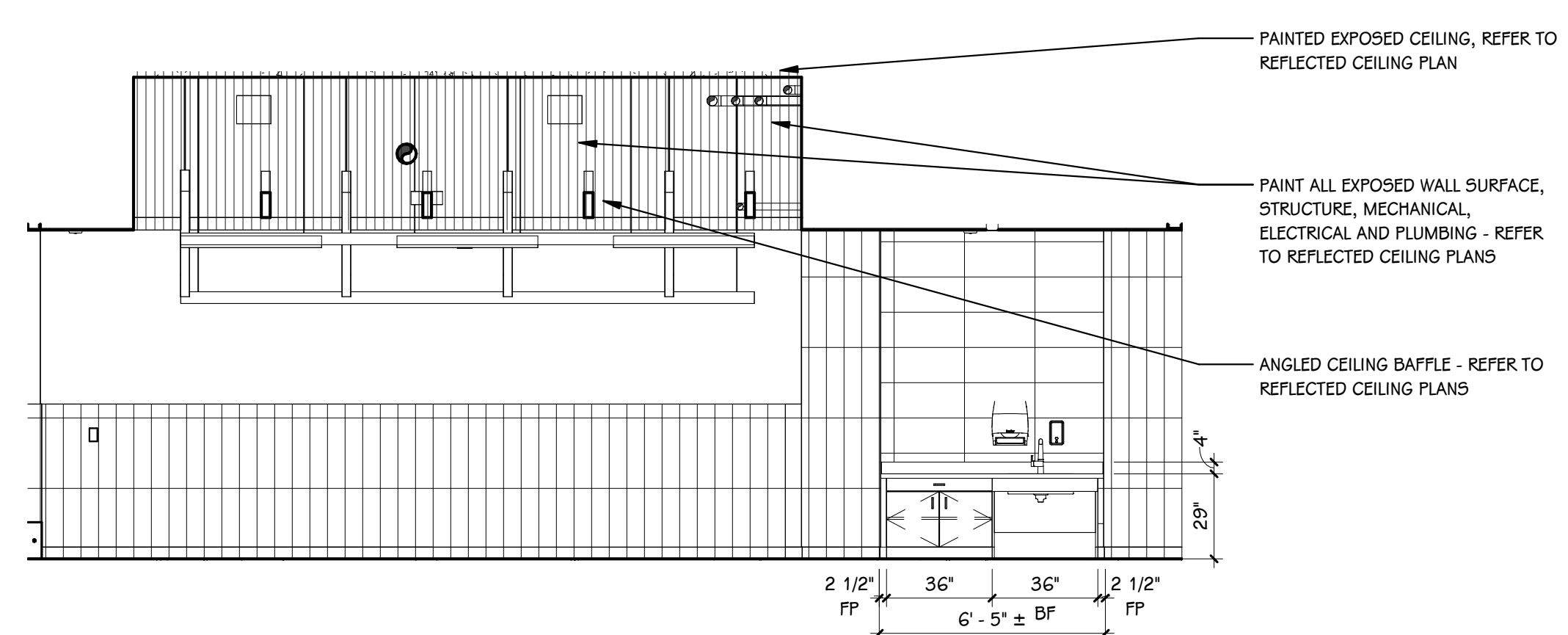
Portage, Michigan

SHEET TITLE  
INTERIOR ELEVATIONS

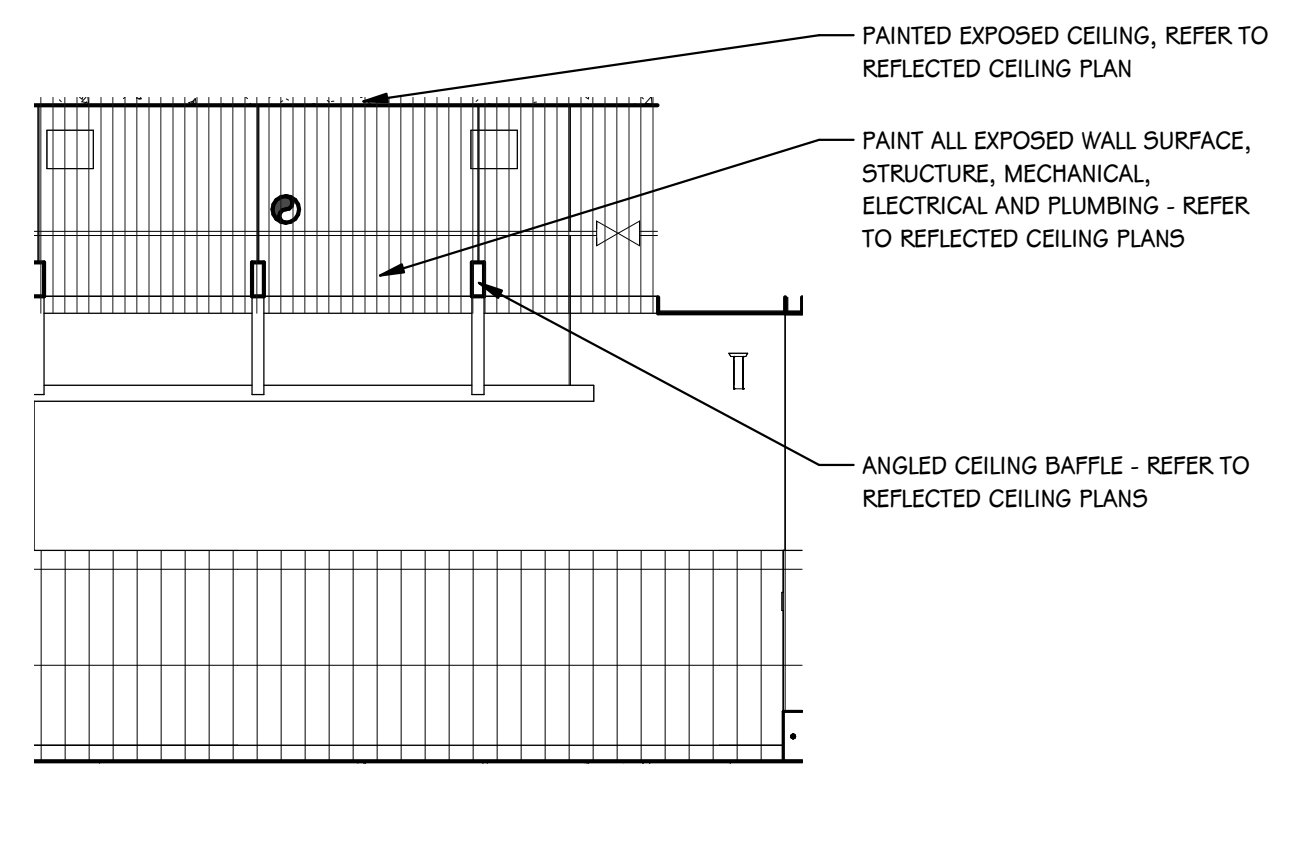
DATE  
JUNE 30, 2023

SHEET NUMBER  
**1304**  
21-237.20

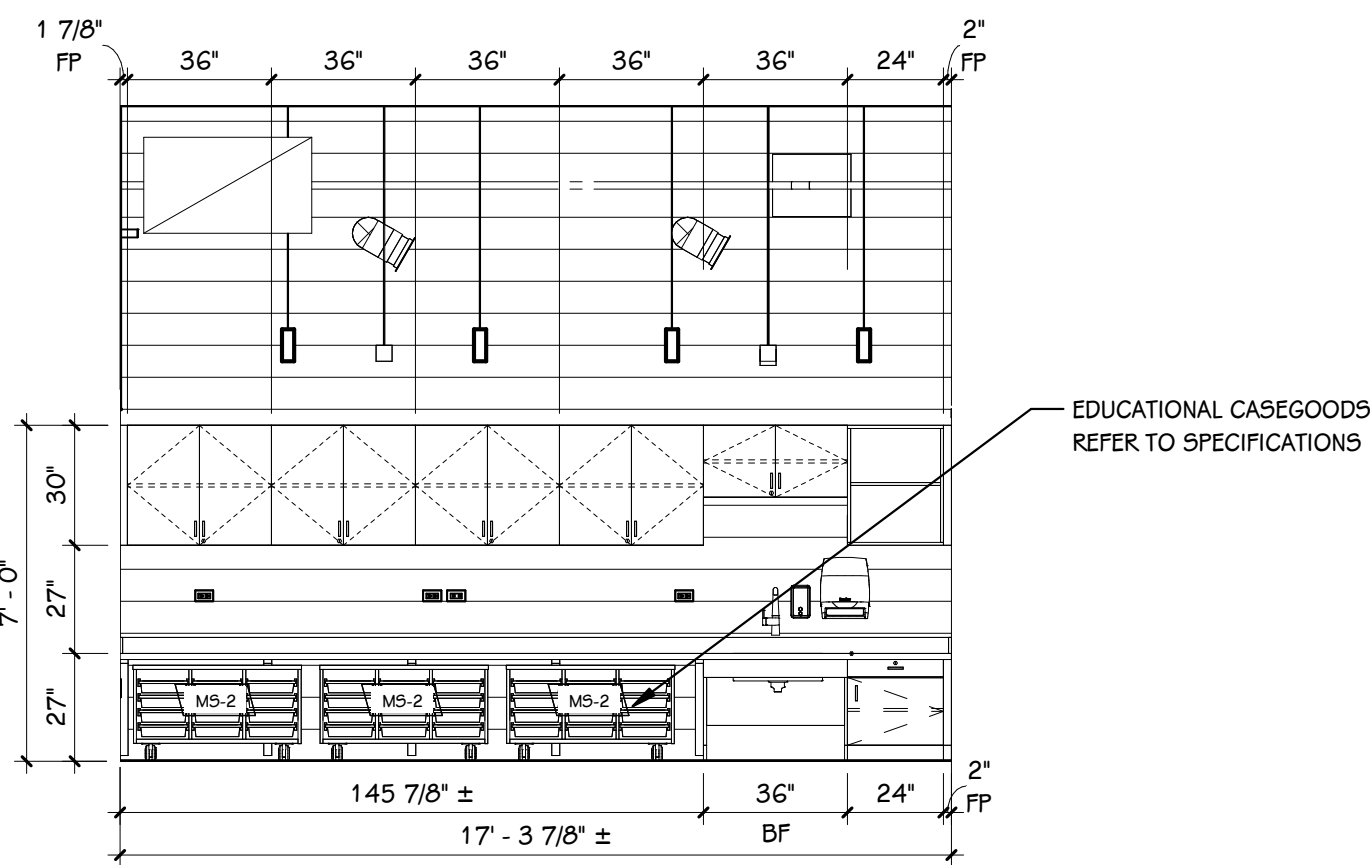
- GENERAL NOTES - INTERIOR ELEVATIONS**
- REFER TO FINISH PLANS FOR CALLOUTS OF MILLWORK OR ENLARGED FINISH PLANS FOR SCOPE NOT COVERED WITHIN INTERIOR ELEVATIONS.
  - REFER TO PATTERN ELEVATIONS FOR COLOR-BLOCKING AND PATTERNED INSTALLATION DETAILS OF PAINT AND ACOUSTICAL WALL PANELS.
  - REFER TO FINISH PLANS AND SPECIFICATION FOR EDUCATIONAL CASEGOODS NOT INCLUDED WITHIN CASEWORK PACKAGE.
  - REFER TO FINISH PLANS FOR VISUAL DISPLAY BOARD AND CORNER GUARD TAGS.
  - NOT ALL MATERIALS ARE ILLUSTRATED, REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
  - AT AREAS OF EXPOSED CEILING, WALL SURFACE SHALL BE PAINTED TO MATCH CEILING ABOVE HEIGHT INDICATED, REFER TO REFLECTED CEILING PLAN KEY FOR PAINT COLOR.
- GENERAL NOTES - CASEWORK**
- VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.
  - FILLER PANELS SHALL BE NO LESS THAN 2" WIDE, UNLESS NOTED OTHERWISE.
  - REFER TO FLOOR FINISH PLANS FOR CASEWORK AND COUNTERTOP FINISHES BY ROOM.
  - FINISH ANY EXPOSED END PANELS, UNDERSIDE OF CABINETS OR OPEN CABINETS, WITH PLASTIC LAMINATE SPECIFIED FOR FRONTS IN THAT ROOM.
  - ALL VERTICAL AND HORIZONTAL EXPOSED AND SEMI-EXPOSED SURFACES TO BE FINISHED WITH BODY PLASTIC LAMINATE.
  - SUPPORT BRACKETS ARE REQUIRED EVERY 36" O.C. AT AREAS WHERE COUNTERTOP IS OPEN UNDERNEATH. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING BRACKETS APPROPRIATELY SIZED BASED ON DEPTH OF COUNTER.
  - PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AIA STANDARDS, UNLESS NOTED OTHERWISE.
  - LOCKS SHALL BE PROVIDED WHERE ILLUSTRATED, KEYS ALIKE BY ROOM, OR BY EACH GROUPING / RUN OF CUBBIES.
  - GROMMET LOCATIONS SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO INSTALLATION - COORDINATE WITH POWER & DATA LOCATIONS FOR ANY ADDITIONAL WIRE MANAGEMENT REQUIREMENTS.
  - 'SLABSMITHING' WILL BE REQUIRED IN INSTANCES WHERE A PATTERNED SOLID SURFACE IS SPECIFIED.
  - WHERE CASEWORK IS INDICATED TO RECEIVE RESIDENTIAL APPLIANCES OR OWNER-FURNISHED EQUIPMENT, COORDINATE WITH FINAL OWNER-PROVIDED SELECTIONS.
- STANDARD ABBREVIATIONS - CASEWORK**
- |     |              |     |                       |
|-----|--------------|-----|-----------------------|
| ADJ | ADJUSTABLE   | FP  | FILLER PANEL          |
| BF  | BARRIER FREE | RP  | REMOVABLE PANEL       |
| EP  | END PANEL    | P/O | PULL OUT TRASH DRAWER |
- HARDWARE AND ACCESSORY SELECTIONS - CASEWORK**
- FULLS:  
BENTWIRE - NICKEL FINISH, OR SIMILAR.
- COUNTERTOP EDGES:  
PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE.  
SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.
- SUPPORT BRACKETS:  
METAL STUD WALL CONSTRUCTION - AIA CONCEALED FLAT BRACKETS, OR A 4 M HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.)  
CMU WALL CONSTRUCTION - AIA HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.)
- PULL-OUT TRASH DRAWERS:  
RICHELIEU 53WC SERIES RECYCLING CENTER IN SILVER GRAY (INCLUDE 2 BINS), OR SIM.



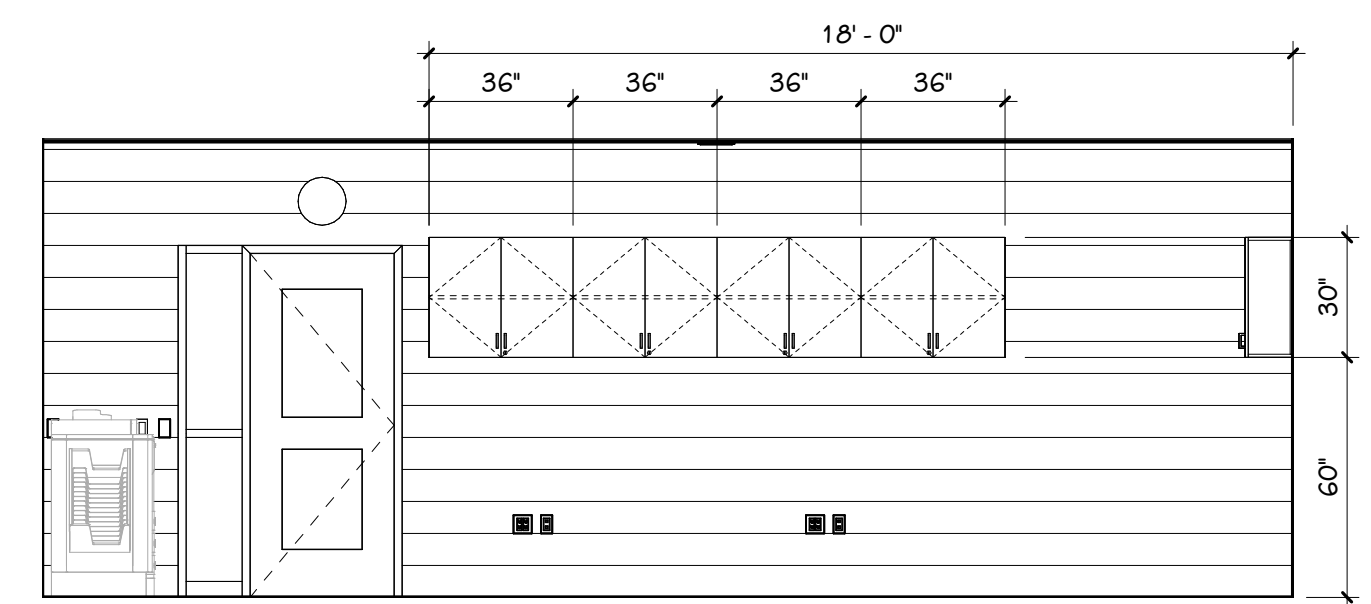
31  
1304  
**COMMONS 130 - EAST**  
1/4" = 1'-0"



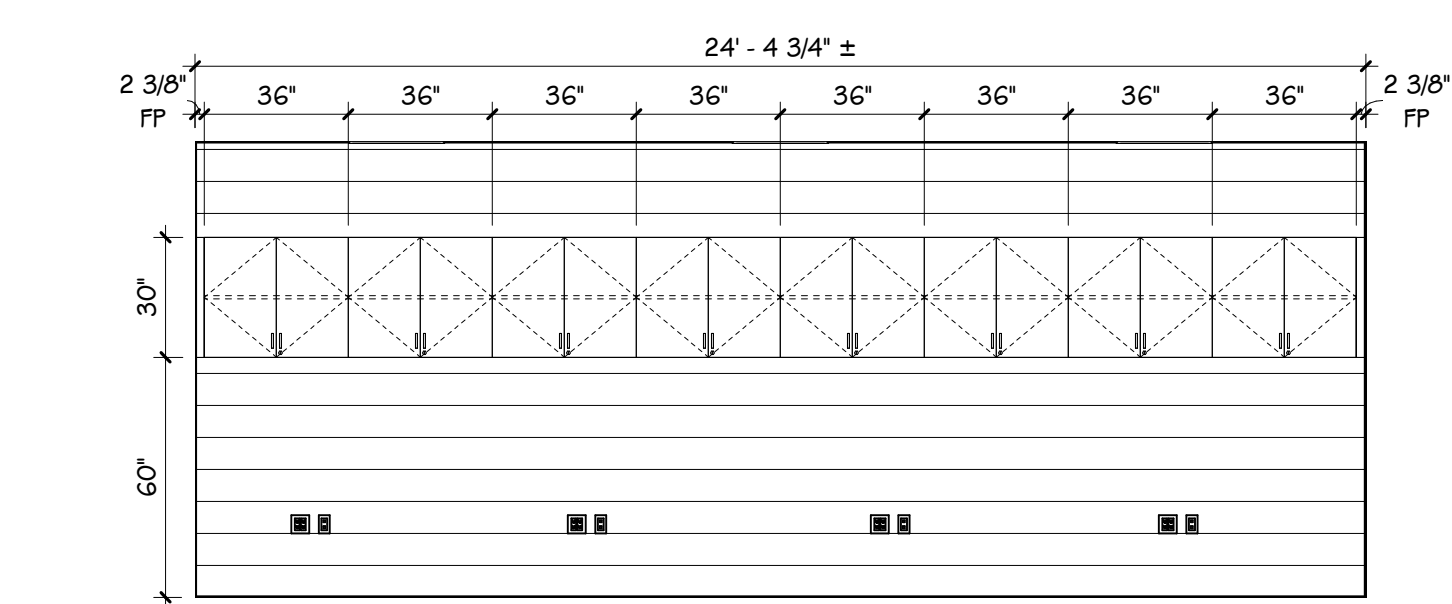
32  
1304  
**COMMONS 130 - WEST**  
1/4" = 1'-0"



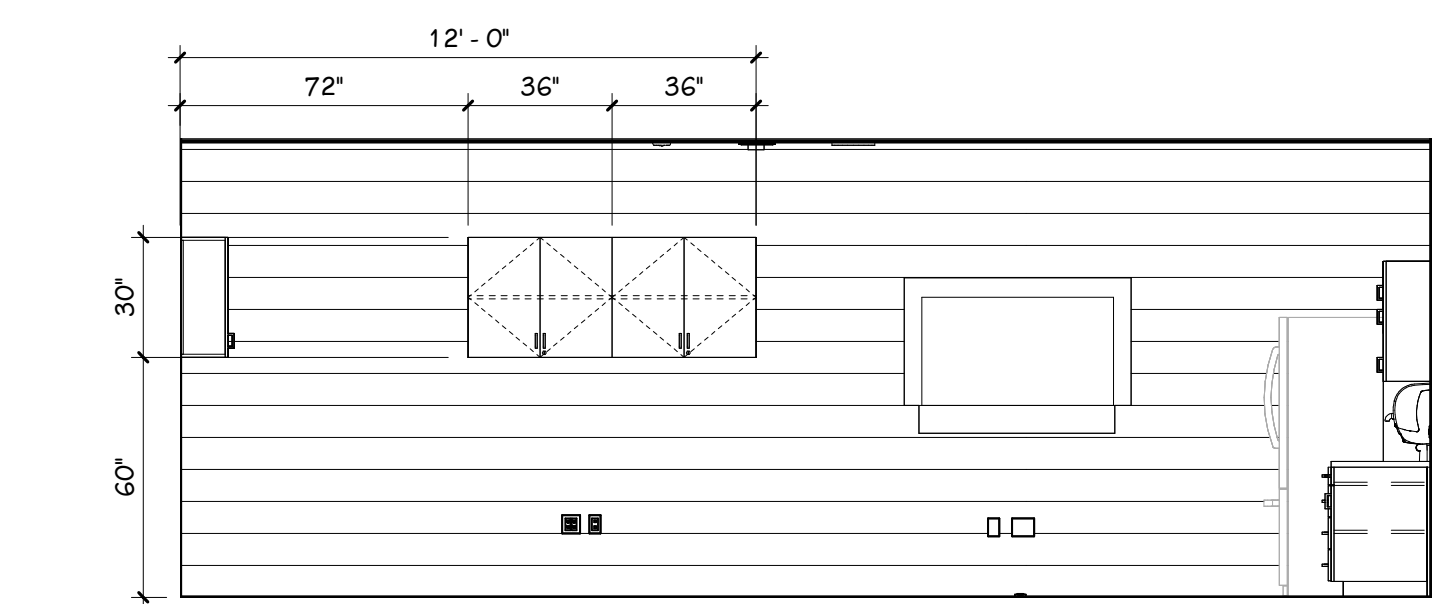
33  
1304  
**Y5/FLEX STUDIO SINK 131 - EAST**  
1/4" = 1'-0"



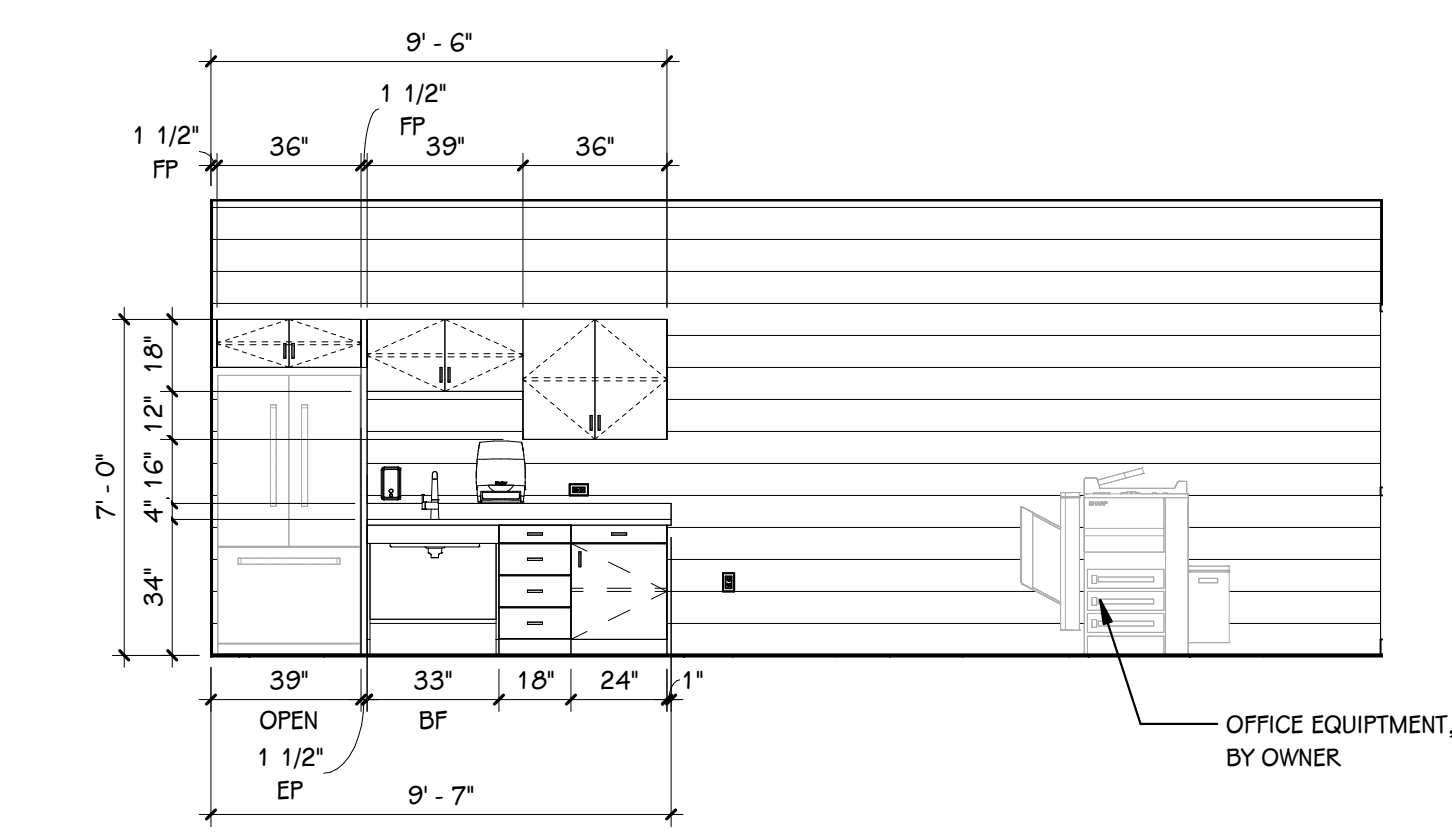
34  
1304  
**EDUC WORKSHOP 133 - NORTH**  
1/4" = 1'-0"



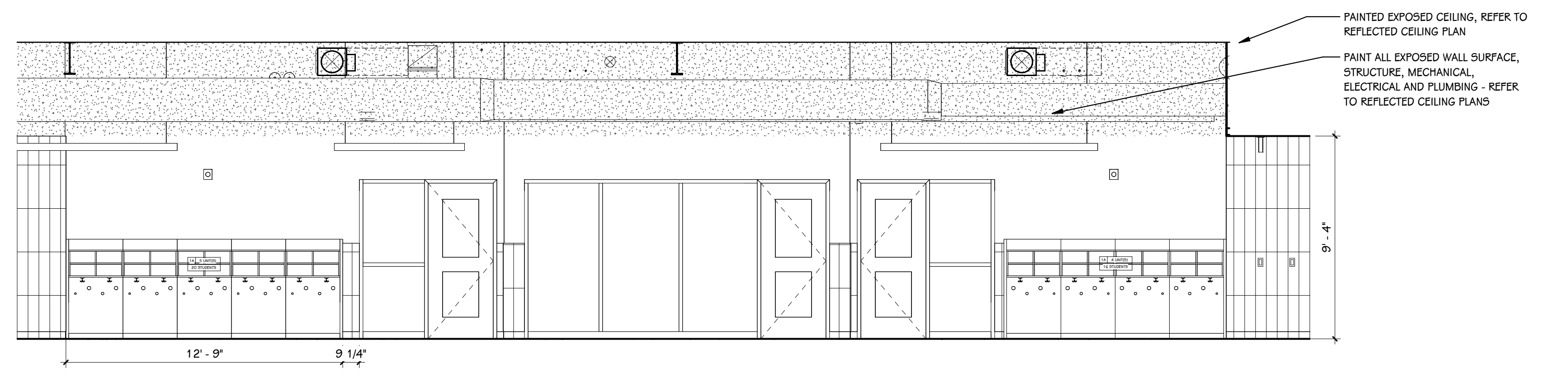
35  
1304  
**EDUC WORKSHOP 133 - EAST**  
1/4" = 1'-0"



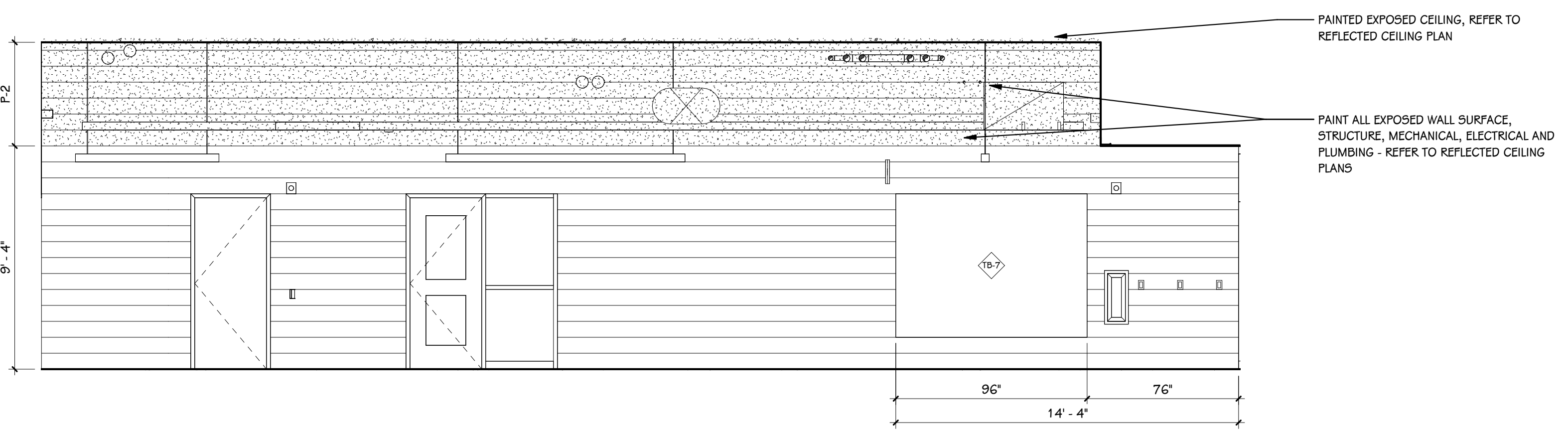
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1304  
**EDUC WORKSHOP 133 - SOUTH**  
1/4" = 1'-0"



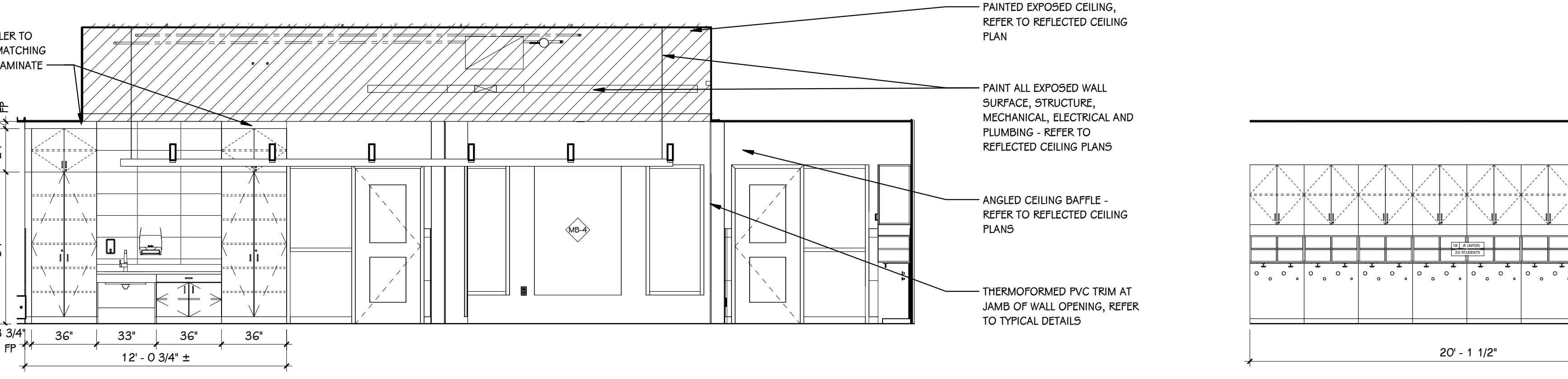
37  
1304  
**EDUC WORKSHOP 133 - WEST**  
1/4" = 1'-0"



38  
1304  
**PASSAGEWAY 140H - NORTH**  
1/4" = 1'-0"

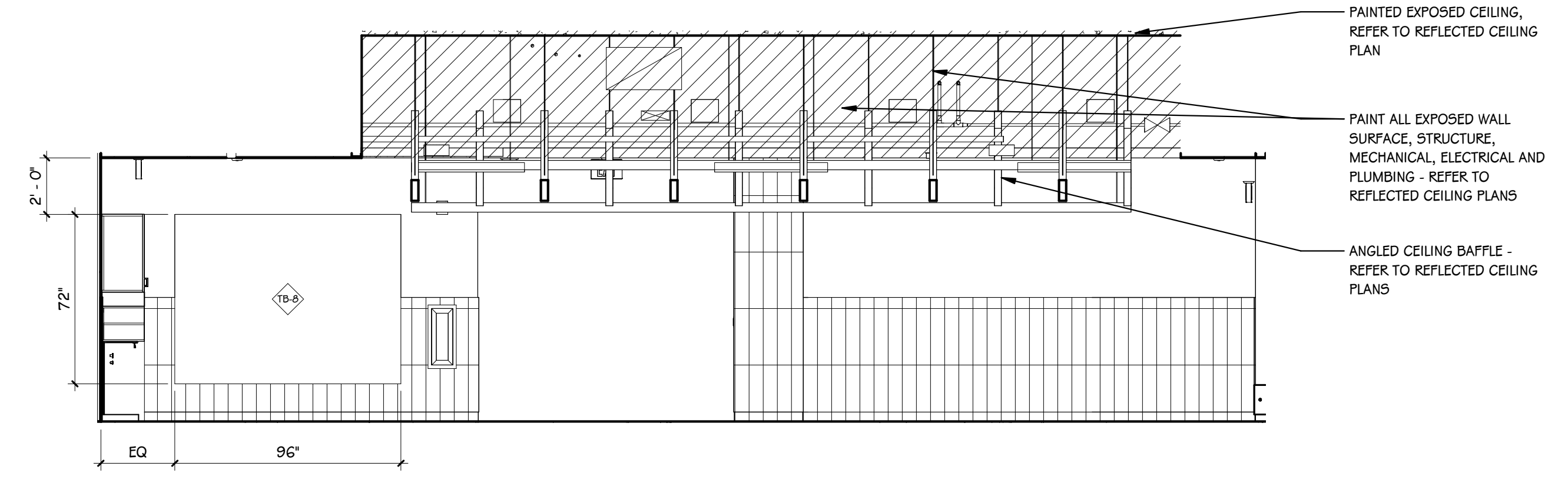


40  
1304  
**PASSAGEWAY 140H - WEST**  
1/4" = 1'-0"

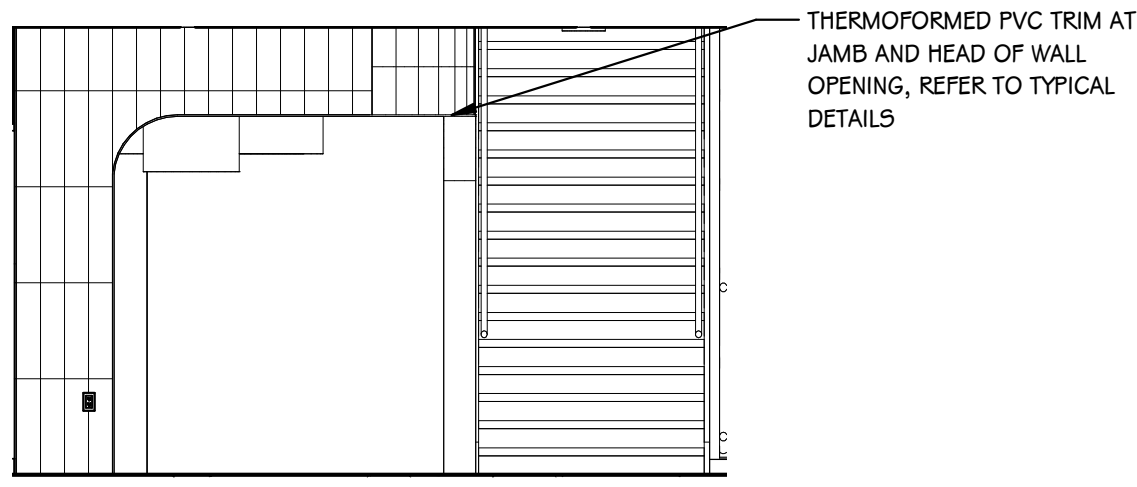


41  
1304  
**COMMONS 140 - EAST**  
1/4" = 1'-0"

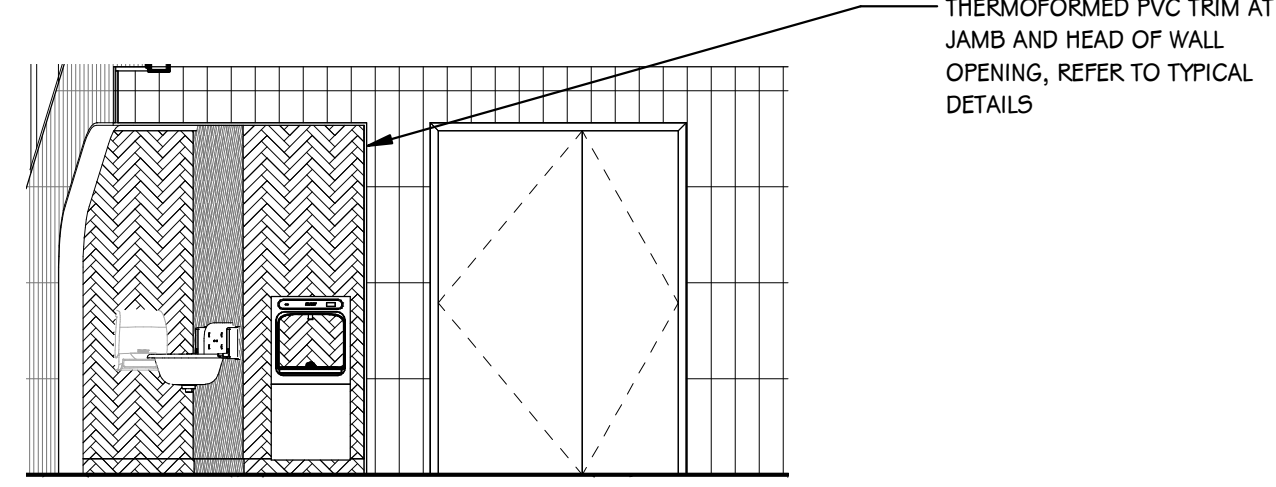
42  
1304  
**COMMONS 140 - SOUTH**  
1/4" = 1'-0"



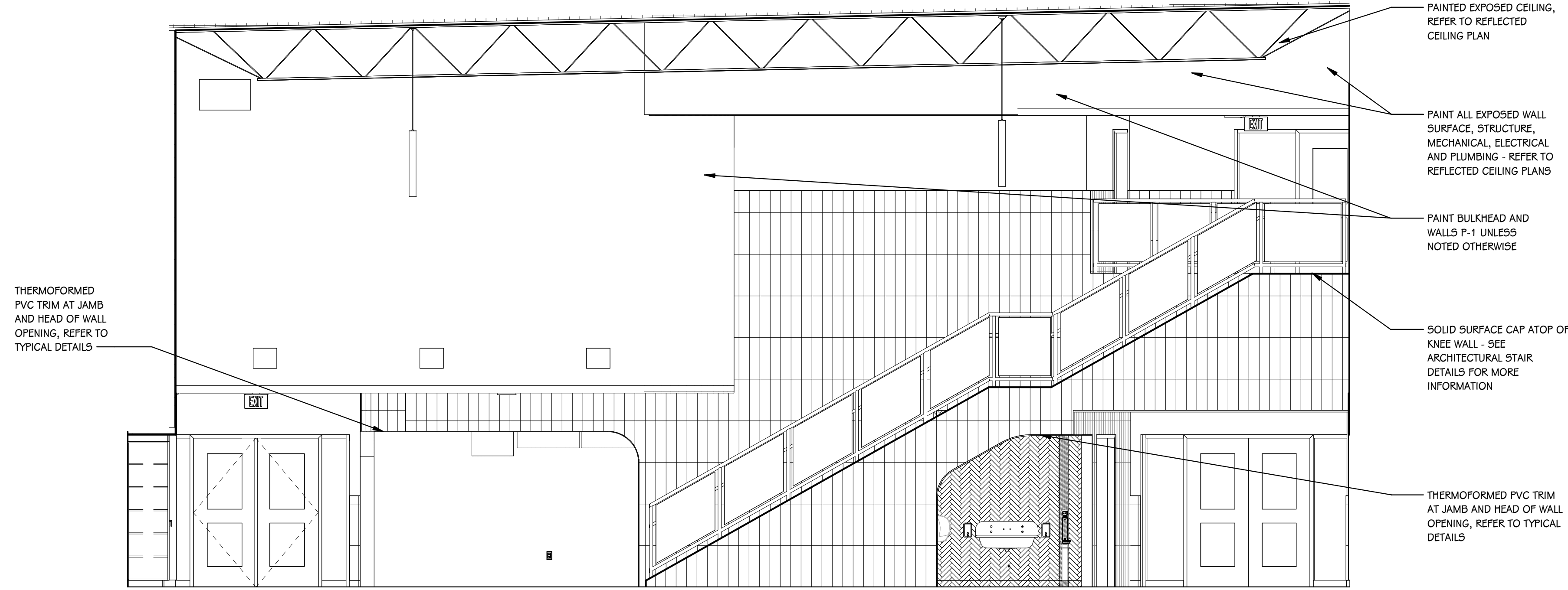
43  
1304  
**COMMONS 140 - WEST**  
1/4" = 1'-0"



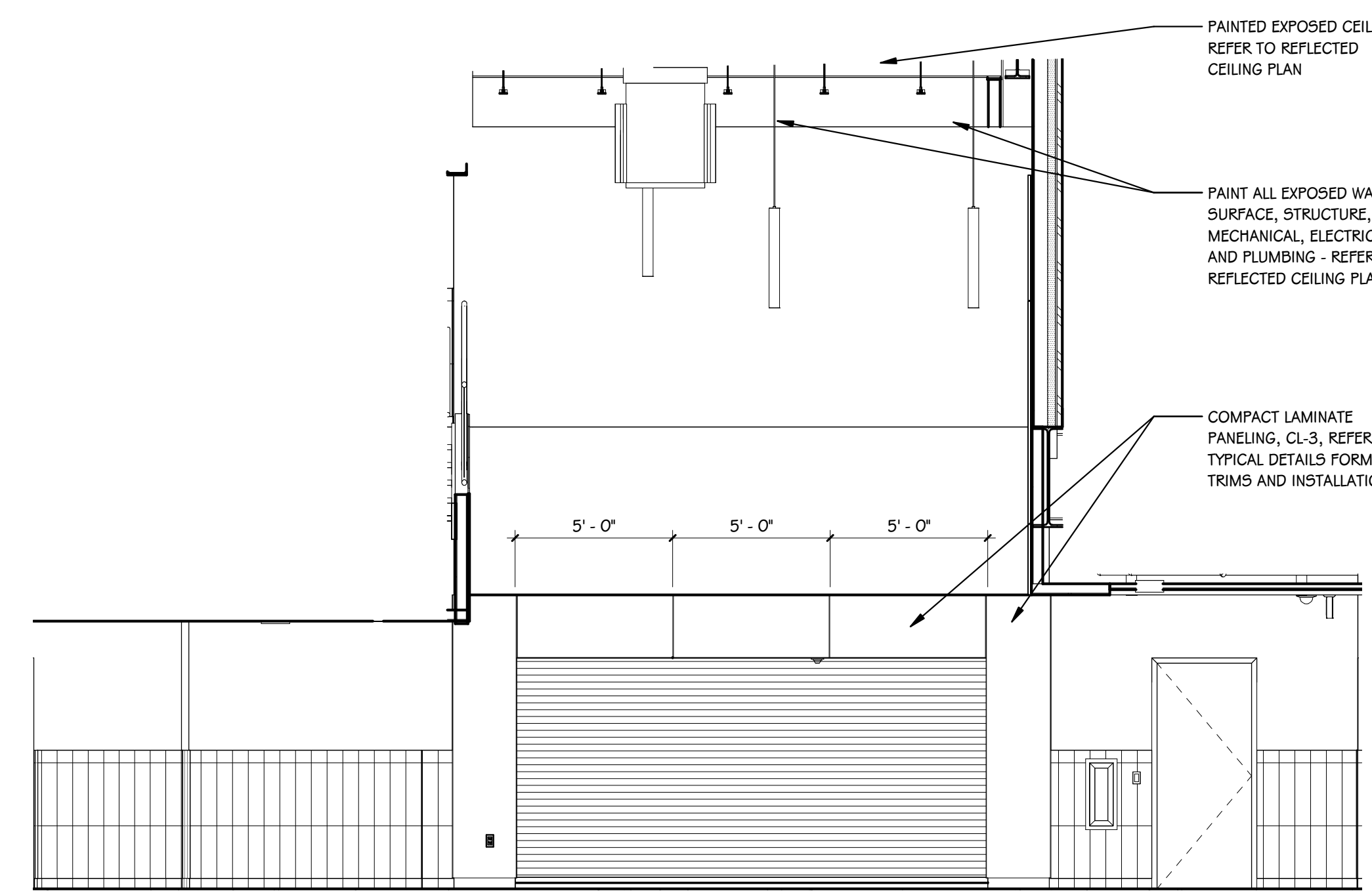
44 CAFE ENTRY 160 - EAST  
1/4" = 1'-0"



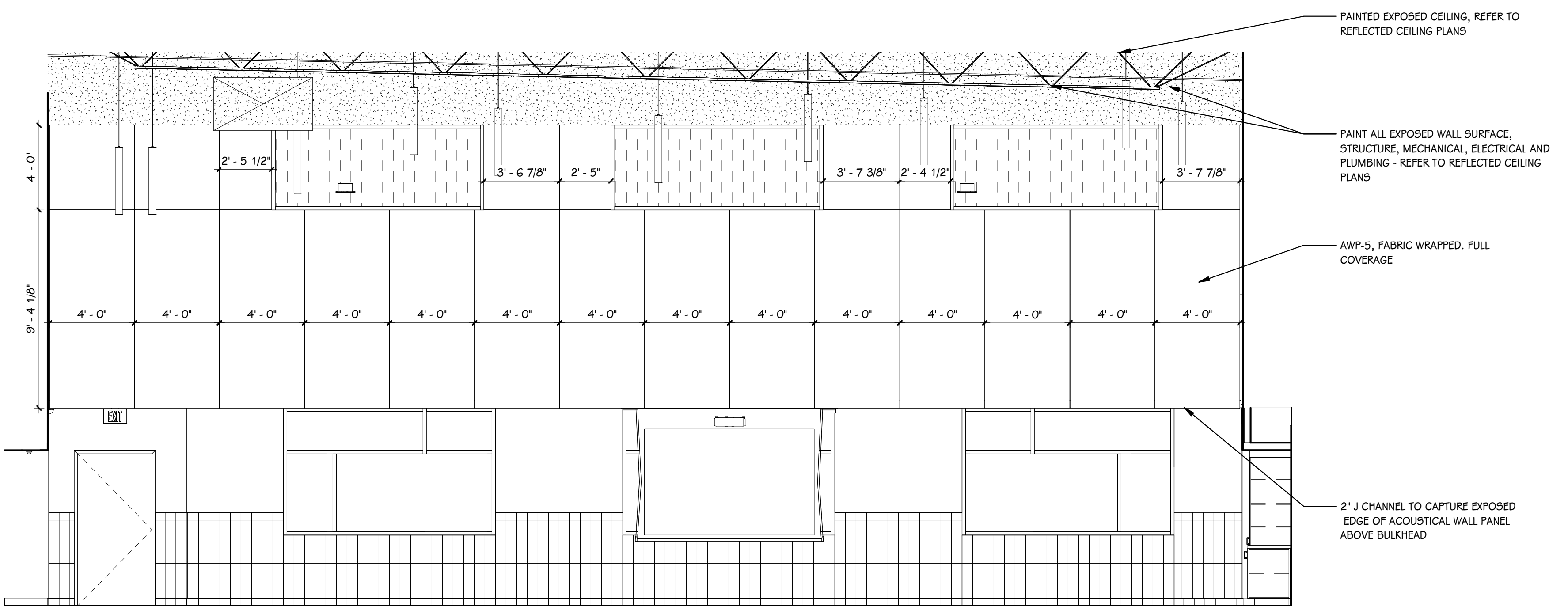
45 CAFE WATER FOUNTAIN 160 - WEST  
1/4" = 1'-0"



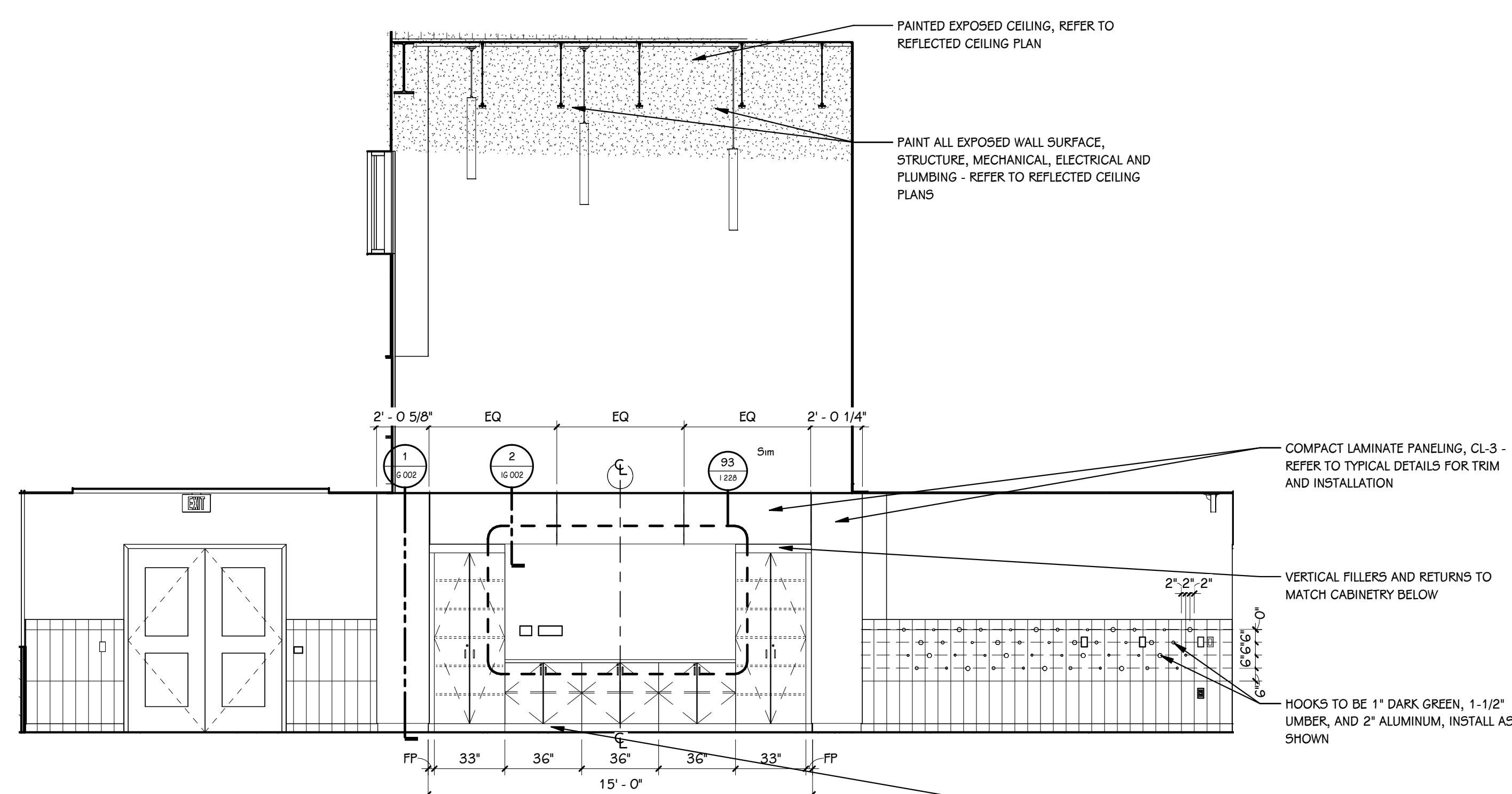
46 CAFE 160 - NORTH  
1/4" = 1'-0"



47 CAFE 160 - EAST  
1/4" = 1'-0"



48 CAFE 160 - SOUTH  
1/4" = 1'-0"



49 CAFE 160 - WEST  
1/4" = 1'-0"

**GENERAL NOTES - INTERIOR ELEVATIONS**

1. REFER TO FINISH PLANS FOR CALLOUTS OF MILLWORK OR ENLARGED FINISH PLANS FOR SCOPE NOT COVERED WITHIN INTERIOR ELEVATIONS.
2. REFER TO PATTERN ELEVATIONS FOR COLOR-BLOCKING AND PATTERNED INSTALLATION DETAILS OF PAINT AND ACOUSTICAL WALL PANELS.
3. REFER TO FINISH PLANS AND SPECIFICATION FOR EDUCATIONAL CASEGOODS NOT INCLUDED WITHIN CASEWORK PACKAGE.
4. REFER TO FINISH PLANS FOR VISUAL DISPLAY BOARD AND CORNER GUARD TAGS.
5. NOT ALL MATERIALS ARE ILLUSTRATED, REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
6. AT AREAS OF EXPOSED CEILING, WALL SURFACE SHALL BE PAINTED TO MATCH CEILING ABOVE HEIGHT INDICATED, REFER TO REFLECTED CEILING PLAN KEY FOR PAINT COLOR.

**GENERAL NOTES - CASEWORK**

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2. FILLER PANELS SHALL BE NO LESS THAN 2' WIDE, UNLESS NOTED OTHERWISE.
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7. PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AIA STANDARDS, UNLESS NOTED OTHERWISE.
8. LOCKS SHALL BE PROVIDED WHERE ILLUSTRATED, KEYS ALIKE BY ROOM, OR BY EACH GROUPING / RUN OF CUBBIES.
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10. 'SLABSMITHING' WILL BE REQUIRED IN INSTANCES WHERE A PATTERNED SOLID SURFACE IS SPECIFIED.
11. WHERE CASEWORK IS INDICATED TO RECEIVE RESIDENTIAL APPLIANCES OR OWNER-FURNISHED EQUIPMENT, COORDINATE WITH FINAL OWNER-PROVIDED SELECTIONS.

**STANDARD ABBREVIATIONS - CASEWORK**

ADJ	ADJUSTABLE	FP	FILLER PANEL
BF	BARRIER FREE	RP	REMOVABLE PANEL
EP	END PANEL	PYO	PULL OUT TRASH DRAWER

**HARDWARE AND ACCESSORY SELECTIONS - CASEWORK**

- FULLS:  
BENTWIRE - NICKEL FINISH, OR SIMILAR
- COUNTERTOP EDGES:  
PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE.  
SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.
- SUPPORT BRACKETS:  
METAL STUD WALL CONSTRUCTION - AIA CONCEALED FLAT BRACKETS, OR A 4 M HEAVY-DUTY HYBRID BRACKETS (SIZE AS REQ'D.)  
CMU WALL CONSTRUCTION - AIA HEAVY-DUTY HYBRID BRACKETS (SIZE AS REQ'D.)
- PULL-OUT TRASH DRAWERS:  
RICHELIEU 53WC SERIES RECYCLING CENTER IN SILVER GRAY (INCLUDE 2 BINS), OR SIM.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

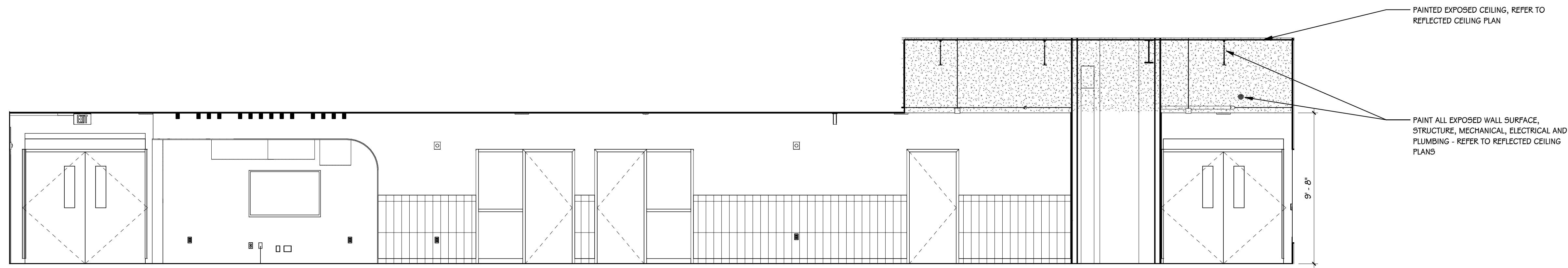
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

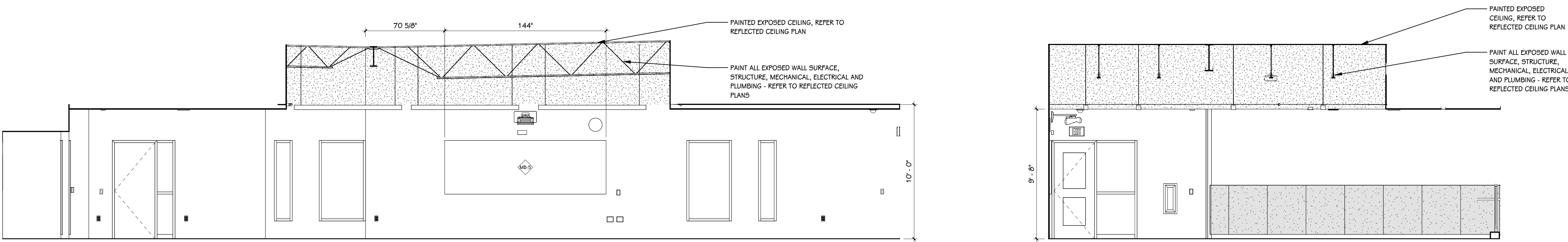
SHEET TITLE  
INTERIOR ELEVATIONS

DATE  
JUNE 30, 2023

SHEET NUMBER  
1305  
21-237.20

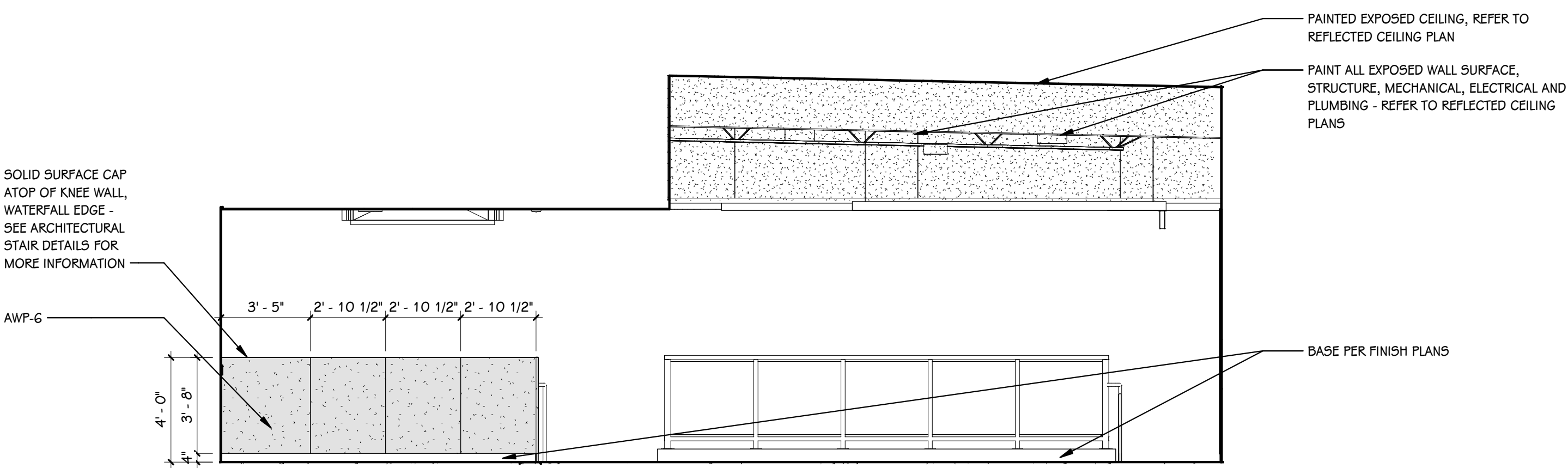


50 COMMONS 210 - NORTH  
1/4" = 1'-0"

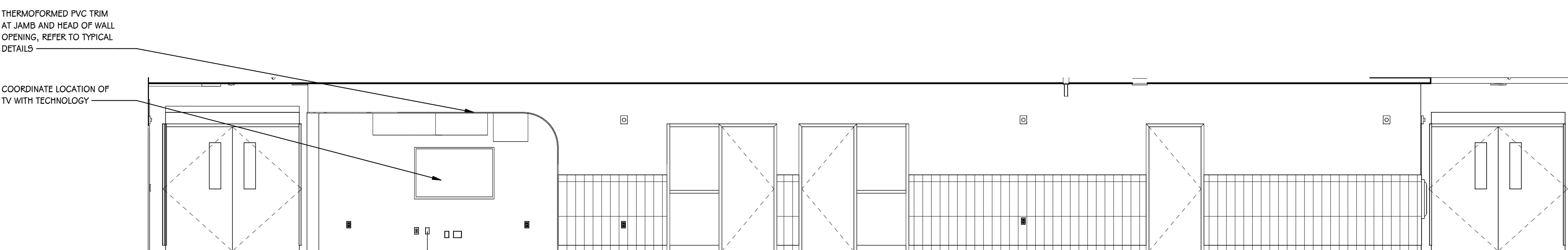


51 COMMONS 210 - EAST  
1/4" = 1'-0"

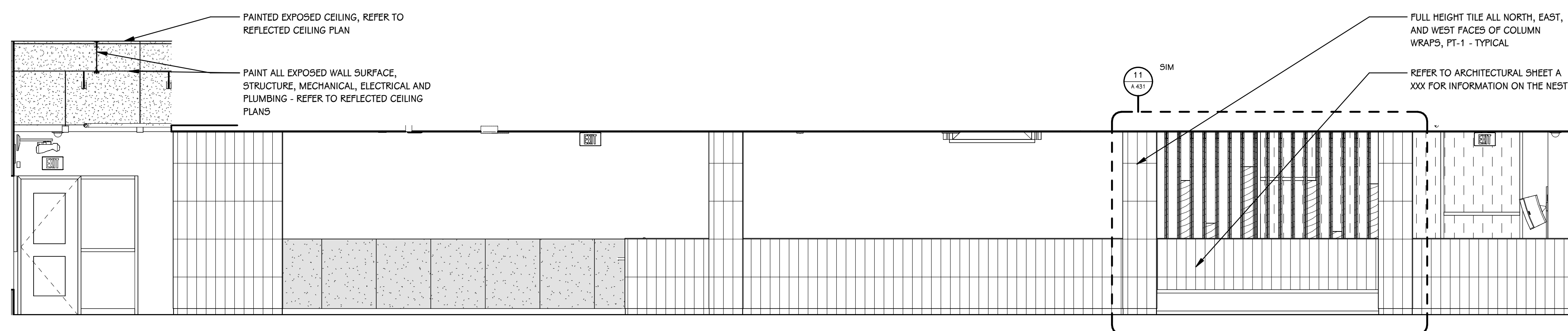
52 COMMONS 210 - SOUTH  
1/4" = 1'-0"



53 COMMONS 210 - WEST  
1/4" = 1'-0"



54 PASSAGEWAY 210H - NORTH  
1/4" = 1'-0"



55 PASSAGEWAY 210H - SOUTH  
1/4" = 1'-0"

**GENERAL NOTES - INTERIOR ELEVATIONS**

1. REFER TO FINISH PLANS FOR CALLOUTS OF MILLWORK OR ENLARGED FINISH PLANS FOR SCOPE NOT COVERED WITHIN INTERIOR ELEVATIONS.
2. REFER TO PATTERN ELEVATIONS FOR COLOR-BLOCKING AND PATTERNED INSTALLATION DETAILS OF PAINT AND ACOUSTICAL WALL PANELS.
3. REFER TO FINISH PLANS AND SPECIFICATION FOR EDUCATIONAL CASEGOODS NOT INCLUDED WITHIN CASEWORK PACKAGE.
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**GENERAL NOTES - CASEWORK**

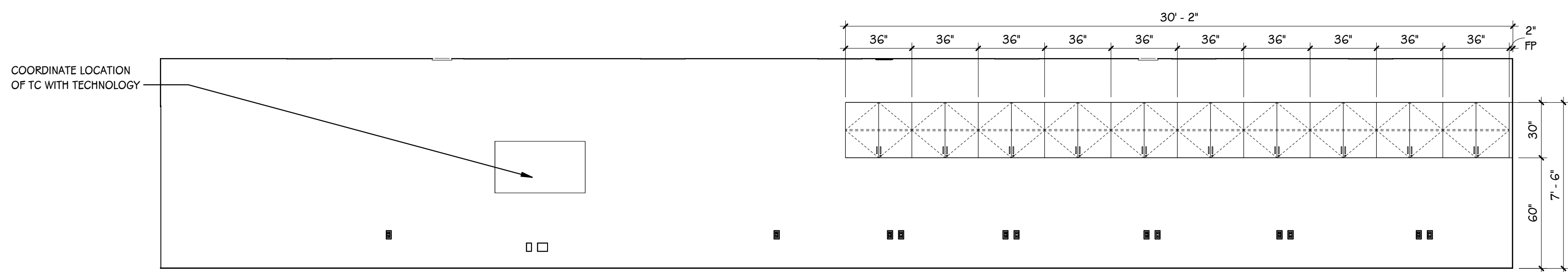
1. VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.
2. FILLER PANELS SHALL BE NO LESS THAN 2' WIDE, UNLESS NOTED OTHERWISE.
3. REFER TO FLOOR FINISH PLANS FOR CASEWORK AND COUNTERTOP FINISHES BY ROOM.
4. FINISH ANY EXPOSED END PANELS, UNDERSIDE OF CABINETS OR OPEN CABINETS, WITH PLASTIC LAMINATE SPECIFIED FOR FRONTS IN THAT ROOM.
5. ALL VERTICAL AND HORIZONTAL EXPOSED AND SEMI-EXPOSED SURFACES TO BE FINISHED WITH BODY PLASTIC LAMINATE.
6. SUPPORT BRACKETS ARE REQUIRED EVERY 36" O.C. AT AREAS WHERE COUNTERTOP IS OPEN UNDERNEATH. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING BRACKETS APPROPRIATELY SIZED BASED ON DEPTH OF COUNTERTOP.
7. PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AIA STANDARDS, UNLESS NOTED OTHERWISE.
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11. WHERE CASEWORK IS INDICATED TO RECEIVE RESIDENTIAL APPLIANCES OR OWNER-FURNISHED EQUIPMENT, COORDINATE WITH FINAL OWNER-PROVIDED SELECTIONS.

**STANDARD ABBREVIATIONS - CASEWORK**

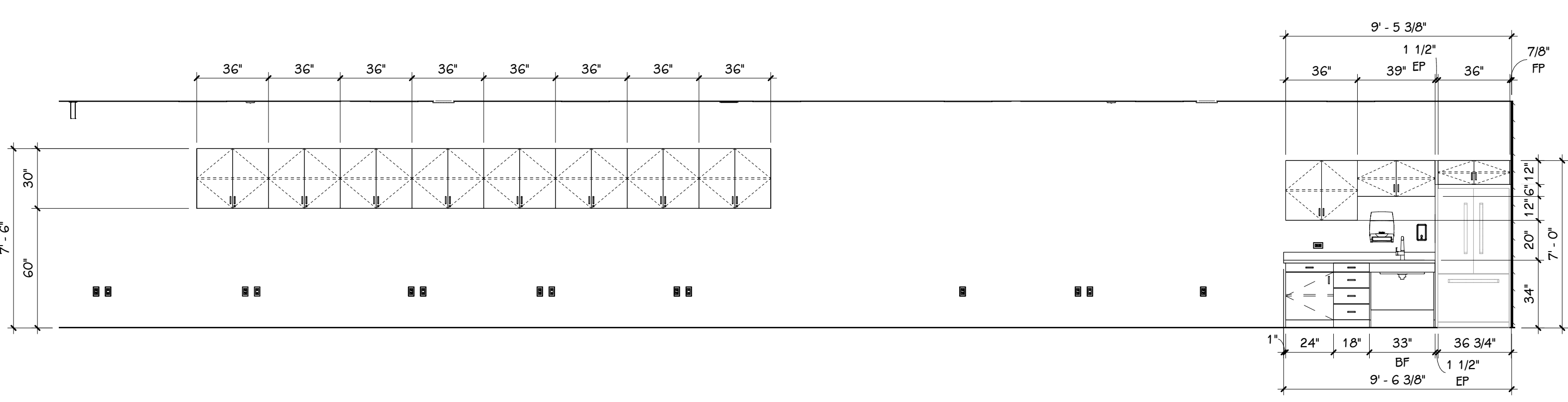
ADJ	ADJUSTABLE	FP	FILLER PANEL
BF	BARrier FREE	RP	REMOVABLE PANEL
EP	END PANEL	P/O	PULL OUT TRASH DRAWER

**HARDWARE AND ACCESSORY SELECTIONS - CASEWORK**

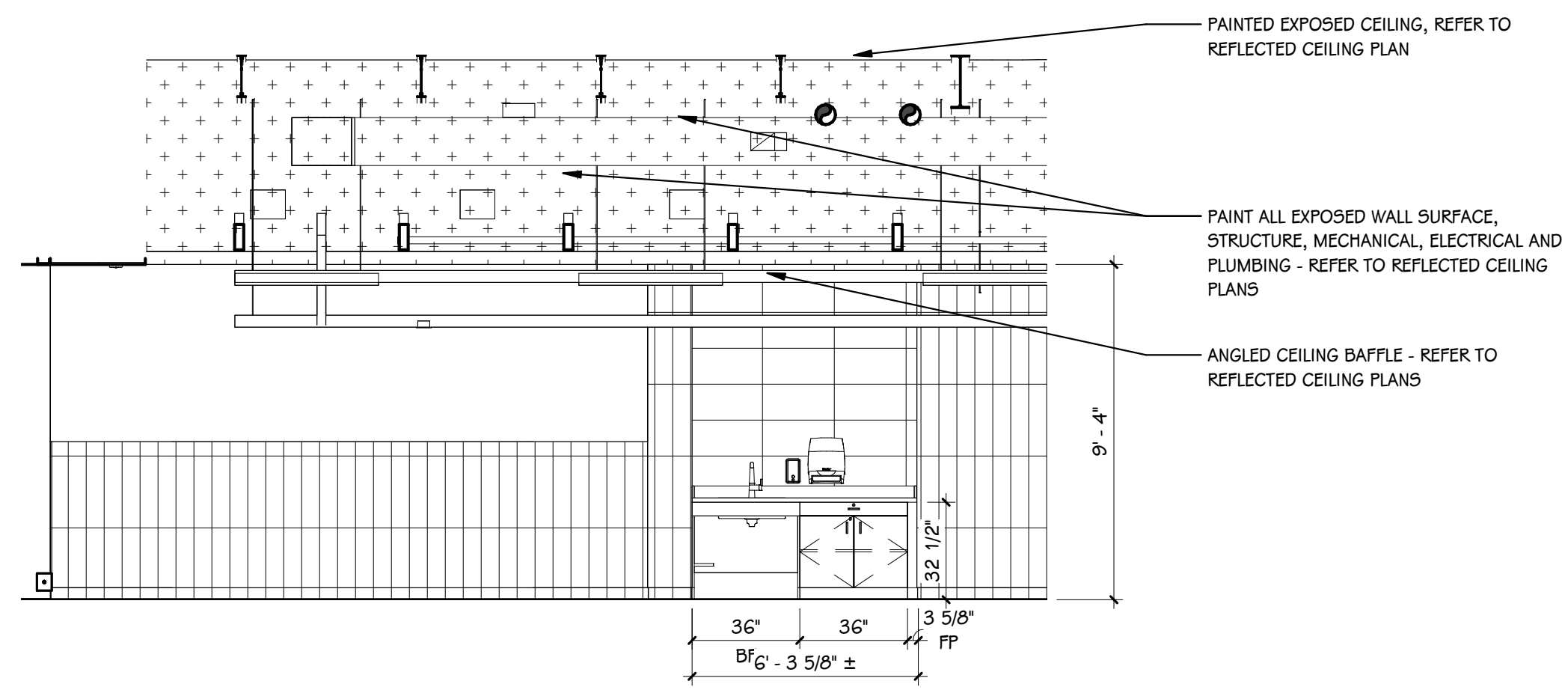
- PULLS:**  
BENTWIRE - NICKEL FINISH, OR SIMILAR.
- COUNTERTOP EDGES:**  
PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE.  
SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.
- SUPPORT BRACKETS:**  
METAL STUD WALL CONSTRUCTION - AMM CONCEALED FLAT BRACKETS, OR A 4 M HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.)  
CMU WALL CONSTRUCTION - AMM HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.)
- PULL-OUT TRASH DRAWERS:**  
RICHELIEU 53WC SERIES RECYCLING CENTER IN SILVER GRAY (INCLUDE 2 BINS), OR SIM.



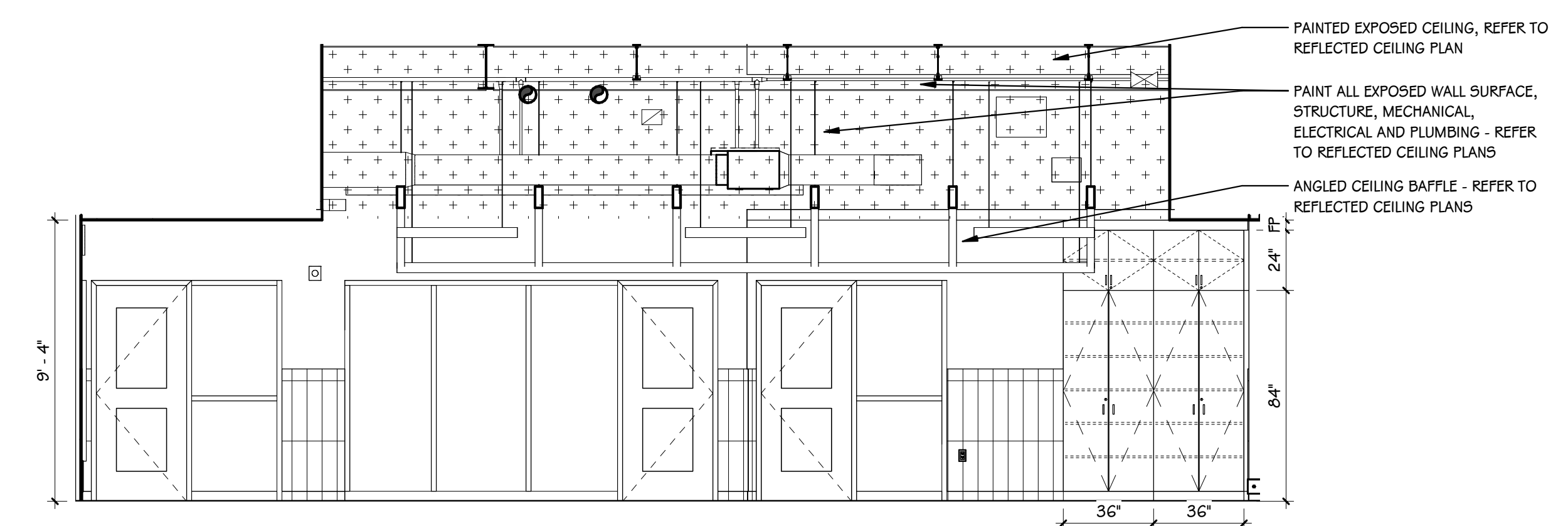
56 ESI HUB 219 - NORTH  
1/4" = 1'-0"



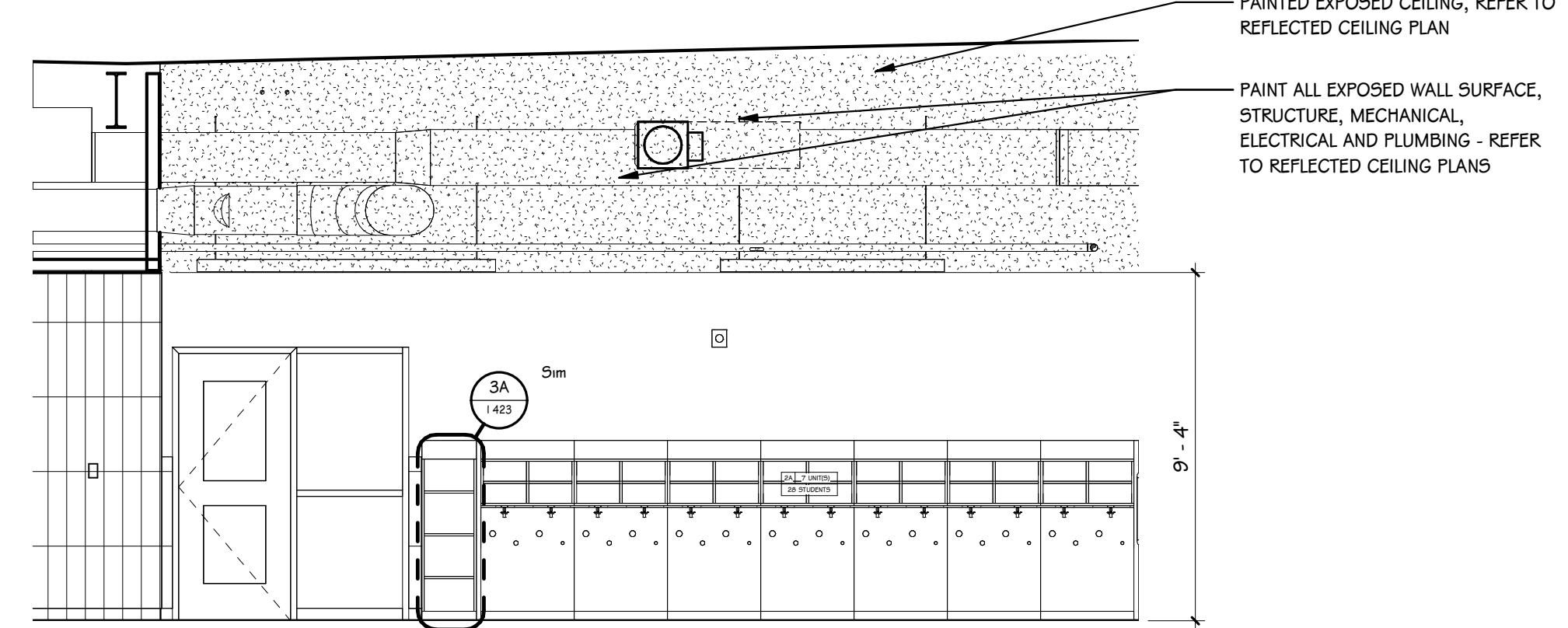
57 ESI HUB 219 - SOUTH  
1/4" = 1'-0"



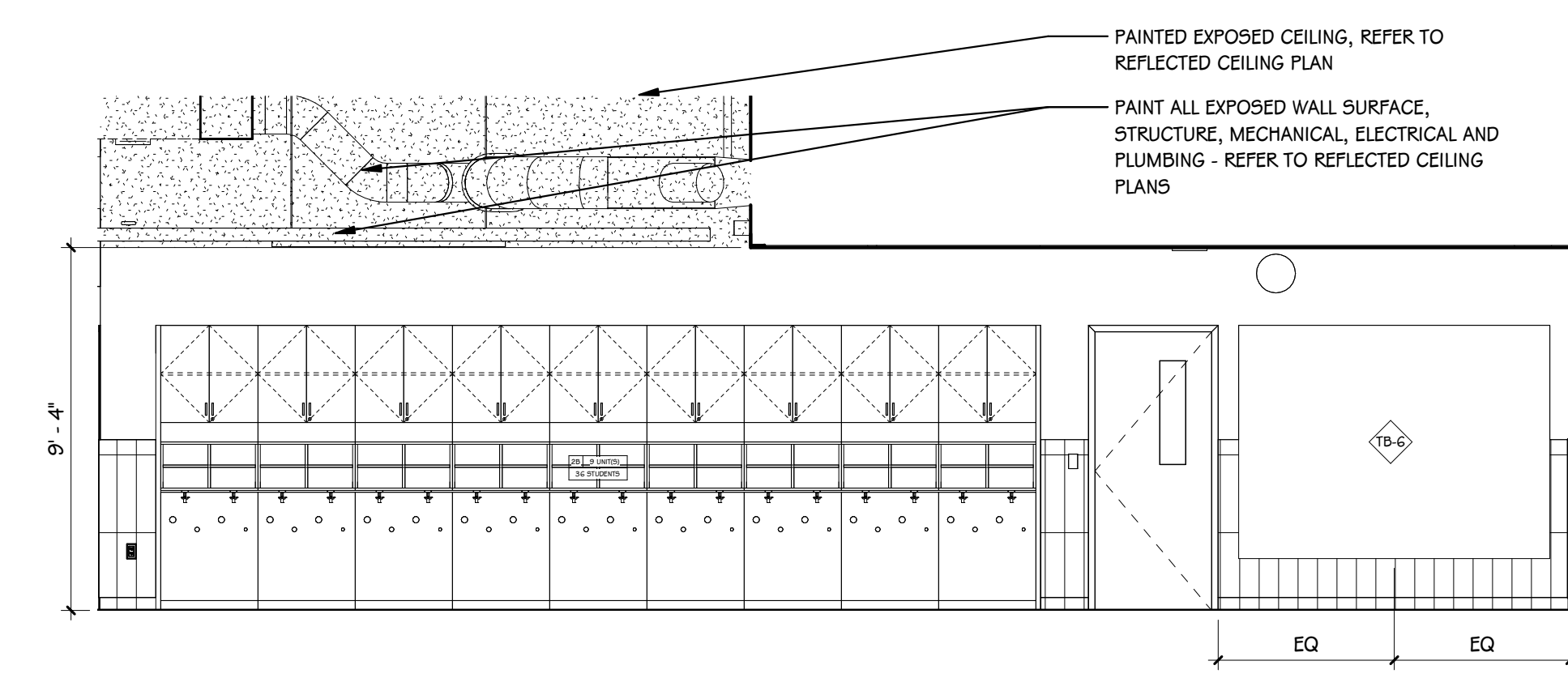
58 COMMONS 220 - EAST  
1/4" = 1'-0"



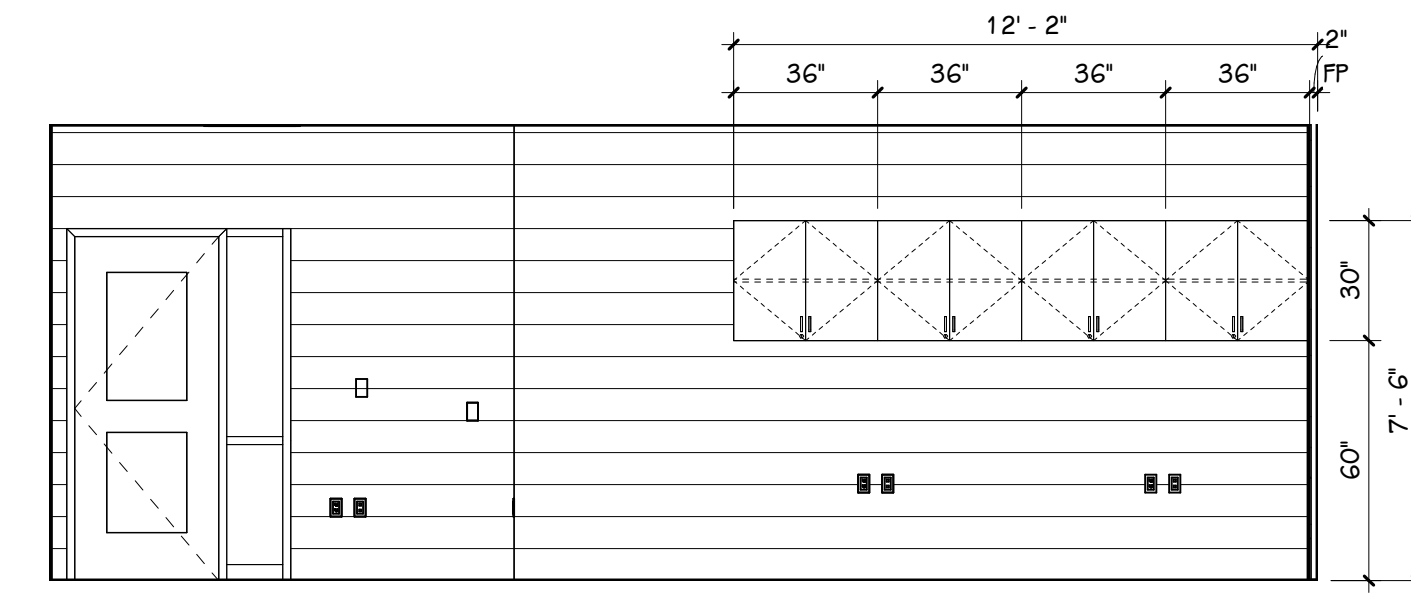
59 COMMONS 220 - WEST  
1/4" = 1'-0"



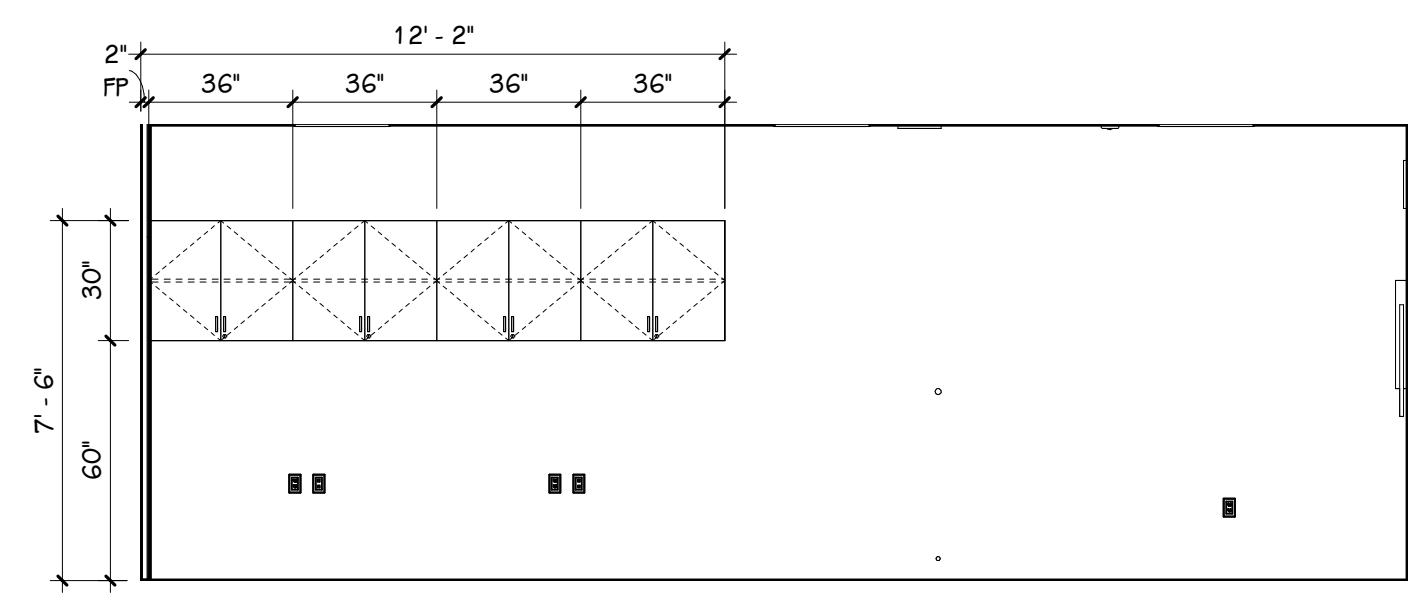
60 PASSAGEWAY 220H - NORTH  
1/4" = 1'-0"



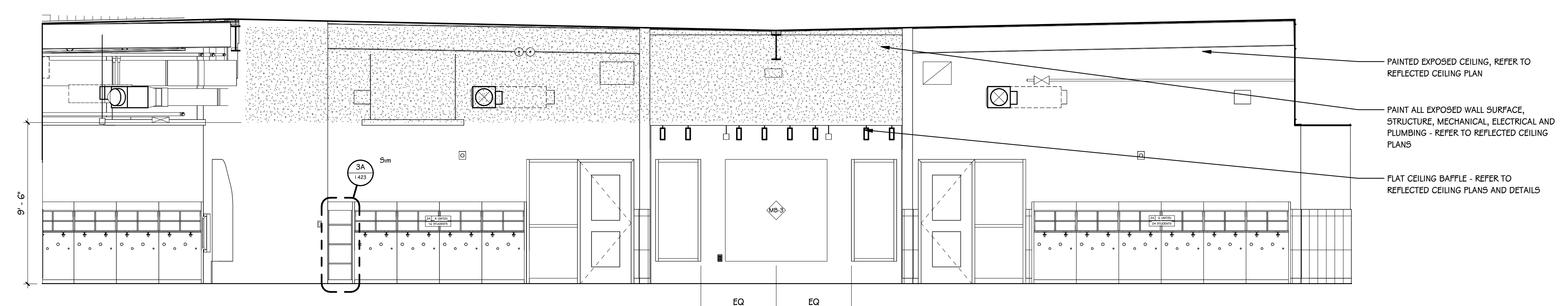
61 PASSAGEWAY 220H - SOUTH  
1/4" = 1'-0"



62 EDUC WORKSHOP 221 - EAST  
1/4" = 1'-0"



63 EDUC WORKSHOP 221 - WEST  
1/4" = 1'-0"



64 PASSAGEWAY 230H - NORTH  
1/4" = 1'-0"

- GENERAL NOTES - INTERIOR ELEVATIONS**
- REFER TO FINISH PLANS FOR CALLOUTS OF MILLWORK OR ENLARGED FINISH PLANS FOR SCOPE NOT COVERED WITHIN INTERIOR ELEVATIONS.
  - REFER TO PATTERN ELEVATIONS FOR COLOR-BLOCKING AND PATTERNED INSTALLATION DETAILS OF PAINT AND ACOUSTICAL WALL PANELS.
  - REFER TO FINISH PLANS AND SPECIFICATION FOR EDUCATIONAL CASEGOODS NOT INCLUDED WITHIN CASEWORK PACKAGE.
  - REFER TO FINISH PLANS FOR VISUAL DISPLAY BOARD AND CORNER GUARD TAGS.
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- GENERAL NOTES - CASEWORK**
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  - REFER TO FLOOR FINISH PLANS FOR CASEWORK AND COUNTERTOP FINISHES BY ROOM.
  - FINISH ANY EXPOSED END PANELS, UNDERSIDE OF CABINETS OR OPEN CABINETS, WITH PLASTIC LAMINATE SPECIFIED FOR FRONTS IN THAT ROOM.
  - ALL VERTICAL AND HORIZONTAL EXPOSED AND SEMI-EXPOSED SURFACES TO BE FINISHED WITH BODY PLASTIC LAMINATE.
  - SUPPORT BRACKETS ARE REQUIRED EVERY 36" O.C. AT AREAS WHERE COUNTERTOP IS OPEN UNDERNEATH. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING BRACKETS APPROPRIATELY SIZED BASED ON DEPTH OF COUNTER.
  - PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AIA STANDARDS, UNLESS NOTED OTHERWISE.
  - LOCKS SHALL BE PROVIDED WHERE ILLUSTRATED, KEYS ALIKE BY ROOM, OR BY EACH GROUPING / RUN OF CUBBIES.
  - GROMMET LOCATIONS SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO INSTALLATION - COORDINATE WITH POWER & DATA LOCATIONS FOR ANY ADDITIONAL WIRE MANAGEMENT REQUIREMENTS.
  - 'SLABSMITHING' WILL BE REQUIRED IN INSTANCES WHERE A PATTERNED SOLID SURFACE IS SPECIFIED.
  - WHERE CASEWORK IS INDICATED TO RECEIVE RESIDENTIAL APPLIANCES OR OWNER-FURNISHED EQUIPMENT, COORDINATE WITH FINAL OWNER-PROVIDED SELECTIONS.

**STANDARD ABBREVIATIONS - CASEWORK**

ADJ	ADJUSTABLE	FP	FILLER PANEL
BF	BARRIER FREE	RP	REMOVABLE PANEL
EP	END PANEL	P/O	PULL OUT TRASH DRAWER

**HARDWARE AND ACCESSORY SELECTIONS - CASEWORK**

PULLS:  
BENTWIRE - NICKEL FINISH, OR SIMILAR

COUNTERTOP EDGES:  
PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE.  
SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.

SUPPORT BRACKETS:  
METAL STUD WALL CONSTRUCTION - 1MM CONCEALED FLAT BRACKETS, OR A 4 M HEAVY-DUTY HYBRID BRACKETS (SIZE AS REQ'D.)  
CMU WALL CONSTRUCTION - 1MM HEAVY-DUTY HYBRID BRACKETS (SIZE AS REQ'D.)

PULL-OUT TRASH DRAWERS:  
RICHELIEU 53WC SERIES RECYCLING CENTER IN SILVER GRAY (INCLUDE 2 BINS), OR SIM.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
INTERIOR ELEVATIONS

DATE  
JUNE 30, 2023

SHEET NUMBER  
**1308**  
21-237.20

- GENERAL NOTES - INTERIOR ELEVATIONS**
- REFER TO FINISH PLANS FOR CALLOUTS OF MILLWORK OR ENLARGED FINISH PLANS FOR SCOPE NOT COVERED WITHIN INTERIOR ELEVATIONS.
  - REFER TO PATTERN ELEVATIONS FOR COLOR-BLOCKING AND PATTERNED INSTALLATION DETAILS OF PAINT AND ACOUSTICAL WALL PANELS.
  - REFER TO FINISH PLANS AND SPECIFICATION FOR EDUCATIONAL CASEGOODS NOT INCLUDED WITHIN CASEWORK PACKAGE.
  - REFER TO FINISH PLANS FOR VISUAL DISPLAY BOARD AND CORNER GUARD TAGS.
  - NOT ALL MATERIALS ARE ILLUSTRATED, REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION.
  - AT AREAS OF EXPOSED CEILING, WALL SURFACE SHALL BE PAINTED TO MATCH CEILING ABOVE HEIGHT INDICATED, REFER TO REFLECTED CEILING PLAN KEY FOR PAINT COLOR.
- GENERAL NOTES - CASEWORK**
- VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.
  - FILLER PANELS SHALL BE NO LESS THAN 2" WIDE, UNLESS NOTED OTHERWISE.
  - REFER TO FLOOR FINISH PLANS FOR CASEWORK AND COUNTERTOP FINISHES BY ROOM.
  - FINISH ANY EXPOSED END PANELS, UNDERSIDE OF CABINETS OR OPEN CABINETS, WITH PLASTIC LAMINATE SPECIFIED FOR FRONTS IN THAT ROOM.
  - ALL VERTICAL AND HORIZONTAL EXPOSED AND SEMI-EXPOSED SURFACES TO BE FINISHED WITH BODY PLASTIC LAMINATE.
  - SUPPORT BRACKETS ARE REQUIRED EVERY 36" O.C. AT AREAS WHERE COUNTERTOP IS OPEN UNDERNEATH. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING BRACKETS APPROPRIATELY SIZED BASED ON DEPTH OF COUNTER.
  - PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AIA STANDARDS, UNLESS NOTED OTHERWISE.
  - LOCKS SHALL BE PROVIDED WHERE ILLUSTRATED, KEYS ALIKE BY ROOM, OR BY EACH GROUPING / RUN OF CUBBIES.
  - GROMMET LOCATIONS SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO INSTALLATION - COORDINATE WITH POWER & DATA LOCATIONS FOR ANY ADDITIONAL WIRE MANAGEMENT REQUIREMENTS.
  - 'SLABSMITHING' WILL BE REQUIRED IN INSTANCES WHERE A PATTERNED SOLID SURFACE IS SPECIFIED.
  - WHERE CASEWORK IS INDICATED TO RECEIVE RESIDENTIAL APPLIANCES OR OWNER-FURNISHED EQUIPMENT, COORDINATE WITH FINAL OWNER-PROVIDED SELECTIONS.

**STANDARD ABBREVIATIONS - CASEWORK**

ADJ	ADJUSTABLE	FP	FILLER PANEL
BF	BARRIER FREE	RP	REMOVABLE PANEL
EP	END PANEL	PFD	PULL OUT TRASH DRAWER

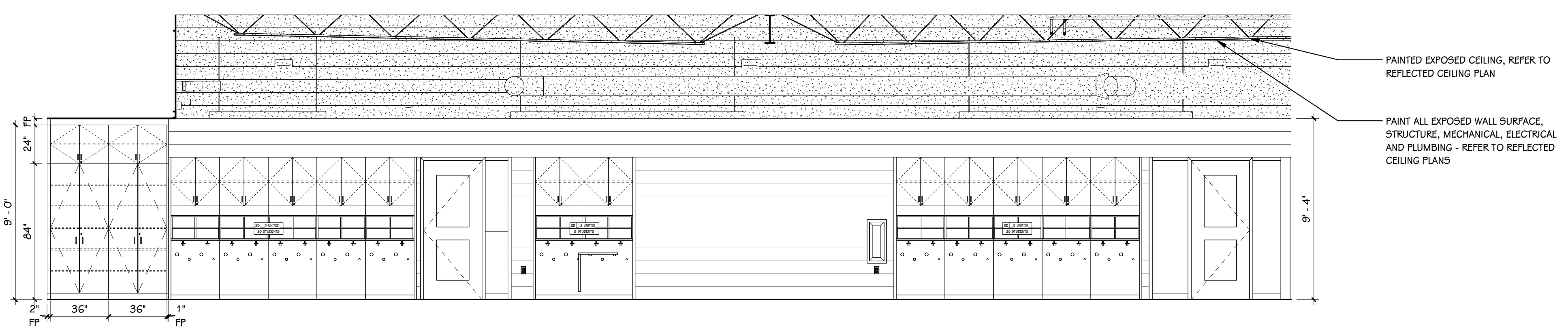
**HARDWARE AND ACCESSORY SELECTIONS - CASEWORK**

FULLS:  
BENTWIRE - NICKEL FINISH, OR SIMILAR.

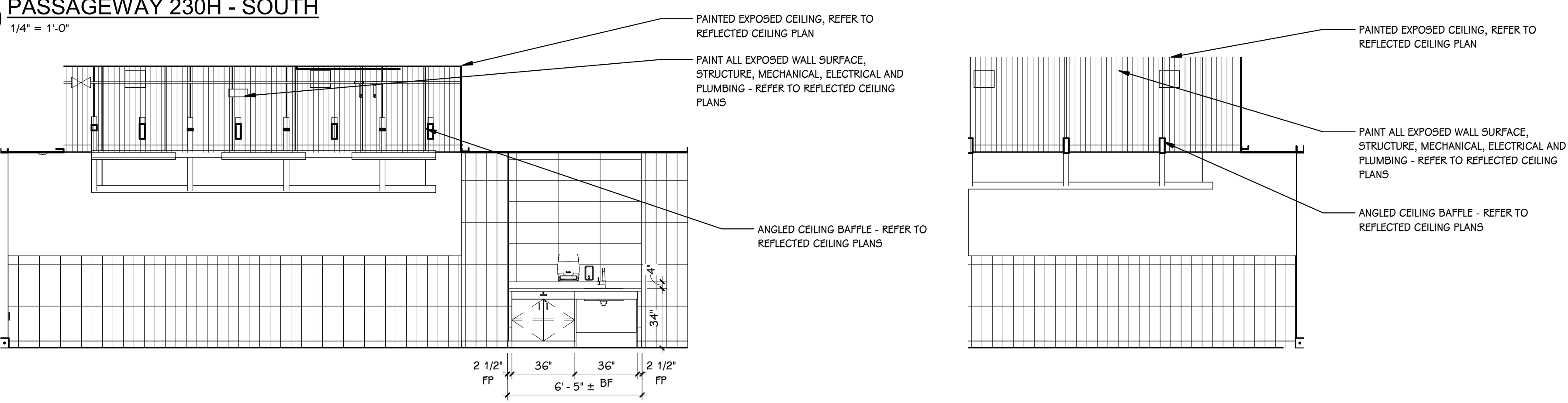
COUNTERTOP EDGES:  
PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE.  
SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.

SUPPORT BRACKETS:  
METAL STUD WALL CONSTRUCTION - AIA CONCEALED FLAT BRACKETS, OR A 4 M HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.)  
CMU WALL CONSTRUCTION - AIA HEAVY-DUTY HYBRID BRACKETS (SIZE A5 REQ'D.)

PULL-OUT TRASH DRAWERS:  
RICHELIEU 53WC-SERIES RECYCLING CENTER IN SILVER GRAY (INCLUDE 2 BINS), OR SIM.

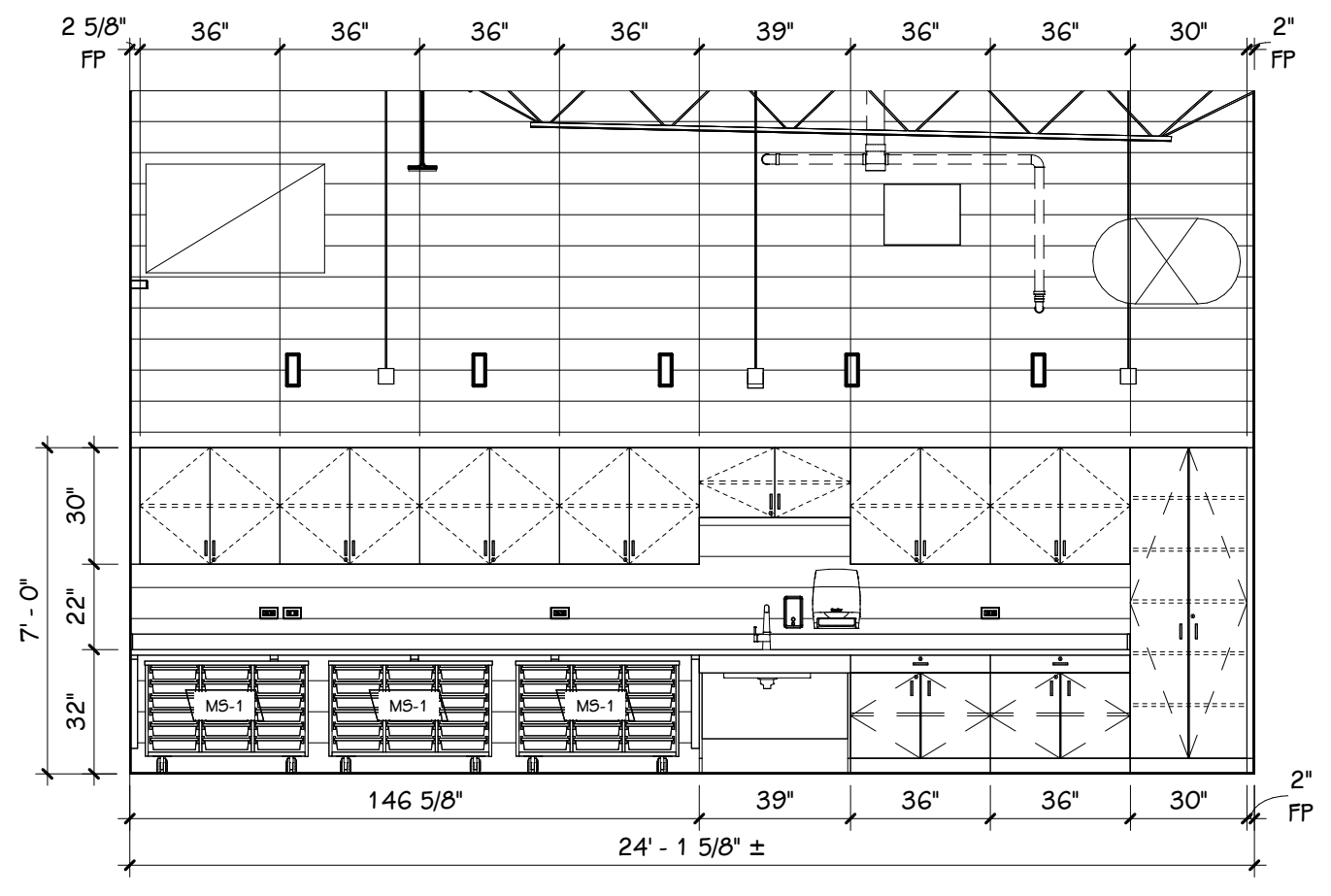


65 PASSAGeway 230H - SOUTH  
1/4" = 1'-0"

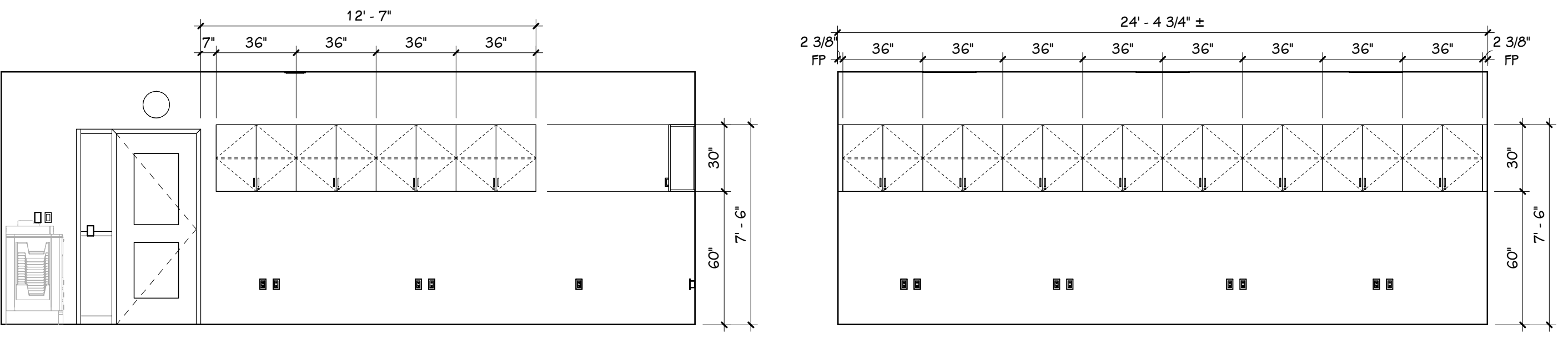


66 COMMONS 230 - EAST  
1/4" = 1'-0"

67 COMMONS 230 - WEST  
1/4" = 1'-0"

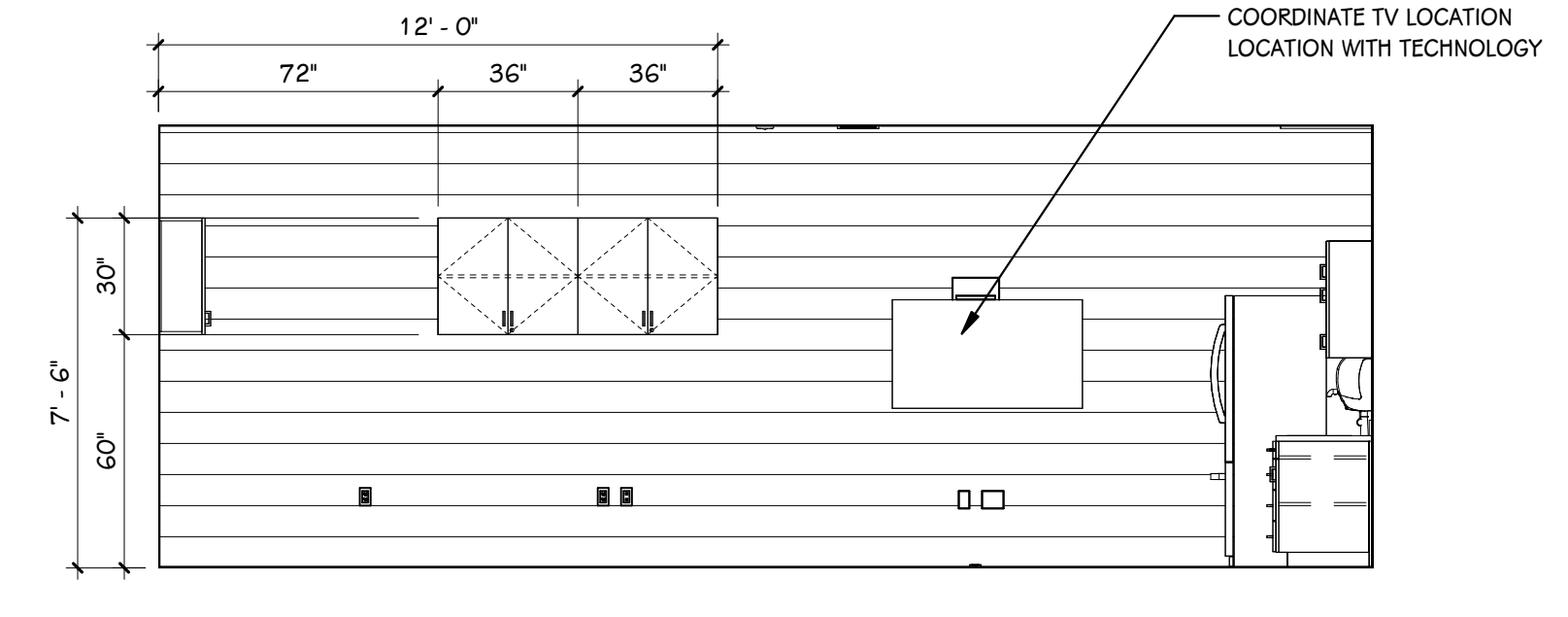


68 FLEX STUDIO SINK 231 - EAST  
1/4" = 1'-0"



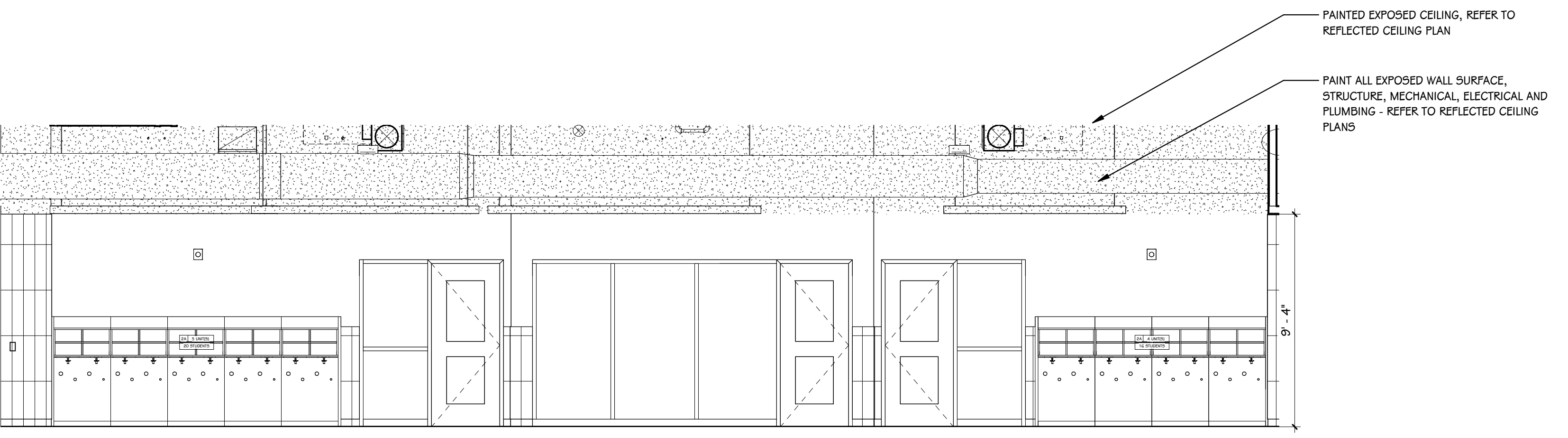
69 EDUC WORKSHOP 233 - NORTH  
1/4" = 1'-0"

70 EDUC WORKSHOP 233 - EAST  
1/4" = 1'-0"

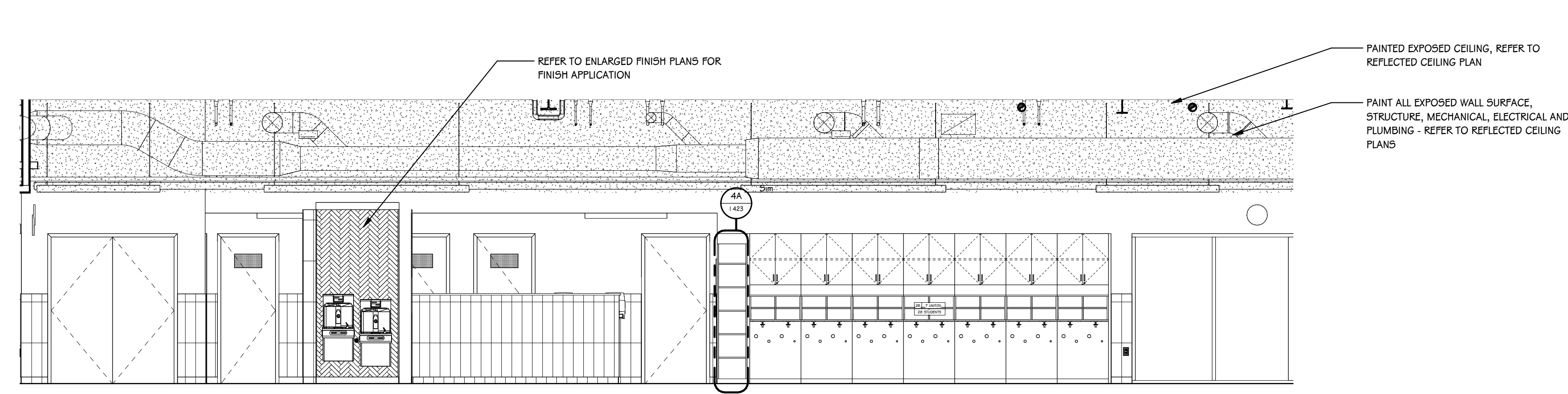


71 EDUC WORKSHOP 233 - SOUTH  
1/4" = 1'-0"

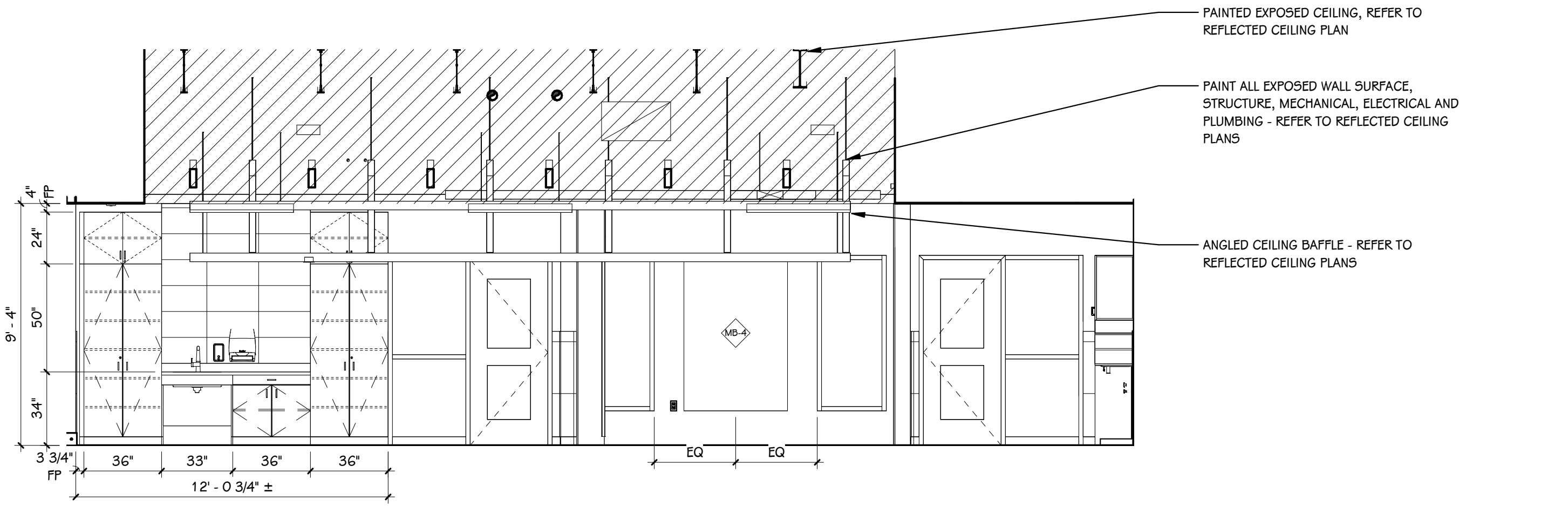
72 EDUC WORKSHOP 233 - WEST  
1/4" = 1'-0"



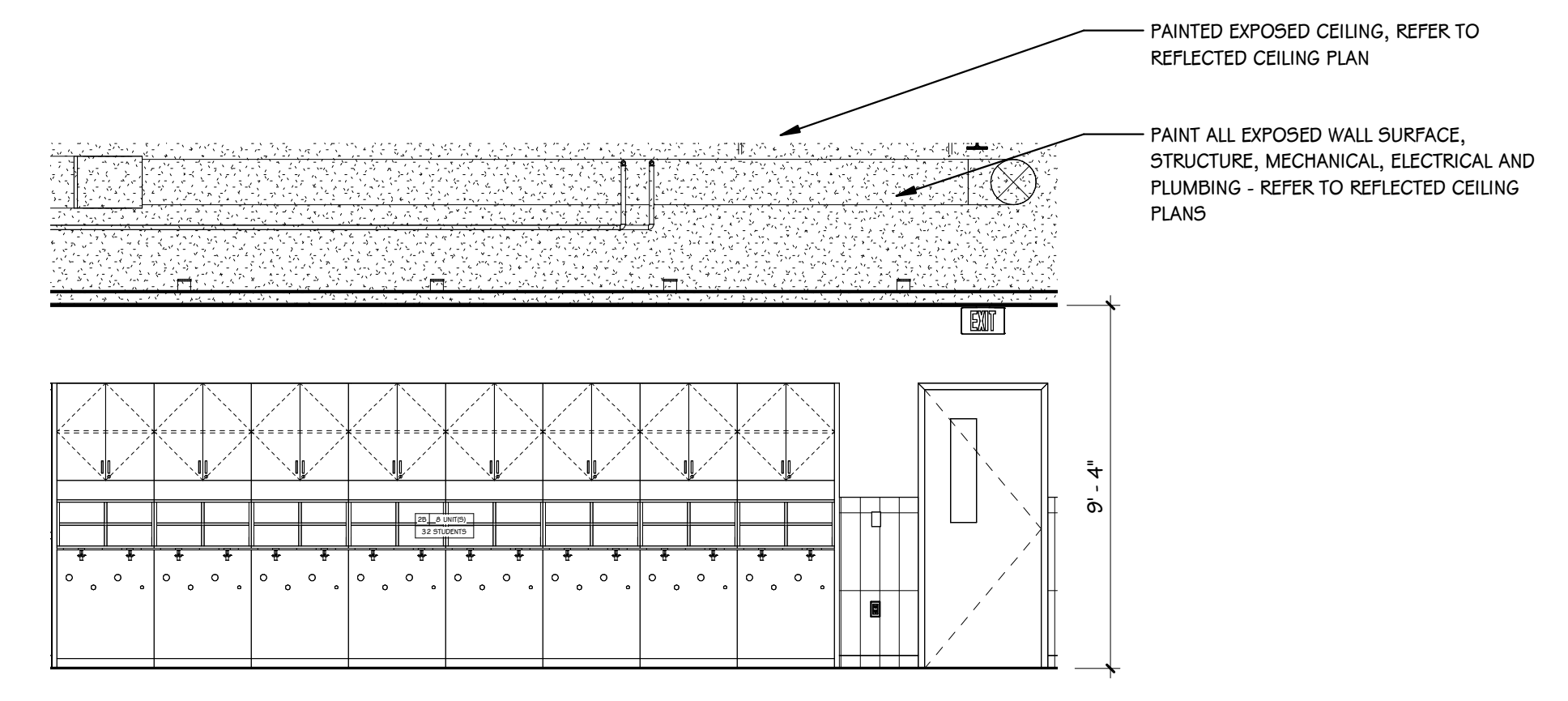
73 PASSAGeway 240H - NORTH  
1/4" = 1'-0"



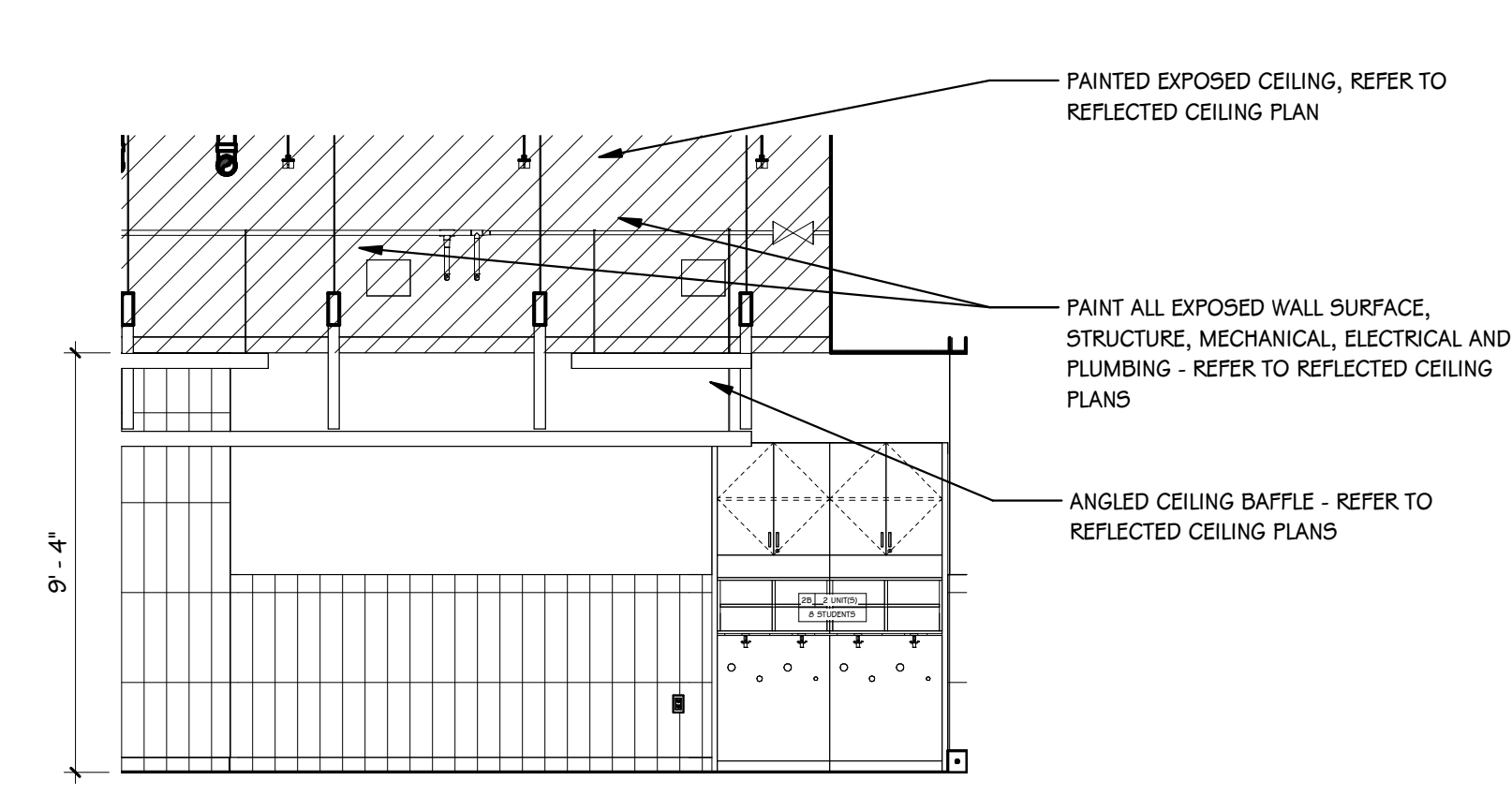
74 240H PASSAGeway - SOUTH  
1/4" = 1'-0"



75 COMMONS 240 - EAST  
1/4" = 1'-0"



76 COMMONS 240 - SOUTH  
1/4" = 1'-0"



77 COMMONS 240 - WEST  
1/4" = 1'-0"



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

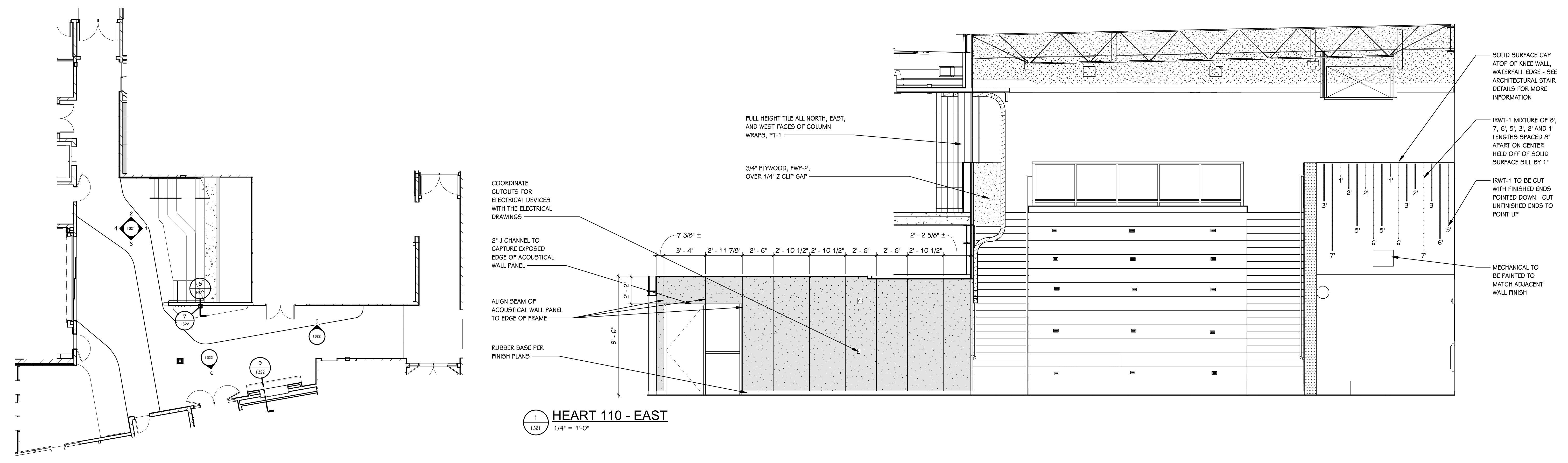
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ENLARGED ELEVATIONS AND DETAILS -  
HEART

DATE  
JUNE 30, 2023

SHEET NUMBER  
**1321**  
21-237.20



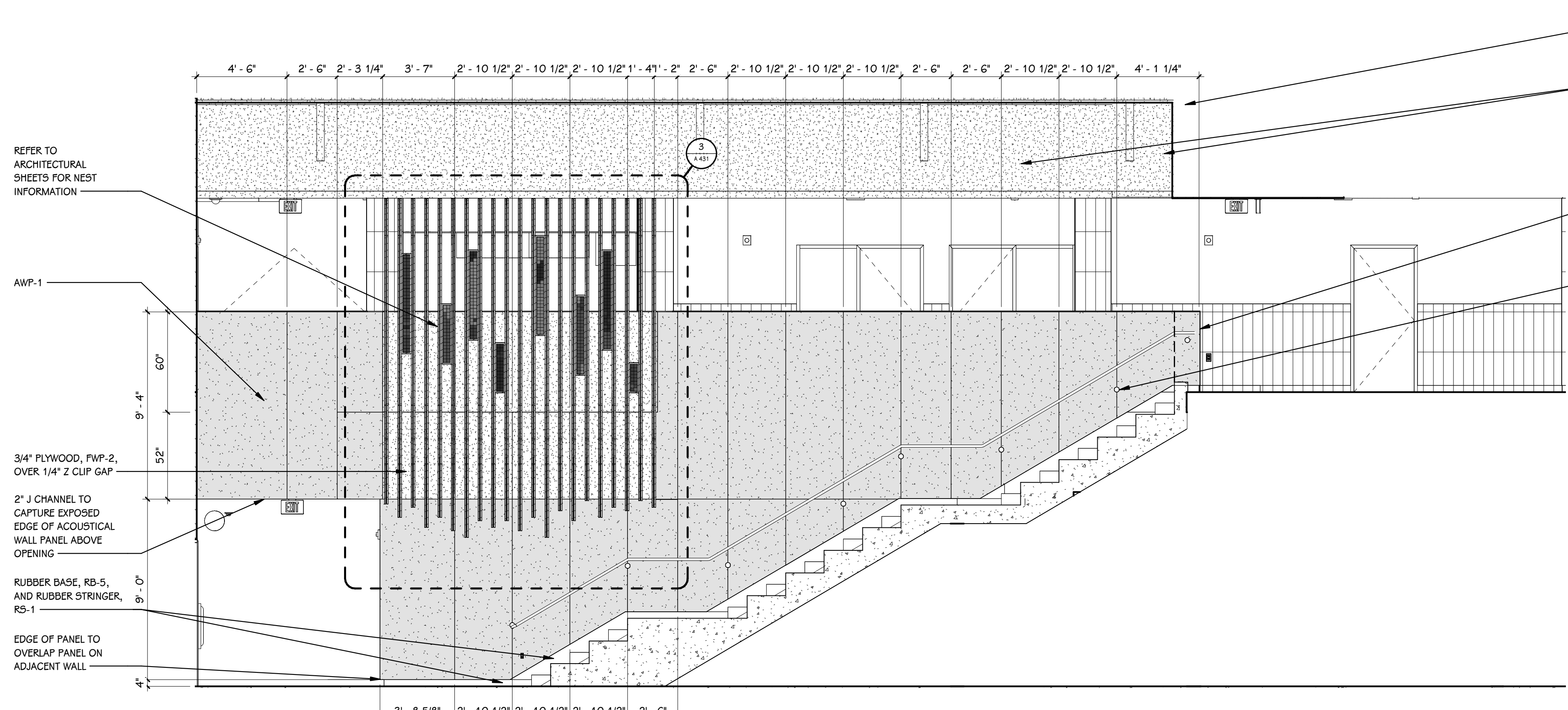
**ENLARGED FINISH PLAN KEY**

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- WALL FINISH
- BASE FINISH
- FLOOR FINISH
- COUNTER FINISH
- CABINET FINISH (BASE AND UPPER)
- INDICATES EXTENT OF ATYPICAL FINISH
- INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION

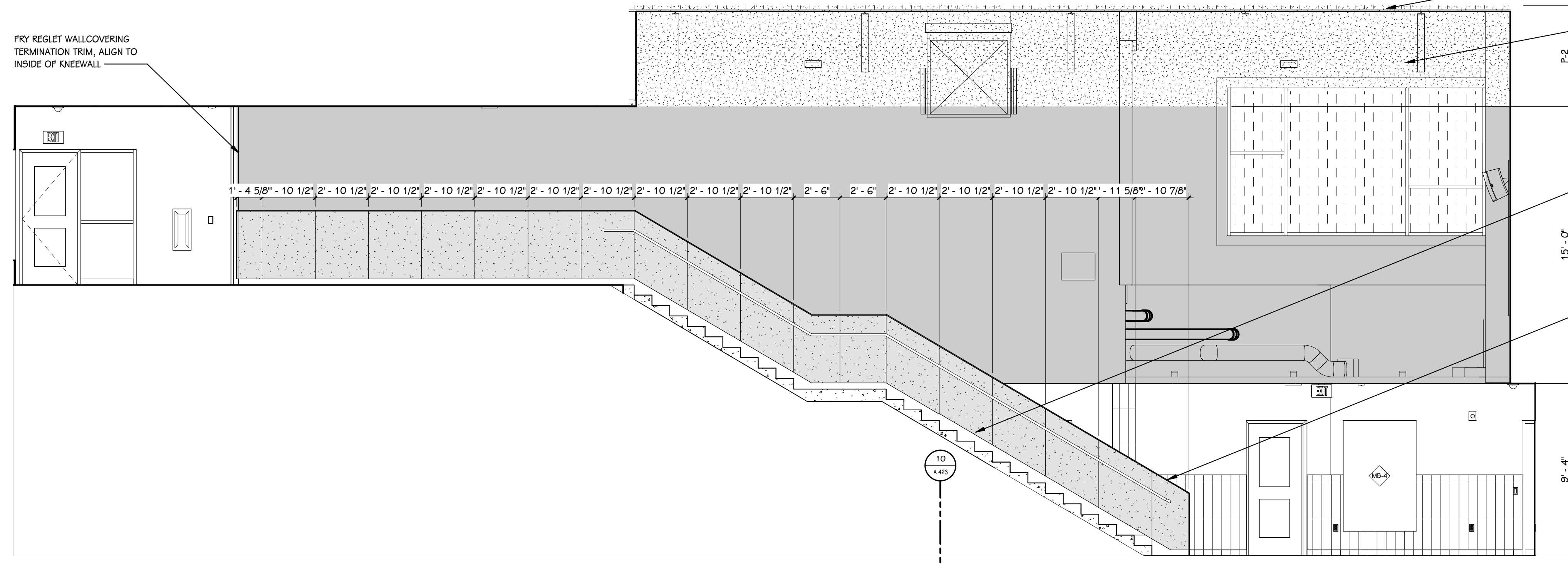
- GENERAL NOTES - ENLARGED FINISH PLAN**
- REFER TO MATERIAL SELECTION SCHEDULE FOR FINISH INFORMATION.
  - REFER TO ARCHITECTURAL FLOOR PLANS AND SPECIFICATION FOR ADDITIONAL INFORMATION ON CONSTRUCTION MATERIALS.
  - REFER TO REFLECTED CEILING PLANS FOR CEILING FINISH AND HEIGHTS.
  - REFER TO DOOR SCHEDULE FOR FINISH ON DOORS AND FRAMES.
  - REFER TO ARCHITECTURAL ENLARGED PLANS FOR TOILET ACCESSORIES, PARTITIONS, BARRIER-FREE REQUIREMENTS, ETC.
  - REFER TO INTERIORS TYPICAL DETAIL SHEETS FOR TILE TRIM DETAILS, FLOORING TRANSITIONS, WAINSCOT DETAILS, AND TYPICAL TILE PATTERN REQUIREMENTS.
  - REFER TO INTERIOR ELEVATION SHEETS FOR REQUIREMENTS, GENERAL NOTES, ABBREVIATIONS, AND HARDWARE/ACCESSORY SELECTIONS FOR CASEWORK.
  - WHERE HEIGHT IS INDICATED FOR IMPACT RESISTANT WALL PANEL AND FIBERGLASS REINFORCED PLASTIC PANELING NOTED HEIGHT IS NOMINAL, CONTRACTOR TO PROVIDE FULL SHEET HEIGHT OR WIDTH ATOP SPECIFIED BASE HEIGHT PLUS ANY NECESSARY TRIMS OR ACCESSORIES.
  - DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. FOR CONDITIONS NOT SHOWN, USE DETAILS CLOSEST TO CONDITION IN QUESTION.

- KEYED NOTES - ENLARGED FINISH PLANS**
- CEILING-MOUNTED CUBICLE CURTAIN AND TRACK, REFER TO SPECIFICATION.
  - ADULT CHANGING TABLE, BY OWNER.
  - ALIGN FLOORING TRANSITION TO CORNER.
  - ALIGN FLOORING TRANSITION TO DOOR MULLION.
  - EXTEND PORCELAIN TILE AND TILE TRIM TO INSIDE CORNER, COPE RESILIENT FLOOR COVE TO TILE.
  - SOLID SURFACE CAP, SSM-1 - REFER TO DETAILS.
  - INSTALL LEFT DRINKING FOUNTAIN AT ADULT BARRIER-FREE HEIGHT.
  - INSTALL RIGHT DRINKING FOUNTAIN AT CHILD BARRIER-FREE HEIGHT.
  - PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION. CAULK ALL JOINTS AND PAINT TO MATCH WALL.
  - DO NOT PROVIDE MIRROR AT EASTERNMOST SINK IN MENS RESTROOM.
  - ALIGN FLOORING TRANSITION TO FACE OF ADJACENT WALL, TRANSITION FLOOR BASE PER TYPICAL DETAILS.
  - PORCELAIN FLOOR TILE PATTERN WORK POINT.
  - PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION. CAULK ALL JOINTS AND PAINT TO MATCH WALL.

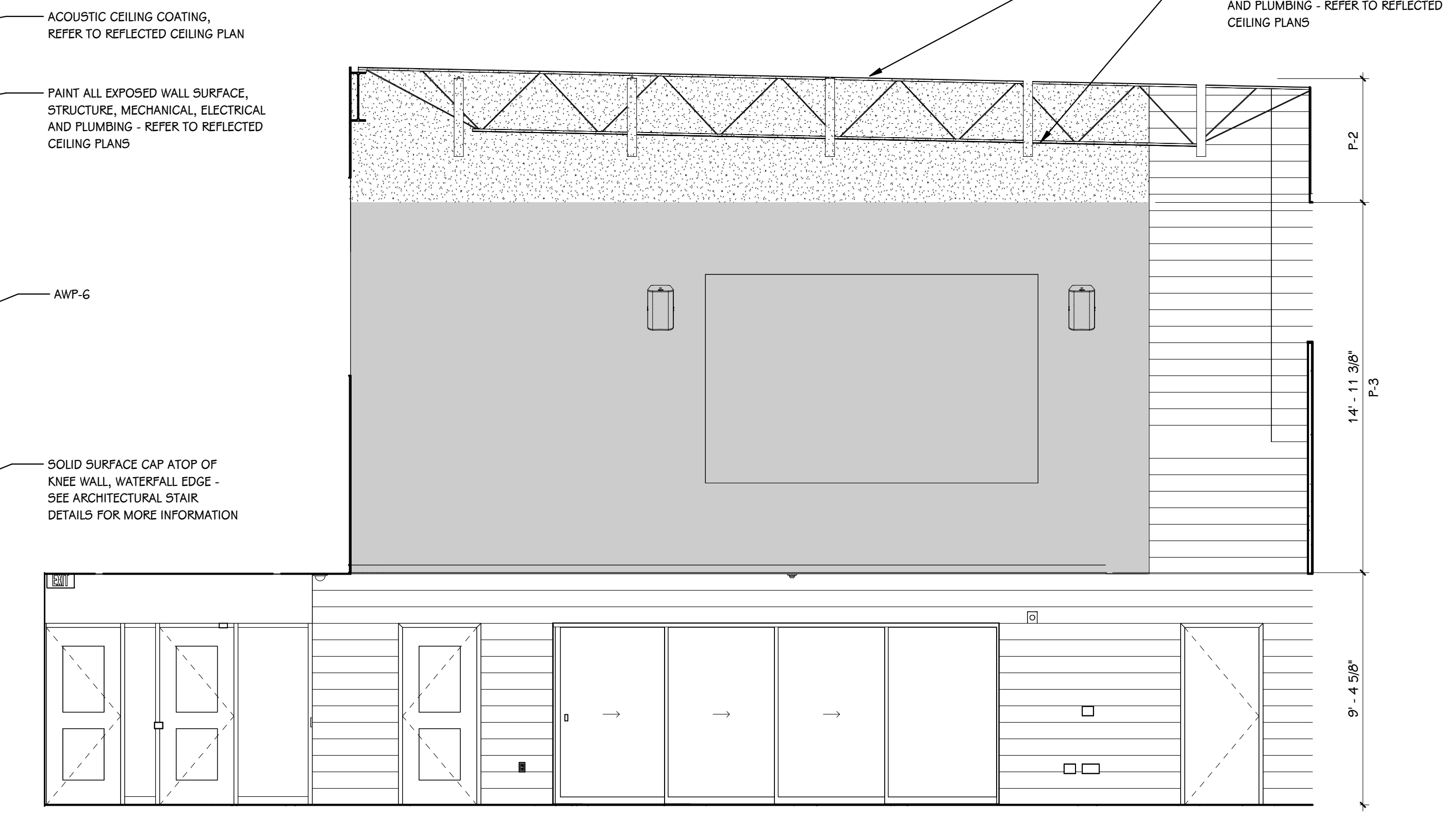
**FIRST FLOOR KEY PLAN - HEART 110**  
3/32" = 1'-0"



**HEART 110 - NORTH**  
1/4" = 1'-0"



**HEART 110 - SOUTH**  
1/4" = 1'-0"



**HEART 110 - WEST**  
1/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ENLARGED ELEVATIONS AND DETAILS -  
HEART

DATE  
JUNE 30, 2023

SHEET NUMBER  
1322  
21-237.20

**ENLARGED FINISH PLAN KEY**

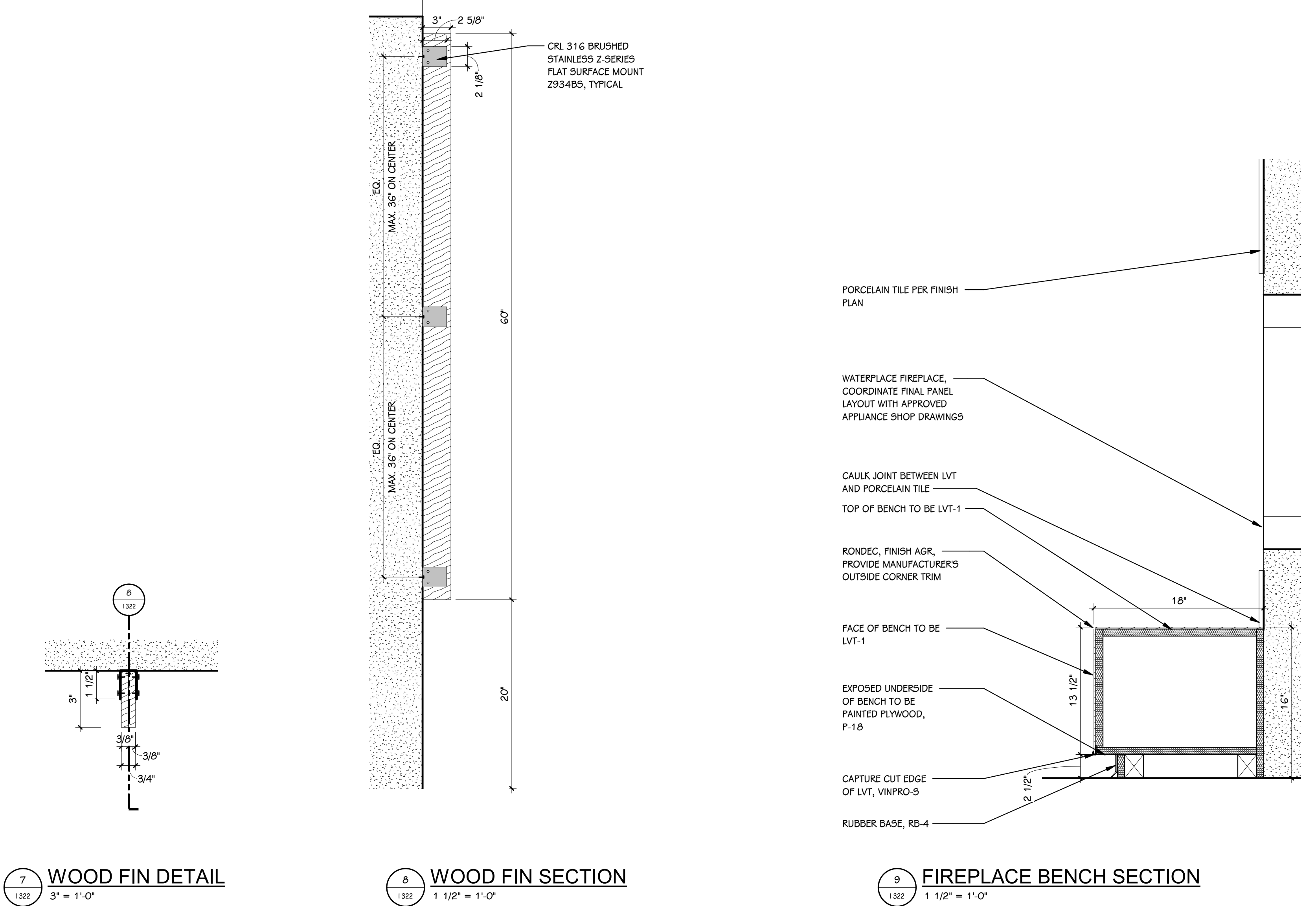
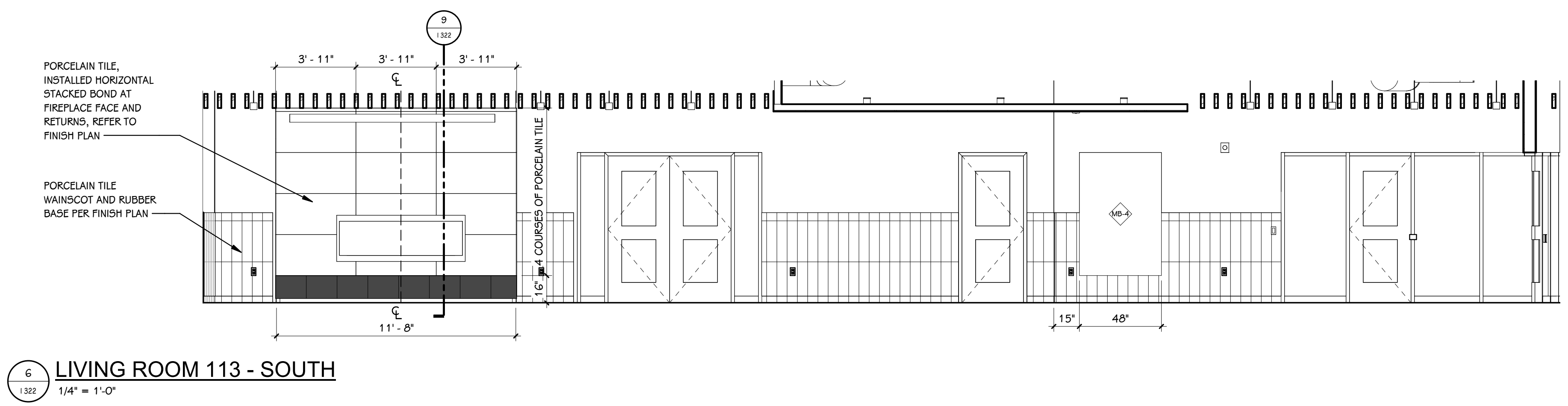
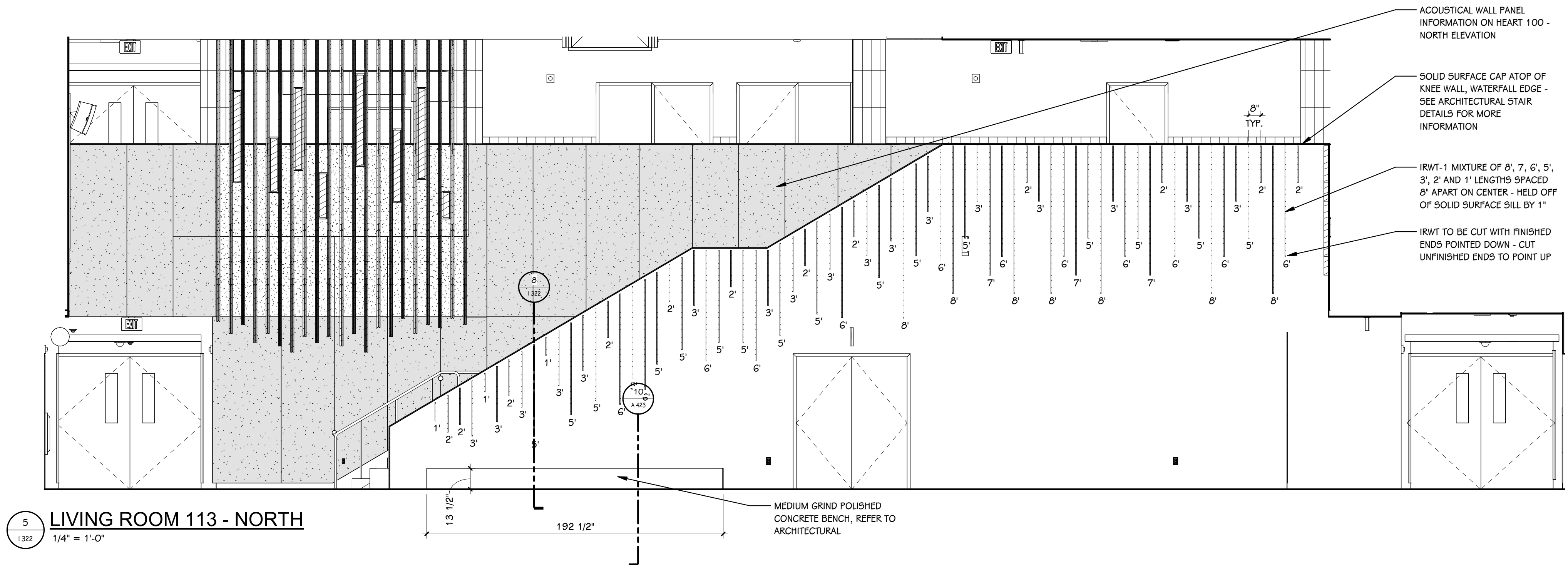
- X# INDICATES MATERIAL TYPE
- X# INDICATES CORRESPONDING SELECTION IN SCHEDULE
- W# WALL FINISH
- F# FLOOR FINISH
- C# COUNTER FINISH
- C# CABINET FINISH (BASE AND UPPER)
- X# INDICATES EXTENT OF ATYPICAL FINISH
- X# X# INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- [MULTI] INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- [X.PLAN] INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- [X.PLAN] INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION

**GENERAL NOTES - ENLARGED FINISH PLAN**

- REFER TO MATERIAL SELECTION SCHEDULE FOR FINISH INFORMATION.
- REFER TO ARCHITECTURAL FLOOR PLANS AND SPECIFICATION FOR ADDITIONAL INFORMATION ON CONSTRUCTION MATERIALS.
- REFER TO REFLECTED CEILING PLANS FOR CEILING FINISH AND HEIGHTS.
- REFER TO DOOR SCHEDULE FOR FINISH ON DOORS AND FRAMES.
- REFER TO ARCHITECTURAL ENLARGED PLANS FOR TOILET ACCESSORIES, PARTITIONS, BARRIER-FREE REQUIREMENTS, ETC.
- REFER TO INTERIORS TYPICAL DETAIL SHEETS FOR TILE TRIM DETAILS, FLOORING TRANSITIONS, WAINSCOT DETAILS, AND TYPICAL TILE PATTERN REQUIREMENTS.
- REFER TO INTERIOR ELEVATION SHEETS FOR REQUIREMENTS, GENERAL NOTES, ABBREVIATIONS, AND HARDWARE/ACCESSORY SELECTIONS FOR CASEWORK.
- WHERE HEIGHT IS INDICATED FOR IMPACT RESISTANT WALL PANEL AND FIBERGLASS REINFORCED PLASTIC PANELING NOTED HEIGHT IS NOMINAL, CONTRACTOR TO PROVIDE FULL SHEET HEIGHT OR WIDTH ATOP SPECIFIED BASE HEIGHT PLUS ANY NECESSARY TRIMS OR ACCESSORIES.
- DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. FOR CONDITIONS NOT SHOWN, USE DETAILS CLOSEST TO CONDITION IN QUESTION.

**KEYED NOTES - ENLARGED FINISH PLANS**

- CEILING-MOUNTED CUBICLE CURTAIN AND TRACK, REFER TO SPECIFICATION.
- ADULT CHANGING TABLE, BY OWNER.
- ALIGN FLOORING TRANSITION TO CORNER.
- ALIGN FLOORING TRANSITION TO DOOR MULLION.
- EXTEND PORCELAIN TILE AND TILE TRIM TO INSIDE CORNER, COPE RESILIENT FLOOR COVE TO TILE.
- SOLID SURFACE CAP, SSM-1 - REFER TO DETAILS.
- INSTALL LEFT DRINKING FOUNTAIN AT ADULT BARRIER-FREE HEIGHT.
- INSTALL RIGHT DRINKING FOUNTAIN AT CHILD BARRIER-FREE HEIGHT.
- PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- DO NOT PROVIDE MIRROR AT EASTERMOST SINK IN MENS RESTROOM.
- ALIGN FLOORING TRANSITION TO FACE OF ADJACENT WALL, TRANSITION FLOOR BASE PER TYPICAL DETAILS.
- PORCELAIN FLOOR TILE PATTERN WORK POINT.
- PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ENLARGED FINISH PLANS - TOILET  
ROOMS

DATE  
JUNE 30, 2023

SHEET NUMBER  
**1401**  
21-237.20

**ENLARGED FINISH PLAN KEY**

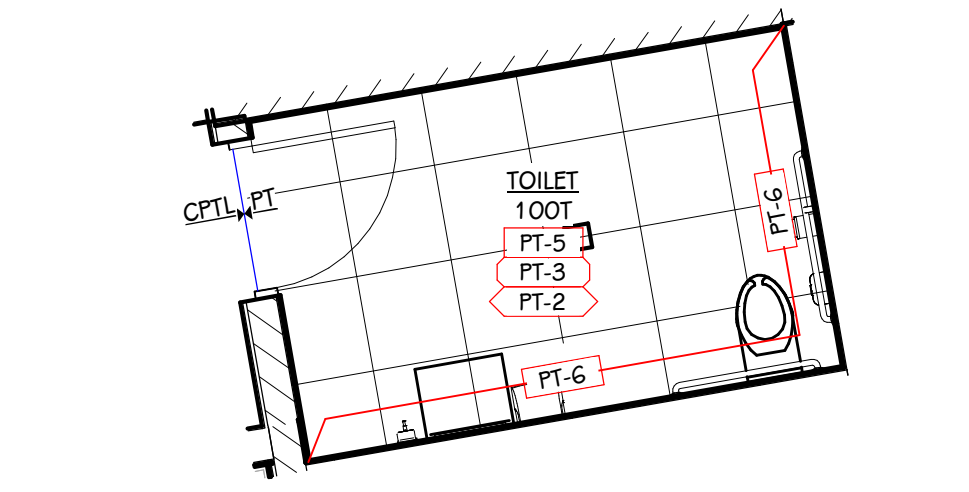
- X# INDICATES MATERIAL TYPE
- X# INDICATES CORRESPONDING SELECTION IN SCHEDULE
- W# WALL FINISH
- F# FLOOR FINISH
- C# COUNTER FINISH
- C# CABINET FINISH (BASE AND UPPER)
- X# INDICATES EXTENT OF ATYPICAL FINISH
- X# X# INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- MULTI INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- X#(A) INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- X#(A) INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION

- GENERAL NOTES - ENLARGED FINISH PLAN**
- REFER TO MATERIAL SELECTION SCHEDULE FOR FINISH INFORMATION.
  - REFER TO ARCHITECTURAL FLOOR PLANS AND SPECIFICATION FOR ADDITIONAL INFORMATION ON CONSTRUCTION MATERIALS.
  - REFER TO REFLECTED CEILING PLANS FOR CEILING FINISH AND HEIGHTS.
  - REFER TO DOOR SCHEDULE FOR FINISH ON DOORS AND FRAMES.
  - REFER TO ARCHITECTURAL ENLARGED PLANS FOR TOILET ACCESSORIES, PARTITIONS, BARRIER-FREE REQUIREMENTS, ETC.
  - REFER TO INTERIORS TYPICAL DETAIL SHEETS FOR TILE TRIM DETAILS, FLOORING TRANSITIONS, WAINSCOT DETAILS, AND TYPICAL TILE PATTERN REQUIREMENTS.
  - REFER TO INTERIOR ELEVATION SHEETS FOR REQUIREMENTS, GENERAL NOTES, ABBREVIATIONS, AND HARDWARE/ACCESSORY SELECTIONS FOR CASEWORK.
  - WHERE HEIGHT IS INDICATED FOR IMPACT RESISTANT WALL PANEL AND FIBERGLASS REINFORCED PLASTIC PANELING NOTED HEIGHT IS NOMINAL, CONTRACTOR TO PROVIDE FULL SHEET HEIGHT OR WIDTH ATOP SPECIFIED BASE HEIGHT PLUS ANY NECESSARY TRIMS OR ACCESSORIES.
  - DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. FOR CONDITIONS NOT SHOWN, USE DETAILS CLOSEST TO CONDITION IN QUESTION.

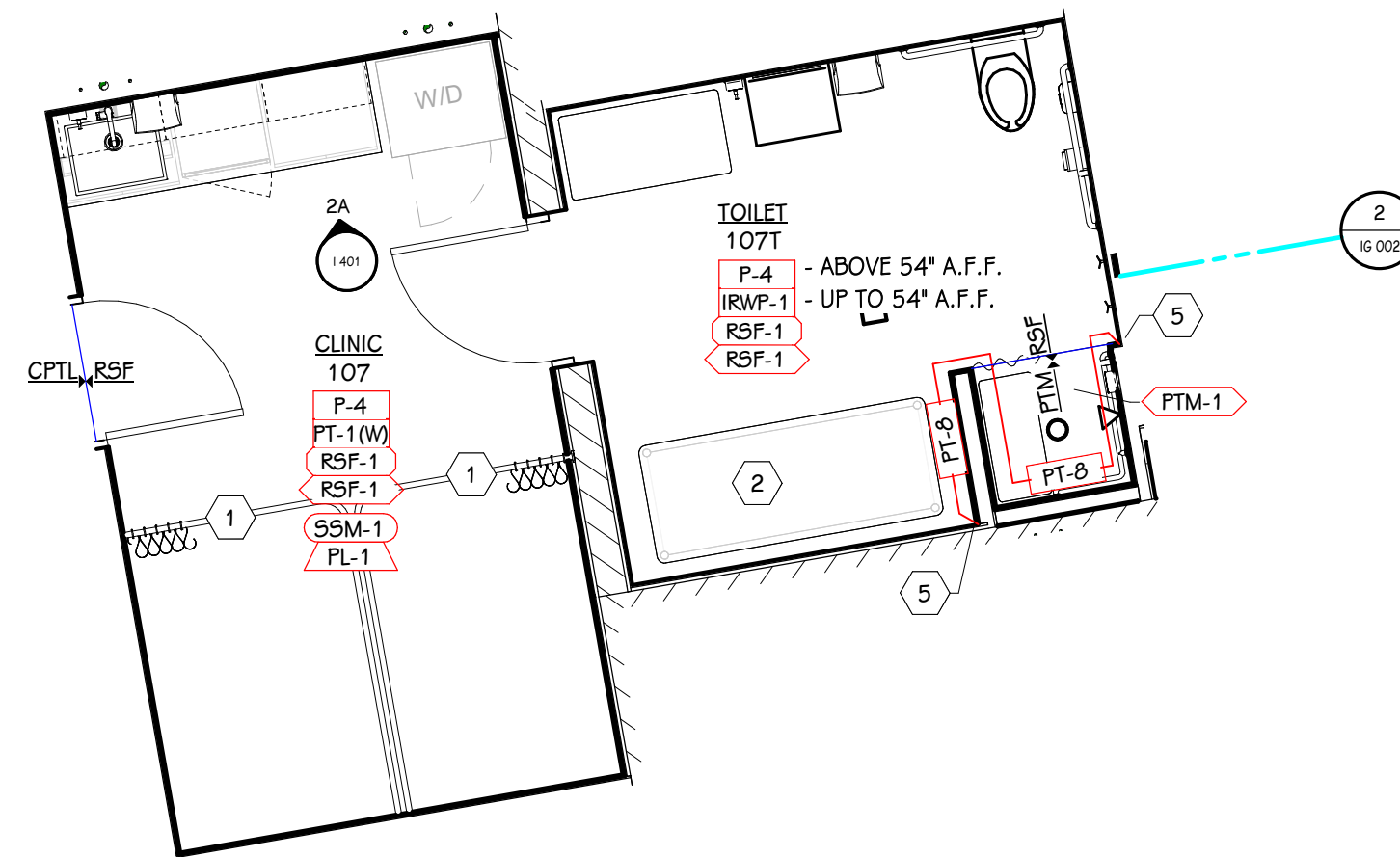
- KEYED NOTES - ENLARGED FINISH PLANS**
- CEILING-MOUNTED CUBICLE CURTAIN AND TRACK, REFER TO SPECIFICATION.
  - ADULT CHANGING TABLE, BY OWNER.
  - ALIGN FLOORING TRANSITION TO CORNER.
  - ALIGN FLOORING TRANSITION TO DOOR MULLION.
  - EXTEND PORCELAIN TILE AND TILE TRIM TO INSIDE CORNER, COPE RESILIENT FLOOR COVE TO TILE.
  - SOLID SURFACE CAP, SSM-1 - REFER TO DETAILS.
  - INSTALL LEFT DRINKING FOUNTAIN AT ADULT BARRIER-FREE HEIGHT.
  - INSTALL RIGHT DRINKING FOUNTAIN AT CHILD BARRIER-FREE HEIGHT.
  - PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
  - DO NOT PROVIDE MIRROR AT EASTERNMOST SINK IN MENS RESTROOM.
  - ALIGN FLOORING TRANSITION TO FACE OF ADJACENT WALL, TRANSITION FLOOR BASE PER TYPICAL DETAILS.
  - PORCELAIN FLOOR TILE PATTERN WORK POINT.
  - PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.

**TILE LEGEND**

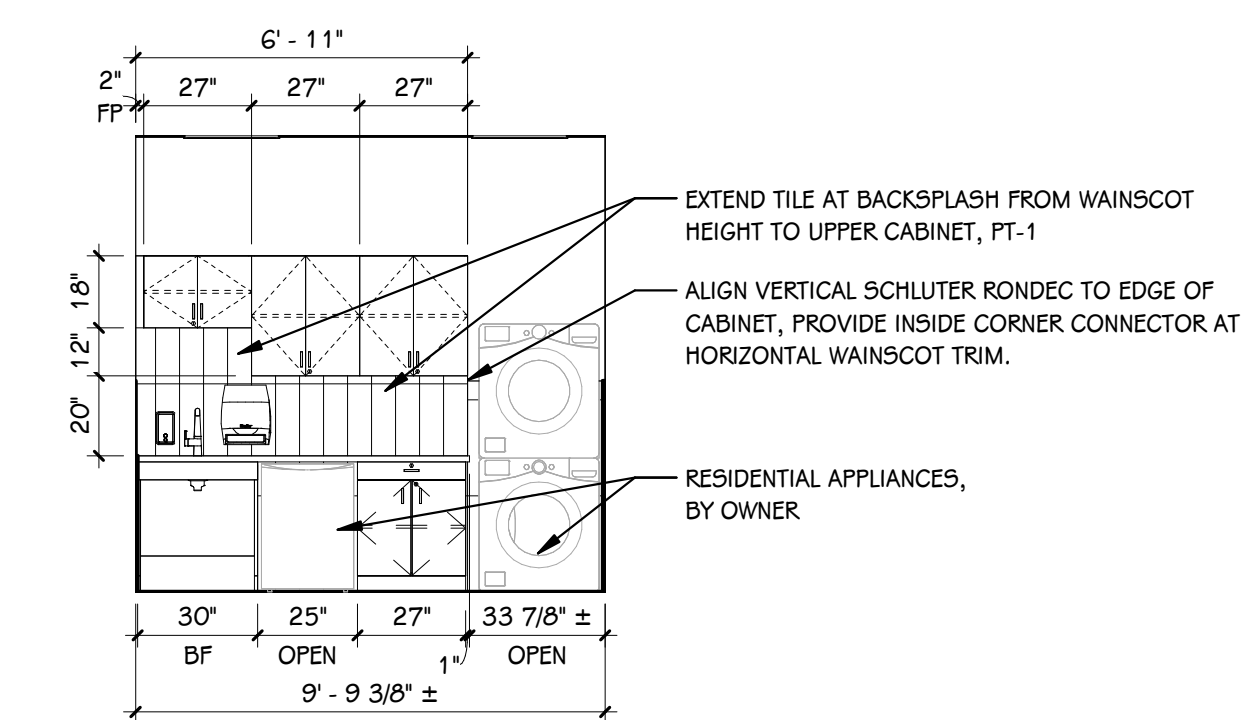
	PT-1: INSTALLED VERTICAL STACKED BOND, UNLESS NOTED OTHERWISE		PT-F: PATTERN INSTALLED HERRINGBONE, REFER TO TYPICAL DETAILS
	PT-5: INSTALLED VERTICAL 1/2 OFFSET, UNLESS NOTED OTHERWISE		PT-G: INSTALLED HERRINGBONE, UNLESS NOTED OTHERWISE
	PT-7: INSTALLED VERTICAL 1/2 OFFSET, UNLESS NOTED OTHERWISE		PT-8: INSTALLED HERRINGBONE, UNLESS NOTED OTHERWISE



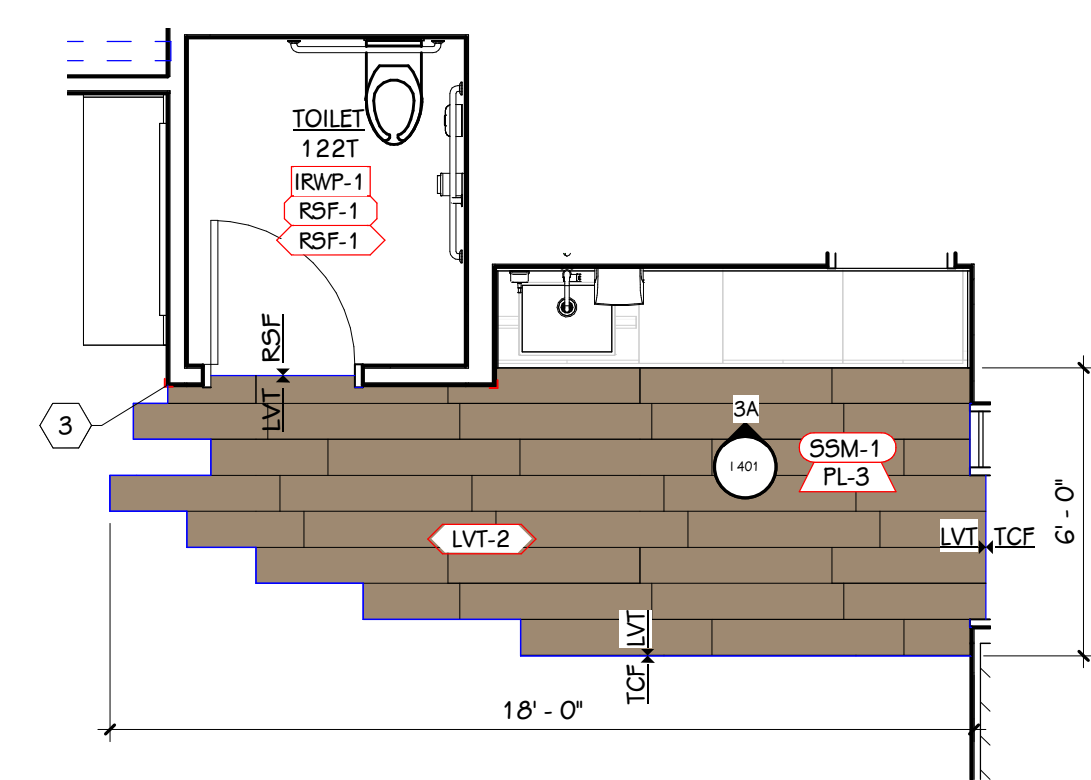
**1 SINGLE USE PUBLIC TOILET 100T**  
1/4" = 1'-0"



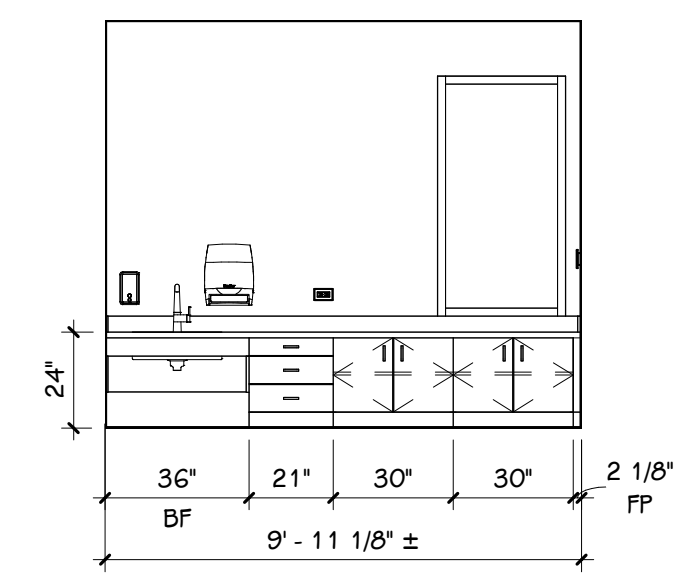
**2 CLINIC/IN-CLINIC TOILET 107/107T**  
1/4" = 1'-0"



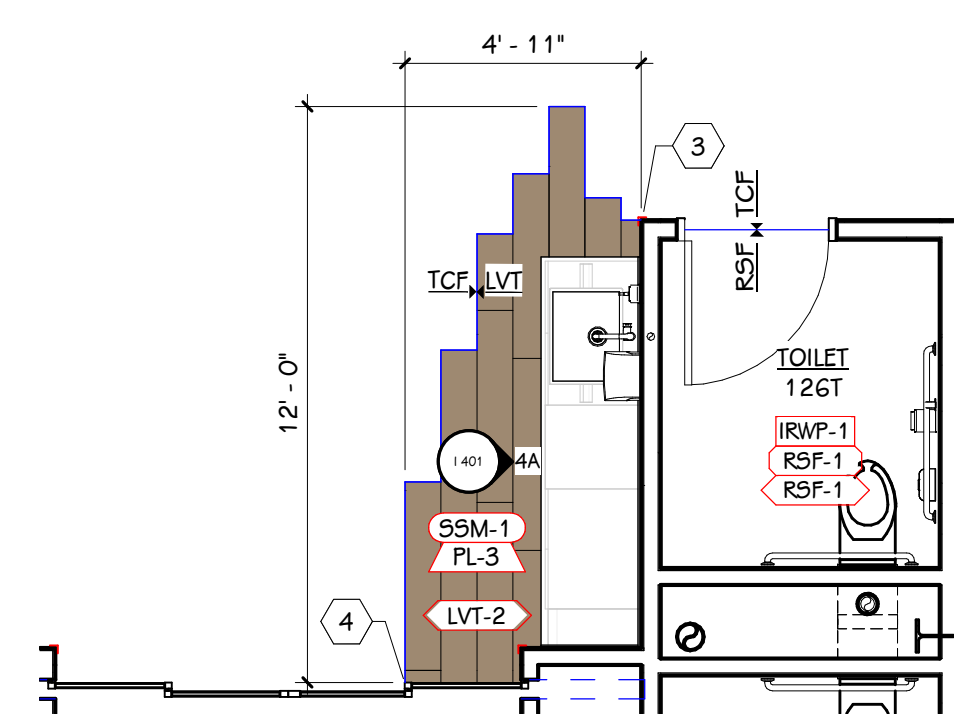
**2A CLINIC 107 - NORTH**  
1/4" = 1'-0"



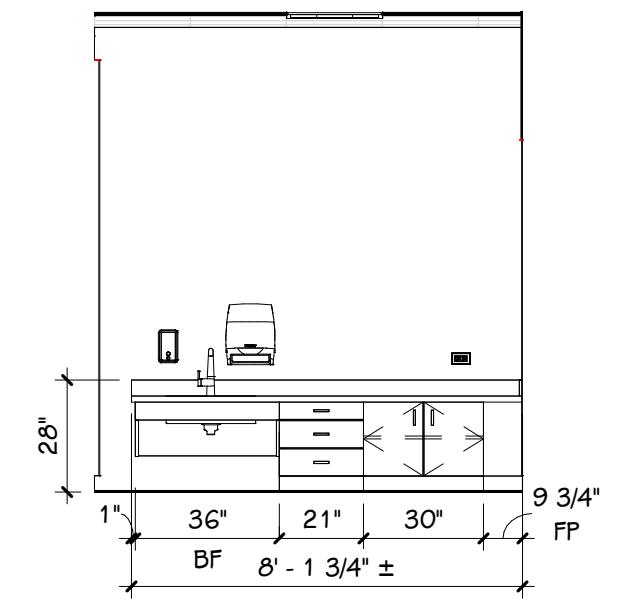
**3 LEARNING STUDIO 122 IN-CLASSROOM TOILET**  
1/4" = 1'-0"



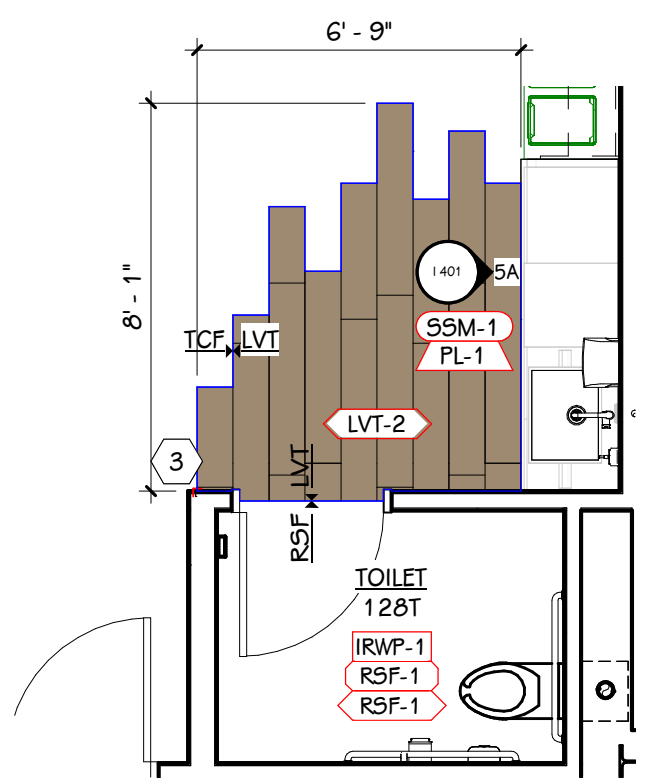
**3A LEARNING STUDIO SINK 122 - NORTH**  
1/4" = 1'-0"



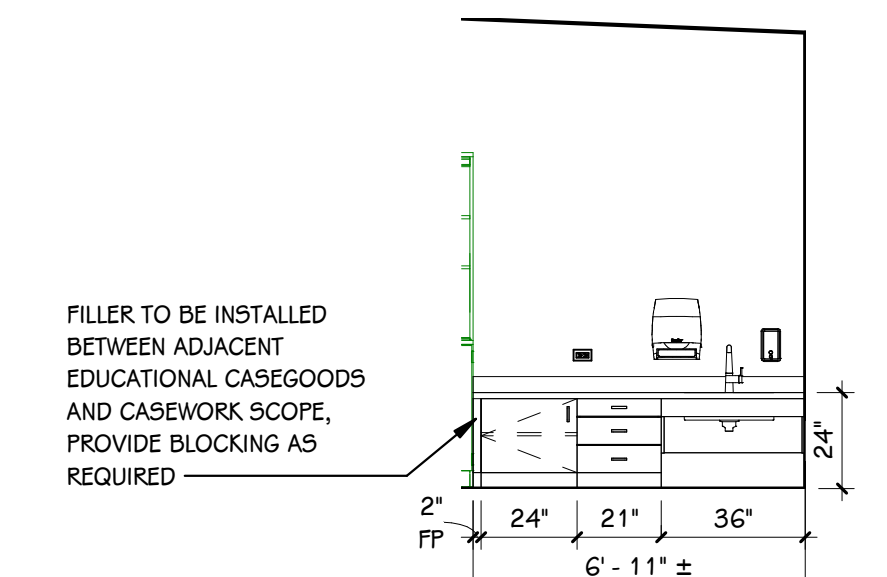
**4 LEARNING STUDIO 126 IN-CLASSROOM TOILET**  
1/4" = 1'-0"



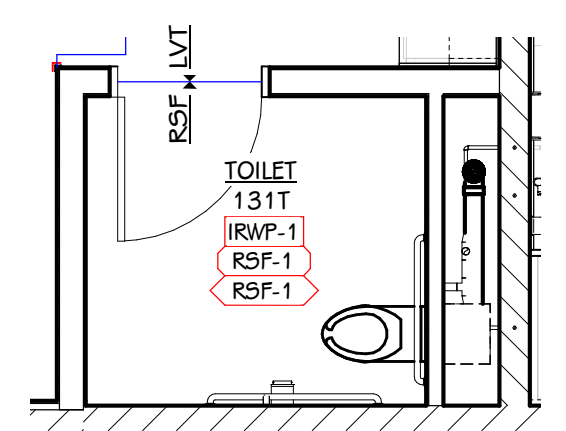
**4A LEARNING STUDIO SINK 126 - EAST**  
1/4" = 1'-0"



**5 LEARNING STUDIO 128 IN-CLASSROOM TOILET**  
1/4" = 1'-0"



**5A LEARNING STUDIO SINK 128 - EAST**  
1/4" = 1'-0"



**6 Y5/FLEX TOILET 131**  
1/4" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ENLARGED FINISH PLANS - TOILET  
ROOMS

DATE  
JUNE 30, 2023

SHEET NUMBER  
1402  
21-237.20

**ENLARGED FINISH PLAN KEY**

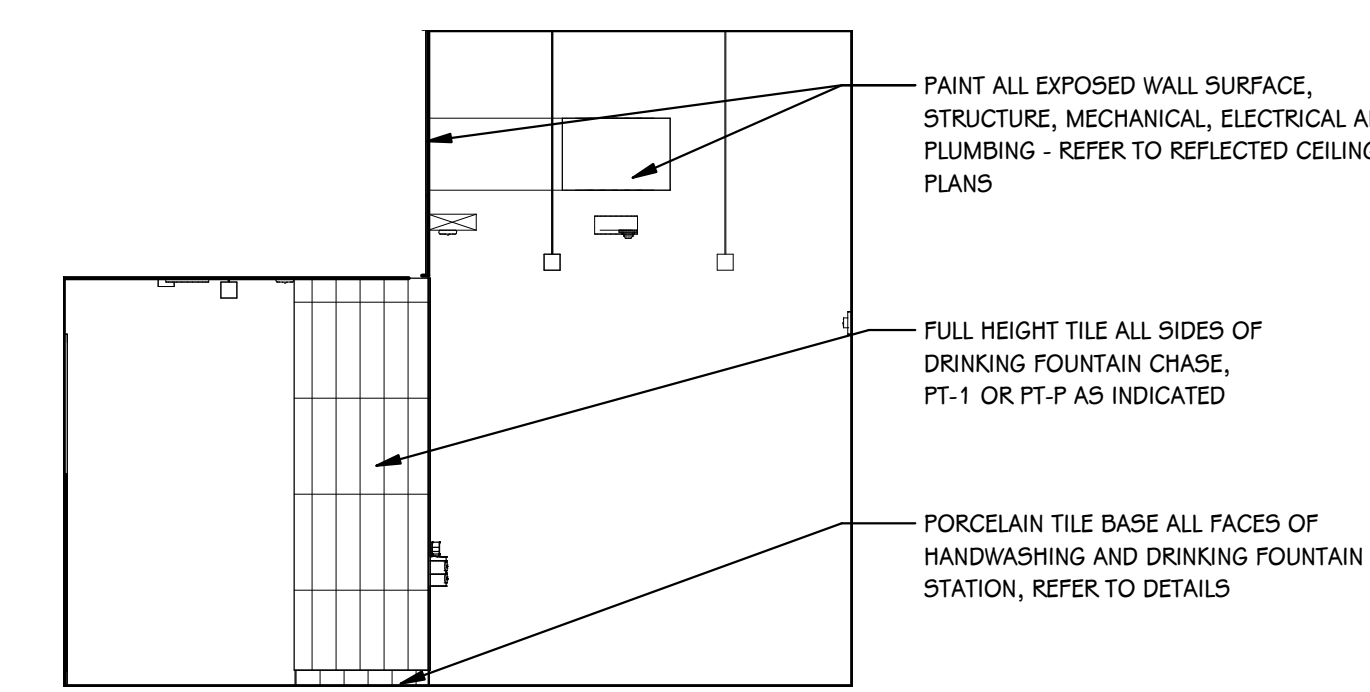
- X.# INDICATES MATERIAL TYPE
- X.# INDICATES CORRESPONDING SELECTION IN SCHEDULE
- X.# WALL FINISH
- X.# BASE FINISH
- X.# FLOOR FINISH
- X.# COUNTER FINISH
- X.# CABINET FINISH (BASE AND UPPER)
- X.# INDICATES EXTENT OF ATYPICAL FINISH
- X X INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- MULTI INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- X.P(A) INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- X.P(A) INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION

- GENERAL NOTES - ENLARGED FINISH PLAN**
- REFER TO MATERIAL SELECTION SCHEDULE FOR FINISH INFORMATION.
  - REFER TO ARCHITECTURAL FLOOR PLANS AND SPECIFICATION FOR ADDITIONAL INFORMATION ON CONSTRUCTION MATERIALS.
  - REFER TO REFLECTED CEILING PLANS FOR CEILING FINISH AND HEIGHTS.
  - REFER TO DOOR SCHEDULE FOR FINISH ON DOORS AND FRAMES.
  - REFER TO ARCHITECTURAL ENLARGED PLANS FOR TOILET ACCESSORIES, PARTITIONS, BARRIER-FREE REQUIREMENTS, ETC.
  - REFER TO INTERIORS TYPICAL DETAIL SHEETS FOR TILE TRIM DETAILS, FLOORING TRANSITIONS, WAINSCOT DETAILS, AND TYPICAL TILE PATTERN REQUIREMENTS.
  - REFER TO INTERIOR ELEVATION SHEETS FOR REQUIREMENTS, GENERAL NOTES, ABBREVIATIONS, AND HARDWARE/ACCESSORY SELECTIONS FOR CASEWORK.
  - WHERE HEIGHT IS INDICATED FOR IMPACT RESISTANT WALL PANEL AND FIBERGLASS REINFORCED PLASTIC PANELING NOTED HEIGHT IS NOMINAL, CONTRACTOR TO PROVIDE FULL SHEET HEIGHT OR WIDTH ATOP SPECIFIED BASE HEIGHT PLUS ANY NECESSARY TRIMS OR ACCESSORIES.
  - DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. FOR CONDITIONS NOT SHOWN, USE DETAILS CLOSEST TO CONDITION IN QUESTION.

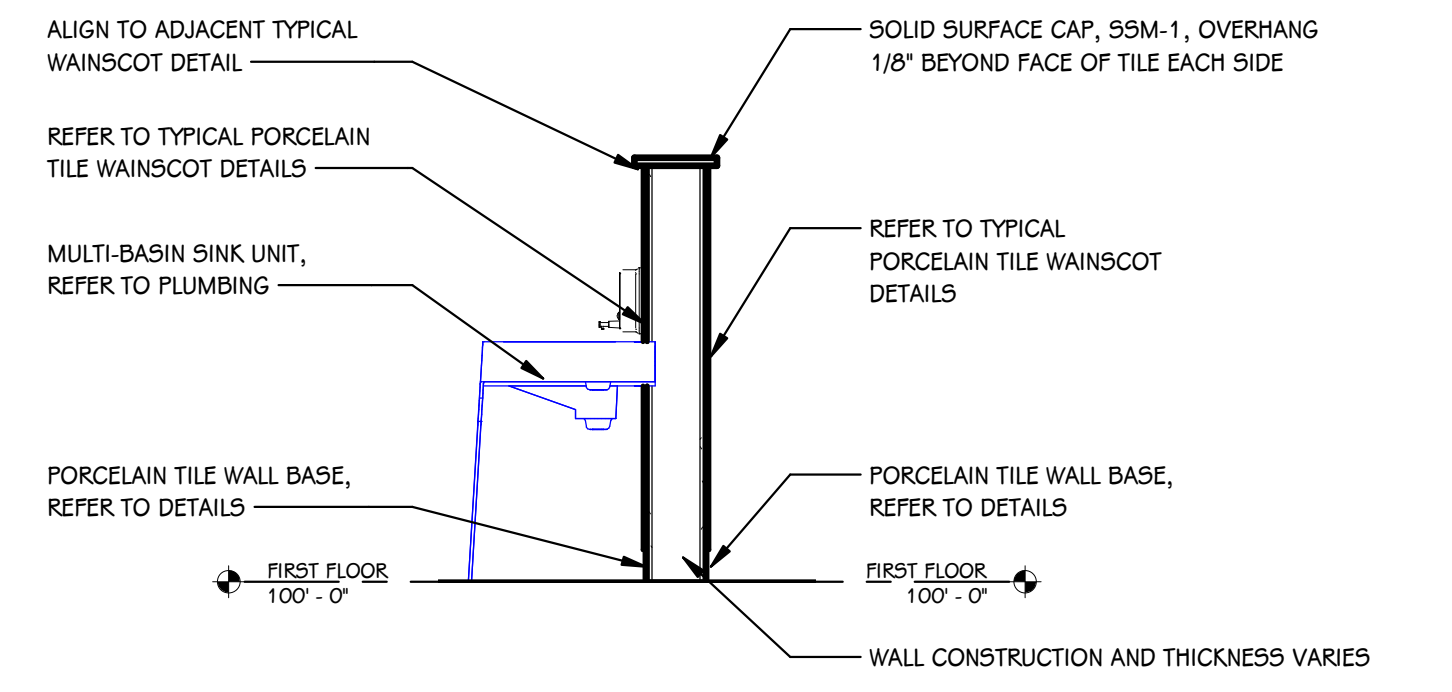
- KEYED NOTES - ENLARGED FINISH PLANS**
- CEILING-MOUNTED CUBICLE CURTAIN AND TRACK, REFER TO SPECIFICATION.
  - ADULT CHANGING TABLE, BY OWNER.
  - ALIGN FLOORING TRANSITION TO CORNER.
  - ALIGN FLOORING TRANSITION TO DOOR MULLION.
  - EXTEND PORCELAIN TILE AND TILE TRIM TO INSIDE CORNER, COPE RESILIENT FLOOR COVE TO TILE.
  - SOLID SURFACE CAP, SSM-1 - REFER TO DETAILS.
  - INSTALL LEFT DRINKING FOUNTAIN AT ADULT BARRIER-FREE HEIGHT.
  - INSTALL RIGHT DRINKING FOUNTAIN AT CHILD BARRIER-FREE HEIGHT.
  - PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION. CAULK ALL JOINTS AND PAINT TO MATCH WALL.
  - DO NOT PROVIDE MIRROR AT EASTERMOST SINK IN MENS RESTROOM.
  - ALIGN FLOORING TRANSITION TO FACE OF ADJACENT WALL, TRANSITION FLOOR BASE PER TYPICAL DETAILS.
  - PORCELAIN FLOOR TILE PATTERN WORK POINT.
  - PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION. CAULK ALL JOINTS AND PAINT TO MATCH WALL.

**TILE LEGEND**

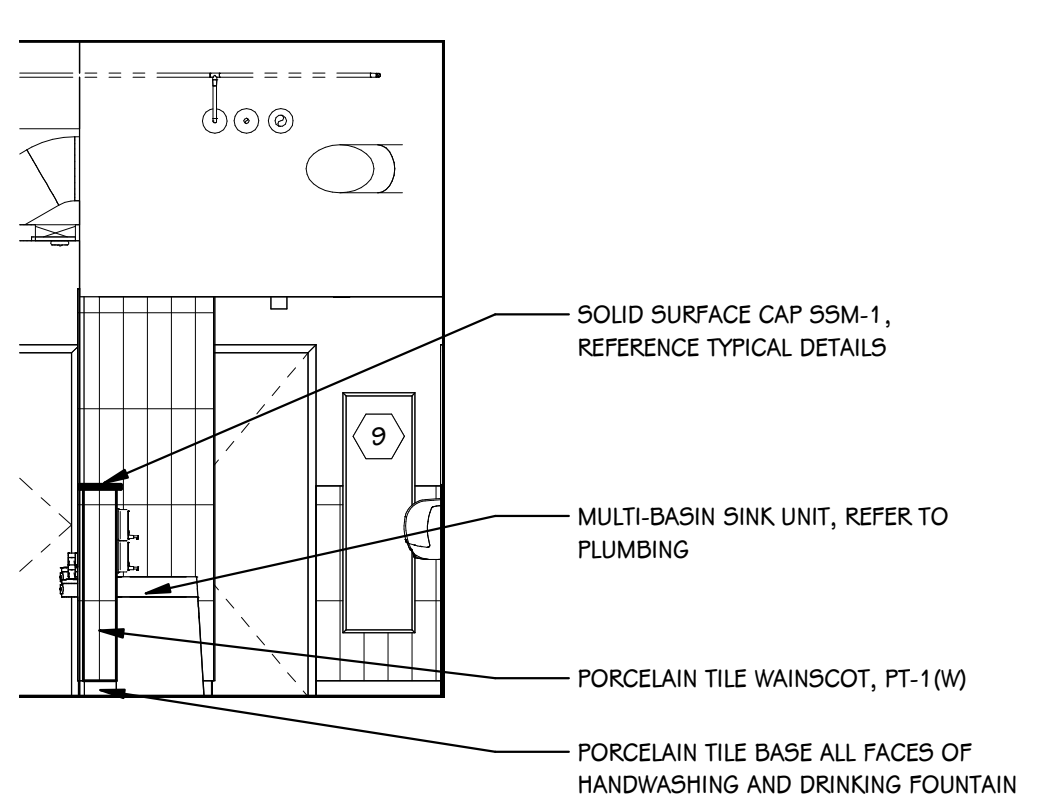
	PT-1: INSTALLED VERTICAL STACKED BOND, UNLESS NOTED OTHERWISE		PT-P: PATTERN INSTALLED HERRINGBONE, REFER TO TYPICAL DETAILS
	PT-5: INSTALLED VERTICAL 1/2 OFFSET, UNLESS NOTED OTHERWISE		PT-G: INSTALLED HERRINGBONE, UNLESS NOTED OTHERWISE
	PT-7: INSTALLED VERTICAL 1/2 OFFSET, UNLESS NOTED OTHERWISE		PT-8: INSTALLED VERTICAL 1/2 OFFSET, UNLESS NOTED OTHERWISE



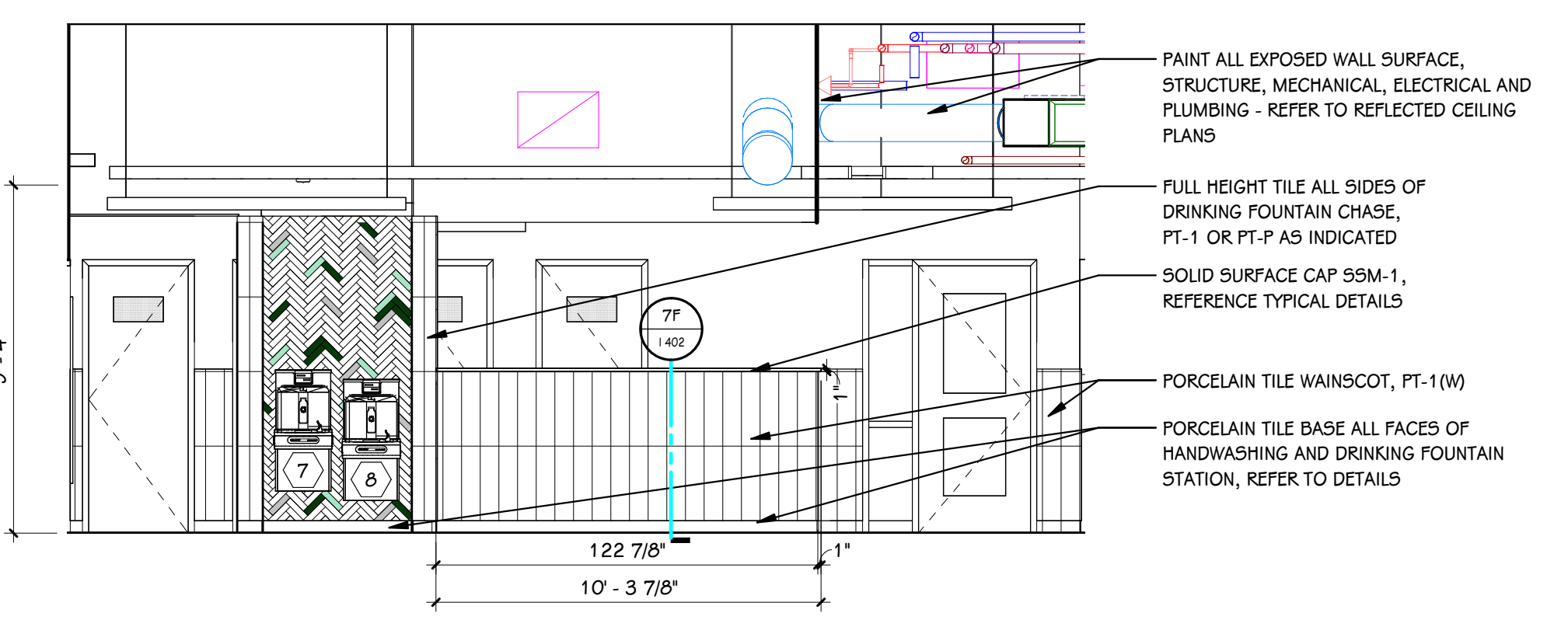
7C STUDENT GROUP TOILET 127/227 - NORTH  
1/4" = 1'-0"



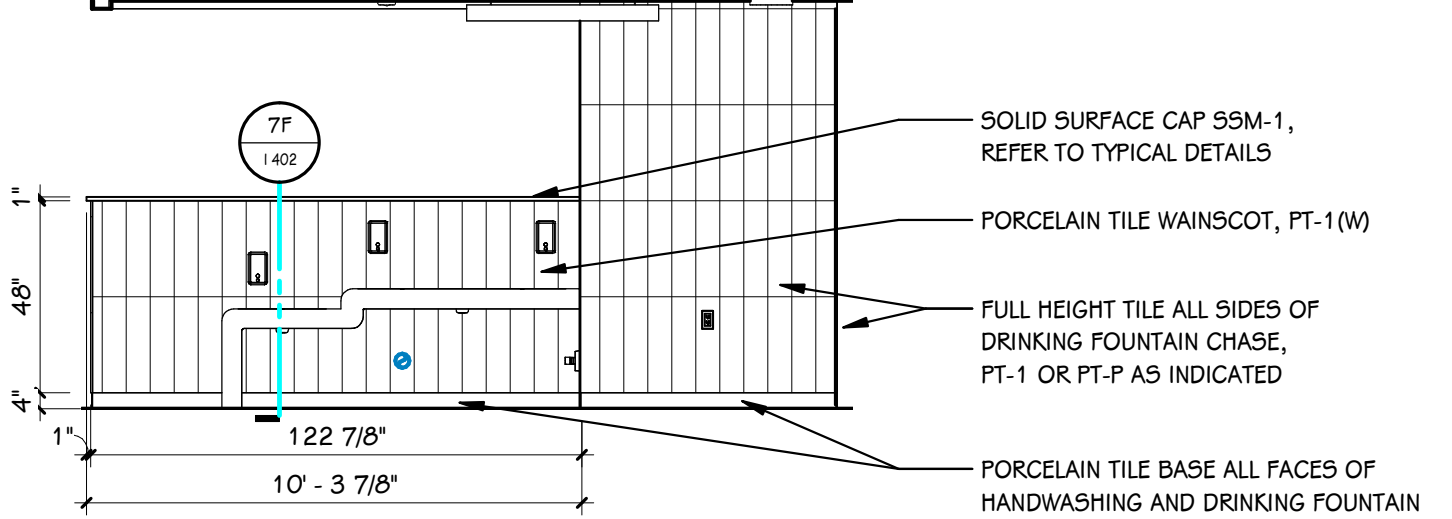
7F HANDWASHING AND DRINKING FOUNTAIN STATION - PARTIAL HEIGHT WALL SECTION  
1/2" = 1'-0"



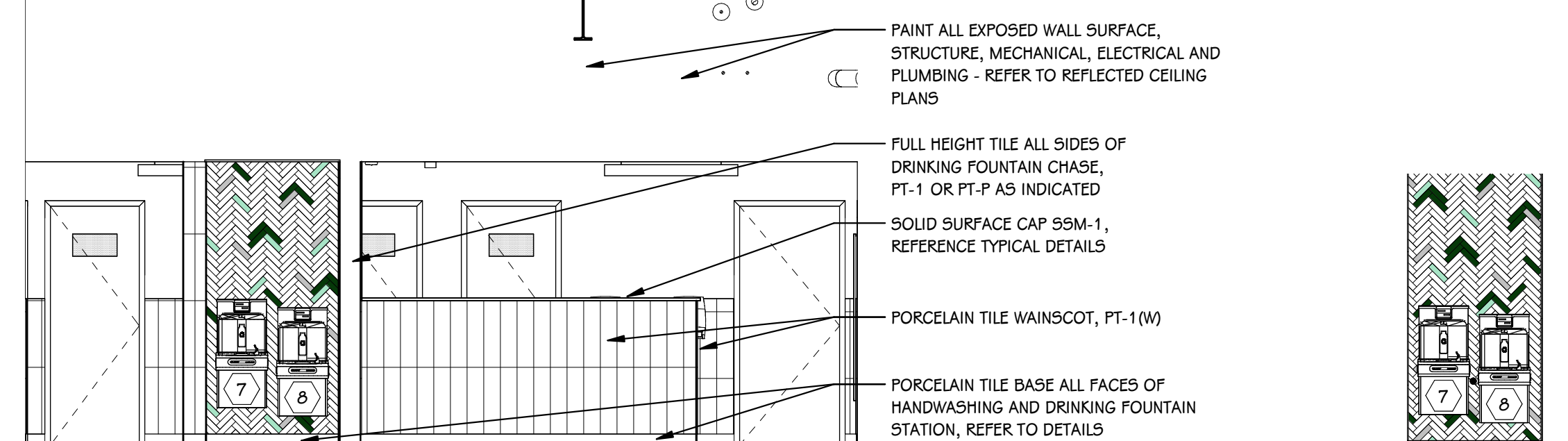
7E STUDENT GROUP TOILET 127/227 - SOUTH  
1/4" = 1'-0"



7A PASSAGEWAY 110H/210H - WEST  
1/4" = 1'-0"



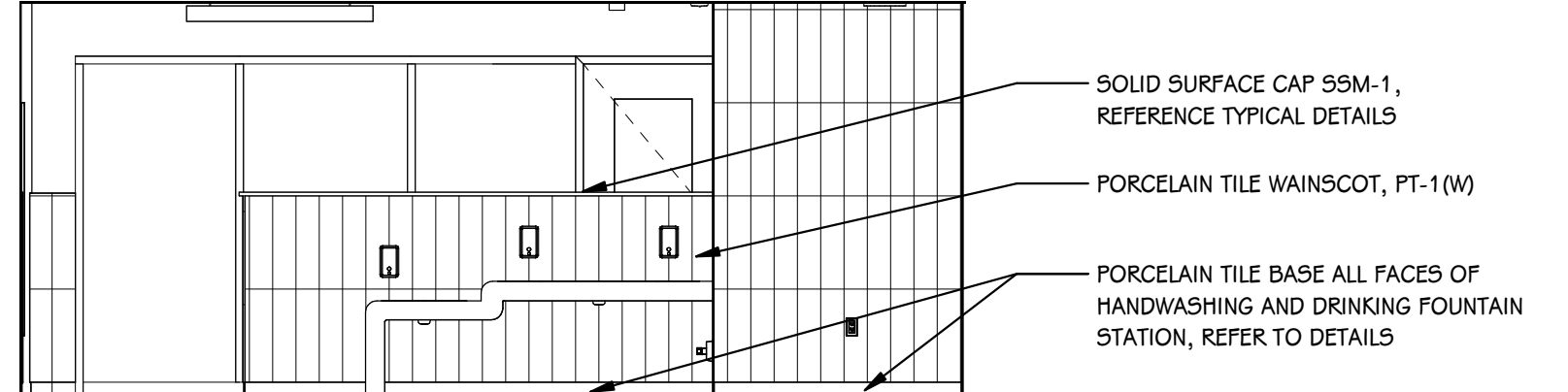
7D STUDENT GROUP TOILET 127/227 - EAST  
1/4" = 1'-0"



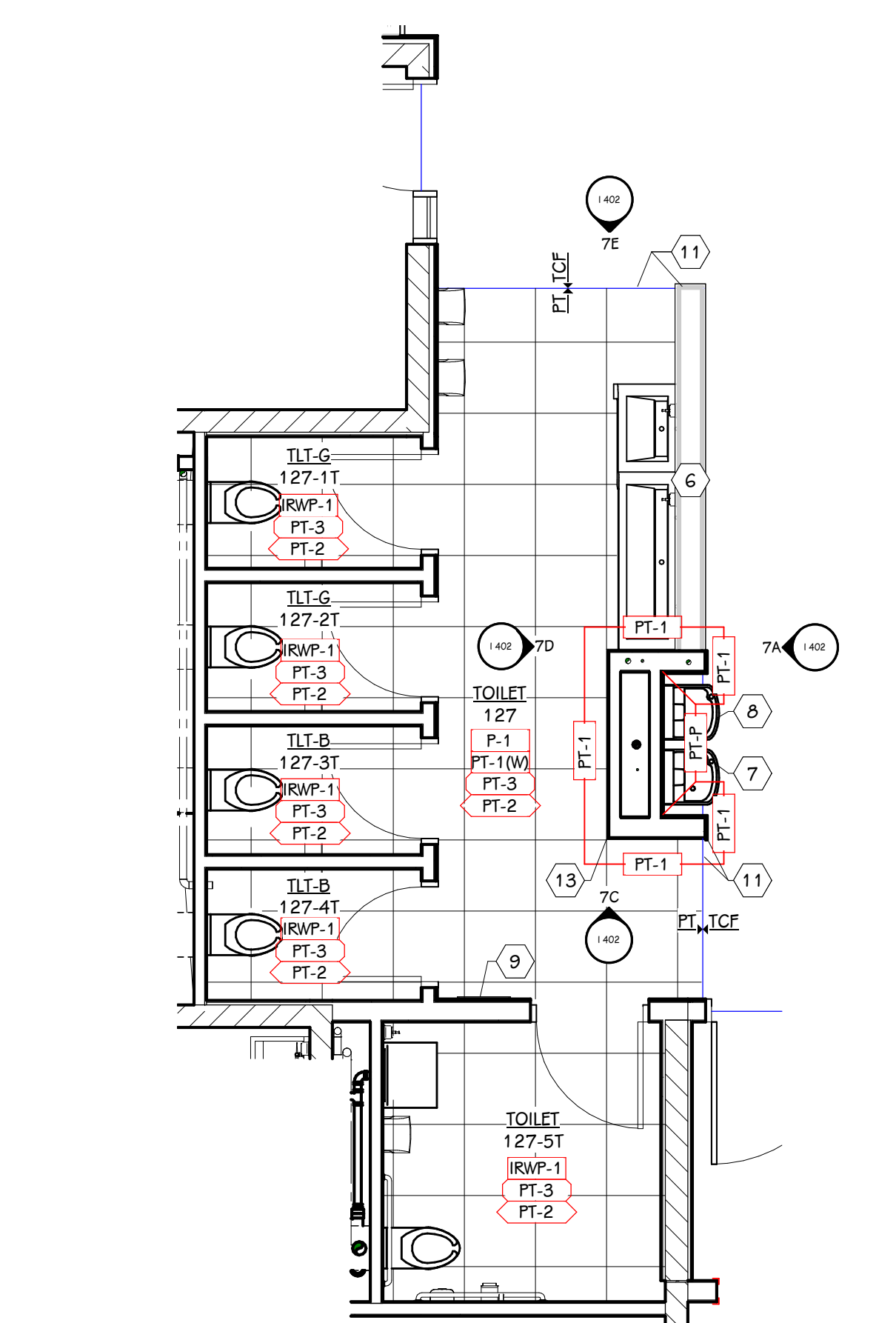
8A PASSAGE 140H/240H - SOUTH  
1/4" = 1'-0"



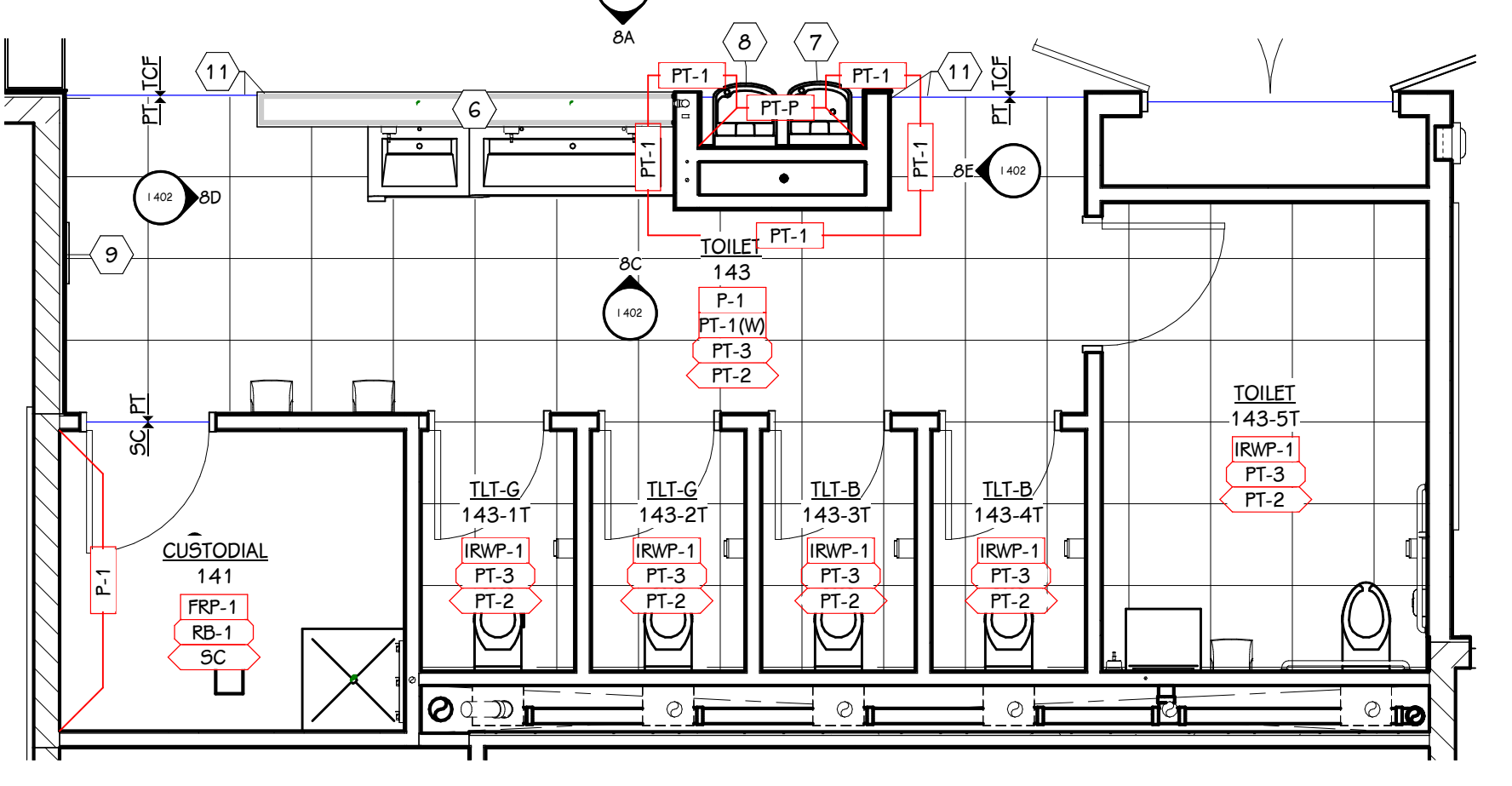
8D TILE PATTERN PASSAGEWAY 240H - SOUTH  
1/4" = 1'-0"



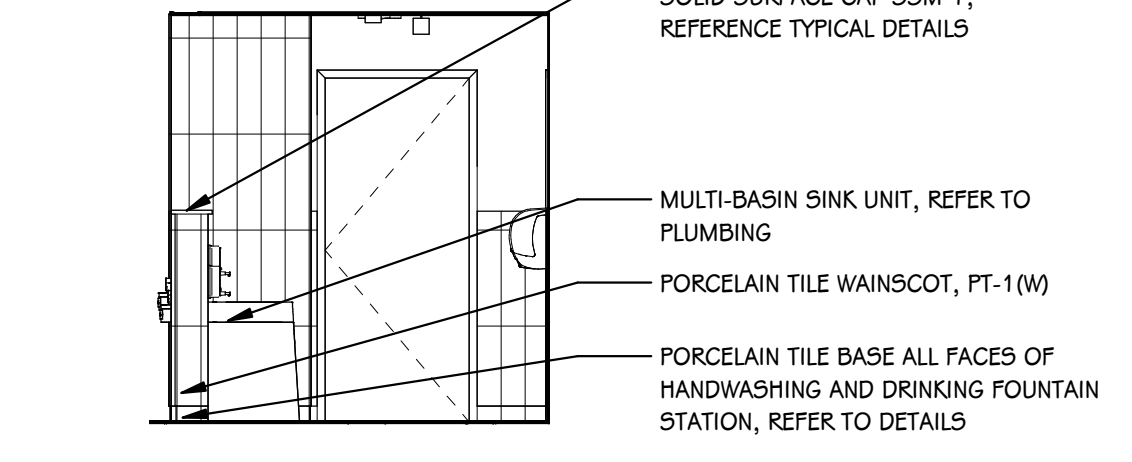
8C STUDENT GROUP TOILET 143/243 - NORTH  
1/4" = 1'-0"



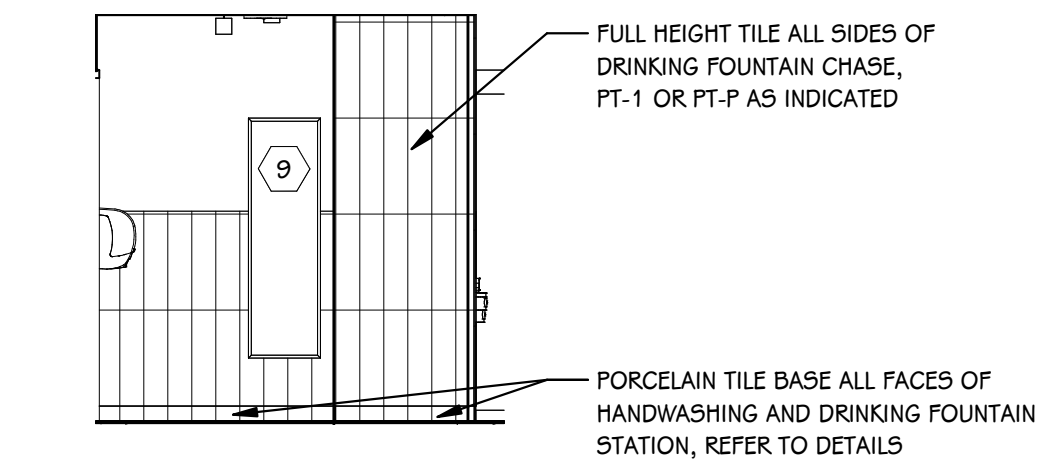
7 STUDENT GROUP TOILET 127/227  
1/4" = 1'-0"



8 STUDENT GROUP TOILET 143/243  
1/4" = 1'-0"



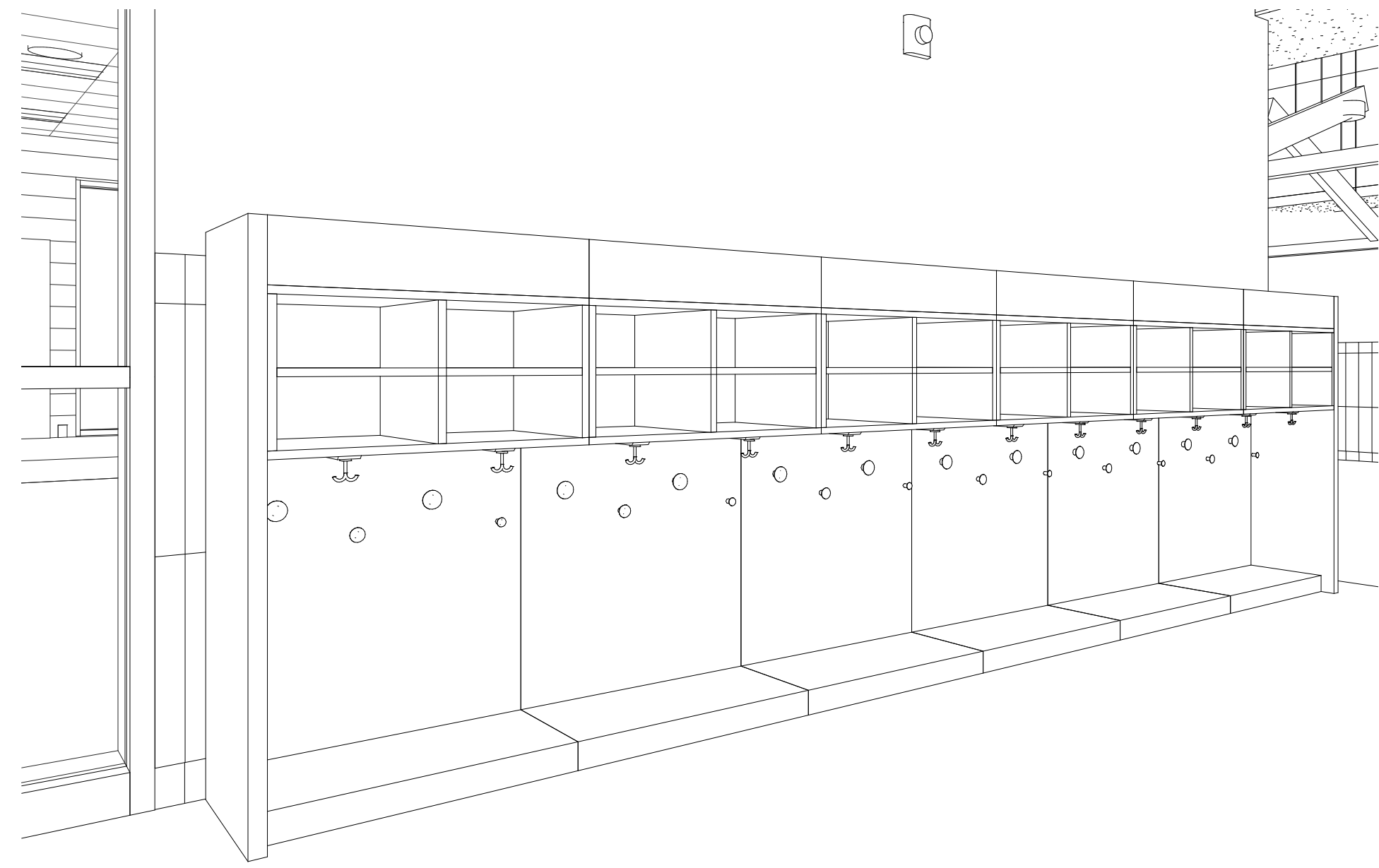
8D STUDENT GROUP TOILET 143/243 - EAST  
1/4" = 1'-0"



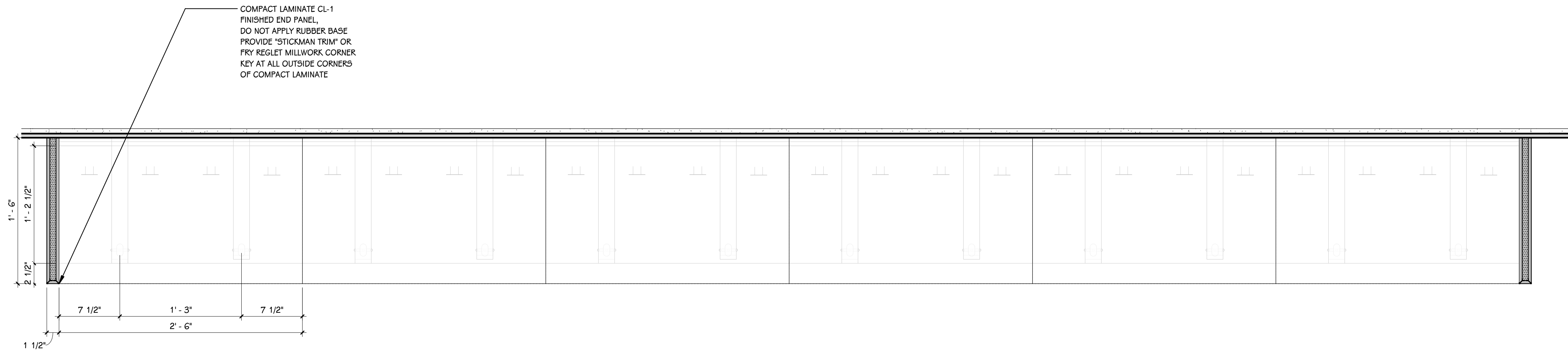
8E STUDENT GROUP TOILET 143/243 - WEST  
1/4" = 1'-0"

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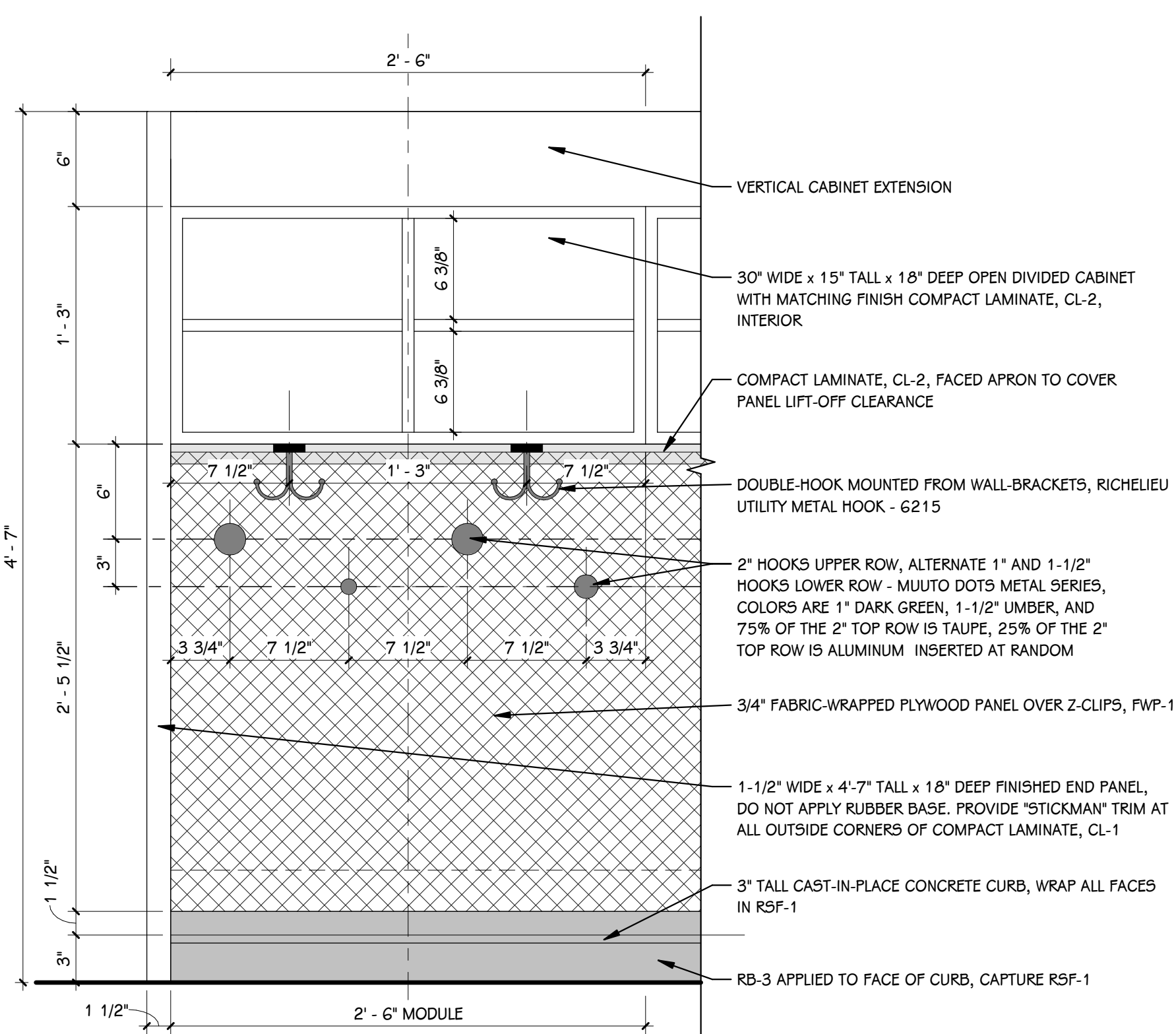
1 TYPICAL CUBBY 3D VIEW



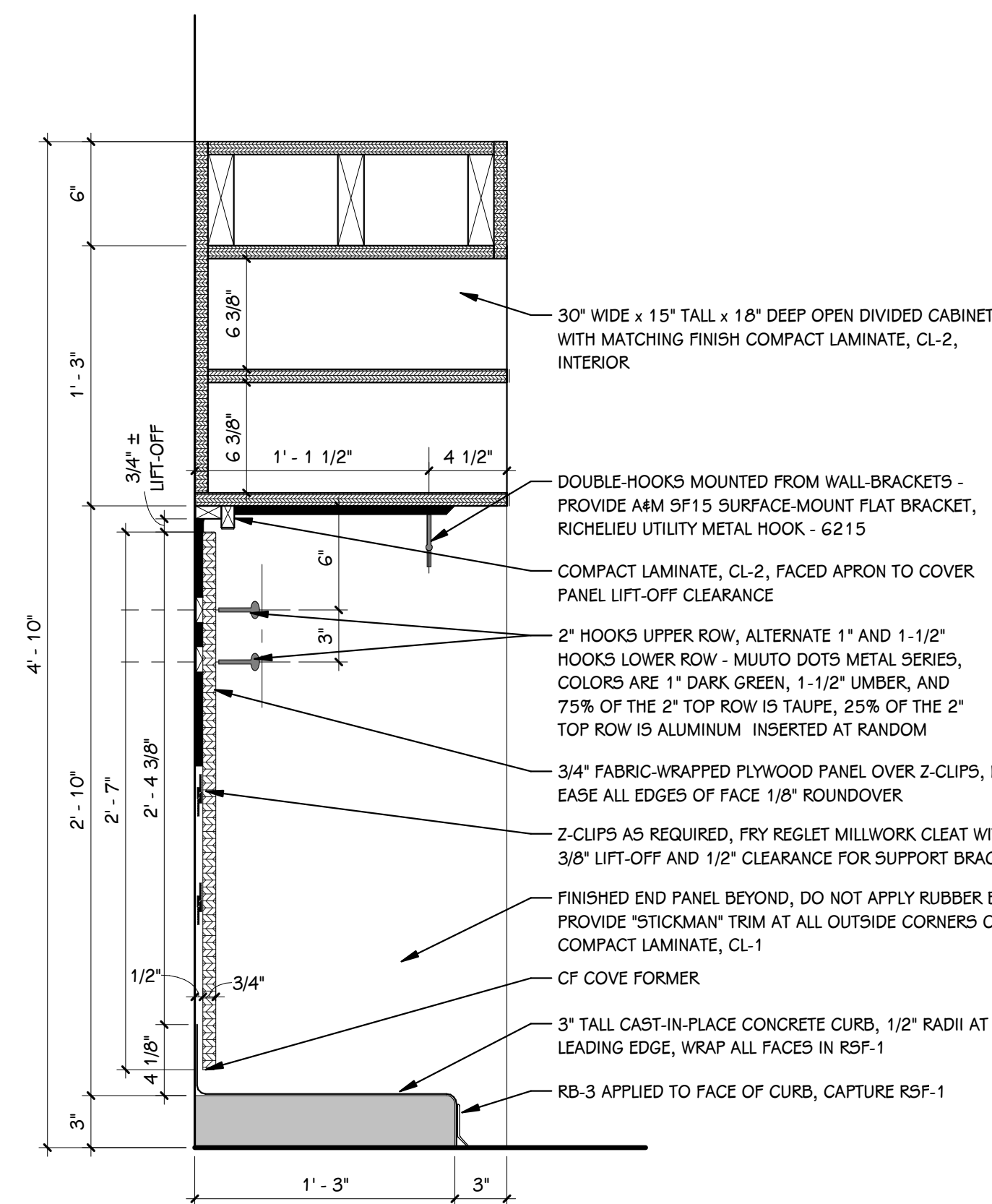
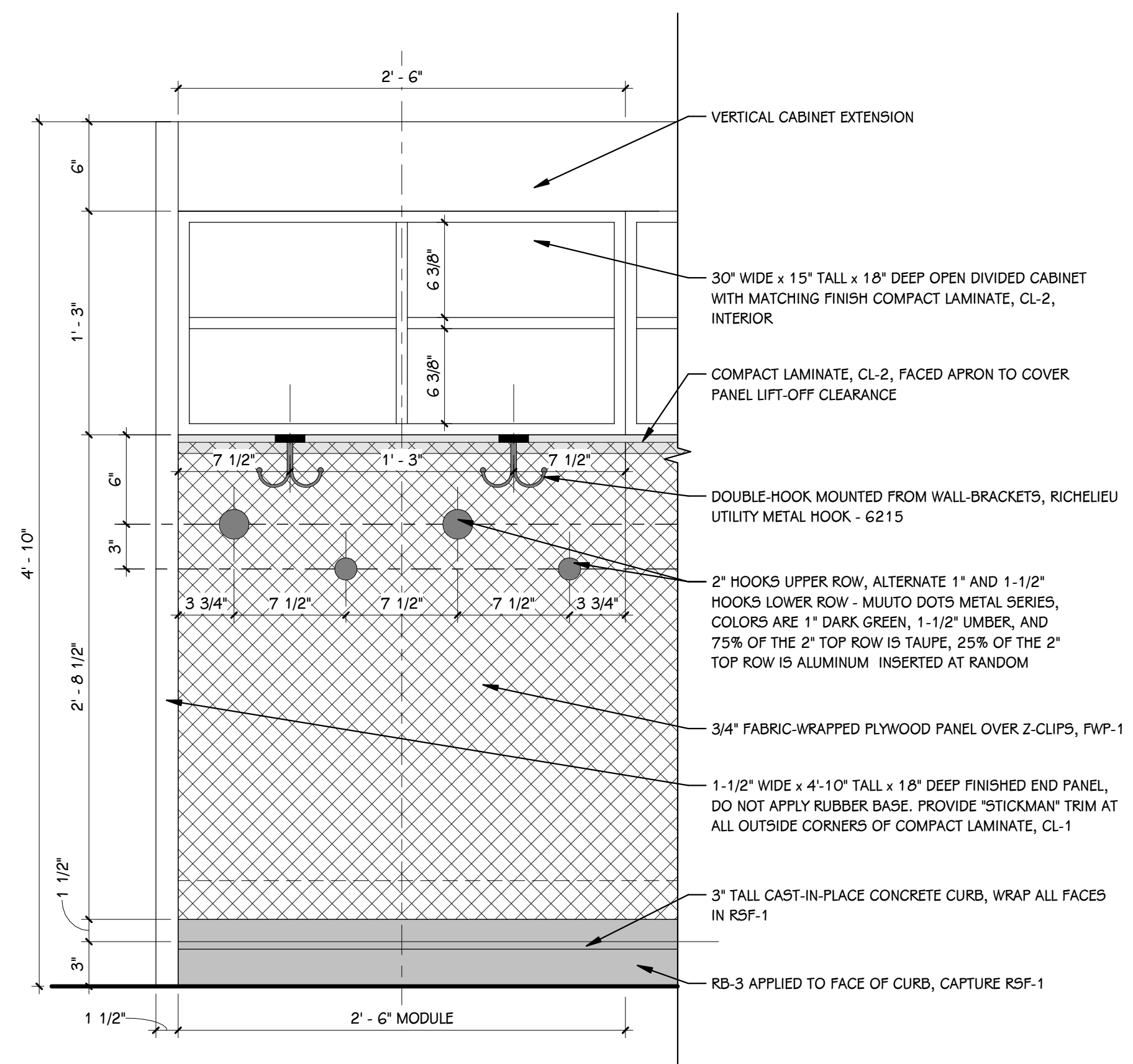
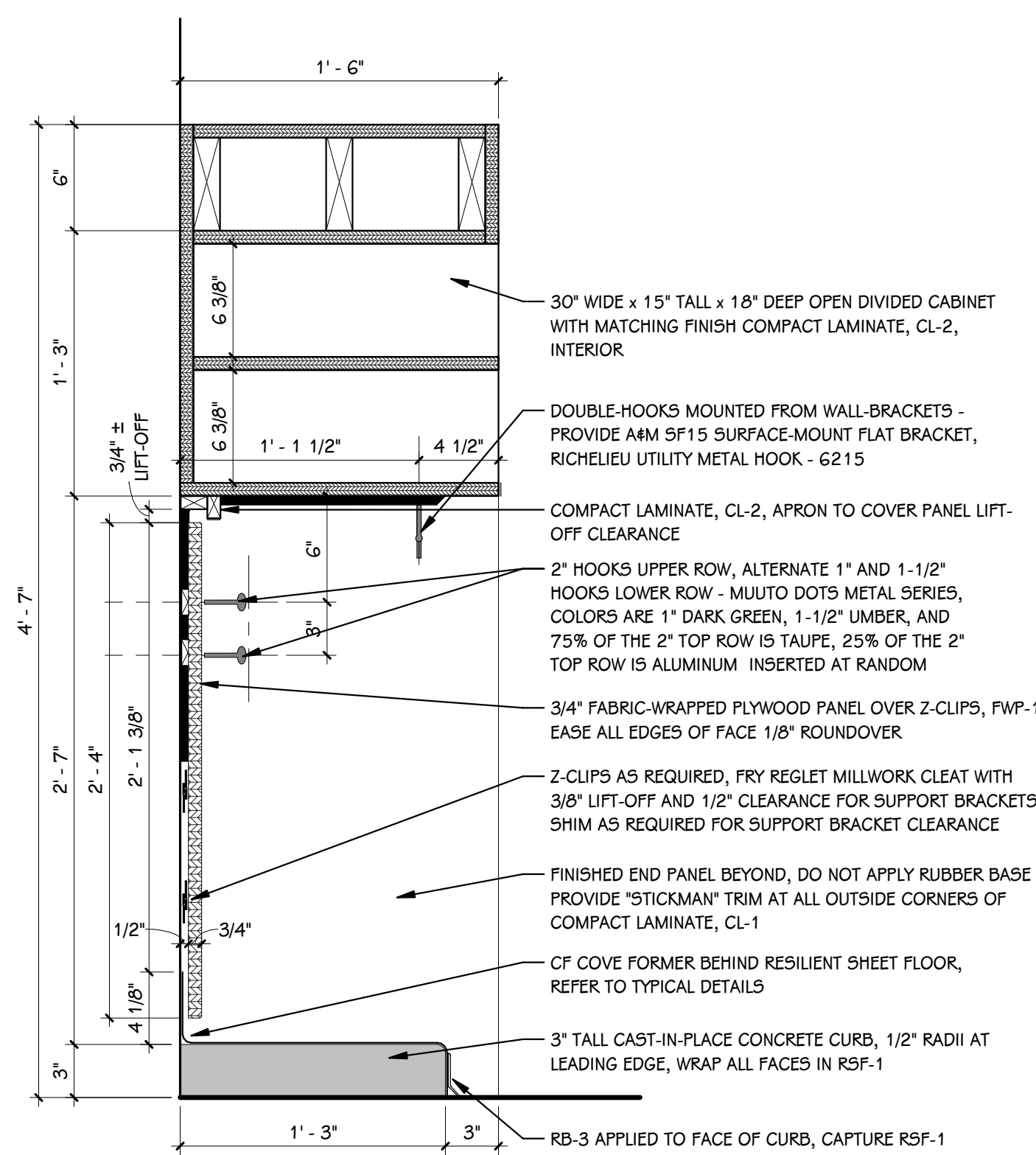
1A CUBBY ENLARGED PLAN

1A - FIRST FLOOR CUBBY WITHOUT UPPER CABINET STORAGE

2A - SECOND FLOOR CUBBY WITHOUT UPPER CABINET STORAGE



1B TYPICAL CUBBY DETAILS



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
ENLARGED FINISH PLANS AND DETAILS  
- CUBBIES

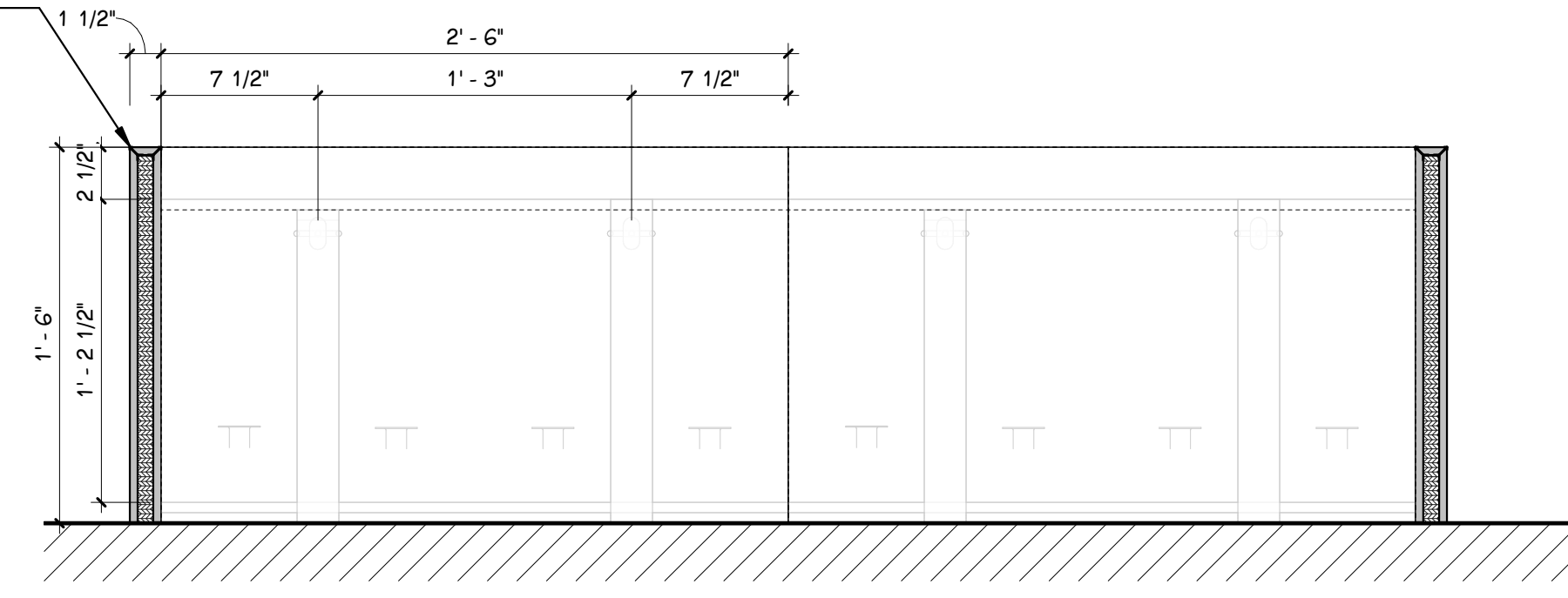
DATE  
JUNE 30, 2023

SHEET NUMBER  
1421  
21-237.20

Portage, Michigan



COMPACT LAMINATE CL-1  
FINISHED END PANEL,  
DO NOT APPLY RUBBER BASE  
PROVIDE "STICKMAN TRIM" OR  
FRY REGLET MILLWORK CORNER  
KEY AT ALL OUTSIDE CORNERS  
OF COMPACT LAMINATE

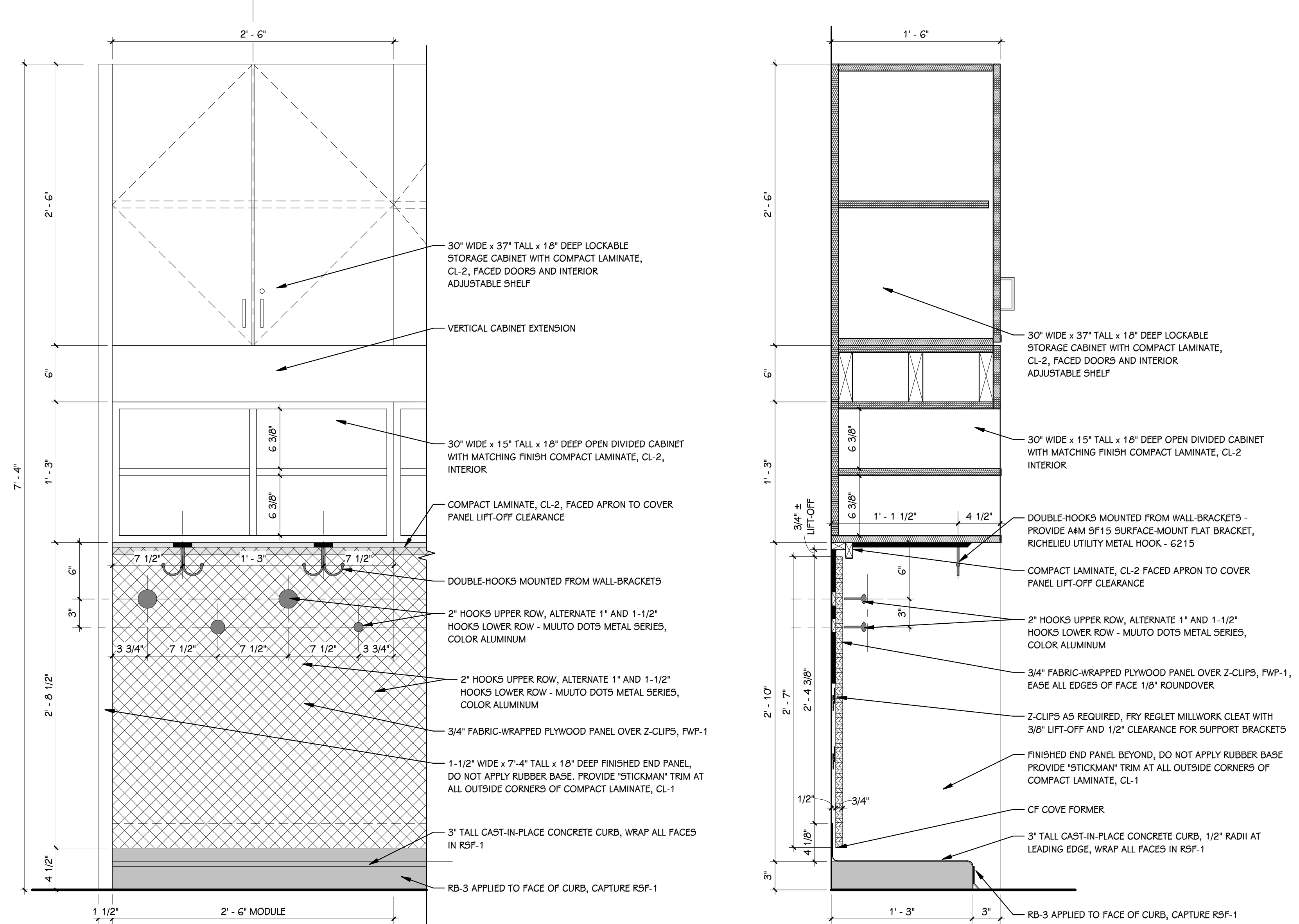
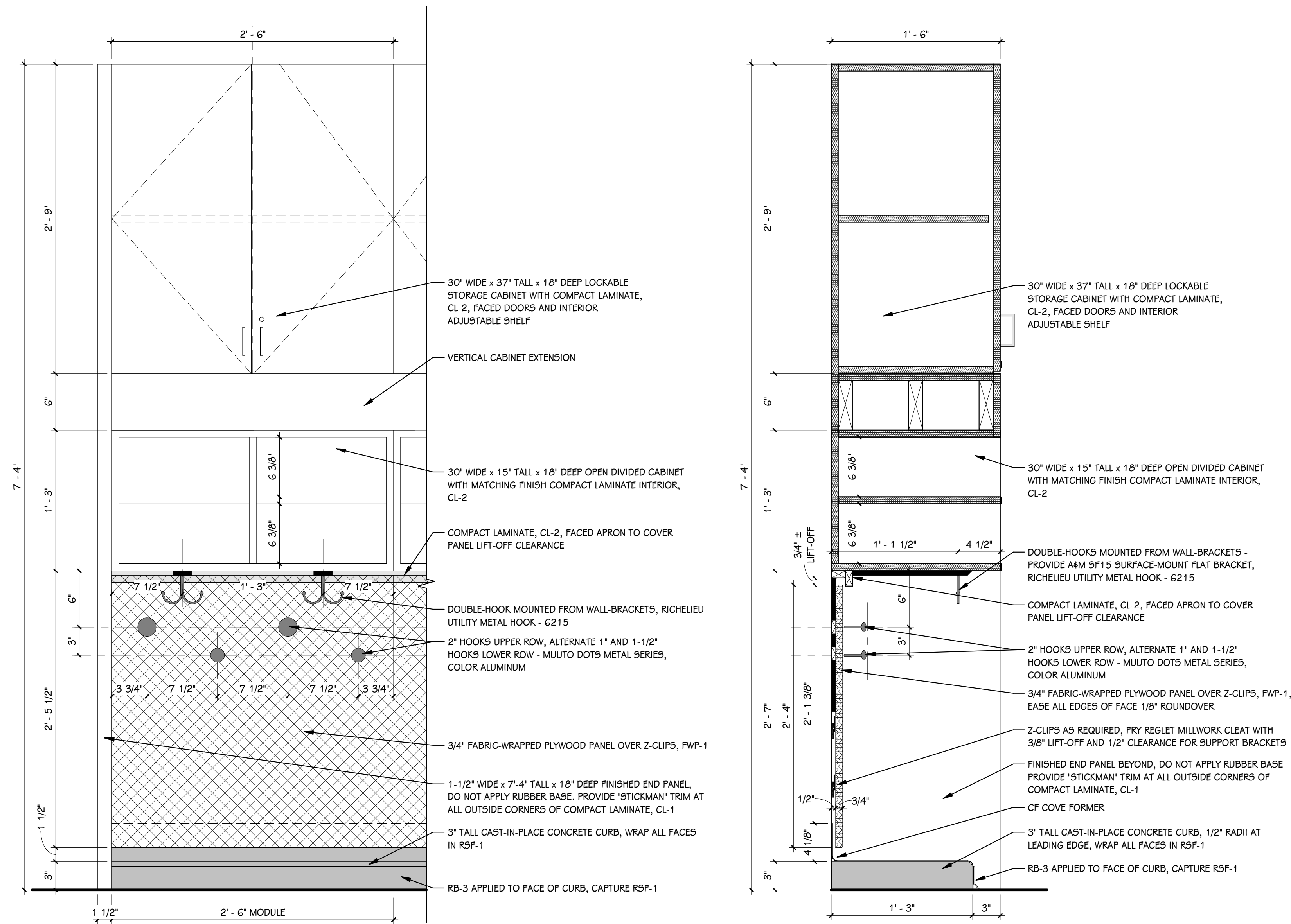


2 TYPICAL CUBBY W. STORAGE 3D VIEW

2A CUBBY W. STORAGE ENLARGED PLAN

1B - FIRST FLOOR CUBBY WITH UPPER CABINET STORAGE

2B - SECOND FLOOR CUBBY WITH UPPER CABINET STORAGE



2B TYPICAL CUBBY W. STORAGE DETAILS

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

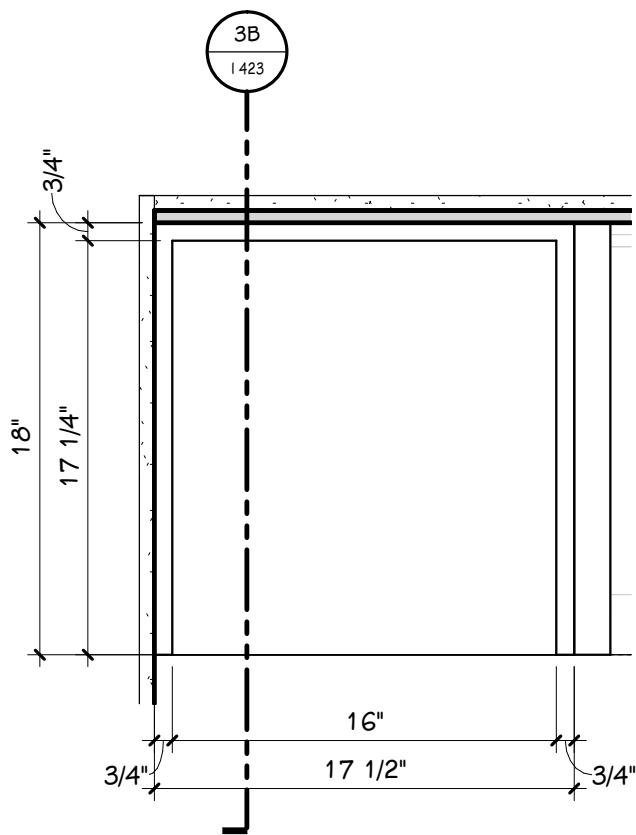
OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
ENLARGED FINISH PLANS AND DETAILS  
- CUBBIES

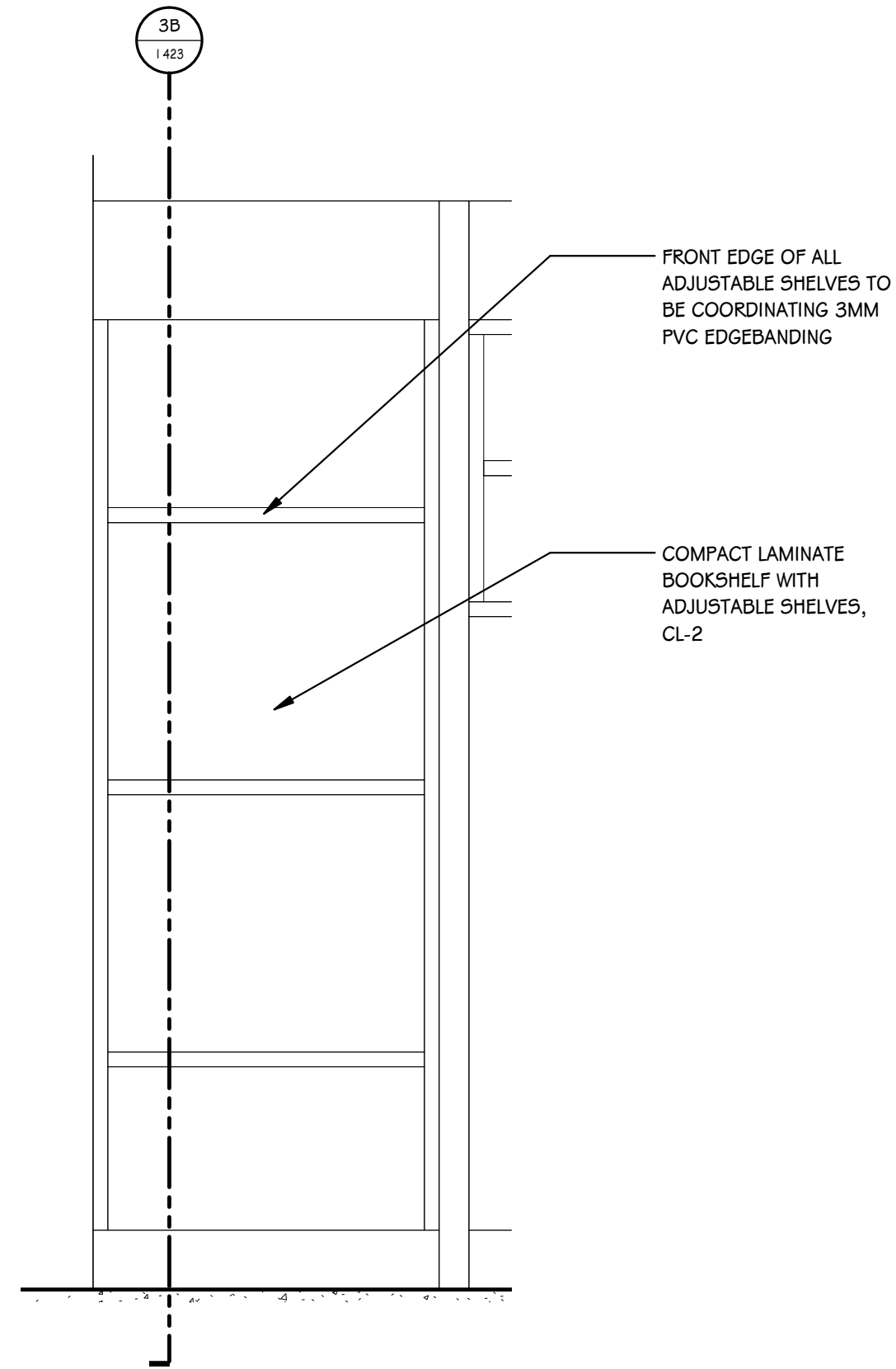
Portage, Michigan

DATE  
JUNE 30, 2023

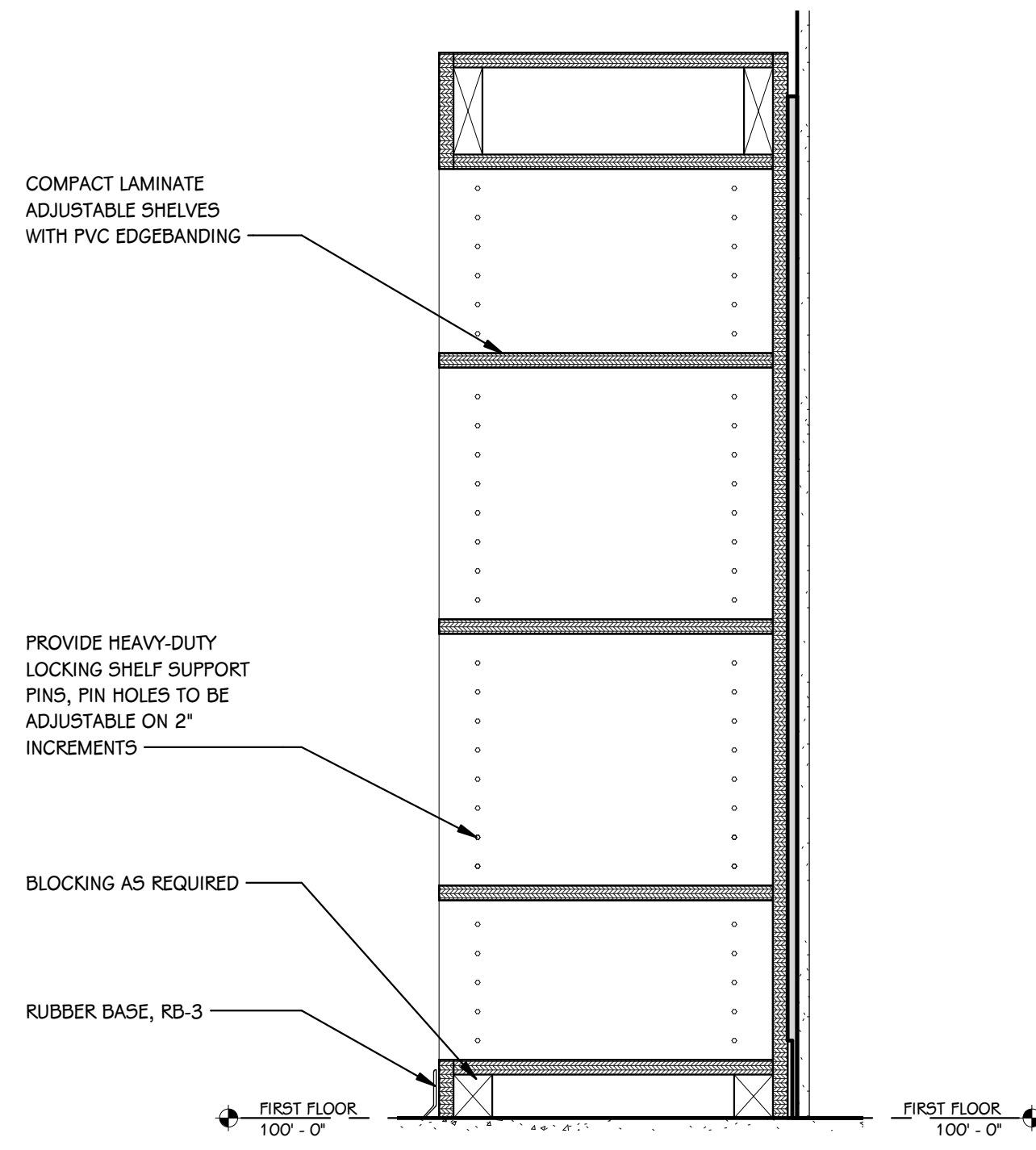
SHEET NUMBER  
1422  
21-237.20



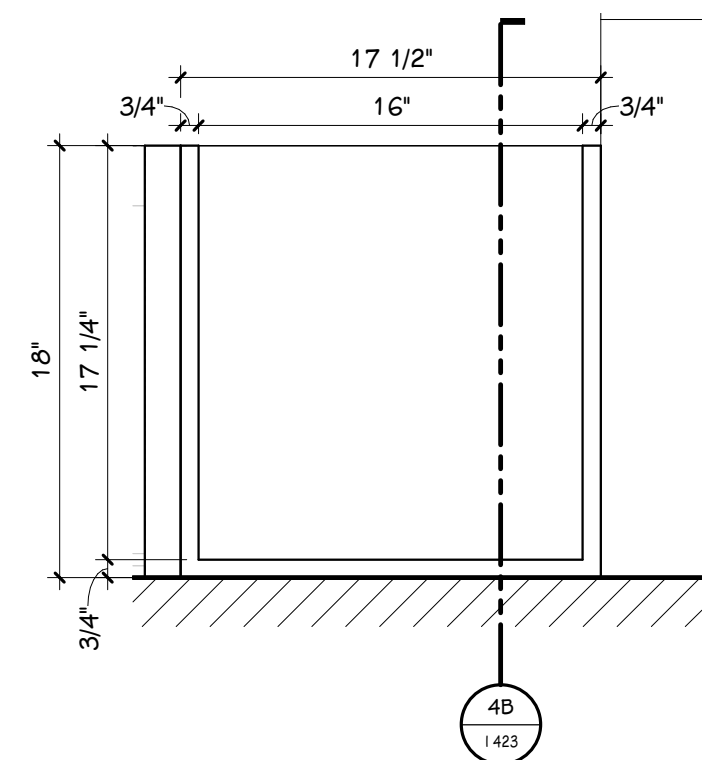
**3** SHORT SPECIALTY CORNER BOOKCASE  
1 1/2" = 1'-0"



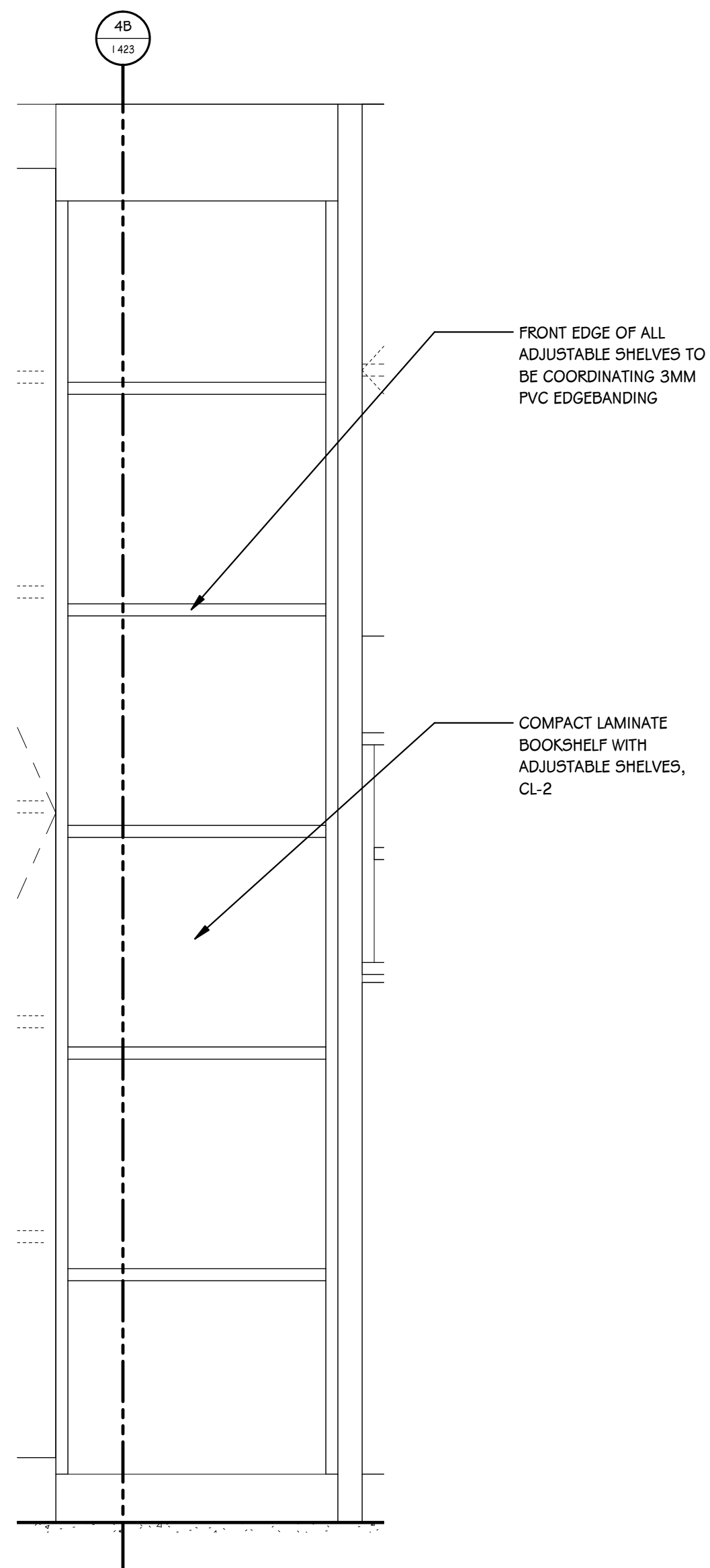
**3A** SHORT SPECIALTY CORNER BOOKCASE ELEVATION  
1 1/2" = 1'-0"



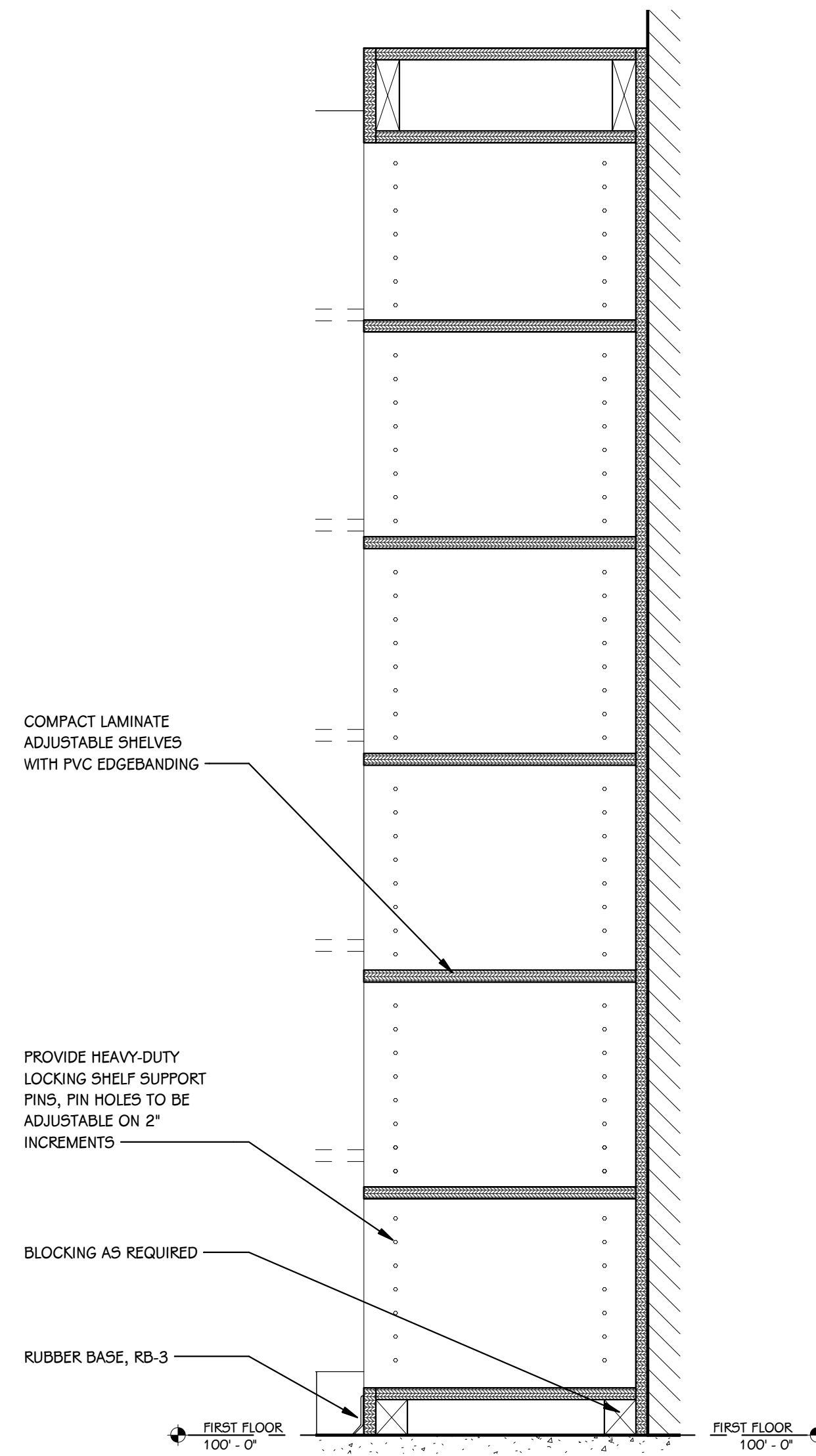
**3B** SHORT SPECIALTY CORNER BOOKCASE SECTION  
1 1/2" = 1'-0"



**4** TALL SPECIALTY CORNER BOOKCASE  
1 1/2" = 1'-0"



**4A** TALL SPECIALTY CORNER BOOKCASE ELEVATION  
1 1/2" = 1'-0"



**4B** TALL SPECIALTY CORNER BOOKCASE SECTION  
1 1/2" = 1'-0"

**ENLARGED FINISH PLAN KEY**

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- WALL FINISH
- BASE FINISH
- FLOOR FINISH
- COUNTER FINISH
- CABINET FINISH (BASE AND UPPER)
- INDICATES EXTENT OF ATYPICAL FINISH
- INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION

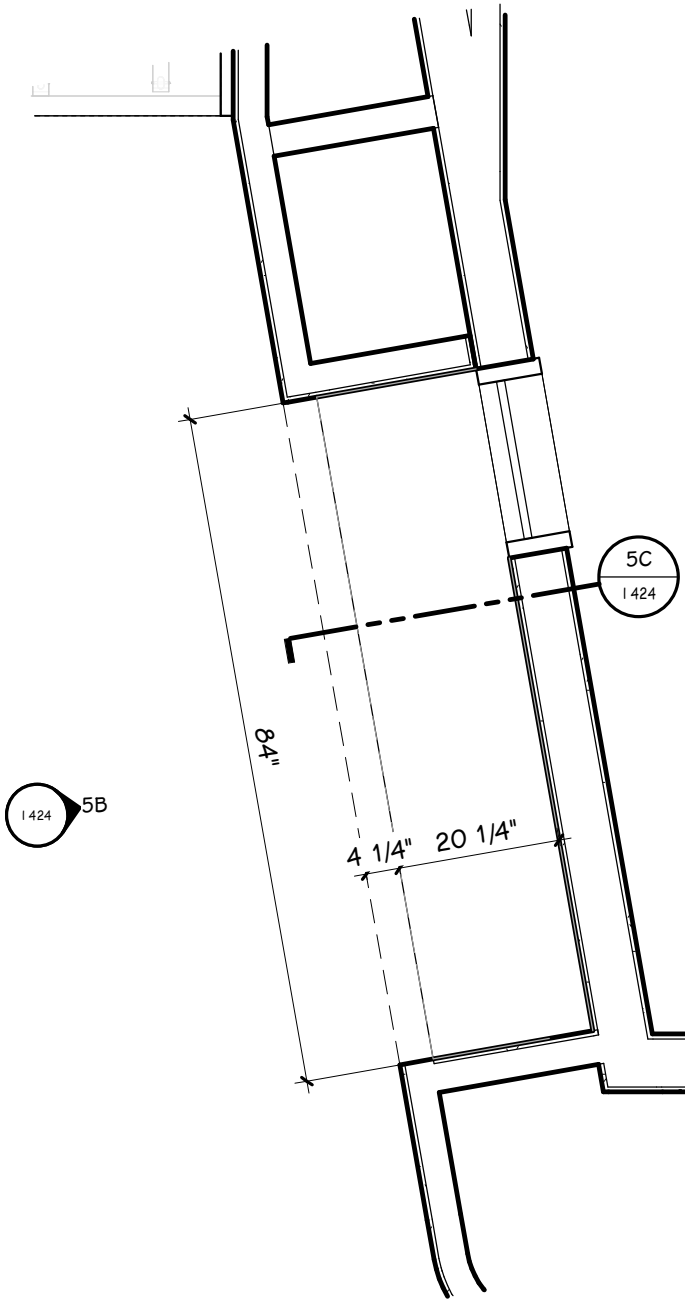
**GENERAL NOTES - ENLARGED FINISH PLAN**

1. REFER TO MATERIAL SELECTION SCHEDULE FOR FINISH INFORMATION.
2. REFER TO ARCHITECTURAL FLOOR PLANS AND SPECIFICATION FOR ADDITIONAL INFORMATION ON CONSTRUCTION MATERIALS.
3. REFER TO REFLECTED CEILING PLANS FOR CEILING FINISH AND HEIGHTS.
4. REFER TO DOOR SCHEDULE FOR FINISH ON DOORS AND FRAMES.
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6. REFER TO INTERIORS TYPICAL DETAIL SHEETS FOR TILE TRIM DETAILS, FLOORING TRANSITIONS, WAINSCOT DETAILS, AND TYPICAL TILE PATTERN REQUIREMENTS.
7. REFER TO INTERIOR ELEVATION SHEETS FOR REQUIREMENTS, GENERAL NOTES, ABBREVIATIONS, AND HARDWARE/ACCESSORY SELECTIONS FOR CASEWORK.
8. WHERE HEIGHT IS INDICATED FOR IMPACT RESISTANT WALL PANEL AND FIBERGLASS REINFORCED PLASTIC PANELING NOTED HEIGHT IS NOMINAL, CONTRACTOR TO PROVIDE FULL SHEET HEIGHT OR WIDTH ATOP SPECIFIED BASE HEIGHT PLUS ANY NECESSARY TRIMS OR ACCESSORIES.
9. DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. FOR CONDITIONS NOT SHOWN, USE DETAILS CLOSEST TO CONDITION IN QUESTION.

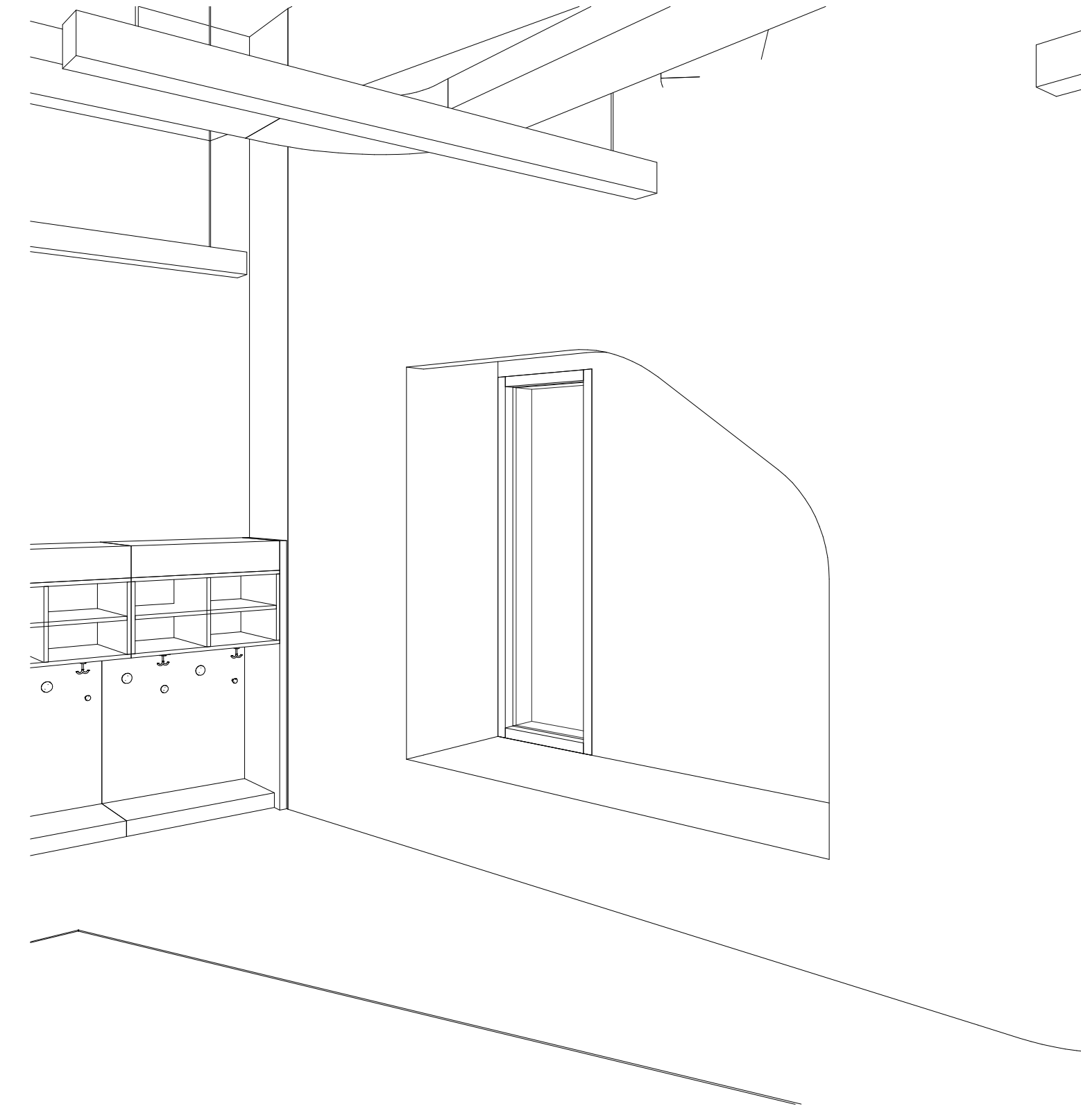
**KEYED NOTES - ENLARGED FINISH PLANS**

- 1 CEILING-MOUNTED CUBICLE CURTAIN AND TRACK, REFER TO SPECIFICATION.
- 2 ADULT CHANGING TABLE, BY OWNER.
- 3 ALIGN FLOORING TRANSITION TO CORNER.
- 4 ALIGN FLOORING TRANSITION TO DOOR MULLION.
- 5 EXTEND PORCELAIN TILE AND TILE TRIM TO INSIDE CORNER, COPE RESILIENT FLOOR COVE TO TILE.
- 6 SOLID SURFACE CAP, SSM-1 - REFER TO DETAILS.
- 7 INSTALL LEFT DRINKING FOUNTAIN AT ADULT BARRIER-FREE HEIGHT.
- 8 INSTALL RIGHT DRINKING FOUNTAIN AT CHILD BARRIER-FREE HEIGHT.
- 9 PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- 10 DO NOT PROVIDE MIRROR AT EASTERNMOST SINK IN MENS RESTROOM.
- 11 ALIGN FLOORING TRANSITION TO FACE OF ADJACENT WALL, TRANSITION FLOOR BASE PER TYPICAL DETAILS.
- 13 PORCELAIN FLOOR TILE PATTERN WORK POINT.
- 14 PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.

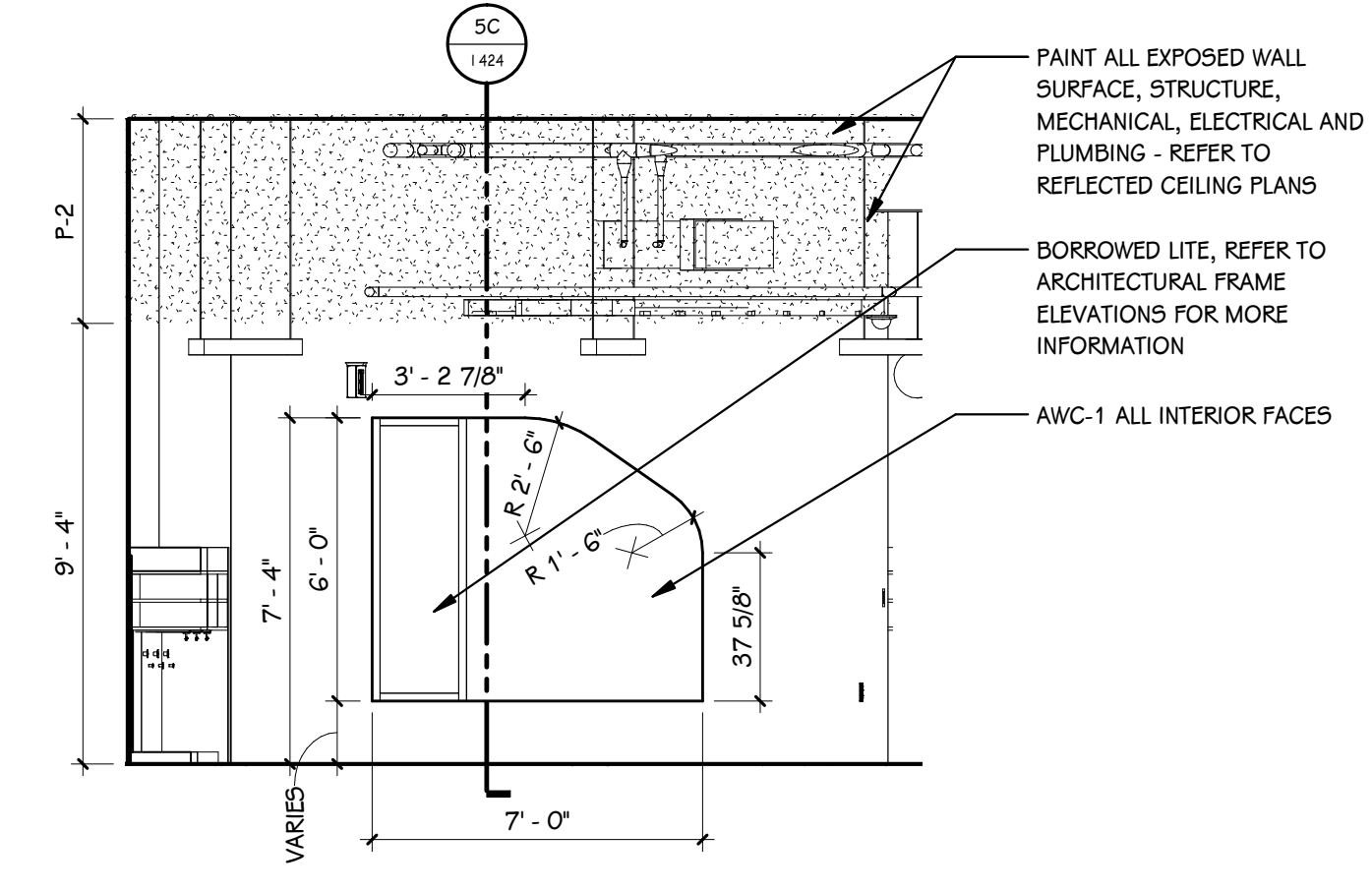




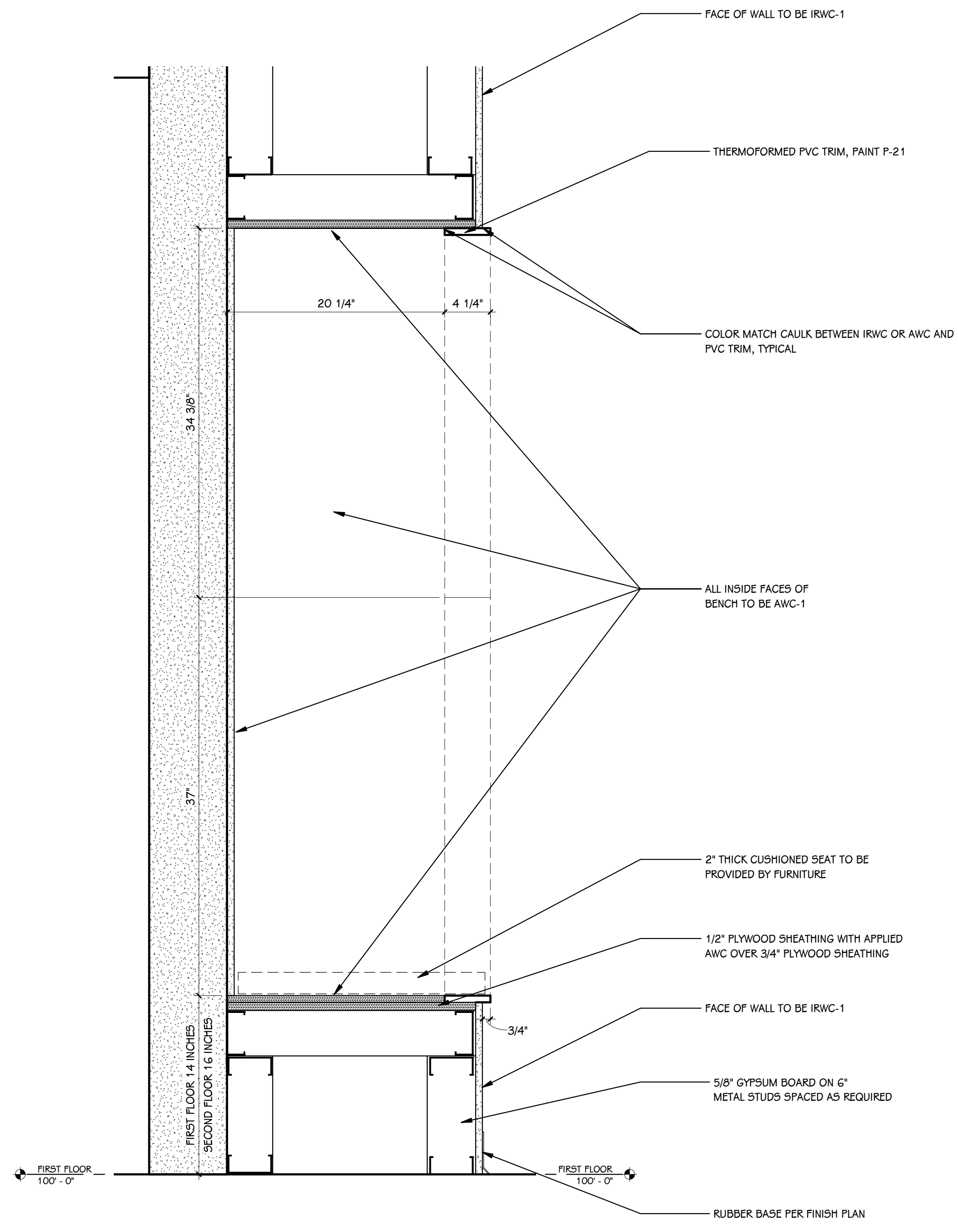
SC 1424 ENLARGED PASSAWAY BENCH PLAN  
1/2" = 1'-0"



SA 1424 3D - PASSAGEWAY BENCH



SB 1424 PASSAGEWAY 120H - EAST  
1/4" = 1'-0"



SC 1424 PASSAWAY BENCH SECTION  
1/2" = 1'-0"

**ENLARGED FINISH PLAN KEY**

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  - REFER TO ARCHITECTURAL FLOOR PLANS AND SPECIFICATION FOR ADDITIONAL INFORMATION ON CONSTRUCTION MATERIALS.
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  - REFER TO INTERIORS TYPICAL DETAIL SHEETS FOR TILE TRIM DETAILS, FLOORING TRANSITIONS, WAINSCOT DETAILS, AND TYPICAL TILE PATTERN REQUIREMENTS.
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  - DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. FOR CONDITIONS NOT SHOWN, USE DETAILS CLOSEST TO CONDITION IN QUESTION.

- KEYED NOTES - ENLARGED FINISH PLANS**
- CEILING-MOUNTED CUBICLE CURTAIN AND TRACK, REFER TO SPECIFICATION.
  - ADULT CHANGING TABLE, BY OWNER.
  - ALIGN FLOORING TRANSITION TO CORNER.
  - ALIGN FLOORING TRANSITION TO CORNER.
  - EXTEND PORCELAIN TILE AND TILE TRIM TO INSIDE CORNER, COPE RESILIENT FLOOR COVE TO TILE.
  - SOLID SURFACE CAP, SSM-1 - REFER TO DETAILS.
  - INSTALL LEFT DRINKING FOUNTAIN AT ADULT BARRIER-FREE HEIGHT.
  - INSTALL RIGHT DRINKING FOUNTAIN AT CHILD BARRIER-FREE HEIGHT.
  - PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
  - DO NOT PROVIDE MIRROR AT EASTERNMOST SINK IN MENS RESTROOM.
  - ALIGN FLOORING TRANSITION TO FACE OF ADJACENT WALL, TRANSITION FLOOR BASE PER TYPICAL DETAILS.
  - PORCELAIN FLOOR TILE PATTERN WORK POINT.
  - PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT MIRROR INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.



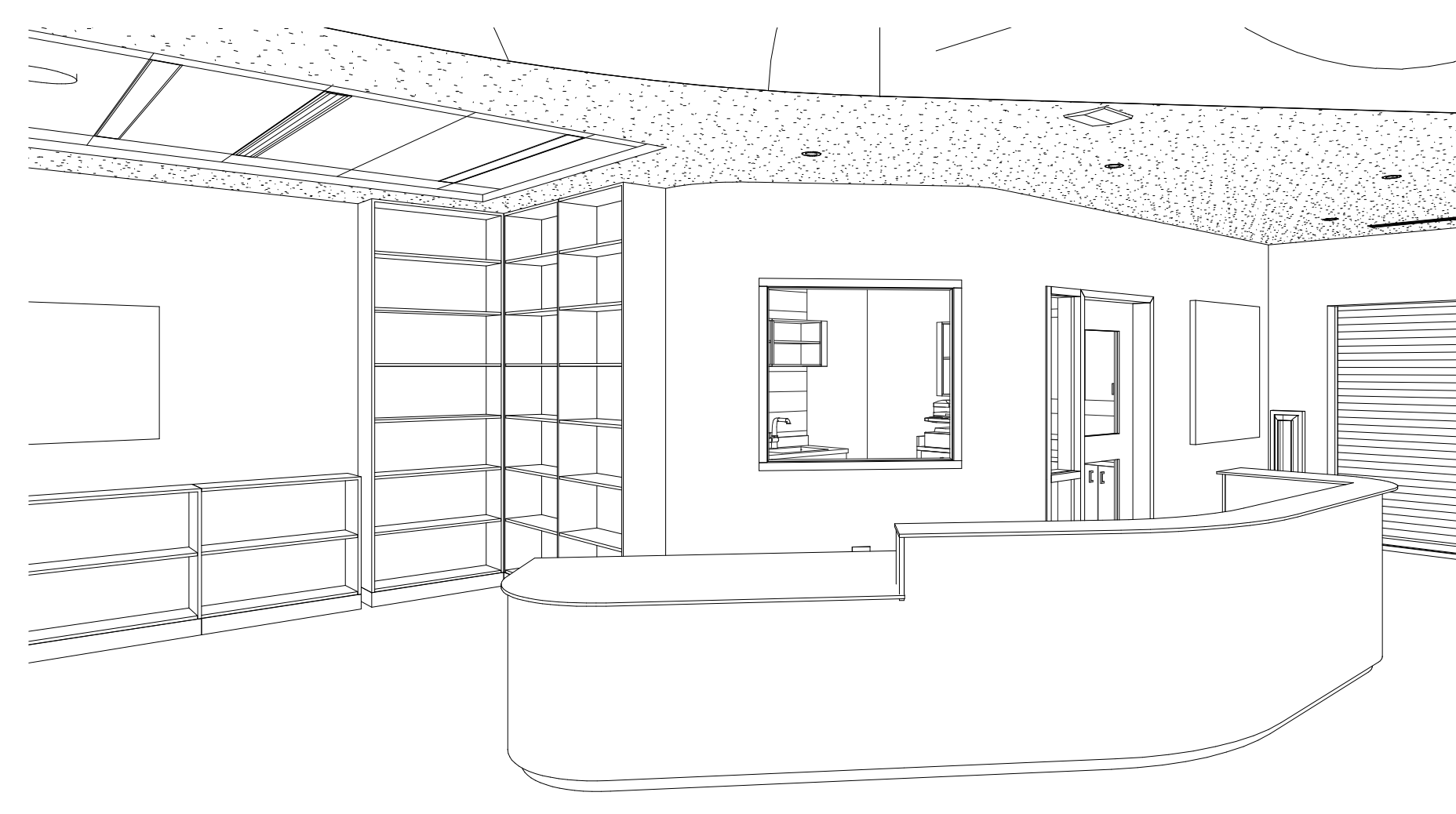
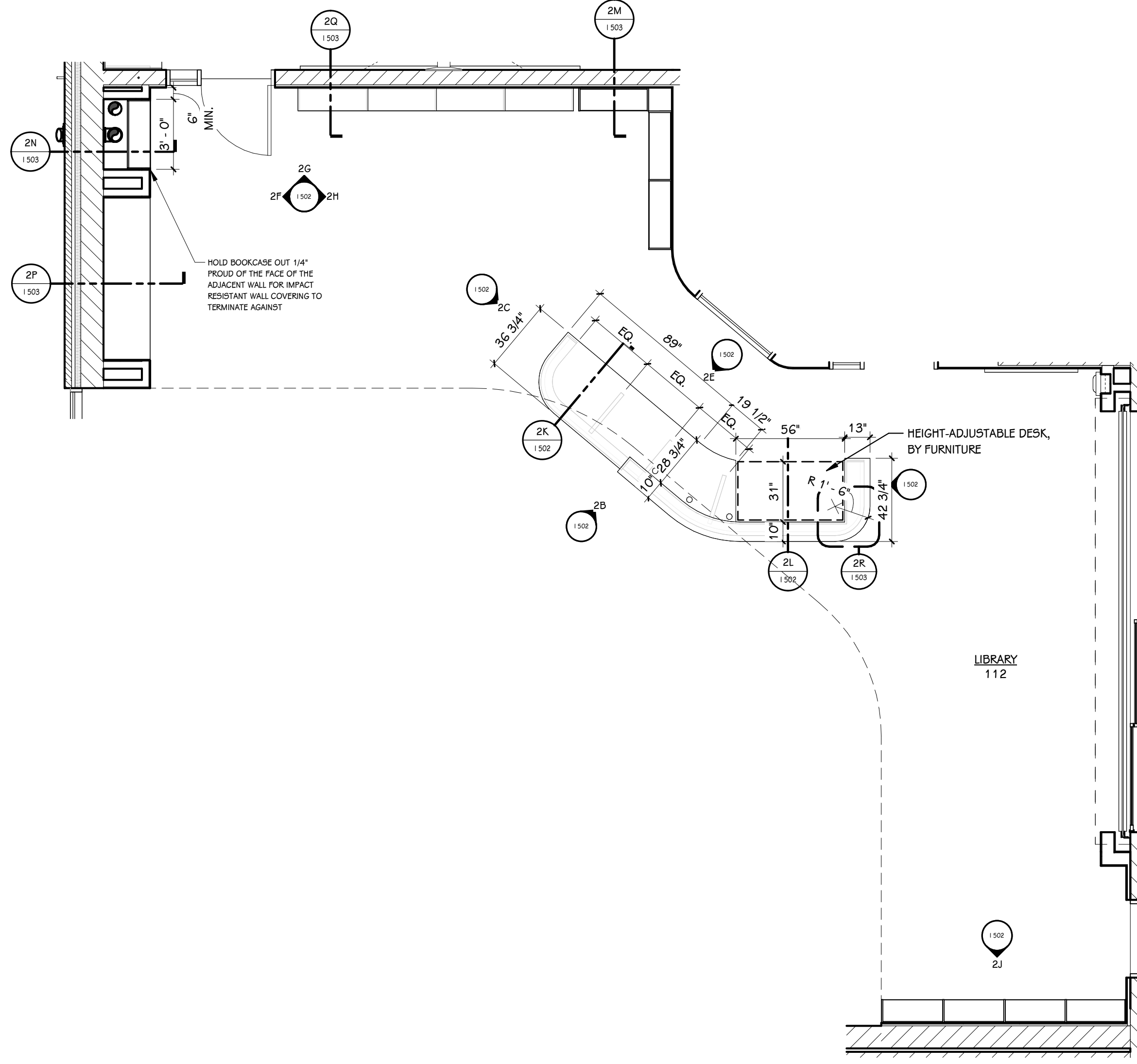
GENERAL NOTES - MILLWORK	
1. VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.	
2. FILLER PANELS SHALL BE NO LESS THAN 2" WIDE, UNLESS NOTED OTHERWISE.	
3. FINISH ANY EXPOSED END PANELS, UNDERSIDE OF CABINETS OR OPEN CABINETS, WITH PLASTIC LAMINATE SPECIFIED FOR FRONTS IN THAT ROOM.	
4. ALL VERTICAL AND HORIZONTAL EXPOSED AND SEMI-EXPOSED SURFACES TO BE FINISHED WITH BODY PLASTIC LAMINATE.	
5. SUPPORT BRACKETS ARE REQUIRED EVERY 36" O.C. AT AREAS WHERE COUNTERTOP IS OPEN UNDERNEATH. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING BRACKETS APPROPRIATELY SIZED BASED ON DEPTH OF COUNTERTOP.	
6. PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AWI STANDARDS, UNLESS NOTED OTHERWISE.	
7. GROMMET LOCATIONS SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO INSTALLATION - COORDINATE WITH POWER & DATA LOCATIONS FOR ANY ADDITIONAL WIRE MANAGEMENT REQUIREMENTS.	
8. "SLABSMITHING" WILL BE REQUIRED IN INSTANCES WHERE A PATTERNED QUARTZ, NATURAL STONE, OR SOLID SURFACE IS SPECIFIED.	
9. WHERE MILLWORK IS INDICATED TO RECEIVE RESIDENTIAL APPLIANCES, FURNITURE, OR OWNER-FURNISHED EQUIPMENT, COORDINATE WITH FINAL OWNER-PROVIDED SELECTIONS.	
10. COORDINATE WITH POWER, DATA, AND OWNERS TECHNOLOGY REQUIREMENTS TO PROVIDE REMOVABLE ACCESS PANELS, WIREWAYS, AND WIRE MANAGEMENT AS REQUIRED.	
11. MAXIMUM OVERHANG OF TRANSACTION COUNTER ON USER SIDE IS 1". COORDINATE CLEARANCES WITH HEIGHT-ADJUSTABLE TABLE REQUIREMENTS PRIOR TO FABRICATION.	

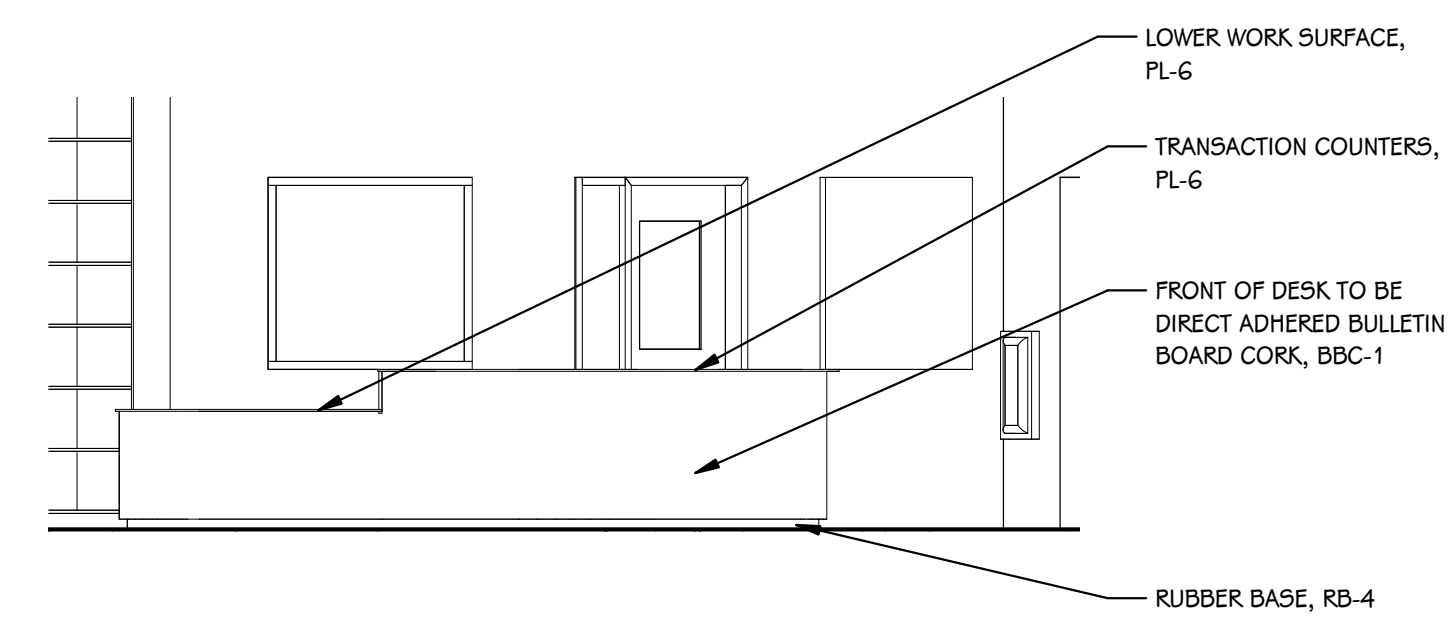
STANDARD ABBREVIATIONS FOR MILLWORK	
ADJ	ADJUSTABLE
FP	FILLER PANEL
RP	REMOVABLE PANEL

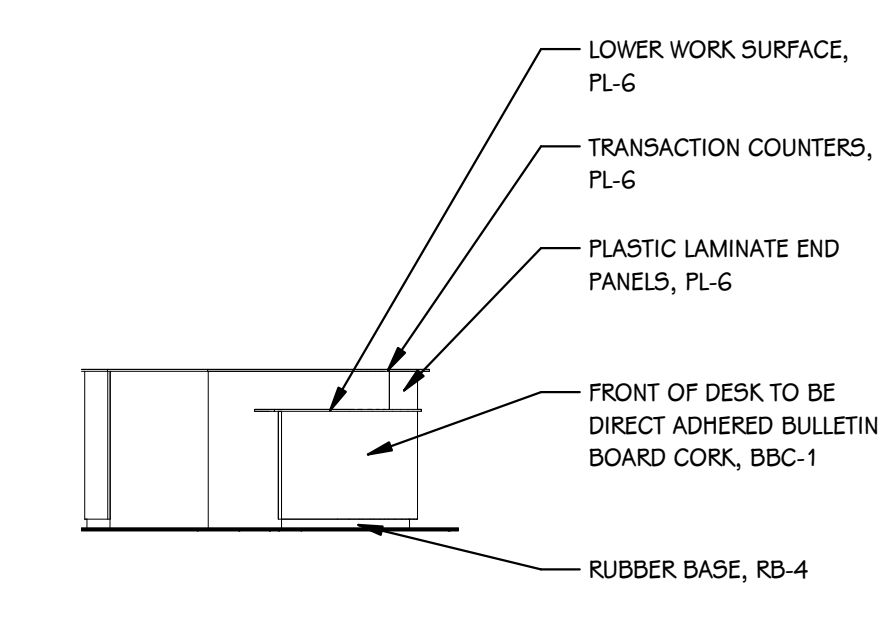
MILLWORK HARDWARE AND ACCESSORY SELECTIONS	
PULLS:	
MOCKETT 5-1/2" RADIUS DRAWER PULL, DP124A - 17 SATIN NICKLE	
COUNTERTOP EDGES:	
PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE.	
SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.	
SUPPORT BRACKETS:	
METAL STUD WALL CONSTRUCTION - ARM CONCEALED FLAT BRACKETS (SIZE AS REQ'D.)	
CMU WALL CONSTRUCTION - ARM HEAVY-DUTY HYBRID BRACKETS (SIZE AS REQ'D.)	
GROMMETS:	
MOCKETT 2-3/8" METAL BRUSH DESK GROMMET, MBG1A-17 NICKLE	



2A 1502 3D - LIBRARY

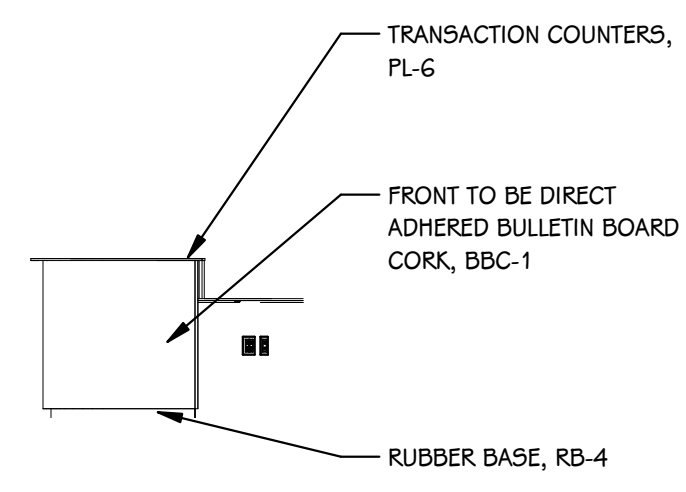


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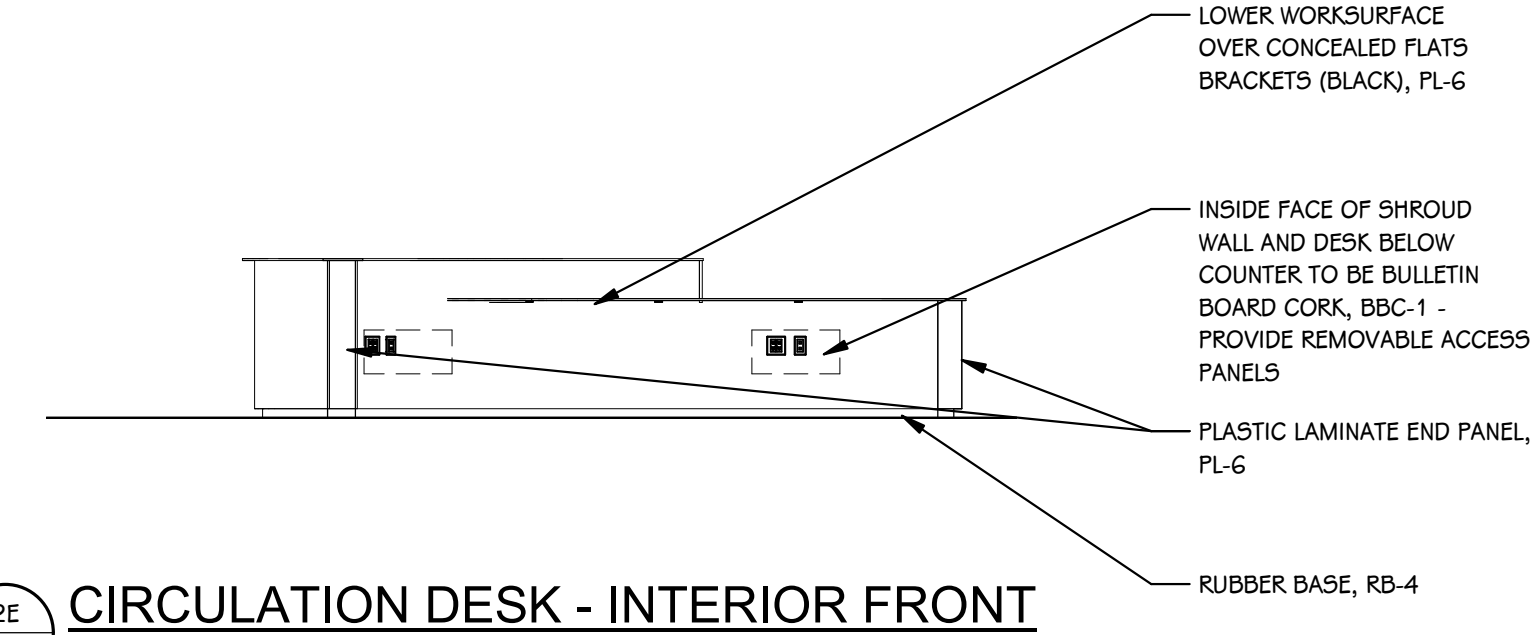


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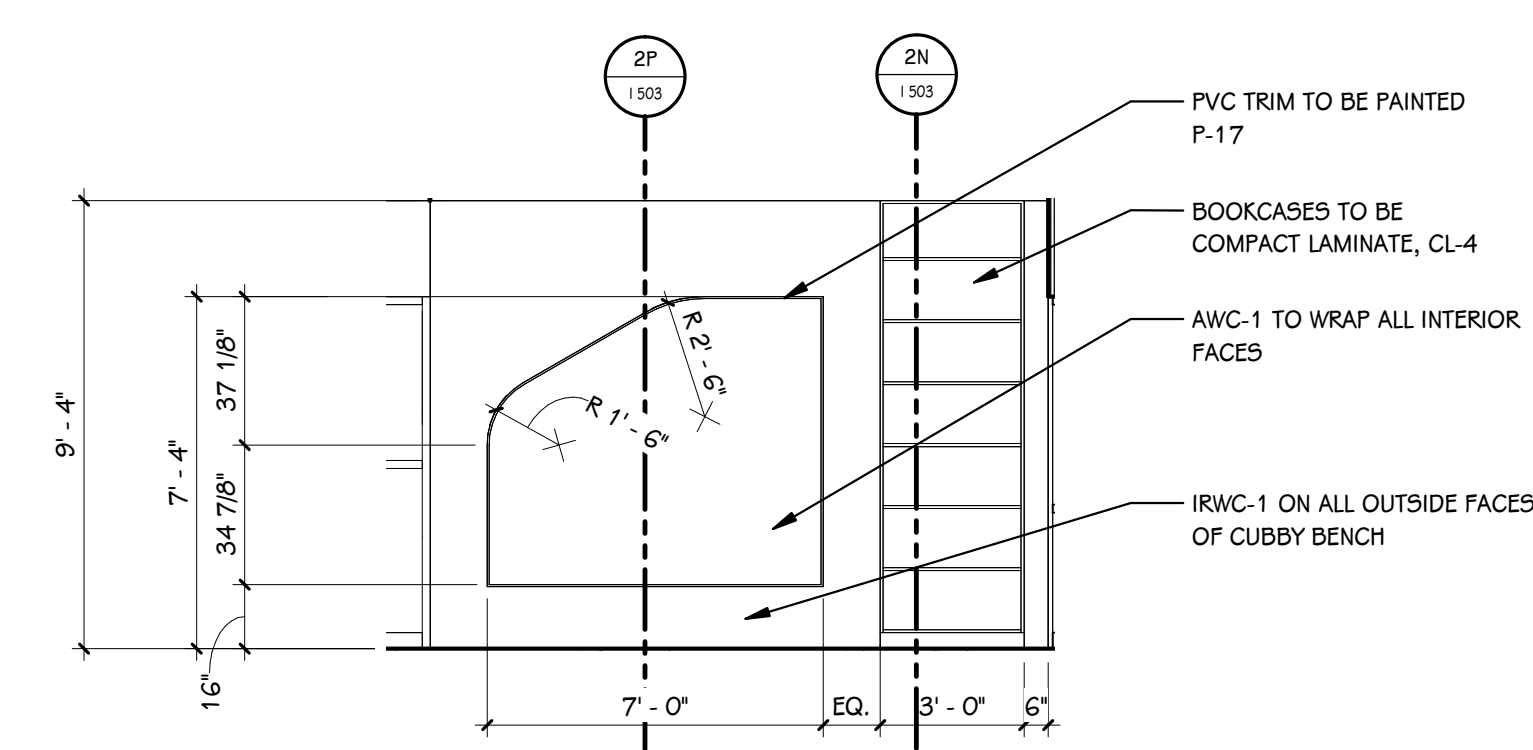
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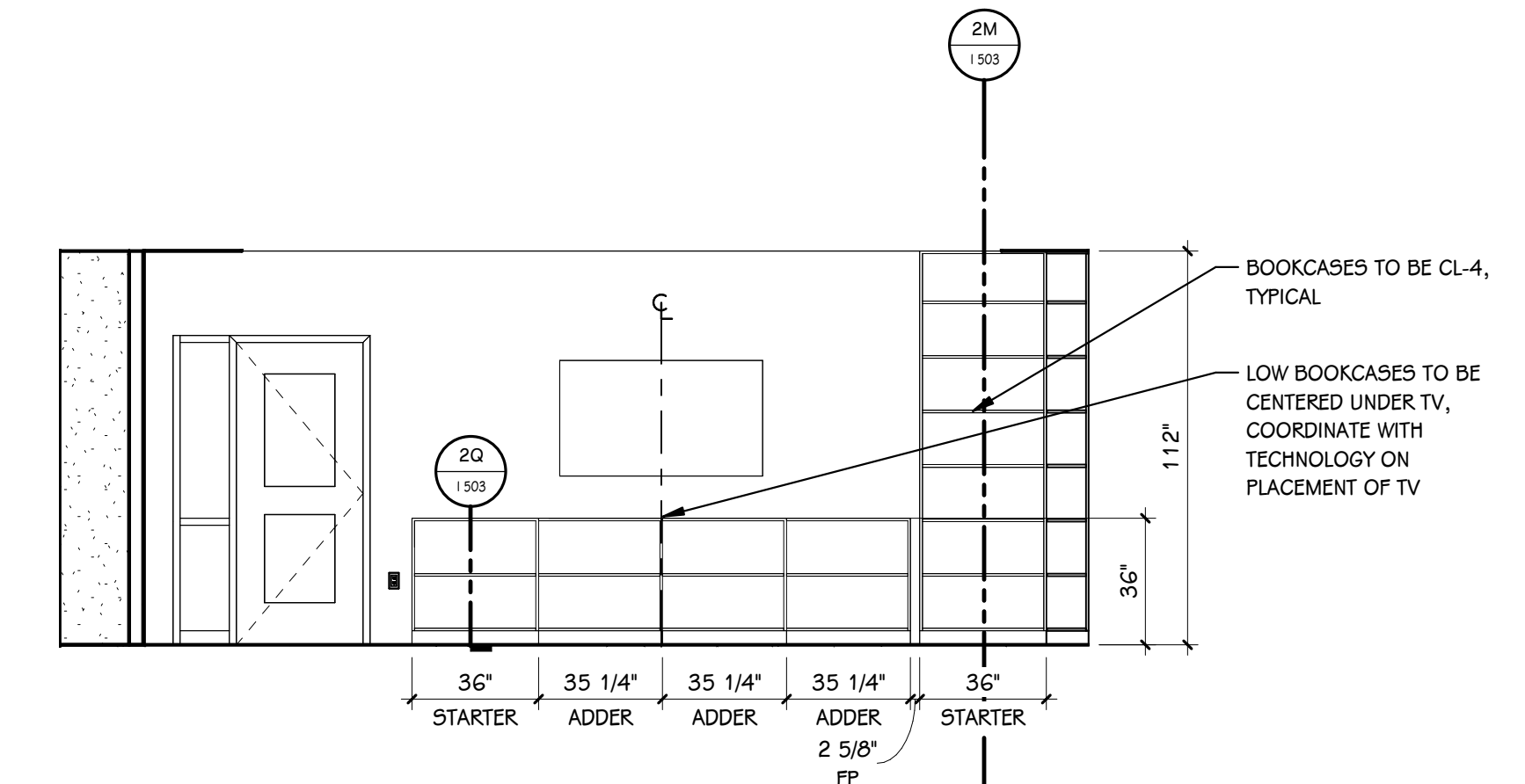
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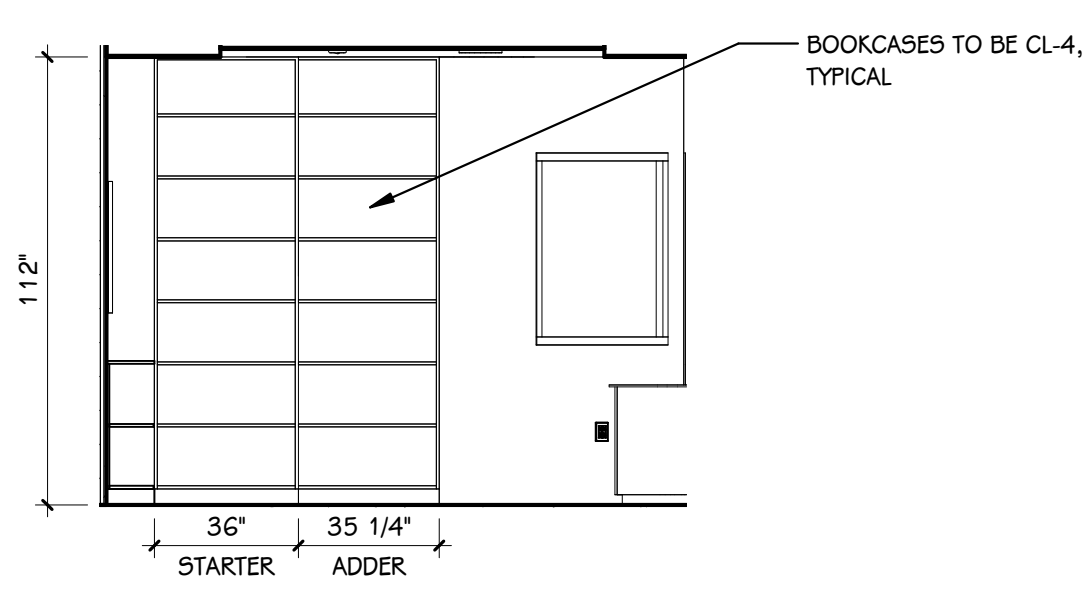
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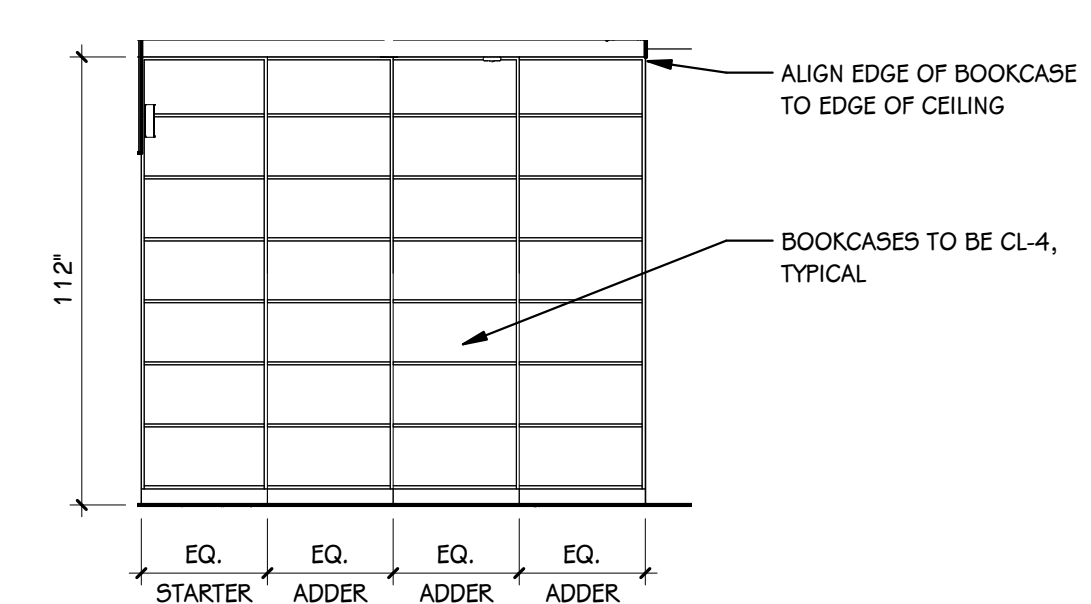
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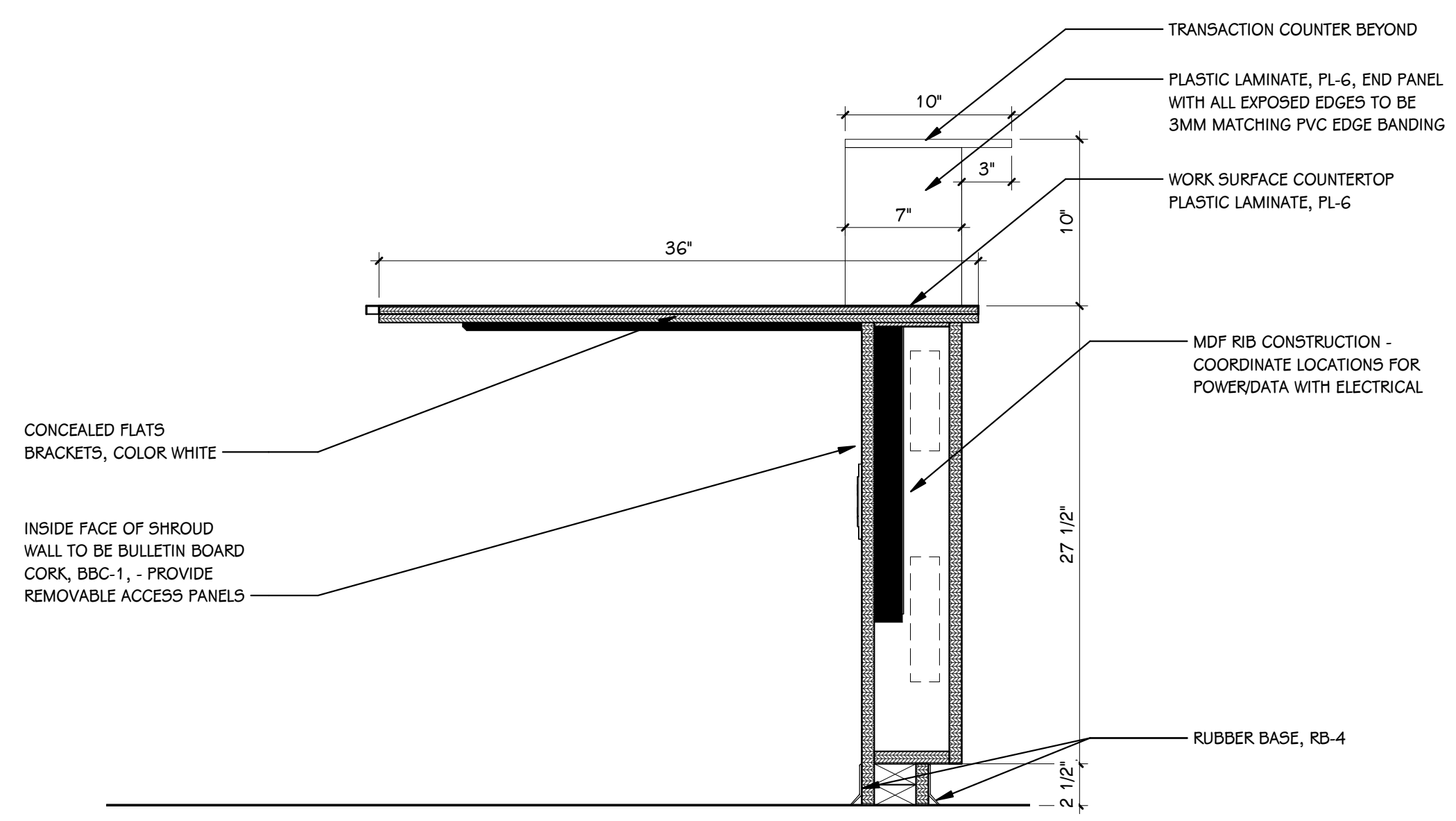
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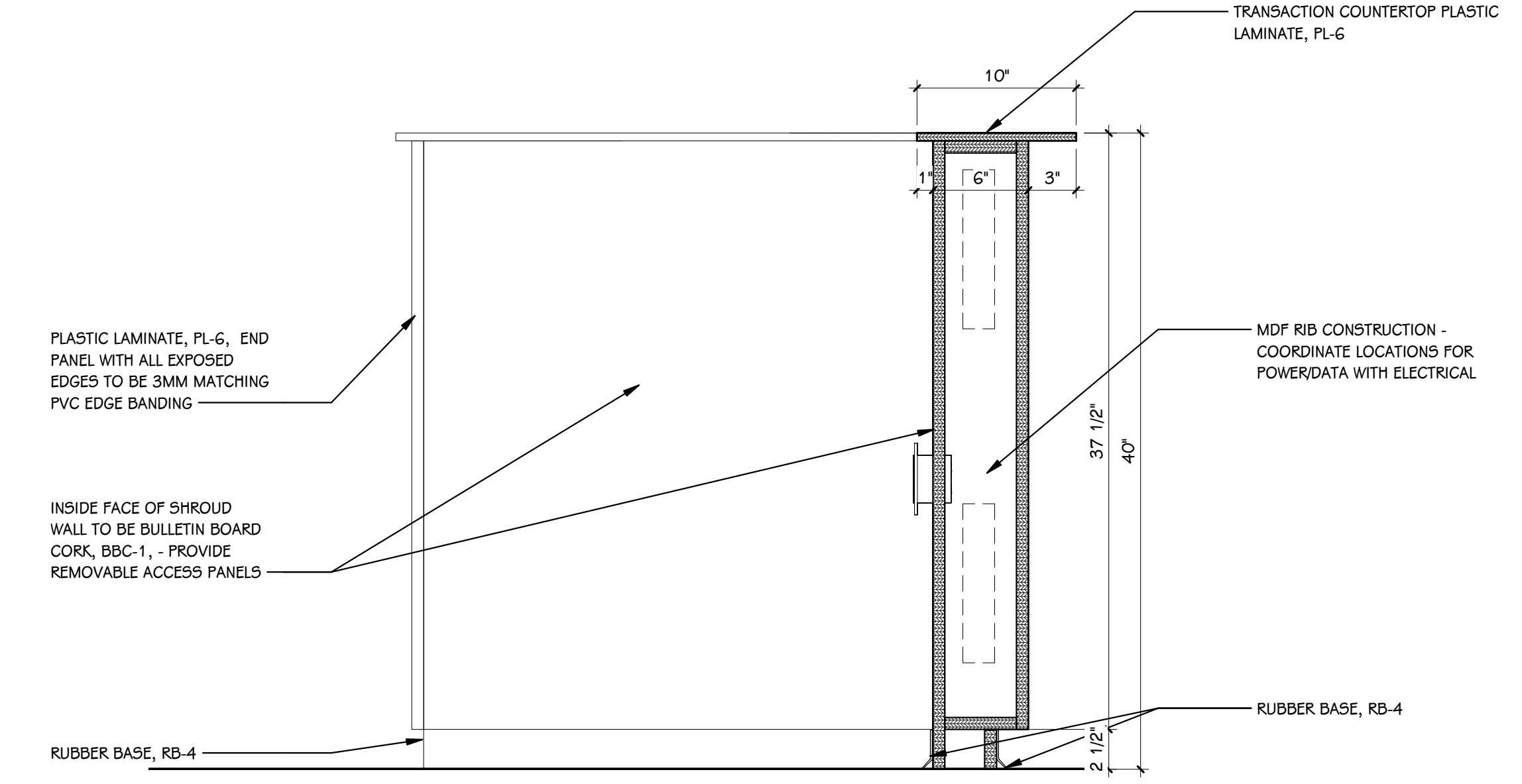
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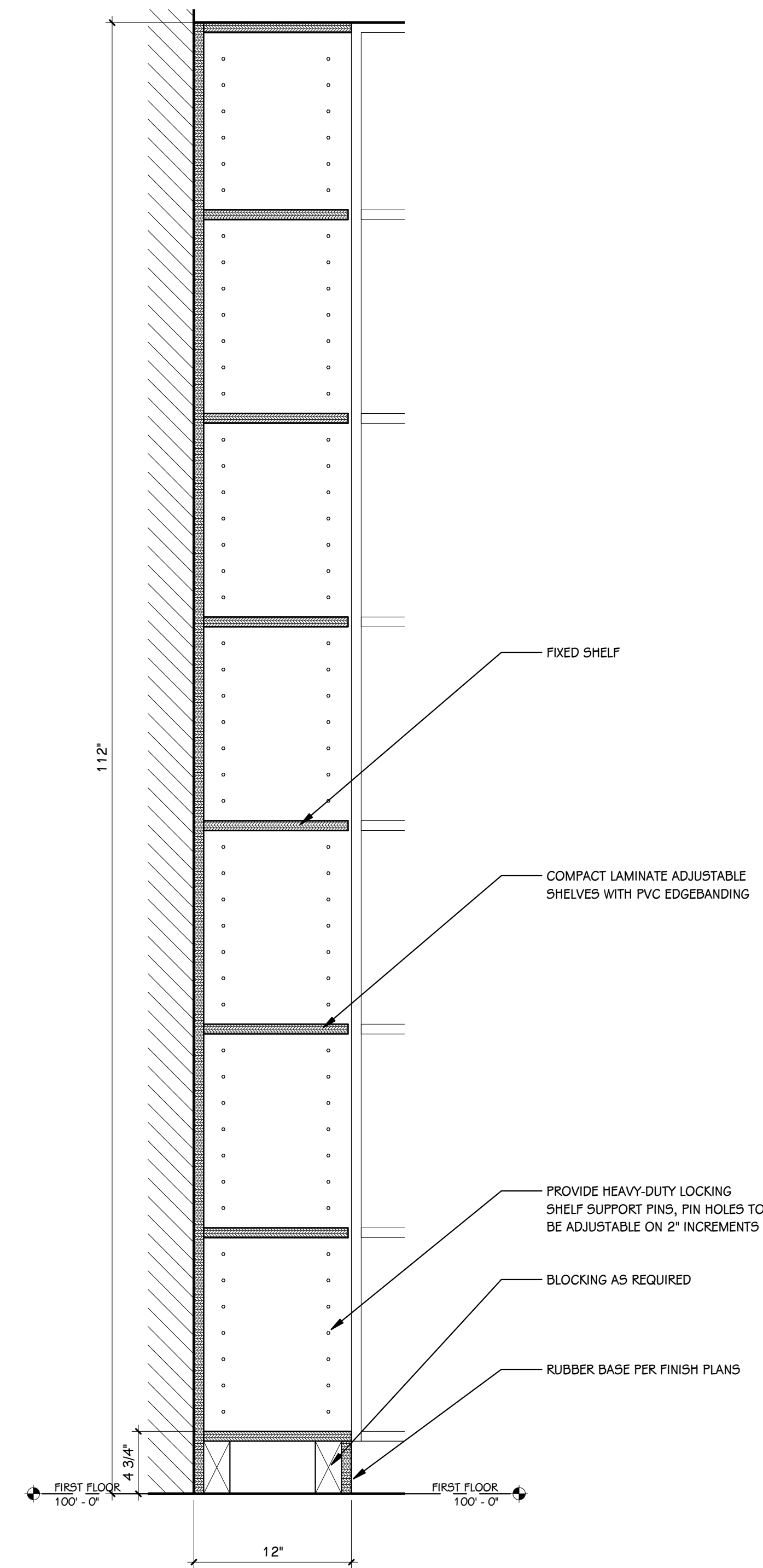
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1/4" = 1'-0"



2K 1502 CIRCULATION DESK SECTION 1  
1 1/2\"/>

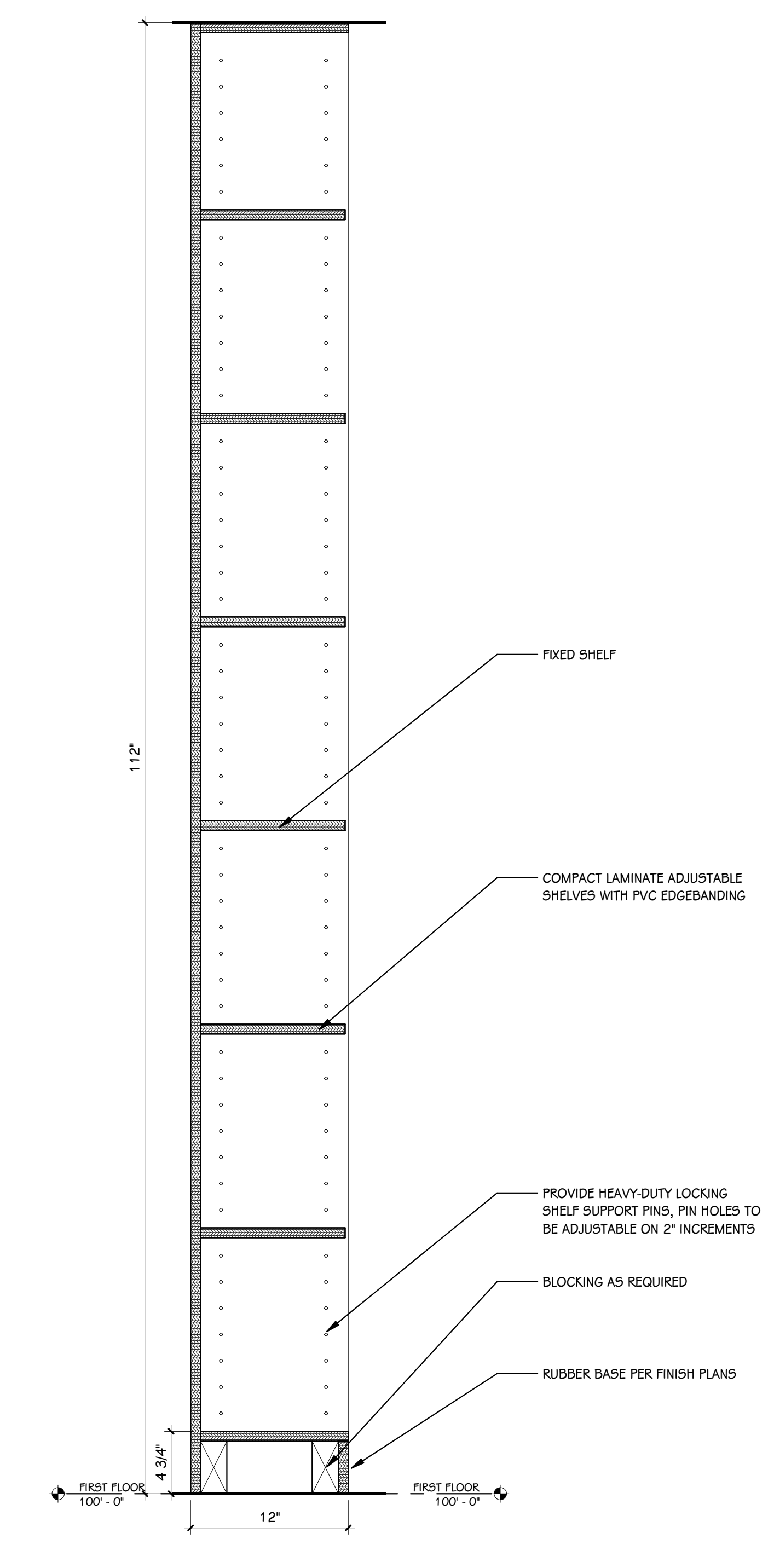


2L 1502 CIRCULATION DESK SECTION 2  
1 1/2\"/>



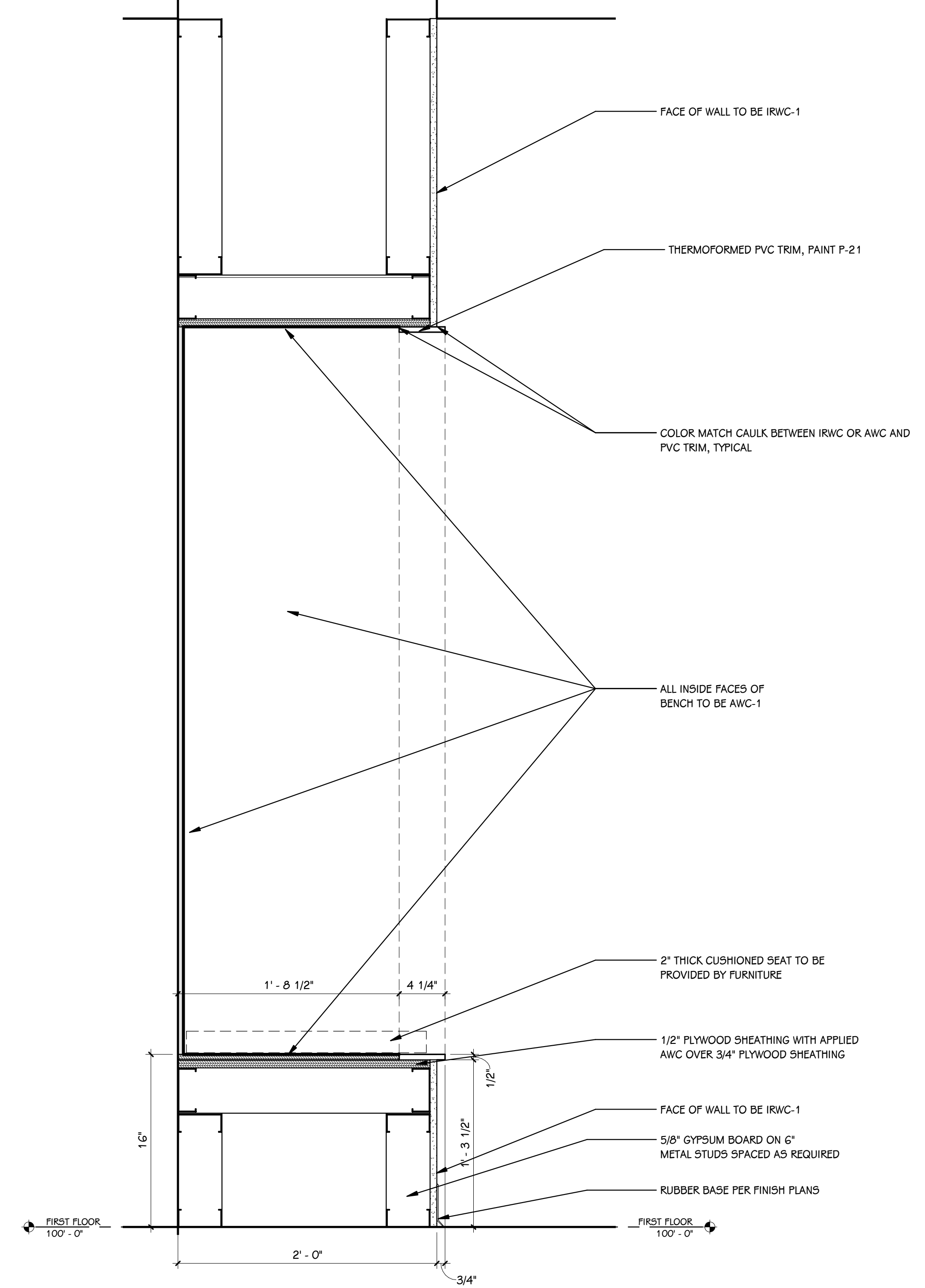
2M  
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1 1/2" = 1'-0"

**FULL HEIGHT BOOKCASE SECTION**



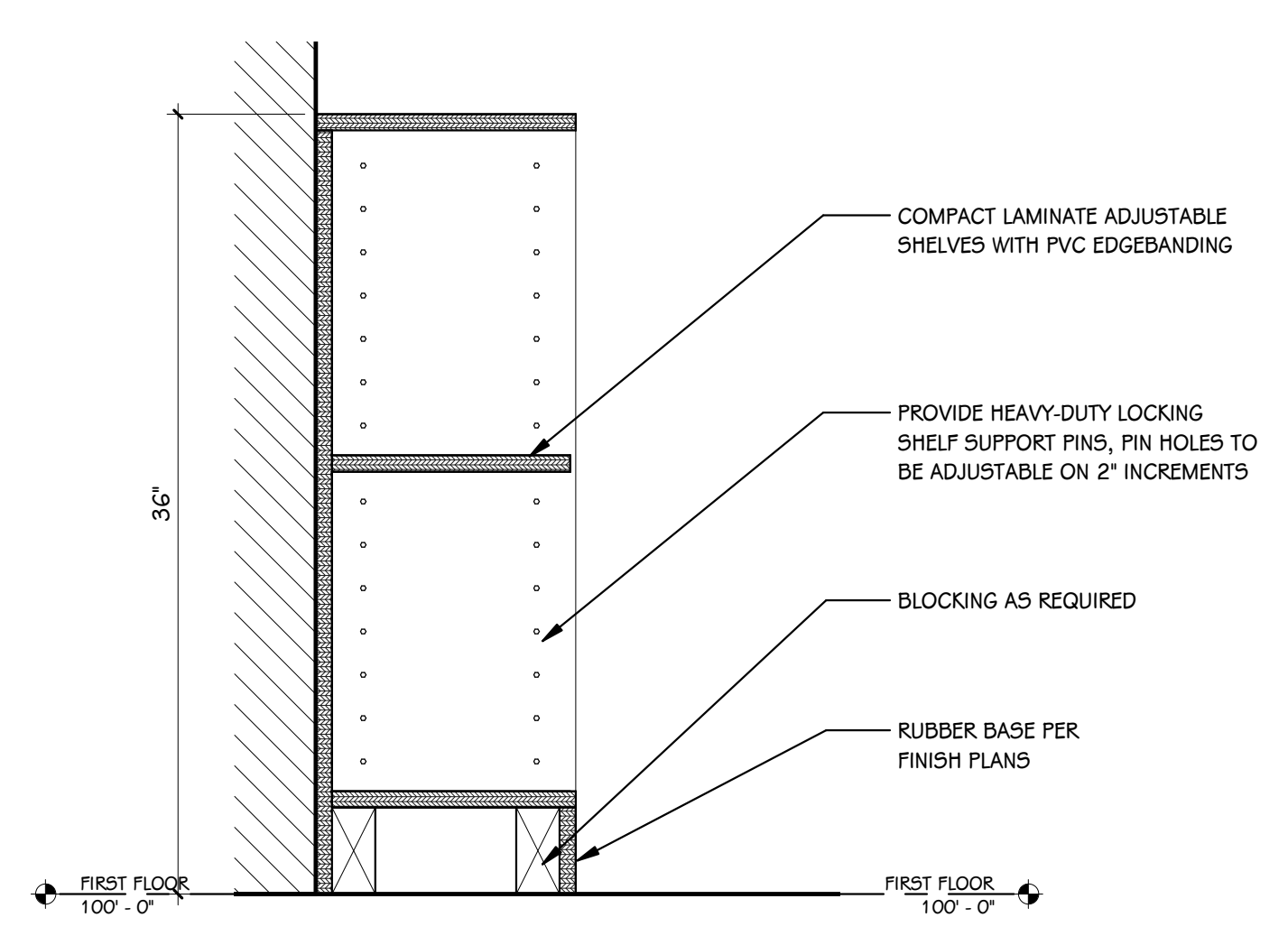
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**LIBRARY BOOKCASE CHASE SECTION**



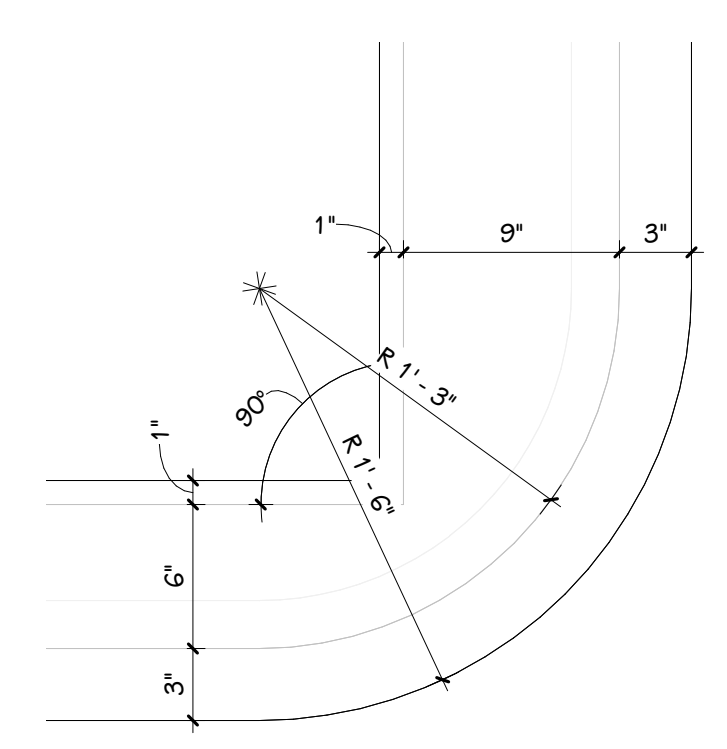
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1 1/2" = 1'-0"

**LIBRARY BENCH SECTION**



2Q  
100  
1 1/2" = 1'-0"

**LOW BOOKCASE SECTION**



2R  
100  
1 1/2" = 1'-0"

**CIRCULATION DESK DETAIL**

**GENERAL NOTES - MILLWORK**

- VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION.
- FILLER PANELS SHALL BE NO LESS THAN 2" WIDE, UNLESS NOTED OTHERWISE.
- FINISH ANY EXPOSED END PANELS, UNDERSIDE OF CABINETS OR OPEN CABINETS, WITH PLASTIC LAMINATE SPECIFIED FOR FRONTS IN THAT ROOM.
- ALL VERTICAL AND HORIZONTAL EXPOSED AND SEMI-EXPOSED SURFACES TO BE FINISHED WITH BODY PLASTIC LAMINATE.
- SUPPORT BRACKETS ARE REQUIRED EVERY 36" O.C. AT AREAS WHERE COUNTERTOP IS OPEN UNDERNEATH. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING BRACKETS APPROPRIATELY SIZED BASED ON DEPTH OF COUNTERTOP.
- PATTERN OR GRAIN DIRECTION TO BE VERTICAL ON DOORS AND HORIZONTAL ON DRAWERS - PER AIA STANDARDS, UNLESS NOTED OTHERWISE.
- GROMMET LOCATIONS SHALL BE VERIFIED IN THE FIELD WITH THE OWNER PRIOR TO INSTALLATION - COORDINATE WITH POWER & DATA LOCATIONS FOR ANY ADDITIONAL WIRE MANAGEMENT REQUIREMENTS.
- 'SLABSMITHING' WILL BE REQUIRED IN INSTANCES WHERE A PATTERNED QUARTZ, NATURAL STONE, OR SOLID SURFACE IS SPECIFIED.
- WHERE MILLWORK IS INDICATED TO RECEIVE RESIDENTIAL APPLIANCES, FURNITURE, OR OWNER-FURNISHED EQUIPMENT, COORDINATE WITH FINAL OWNER-PROVIDED SELECTIONS.
- COORDINATE WITH POWER, DATA, AND OWNERS TECHNOLOGY REQUIREMENTS TO PROVIDE REMOVABLE ACCESS PANELS, WIREWAYS, AND WIRE MANAGEMENT AS REQUIRED.
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**STANDARD ABBREVIATIONS FOR MILLWORK**

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FP	FILLER PANEL
RP	REMOVABLE PANEL

**MILLWORK HARDWARE AND ACCESSORY SELECTIONS**

PULLS:  
MOCKETT 5-1/2" RADIUS DRAWER PULL, DP124A - 17 SATIN NICKLE

COUNTERTOP EDGES:  
PLASTIC LAMINATE - 3MM PVC EDGE, MATCHING SURFACE LAMINATE.  
SOLID SURFACE - 1-1/2" BUILT-UP EDGE WITH PENCIL PROFILE.

SUPPORT BRACKETS:  
METAL STUD WALL CONSTRUCTION - ARM CONCEALED FLAT BRACKETS (SIZE AS REQ'D.)  
CMU WALL CONSTRUCTION - ARM HEAVY-DUTY HYBRID BRACKETS (SIZE AS REQ'D.)

GROMMETS:  
MOCKETT 2-3/8" METAL BRUSH DESK GROMMET, MBG1A-17 NICKLE

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

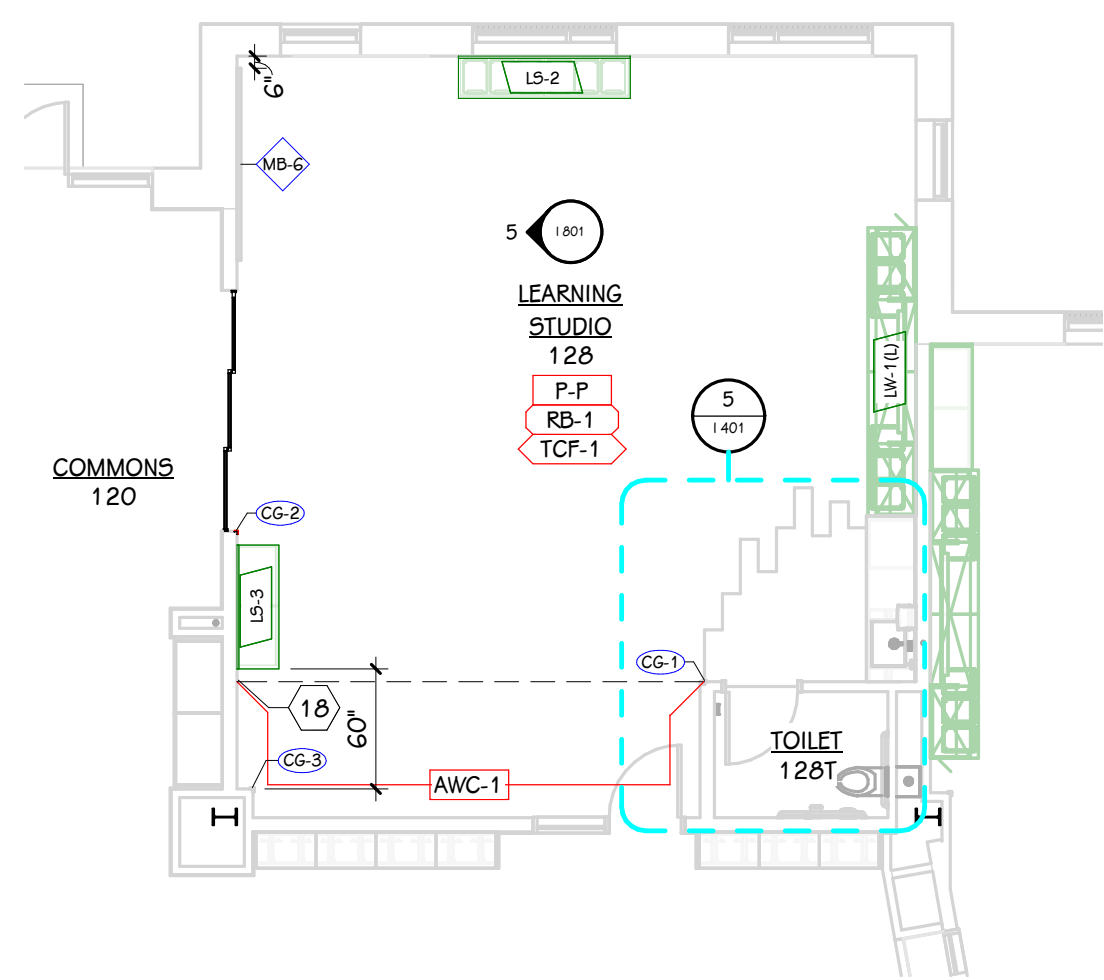
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PORTAGE PUBLIC SCHOOLS

Portage, Michigan

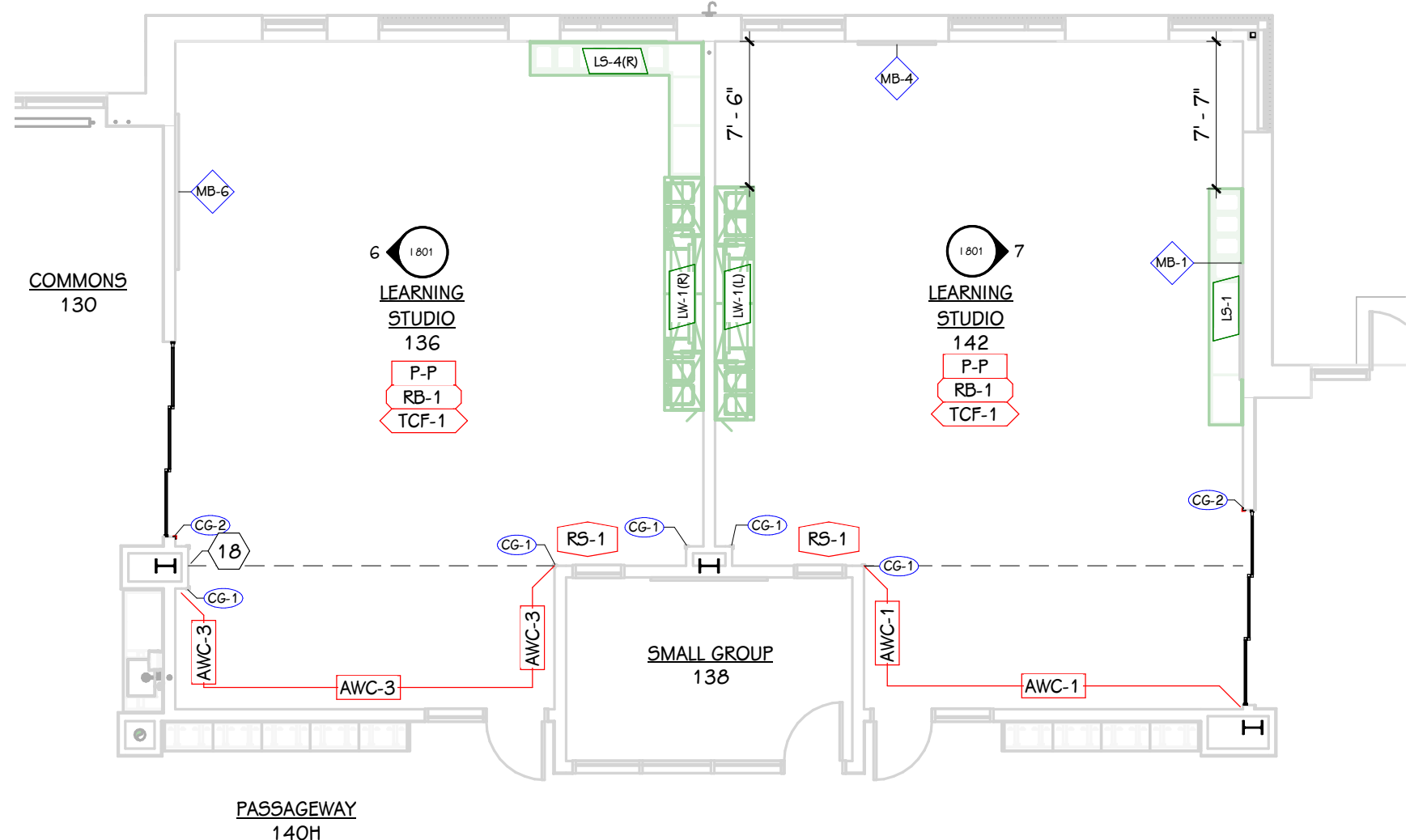
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ENLARGED MILLWORK PLANS AND  
DETAILS - LIBRARY

DATE  
JUNE 30, 2023

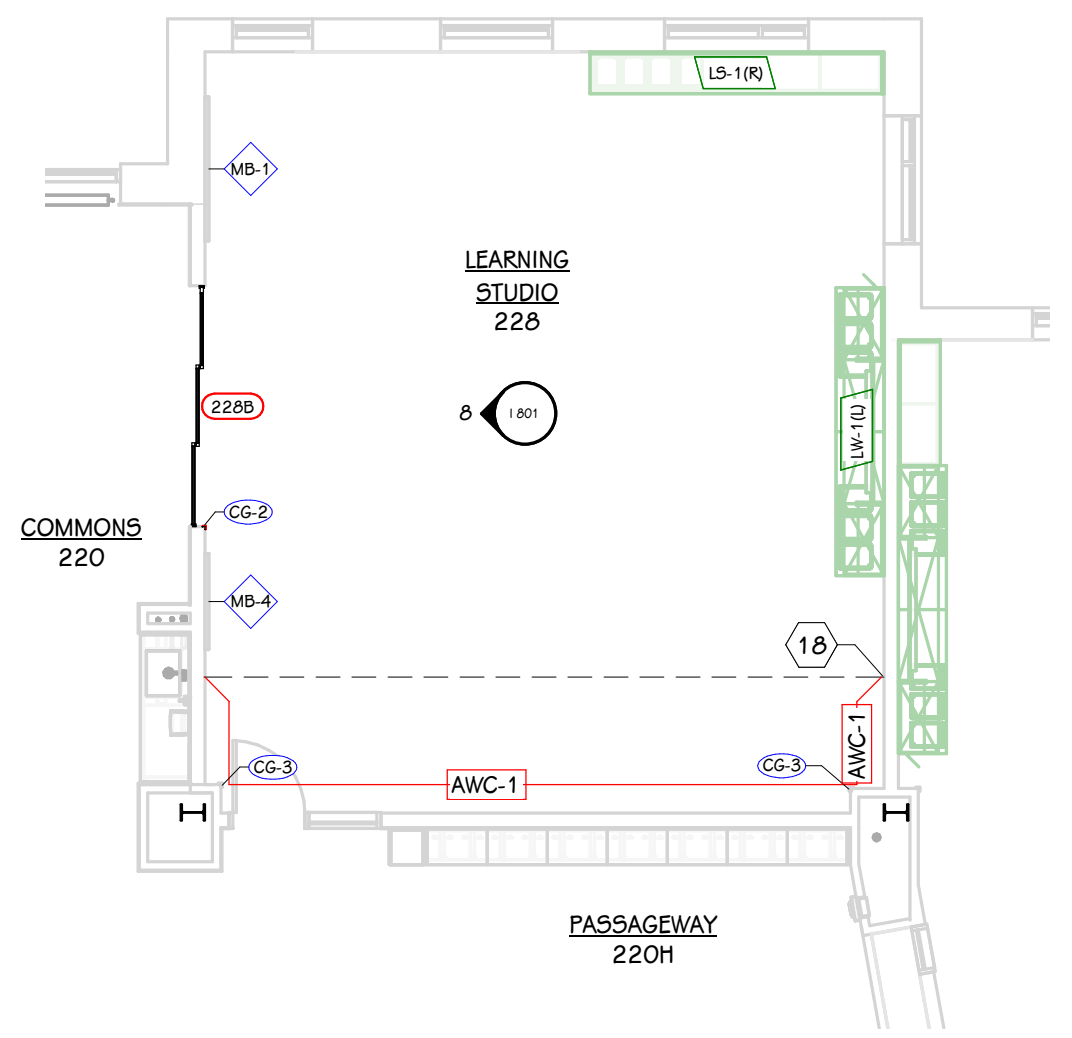
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1503  
21-237-20



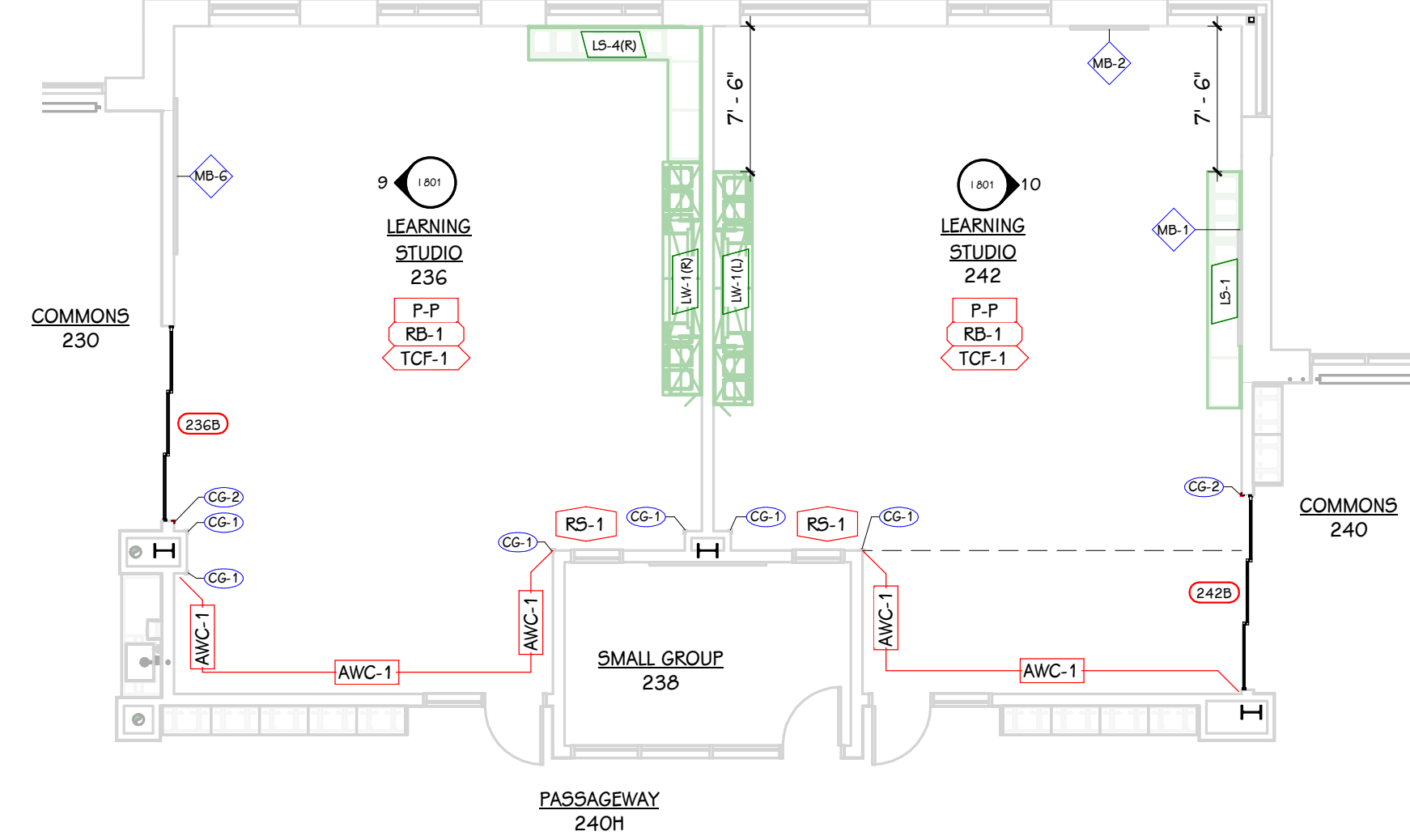
1 LEARNING STUDIO 128 - ALT. No. 4  
1/8" = 1'-0"



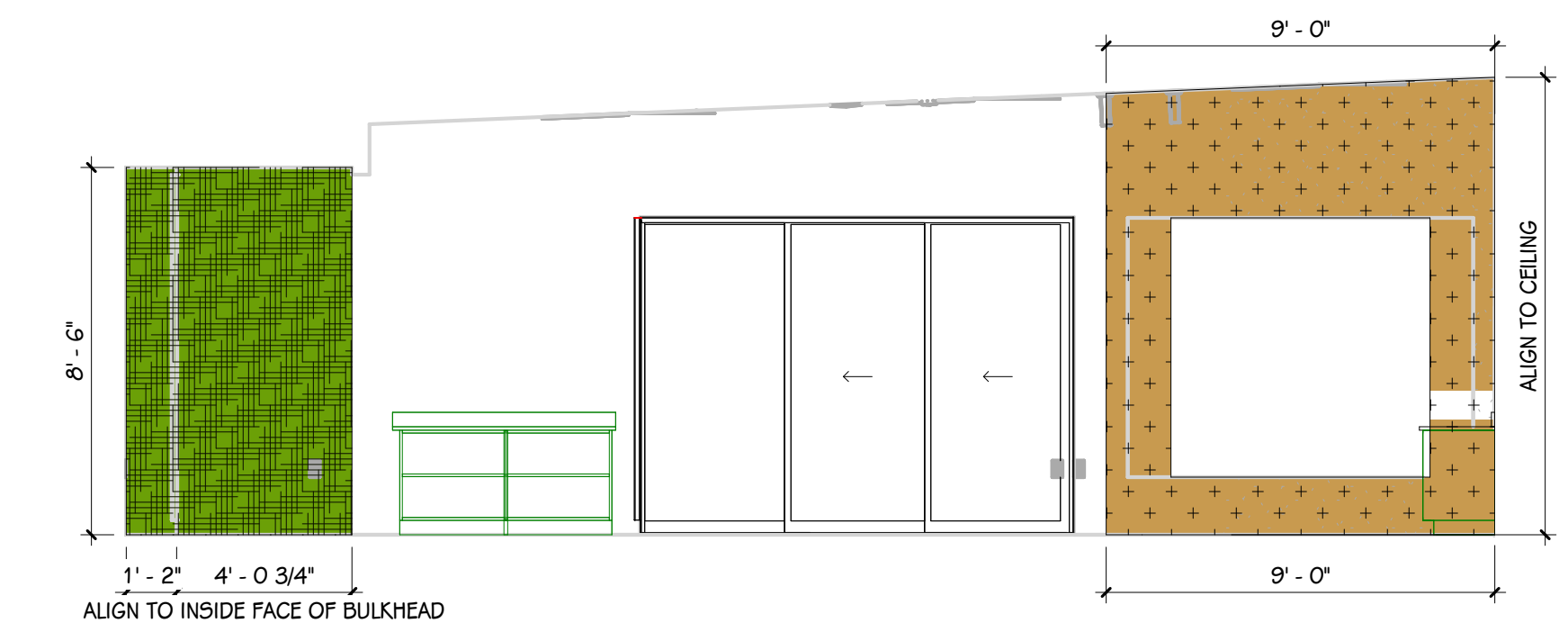
2 LEARNING STUDIO 136 AND 142 - ALT. No. 4  
1/8" = 1'-0"



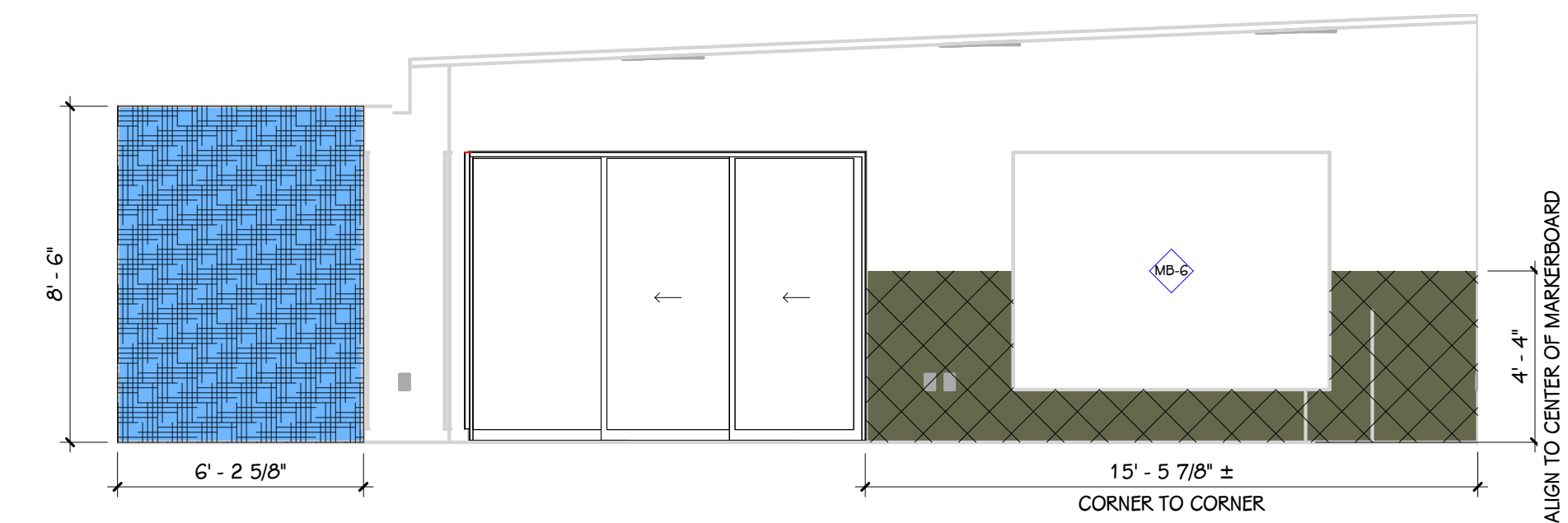
3 LEARNING STUDIO 228 - ALT. No. 4  
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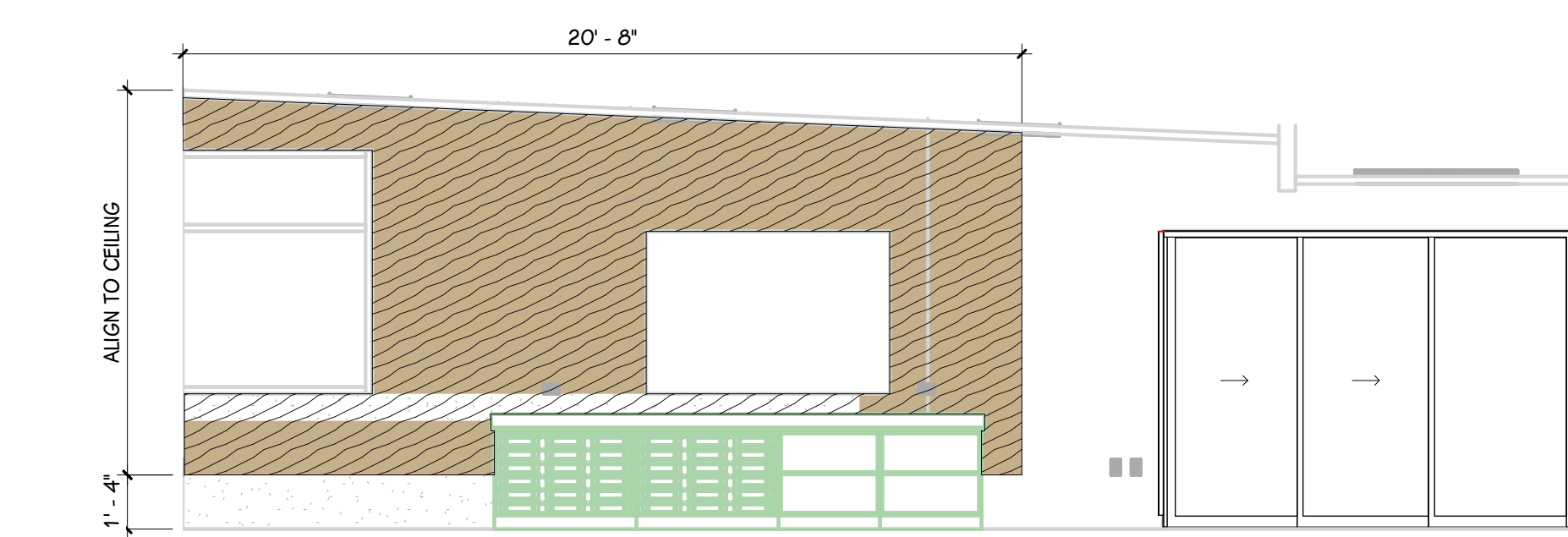
4 LEARNING STUDIO 236 AND 242 - ALT. No. 4  
1/8" = 1'-0"



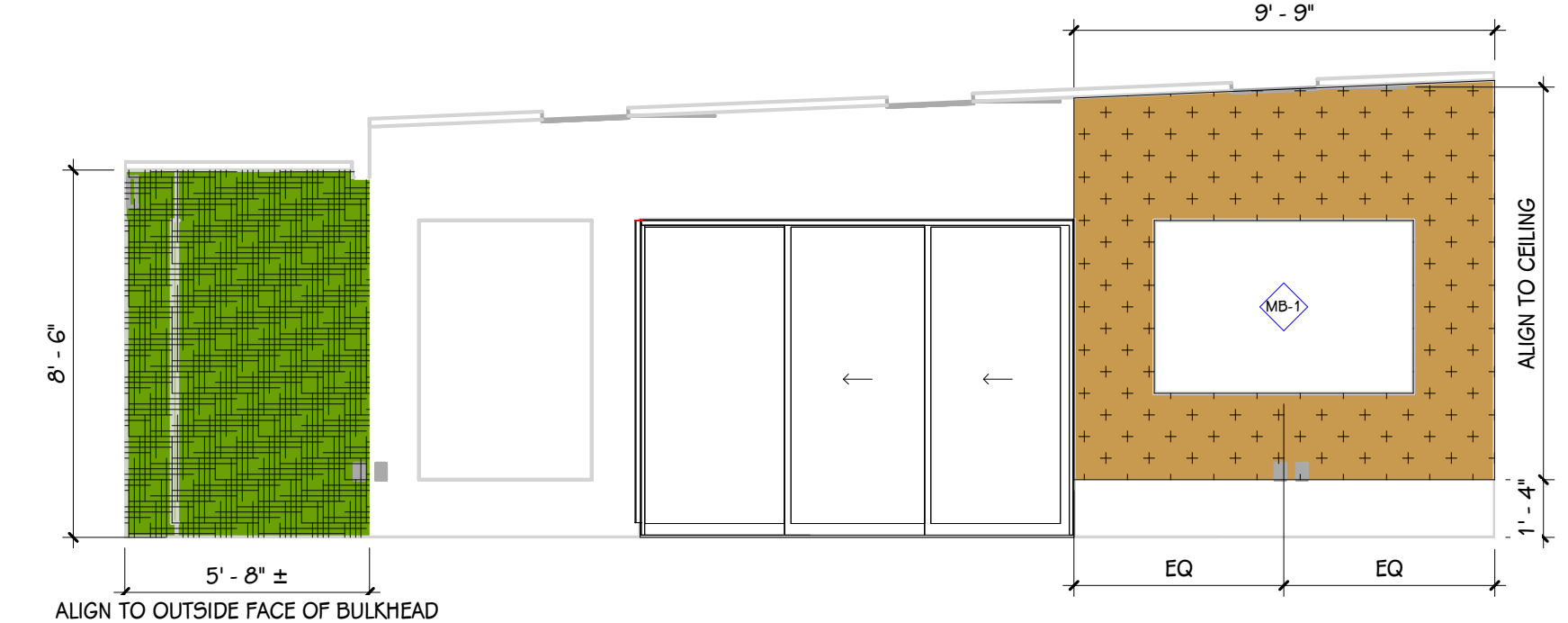
5 LEARNING STUDIO 128 - WEST - ALT. No. 4  
1/4" = 1'-0"



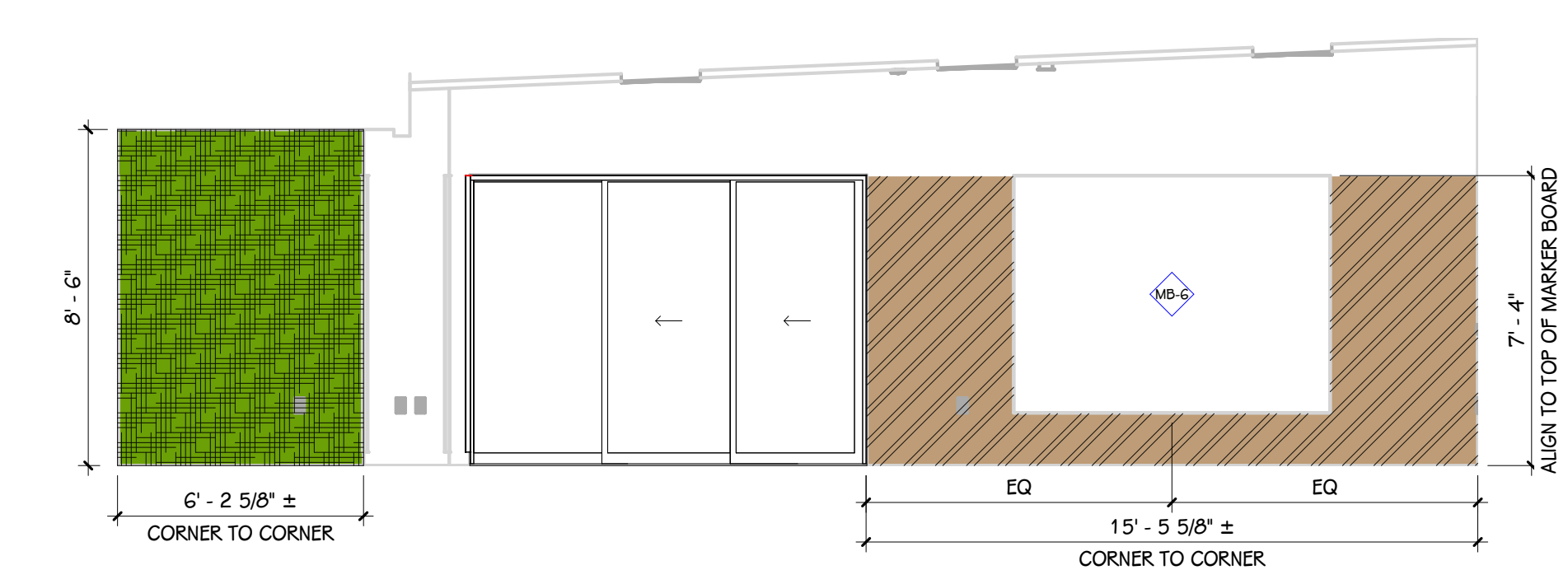
6 136 LEARNING STUDIO - WEST - ALT. No. 4  
1/4" = 1'-0"



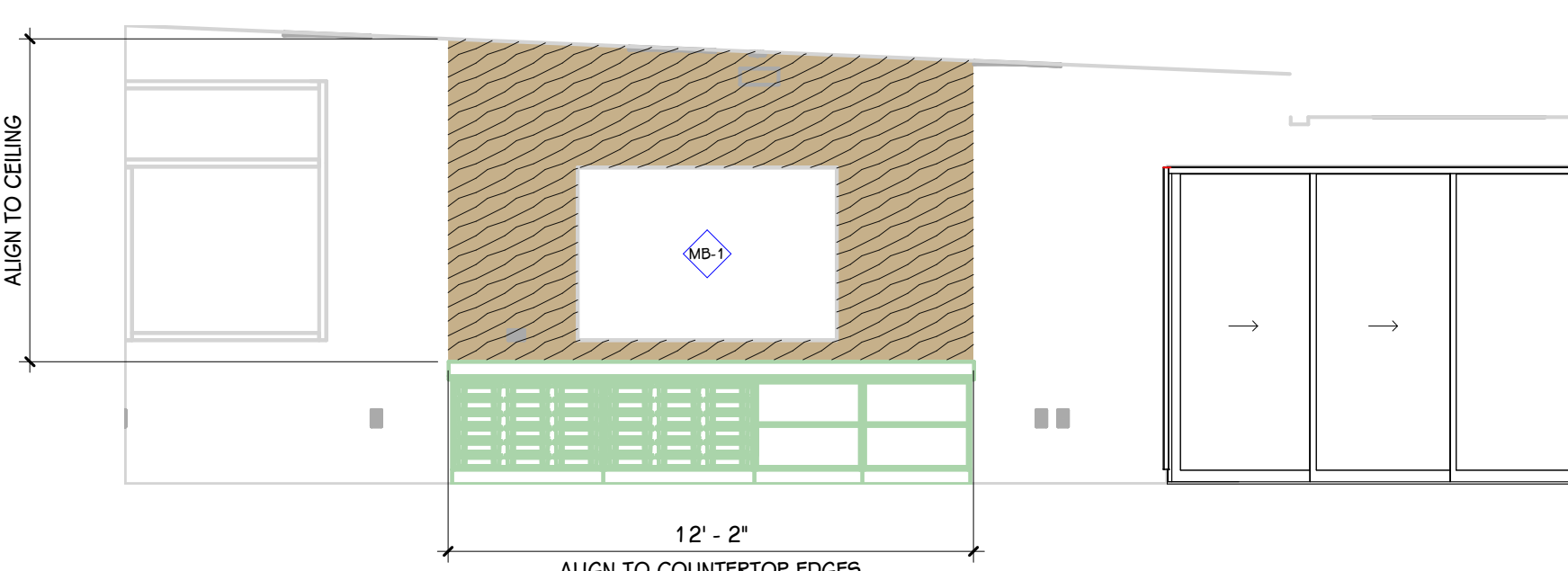
7 LEARNING STUDIO 142 - EAST - ALT. No. 4  
1/4" = 1'-0"



8 LEARNING STUDIO 228 - ALT. No. 4  
1/4" = 1'-0"



9 LEARNING STUDIO 236 - ALT. No. 4  
1/4" = 1'-0"



10 LEARNING STUDIO 242 - ALT. No. 4  
1/4" = 1'-0"

GENERAL NOTES - PATTERN ELEVATIONS

- REFER TO FINISH PLANS FOR INTERIOR ELEVATIONS OF CASEWORK AND NON-PATTERNED FINISH DETAILS.
- REFER TO MATERIAL SELECTION SCHEDULE, FINISH PLANS, AND SPECIFICATION FOR ADDITIONAL FINISH INFORMATION.
- REFER TO REFLECTED CEILING PLANS FOR CEILING AND BULKHEAD HEIGHTS AND FINISHES.
- NOT ALL MATERIALS ARE ILLUSTRATED, REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION. (IE. RUBBER BASE NOT INDICATED, INSTALL PER FINISH PLAN)
- ALIGN PATTERN TO NEAREST HORIZONTAL MASONRY JOINT, UNLESS NOTED OTHERWISE.
- WHERE PATTERNS ARE INDICATED TO ALIGN TO CASEWORK OR SHELVING, COORDINATE WITH APPROVED SHOP DRAWINGS.

COLOR LEGEND - PATTERN ELEVATIONS

AWC-1: GHERKIN	P-9: RIVERWAY
AWC-2: BEEHIVE	P-10: TEMPE STAR
AWC-3: MURALLA	P-11: HARMONIC TAN
AWC-4: VINTAGE	P-12: ALCHEMY
P-4: GREEN ONYX	P-13: DIFFERENT GOLD
P-5: ARTICHOKE	P-14: MESA TAN
P-6: OAKMOSS	P-15: BRANDYWINE
P-7: VOGUE GREEN	P-16: ROOKWOOD TERRA COTTA
P-8: ACACIA HAZE	

FINISH PLAN KEY

- INDICATES MATERIAL TYPE
- INDICATES CORRESPONDING SELECTION IN SCHEDULE
- WALL FINISH
- BASE FINISH
- FLOOR FINISH
- COUNTER FINISH
- CABINET FINISH (BASE AND UPPER)
- INDICATES EXTENT OF ATYPICAL FINISH
- INDICATES TRANSITION BETWEEN DISSIMILAR FLOOR MATERIALS
- INDICATES MULTIPLE MATERIAL TYPES ON A SURFACE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERNED INSTALLATION OF A SINGLE MATERIAL TYPE, REFER TO DETAIL OR ELEVATION
- INDICATES PATTERN INTENT, REFER TO DETAIL OR ELEVATION
- INDICATES PORCELAIN TILE WAINSCOT, REFER TO DETAIL
- INDICATES VISUAL DISPLAY BOARD, REFER TO SCHEDULES
- INDICATES PRE-FABRICATED EDUCATIONAL CASEGOODS, REFER TO SPECIFICATION
- INDICATES CUBBY TYPE - REFER TO TYPICAL DETAILS
- INDICATES NUMBER OF MODULAR CUBBY UNITS PER RUN
- INDICATES TOTAL QUANTITY OF STUDENTS PER RUN
- INDICATES CORNER GUARD, REFER TO SCHEDULE

GENERAL NOTES - FINISH PLAN

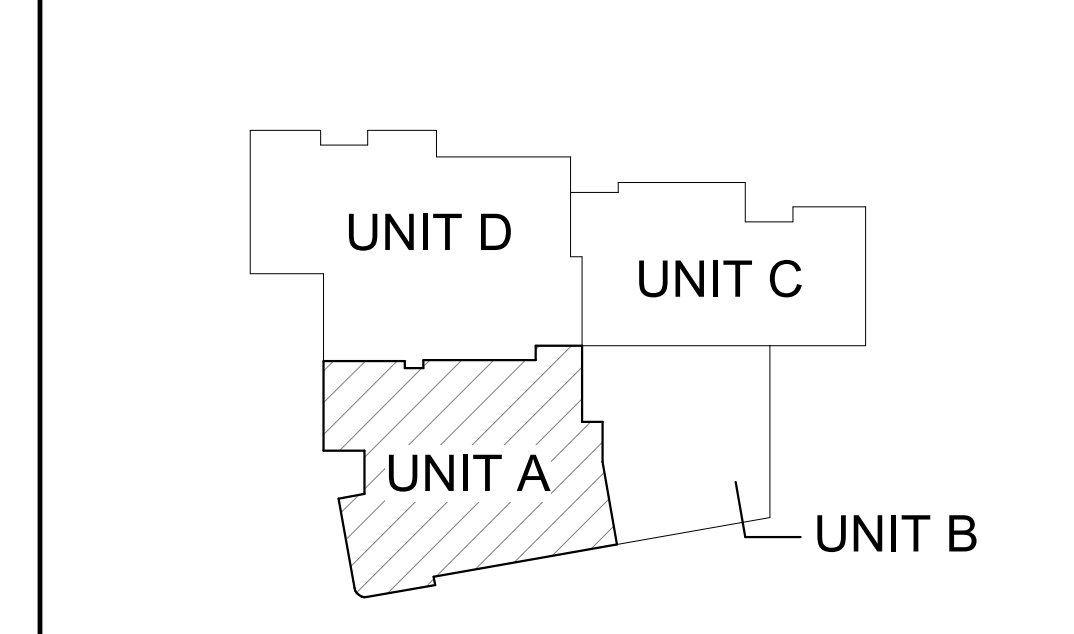
- FINISH TAGS APPLY TO LIKE MATERIALS IN ENTIRE ROOM. I.E. CASEWORK TAG MAY ONLY CALLOUT ONE RUN OF CASEWORK, BUT ALL CASEWORK IN ROOM RECEIVE THE SAME FINISHES, UNLESS TAGGED DIFFERENTLY.
- REFER TO ENLARGED FINISH PLANS AND PATTERN PLANS FOR ADDITIONAL FINISH DETAILS.
- CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.
- CASEWORK FINISH TAGS DO NOT APPLY TO EDUCATIONAL CASEGOOD PIECES. REFER TO TAGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON TYPE AND FINISH.
- WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH THE ADJACENT WALL FINISH.
- CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.
- REFER TO VISUAL DISPLAY BOARD SCHEDULE AND GENERAL NOTES FOR MORE INFORMATION.
- PORCELAIN TILE WAINSCOT IS NOT REQUIRED BEHIND STUDENT CUBBIES.

KEYED NOTES - FINISH PLANS

- ALIGN FLOORING TRANSITION BEYOND RADIUS OF BULLNOSE BLOCK.
- PAINT WALL RETURNS AND HORIZONTAL FACE OF BULKHEAD P-1.
- PEP PANELS TO BE INSTALLED ABOVE RUBBER BASE, INSTALL FULL SHEET VERTICALLY ORIENTED.
- INSTALL ROLLER SHADES OVER DOOR AND SIDELITE, ART ROOM ONLY.
- DO NOT APPLY PAINT OR PORCELAIN TILE WAINSCOT TO DECORATIVE CONCRETE MASONRY WALLS, TYPICAL.
- RETURN PORCELAIN TILE WAINSCOT BACK TO STOREFRONT.
- SKIMCOAT CMU WALL AS REQUIRED FOR SMOOTH IRWP-1 INSTALLATION, REFER TO ELEVATION FOR EXTENTS.
- PROVIDE PRP-1 ALL FACES OF COLUMN WRAP - PROVIDE ALL TRIMS AND OUTSIDE CORNER PIECES AS NECESSARY TO COMPLETE INSTALLATION.
- MEDIUM-GRIND POLISHED CONCRETE STAIR - SEE ARCHITECTURAL STAIR DRAWINGS FOR MORE INFORMATION.
- PT-1 VERTICALLY STACKED, ALL FACES OF COLUMN WRAP.
- REFER TO SECOND FLOOR FINISH PLAN AND PATTERN ELEVATIONS FOR BULKHEAD PAINTING SCOPE.
- ALIGN PAINT TRANSITION TO BULKHEAD.
- INSTALL THREE WINDOW TREATMENTS.
- VERIFY FINISH EXTENTS WITH FOOD SERVICE EQUIPMENT PRIOR TO INSTALLATION.
- ROLLER SHADE TO BE RECESSED WITHIN CEILING HEADBOX, REFER TO ARCHITECTURAL.
- TERMOPROFIBRED PVC TRIM AT JAMB AND HEAD OF WALL OPENING, REFER TO DETAILS.
- TERMINATE WALLCOVERING AT HEIGHT INDICATED, PROVIDE FRY REGLET ALUMINUM WALLCOVERING BASE/TERMINATION TRIM OR SIMILAR. CLEAR ANODIZED FINISH.
- ALIGN WALL FINISH MATERIAL TRANSITION TO BULKHEAD, REFER TO ELEVATIONS.
- ALIGN FLOORING TRANSITION TO CORNER.
- PROVIDE LEVEL 5 GYPSUM BOARD WALL FINISH.
- ABUSE RESISTANT GYPSUM BOARD PROJECTION SURFACE WITH LEVEL 5 FINISH WITH MITERED DARK BRONZE ANODIZED J-CHANNEL FRAME, REFER TO ELEVATION.
- PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT TACKBOARD INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FIRE EXTINGUISHER CABINET INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- AREA RUG, BY FURNITURE.
- METAL LOCKERS, REFER TO ARCHITECTURAL.
- STAGGER EDGE OF FLOORING TRANSITION, CUT CARPET TILE TO COPE TO FULL WIDTH OF LVT PLANK.
- MEDIUM-GRIND POLISHED CONCRETE INFILL IN METAL PAN STAIRS, PROVIDE (2) INSET STAINLESS STEEL BARS AT NOSING OF EACH STAIR TREAD.
- 36" WIDE X 12" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- 36" WIDE X 24" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- PVC TRIM WHERE INDICATED, REFER TO DETAILS.
- WALL FINISH VARIES, REFER TO ELEVATIONS AND DETAILS.

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

HAVERHILL ELEMENTARY



KEY PLAN  
SCALE: NO SCALE

WINDOW TREATMENT KEY

- ROLLER SHADE, SINGLE MANUAL SHADE(CLOTHES): 3% LIGHT-FILTERING
- ROLLER SHADE, DUAL MANUAL (INCLUDING DOOR & SIDELITE) SHADE(CLOTHES): 3% LIGHT-FILTERING & BLACKOUT PROVIDE JAMB-MOUNTED CHANNELS FOR LIGHT-BLOCKING
- ROLLER SHADE, DUAL MANUAL SHADE(CLOTHES): 3% LIGHT-FILTERING & BLACKOUT
- ROLLER SHADE, DUAL MOTORIZED SHADE(CLOTHES): 3% LIGHT-FILTERING & BLACKOUT

- REFER TO SPECIFICATION FOR MORE INFORMATION.
- WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
- TREATMENT TAGS SHOWN ON EXTERIOR OF WALL FOR CLARITY - AT INTERIOR LOCATIONS, TAG SHOWN INSIDE ROOM FOR MOUNTING.
- REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
- WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
- VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ALTERNATE 4 FINISH PLANS AND  
ELEVATIONS

DATE  
JUNE 30, 2023

SHEET NUMBER  
1801  
21-237.20

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ALTERNATE 5 FINISH PLANS AND  
ELEVATIONS

DATE  
JUNE 30, 2023

SHEET NUMBER  
1802  
21-237.20

**GENERAL NOTES - PATTERN ELEVATIONS**

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- NOT ALL MATERIALS ARE ILLUSTRATED, REFER TO FINISH PLANS AND TYPICAL DETAILS FOR ADDITIONAL INFORMATION. (IE. RUBBER BASE NOT INDICATED, INSTALL PER FINISH PLAN)
- ALIGN PATTERN TO NEAREST HORIZONTAL MASONRY JOINT, UNLESS NOTED OTHERWISE.
- WHERE PATTERNS ARE INDICATED TO ALIGN TO CASEWORK OR SHELVING, COORDINATE WITH APPROVED SHOP DRAWINGS.

**COLOR LEGEND - PATTERN ELEVATIONS**

AWC-1: GHERKIN	P-9: RIVERWAY
AWC-2: BEEHIVE	P-10: TEMPE STAR
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P-8: ACACIA HAZE	

**FINISH PLAN KEY**

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- INDICATES TOTAL QUANTITY OF STUDENTS PER RUN
- INDICATES CORNER GUARD, REFER TO SCHEDULE

**GENERAL NOTES - FINISH PLAN**

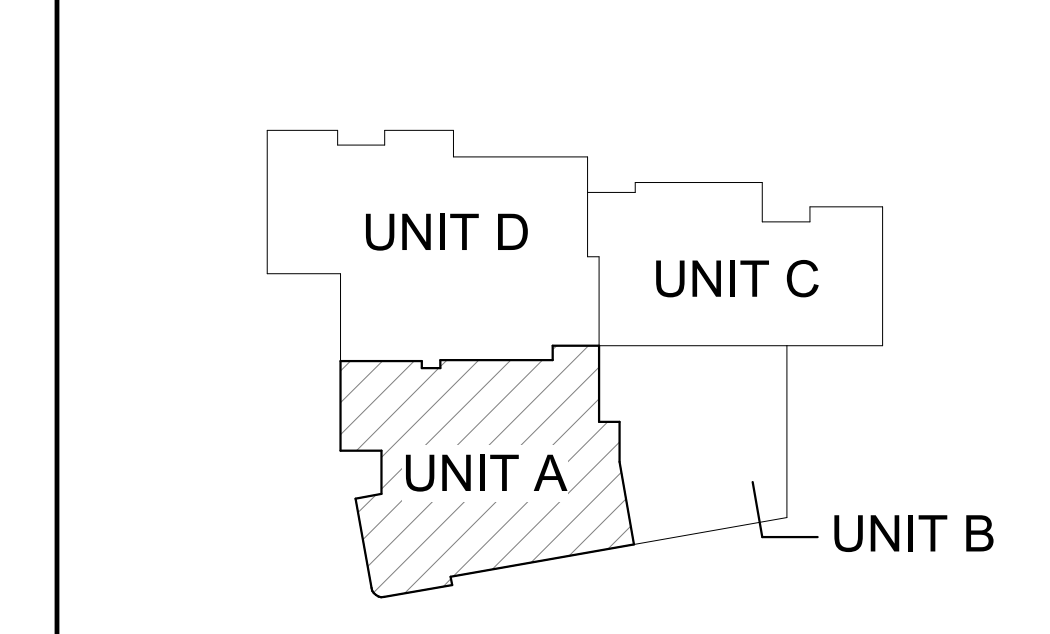
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- CASEWORK FINISH TAGS DO NOT APPLY TO CUSTOM MILLWORK PIECES. REFER TO ENLARGED MILLWORK DETAILS FOR FINISH MATERIALS.
- CASEWORK FINISH TAGS DO NOT APPLY TO EDUCATIONAL CASEGOOD PIECES. REFER TO TAGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION ON TYPE AND FINISH.
- WALL MOUNTED DIFFUSERS, GRILLES, ACCESS PANELS, ELECTRICAL PANELS, ETC. ARE TO BE PAINTED WITH AN OIL-BASED PAINT TO MATCH THE ADJACENT WALL FINISH.
- CEILING ACCESS PANELS ARE TO BE PAINTED TO MATCH ADJACENT CEILING FINISH.
- REFER TO VISUAL DISPLAY BOARD SCHEDULE AND GENERAL NOTES FOR MORE INFORMATION.
- PORCELAIN TILE WAINSCOT IS NOT REQUIRED BEHIND STUDENT CUBBIES.

**KEYED NOTES - FINISH PLANS**

- ALIGN FLOORING TRANSITION BEYOND RADIUS OF BULLNOSE BLOCK.
- PAINT WALL RETURNS AND HORIZONTAL FACE OF BULKHEAD P-1.
- PEP PANELS TO BE INSTALLED ABOVE RUBBER BASE, INSTALL FULL SHEET VERTICALLY ORIENTED.
- INSTALL ROLLER SHADES OVER DOOR AND SIDELITE, ART ROOM ONLY.
- DO NOT APPLY PAINT OR PORCELAIN TILE WAINSCOT TO DECORATIVE CONCRETE MASONRY WALLS, TYPICAL.
- RETURN PORCELAIN TILE WAINSCOT BACK TO STOREFRONT.
- SKIMCOAT CMU WALL AS REQUIRED FOR SMOOTH IRWP-1 INSTALLATION, REFER TO ELEVATION FOR EXTENTS.
- PROVIDE PEP-1 ALL FACES OF COLUMN WRAP - PROVIDE ALL TRIMS AND OUTSIDE CORNER PIECES AS NECESSARY TO COMPLETE INSTALLATION.
- MEDIUM-GRIND POLISHED CONCRETE STAIR - SEE ARCHITECTURAL STAIR DRAWINGS FOR MORE INFORMATION.
- PT-1 VERTICALLY STACKED, ALL FACES OF COLUMN WRAP.
- REFER TO SECOND FLOOR FINISH PLAN AND PATTERN ELEVATIONS FOR BULKHEAD PAINTING SCOPE.
- ALIGN PAINT TRANSITION TO BULKHEAD.
- INSTALL THREE WINDOW TREATMENTS.
- VERIFY FINISH EXTENTS WITH FOOD SERVICE EQUIPMENT PRIOR TO INSTALLATION.
- ROLLER SHADE TO BE RECESSED WITHIN CEILING HEADBOX, REFER TO ARCHITECTURAL.
- TERMINATED/FORMED PVC TRIM AT JAMB AND HEAD OF WALL OPENING, REFER TO DETAILS.
- TERMINATE WALLCOVERING AT HEIGHT INDICATED, PROVIDE FRY REGLET ALUMINUM WALLCOVERING BASE/TERMINATION TRIM OR SIMILAR. CLEAR ANODIZED FINISH.
- ALIGN WALL FINISH MATERIAL TRANSITION TO BULKHEAD, REFER TO ELEVATIONS.
- ALIGN FLOORING TRANSITION TO CORNER.
- PROVIDE LEVEL 5 GYPSUM BOARD WALL FINISH.
- ABUSE-RESISTANT GYPSUM BOARD PROJECTION SURFACE WITH LEVEL 5 FINISH WITH MITERED DARK BRONZE ANODIZED J-CANNEL FRAME, REFER TO ELEVATION.
- PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FLUSH AND FLAT TACKBOARD INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- PROVIDE CONTINUOUS, MITERED FURRING STRIPS ABOVE WAINSCOT FOR FIRE EXTINGUISHER CABINET INSTALLATION, CAULK ALL JOINTS AND PAINT TO MATCH WALL.
- AREA RUG, BY FURNITURE.
- METAL LOCKERS, REFER TO ARCHITECTURAL.
- STAGGER EDGE OF FLOORING TRANSITION, CUT CARPET TILE TO COPE TO FULL WIDTH OF LVT PLANK.
- MEDIUM-GRIND POLISHED CONCRETE INFILL IN METAL PAN STAIRS, PROVIDE (2) INSET STAINLESS STEEL BARS AT NOSING OF EACH STAIR TREAD.
- 36" WIDE X 12" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- 36" WIDE X 24" DEEP ADJUSTABLE PR-1 SHELVING ON WALL STANDARDS.
- PVC TRIM WHERE INDICATED, REFER TO DETAILS.
- WALL FINISH VARIES, REFER TO ELEVATIONS AND DETAILS.

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

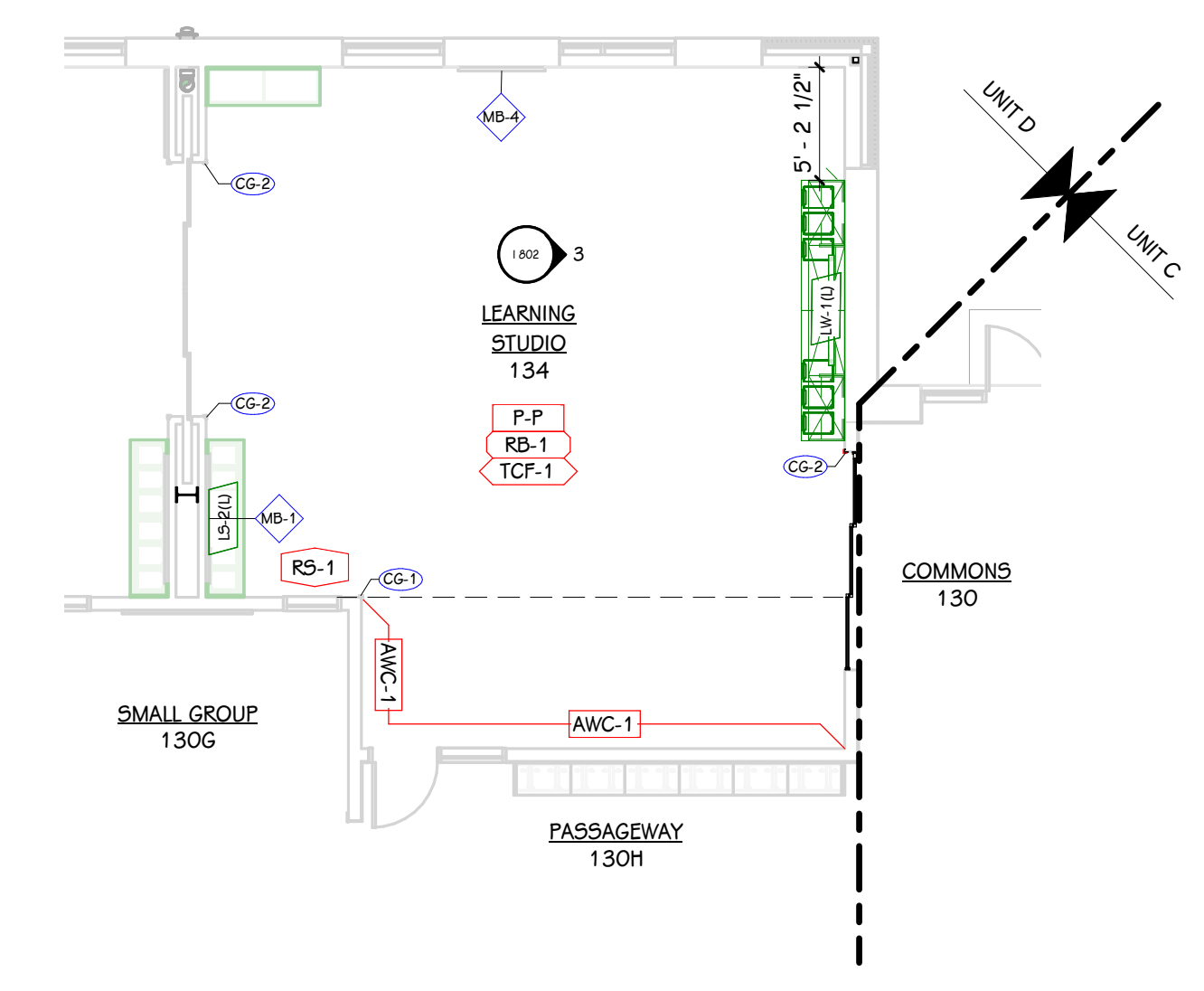
**HAVERHILL ELEMENTARY**



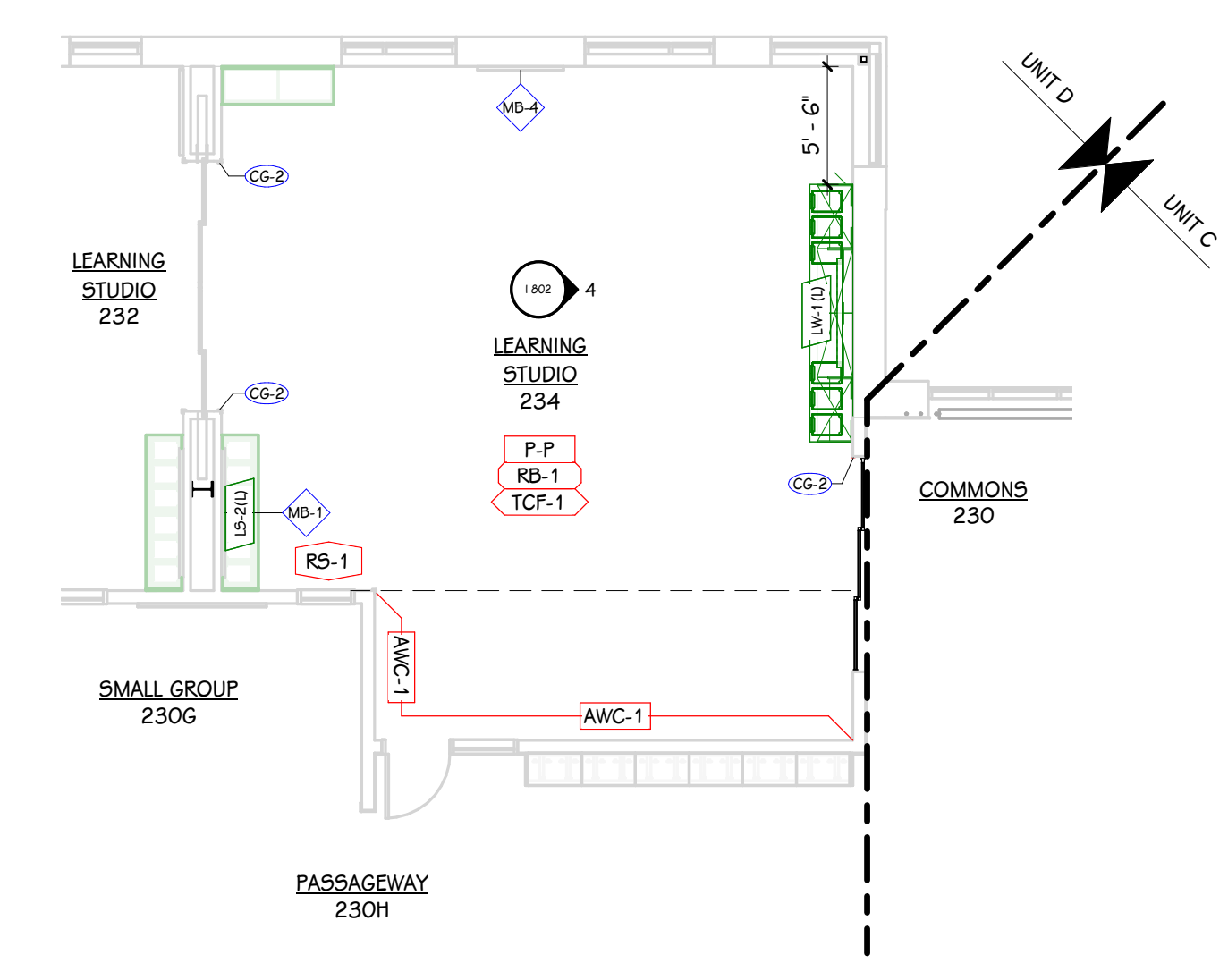
**KEY PLAN**  
SCALE: NO SCALE

**WINDOW TREATMENT KEY**

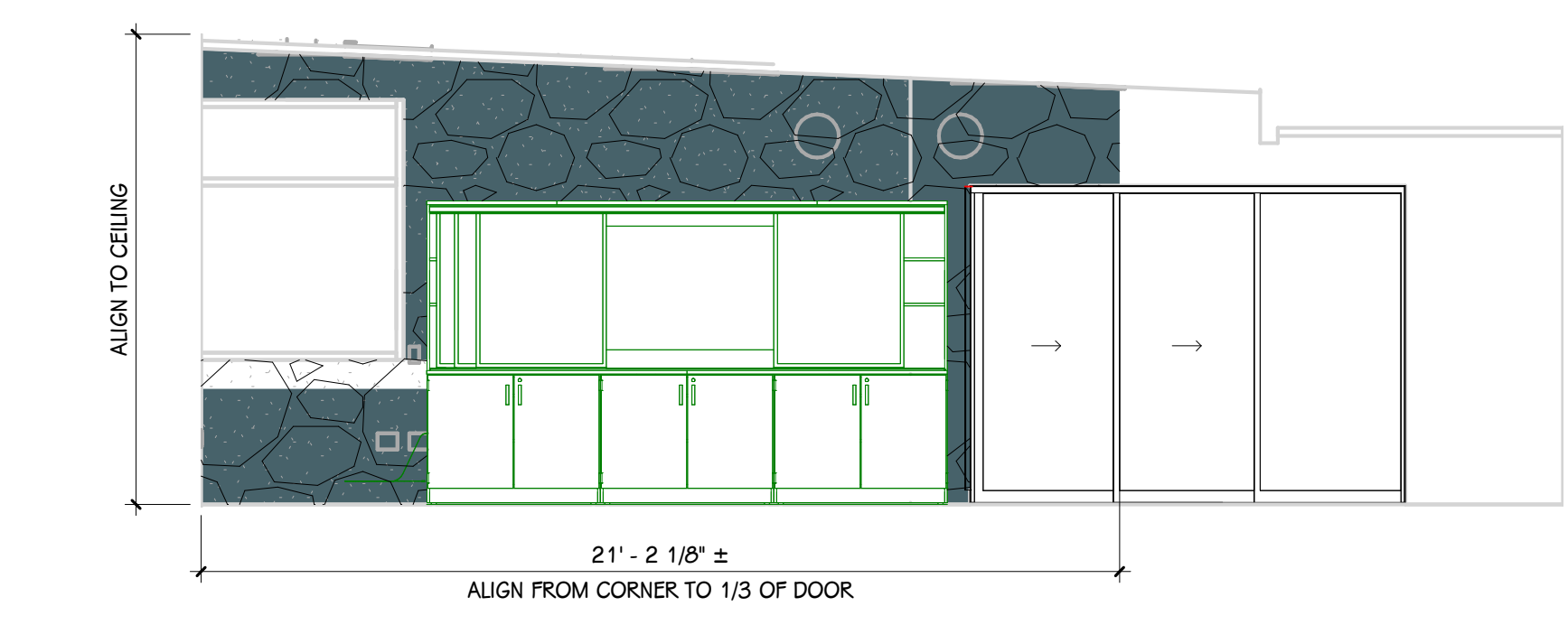
- ROLLER SHADE, SINGLE MANUAL SHADE/CLOTHES: 3% LIGHT-FILTERING
  - ROLLER SHADE, DUAL MANUAL (INCLUDING DOOR & SIDELITE) SHADE/CLOTHES: 3% LIGHT-FILTERING & BLACKOUT PROVIDE JAMB-MOUNTED CHANNELS FOR LIGHT-BLOCKING
  - ROLLER SHADE, DUAL MANUAL SHADE/CLOTHES: 3% LIGHT-FILTERING & BLACKOUT
  - ROLLER SHADE, DUAL MOTORIZED SHADE/CLOTHES: 3% LIGHT-FILTERING & BLACKOUT
- REFER TO SPECIFICATION FOR MORE INFORMATION.
  - WINDOW TREATMENT TAGS SHOWN ON PLAN REPRESENTS A SINGLE SHADE.
  - TREATMENT TAGS SHOWN ON EXTERIOR OF WALL FOR CLARITY - AT INTERIOR LOCATIONS, TAG SHOWN INSIDE ROOM FOR MOUNTING.
  - REFER TO FLOOR PLANS, EXTERIOR ELEVATIONS AND FRAME TYPES FOR HEIGHT AND WIDTH OF OPENINGS.
  - WINDOW TREATMENTS ARE TO BE MOUNTED INSIDE OF THE WINDOW OPENING FROM HEAD TO SILL AND JAMB TO JAMB, UNLESS NOTED OTHERWISE.
  - VERIFY ALL DIMENSIONS IN FIELD PRIOR TO FABRICATION.



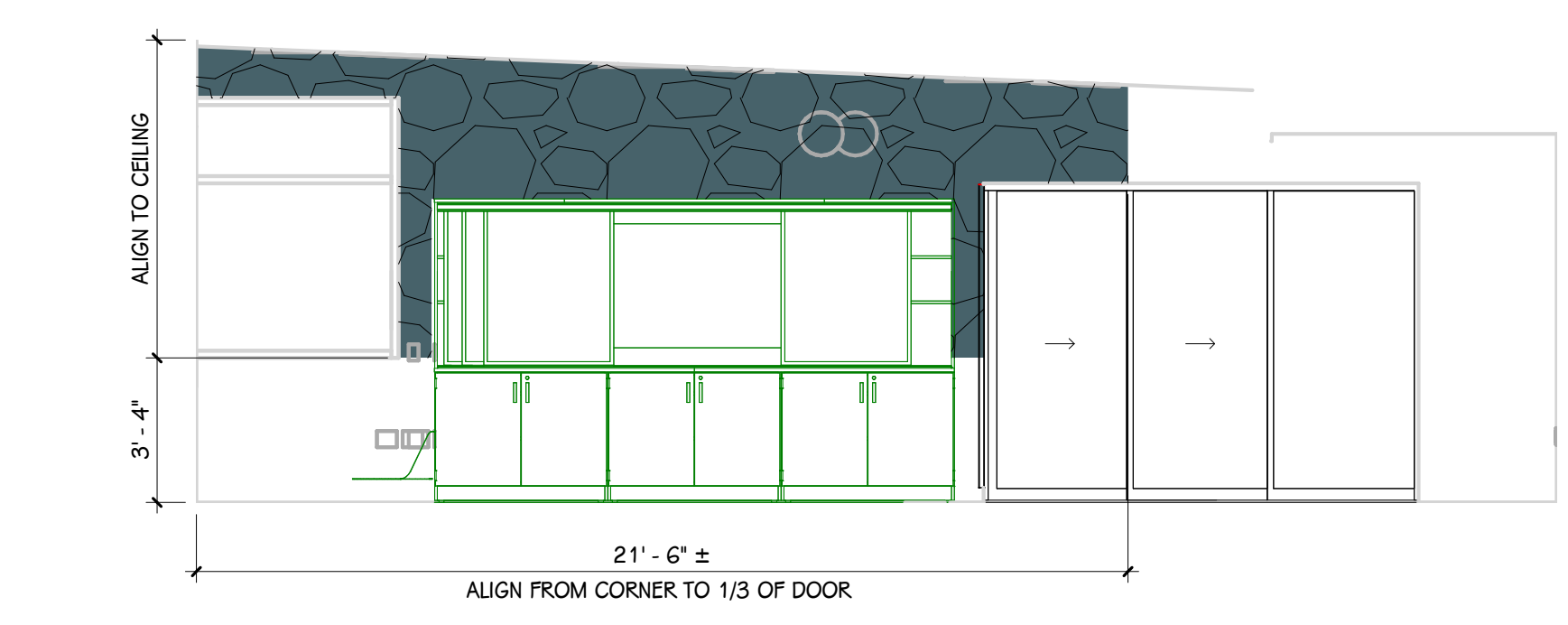
**1 LEARNING STUDIO 134 - ALT. No. 5**  
1/8" = 1'-0"



**2 LEARNING STUDIO 234 - ALT. No. 5**  
1/8" = 1'-0"

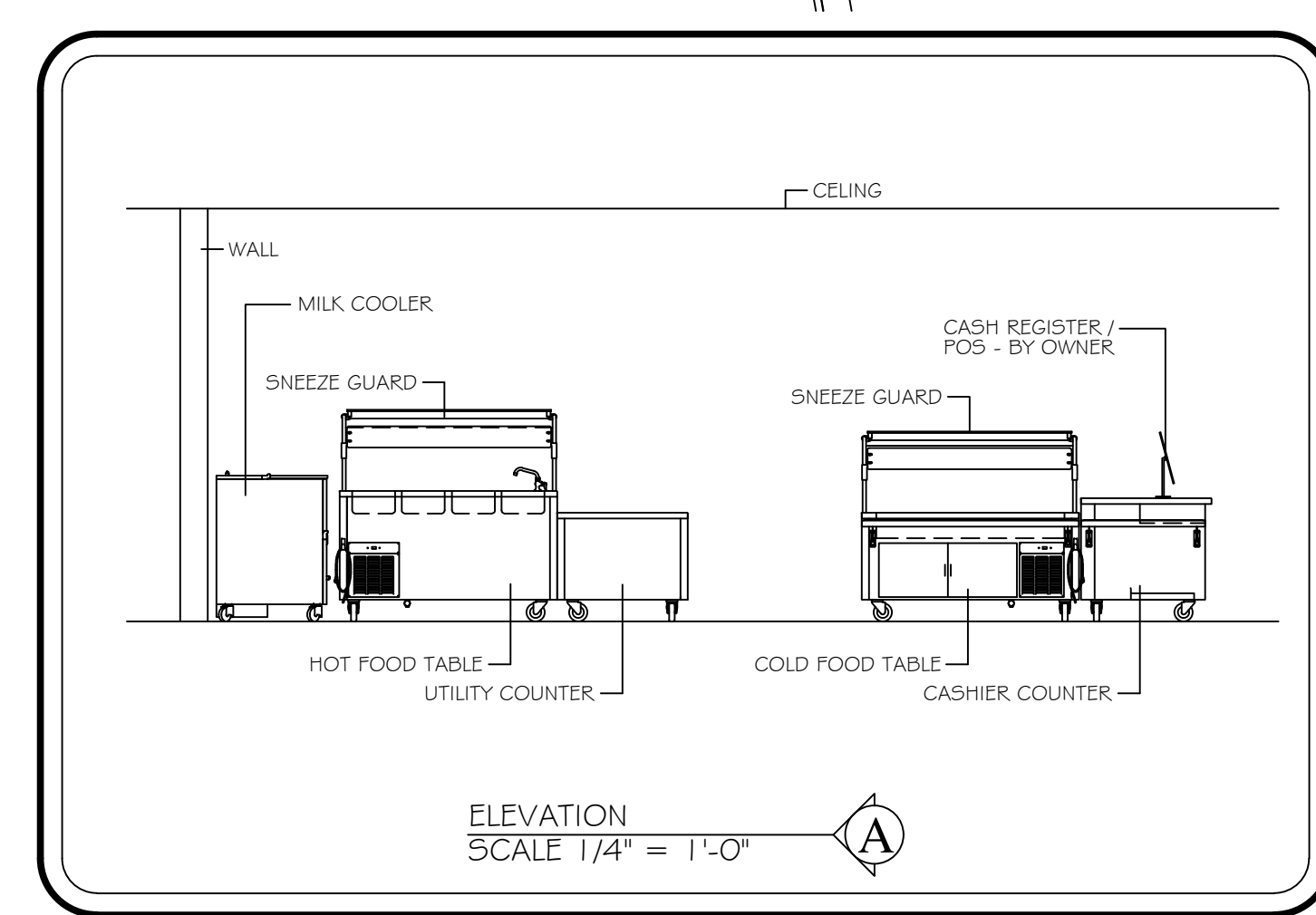
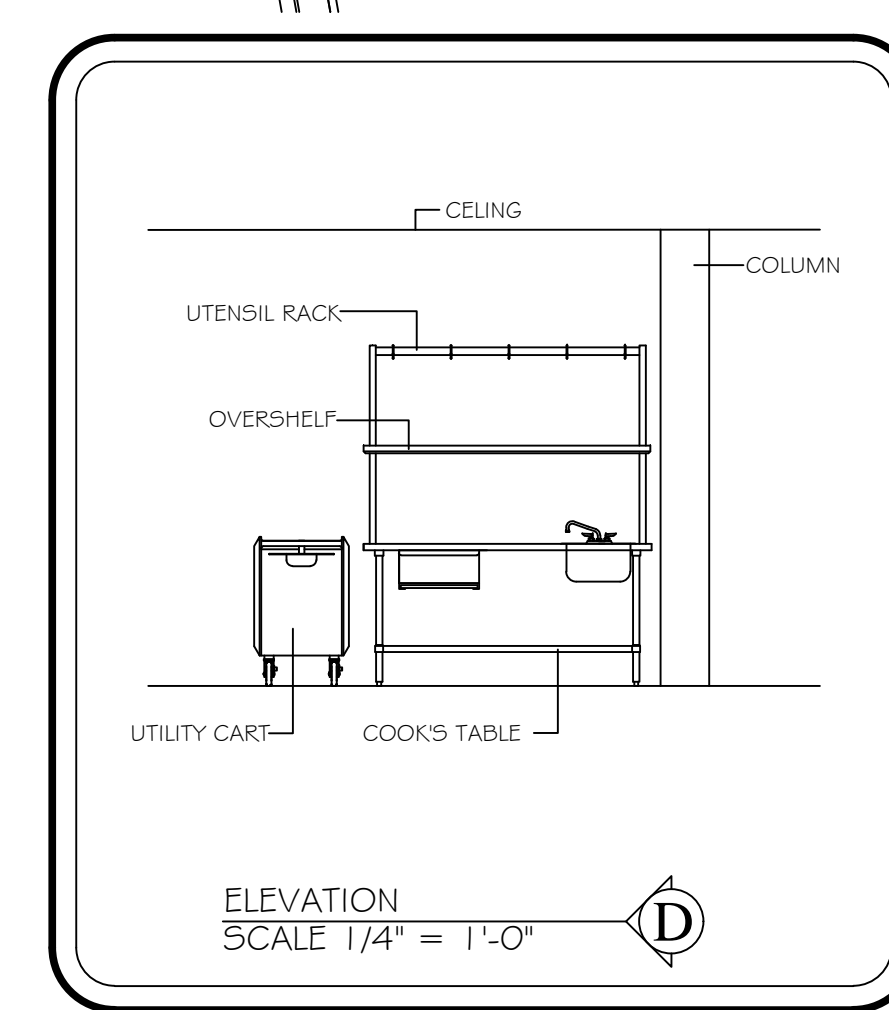
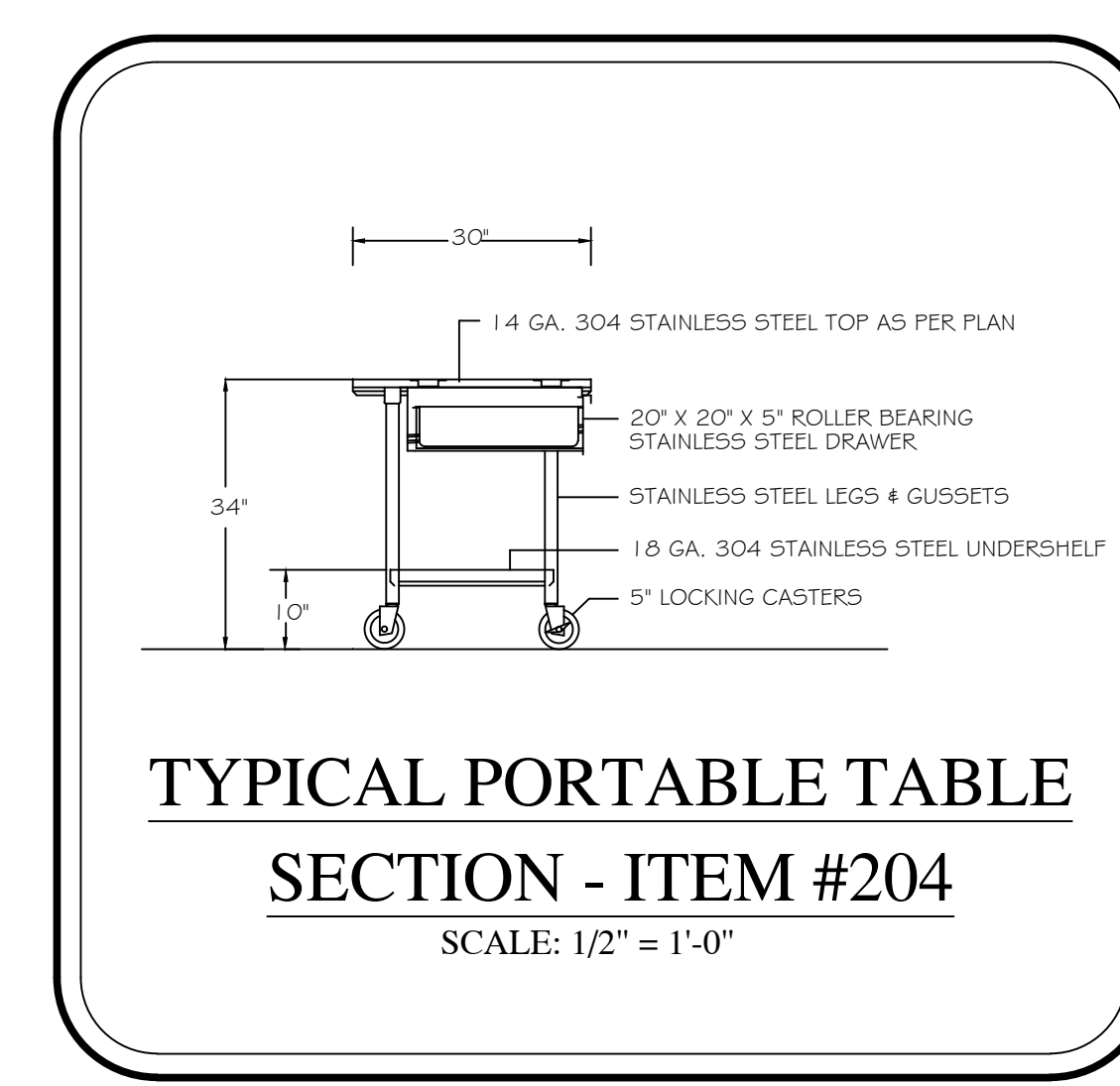
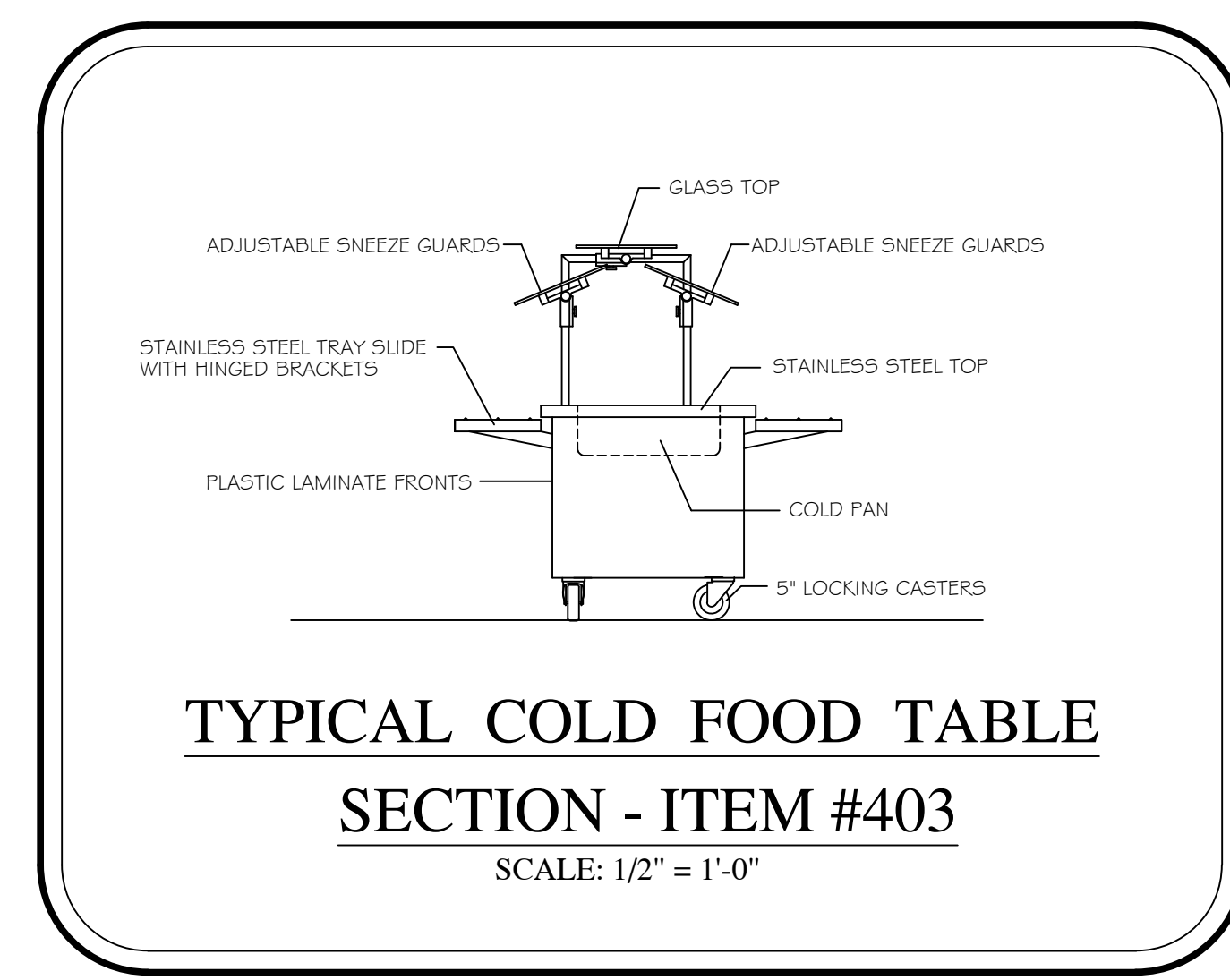
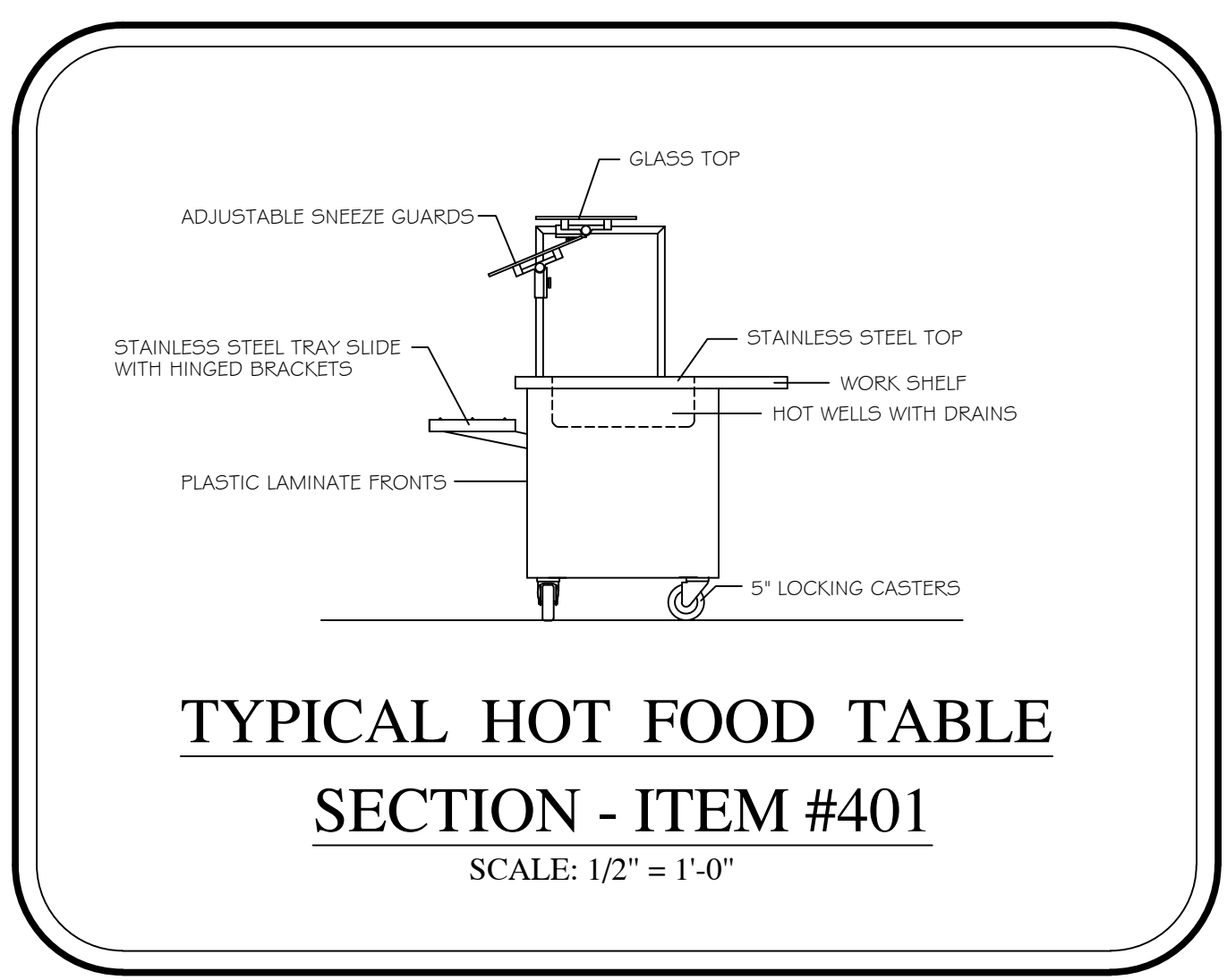
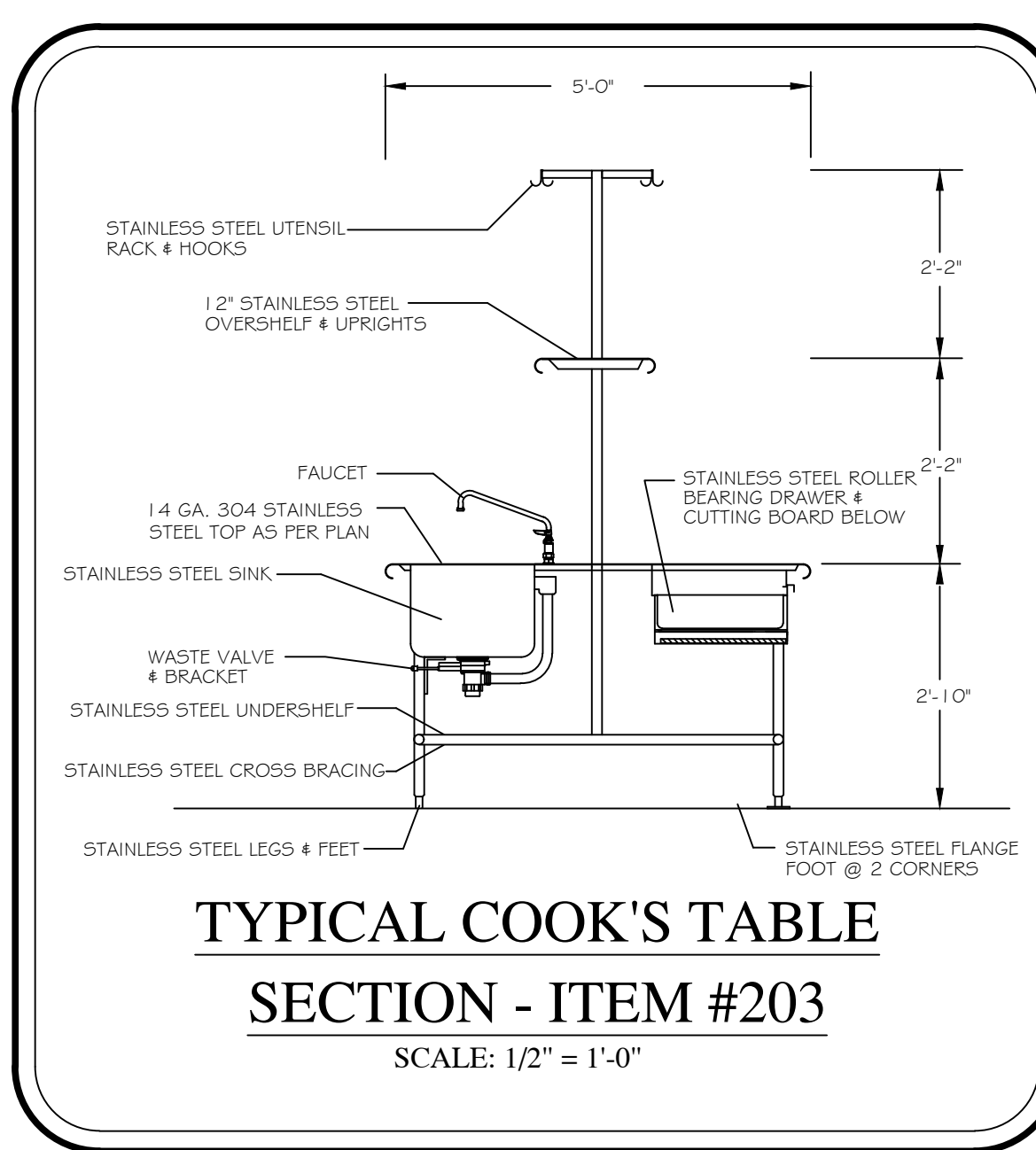
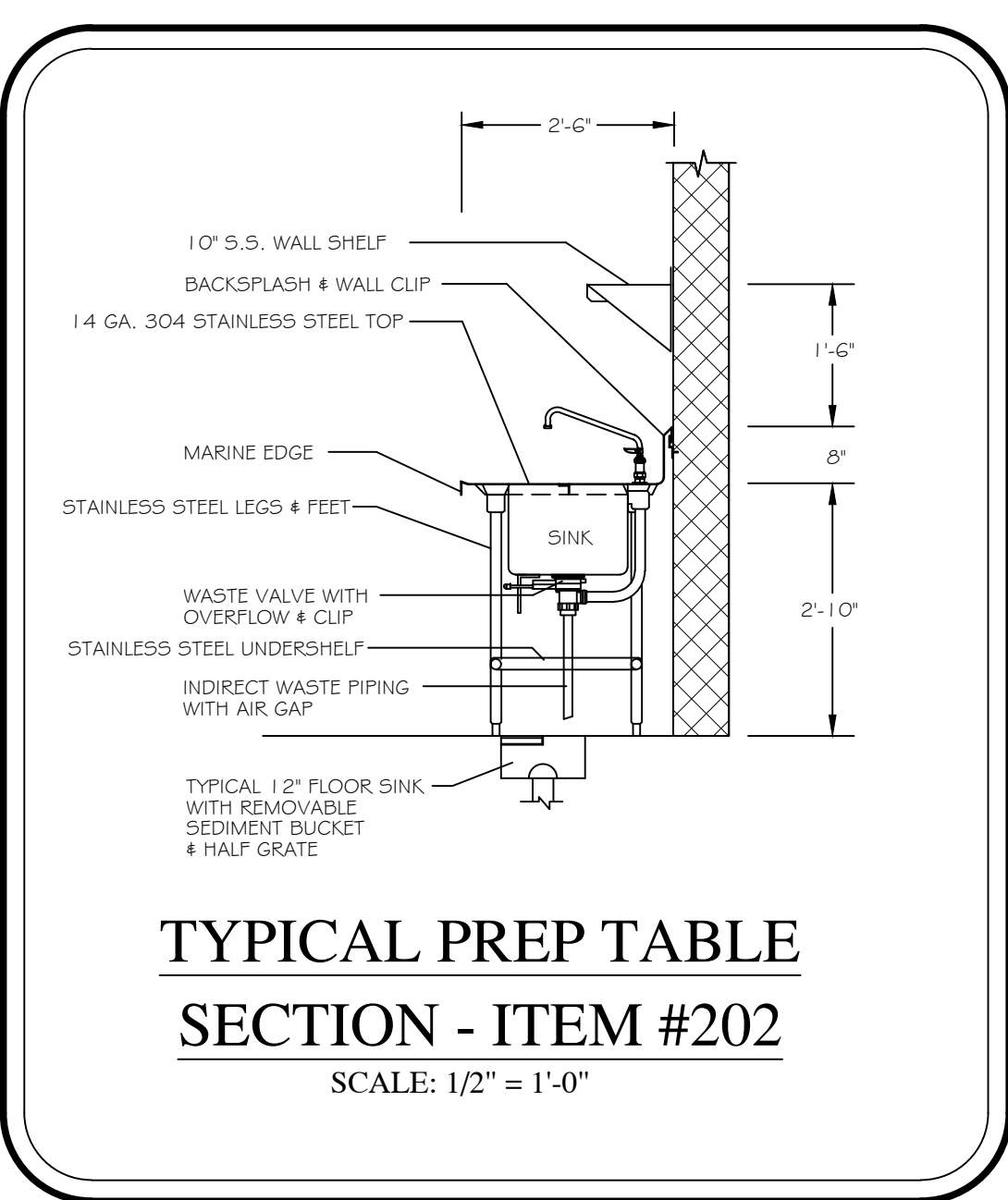
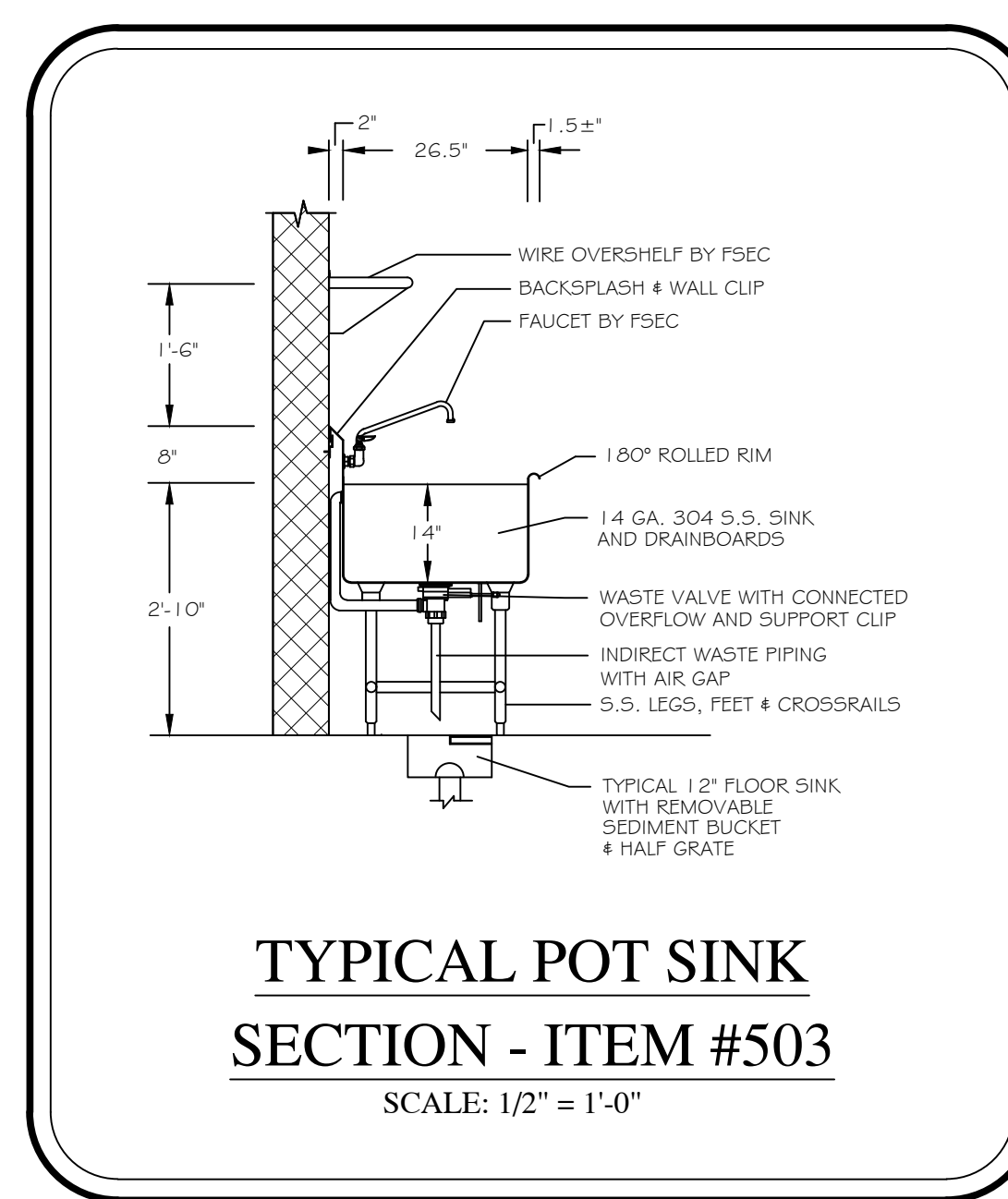
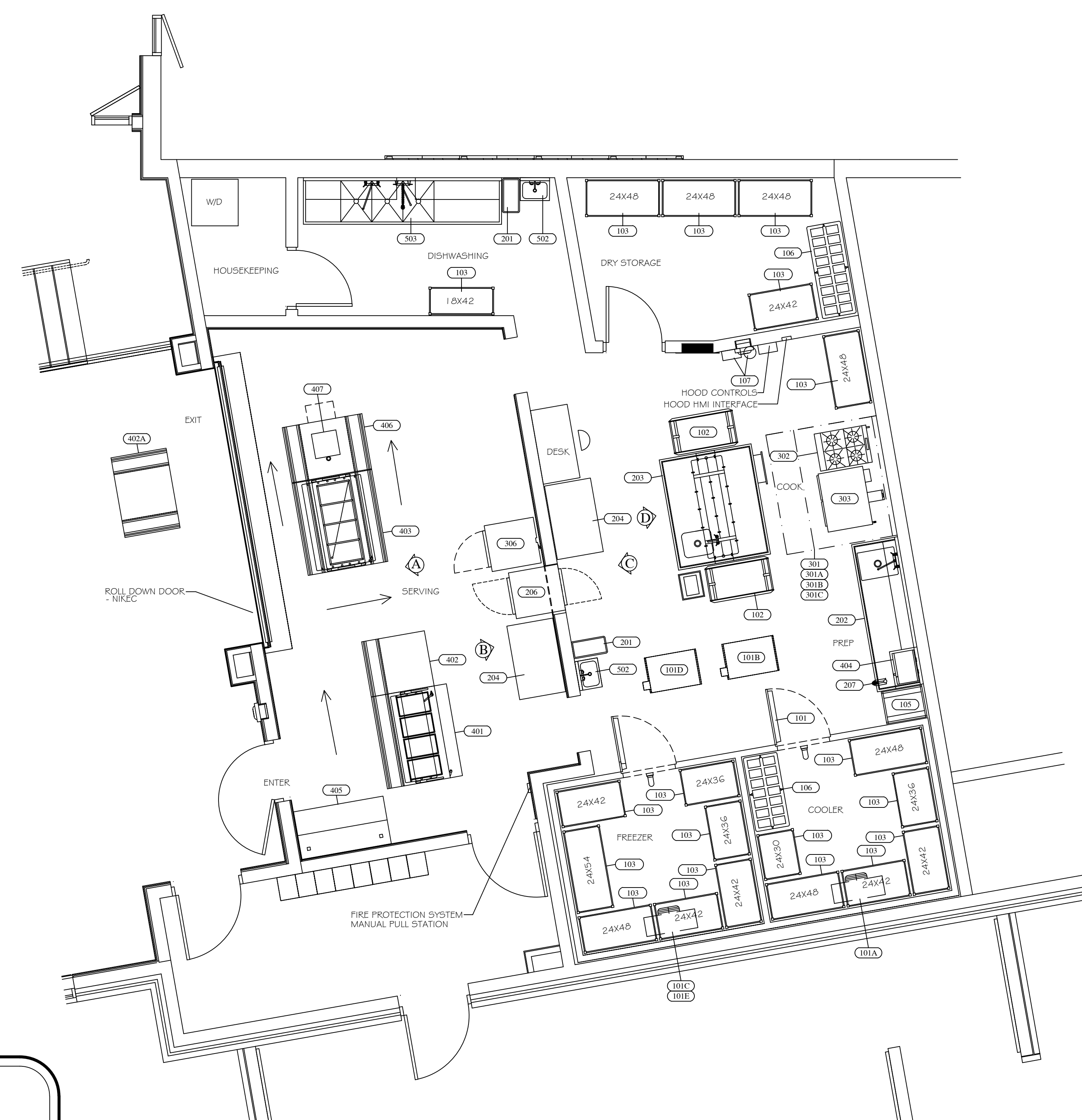
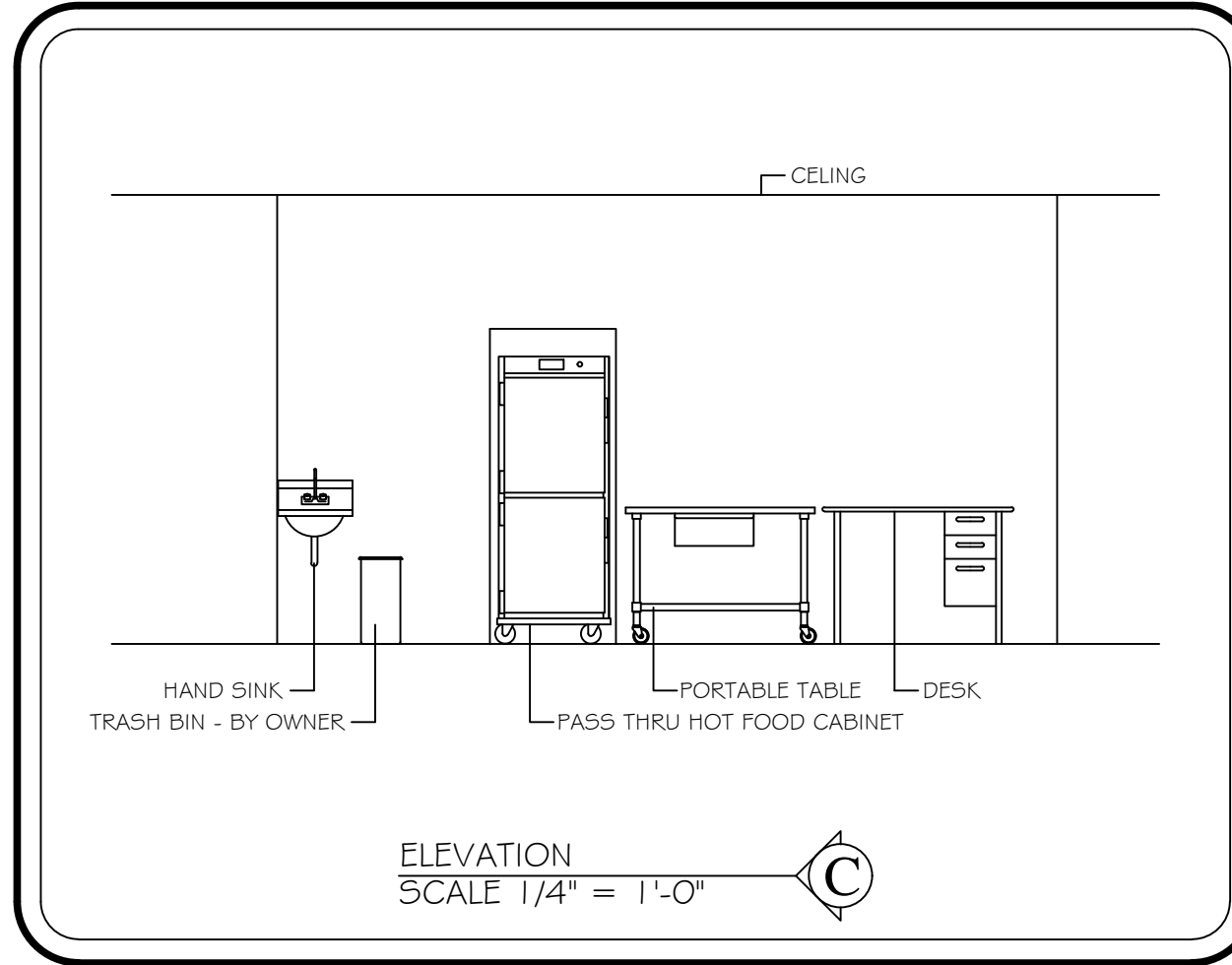
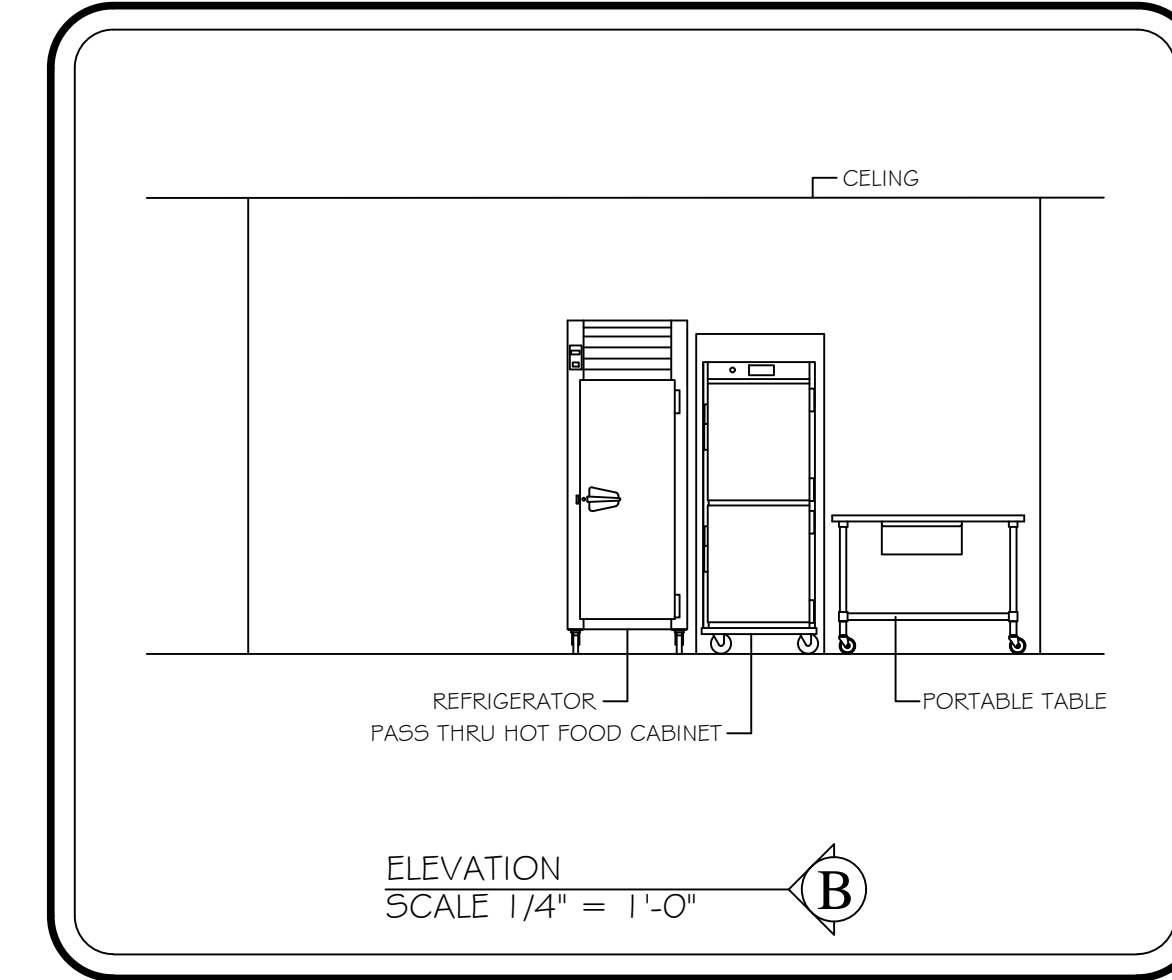


**3 LEARNING STUDIO 134 - EAST - ALT No. 5**  
1/4" = 1'-0"



**4 LEARNING STUDIO 234 - ALT. No. 5**  
1/4" = 1'-0"

EQUIPMENT SCHEDULE																
Item	Qty	DESCRIPTION	CW (in)	HW (in)	INDIRECT DRAIN	DIRECT DRAIN (IN)	GAS (in)	MBTUH	EXH DUCT	EXH CFM	MUA DUCT	MUA CFM	Volts	Ph	Amps load	Equipment Remarks
101	1	WALK-IN COOLER/FREEZER											120	1	(2) 8.0	INSULATED FLOOR; SEE REFRIGERATION PLAN
101A	1	COOLER COIL			FFD								120	1	5.0	
101B	1	COOLER COMPRESSOR											208	3	10.0	ROOF CURBS BY FSEC
101C	1	FREEZER COIL			FFD								208	1	15.0	
101D	1	FREEZER COMPRESSOR											208	3	15.0	ROOF CURBS BY FSEC
101E	1	FREEZER COIL HEAT TAPE											120	1	5.0	
102	2	UTILITY CART														
103	19	SHELVING - POLYMER														
104	1	LOCKERS - NIKEC														
105	1	PAN RACK														
106	2	DUNNAGE RACK														
107	1	FIRE PROTECTION SYSTEM											120	1	10.0	GAS SHUT OFF VALVE BY FSEC
201	2	TRASH BIN - BY OWNER														
202	1	PREP TABLE	0.5	0.5	FL SK											
203	1	COOKS TABLE	0.5	0.5	FL SK											
204	2	PORTABLE TABLE														
205	1	SPARE NUMBER														
206	1	PASS THRU HOT FOOD CABINET											120/208	1	7.8	UNIVERSAL ANGLES
207	1	CAN OPENER														
301	1	HOOD						13" X 13"			14" X 14"		120	1	10.0	WIRE LIGHTS & HEAT SENSOR
301A	1	EXHAUST FAN & CURB							1,800				208	3	10.0	INTERLOCK TO MUA UNIT
301B	1	MAKE UP AIR UNIT					1	119				1,500	208	3	15.0	CONNECT TO HOOD CONTROL PANEL
301C	1	MAKE UP AIR UNIT CONDENSER UNIT											208	3	14.5	
302	1	RANGE - FOUR BURNER					0.75	177					120	1	(2) 8.9	STANDARD OVEN
303	1	CONVECTION OVEN - DOUBLE DECK					(2) 0.75	90								
304	1	SPARE NUMBER														
305	1	SPARE NUMBER														
306	1	REFRIGERATOR											120	1	4.9	
401	1	HOT FOOD TABLE		0.5	FFD								120/208	1	32.8	
402	1	UTILITY COUNTER														
402A	1	CONDIMENT COUNTER														
403	1	COLD FOOD TABLE			FFD								120	1	4.7	
404	1	MICROWAVE OVEN											120	1	13.4	
405	1	MILK COOLER											120	1	7.5	
406	1	CASHIER COUNTER														
407	1	CASH REGISTER/POS - BY OWNER											120	1	10.0	DEDICATED CIRCUIT & DATA
501	1	SPARE NUMBER														
502	2	HAND SINK W/ SIDE SPLASHES	0.5	0.5		1.5										SOAP & TOWEL DISPENSER - BY OWNER
503	1	POT SINK	(2) 0.5	(2) 0.5	FL SK	2										PIPE 2" DIRECT WASTE TO GREASE TRAP



FOODSERVICE DESIGN BY:  
**JRA**  
Food Service Consultants  
JRA FOOD SERVICE CONSULTANTS, LLC  
401 HALL STREET SW - SUITE 185H  
GRAND RAPIDS, MI 49503  
PH: (616) 454-4433

**TowerPinkster**  
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ISSUED FOR DATE

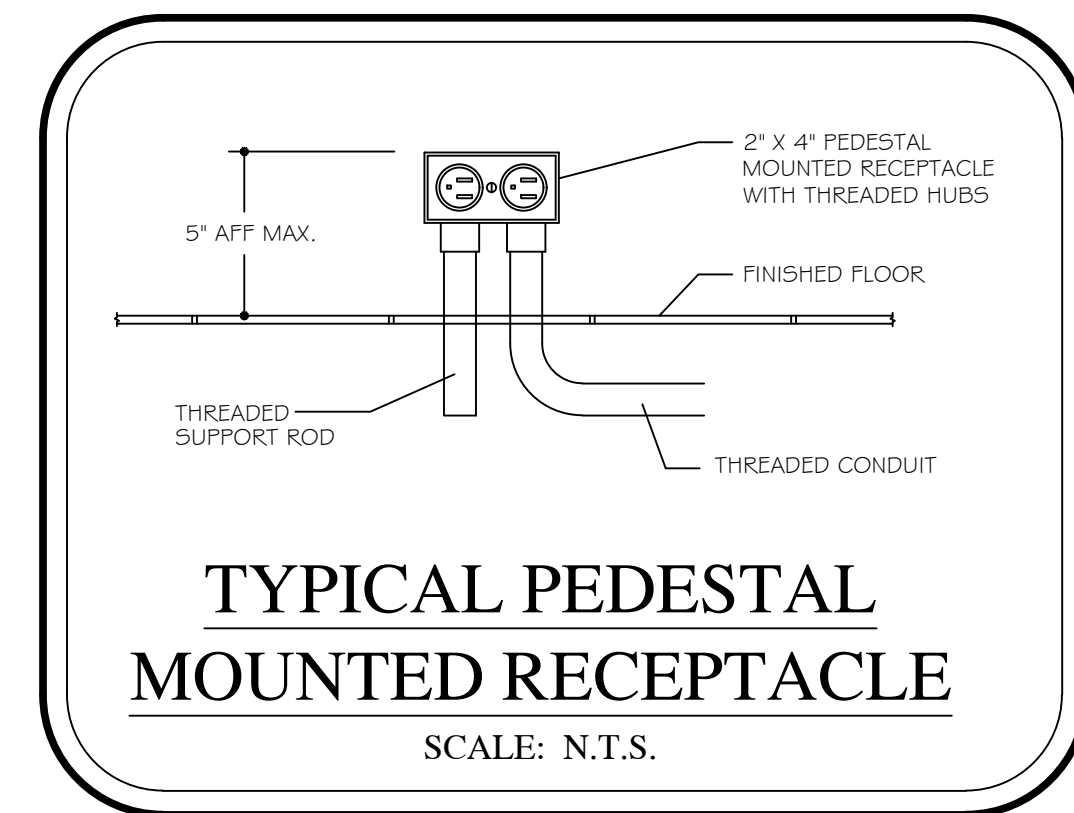
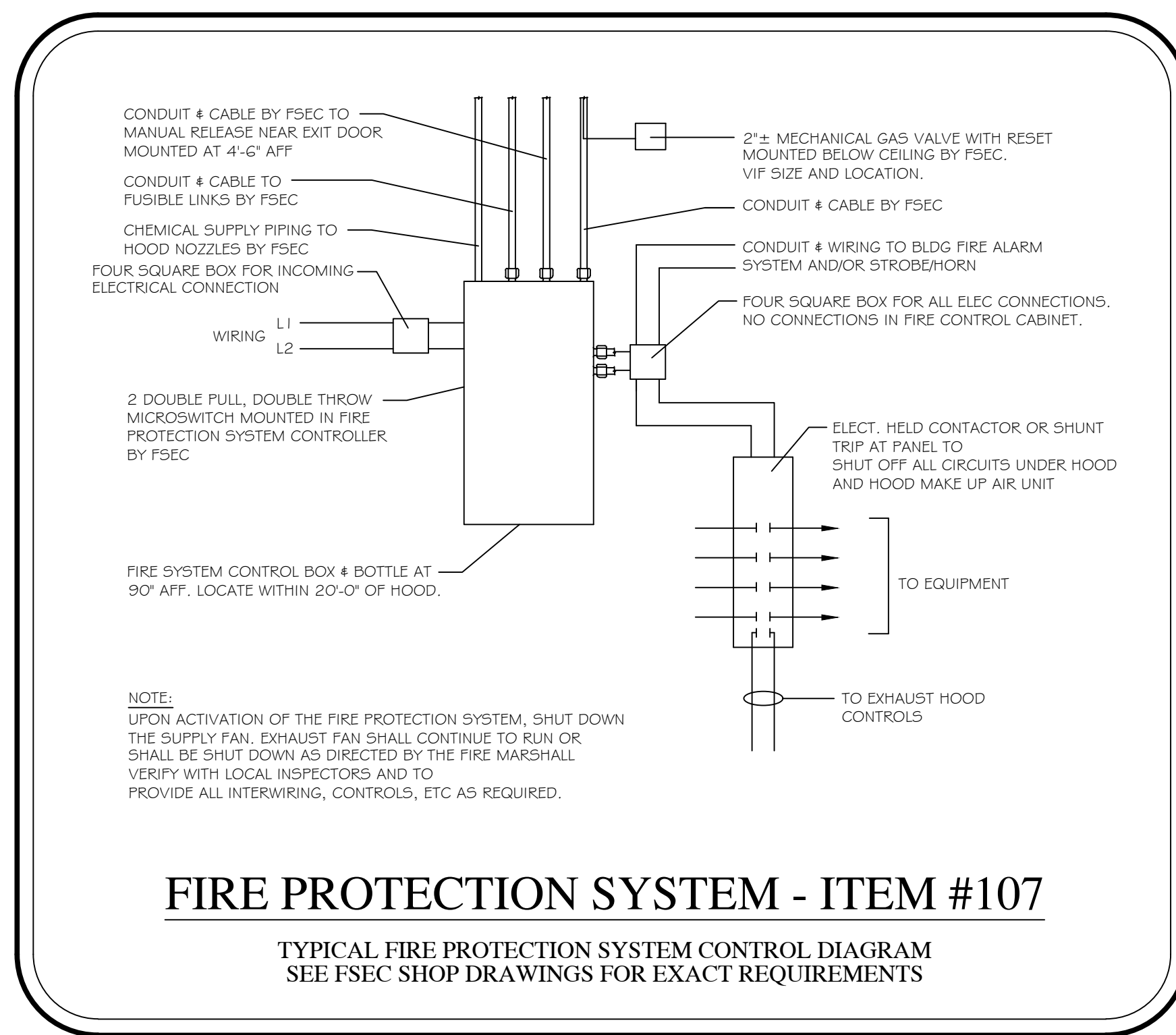
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

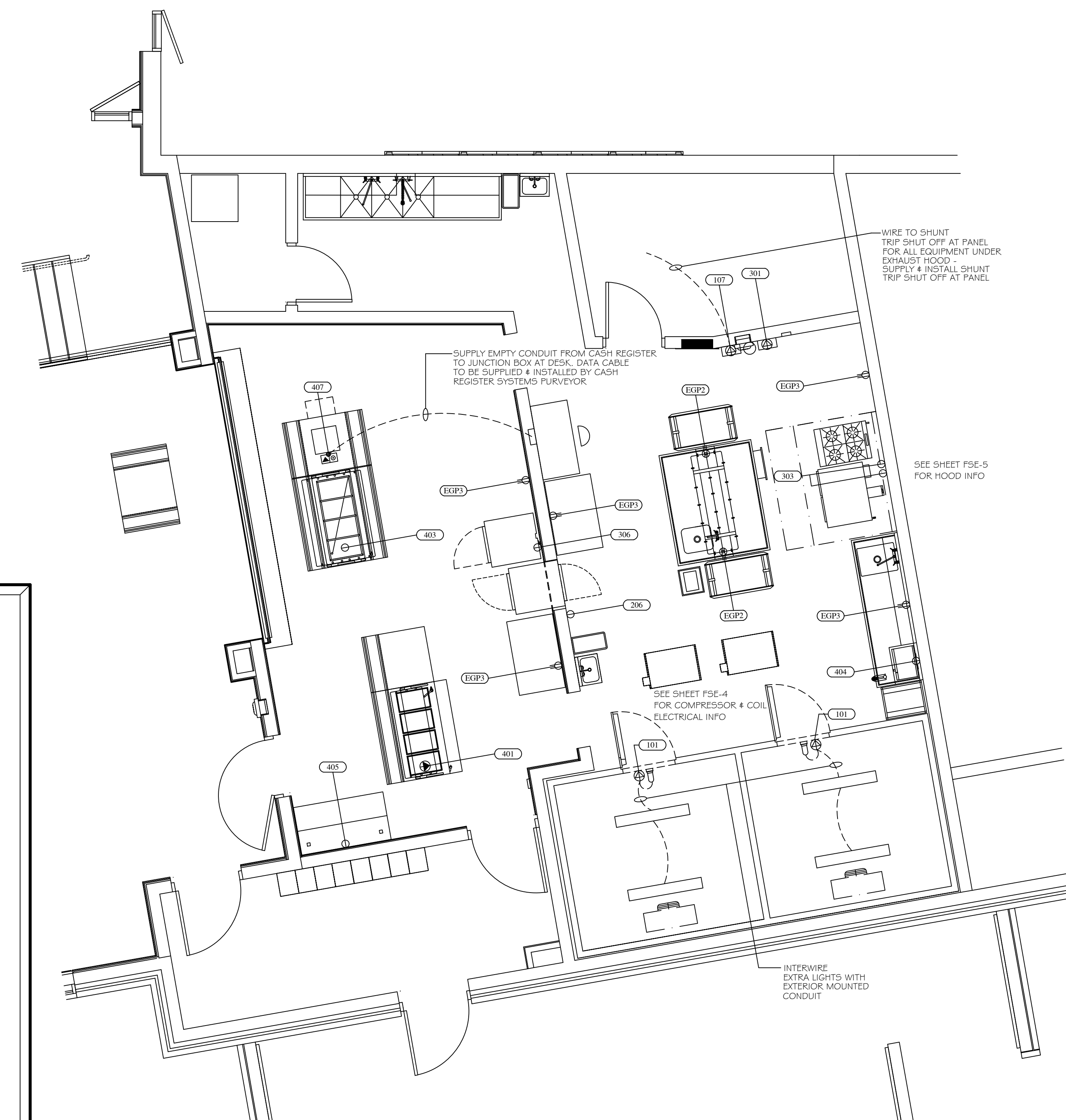
SHEET TITLE  
FOOD SERVICE EQUIPMENT FLOOR PLAN  
SCALE 1/4" = 1'-0"  
DATE  
JUNE 30, 2023  
SHEET NUMBER  
FSE-1  
21-237.20

EQUIPMENT SCHEDULE								
Item	EQUIPMENT DESCRIPTION	VOLTS	PH	AMPS LOAD	DIRECT BY EC	CORDESET BY FSEC	AFF (in)	REMARKS
101	WALK-IN COOLER/FREEZER	120	1	8.0	X		DFA	WIRE TO JB FOR LIGHTS, DOOR HEATER
107	FIRE PROTECTION SYSTEM	120	1	10.0	X		DFA	WIRE TO SHUT-OFF IN PANEL
206	PASS THRU HOT FOOD CABINET	120/208	1	7.8		X	72	
301	HOOD	120	1	10.0	X		DFA	WIRE LIGHTS & HEAT SENSOR
303	CONVECTION OVEN - DOUBLE DECK	120	1	8.9		X	24	
306	REFRIGERATOR	120	1	4.9		X	90	
401	HOT FOOD TABLE	120/208	1	34.0		X	5	PEDESTAL MOUNTED RECEPTACLE
403	COLD FOOD TABLE	120	1	4.7		X	5	PEDESTAL MOUNTED RECEPTACLE
404	MICROWAVE OVEN	120	1	13.4		X	72	
405	MILK COOLER	120	1	7.5		X	16	
407	CASH REGISTER/POS - BY OWNER	120	1	10.0		X	5	INTERWIRE TO OFFICE/CPU - VIF
EGP2	GENERAL PURPOSE DUPLEX	120	1	10.0		X	5	PEDESTAL MOUNTED RECEPTACLE
EGP3	GENERAL PURPOSE DUPLEX	120	1	10.0		X	48	



- TRADE & FSEC NOTES:**
- KITCHEN EQUIPMENT SHALL BE DELIVERED AND ERECTED BY F.S.E.C.
  - DO NOT ROUGH-IN FROM THIS DRAWING. REFER TO F.S.E.C. DIMENSIONED ROUGH-IN DRAWINGS AND SHOP DRAWINGS FOR ACTUAL REQUIREMENTS.
  - TRADES SHALL MAKE ALL FINAL CONNECTIONS BETWEEN EQUIPMENT AND ROUGH-IN POINT, AND FURNISH ALL WIRING, SWITCHES, CONTROLS, SERVICE VALVES, PIPING, ETC AS REQUIRED. FSEC SHALL FURNISH DRAIN WATER TEMPERING KIT(S), TRADES SHALL INSTALL.
  - FSEC SHALL FURNISH AND TRADES SHALL INSTALL ALL ACCESSORIES (FAUCETS, SWITCHES, CORDS, VALVES, GAS HOSES, ETC.).
  - SLOPES TO PDS SHOULD BE HELD TO A MINIMUM DIMENSION.
  - ALL "ROUGH-INS" SHOULD BE "UP-WITHIN" AND THEN "OUT-OF" WALLS WHERE POSSIBLE TO KEEP FLOORS AS CLEAN AS POSSIBLE. ROUGH-INS ARE SHOWN AT TERMINATION POINT TO ALLOW WIRING/PIPING TO FIXTURE BY TRADES.
  - TRADES TO PROVIDE CHASES/REWORK OF WALLS, FLOORS, CEILINGS FOR UTILITIES, FLOOR GRATES, WALKING, DUCTS, ETC.
  - F.S.E.C. SHALL PROVIDE ACCESS HOLES IN EQUIPMENT FOR UTILITIES, PIPING, POS, BEVERAGE LINES, ETC.
  - TRADES SHALL PROVIDE VENTILATION STRUCTURAL SUPPORT, CEILING WORK, ROOF PENETRATIONS AND FIRE PROOFING AS REQUIRED.
  - EXHAUST HOOD SHALL BE USED FOR VENTILATION OF COOKING EQUIPMENT ONLY. TRADES SHALL PROVIDE ROOM VENTILATION (A/C RECOMMENDED) AS REQUIRED.
  - TRADES SHALL PROVIDE ADEQUATE VENTILATION FOR REFRIGERATION COMPRESSORS, WHETHER AIR OR WATER COOLED.
  - TRADES SHALL REVIEW ALL ROUGHINS AND SHOP DRAWINGS FROM F.S.E.C. AND ADVISE PRIOR TO ROUGHING IN IF ANY CHANGES ARE REQUIRED.
  - FSEC SHALL COORDINATE ROUGHIN REQUIREMENTS FOR OWNER SUPPLIED, RELOCATED, OR EXISTING EQUIPMENT WITH ALL TRADES.
  - TRADES TO REUSE EXISTING ROUGHINS IF APPLICABLE.
  - EQUIPMENT NOT BEING REUSED TO BE DISCONNECTED FROM UTILITIES BY THE TRADES.
  - EQUIPMENT NOT BEING RE-USED SHALL BE DISCARDED BY THE FSEC.
  - IF OWNER REQUESTS EXISTING EQUIPMENT BE SALVAGED THE FSEC SHALL TURN OVER TO OWNER.
  - EQUIPMENT DESIGNATED AS RELOCATED SHALL BE DISCONNECTED FROM UTILITIES BY THE TRADES.
  - EQUIPMENT DESIGNATED AS RELOCATED SHALL BE REMOVED FROM SITE, CLEANED, MADE READY FOR HEALTH DEPARTMENT AND RETURNED TO THE SITE BY THE FSEC.
  - EQUIPMENT DESIGNATED AS RELOCATED SHALL BE RE-CONNECTED BY THE TRADES.
  - TRADES & FSEC TO VERIFY VENTILATION DATA WITH HOOD MFG. SHOP DRAWINGS.

MECHANICAL / ELECTRICAL NOTES			
⊕	120 V - 20 AMP DUPLEX RECEPTACLE - GFCI VERTICALLY MOUNTED	TFT	TEMPERED FLOOR TROUGH
⊕	120 V - 20 AMP SIMPLEX OUTLET - GFCI VERTICALLY MOUNTED	PH	PHASE
⊕	120 VOLT - 30 AMP QUAD OUTLET	LNON	UNLESS OTHERWISE NOTED
SR	SPECIAL RECEPTACLE - 120 VOLT	V	VOLTS
SR	SPECIAL RECEPTACLE - 208/240 VOLT	VIF	VERIFY IN FIELD
W.T.	W.T. FLUSH FLOOR POWER/COMMUNICATIONS RECEPTACLE	HW	HOT WATER - 25 PSI - 115 DEGREES
DATA	DATA CONNECTION	CW	COLD WATER - 25 PSI
WT	WATERTIGHT FLUSH FLOOR DUPLEX - 20 AMP - GFCI	G	NATURAL GAS - 7" W.C. OR LP GAS - 11" W.C. - VIF
JB	JUNCTION BOX	W	WASTE DRAIN - DIRECT CONNECTION
LT	LIGHT FIXTURE	FD	FLOOR DRAIN - 3" MINIMUM DRAIN - MINIMUM FITCH
A	AMPS	FFD	FUNNEL FLOOR DRAIN FOR IW - 3" MINIMUM DRAIN
AFF	ABOVE FINISHED FLOOR	FLSK	FLOOR SINK FOR IW - 12" SQ. - HALF GRATE - 3" MIN.
BTC	BRANCH TO CONNECTION BY TRADES	EVC	EXHAUST VENT CONNECTION
DFA	DROP FROM ABOVE	MUA	MAKE UP AIR DUCT CONNECTION
GP	GENERAL PURPOSE	CFM	CUBIC FEET MINUTE
HP	HORSEPOWER	SP	STATIC PRESSURE
IW	INDIRECT/AIR GAPPED WASTE TO FL DR OR FL SK	BC	BEVERAGE CONDUIT WITH 1/8" SWEEP ENDS BY TRADES - VIF
KW	KILOWATT	NKEC	NOT IN KITCHEN EQUIPMENT CONTRACT



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
FOOD SERVICE  
ELECTRICAL  
FLOOR PLAN  
SCALE 1/4" = 1'-0"

SHEET NUMBER  
FSE-2  
21-237.20

DATE  
JUNE 30, 2023

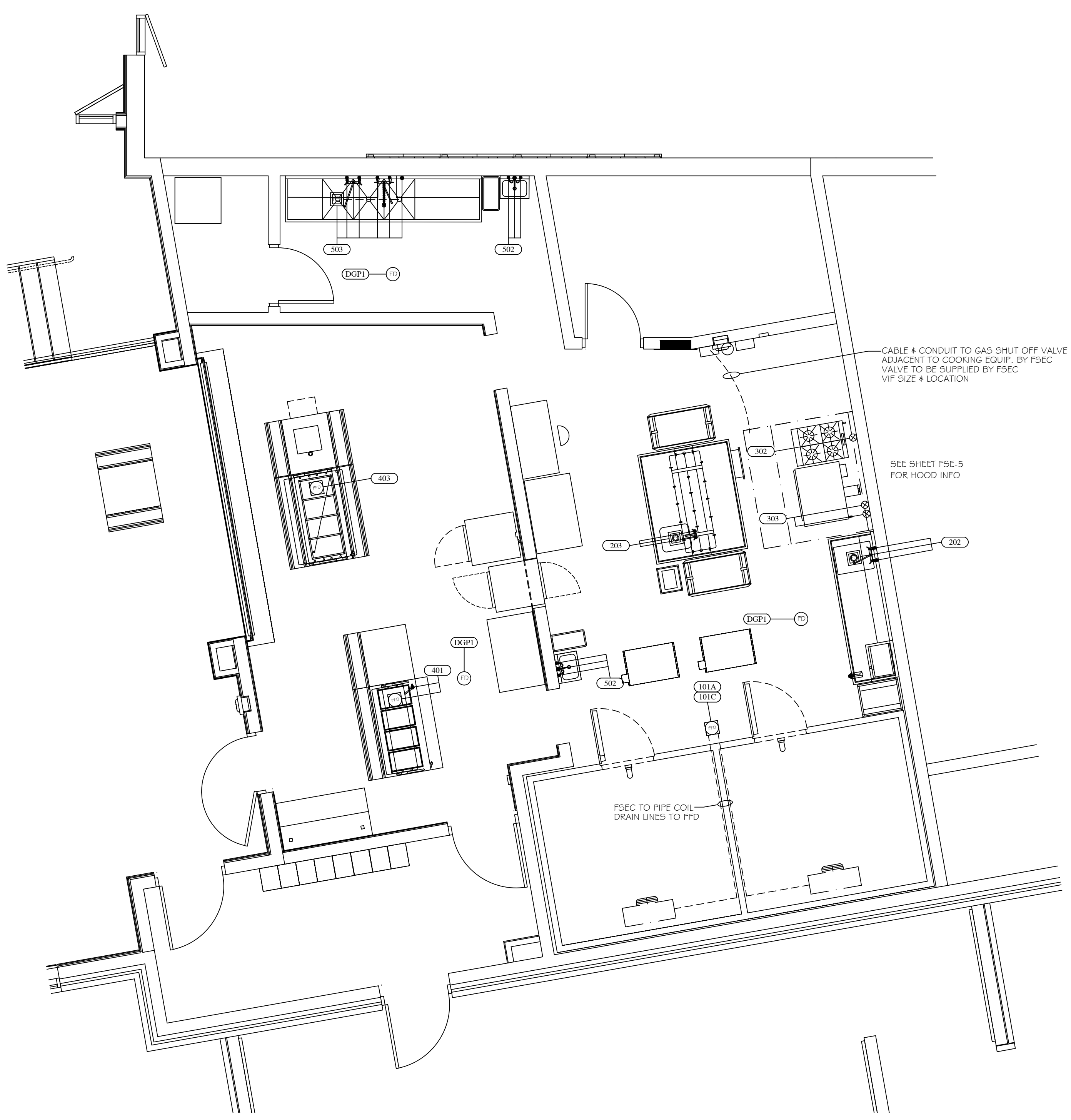
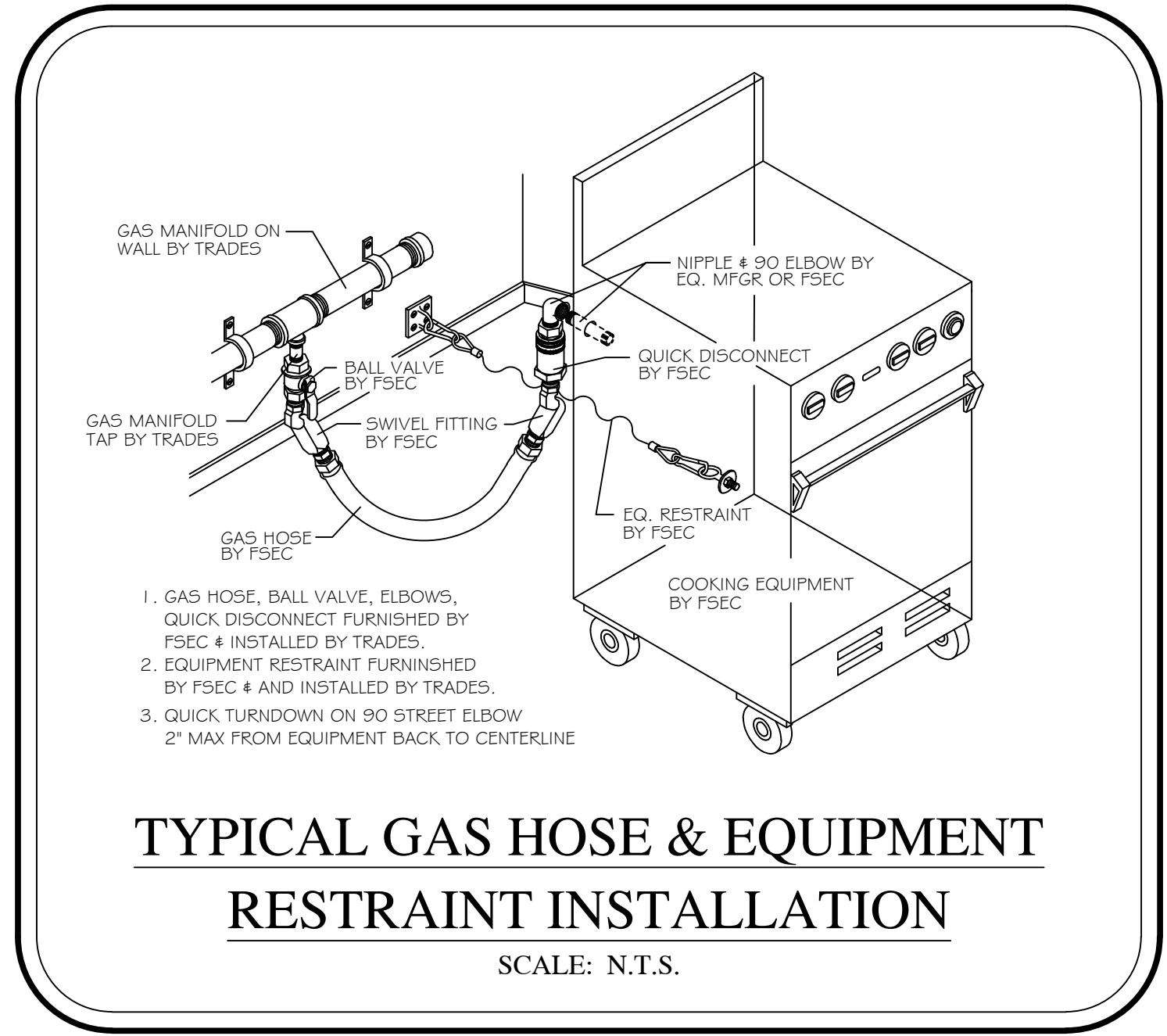


EQUIPMENT SCHEDULE											
Item	EQUIPMENT DESCRIPTION	CW (in)	HW (in)	AFF (in)	DIRECT DRAIN (in)	AFF (in)	INDIRECT AIR GAP	GAS (in)	AFF (in)	MBTUH	REMARKS
101A	COOLER COIL						FFD				FSEC PIPE COIL TO FFD
101C	FREEZER COIL						FFD				FSEC PIPE COIL TO FFD
202	PREP TABLE	0.5	0.5	16			FL SK				
203	COOKS TABLE	0.5	0.5	5			FL SK				
302	RANGE - FOUR BURNER							0.75	10	177	
303	CONVECTION OVEN - DOUBLE DECK							0.75	10	90	
401	HOT FOOD TABLE		0.5	5			FFD				
403	COLD FOOD TABLE						FFD				
502	HAND SINK W/ SIDE SPLASHES	0.5	0.5	18	1.5	16					SOAP & TOWEL DISPENSER - BY OWNER
503	POT SINK	0.5	0.5	16	2	12	FL SK				PIPE 2" DIRECT WASTE TO GREASE TRAP
DGP1	GENERAL PURPOSE FLOOR DRAIN				3	IN FLOOR					

MECHANICAL / ELECTRICAL NOTES				
⊕	120 V - 20 AMP DUPLEX RECEPTACLE - GFCI VERTICALLY MOUNTED		TFT	TEMPERED FLOOR TROUGH
⊕	120 V - 20 AMP SIMPLEX OUTLET - GFCI VERTICALLY MOUNTED		PH	PHASE
⊕	120 VOLT - 30 AMP QUAD OUTLET		UN	UNLESS OTHERWISE NOTED
SR	SPECIAL RECEPTACLE - 120 VOLT		V	VOLTS
SR	SPECIAL RECEPTACLE - 208/240 VOLT		VIF	VERIFY IN FIELD
W.T.	W.T. FLUSH FLOOR POWER/COMMUNICATIONS RECEPTACLE		HW	HOT WATER - 25 PSI - 115 DEGREES
DATA	DATA CONNECTION		CW	COLD WATER - 25 PSI
WATER	WATERTIGHT FLUSH FLOOR DUPLEX - 20 AMP - GFCI		G	NATURAL GAS - 7" W.C. OR LP GAS - 1 1/4" W.C. - VIF
JB	JUNCTION BOX		W	WASTE DRAIN - DIRECT CONNECTION
LT	LIGHT FIXTURE		FD	FLOOR DRAIN - 3" MINIMUM DRAIN - MINIMUM PITCH
A	AMPS		FFD	FUNNEL FLOOR DRAIN FOR IW - 3" MINIMUM DRAIN
AFF	ABOVE FINISHED FLOOR		FL SK	FLOOR SINK FOR IW - 12" SQ. - HALF GRATE - 3" MIN.
BTIC	BRANCH TO CONNECTION BY TRADES		EVC	EXHAUST VENT CONNECTION
DFA	DROP FROM ABOVE		MUA	MAKE UP AIR DUCT CONNECTION
GP	GENERAL PURPOSE		CFM	CUBIC FEET MINUTE
HP	HORSEPOWER		SP	STATIC PRESSURE
IW	INDIRECT/AIR GAPPED WASTE TO FL DR OR FL SK		BC	BEVERAGE CONDUIT WITH 18" SWEEP ENDS BY TRADES - VIF
KW	KIDWAY		NIKEC	NOT IN KITCHEN EQUIPMENT CONTRACT

**TRADE & FSEC NOTES:**

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- FSEC SHALL FURNISH AND TRADES SHALL INSTALL ALL ACCESSORIES (FAUCETS, SWITCHES, CORDS, VALVES, GAS HOSES, ETC.).
- SLOPES TO FDS SHOULD BE HELD TO A MINIMUM DIMENSION.
- ALL 'ROUGH-INS' SHOULD BE 'UP-WITHIN' AND 'THRU' 'OUT-OF' WALLS WHERE POSSIBLE TO KEEP FLOORS AS CLEAN AS POSSIBLE. ROUGH-INS ARE SHOWN AT TERMINATION POINT TO ALLOW WIRING/PIPING TO FIXTURE BY TRADES.
- TRADES TO PROVIDE CHASES/REWORK OF WALLS, FLOORS, CEILINGS FOR UTILITIES, FLOOR GRATES, WALKING, DUCTS, ETC.
- F.S.E.C. SHALL PROVIDE ACCESS HOLES IN EQUIPMENT FOR UTILITIES, PIPING, POS, BEVERAGE LINES, ETC.
- TRADES SHALL PROVIDE VENTILATION STRUCTURAL SUPPORT, CEILING WORK, ROOF PENETRATIONS AND FIRE PROOFING AS REQUIRED.
- EXHAUST HOOD SHALL BE USED FOR VENTILATION OF COOKING EQUIPMENT ONLY. TRADES SHALL PROVIDE ROOM VENTILATION (AG RECOMMENDED) AS REQUIRED.
- TRADES SHALL PROVIDE ADEQUATE VENTILATION FOR REFRIGERATION COMPRESSORS, WHETHER AIR OR WATER COOLED.
- TRADES SHALL REVIEW ALL ROUGH-INS AND SHOP DRAWINGS FROM F.S.E.C. AND ADVISE PRIOR TO ROUGHING IN IF ANY CHANGES ARE REQUIRED.
- FSEC SHALL COORDINATE ROUGH-IN REQUIREMENTS FOR OWNER SUPPLIED, RELOCATED, OR EXISTING EQUIPMENT WITH ALL TRADES.
- TRADES TO REUSE EXISTING ROUGH-INS IF APPLICABLE.
- EQUIPMENT NOT BEING REUSED TO BE DISCONNECTED FROM UTILITIES BY THE TRADES.
- EQUIPMENT NOT BEING RE-USED SHALL BE DISCARDED BY THE FSEC.
- IF OWNER REQUESTS EXISTING EQUIPMENT BE SALVAGED THE FSEC SHALL TURN OVER TO OWNER.
- EQUIPMENT DESIGNATED AS RELOCATED SHALL BE DISCONNECTED FROM UTILITIES BY THE TRADES.
- EQUIPMENT DESIGNATED AS RELOCATED SHALL BE REMOVED FROM SITE, CLEANED, MADE READY FOR HEALTH DEPARTMENT AND RETURNED TO THE SITE BY THE FSEC.
- EQUIPMENT DESIGNATED AS RELOCATED SHALL BE RE-CONNECTED BY THE TRADES.
- TRADES & FSEC TO VERIFY VENTILATION DATA WITH HOOD MFG. SHOP DRAWINGS.



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

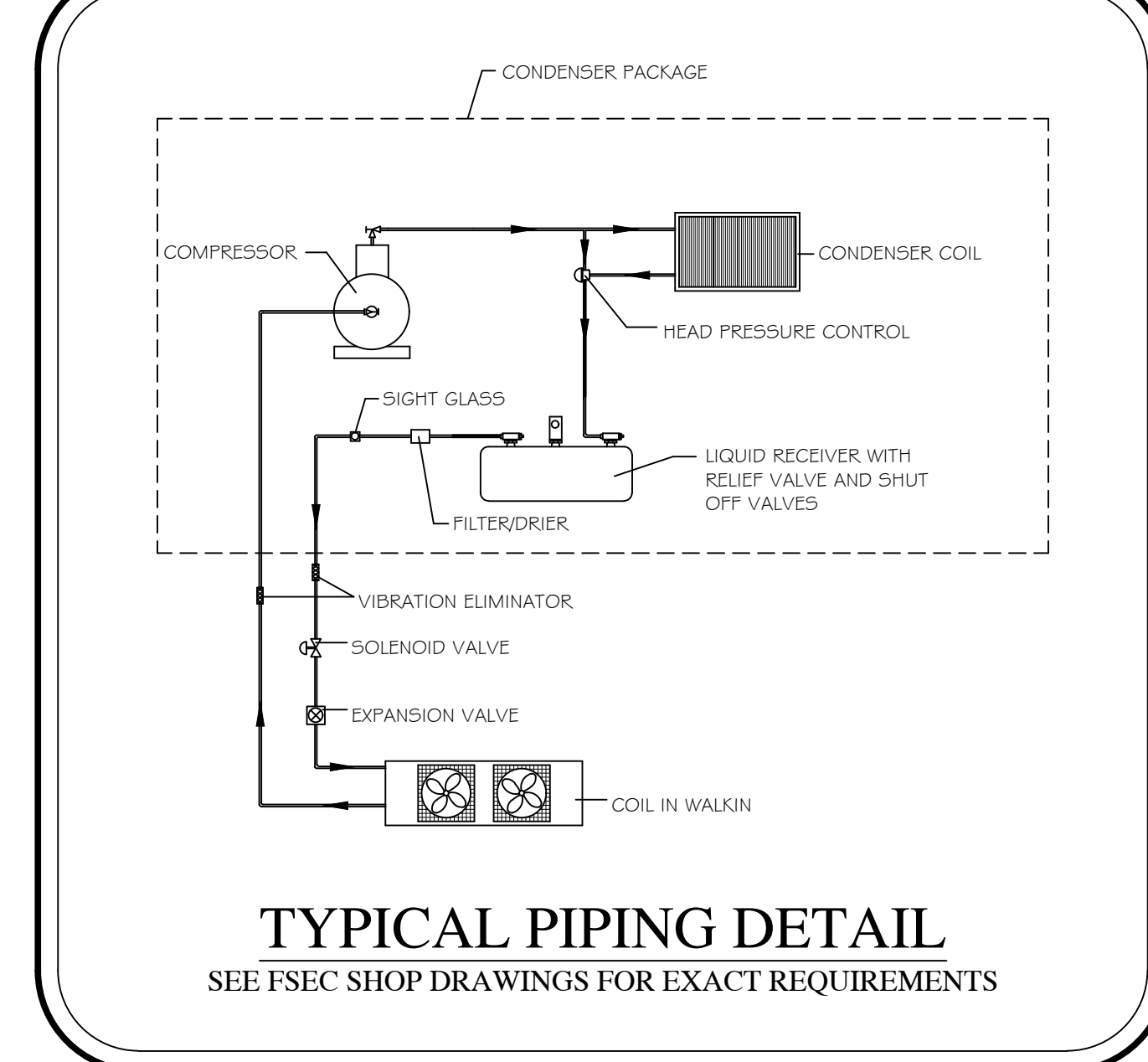
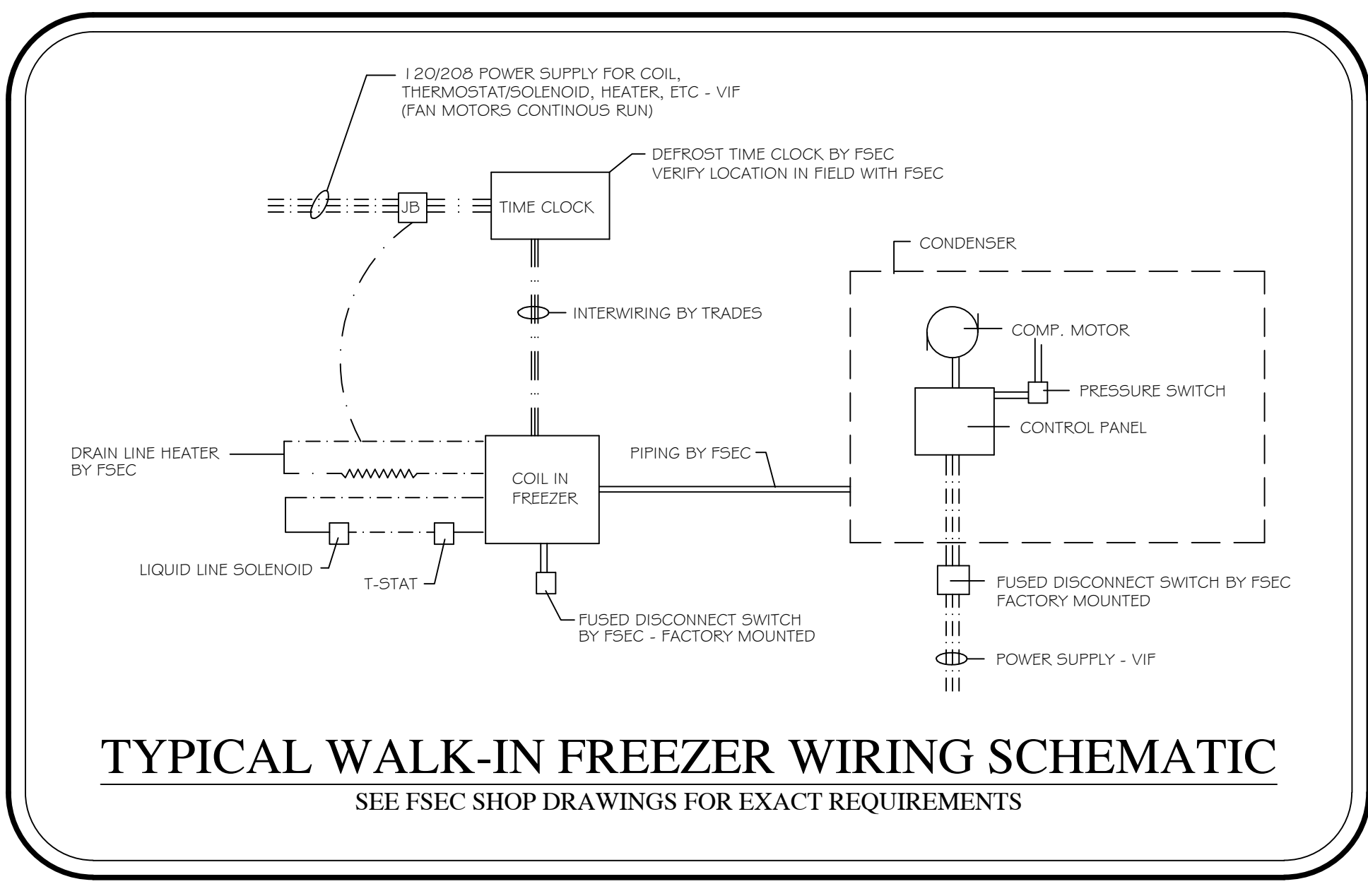
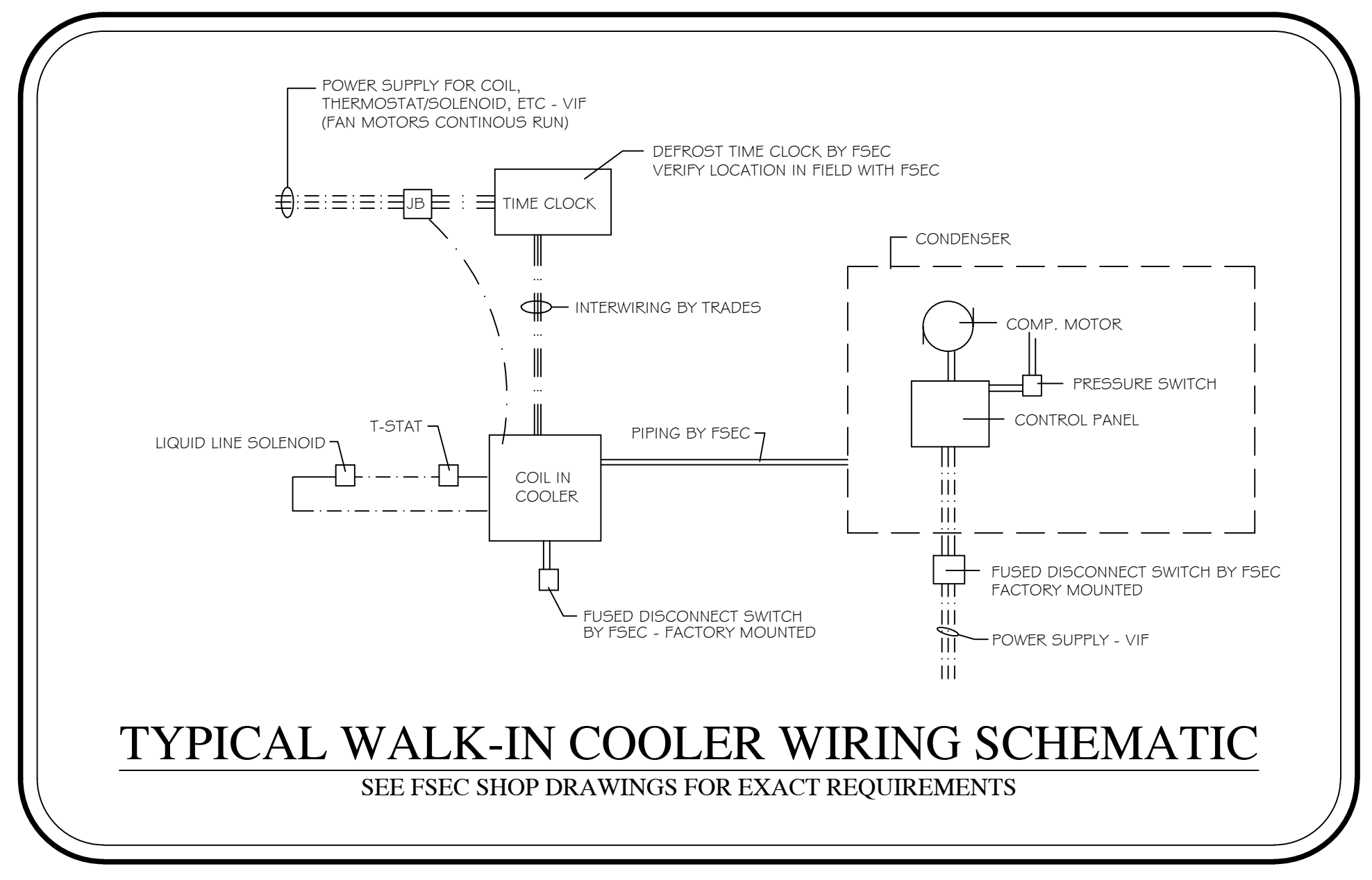
Portage, Michigan

SHEET TITLE  
FOOD SERVICE  
PLUMBING  
FLOOR PLAN  
SCALE 1/4" = 1'-0"

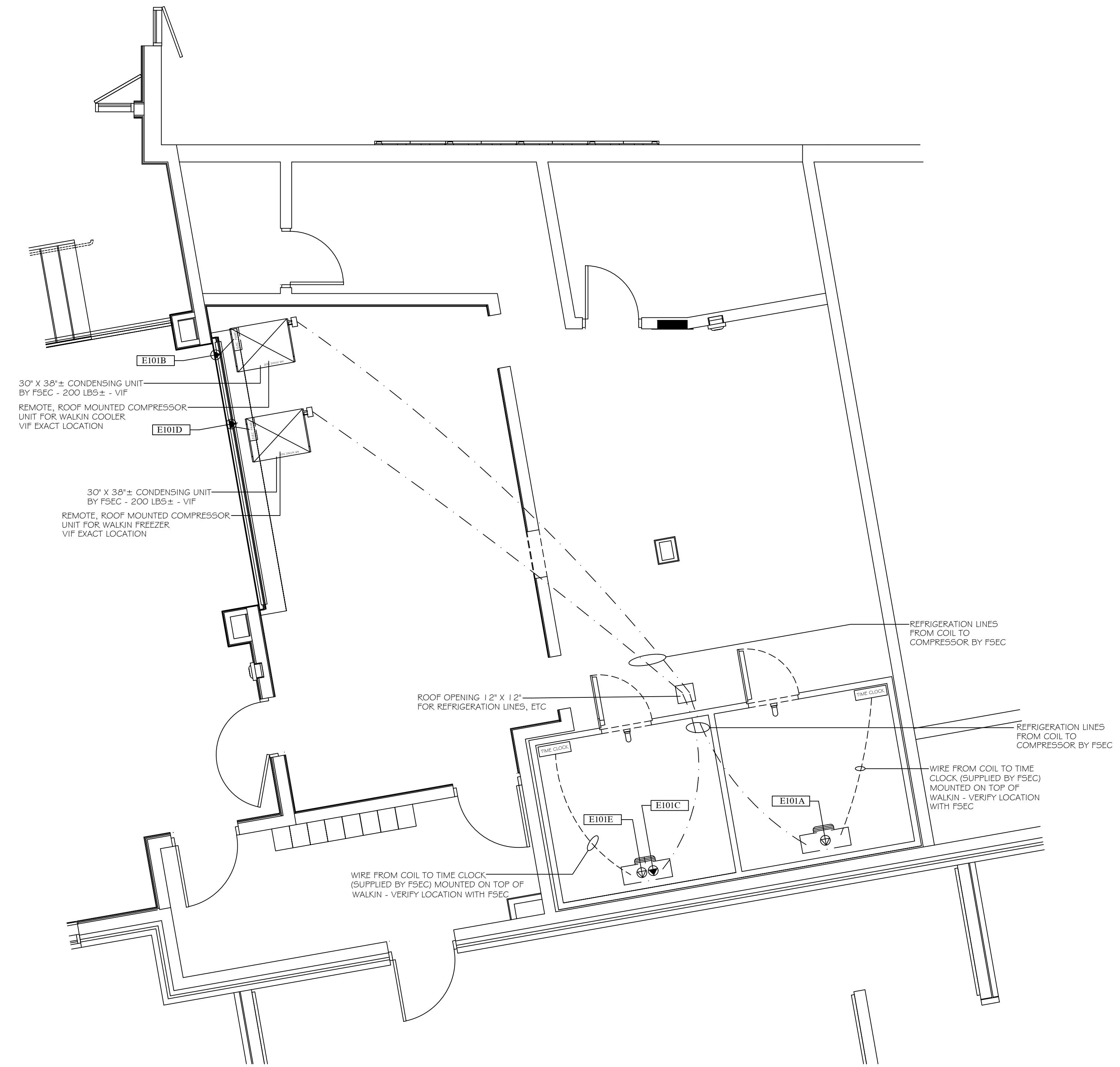
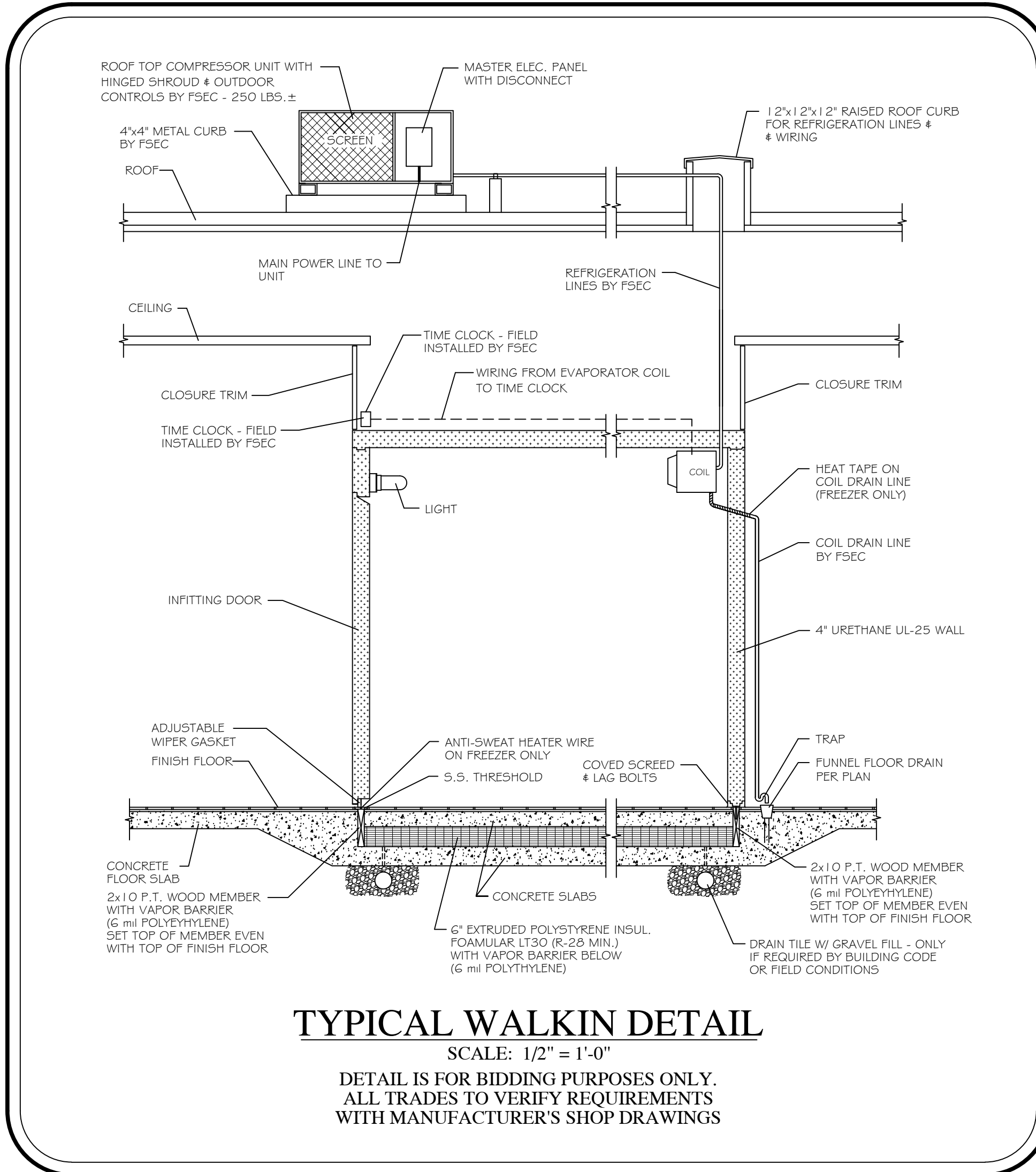
SHEET NUMBER  
FSE-3

DATE  
JUNE 30, 2023

21-237-20



- REFRIGERATION NOTES**
- FOODSERVICE EQUIPMENT TRADES
    - FSEC SHALL PROVIDE AND INSTALL WALK-IN AND REFRIGERATION SYSTEM WITH COIL, CONDENSER, INSULATED LINES, OUTDOOR CONTROL PACKAGE, HINGED SHROUD, CONTROLS, CURBS, ETC. EVALUATE, CHANGE, TEST, ADJUST, ETC. PER G.S.
    - PROVIDE DIRECT EXPANSION TYPE COILS WITH ELECTRIC DEFROST SIMILAR TO BORN CO. 1ET SERIES WITH LIQUID LINE SOLENOID VALVE, SUCTION LINE HEATER AND THERMOSTAT WIRE AND WIRE TO THE INJECTION PUMP FOR ROUTING FIRM DOWN. PROVIDE HEATED COIL DRAIN LINES.
    - PROVIDE AIR-COOLED CONDENSER PACKAGE SIMILAR TO COPLAND CO. T SERIES WITH SUCTION, CONTROLS, HINGED SHROUD AND DEFROST HEAD PRESSURE CONTROL SYSTEM. ALL INTERNAL PIPING SHALL BE PIPED TO OUTSIDE OF ENCLOSURE WITH BENT, SHORT GLASS AND VIBRATION ELIMINATORS FOR SUCTION AND LIQUID LINES.
    - PROVIDE INSULATED, REFRIGERANT GRADE OR TYPE 11 COPPER LINE SETS WITH SILVER SOLDER.
    - ALL LINES SHALL BE SECURELY SUPPORTED AND ANCHORED WITH CLAMPS. FSEC TO VERIFY ALL DIMENSIONS AND DATA IN FIELD.
  - GENERAL TRADES
    - PROVIDE 12" X 12" ROOF OPENING AND RAISED CURB - VIF.
    - PROVIDE STRUCTURAL SUPPORT FOR CONDENSER UNIT - VIF.
    - PROVIDE FLOOR CONSTRUCTION AND INSULATION AS PER PLAN.
    - PROVIDE PRESSURE TREATED WOOD THERMAL BREAKS UNDER ALL WALK-IN WALLS UP THROUGH AND UP ABOVE QUARRY THE FLOOR TO TOUCH SOCCLES.
    - PROVIDE A MINIMUM OF 4" FROM CENTERLINE OF THERMAL BREAK TO ADJACENT BUILDING WALLS TO CREATE AIR SPACE TO WALK-IN WALLS.
    - PROVIDE THREE LAYERS OF 2" OADR EXPANDING FOAMULAR I 50 SERIES EXTRUDED POLYSTYRENE WITH KVALES OF 10 EACH AND DENSITY TO SUPPORT CONCRETE.
    - INSULATION MUST BE TIGHT AGAINST ALL THERMAL BREAKS AFTER CONCRETE IS POURED.
    - PROVIDE A 6 MIL POLYETHYLENE SHEET WATER/TIGHT SEAL UNDER THE ENTIRE INSULATED SUBFLOOR AND UP ALL VERTICAL EXTERIOR SIDES IN CONTACT WITH THERMAL BREAKS.
  - PROVIDE POWER AND WIRING PER CODE FOR REFRIGERATION SYSTEM AND CONNECT TO CONTROL PANEL AND DISCONNECT BY FSEC ON ROOF TOP CONDENSING UNIT.
  - INSTALL ALL WIRING PER CODE TO SUPPLY POWER FOR COILS, TIME CLOCKS, SOLENOID/THERMOSTAT, DRAIN LINE HEATER, ETC. - VIF.
  - PROVIDE POWER AND WIRING FOR INTERIOR LIGHTS WITH EXTERIOR CONDUIT.
  - CONNECT DRAIN LINE HEATER PROVIDED BY FSEC IN FREEZER THROUGH J.E.
  - PROVIDE FURNISH FLOOR DRAINS PER PLAN WITH MINIMUM PITCH 4" FROM WALK-IN WALLS. PIPING SHALL NOT INTERFERE WITH INSULATED SUBFLOOR.



ELECTRICAL CONNECTIONS SCHEDULE								
CONN.	VOLTS	PH	KW	HP	AMPS	CONNECTION	HEIGHT	REMARKS
E101A	120	1			5.0	DIRECT	DFA	WIRING FROM COIL TO TIME CLOCK
E101B	208	3			10.0	DIRECT	ROOF	
E101C	208	1			15.0	DIRECT	DFA	WIRING FROM COIL TO TIME CLOCK
E101D	208	3			15.0	DIRECT	ROOF	
E101E	120	1			5.0	DIRECT	DFA	FREEZER COIL HEAT TAPE

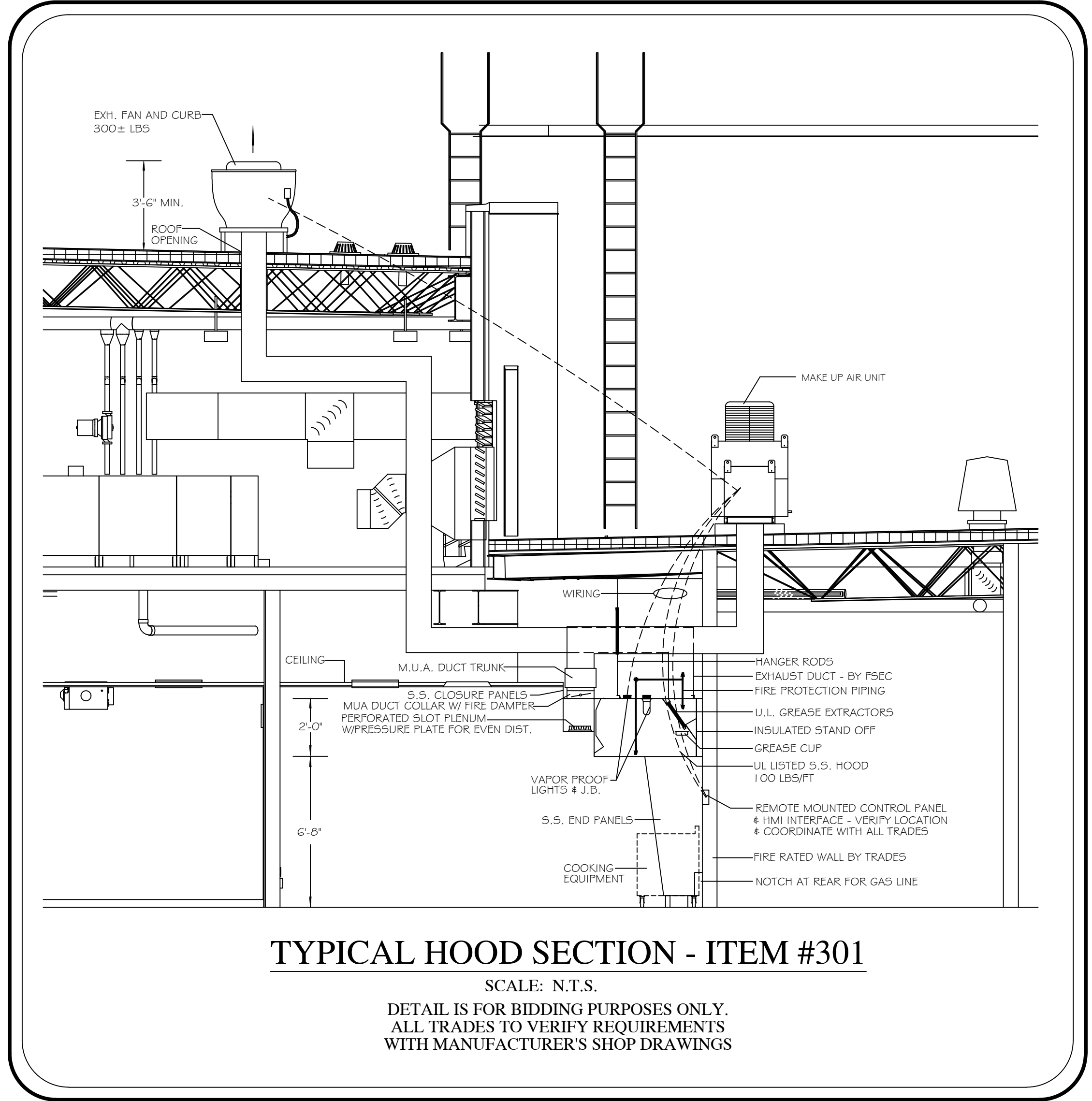
ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

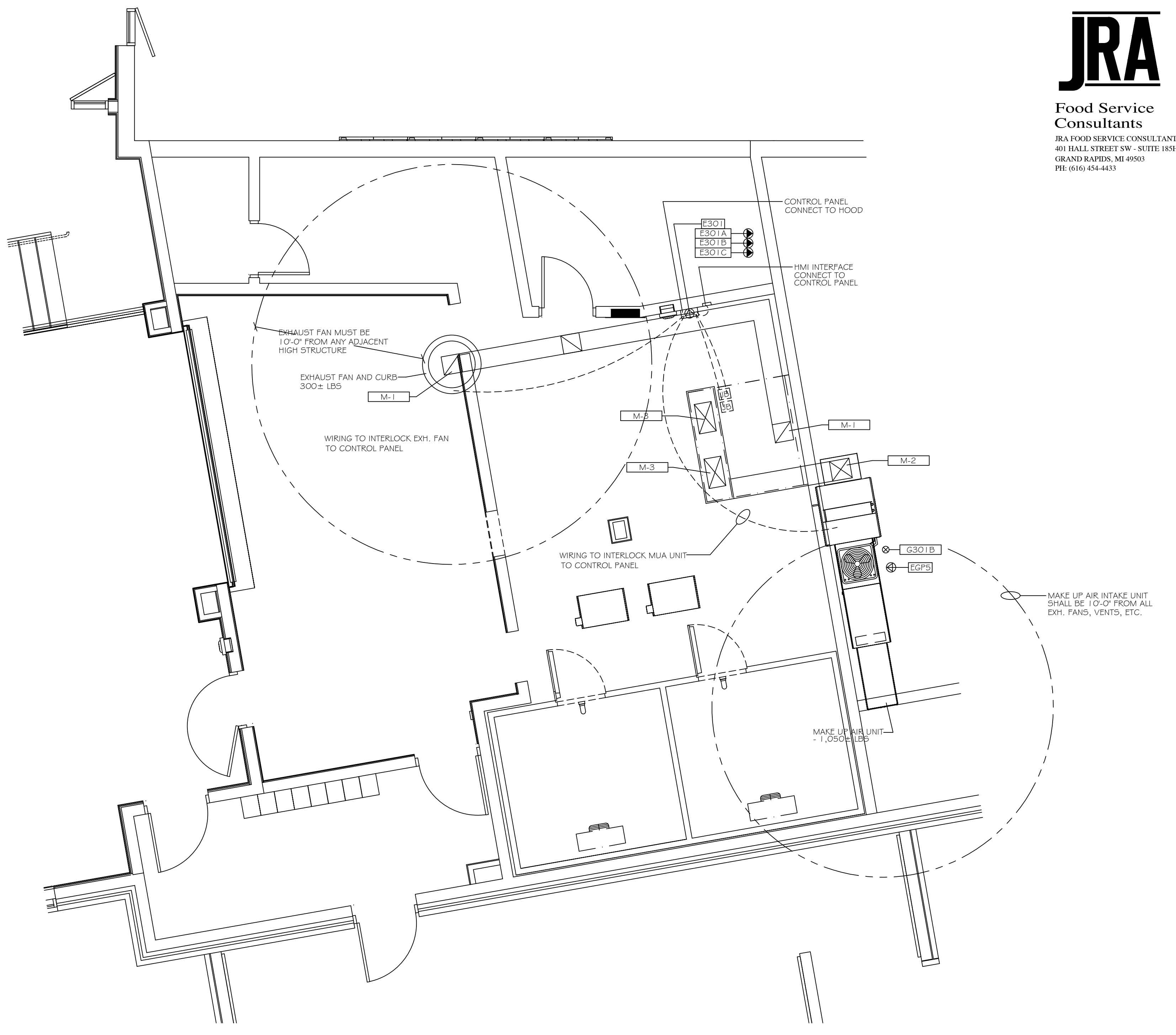
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
FOOD SERVICE  
REFRIGERATION  
FLOOR PLAN  
SCALE 1/4" = 1'-0"  
SHEET NUMBER  
FSE-4  
21-237.20  
DATE  
JUNE 30, 2023



**TYPICAL HOOD SECTION - ITEM #301**  
SCALE: N.T.S.  
DETAIL IS FOR BIDDING PURPOSES ONLY.  
ALL TRADES TO VERIFY REQUIREMENTS  
WITH MANUFACTURER'S SHOP DRAWINGS

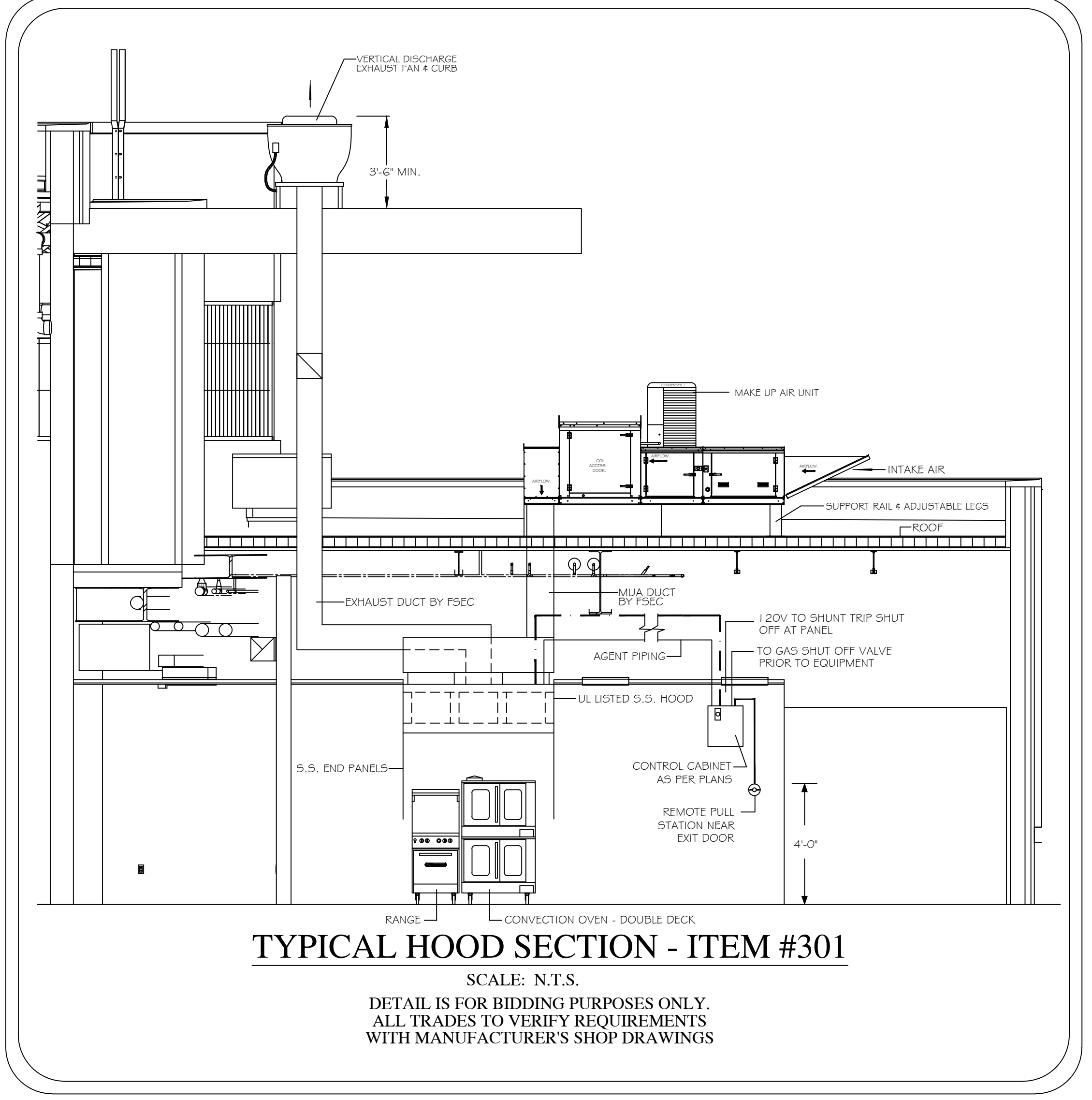


ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan



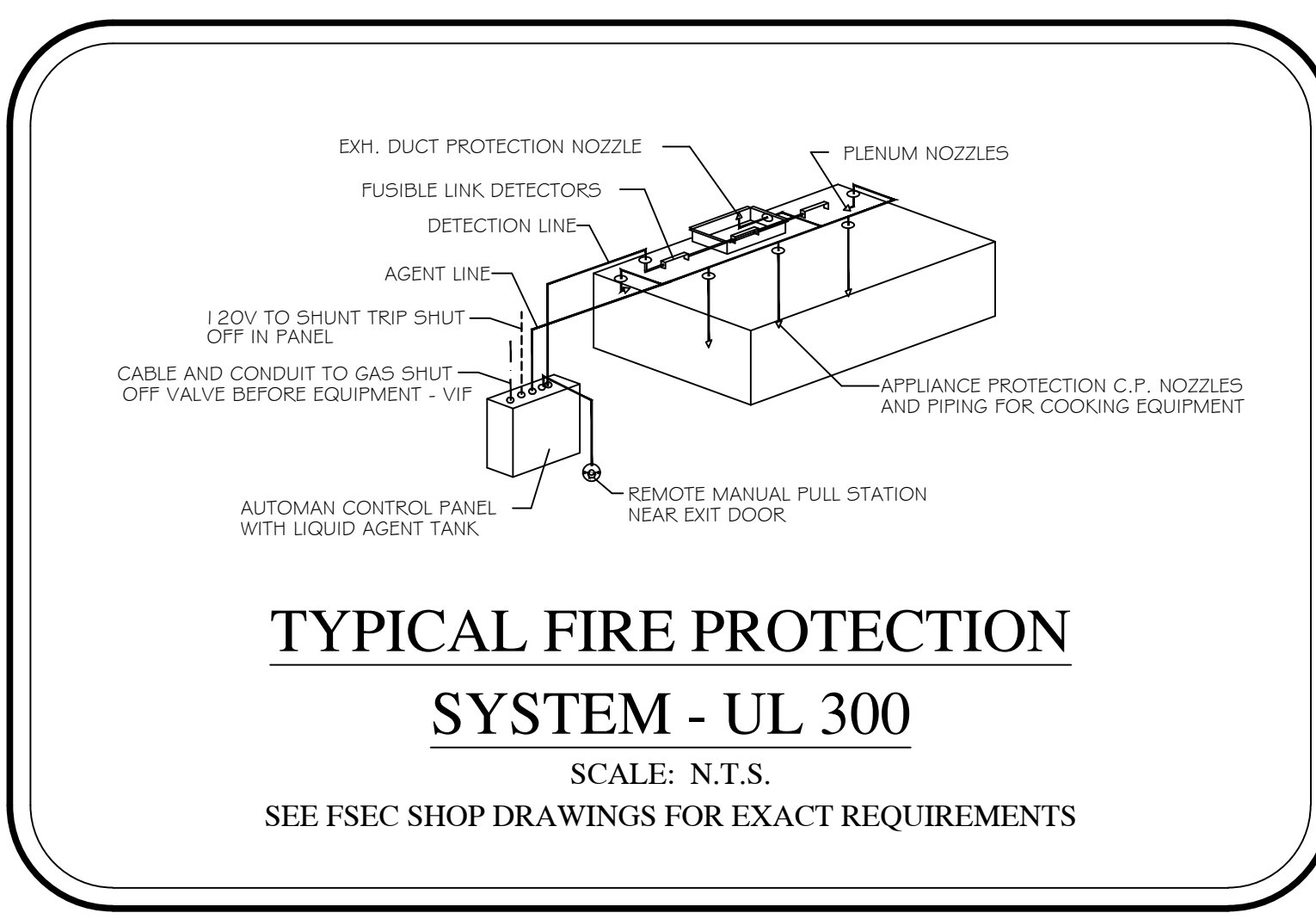
**TYPICAL HOOD SECTION - ITEM #301**  
SCALE: N.T.S.  
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ALL TRADES TO VERIFY REQUIREMENTS  
WITH MANUFACTURER'S SHOP DRAWINGS

VENTILATION DATA - 301

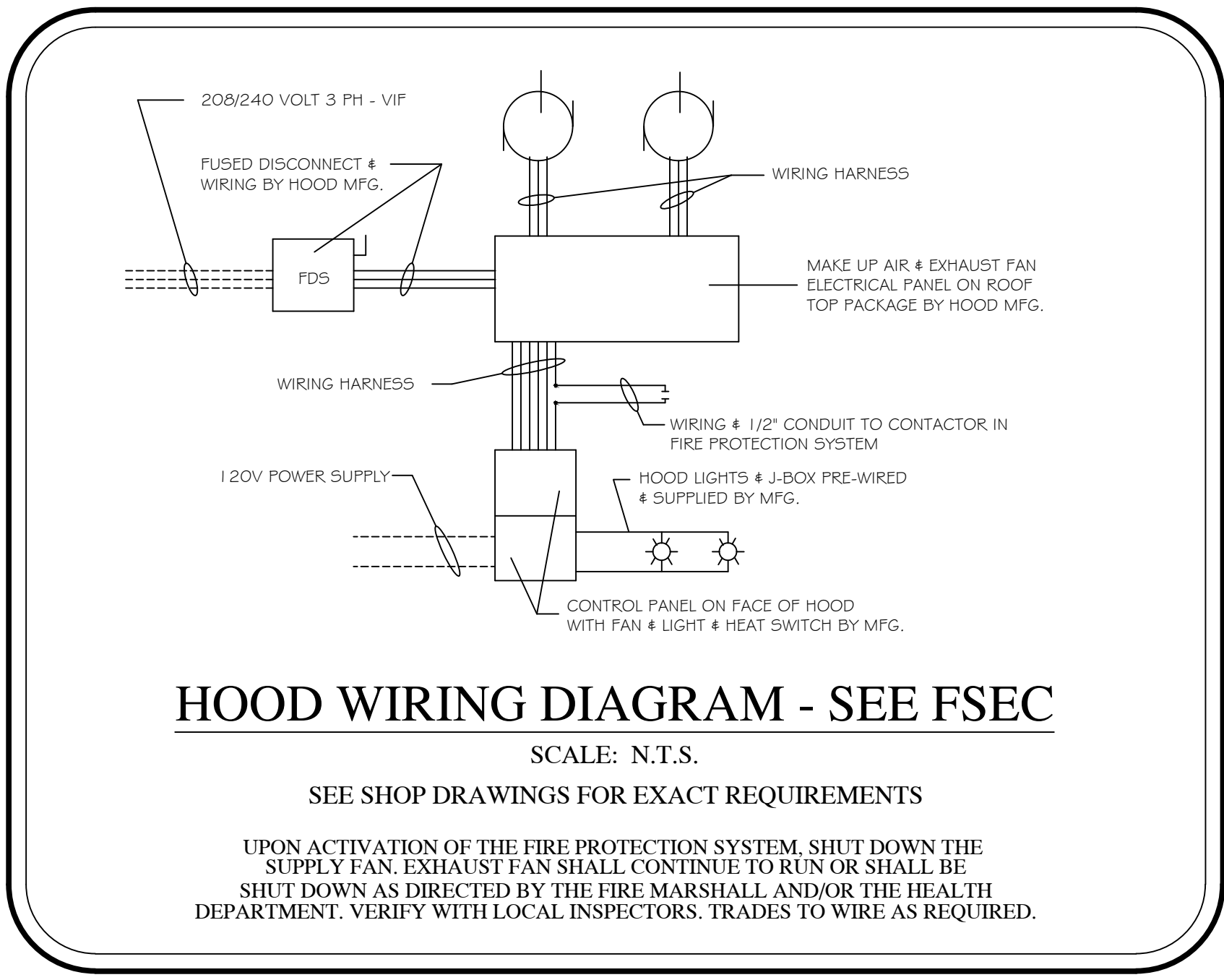
1 1/2 GA. S.S. HOOD - 1 00 LBS/FT	6'-6" X 6'-0" X 24"	6" OVERHANG & M.U.A. FRONT
UL LISTED GREASE EXTRACTOR FILTERS	3 - 16" BY 20"	351 FPM - FACE VELOCITY
EXHAUST DUCT COLLARS ON HOOD	13" X 13"	ONE REQUIRED
M.U.A. DUCT COLLARS ON HOOD	12" X 24"	TWO REQUIRED
S.S. END PANELS	40" X 46"	TWO REQUIRED
TOTAL SYSTEM STATIC PRESSURE	1.00 WG	
EXHAUST FAN & CURB	FENH FMX-BMT	300± LBS
EXHAUST CFM - UL LISTING	1500	
EXH. DUCT - 1 1/2 GA. WELDED	13" X 13"	1525 FPM - DUCT VELOCITY
M.U.A. UNIT - 70" RISE	1 19,000	700± LBS
M.U.A. CFM - TEMPERED	1500	600 CFM FROM BLDG HVAC
M.U.A. DUCT	14" X 14"	1 094 FPM
ROOF OPENINGS	TWO REQUIRED - VIF	NIKEC

MECHANICAL CONNECTION SCHEDULE

NO.	GAS	BTU	EXH	MUA	CFM	VOLTS	PH	AMPS	REMARKS
G301B	1"	119,000							ON ROOF FOR MUA UNIT - VERIFY EXACT LOCATION
E301						120	1	10.0	LIGHTS & HEAT SENSOR
E301A						208	3	10.0	ON ROOF FOR EXHAUST FAN - VIF
E301B						208	3	15.0	ON ROOF FOR MUA UNIT - VIF
E301C						208	3	14.5	ON ROOF FOR MUA CONDENSER UNIT - VIF
EGFS						120	1	10.0	SERVICE OUTLET FOR ROOFTOP EQUIPMENT
M-1			13" X 13"	14" X 14"	1,800				EXHAUST DUCT - 2 HR RATED BY FSEC IF REGD BY CODE
M-2				14" X 14"	1,500				MUA DUCT - CONNECT TO DIFFUSERS ON HOOD FACE
M-3				12" X 24"					MUA DUCT COLLAR - TWO REQUIRED



**TYPICAL FIRE PROTECTION SYSTEM - UL 300**  
SCALE: N.T.S.  
SEE FSEC SHOP DRAWINGS FOR EXACT REQUIREMENTS



**HOOD WIRING DIAGRAM - SEE FSEC**  
SCALE: N.T.S.  
SEE SHOP DRAWINGS FOR EXACT REQUIREMENTS

UPON ACTIVATION OF THE FIRE PROTECTION SYSTEM, SHUT DOWN THE SUPPLY FAN. EXHAUST FAN SHALL CONTINUE TO RUN OR SHALL BE SHUT DOWN AS DIRECTED BY THE FIRE MARSHALL AND/OR THE HEALTH DEPARTMENT. VERIFY WITH LOCAL INSPECTORS, TRADES TO WIRE AS REQUIRED.

**ABBREVIATIONS**      **MECHANICAL SYMBOLS**      **GENERAL MECHANICAL NOTES**

A.C.D.	AUTOMATIC CONTROL DAMPER
A.F.F.	ABOVE FINISHED FLOOR
A.G.	ABOVE GRADE
A.P.D.	AIR PRESSURE DROP
B.D.	BALANCING DAMPER
B.D.D.	BACKDRAFT DAMPER
B.F.	BARRIER FREE
BTUH	BRITISH THERMAL UNIT PER HOUR
B.V.	BALANCING VALVE
C.B.	CATCH BASIN
C.D.V.	CALIBRATED BALANCING VALVE
C.F.H.	CUBIC FEET PER HOUR
C.F.M.	CUBIC FEET PER MINUTE
C.H.	CABINET HEATER
C.I.	CAST IRON
C.M.	CEILING MOUNTED
C.O.	CLEAN OUT
C.V.	CONTROL VALVE
D.F.	DRINKING FOUNTAIN
DN.	DOWN
D.S.	DOWN SPOUT
E.A.	EXHAUST AIR
E.A.T.	ENTERING AIR TEMPERATURE
E.D.B.	ENTERING DRY BULB
E.F.	EXHAUST FAN
E.S.P.	EXTERNAL STATIC PRESSURE
E.W.B.	ENTERING WET BULB
E.W.C.	ELECTRIC WATER COOLER
E.W.T.	ENTERING WATER TEMPERATURE
EXIST.	EXISTING
E.T.R.	EXISTING TO REMAIN
F.C.	FLEXIBLE CONNECTION
F.D.	FLOOR DRAIN
(FD)	FIRE DAMPER
F.H.C.	FIRE HOSE CABINET
F.I.	FIELD INSTALLED
F.M.	FLOOR MOUNTED
F.P.M.	FEET PER MINUTE
F.R.	FIN RADIATION
G.P.M.	GALLONS PER MINUTE
H.B.	HOSE BIBB
HP	HORSE POWER
I.E.	INVERT ELEVATION
L.A.T.	LEAVING AIR TEMPERATURE
LAV.	LAVATORY
L.D.B.	LEAVING DRY BULB
LOWV.	LOWVOLT
L.W.B.	LEAVING WET BULB
L.W.T.	LEAVING WATER TEMPERATURE
M.A.	MIXED AIR
M.A.T.	MIXED AIR TEMPERATURE
MAX.	MAXIMUM
M.B.	MOP BASIN
MBH	BRITISH THERMAL UNIT PER HOUR (THOUSANDS)
MFR. (S)	MANUFACTURERS (S)
M.H.	MANHOLE
MIN.	MINIMUM
MTG.	MOUNTING
M.V.	MANUAL AIR VENT
N.C.	NORMALLY CLOSED
N.F.W.H.	NON-FREEZE WALL HYDRANT
N.I.C.	NOT IN CONTRACT
N.O.	NORMALLY OPEN
O.A.	OUTSIDE AIR
O.A.I.	OUTSIDE AIR INTAKE
OCT.	OCTAVE
P.A.	PIPE ANCHOR
P.D.	PRESSURE DROP
P.I.V.	POST INDICATOR VALVE
P.R.V.	PRESSURE REDUCING VALVE
P.T.	PRESSURE / TEMPERATURE TAPPING
R.A.	RETURN AIR
R.D.	ROOF DRAIN
R.H.	RELATIVE HUMIDITY
R.L.O.	ROUGH IN ONLY
R.P.M.	REVOLUTIONS PER MINUTE
RPPBP	REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTER
R.V.	RELIEF VALVE
S.A.	SUPPLY AIR
SENS.	SENSIBLE
SHR.	SHOWER
SK.	SINK
S.O.V.	SHUT-OFF VALVE
S.P.	STATIC PRESSURE
S.SK.	SERVICE SINK
TEMP.	TEMPERATURE
TOT.	TOTAL
T.R.	TEMPERATURE RISE
T.S.	TIP SPEED
T.S.P.	TOTAL STATIC PRESSURE
T.U.	TERMINAL UNIT BOX
T.W.C.	TEPID WATER CONNECTION
U.H.	UNIT HEATER
URN.	URNAL
V.	VENT
VEL.	VELOCITY
V.I.	VIBRATION ISOLATORS
V.I.F.	VERIFY IN FIELD
V.S.	VENT STACK
V.T.R.	VENT THRU ROOF
W.	WASTE
W.C.	WATER CLOSET
W.M.	WALL MOUNTED
W.P.D.	WATER PRESSURE DROP
W.SK.	WASH SINK

	CONTROL VALVE
	FLOW METER (PROBE TYPE)
	THREE-WAY CONTROL VALVE
	FREEZE STAT
	MOTORIZED ACTUATOR
	HUMIDITY SENSOR
	TEMPERATURE SENSOR
	CARBON DIOXIDE SENSOR
	DIFFERENTIAL PRESSURE SENSOR
	AIRFLOW SENSOR
	ENTHALPY SENSOR (TEMP / HUMIDITY)
	MOISTURE SENSOR
	DUCT SMOKE SENSOR

	ACID WASTE
	ACID WASTE VENT
	BALANCING VALVE
	BUTTERFLY VALVE
	CALIBRATED BALANCING VALVE
	CAP
	CHECK VALVE
	CHILLER RETURN
	CHILLER SUPPLY
	CHILLED WATER RETURN
	CHILLED WATER SUPPLY
	COLD WATER (DOMESTIC)
	COMPRESSED AIR
	CONDENSATE
	CONDENSATE DRAIN
	CONTROL VALVE
	COOLING TOWER RETURN
	COOLING TOWER SUPPLY
	FIRE DAMPER (HORIZONTAL)
	FIRE DAMPER (VERTICAL)
	FIRE/SMOKE DAMPER
	FIRE PROTECTION
	FLOW METER (PROBE TYPE)
	FLOW METER (WATER TYPE)
	FLOW SWITCH
	FOOTING DRAIN
	FUEL OIL RETURN
	FUEL OIL SUPPLY
	GAS
	GAS COCK
	HEATING HOT WATER RETURN
	HEATING HOT WATER SUPPLY
	HEAT PUMP RETURN
	HEAT PUMP SUPPLY
	HOT WATER RETURN (DOMESTIC)
	HOT WATER SUPPLY (DOMESTIC)
	HUMIDISTAT
	MEDICAL AIR
	MEDICAL VACUUM
	OUTSIDE STEM AND YOKE VALVE
	OXYGEN
	PRESSURE GAUGE
	PRESSURE REDUCING VALVE
	PRESSURE RELIEF VALVE
	PRESSURE / TEMPERATURE TAPPING
	PRIMARY HEATING HOT WATER RETURN
	PRIMARY HEATING HOT WATER SUPPLY
	PUMPED CONDENSATE
	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER
	SANITARY SEWER (ABOVE FLOOR)
	SANITARY SEWER (BELOW FLOOR)
	SHUT-OFF VALVE
	SMOKE DAMPER
	SOFT COLD WATER
	SOFT HOT WATER
	SOFT HOT WATER RETURN
	SPRING CHECK VALVE
	STEAM
	STEAM TRAP
	STORM SEWER (ABOVE FLOOR)
	STORM SEWER (OVERFLOW SYSTEM)
	STORM (BELOW FLOOR)
	STRAINER
	TEMPERATURE SENSOR
	TEPID WATER
	TEPID WATER RETURN
	THERMOMETER
	THERMOSTAT
	THREE-WAY CONTROL VALVE
	THROTTLING VALVE
	TRIPLE DUTY VALVE (ANGLE)
	TRIPLE DUTY VALVE (STRAIGHT)
	UNION
	VACUUM
	VACUUM BREAKER
	VENT

- DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. DRAWINGS ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS.
- IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT OTHER THAN BASIS OF DESIGN, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.
- COORDINATE ALL NEW CONSTRUCTION WORK OR ACTIVITY WITH THAT WHICH IS REQUIRED BY OTHER TRADES OR INSTALLERS IN ORDER TO PROVIDE A COMPLETE SYSTEM INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
- INSTALLER SHALL VERIFY ALL EXISTING JOBSITE CONDITIONS AND DIMENSIONS AND BE RESPONSIBLE FOR THE SAME. NOTIFY THE ENGINEER OF DISCREPANCIES PRIOR TO COMMENCING WORK.
- FIRE SEAL ALL PENETRATIONS, SUCH AS PIPES, DUCTS, CONDUIT, ETC. THROUGH FIRE AND/OR SMOKE RATED ASSEMBLIES.
- MECHANICAL INSTALLER IS RESPONSIBLE FOR PATCHING OF WALLS, CEILINGS, AND FLOORS WHERE FIXTURES, MECHANICAL EQUIPMENT, SHEET METAL, OR PIPING HAS BEEN REMOVED, RELOCATED, OR INSTALLED.
- ALL PIPING SHALL AVOID LOCATIONS DIRECTLY ABOVE ALL ELECTRICAL EQUIPMENT. COORDINATE WITH ELECTRICAL.
- ALL LOW VOLTAGE CABLING SHALL BE RUN IN CONDUIT BETWEEN DEVICE AND CABLE TRAY OR TECHNOLOGY RACK. NO CABLING SHALL BE VISIBLE IN EXPOSED CEILING SPACES. EXPOSED CONDUIT SHALL BE PAINTED TO MATCH SURFACE IT IS SUPPORTED FROM. WIRING ROUTED IN ACCESSIBLE CEILING SPACES SHALL BE INDEPENDENTLY SUPPORTED WITH COMM HOOKS OR RINGS.
- COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH "ELECTRICAL DEVICES ALIGNMENT GUIDELINES" DETAIL ON SHEET E001.

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
MECHANICAL & PLUMBING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES

SHEET NUMBER  
**MP 001**  
21-237.20

DATE  
JUNE 30, 2023

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

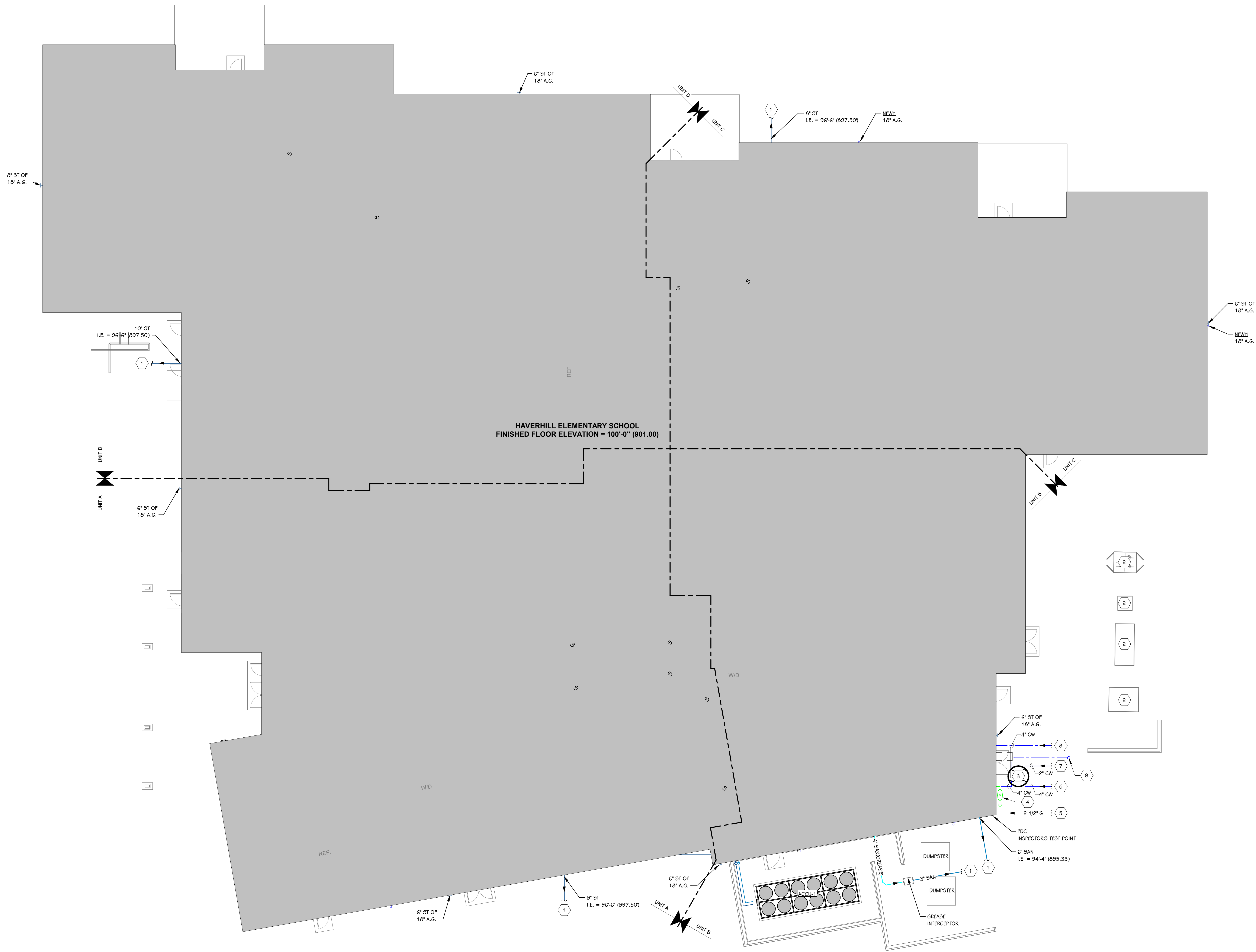
Portage, Michigan

SHEET TITLE  
**MECHANICAL SITE PLAN**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**MS 101**  
 21-237.20

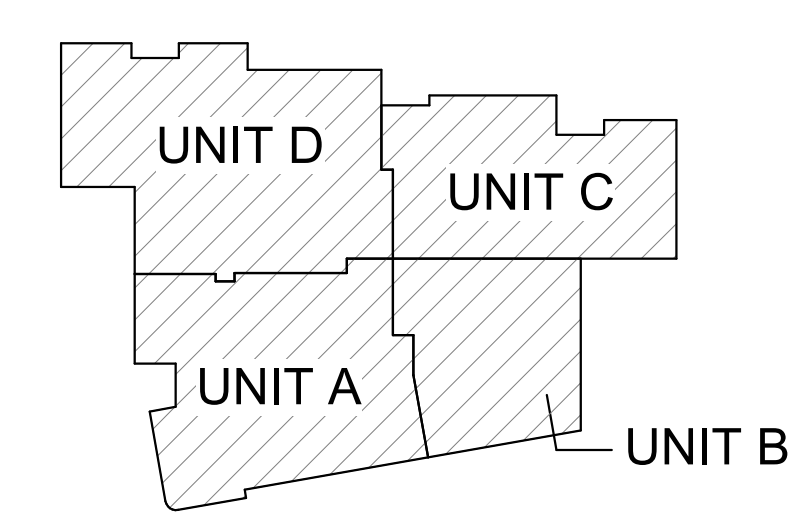
- KEYED NOTES - MECHANICAL SITE**
- 1 REFER TO CIVIL FOR CONTINUATION.
  - 2 ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL PLANS.
  - 3 METER PIT. REFER TO CIVIL PLANS.
  - 4 GAS METER. REFER TO PLUMBING PLANS.
  - 5 NATURAL GAS SERVICE. REFER TO CIVIL PLANS.
  - 6 DOMESTIC WATER SERVICE. REFER TO PLUMBING PLANS.
  - 7 IRRIGATION WATER SERVICE. REFER TO CIVIL PLANS.
  - 8 FIRE PROTECTION WATER SERVICE. REFER TO CIVIL PLANS.
  - 9 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.



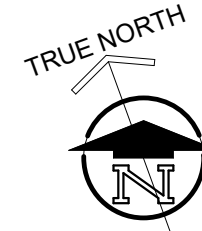
**MECHANICAL SITE PLAN**  
 1" = 10'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
 SCALE: NO SCALE





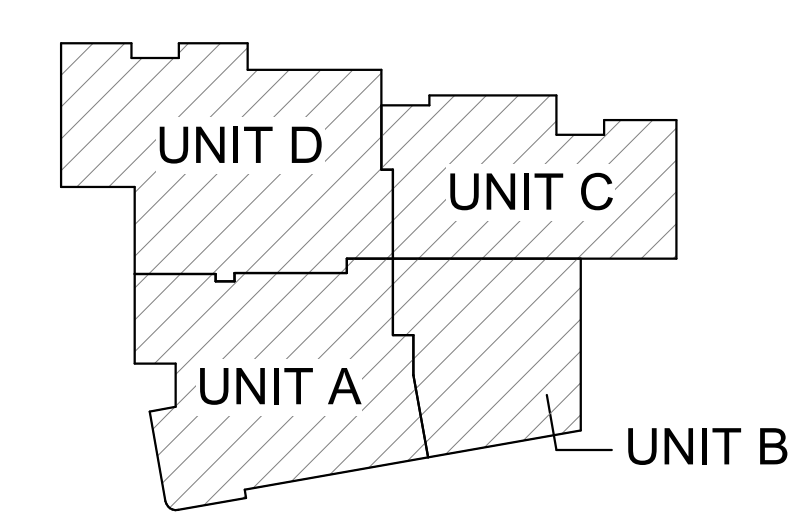
**KEYED NOTES - FIRE PROTECTION**

- 1 INSTALLATION CONTRACTOR SHALL PROVIDE A WET PIPE FIRE PROTECTION SYSTEM. CONTRACTOR SHALL DETERMINE SPACE DENSITY AND HYDRAULICALLY CALCULATE MOST DEMANDING AREA. FIRE PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA-13, THE AUTHORITY HAVING JURISDICTION, AND STATE AND LOCAL REQUIREMENTS.
- 2 PROVIDE DRY HEADS WITHIN COOLERS AND STANDARD HEAT ABOVE COOLERS.
- 4 PROPOSED FIRE PROTECTION RISER LOCATION.
- 5 PROPOSED ROUTING FOR FIRE PROTECTION MAIN.

**FIRST FLOOR FIRE PROTECTION PLAN**  
1" = 10'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

SHEET TITLE  
**FIRST FLOOR FIRE PROTECTION PLAN**

Portage, Michigan

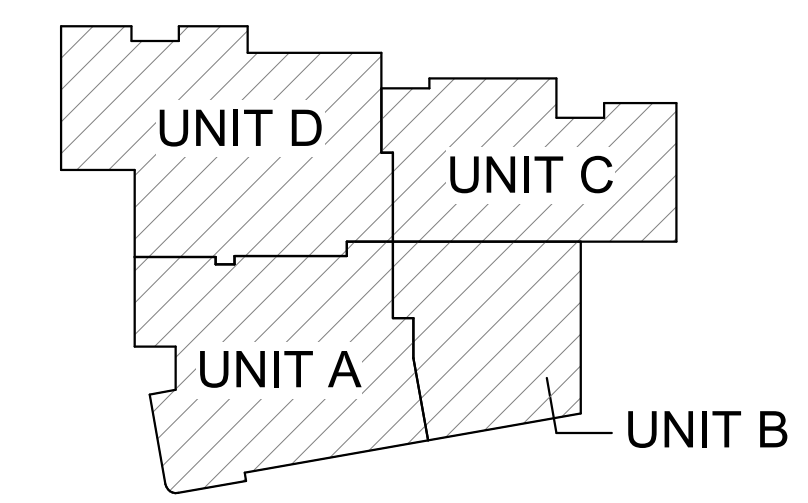
DATE  
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21-237.20



**SECOND FLOOR FIRE PROTECTION PLAN**  
1" = 10'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



**KEY PLAN**  
SCALE: NO SCALE

- KEYED NOTES - FIRE PROTECTION**
1. INSTALLATION CONTRACTOR SHALL PROVIDE A WET PIPE FIRE PROTECTION SYSTEM. CONTRACTOR SHALL DETERMINE SPACE DENSITY AND HYDRAULICALLY CALCULATE MOST DEMANDING AREA. FIRE PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH NFPA-13, THE AUTHORITY HAVING JURISDICTION, AND STATE AND LOCAL REQUIREMENTS.
  2. PROVIDE DRY HEADS WITHIN COOLERS AND STANDARD HEAD ABOVE COOLERS.
  4. PROPOSED FIRE PROTECTION RISER LOCATION.
  5. PROPOSED ROUTING FOR FIRE PROTECTION MAIN.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR FIRE PROTECTION PLAN

DATE  
JUNE 30, 2023

SHEET NUMBER  
FP 102  
21-237.20

PRELIMINARY  
NOT FOR CONSTRUCTION

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

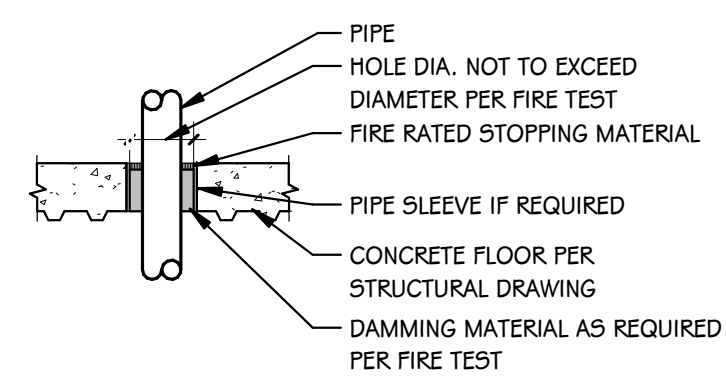
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

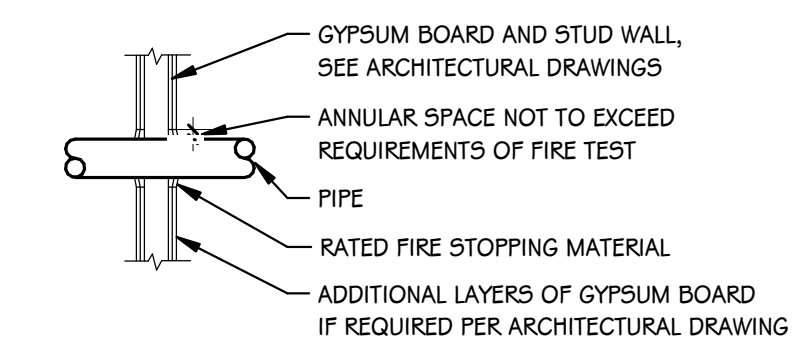
SHEET TITLE  
FIRE PROTECTION DETAILS

DATE  
JUNE 30, 2023

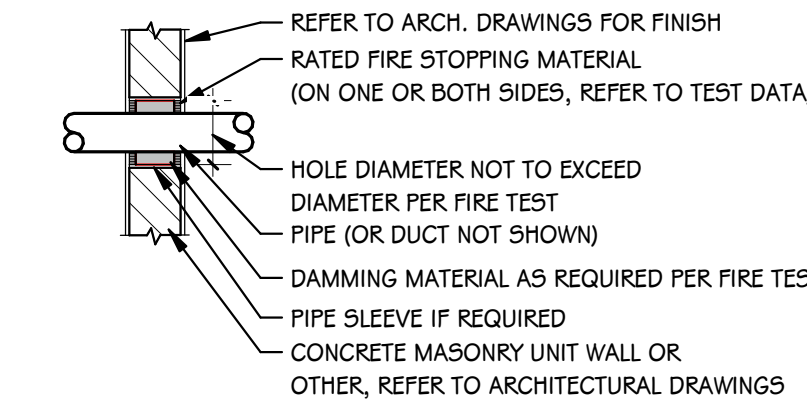
SHEET NUMBER  
FP 501  
21-237.20



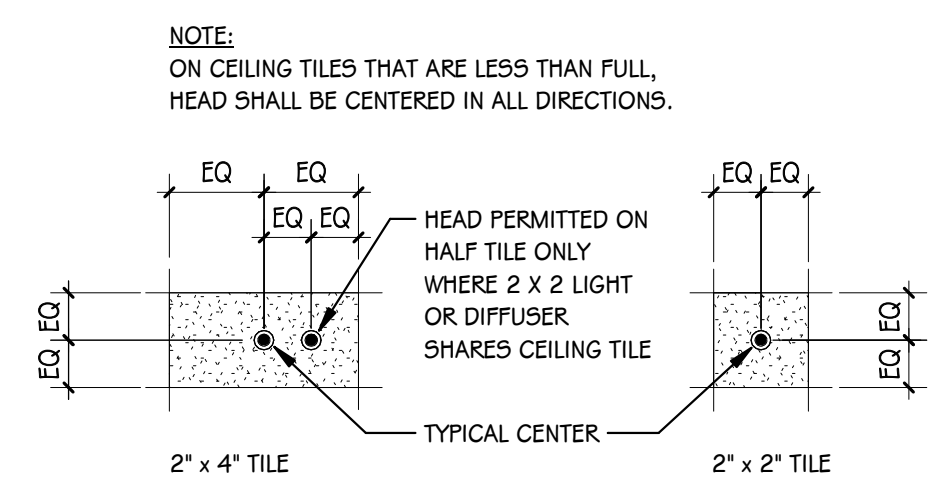
**MECHANICAL FIRE STOPPING - FLOOR PENETRATIONS**  
SCALE: NONE



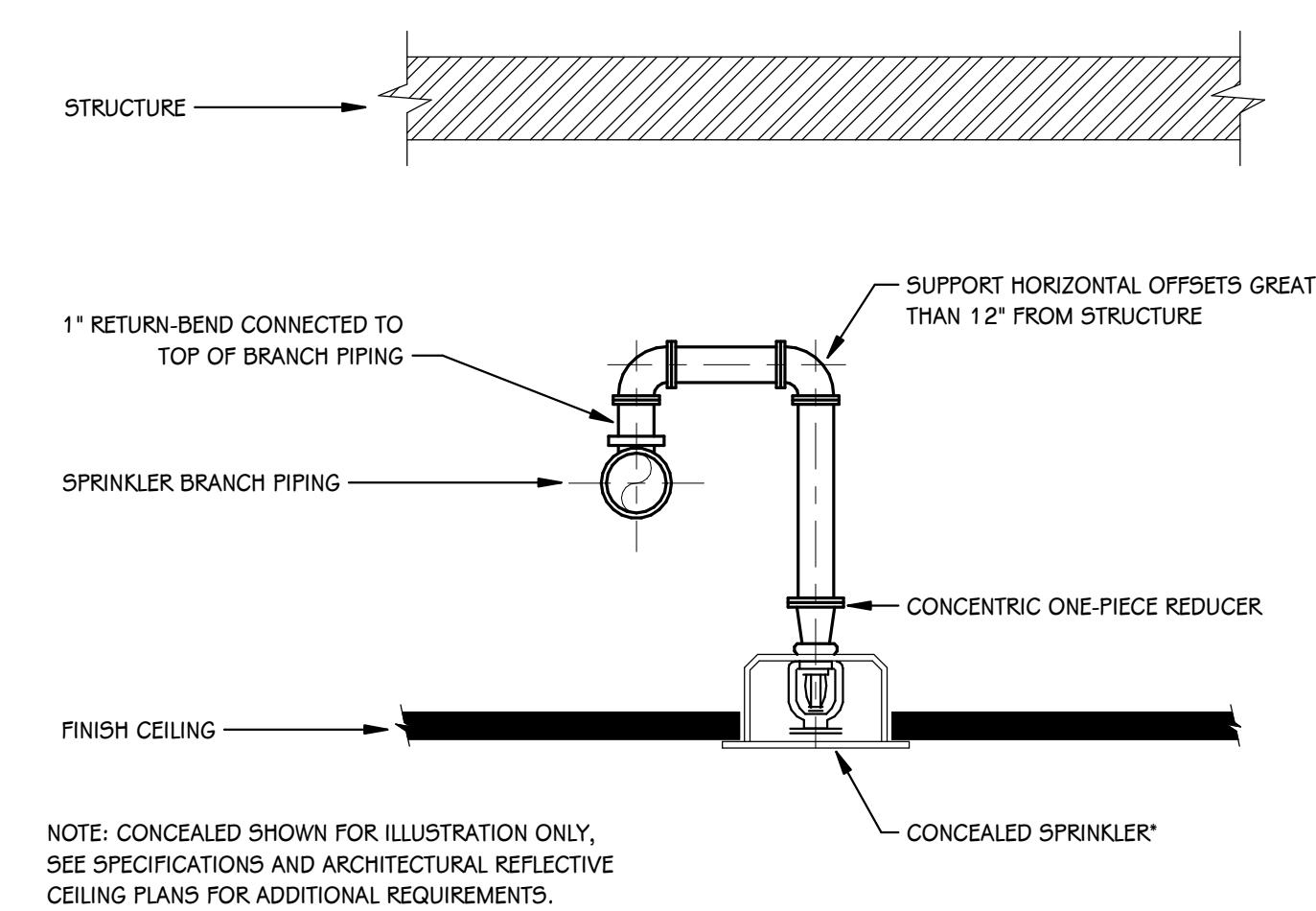
**MECHANICAL FIRE STOPPING - STUD WALL PENETRATIONS**  
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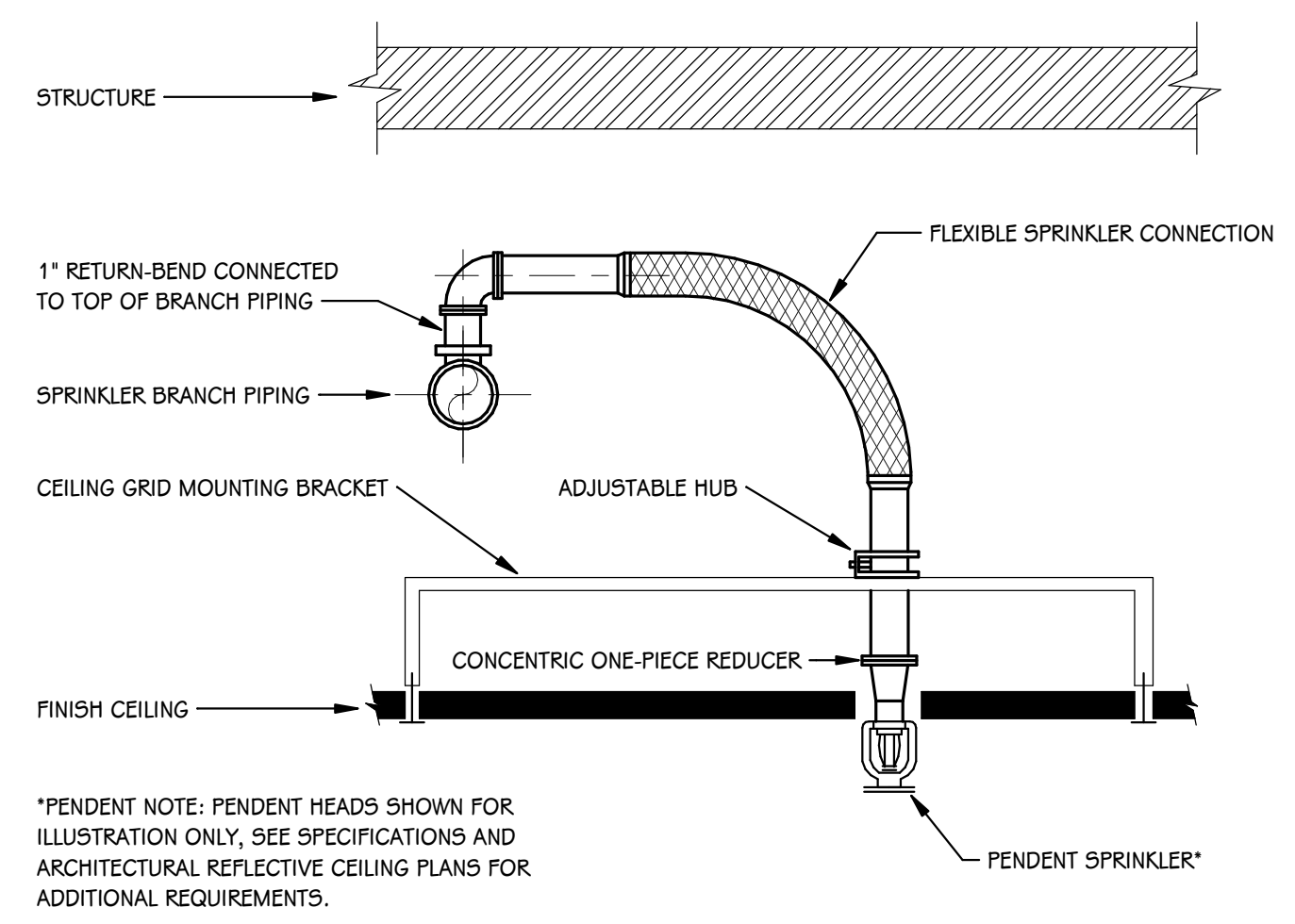
**MECHANICAL FIRE STOPPING - WALL PENETRATIONS**  
SCALE: NONE



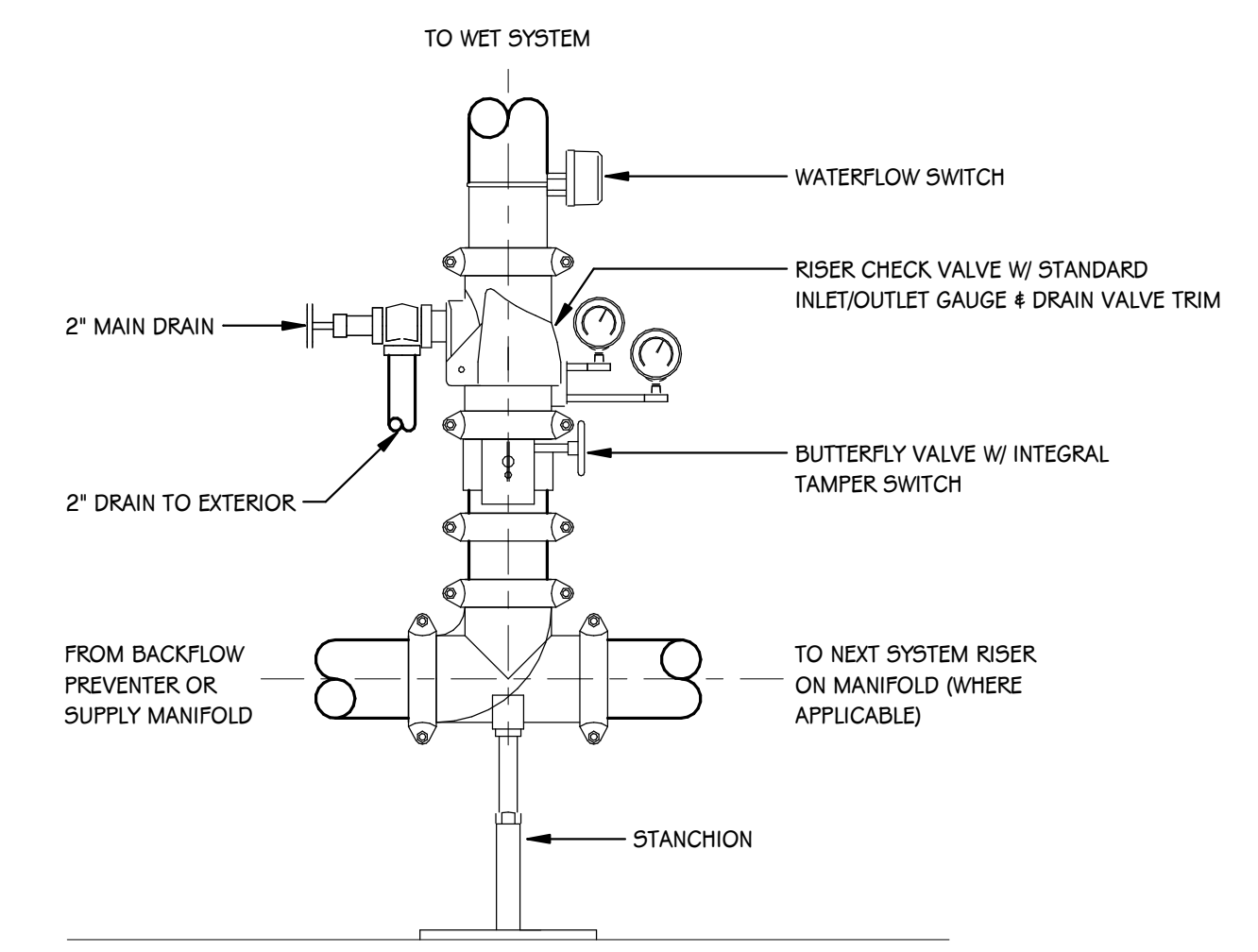
**CEILING TILE DETAIL**  
SCALE: NONE



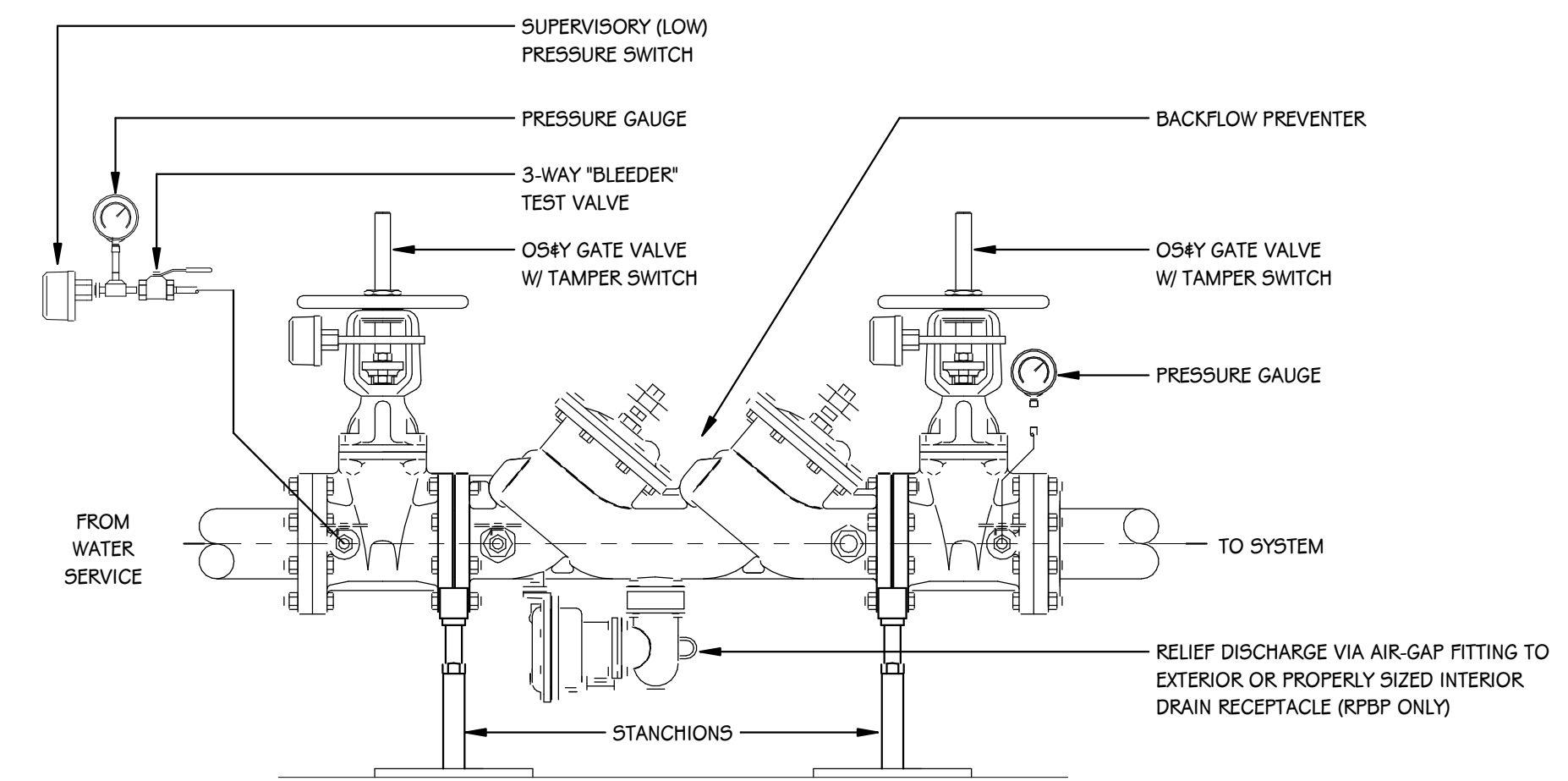
**RETURN BEND PIPING**  
SCALE: NONE



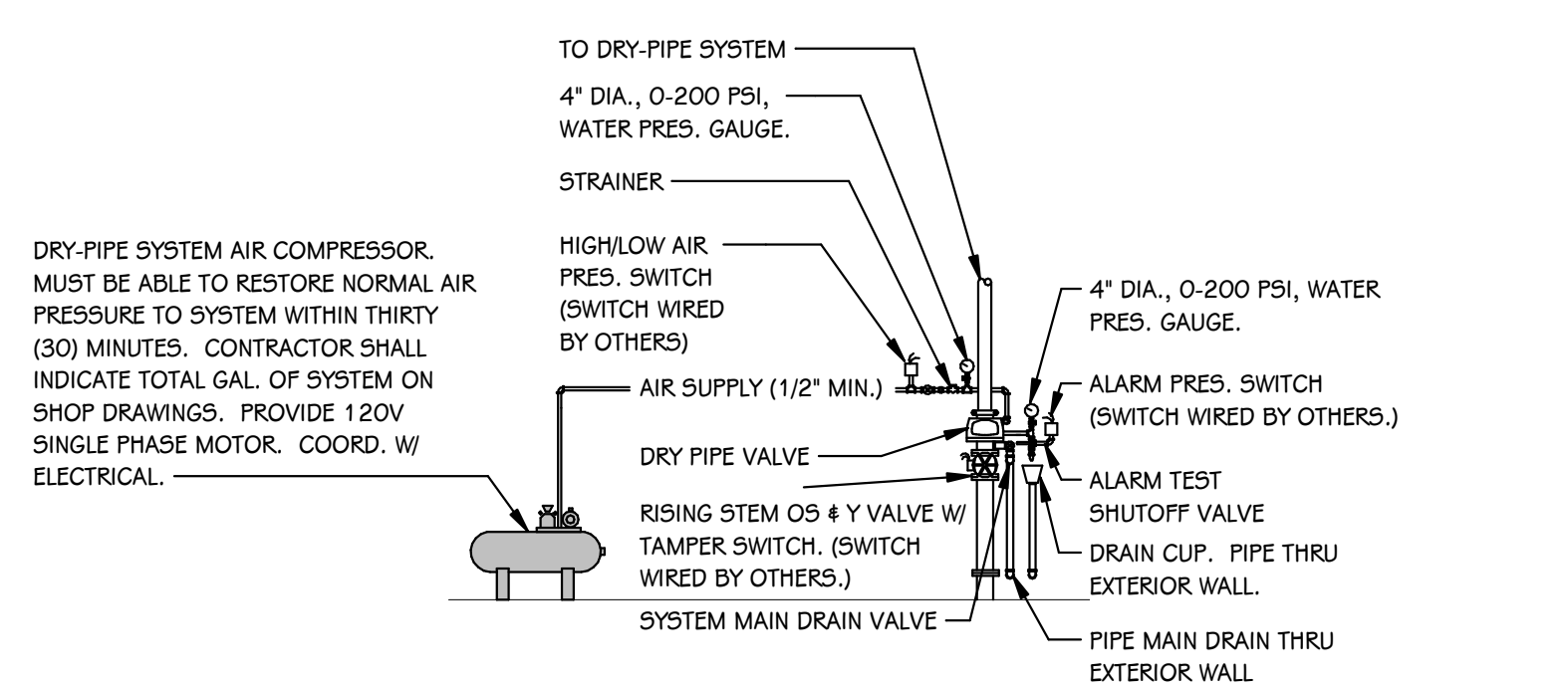
**FLEXIBLE SPRINKLER CONNECTION DETAIL**  
SCALE: NONE



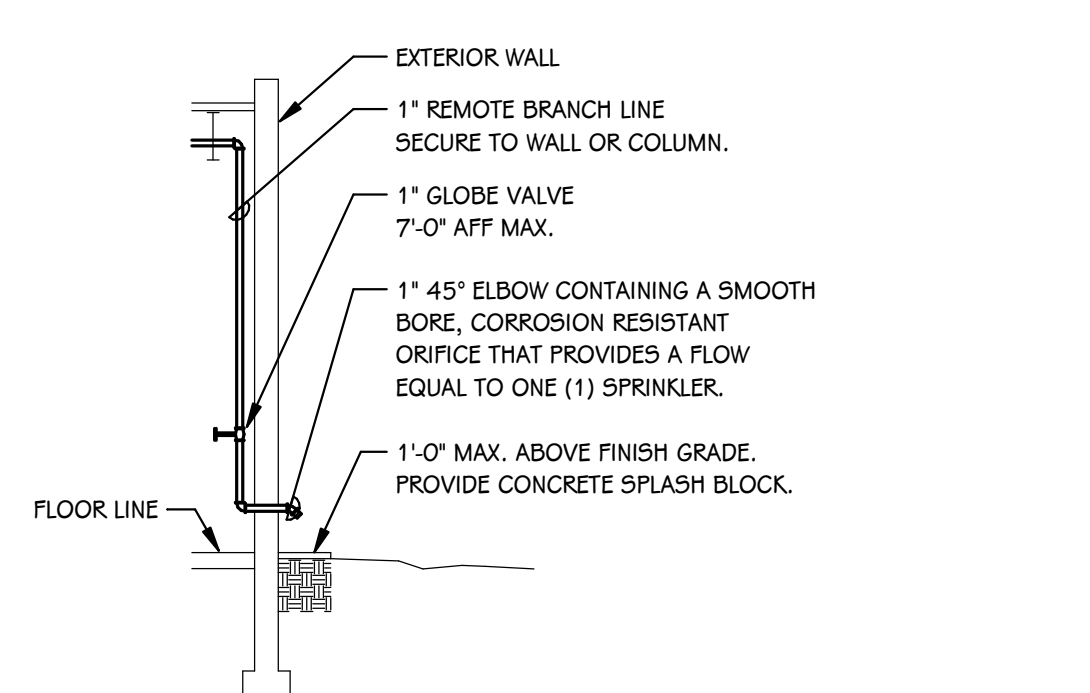
**WET SYSTEM RISER (CHECK VALVE)**  
SCALE: NONE



**BACKFLOW PREVENTER**  
SCALE: NONE



**DRY-PIPE FIRE PROTECTION**  
SCALE: NONE



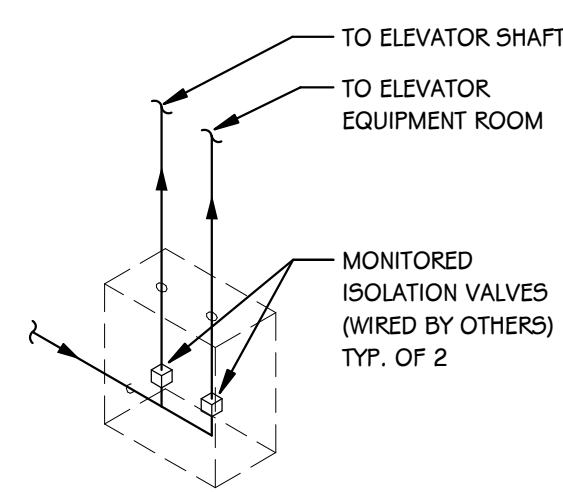
**INSPECTOR'S TEST CONNECTION DETAIL**  
SCALE: NONE

- FIRE STOPPING NOTES:**
1. INSTALL COMPLETE ASSEMBLY AS REQUIRED PER FIRE STOPPING FIRE TEST.
  2. PROVIDE AT ALL FIRE RATED FLOORS. SEE ARCH. DRAWINGS FOR FIRE RATING HOURS.
  3. REFER TO SPEC. SECTION 07 54 13.
  4. MULTIPLE PIPES CAN BE USED IF IN COMPLIANCE WITH FIRE TEST.
  5. THESE ARE GENERIC DETAILS. OTHER FIRE STOPPING SYSTEMS CAN BE USED IF THEY ARE IN COMPLIANCE WITH FIRE TEST REQUIREMENTS.
  6. IF FIRE TEST ARE NOT AVAILABLE FOR T-RATINGS PROVIDE HIGHEST AVAILABLE T-RATING BUT NOT TO EXCEED F-RATING OF FIRE ASSEMBLY.

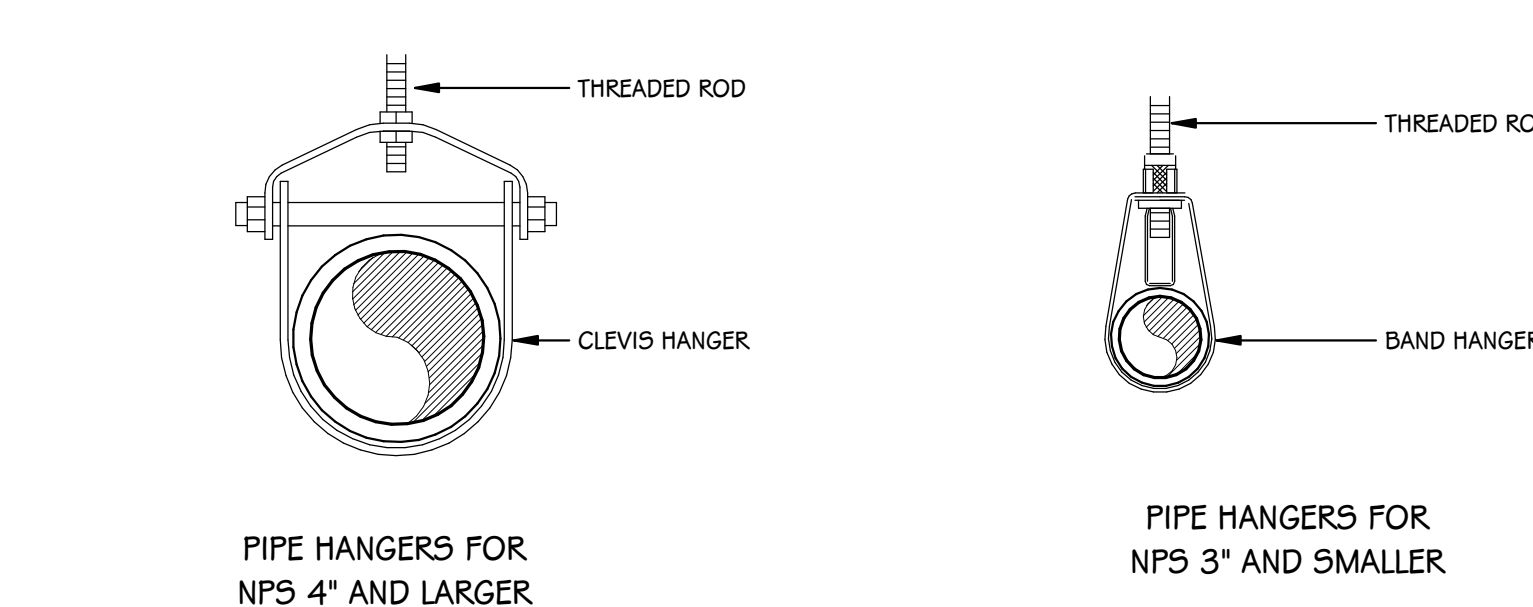
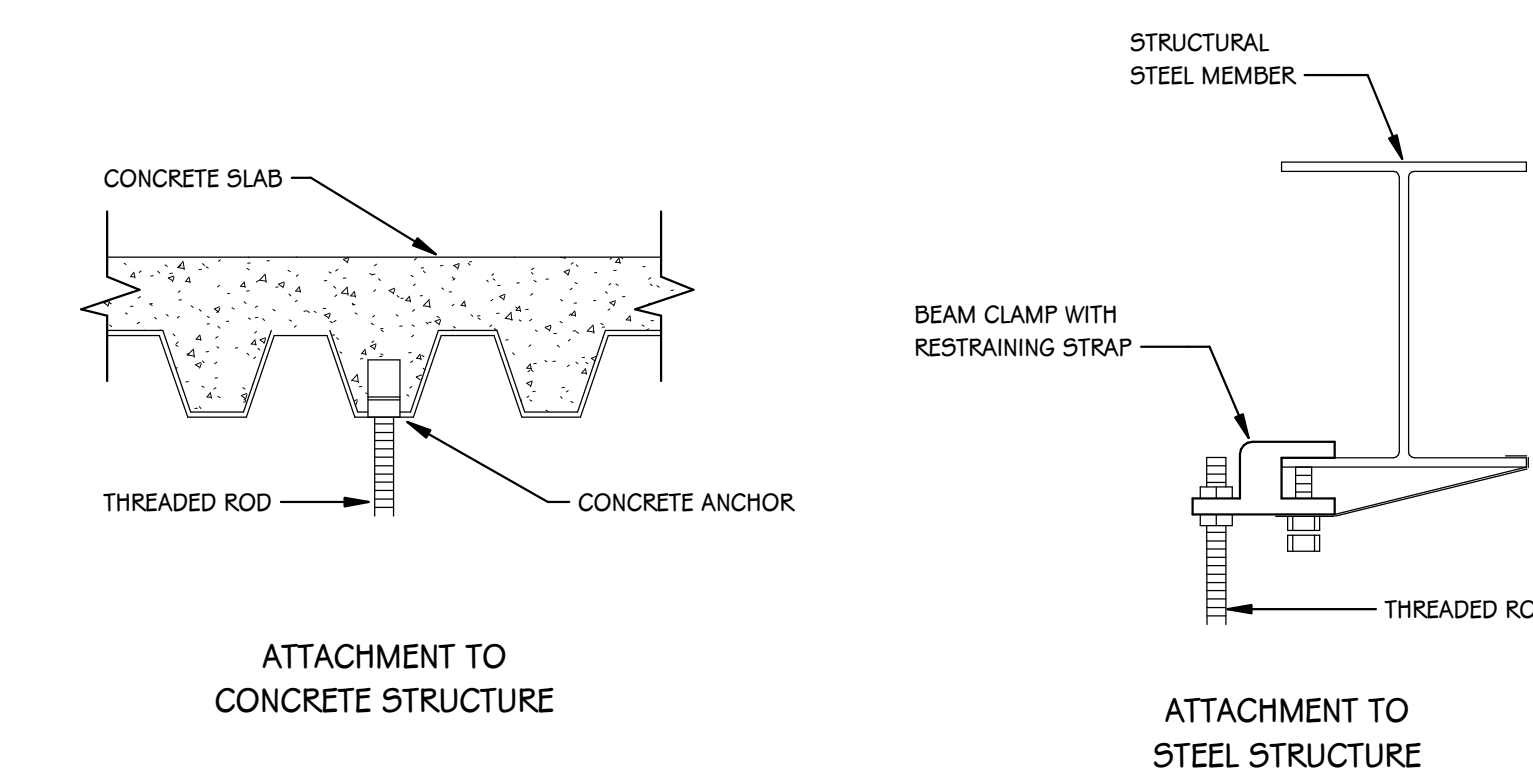
FLOOR	OCCUPANCY CLASSIFICATION	AREA DESCRIPTION	DESIGN DENSITY (GPM/SQ FT)	CALCULATION AREA (SQ FT)	MAX AREA PER SPRINKLER (SQ FT)	HOSE ALLOWANCE (GPM)	DRAWING HATCH
FIRST	LIGHT HAZARD	SCHOOL	0.10	41,280	225	100	
SECOND	LIGHT HAZARD	SCHOOL	0.10	34,825	225	100	

- GENERAL NOTES:**
1. FIRE PROTECTION SPRINKLER HEADS TO BE DRYHEADS ABOVE COOLER/FREEZER IN KITCHEN.
  2. REFER TO WATER SERVICE DETAIL ON SHEET P 501.
  3. REFER TO WATER SERVICE SITE PLAN ON SHEET MS 101.

**FIRE PROTECTION CLASSIFICATION SCHEDULE**  
SCALE: NONE



**ELEVATOR VALVING**  
SCALE: NONE



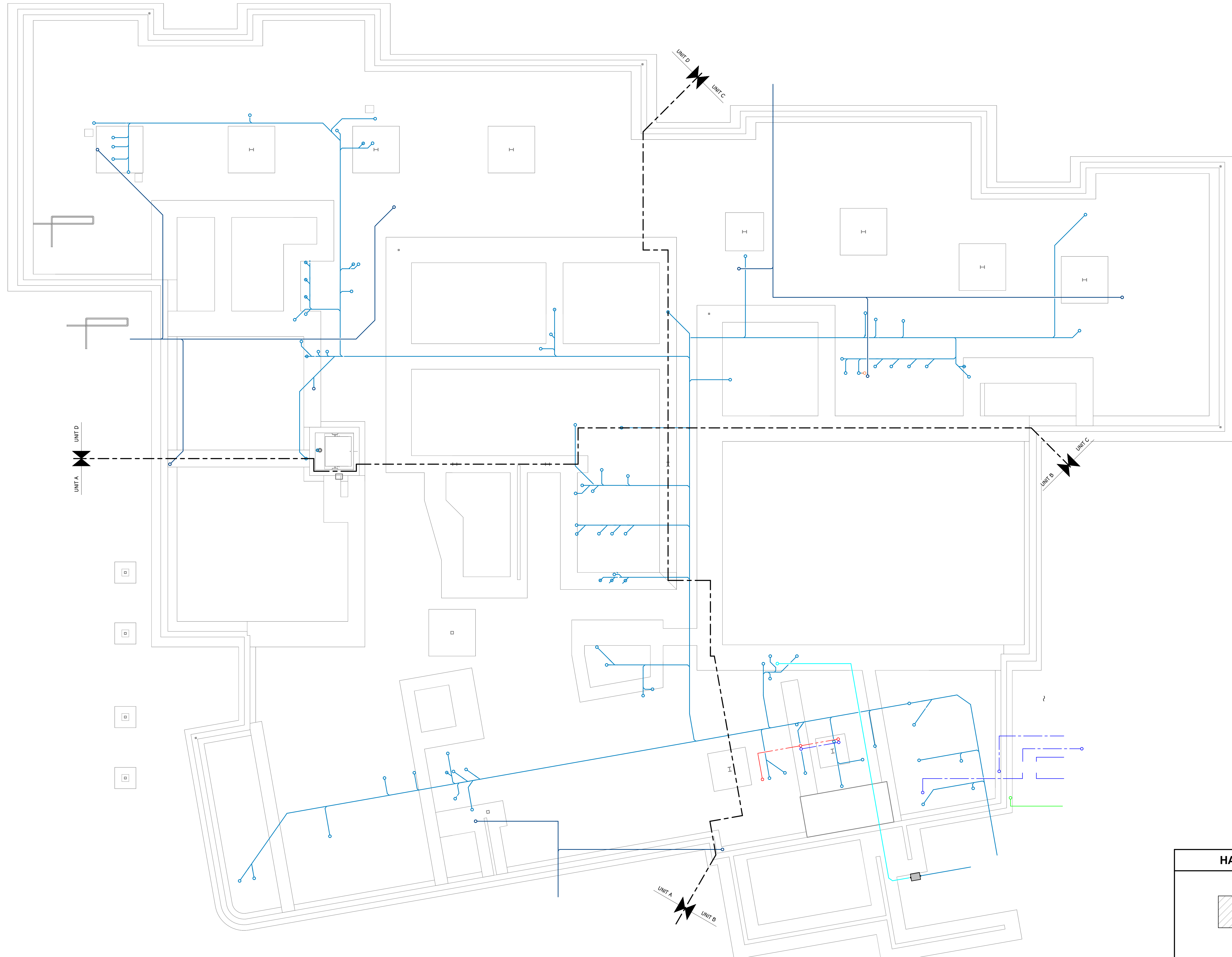
**NFPA 13 MINIMUM REQUIRED HANGER ROD SIZES**

PIPE SIZE	DIAMETER OF ROD
UP TO AND INCLUDING 4"	3/8"
5", 6", 8"	1/2"
10", 12"	5/8"

**PIPE SUPPORTS**  
SCALE: NONE

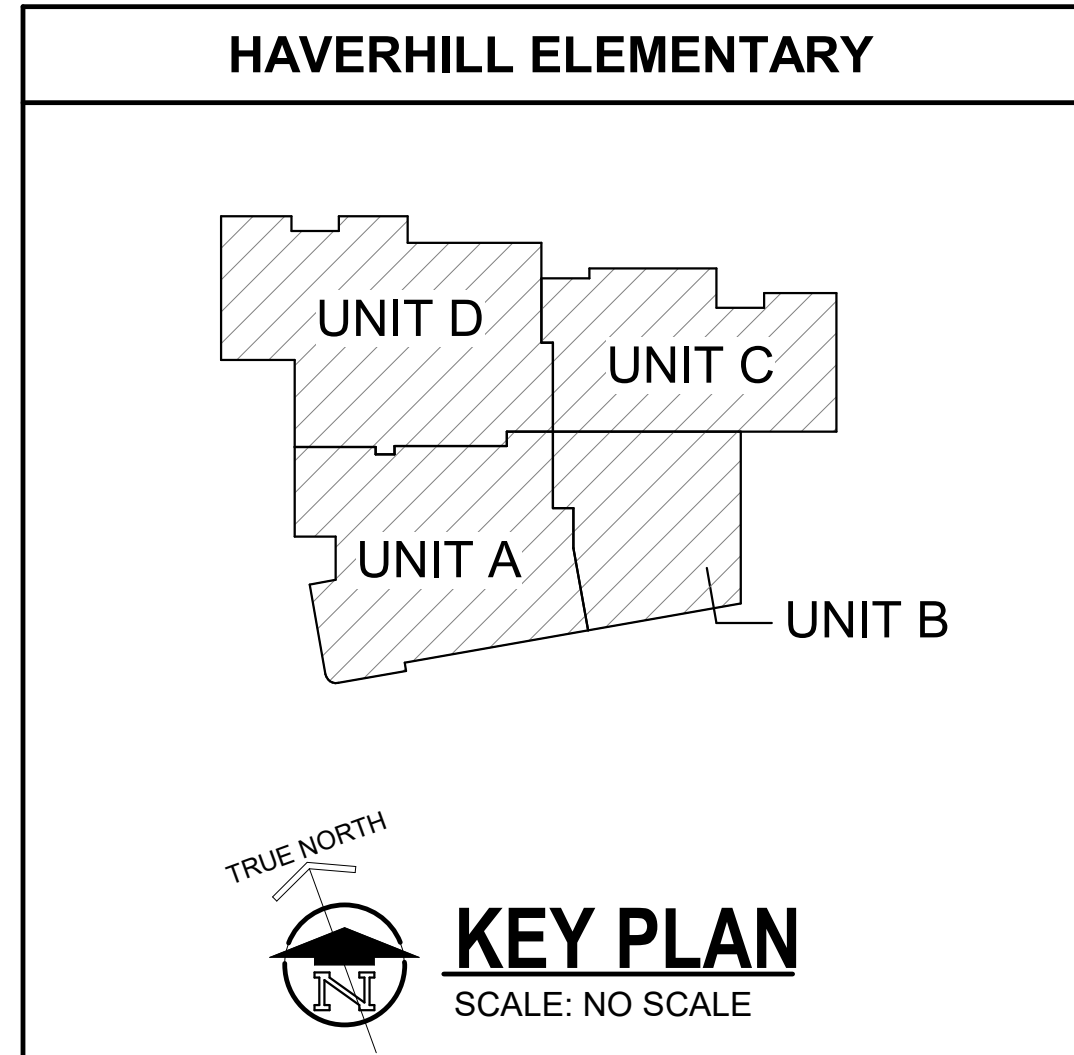
- SURGE RESTRAINT**
- PROVIDE SURGE RESTRAINT AT HANGER VIA RESTRAINT CLIP OR THREADED ROD EXTENSION TO PIPE SURFACE AS REQUIRED BY NFPA 13.
1. END OF BRANCH PIPING WHERE MAXIMUM SYSTEM PRESSURE EXCEEDS 100 PSI.
  2. RETURN BEND OFFSETS GREATER THAN 12" WHERE MAXIMUM SYSTEM PRESSURE EXCEEDS 100 PSI.
  3. RETURN BEND OFFSETS GREATER THAN 24".





FOUNDATION PLUMBING PLAN - OVERALL  
 1" = 10'-0"  
 FFE = 100'-0" (901.00)

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SHEET TITLE  
 FOUNDATION PLUMBING PLAN -  
 OVERALL

SHEET NUMBER  
**P 000**  
 21-237.20

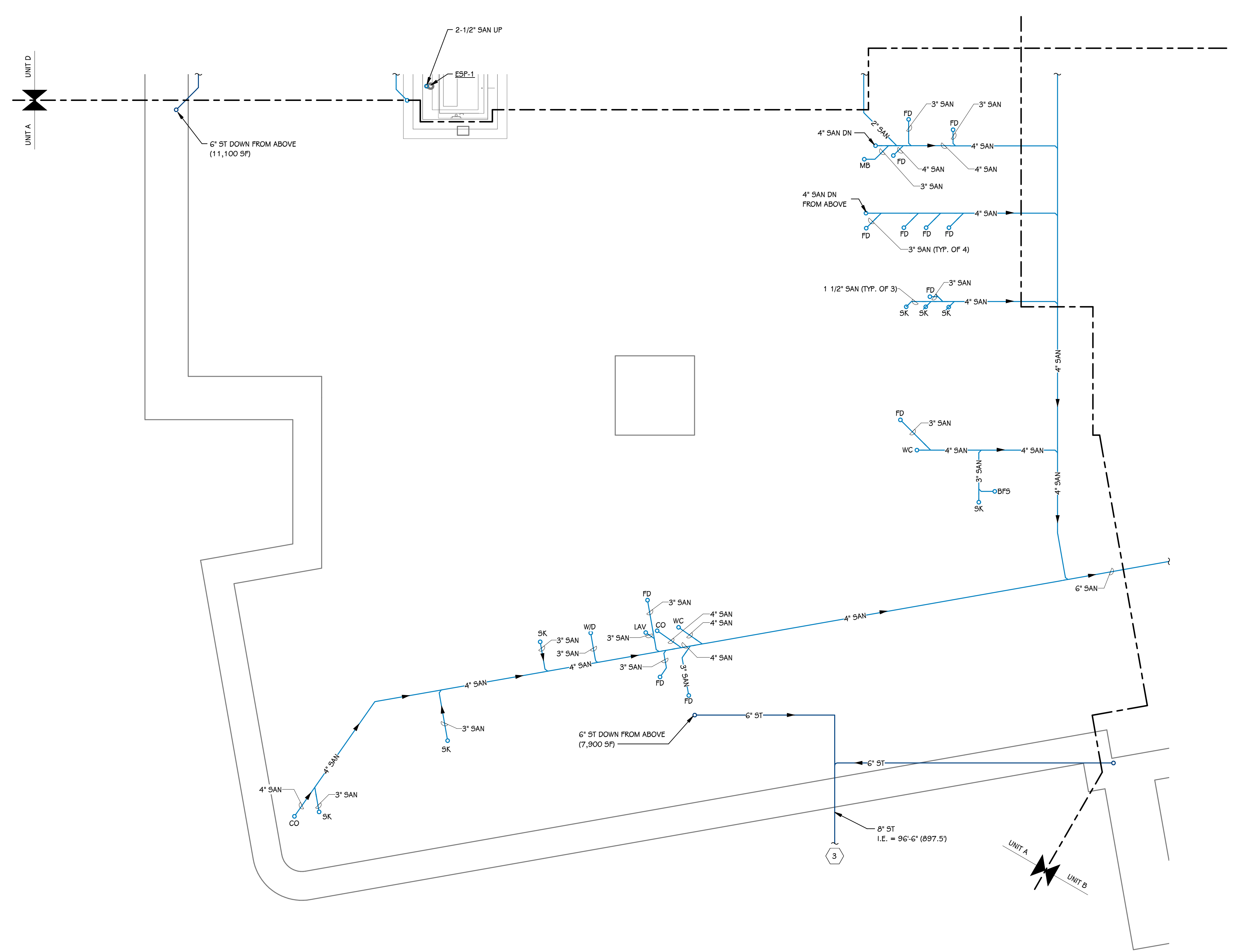
DATE  
 JUNE 30, 2023

OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

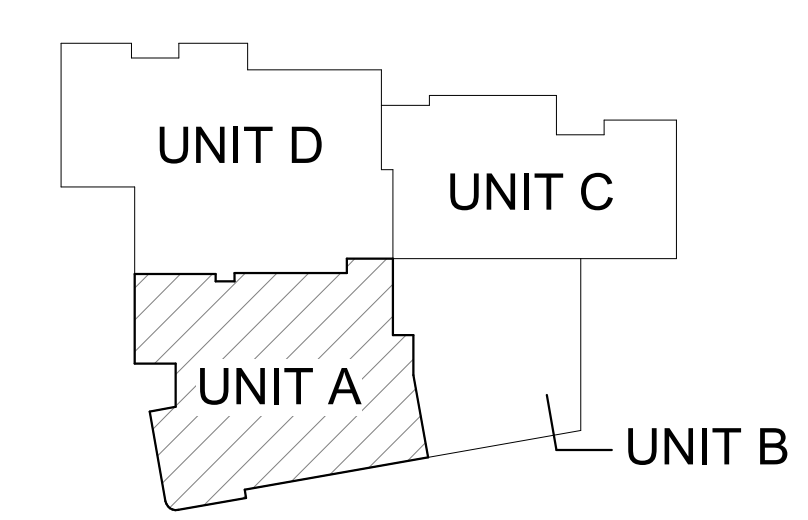
ISSUED FOR DATE



**FOUNDATION PLUMBING PLAN - UNIT A**  
 1/8" = 1'-0"  
 FFE = 100'-0" (801.00)

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

KEYED NOTES - PLUMBING	
1	SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
2	SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
3	REFER TO CIVIL FOR CONTINUATION.
4	SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
5	SK; MOUNTING HEIGHT AT 29" AFF TO DECK. COORDINATE WITH ALL TRADES.
6	WC; 1" SCW, 4" WASTE DOWN, 2" VENT UP.
7	SK; 1/2" HW/CW, 2" WASTE DOWN, 1-1/2" VENT UP.
8	LAV; 1/2" HW/CW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
9	BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
10	DRDP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
11	4" SAN DN, 3" VENT UP.
12	2" SAN DN, 2" VENT UP. 1/2" HCW DN.
13	1/2" CW UP TO ICE MAKER OUTLET BOX.
14	ICE MAKER OUTLET BOX IN WALL.
15	2" SAN UP/DN. 1/2" HCW UP/DN.
16	2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
17	3" VENT UP FROM BELOW.
18	4" VENT UP FROM BELOW UP THRU ROOF.
19	1/2" CW TO ICE MAKER OUTLET BOX.
20	2" SAN UP. 1/2" HCW UP.
21	CLOTHES WASHER OUTLET BOX IN WALL.
22	2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
23	4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
25	2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
26	2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
27	4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.



**KEY PLAN**  
 SCALE: NO SCALE

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

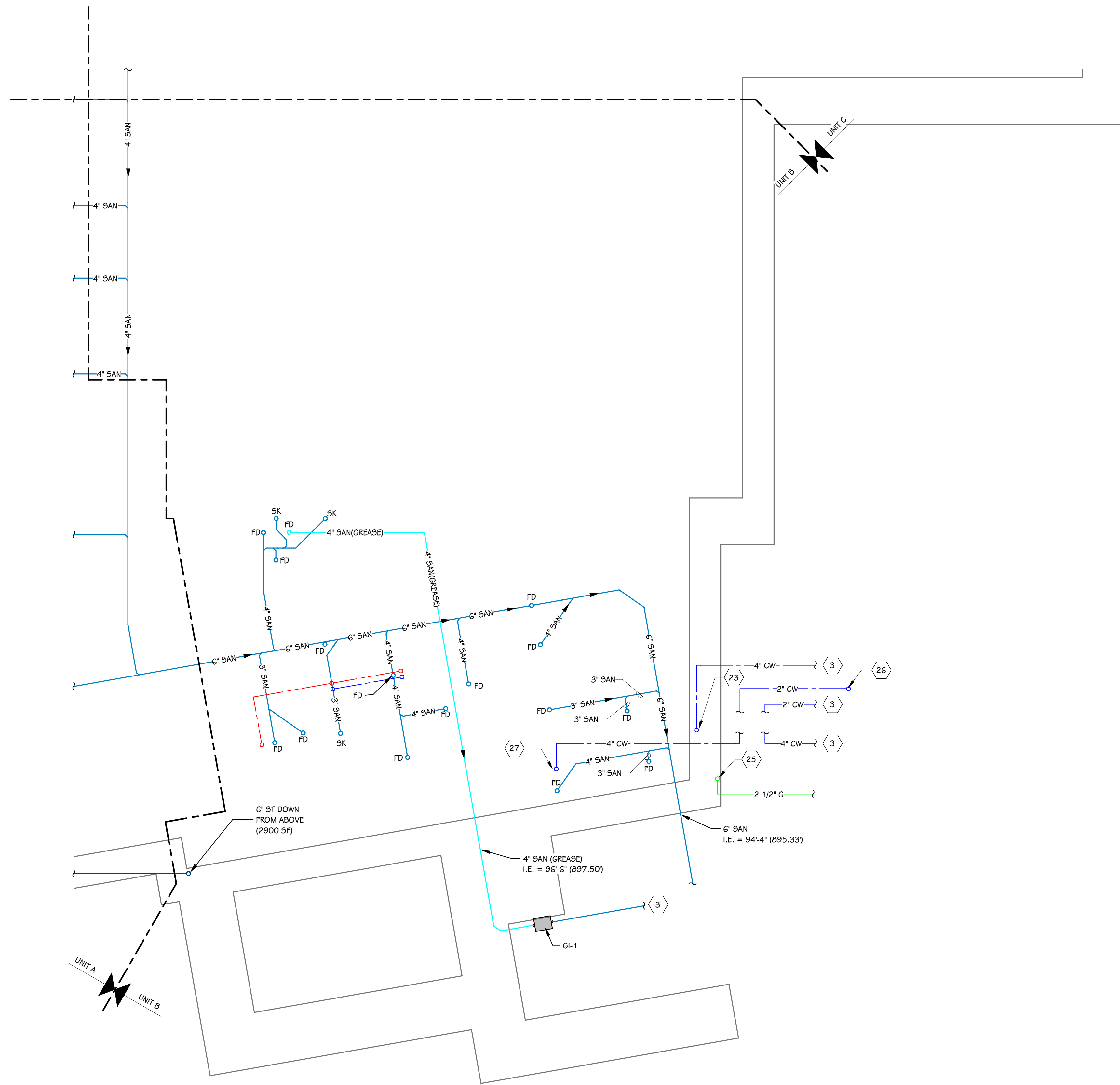
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**FOUNDATION PLUMBING PLAN - UNIT A**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**P 000A**  
 21-237.20



**FOUNDATION PLUMBING PLAN - UNIT B**  
 1/8" = 1'-0"  
 PFE = 100'-0" (901.00)

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**KEYED NOTES - PLUMBING**

- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
- 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
- 3 REFER TO CIVIL FOR CONTINUATION.
- 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
- 5 SK; MOUNTING HEIGHT AT 29" AFF TO DECK. COORDINATE WITH ALL TRADES.
- 6 WC; 1" SCW, 4" WASTE DOWN, 2" VENT UP.
- 7 SK; 1/2" HW/CW, 2" WASTE DOWN, 1-1/2" VENT UP.
- 8 LAV; 1/2" HW/CW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
- 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
- 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
- 11 4" SAN DN, 3" VENT UP.
- 12 2" SAN DN, 2" VENT UP. 1/2" HCW DN.
- 13 1/2" CW UP TO ICE MAKER OUTLET BOX.
- 14 ICE MAKER OUTLET BOX IN WALL.
- 15 2" SAN UP/DN. 1/2" HCW UP/DN.
- 16 2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
- 17 3" VENT UP FROM BELOW.
- 18 4" VENT UP FROM BELOW UP THRU ROOF.
- 19 1/2" CW TO ICE MAKER OUTLET BOX.
- 20 2" SAN UP. 1/2" HCW UP.
- 21 CLOTHES WASHER OUTLET BOX IN WALL.
- 22 2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
- 23 4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
- 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
- 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
- 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

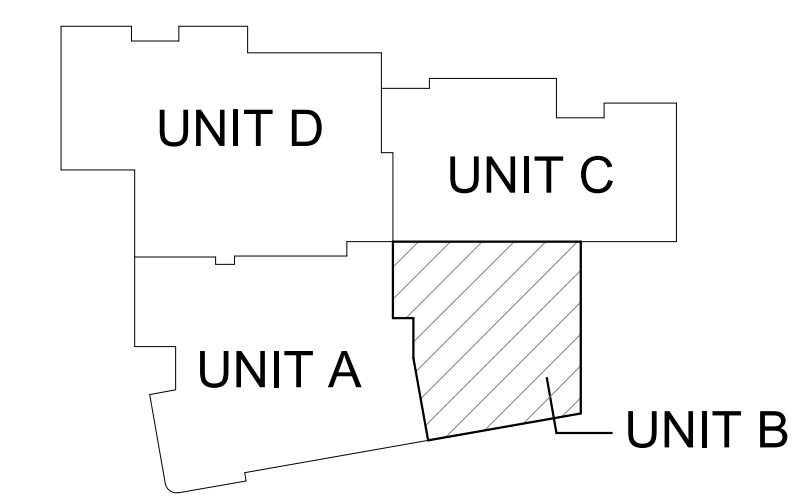
ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

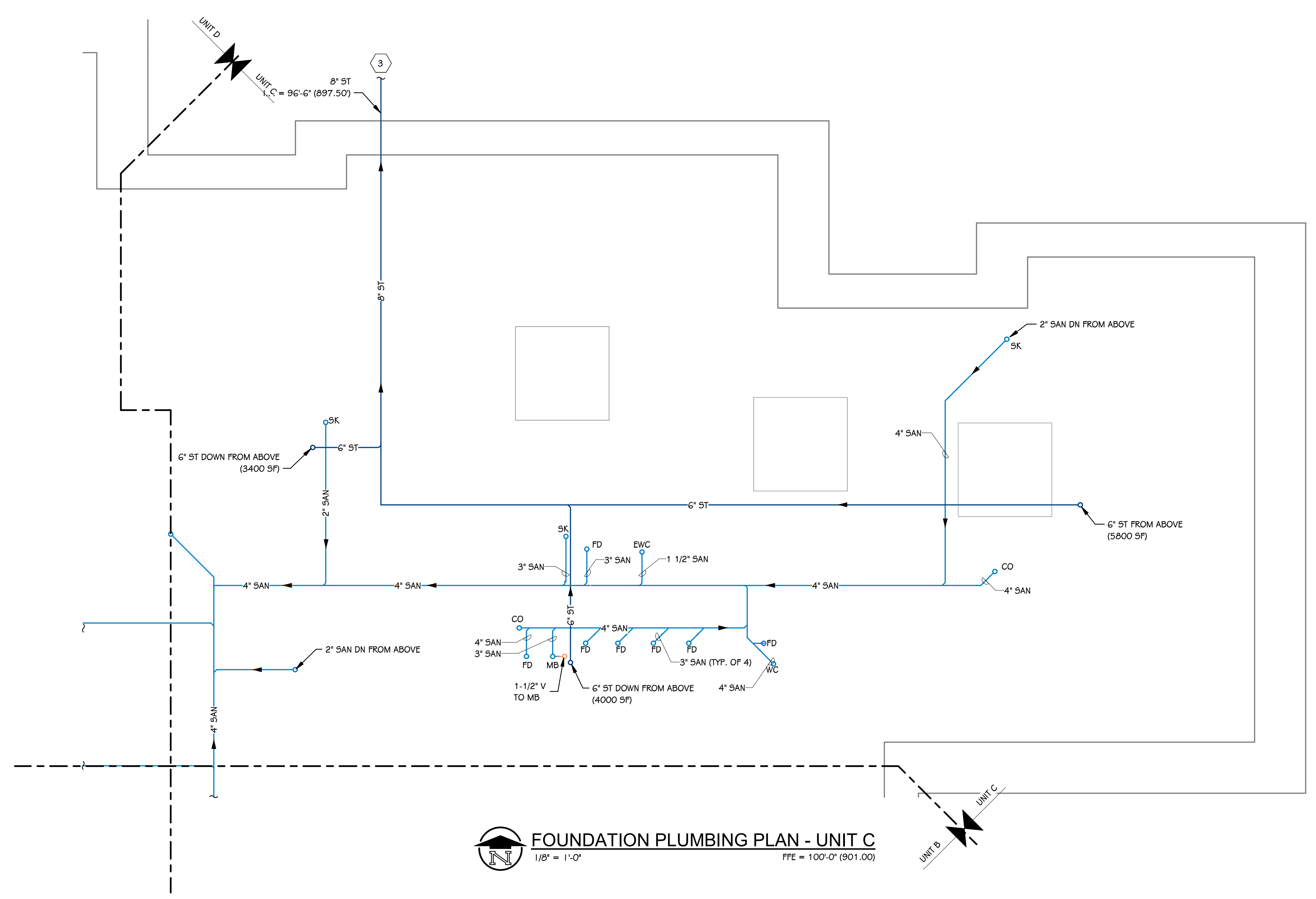
SHEET TITLE  
 FOUNDATION PLUMBING PLAN - UNIT B



**KEY PLAN**  
 SCALE: NO SCALE

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**P 000B**  
 21-237.20

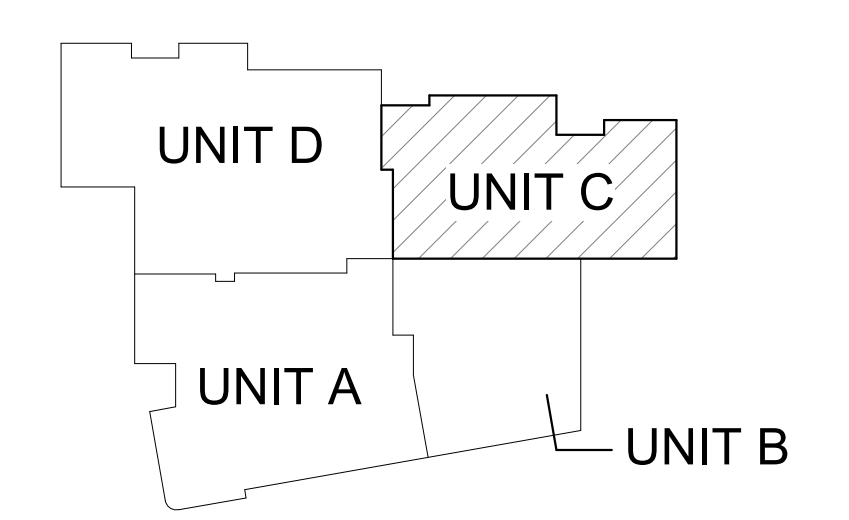


**FOUNDATION PLUMBING PLAN - UNIT C**  
 1/8" = 1'-0" FFE = 100'-0" (801.00)

**KEYED NOTES - PLUMBING**

- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
- 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
- 3 REFER TO CIVIL FOR CONTINUATION.
- 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
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- 6 WC; 1" SCW, 4" WASTE DOWN, 2" VENT UP.
- 7 SK; 1/2" HWICW, 2" WASTE DOWN, 1-1/2" VENT UP.
- 8 LAV; 1/2" HWICW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
- 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
- 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
- 11 4" SAN DN, 3" VENT UP.
- 12 2" SAN DN, 2" VENT UP. 1/2" HCW DN.
- 13 1/2" CW UP TO ICE MAKER OUTLET BOX.
- 14 ICE MAKER OUTLET BOX IN WALL.
- 15 2" SAN UP/DN. 1/2" HCW UP/DN.
- 16 2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
- 17 3" VENT UP FROM BELOW.
- 18 4" VENT UP FROM BELOW UP THRU ROOF.
- 19 1/2" CW TO ICE MAKER OUTLET BOX.
- 20 2" SAN UP. 1/2" HCW UP.
- 21 CLOTHES WASHER OUTLET BOX IN WALL.
- 22 2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
- 23 4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
- 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
- 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
- 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

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**KEY PLAN**  
 SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

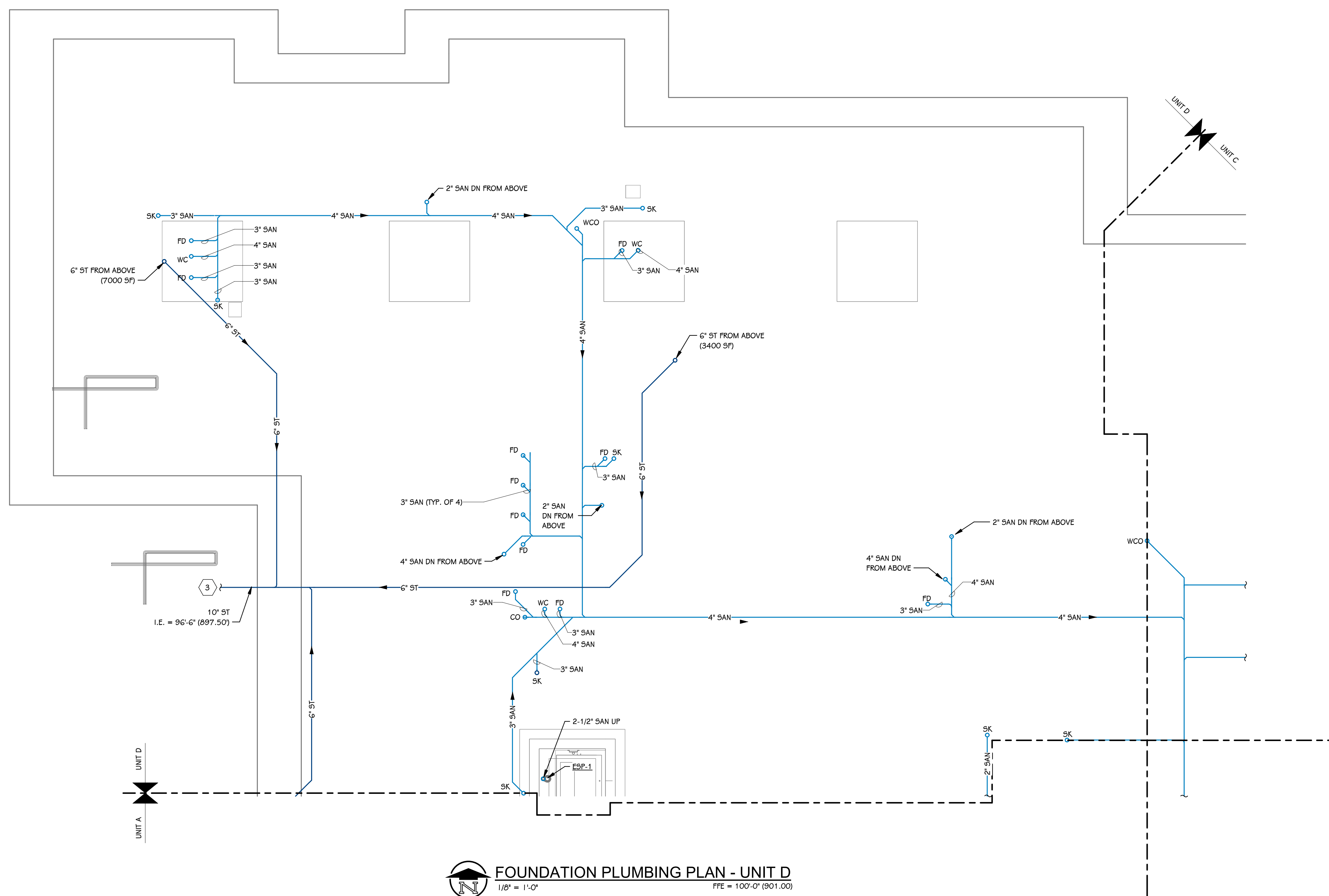
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 FOUNDATION PLUMBING PLAN - UNIT C

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**P 000C**  
 21-237.20



**FOUNDATION PLUMBING PLAN - UNIT D**  
 1/8" = 1'-0"  
 FFE = 100'-0" (901.00)

**KEYED NOTES - PLUMBING**

- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
- 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
- 3 REFER TO CIVIL FOR CONTINUATION.
- 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
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- 8 LAV; 1/2" HW/CW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
- 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
- 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
- 11 4" SAN DN, 3" VENT UP.
- 12 2" SAN DN, 2" VENT UP. 1/2" HCW DN.
- 13 1/2" CW UP TO ICE MAKER OUTLET BOX.
- 14 ICE MAKER OUTLET BOX IN WALL.
- 15 2" SAN UP/DN. 1/2" HCW UP/DN.
- 16 2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
- 17 3" VENT UP FROM BELOW.
- 18 4" VENT UP FROM BELOW UP THRU ROOF.
- 19 1/2" CW TO ICE MAKER OUTLET BOX.
- 20 2" SAN UP. 1/2" HCW UP.
- 21 CLOTHES WASHER OUTLET BOX IN WALL.
- 22 2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
- 23 4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
- 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
- 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
- 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

ISSUED FOR DATE

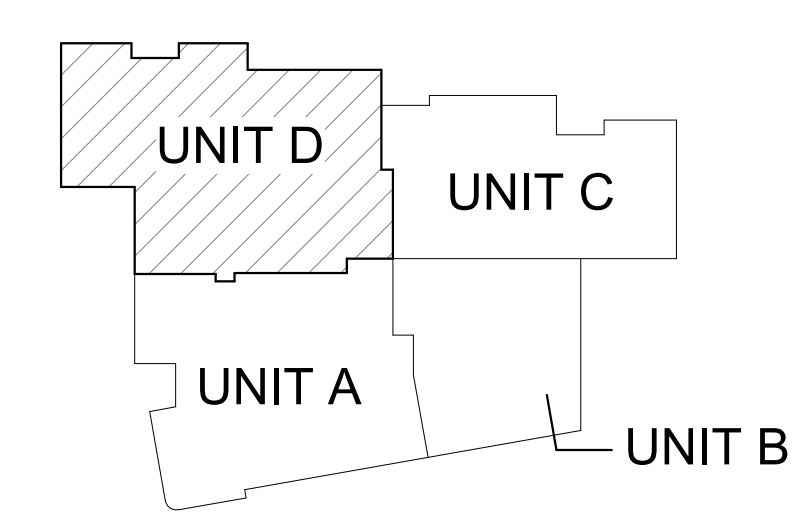
PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 FOUNDATION PLUMBING PLAN - UNIT D

**HAVERHILL ELEMENTARY**



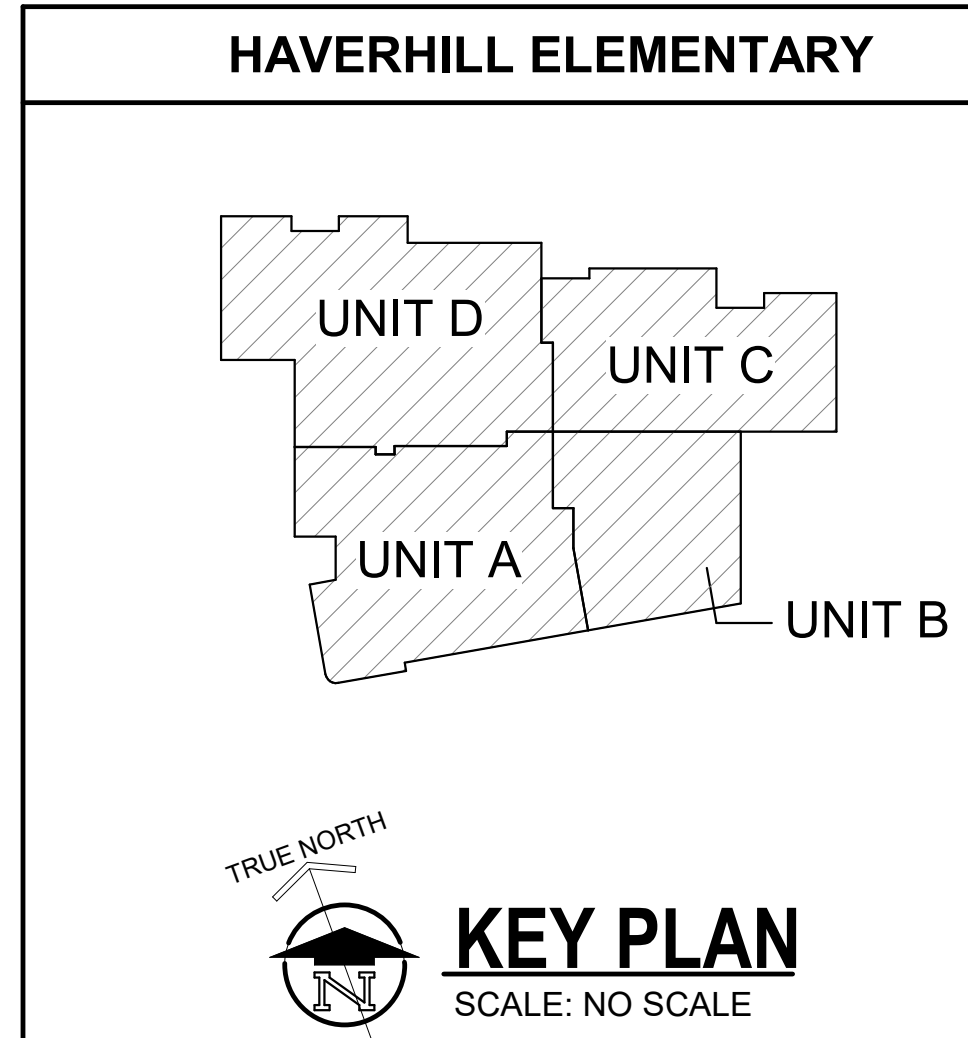
**KEY PLAN**  
 SCALE: NO SCALE

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**FIRST FLOOR PLUMBING PLAN - OVERALL**  
 1" = 10'-0"

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PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

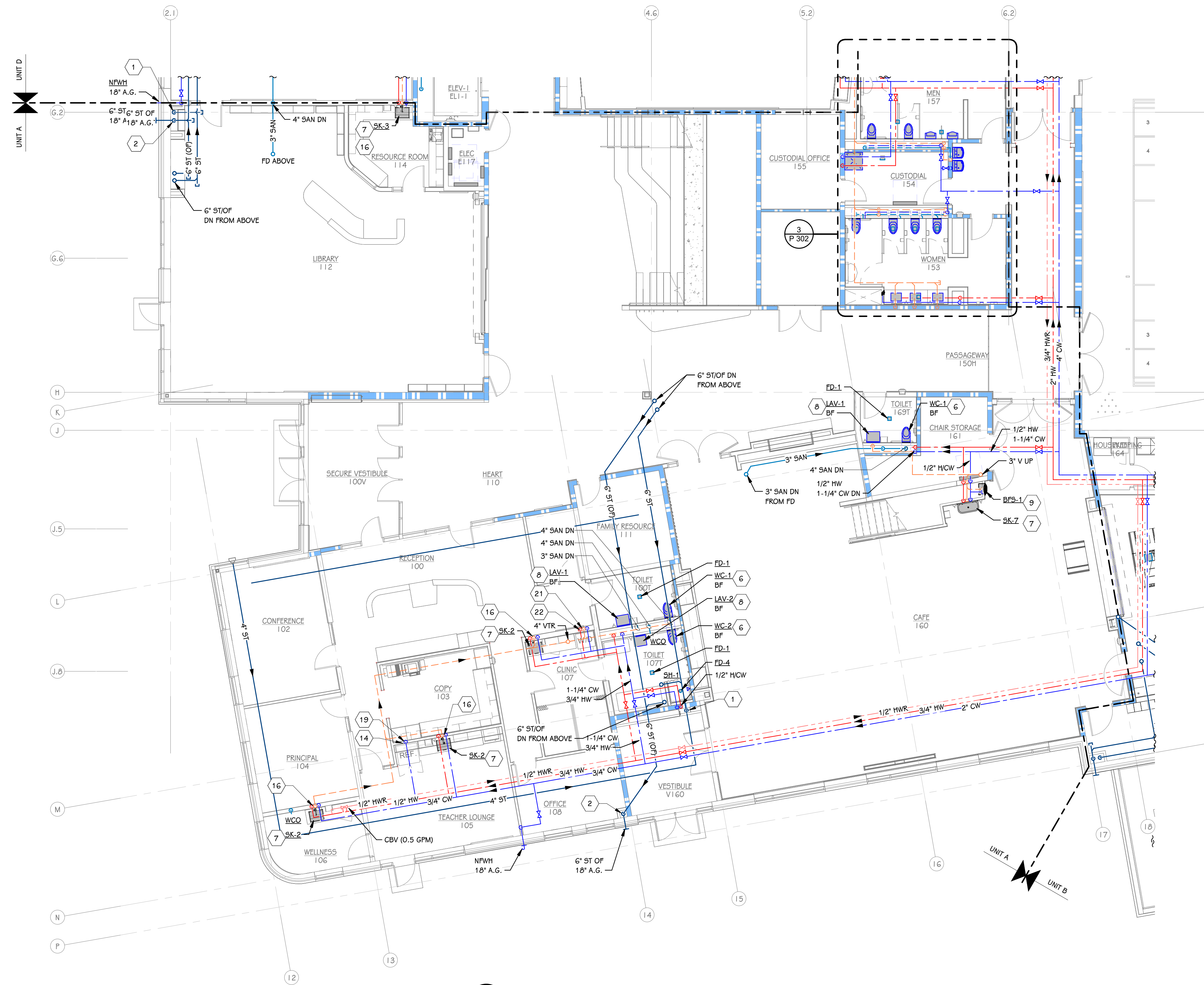
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
 FIRST FLOOR PLUMBING PLAN - OVERALL

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**P 101**  
 21-237.20



**FIRST FLOOR PLUMBING PLAN - UNIT A**  
1/8" = 1'-0"

**KEYED NOTES - PLUMBING**

- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
- 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
- 3 REFER TO CIVIL FOR CONTINUATION.
- 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
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- 7 SK; 1/2" HW/CW, 2" WASTE DOWN, 1-1/2" VENT UP.
- 8 LAV; 1/2" HW/CW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
- 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
- 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
- 11 4" SAN DN, 3" VENT UP.
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- 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
- 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
- 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

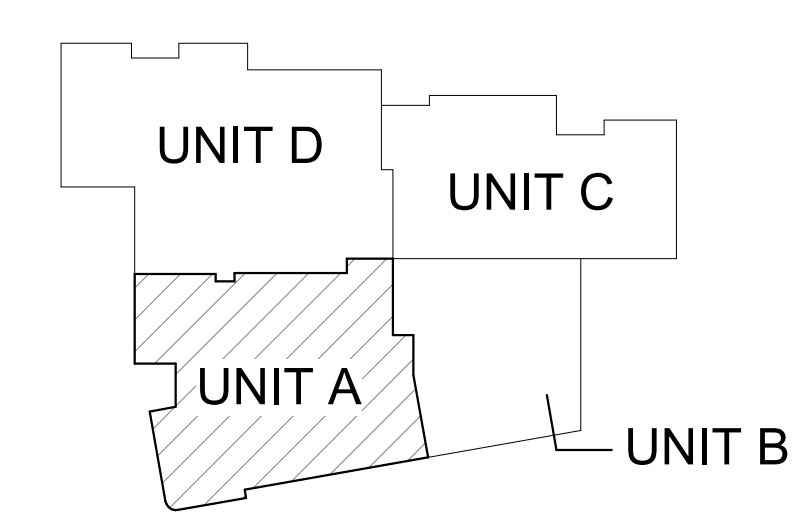
Portage, Michigan

SHEET TITLE  
FIRST FLOOR PLUMBING PLAN - UNIT A

DATE  
JUNE 30, 2023

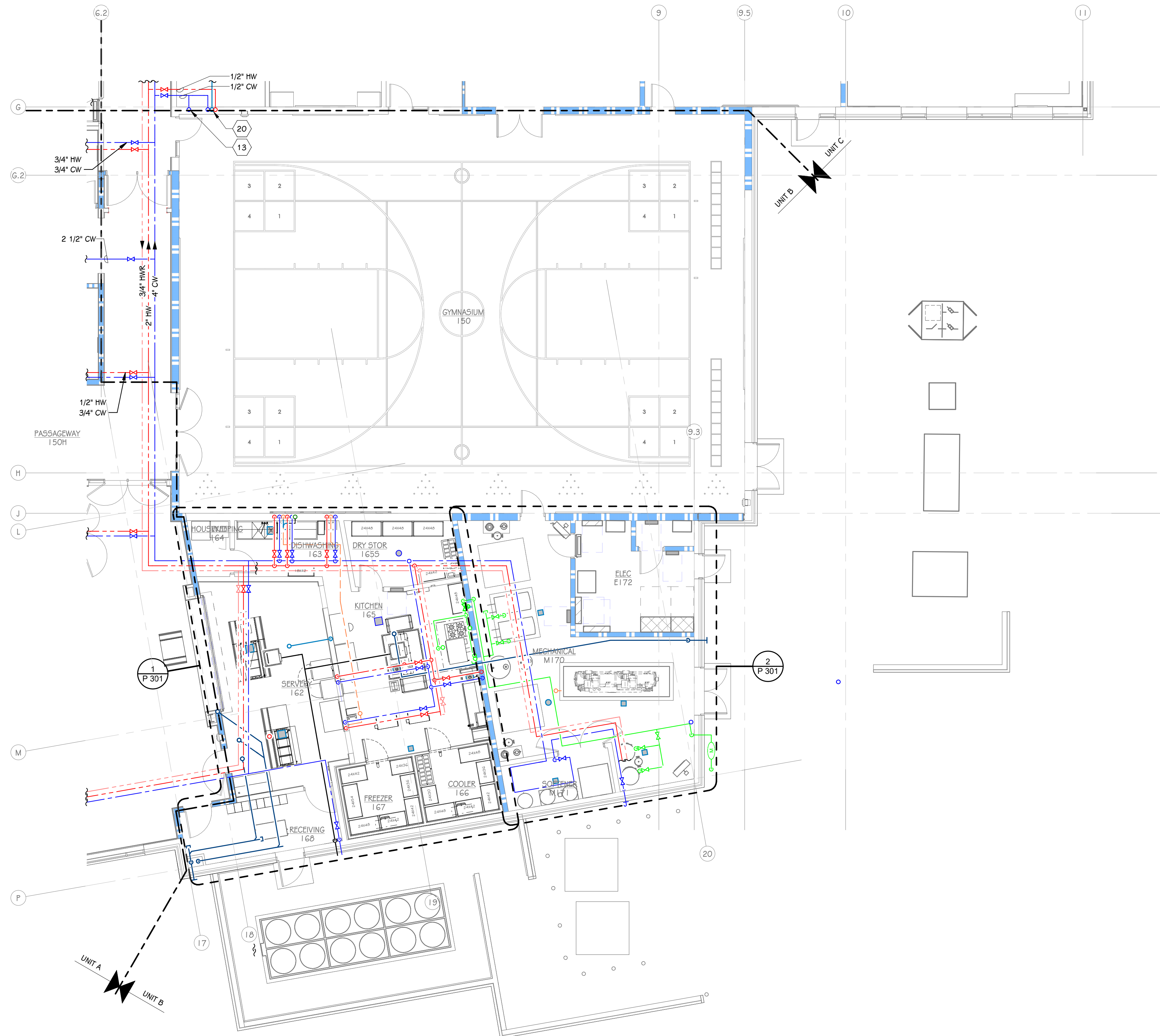
SHEET NUMBER  
P 101A  
21-237.20

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

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**FIRST FLOOR PLUMBING PLAN - UNIT B**  
1/8" = 1'-0"

- KEYED NOTES - PLUMBING**
- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
  - 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
  - 3 REFER TO CIVIL FOR CONTINUATION.
  - 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
  - 5 SK; MOUNTING HEIGHT AT 29" AFF TO DECK. COORDINATE WITH ALL TRADES.
  - 6 WC; 1" SCW, 4" WASTE DOWN, 2" VENT UP.
  - 7 SK; 1/2" HW/CW, 2" WASTE DOWN, 1-1/2" VENT UP.
  - 8 LAV; 1/2" HW/CW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
  - 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
  - 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
  - 11 4" SAN DN, 3" VENT UP.
  - 12 2" SAN DN, 2" VENT UP. 1/2" HCW DN.
  - 13 1/2" CW UP TO ICE MAKER OUTLET BOX.
  - 14 ICE MAKER OUTLET BOX IN WALL.
  - 15 2" SAN UP/DN. 1/2" HCW UP/DN.
  - 16 2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
  - 17 3" VENT UP FROM BELOW.
  - 18 4" VENT UP FROM BELOW UP THRU ROOF.
  - 19 1/2" CW TO ICE MAKER OUTLET BOX.
  - 20 2" SAN UP. 1/2" HCW UP.
  - 21 CLOTHES WASHER OUTLET BOX IN WALL.
  - 22 2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
  - 23 4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
  - 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
  - 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
  - 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

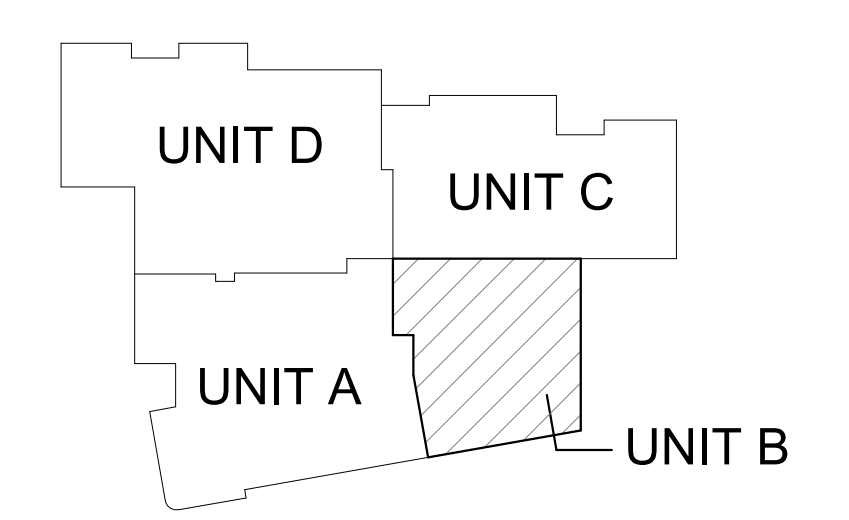
ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
FIRST FLOOR PLUMBING PLAN - UNIT B



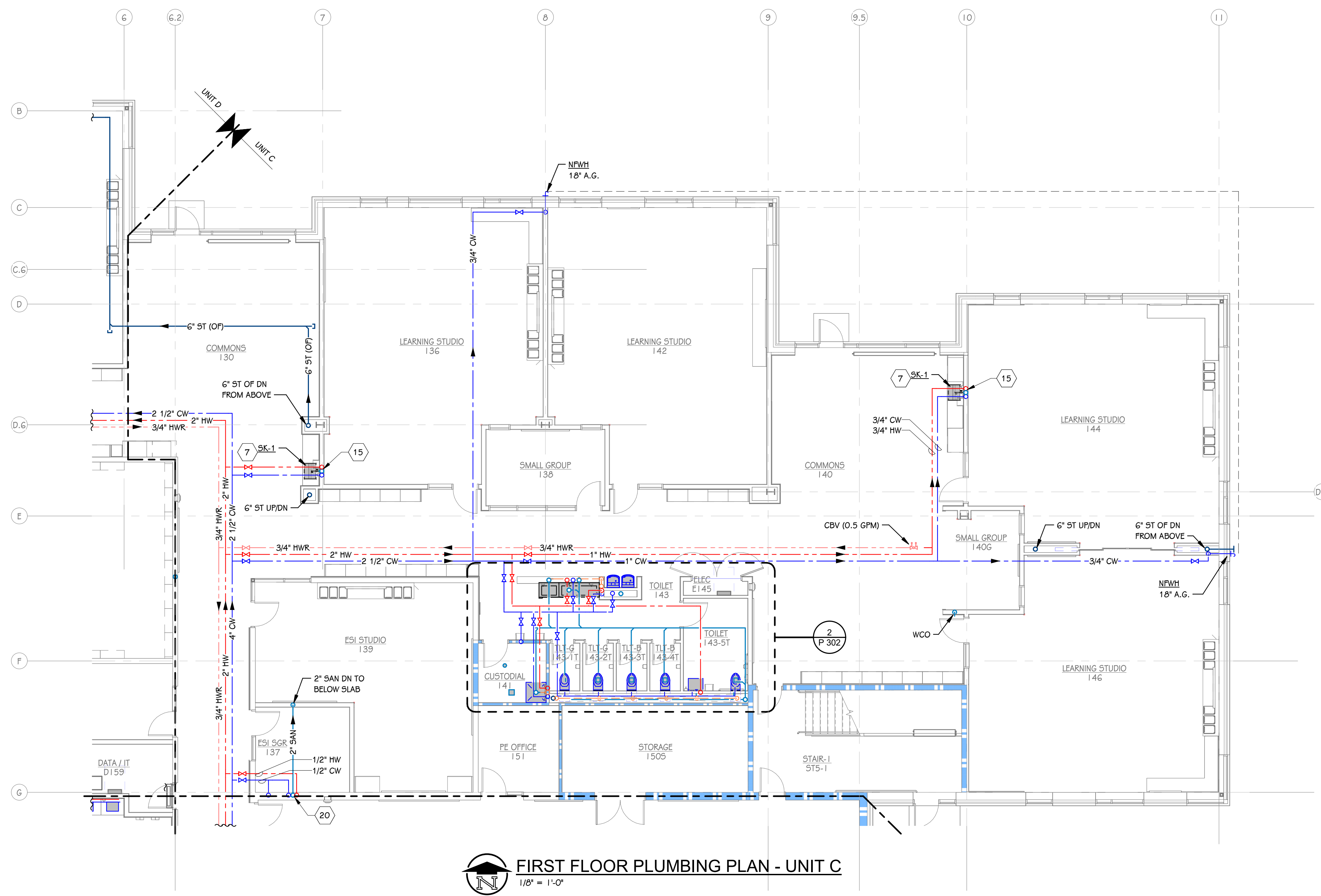
**KEY PLAN**  
SCALE: NO SCALE

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

DATE  
JUNE 30, 2023

SHEET NUMBER  
**P 101B**  
21-237.20





**FIRST FLOOR PLUMBING PLAN - UNIT C**  
1/8" = 1'-0"

KEYED NOTES - PLUMBING	
1	SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
2	SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
3	REFER TO CIVIL FOR CONTINUATION.
4	SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
5	SK; MOUNTING HEIGHT AT 29" AFF TO DECK. COORDINATE WITH ALL TRADES.
6	WC; 1" SCW, 4" WASTE DOWN, 2" VENT UP.
7	SK; 1/2" HW/CW, 2" WASTE DOWN, 1-1/2" VENT UP.
8	LAV; 1/2" HW/CW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
9	BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
10	DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
11	4" SAN DN, 3" VENT UP.
12	2" SAN DN, 2" VENT UP. 1/2" HCW DN.
13	1/2" CW UP TO ICE MAKER OUTLET BOX.
14	ICE MAKER OUTLET BOX IN WALL.
15	2" SAN UP/DN. 1/2" HCW UP/DN.
16	2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
17	3" VENT UP FROM BELOW.
18	4" VENT UP FROM BELOW UP THRU ROOF.
19	1/2" CW TO ICE MAKER OUTLET BOX.
20	2" SAN UP. 1/2" HCW UP.
21	CLOTHES WASHER OUTLET BOX IN WALL.
22	2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
23	4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
25	2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
26	2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
27	4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

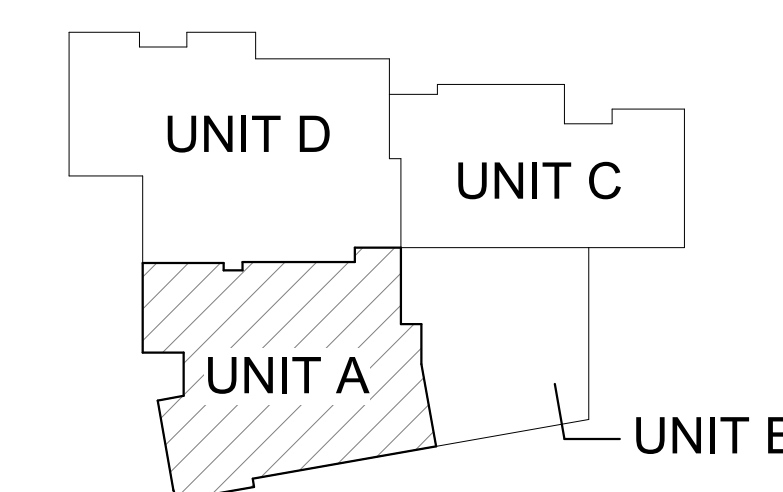
ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

**HAVERHILL ELEMENTARY**



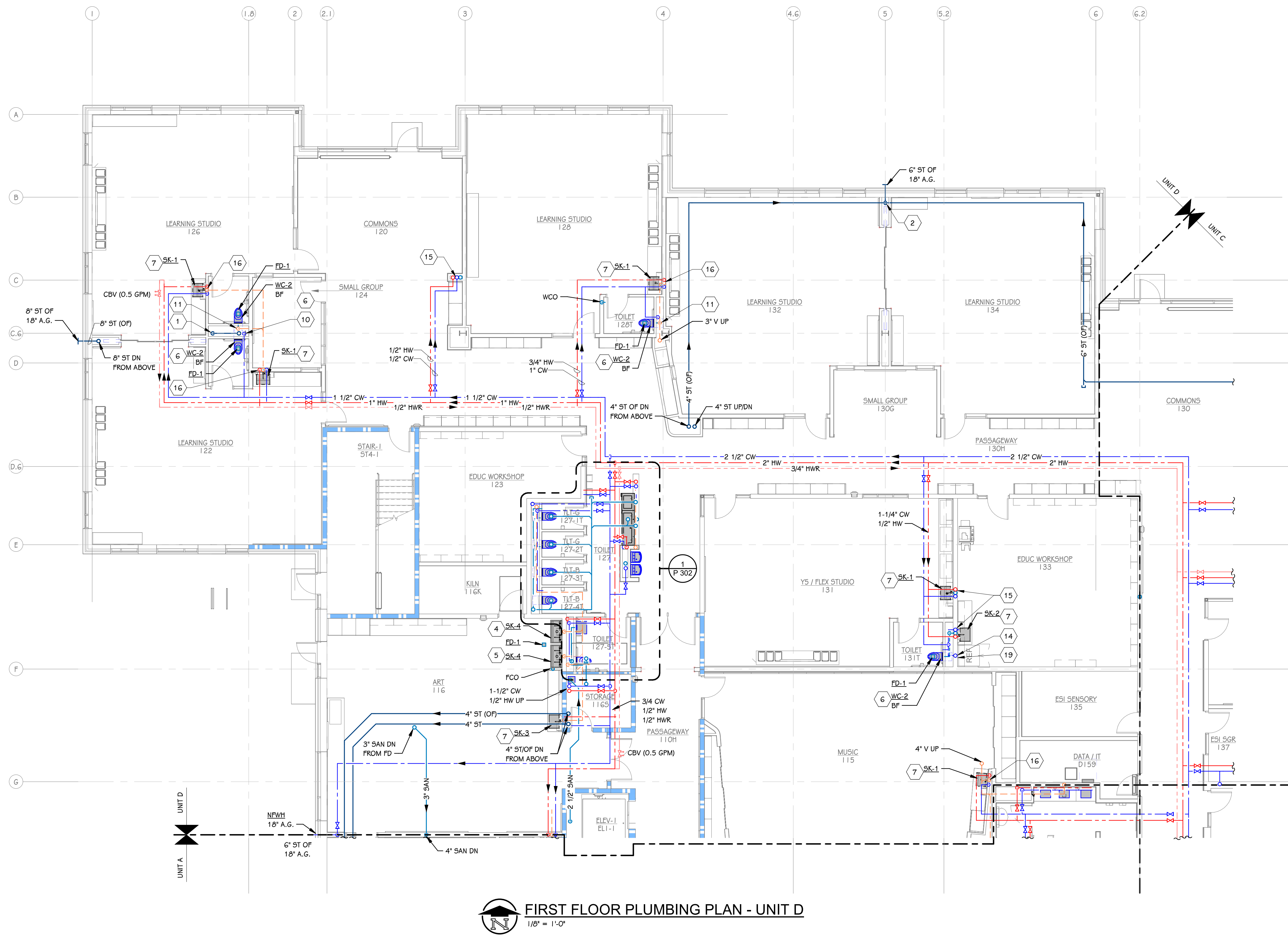
TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

SHEET TITLE  
FIRST FLOOR PLUMBING PLAN - UNIT C

DATE  
JUNE 30, 2023

SHEET NUMBER  
**P 101C**  
21-237.20



**KEYED NOTES - PLUMBING**

- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
- 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
- 3 REFER TO CIVIL FOR CONTINUATION.
- 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
- 5 SK; MOUNTING HEIGHT AT 29" AFF TO DECK. COORDINATE WITH ALL TRADES.
- 6 WC; 1" SCW, 4" WASTE DOWN, 2" VENT UP.
- 7 SK; 1/2" HW/CW, 2" WASTE DOWN, 1-1/2" VENT UP.
- 8 LAV; 1/2" HW/CW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
- 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
- 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
- 11 4" SAN DN, 3" VENT UP.
- 12 2" SAN DN, 2" VENT UP. 1/2" HCW DN.
- 13 1/2" CW UP TO ICE MAKER OUTLET BOX.
- 14 ICE MAKER OUTLET BOX IN WALL.
- 15 2" SAN UP/DN. 1/2" HCW UP/DN.
- 16 2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
- 17 3" VENT UP FROM BELOW.
- 18 4" VENT UP FROM BELOW UP THRU ROOF.
- 19 1/2" CW TO ICE MAKER OUTLET BOX.
- 20 2" SAN UP. 1/2" HCW UP.
- 21 CLOTHES WASHER OUTLET BOX IN WALL.
- 22 2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
- 23 4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
- 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
- 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
- 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

ISSUED FOR DATE

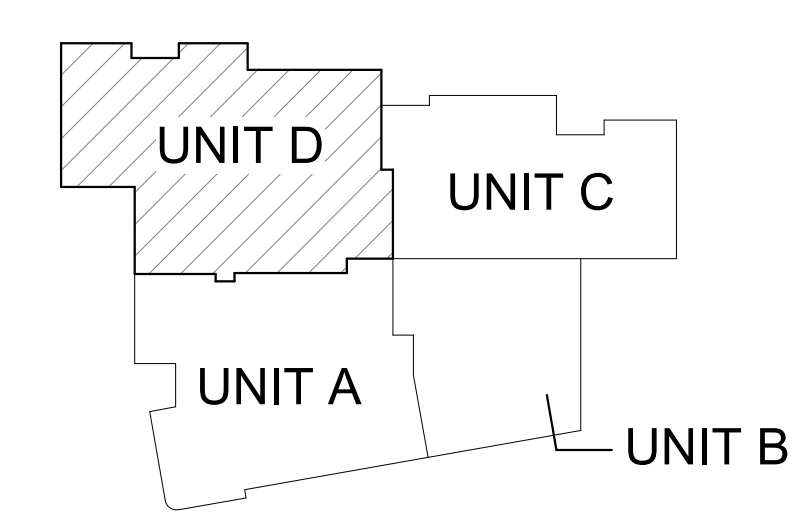
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
FIRST FLOOR PLUMBING PLAN - UNIT D

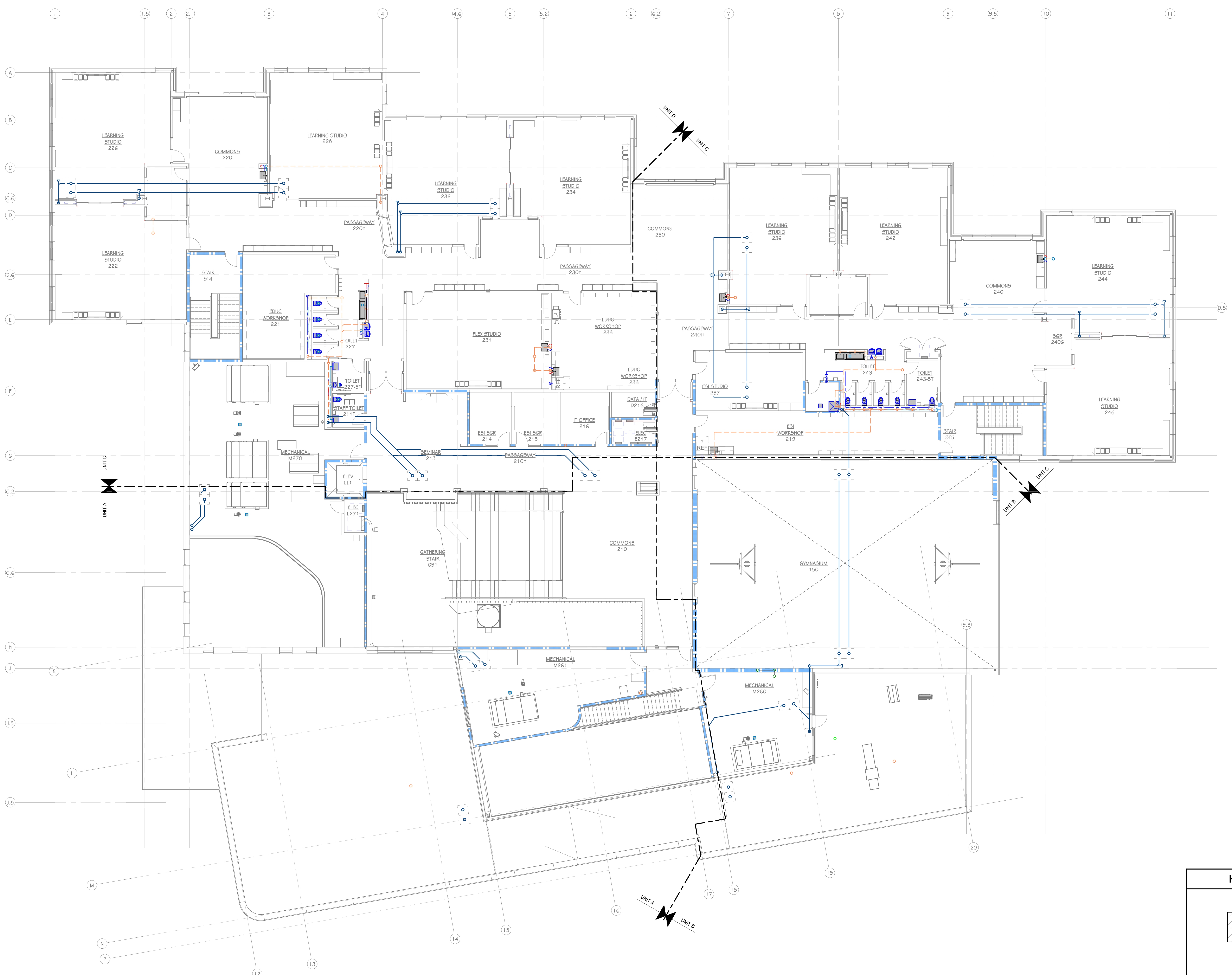
**HAVERHILL ELEMENTARY**



TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

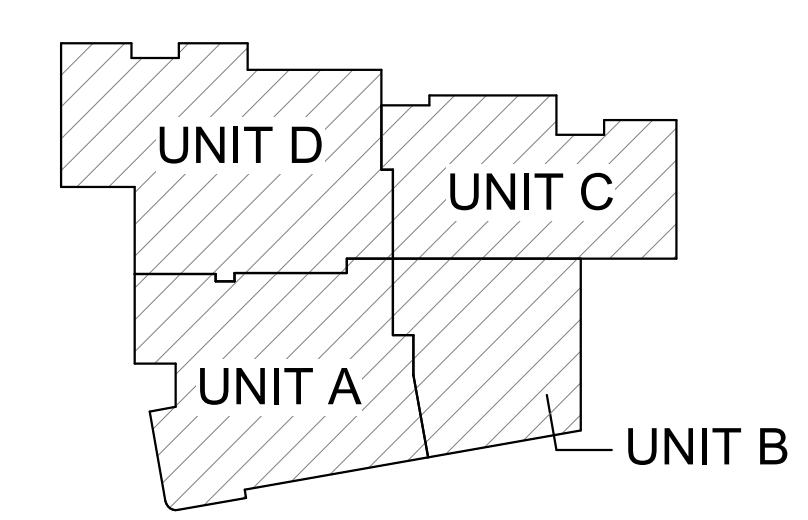
DATE  
JUNE 30, 2023  
SHEET NUMBER  
**P 101D**  
21-237-20



**SECOND FLOOR PLUMBING PLAN - OVERALL**  
 1" = 10'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
 SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
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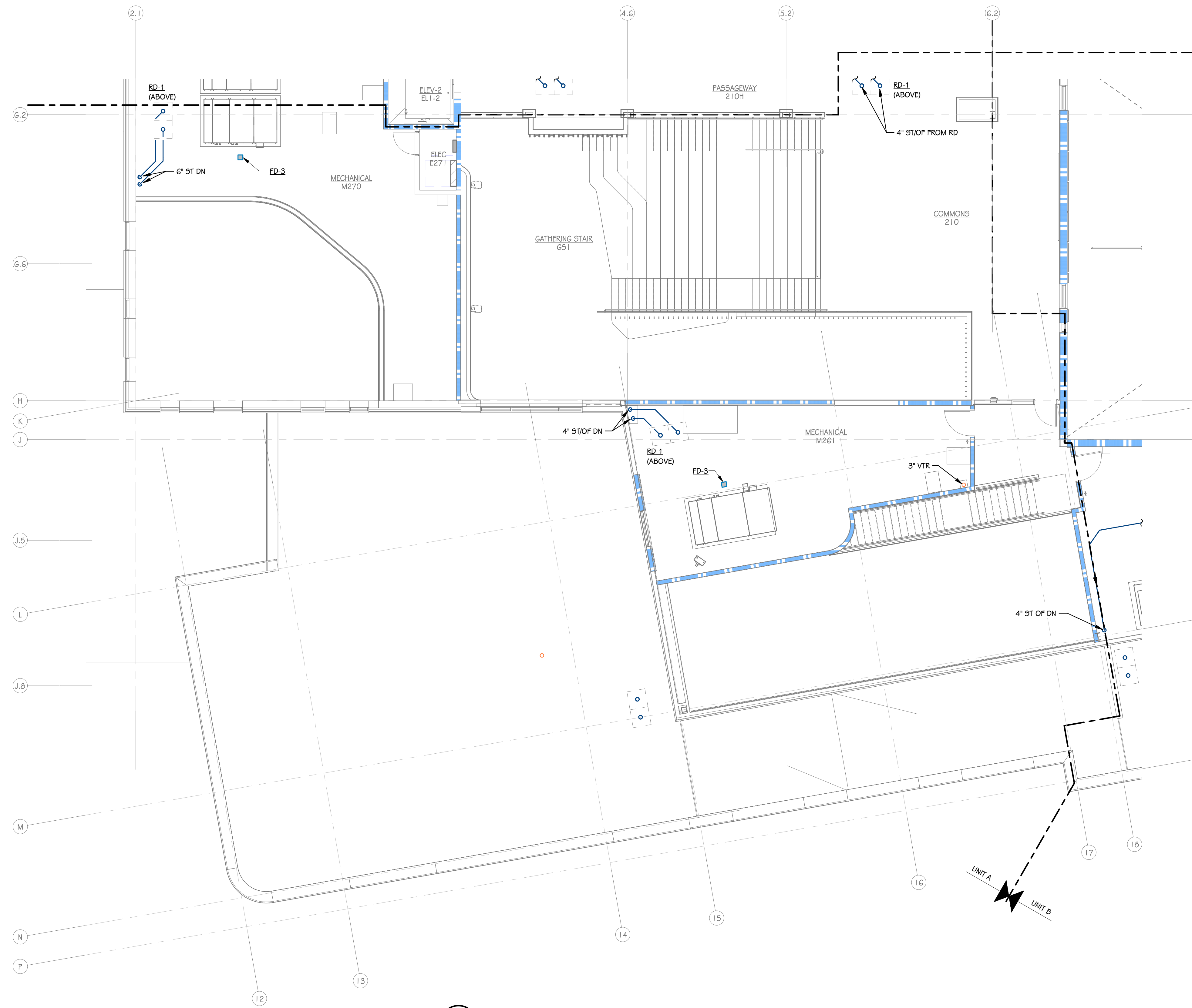
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**SECOND FLOOR PLUMBING PLAN - OVERALL**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**P 102**  
 21-237.20

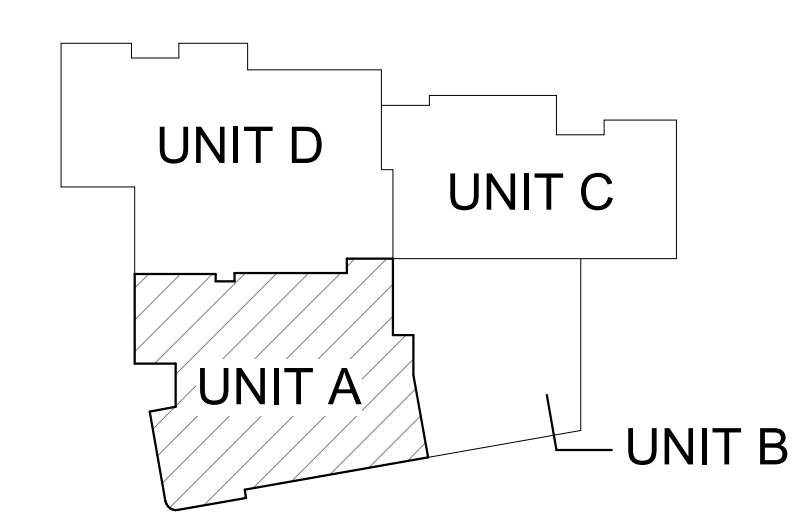


**SECOND FLOOR PLUMBING PLAN - UNIT A**  
1/8" = 1'-0"

**KEYED NOTES - PLUMBING**

- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
- 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
- 3 REFER TO CIVIL FOR CONTINUATION.
- 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
- 5 SK; MOUNTING HEIGHT AT 29" AFF TO DECK. COORDINATE WITH ALL TRADES.
- 6 WC; 1" SCW, 4" WASTE DOWN, 2" VENT UP.
- 7 SK; 1/2" HWICW, 2" WASTE DOWN, 1-1/2" VENT UP.
- 8 LAV; 1/2" HWICW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
- 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
- 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
- 11 4" SAN DN, 3" VENT UP.
- 12 2" SAN DN, 2" VENT UP. 1/2" HCW DN.
- 13 1/2" CW UP TO ICE MAKER OUTLET BOX.
- 14 ICE MAKER OUTLET BOX IN WALL.
- 15 2" SAN UP/DN. 1/2" HCW UP/DN.
- 16 2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
- 17 3" VENT UP FROM BELOW.
- 18 4" VENT UP FROM BELOW UP THRU ROOF.
- 19 1/2" CW TO ICE MAKER OUTLET BOX.
- 20 2" SAN UP. 1/2" HCW UP.
- 21 CLOTHES WASHER OUTLET BOX IN WALL.
- 22 2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
- 23 4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
- 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
- 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
- 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

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**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

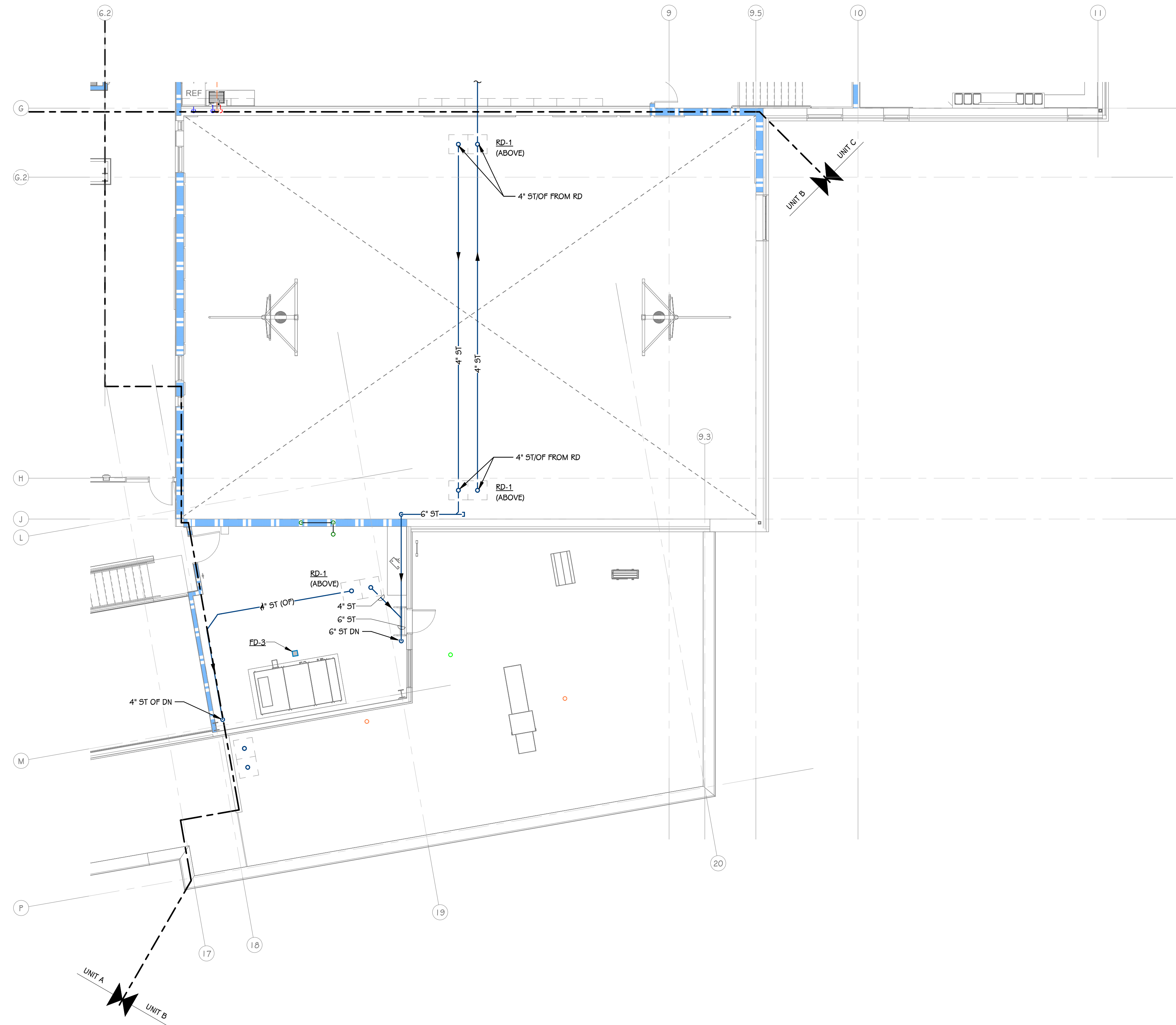
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR PLUMBING PLAN - UNIT A

DATE  
JUNE 30, 2023

SHEET NUMBER  
**P 102A**  
21-237.20



**SECOND FLOOR PLUMBING PLAN - UNIT B**  
1/8" = 1'-0"

**KEYED NOTES - PLUMBING**

- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
- 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
- 3 REFER TO CIVIL FOR CONTINUATION.
- 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
- 5 SK; MOUNTING HEIGHT AT 29" AFF TO DECK. COORDINATE WITH ALL TRADES.
- 6 WC; 1" SCW, 4" WASTE DOWN, 2" VENT UP.
- 7 SK; 1/2" HWICW, 2" WASTE DOWN, 1-1/2" VENT UP.
- 8 LAV; 1/2" HWICW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
- 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
- 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
- 11 4" SAN DN, 3" VENT UP.
- 12 2" SAN DN, 2" VENT UP. 1/2" HCW DN.
- 13 1/2" CW UP TO ICE MAKER OUTLET BOX.
- 14 ICE MAKER OUTLET BOX IN WALL.
- 15 2" SAN UP/DN. 1/2" HCW UP/DN.
- 16 2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
- 17 3" VENT UP FROM BELOW.
- 18 4" VENT UP FROM BELOW UP THRU ROOF.
- 19 1/2" CW TO ICE MAKER OUTLET BOX.
- 20 2" SAN UP. 1/2" HCW UP.
- 21 CLOTHES WASHER OUTLET BOX IN WALL.
- 22 2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
- 23 4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
- 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
- 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
- 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

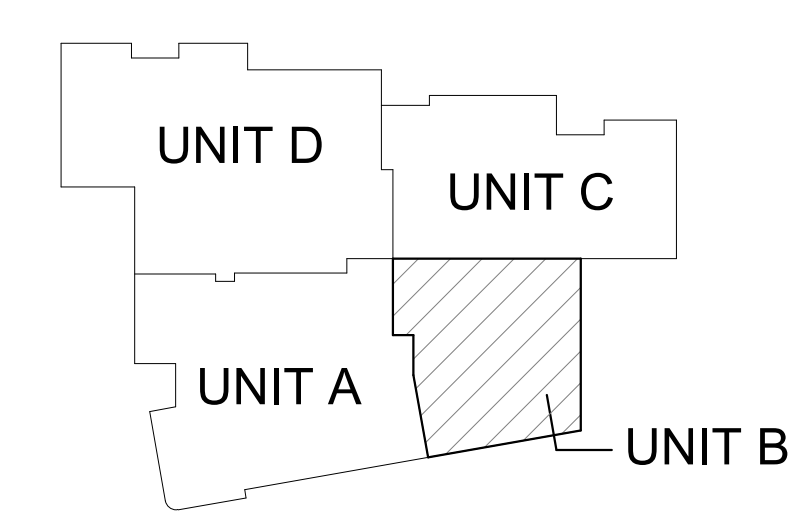
Portage, Michigan

SHEET TITLE  
SECOND FLOOR PLUMBING PLAN - UNIT B

DATE  
JUNE 30, 2023

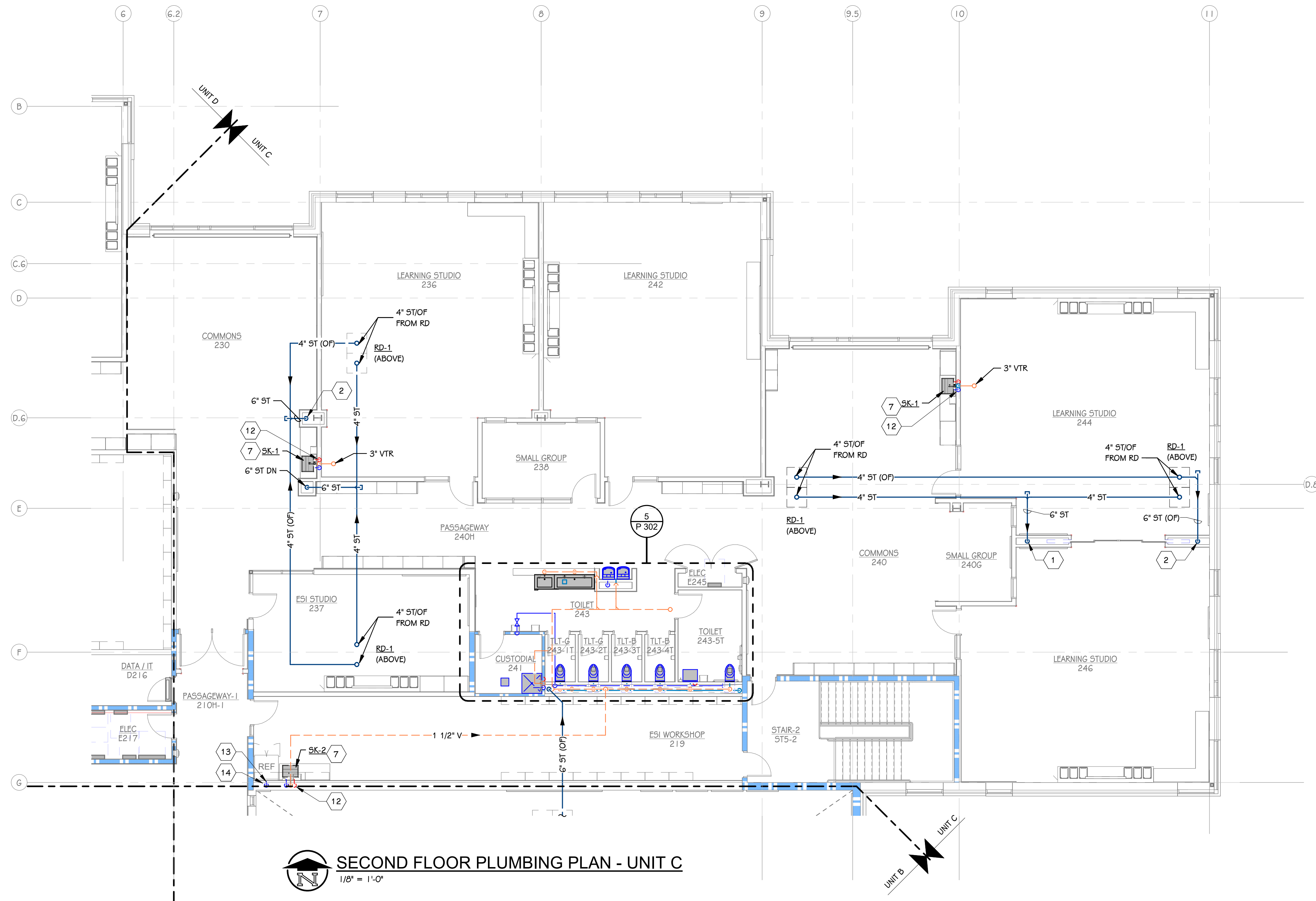
SHEET NUMBER  
P 102B  
21-237.20

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

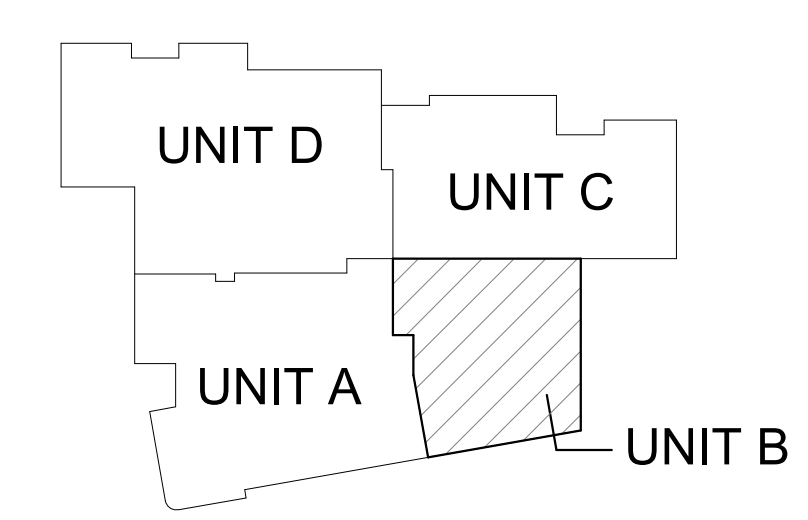
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**SECOND FLOOR PLUMBING PLAN - UNIT C**  
1/8" = 1'-0"

- KEYED NOTES - PLUMBING**
- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
  - 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
  - 3 REFER TO CIVIL FOR CONTINUATION.
  - 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
  - 5 SK; MOUNTING HEIGHT AT 29" AFF TO DECK. COORDINATE WITH ALL TRADES.
  - 6 WC; 1" SCW, 4" WASTE DOWN, 2" VENT UP.
  - 7 SK; 1/2" HW/CW, 2" WASTE DOWN, 1-1/2" VENT UP.
  - 8 LAV; 1/2" HW/CW, 1-1/2" WASTE DOWN, 1-1/4" VENT UP.
  - 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
  - 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
  - 11 4" SAN DN, 3" VENT UP.
  - 12 2" SAN DN, 2" VENT UP. 1/2" HCW DN.
  - 13 1/2" CW UP TO ICE MAKER OUTLET BOX.
  - 14 ICE MAKER OUTLET BOX IN WALL.
  - 15 2" SAN UP/DN. 1/2" HCW UP/DN.
  - 16 2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
  - 17 3" VENT UP FROM BELOW.
  - 18 4" VENT UP FROM BELOW UP THRU ROOF.
  - 19 1/2" CW TO ICE MAKER OUTLET BOX.
  - 20 2" SAN UP. 1/2" HCW UP.
  - 21 CLOTHES WASHER OUTLET BOX IN WALL.
  - 22 2" SAN DN, 1-1/2" VENT UP. 3/4" HCW DN.
  - 23 4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
  - 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
  - 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
  - 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

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**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

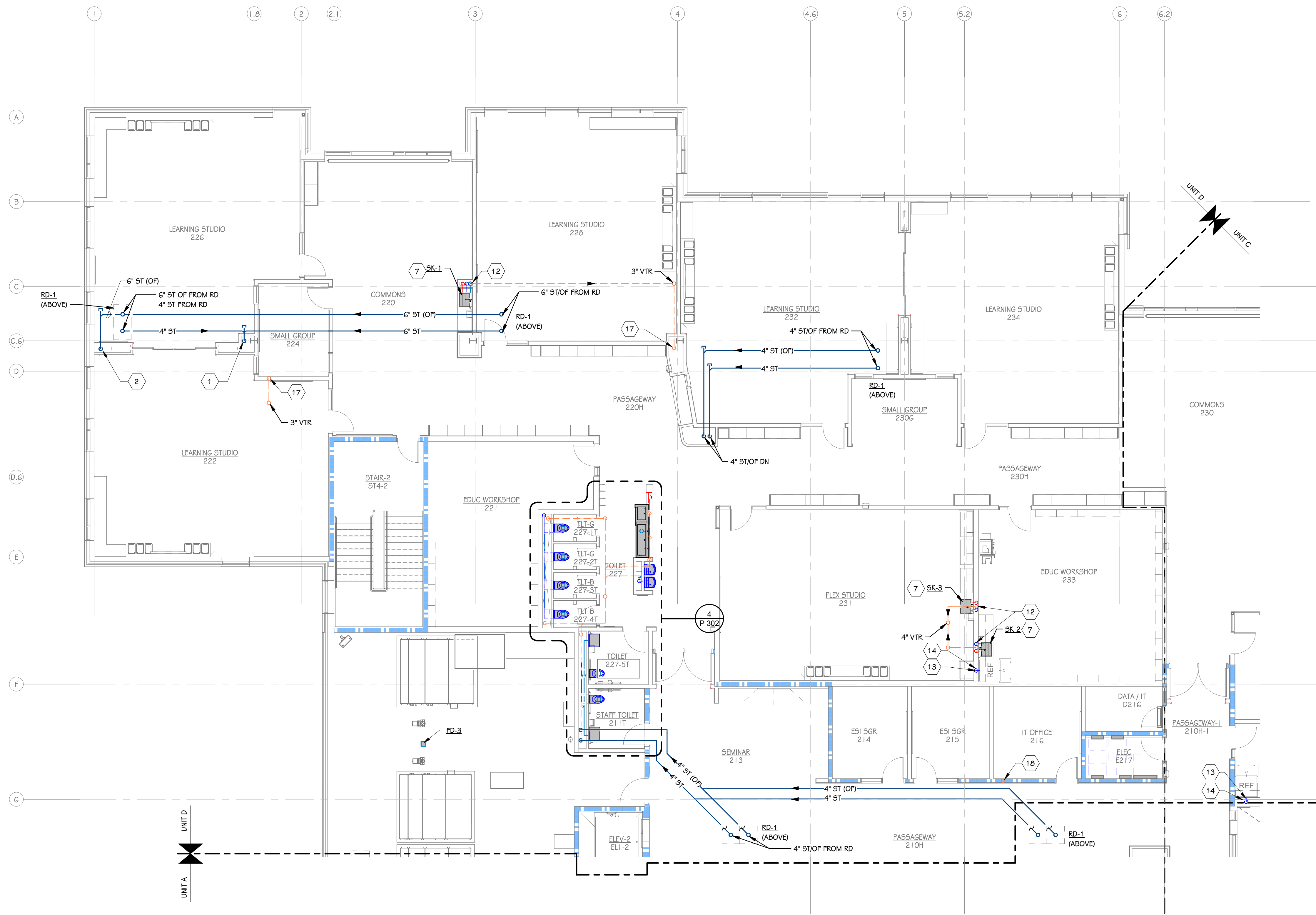
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR PLUMBING PLAN - UNIT C

DATE  
JUNE 30, 2023

SHEET NUMBER  
P 102C  
21-237-20



**SECOND FLOOR PLUMBING PLAN - UNIT D**  
1/8" = 1'-0"

**KEYED NOTES - PLUMBING**

- 1 SANITARY STORM PIPING DOWN TO BELOW SLAB. CLEANOUT AT TOP OF STACK.
- 2 SANITARY STORM OVERFLOW PIPING DOWN. CLEANOUT AT TOP OF STACK.
- 3 REFER TO CIVIL FOR CONTINUATION.
- 4 SK; MOUNTING HEIGHT AT 34" AFF TO DECK. COORDINATE WITH ALL TRADES.
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- 9 BFS; 1/2" CW, 1-1/4" WASTE DOWN, 1-1/4" VENT UP.
- 10 DROP 1-1/4" CW IN CHASE. DISTRIBUTE 1" TO EACH WC.
- 11 4" SAN DN, 3" VENT UP.
- 12 2" SAN DN, 2" VENT UP. 1/2" HCW DN.
- 13 1/2" CW UP TO ICE MAKER OUTLET BOX.
- 14 ICE MAKER OUTLET BOX IN WALL.
- 15 2" SAN UP/DN. 1/2" HCW UP/DN.
- 16 2" SAN DN, 1-1/2" VENT UP. 1/2" HCW DN.
- 17 3" VENT UP FROM BELOW.
- 18 4" VENT UP FROM BELOW UP THRU ROOF.
- 19 1/2" CW TO ICE MAKER OUTLET BOX.
- 20 2" SAN UP. 1/2" HCW UP.
- 21 CLOTHES WASHER OUTLET BOX IN WALL.
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- 23 4" FIRE PROTECTION WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.
- 25 2-1/2" GAS SERVICE UP TO GAS METER. REFER TO SHEET P 101B FOR CONTINUATION.
- 26 2" CW TO IRRIGATION PANEL. COORDINATE WITH IRRIGATION SYSTEMS CONTRACTOR.
- 27 4" DOMESTIC WATER SERVICE UP INTO MECH ROOM. REFER TO P 101B FOR CONTINUATION.

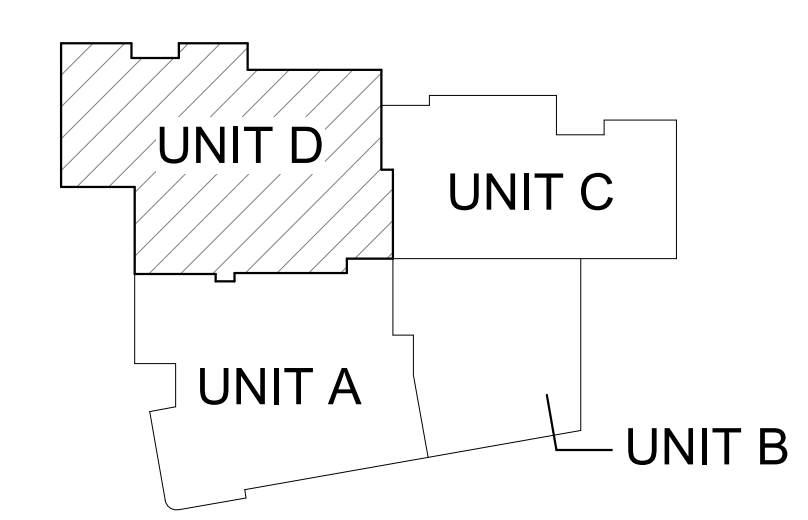
ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

SHEET TITLE  
SECOND FLOOR PLUMBING PLAN - UNIT D

DATE  
JUNE 30, 2023

SHEET NUMBER  
**P 102D**  
21-237.20

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

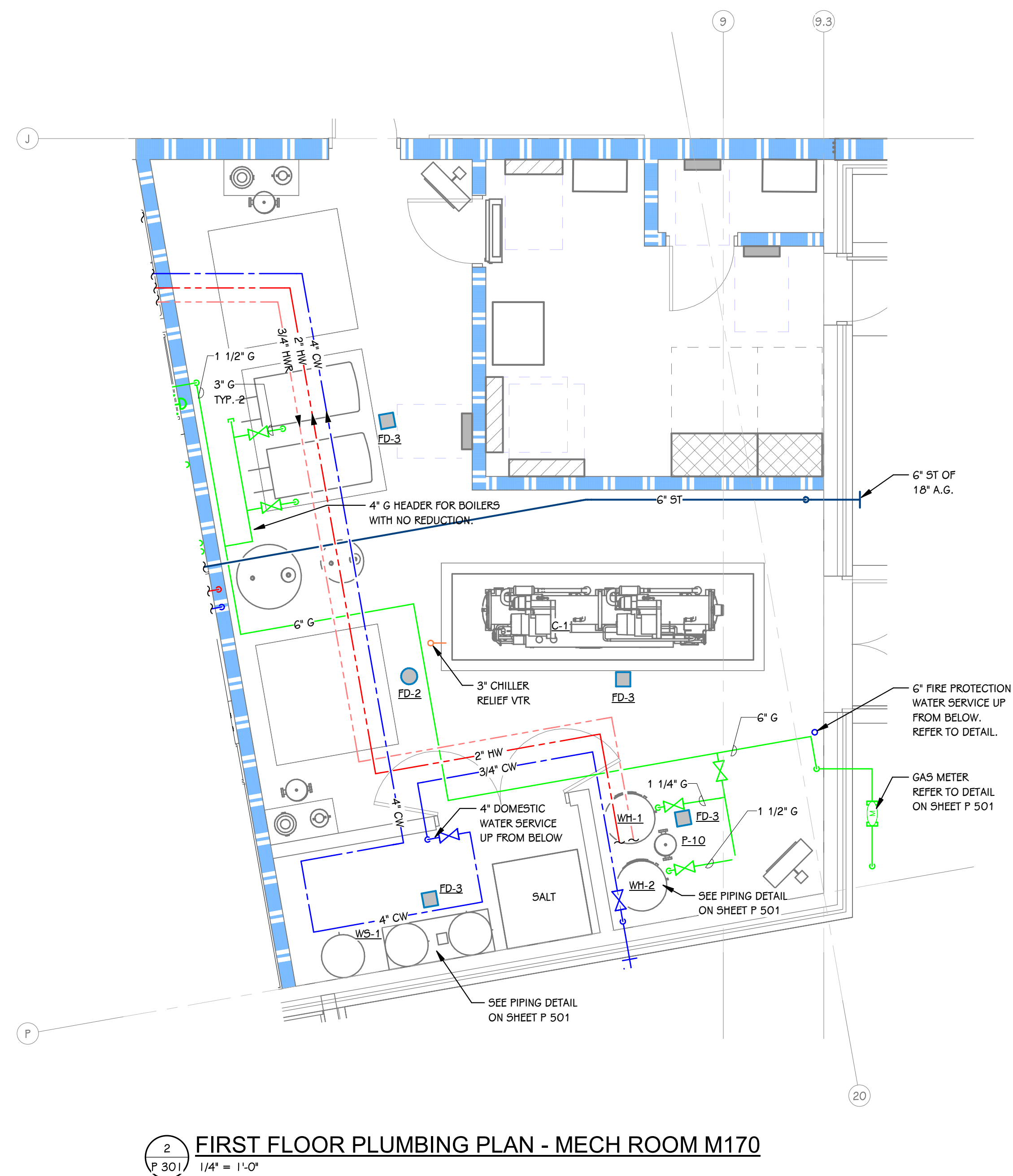
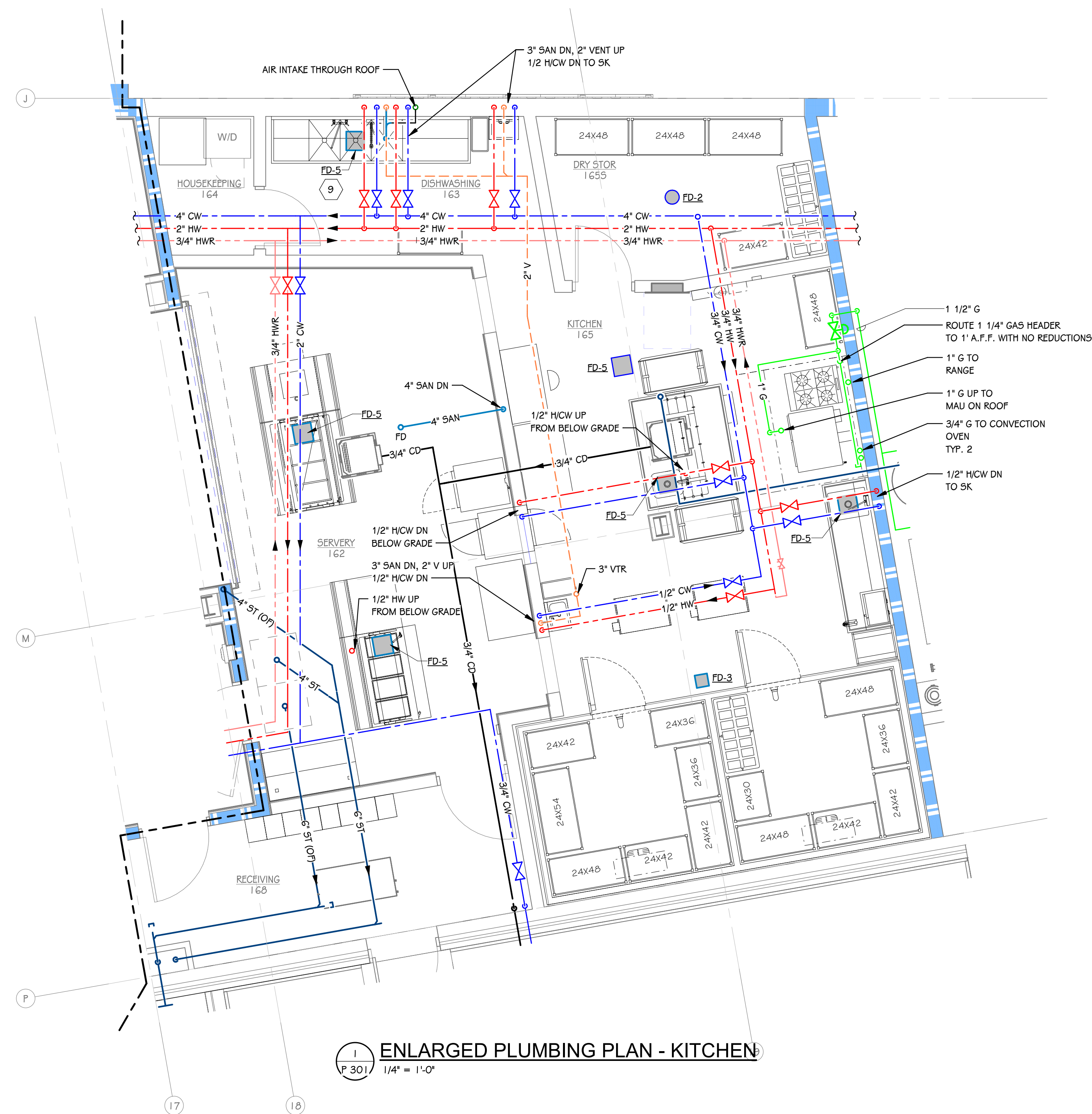
Portage, Michigan

SHEET TITLE  
ENLARGED PLUMBING PLANS

DATE  
JUNE 30, 2023

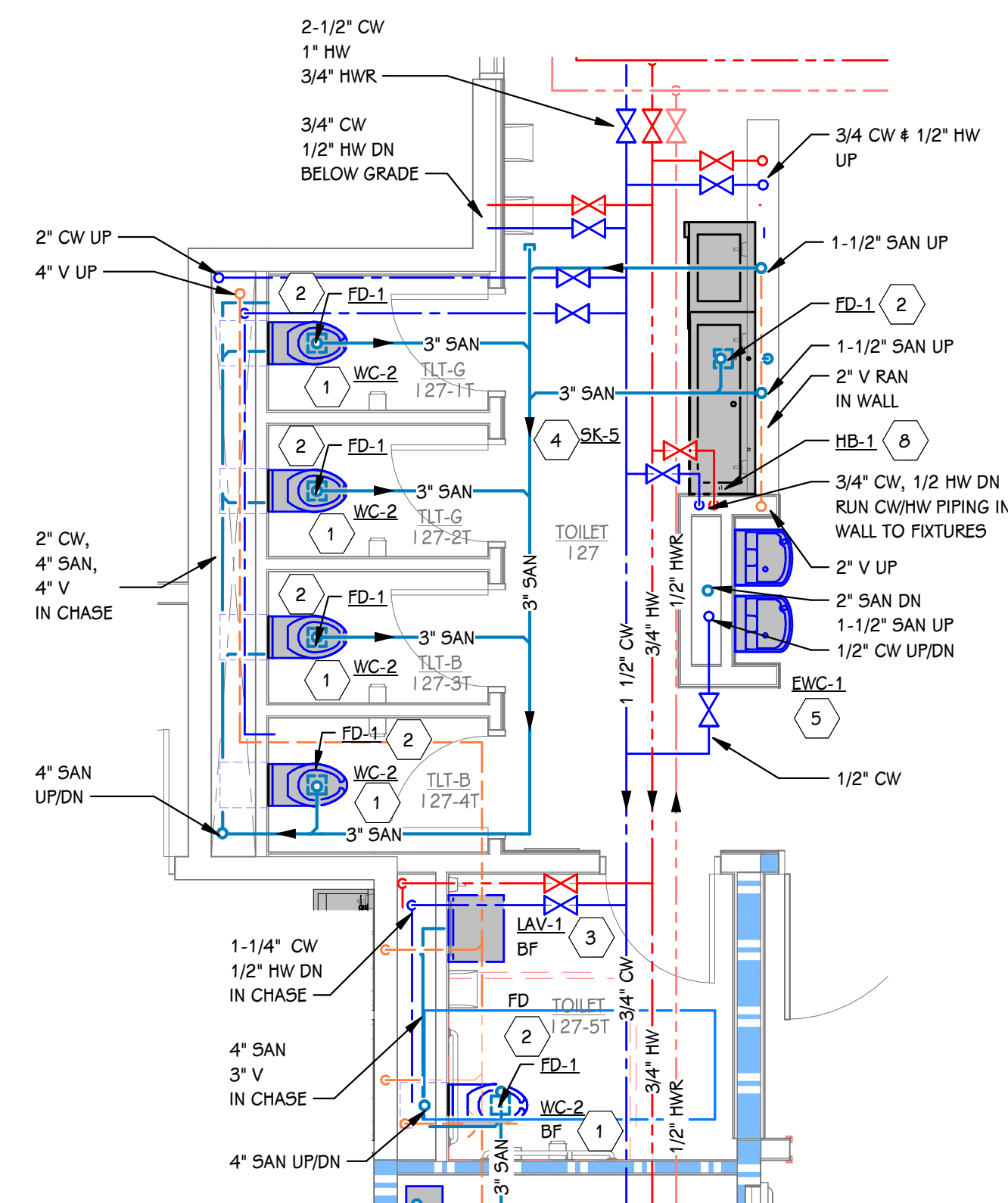
SHEET NUMBER  
**P 301**  
21-237.20

- KEYED NOTES - PLUMBING - ENLARGED**
- 1 WC; 1" CW, 4" WASTE, 2" VENT.
  - 2 3" SAN UP TO FD.
  - 3 LAV; 1/2" HW/CW, 1-1/2" WASTE, 1-1/4" VENT.
  - 4 SK; 1/2" HW/CW, 2" WASTE DOWN, 1-1/2" VENT.
  - 5 EWG; 1/2" CW, 1-1/4" WASTE, 1-1/4" VENT.
  - 6 MB; 3/4" HW/CW, 3" SAN, 1-1/2" V.
  - 7 UR; 1" CW, 2" SAN, 1-1/2" V.
  - 8 3/4" CW TO HB.
  - 9 4" SAN TO FD WITH SAFE-WASTE AIR GAP BETWEEN DRAIN AND SANITIZING/RINSE COMPARTMENTS.

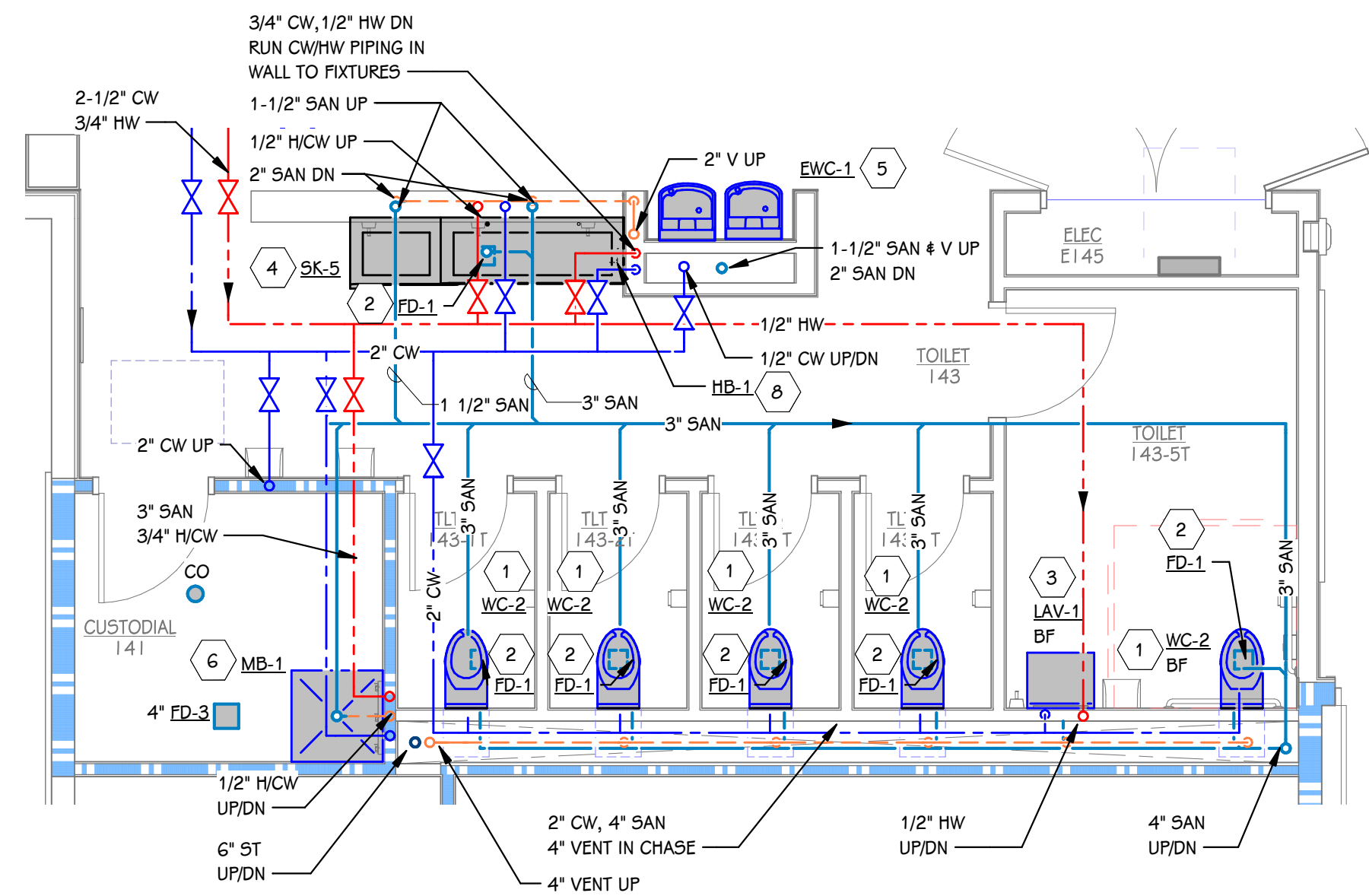


**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

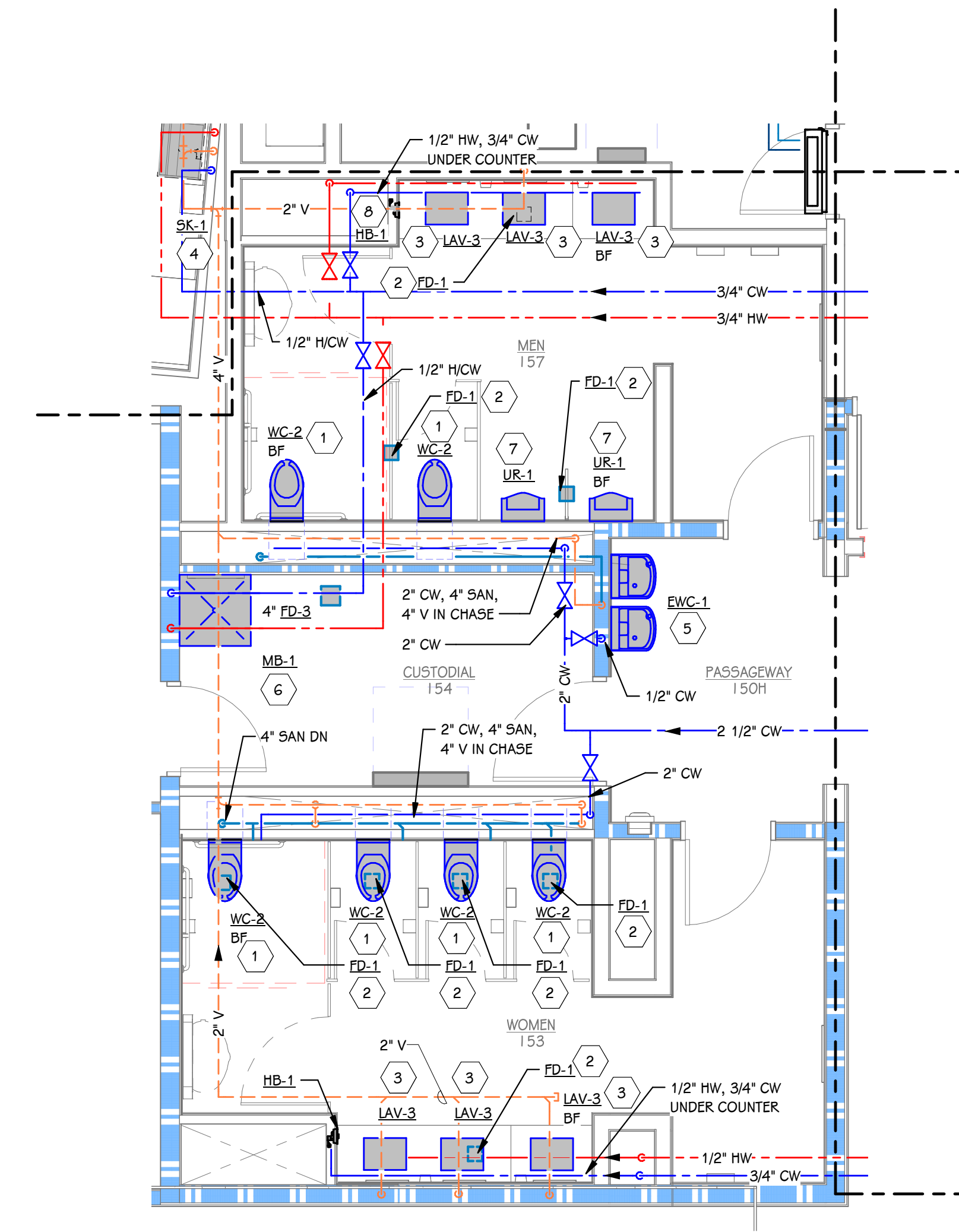




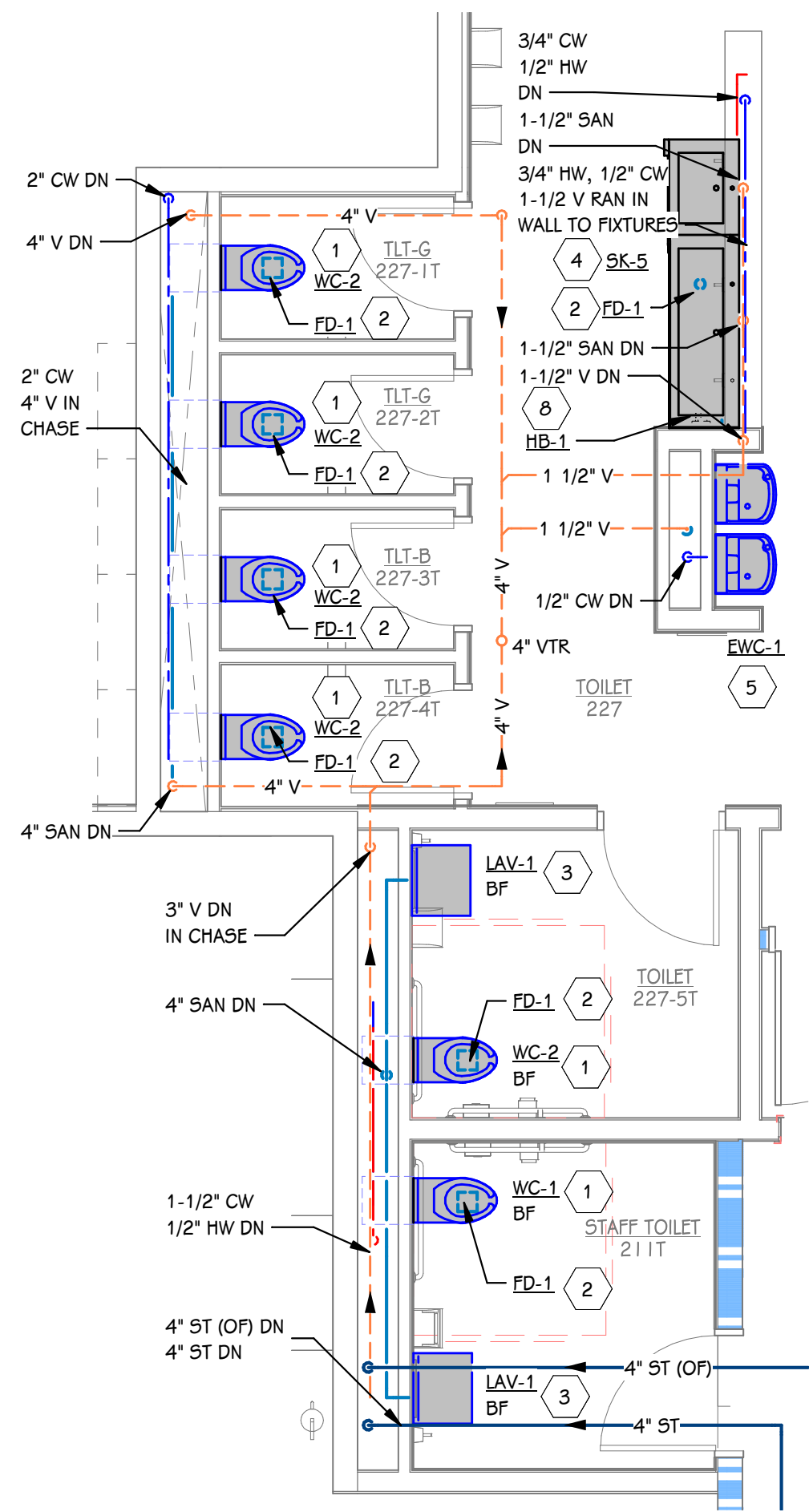
1 ENLARGED PLUMBING PLAN - TOILET ROOM 127  
P. 302/ 1/4" = 1'-0"



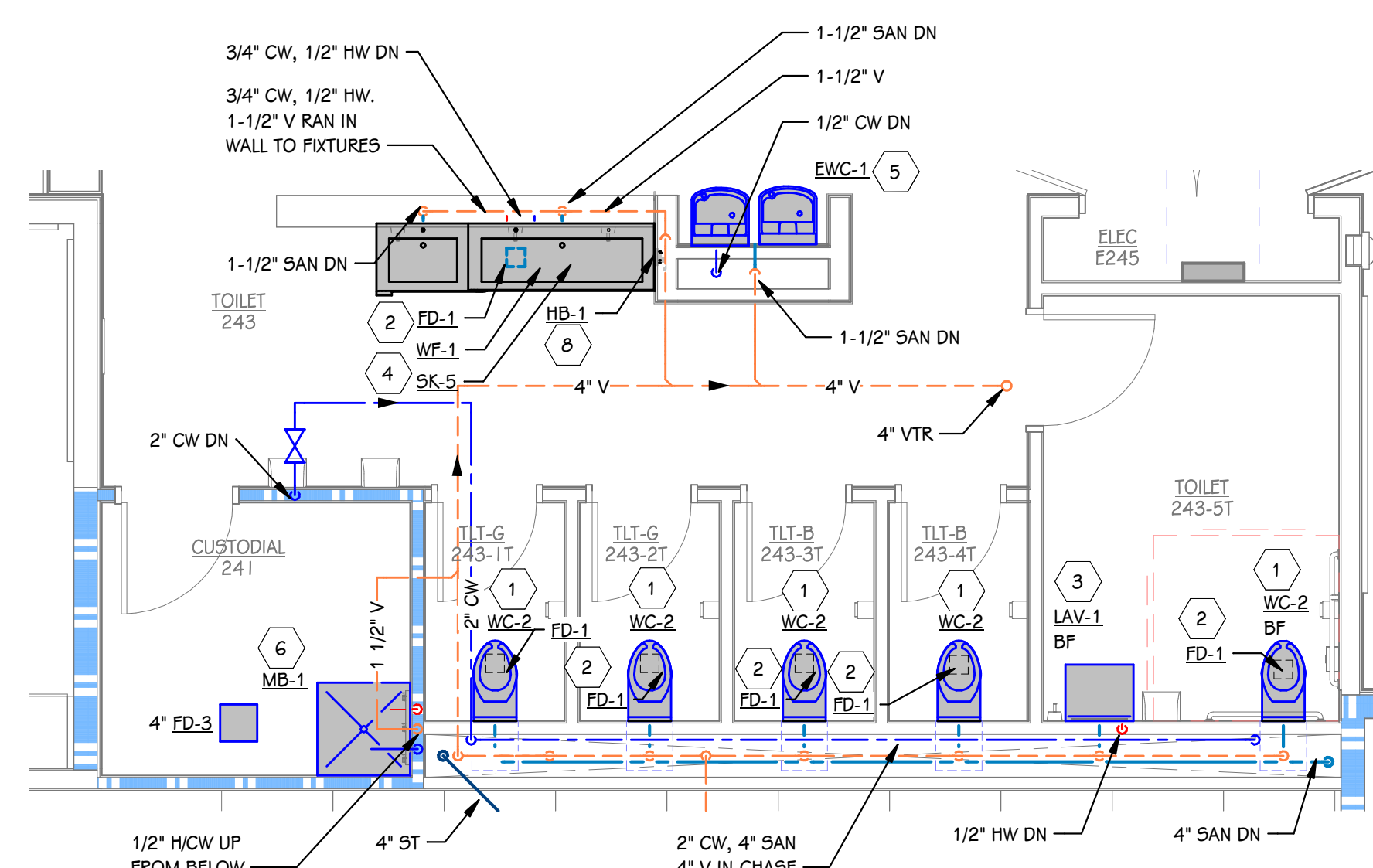
2 ENLARGED PLUMBING PLAN - TOILET ROOM 143  
P. 302/ 1/4" = 1'-0"



3 ENLARGED PLUMBING PLAN - TOILET ROOM 163  
P. 302/ 1/4" = 1'-0"



4 ENLARGED PLUMBING PLAN - TOILET ROOM 227  
P. 302/ 1/4" = 1'-0"

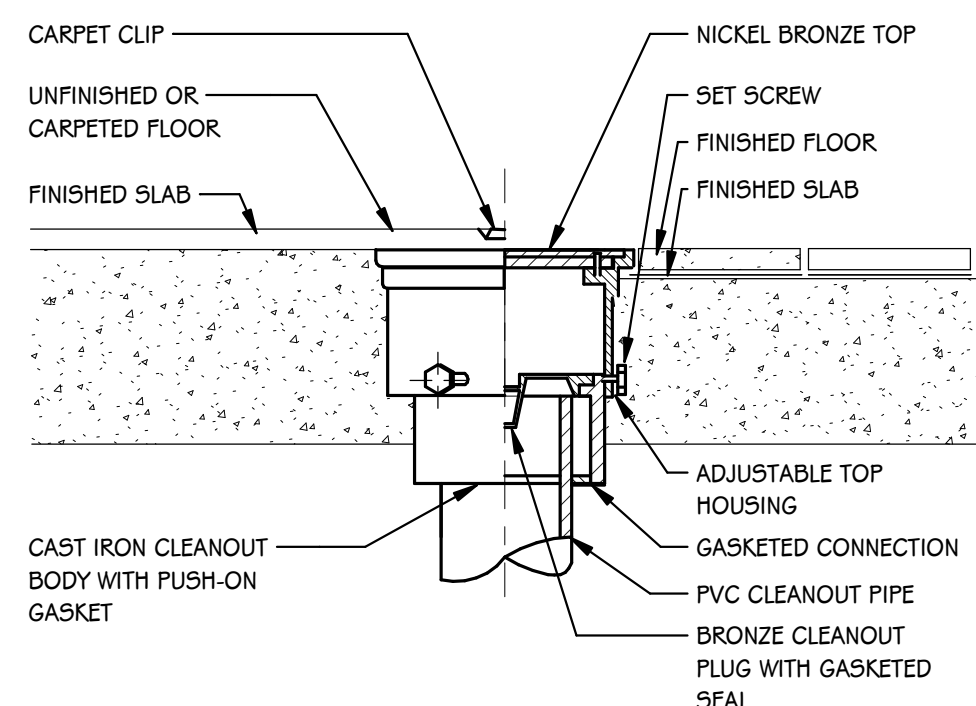


5 ENLARGED PLUMBING PLAN - TOILET ROOM 243  
P. 302/ 1/4" = 1'-0"

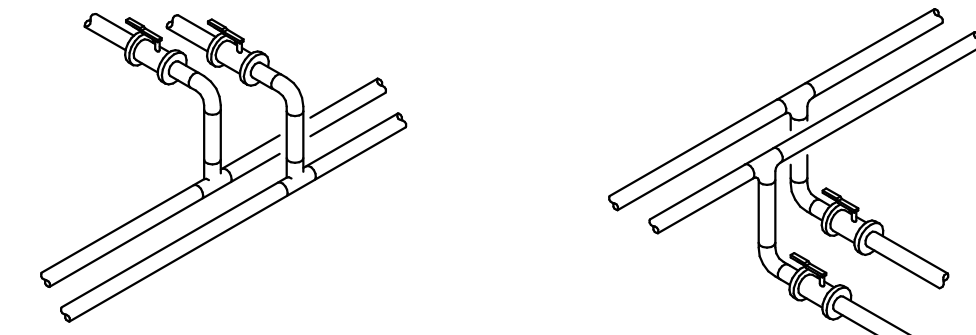
KEYED NOTES - PLUMBING - ENLARGED

- 1 WC; 1" CW, 4" WASTE, 2" VENT.
- 2 3" SAN UP TO FD.
- 3 LAV; 1/2" HW/CW, 1-1/2" WASTE, 1-1/4" VENT.
- 4 SK; 1/2" HW/CW, 2" WASTE DOWN, 1-1/2" VENT.
- 5 EWC; 1/2" CW, 1-1/4" WASTE, 1-1/2" VENT.
- 6 MB; 3/4" HW/CW, 3" SAN, 1-1/2" V.
- 7 UR; 1" CW, 2" SAN, 1-1/2" V.
- 8 3/4" CW TO HB.
- 9 4" SAN TO FD WITH SAFE-WASTE AIR GAP BETWEEN DRAIN AND SANITIZING/RINSE COMPARTMENTS.

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**FLOOR CLEANOUT DETAIL**  
SCALE: NONE

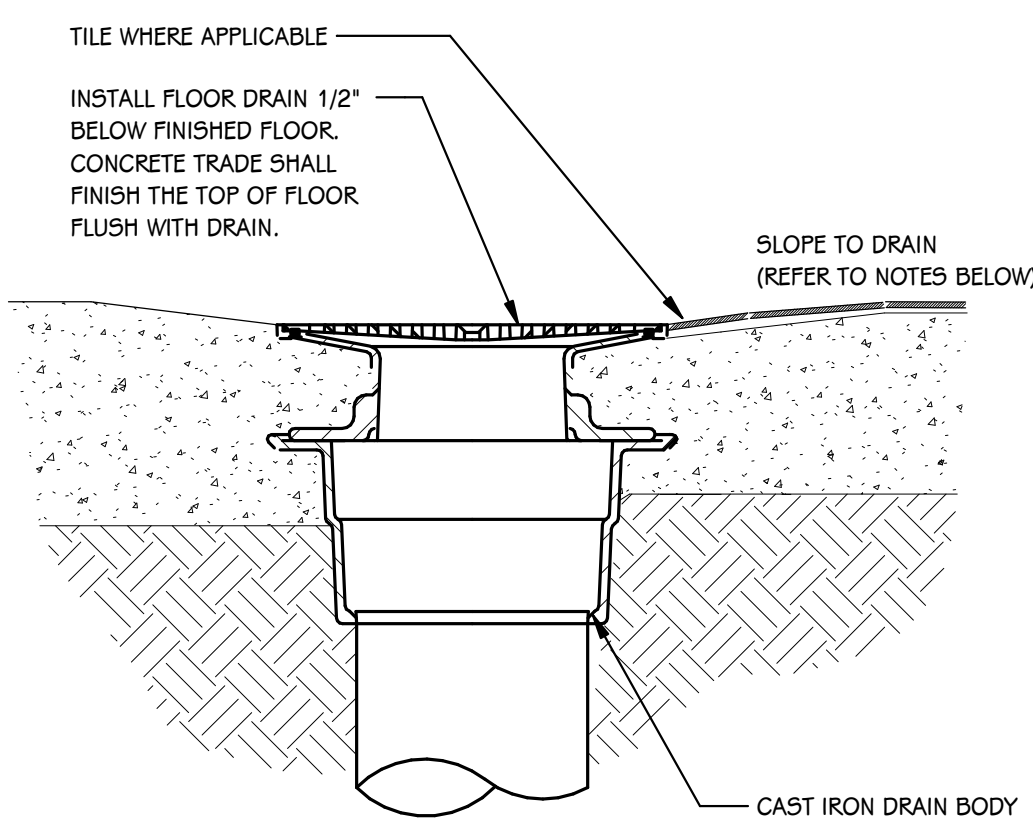


**BRANCH CONNECTION OFF TOP**  
APPLIES TO THE FOLLOWING SYSTEMS:  
DOMESTIC WATER  
NATURAL GAS  
COMPRESSED AIR  
MEDICAL GASES  
VACUUM  
STEAM / CONDENSATE

**BRANCH CONNECTION OFF BOTTOM**  
APPLIES TO THE FOLLOWING SYSTEMS:  
HEATING HOT WATER  
CHILLED WATER  
GEOTHERMAL

NOTE: BOTTOM AS INDICATED OR SIDE CONNECTION IS ACCEPTABLE. CONNECTION TO THE TOP OF THE MAINS IS ONLY ACCEPTABLE WITH AIR VENT ON TOP.

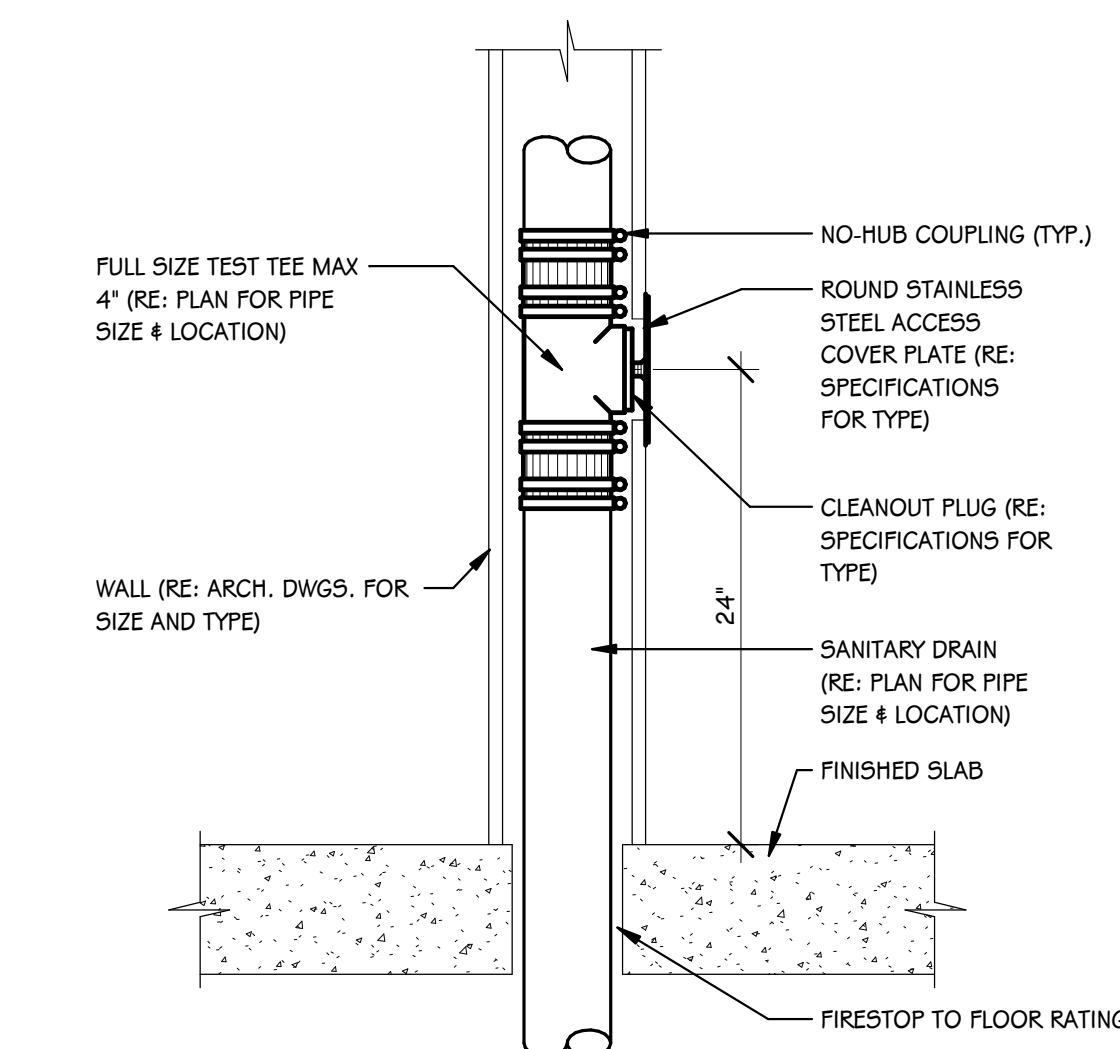
**BRANCH TAKE-OFF PIPING DETAIL**  
SCALE: NONE



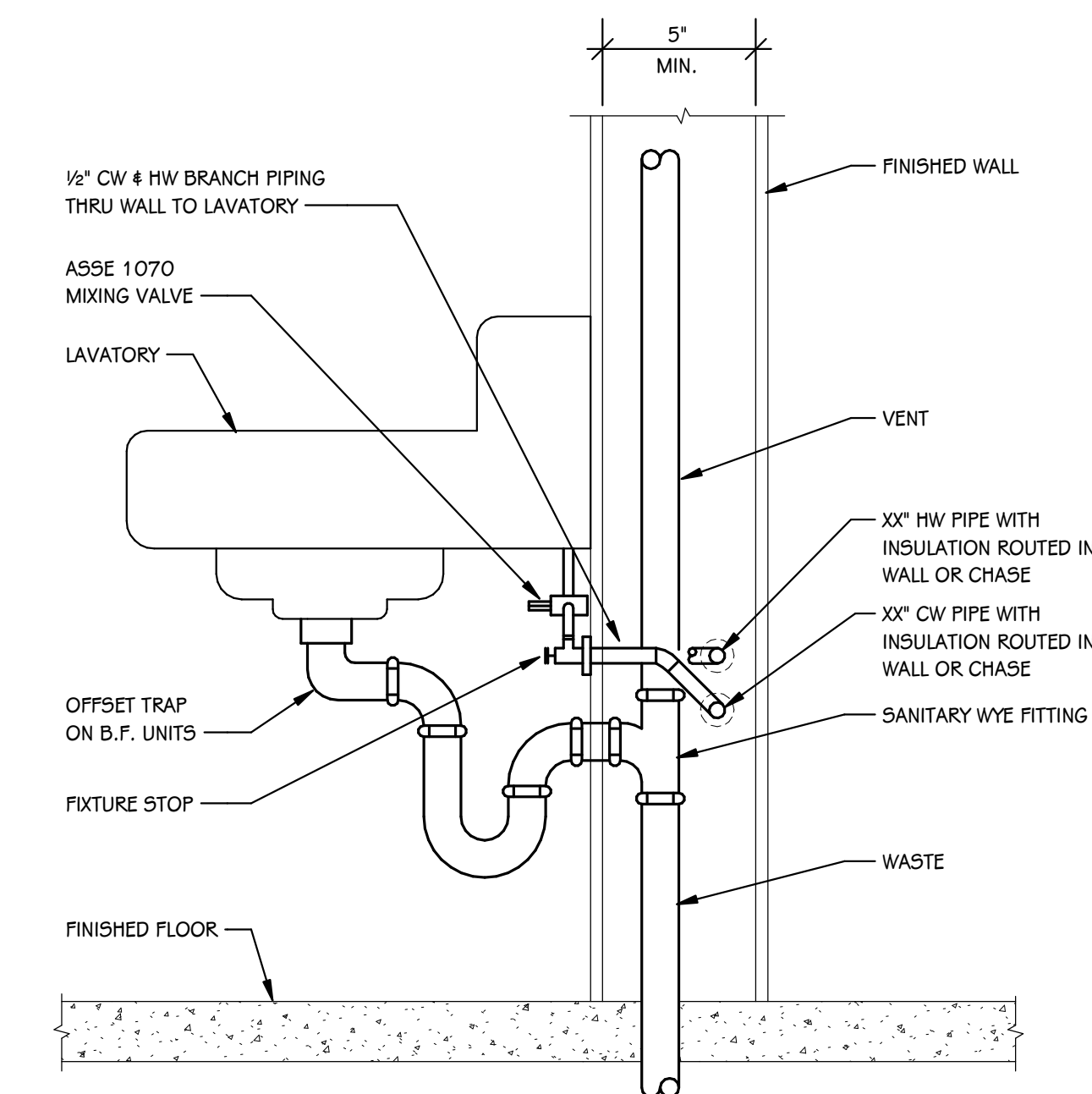
**NOTES**

- FOR FLOOR DRAINS WITH SQUARE TOPS.
  - WHERE TILE HAS A DIMENSION LARGER THAN 2", MOUNT THE FLOOR DRAIN FLUSH WITH THE FINISHED FLOOR. DO NOT SLOPE THE FLOOR TO THE DRAIN.
  - ALIGN FLOOR DRAIN TOPS WITH TILE FLOORS.
- WHERE EDGE OF FLOOR DRAIN IS WITHIN 24" OF WALL, ADJUST SLOPE TO SUIT INSTALLATION.

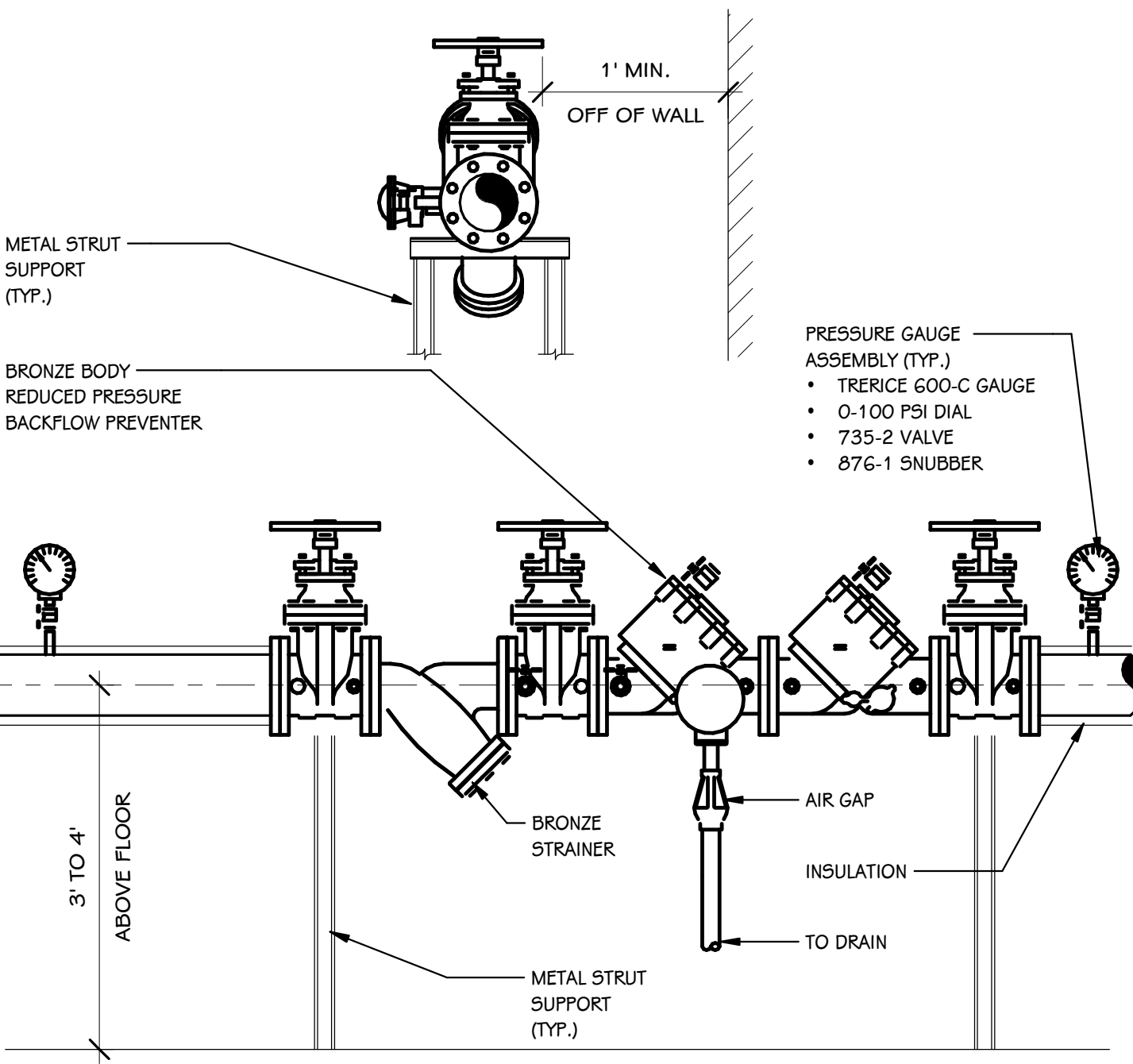
**FINISH FLOOR DRAIN DETAIL**  
SCALE: NONE



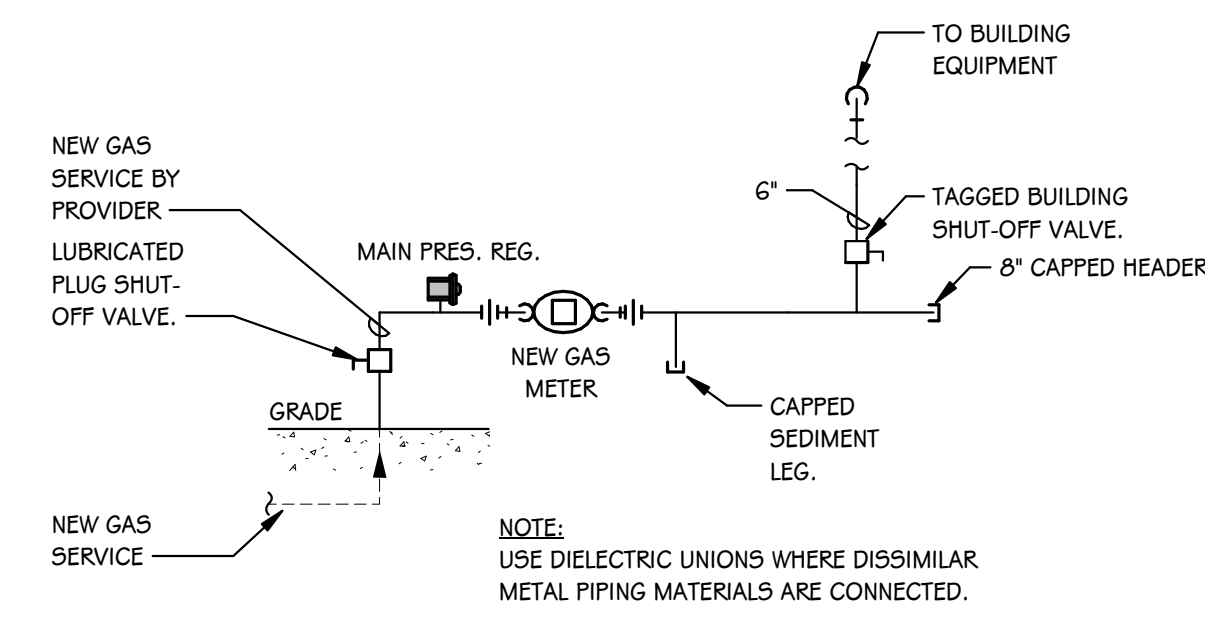
**WALL CLEANOUT DETAIL**  
SCALE: NONE



**TYPICAL LAVATORY DETAIL**  
SCALE: NONE

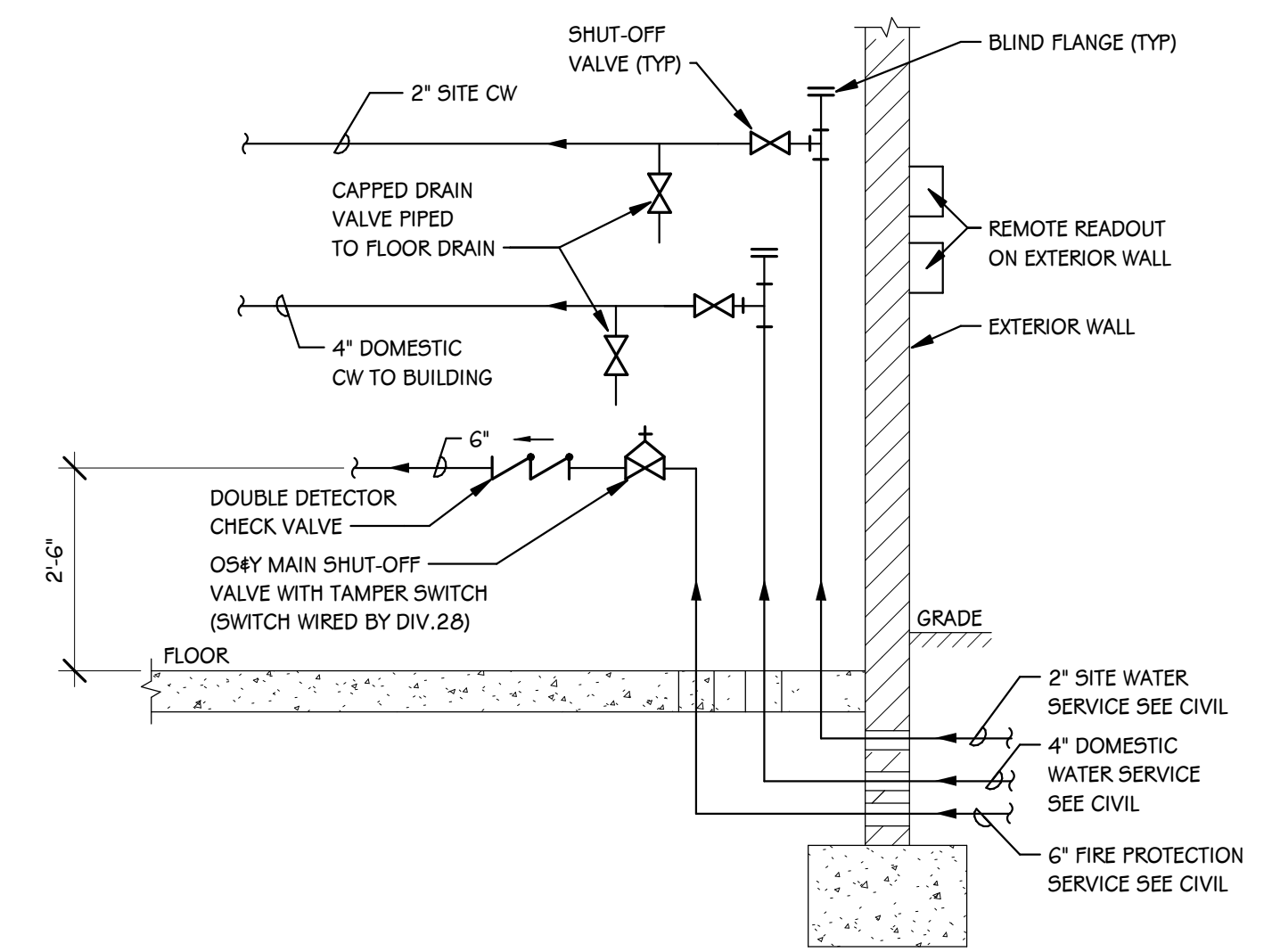


**BACKFLOW PREVENTER (2 1/2" TO 10") DETAIL**  
SCALE: NONE

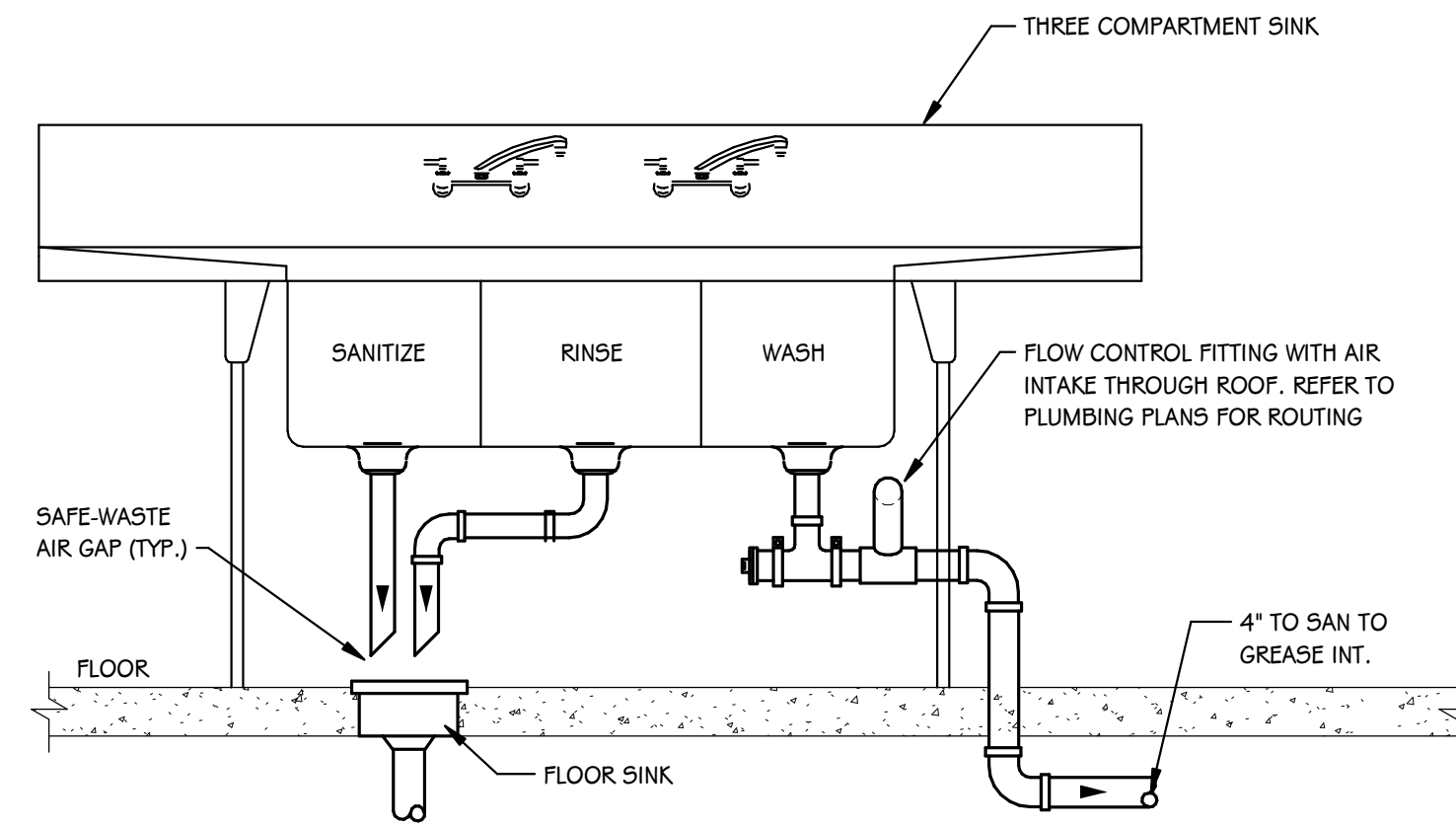


SERVICE	CAPACITY (C.F.H.)	PRESS. RANGE (IN. WC)
B-1	2,500	7 - 14
B-2	2,500	7 - 14
WH-2	232	7 - 14
WH-1	232	7 - 14
MAKEUP AIR UNIT	119	7 - 14
RANGE	177	7 - 14
CONNECTION OVEN	90	7 - 14
<b>BUILDING TOTAL:</b>	<b>6,850</b>	

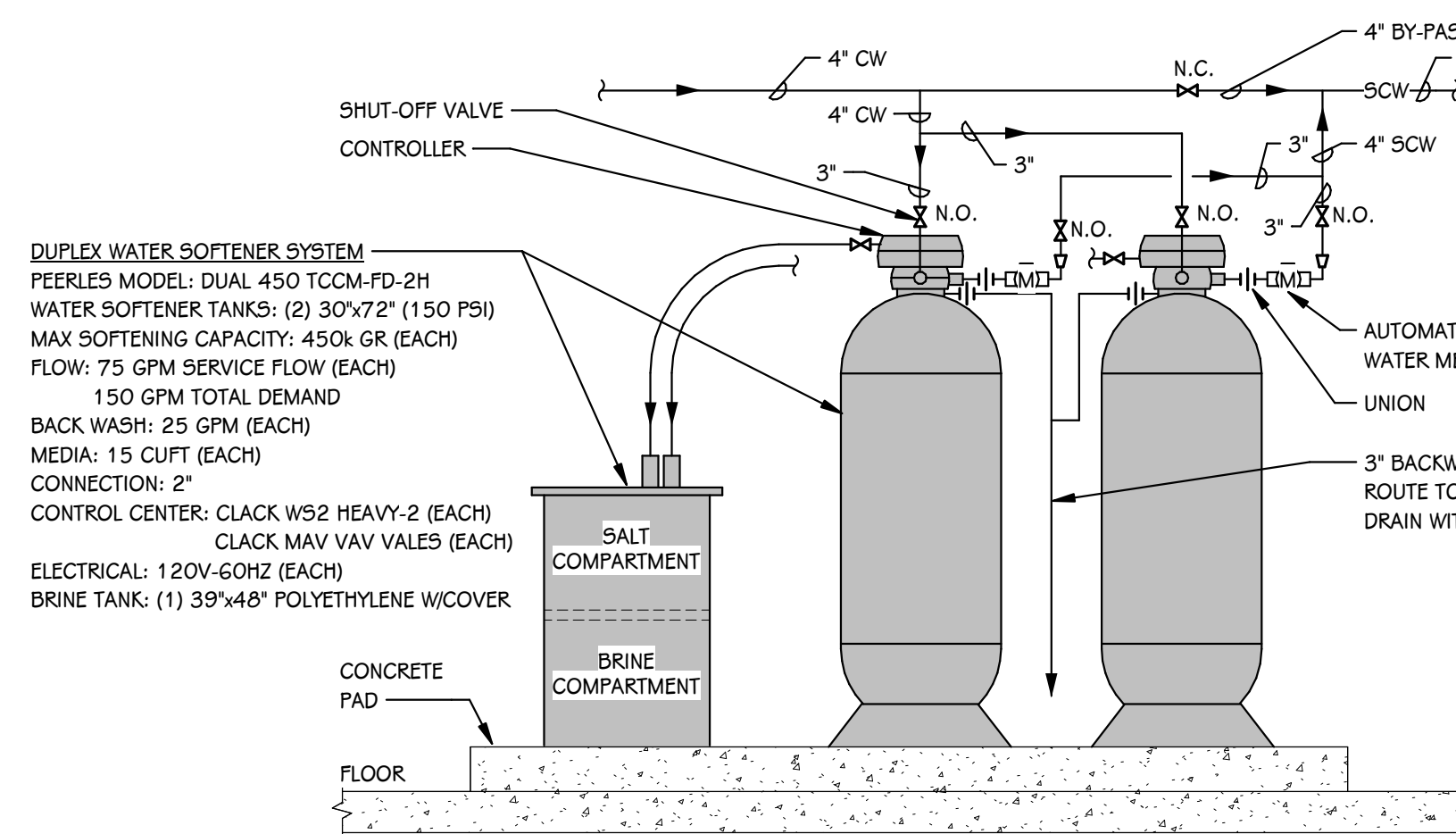
**GAS SERVICE PIPING DETAIL**  
SCALE: NONE



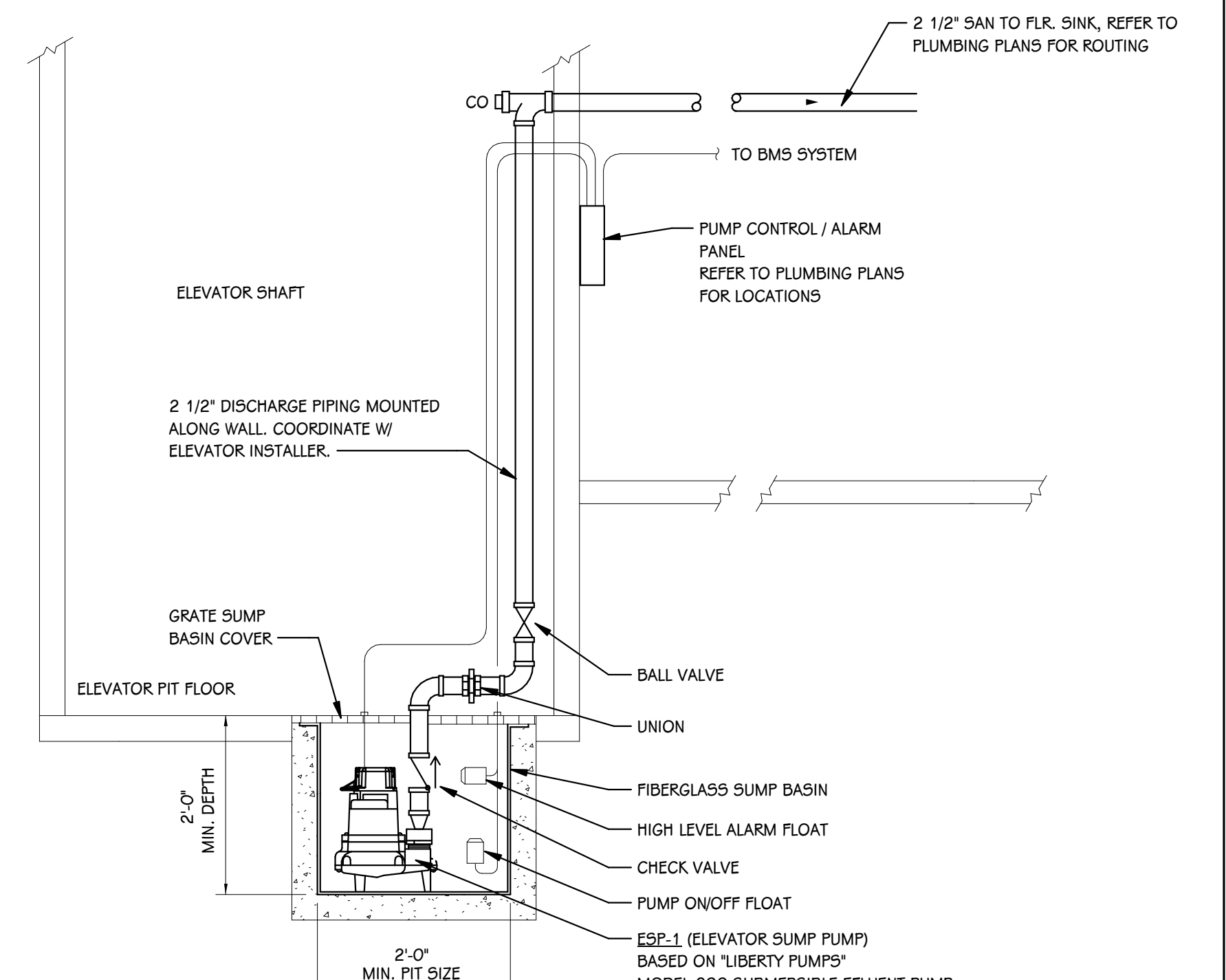
**WATER SERVICE DETAIL - INSIDE BUILDING**  
SCALE: NONE



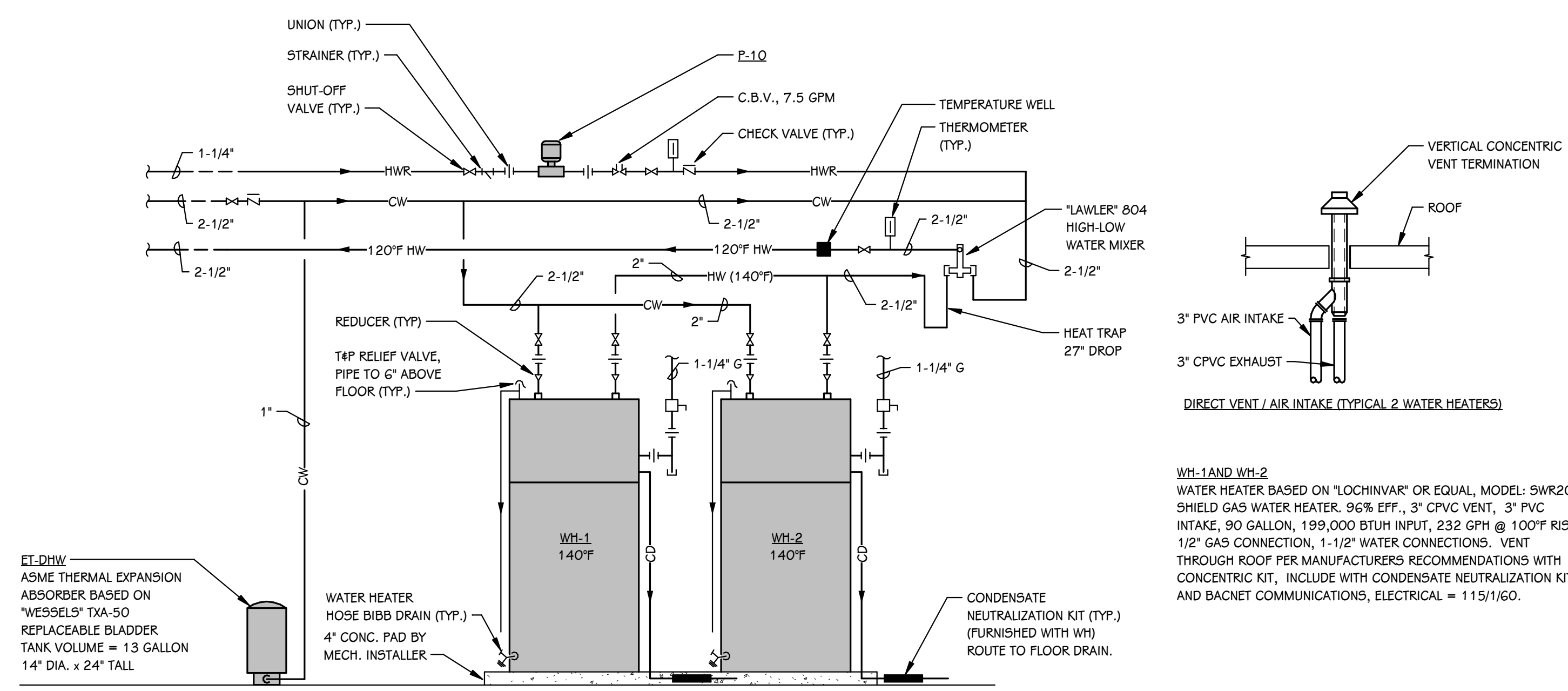
**THREE COMPARTMENT SINK WASTE PIPING**  
SCALE: NONE



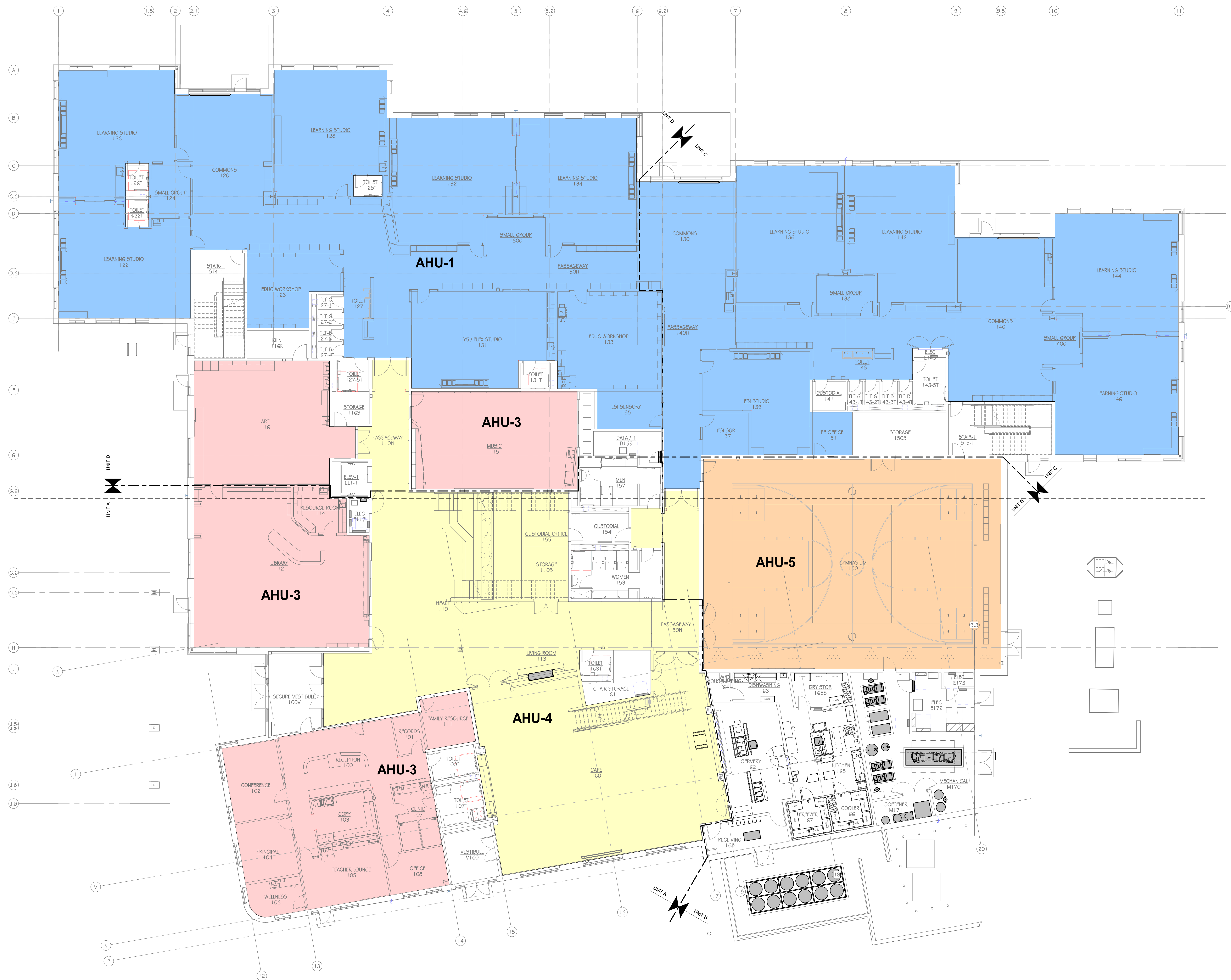
**DUPLEX WATER SOFTENER DETAIL (WS-1)**  
SCALE: NONE



**ELEVATOR SUMP PUMP DETAIL (ESP-1)**  
SCALE: NONE



**WATER HEATER DETAIL (2 WATER HEATERS) - DOMESTIC**  
SCALE: NONE



**FIRST FLOOR AHU ZONE PLAN**  
 1" = 10'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

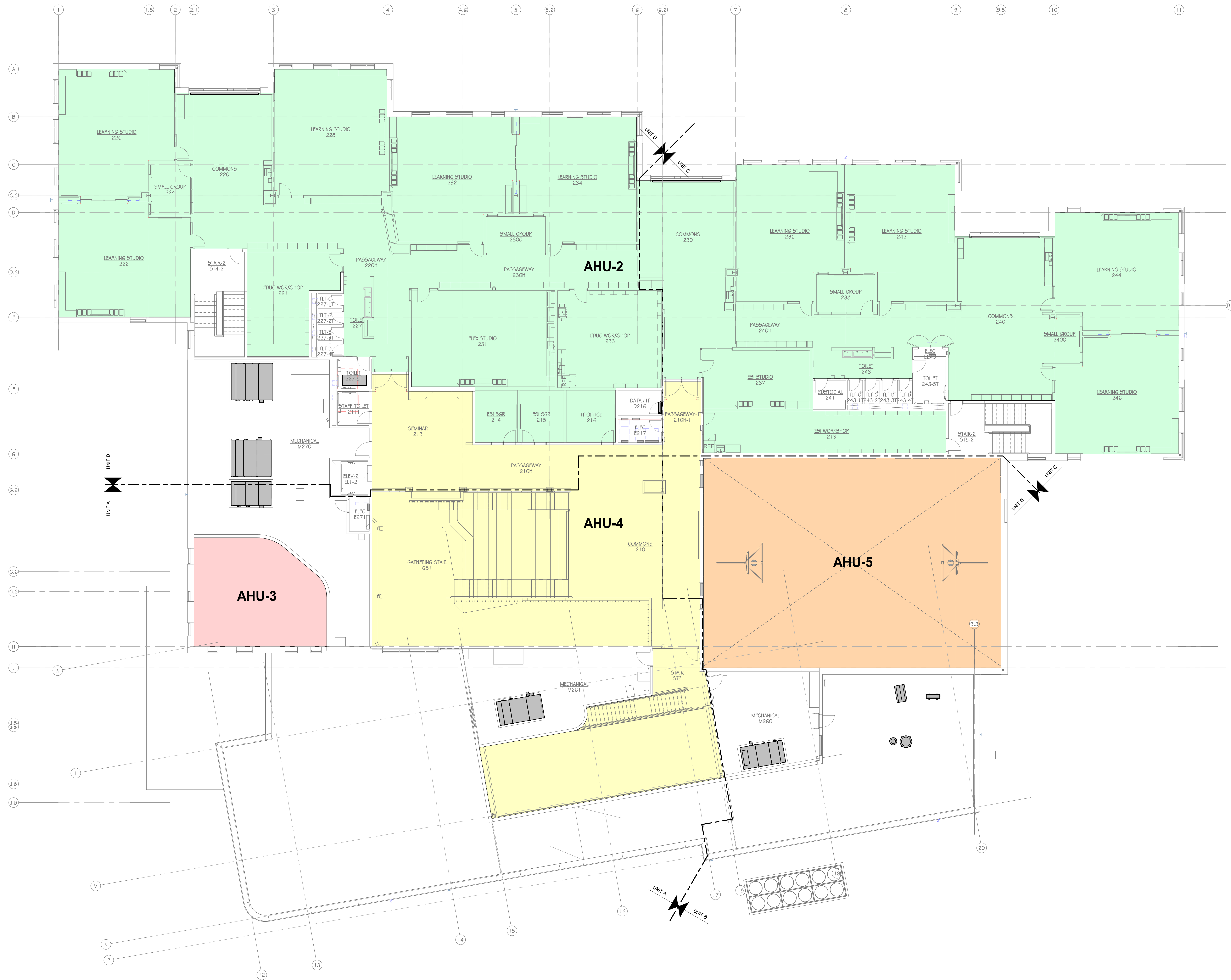
SHEET TITLE  
 FIRST FLOOR AHU ZONE PLAN

Portage, Michigan

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**MZ 101**  
 21-237.20

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



**SECOND FLOOR AHU ZONE PLAN**  
 1" = 10'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

OWNER  
 PORTAGE PUBLIC SCHOOLS

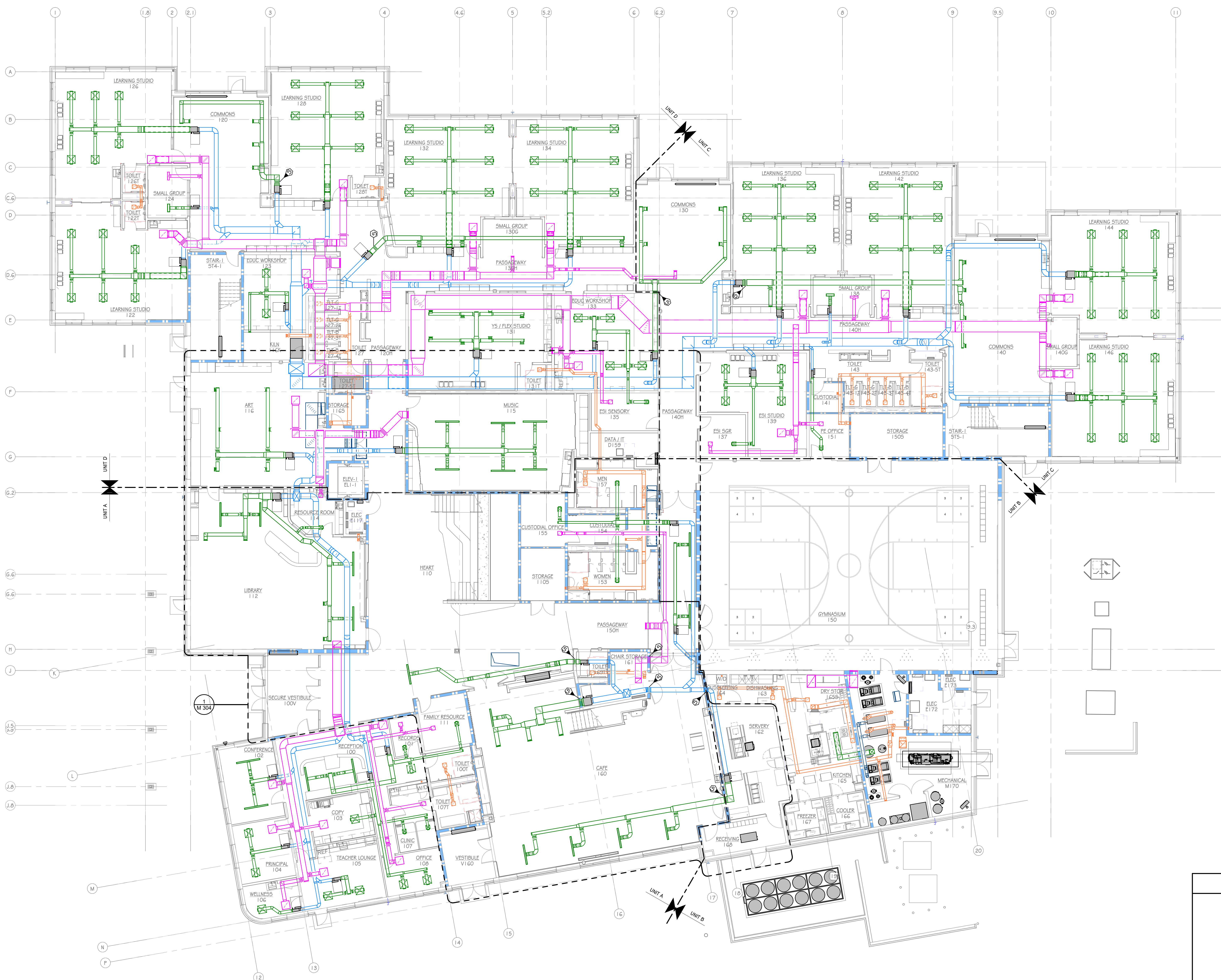
SHEET TITLE  
 SECOND FLOOR AHU ZONE PLAN

Portage, Michigan

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**MZ 102**  
 21-237.20

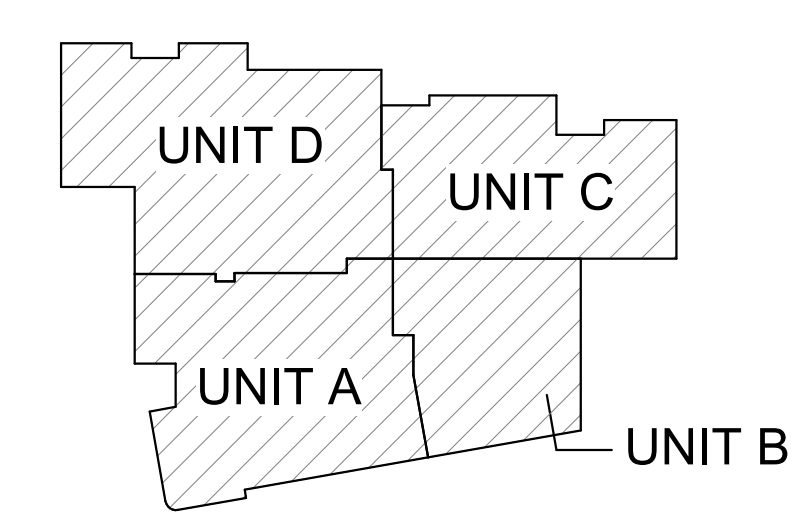
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**FIRST FLOOR SHEET METAL PLAN - OVERALL**  
 1" = 10'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
 SCALE: NO SCALE  
 TRUE NORTH

ISSUED FOR DATE

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

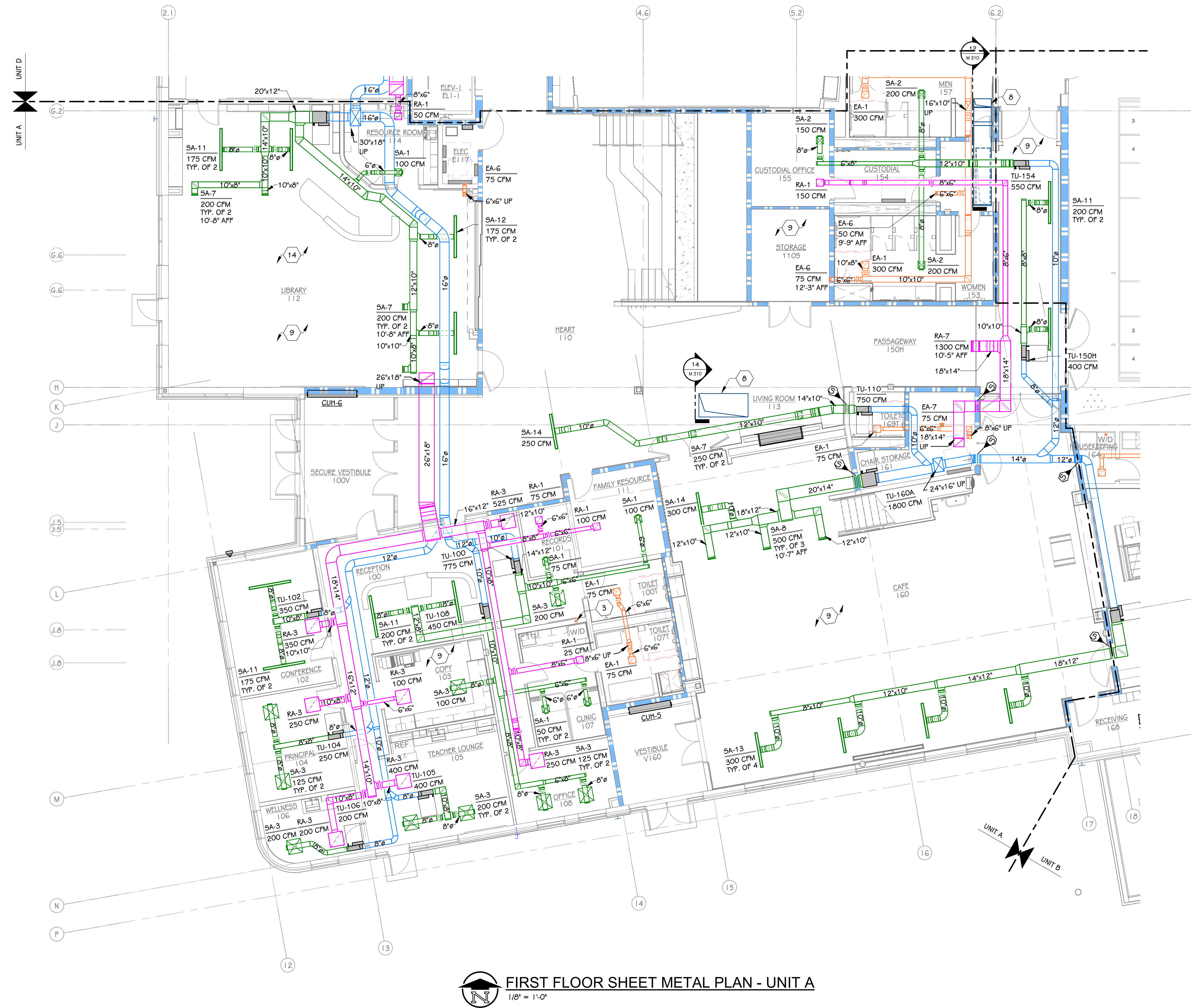
OWNER  
**PORTAGE PUBLIC SCHOOLS**

SHEET TITLE  
**FIRST FLOOR SHEET METAL PLAN - OVERALL**

Portage, Michigan

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 101**  
 21-237.20



**FIRST FLOOR SHEET METAL PLAN - UNIT A**  
1/8" = 1'-0"

- KEYED NOTES - SHEET METAL**
- 1 SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
  - 2 REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
  - 3 4" DRYER VENT WITH GOOSENECK.
  - 4 PROVIDE 1G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
  - 5 COORDINATE DUCTWORK WITH PIPING IN PLUMBING CHASE.
  - 6 PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING FOR ALL EXPOSED DUCTWORK.
  - 7 ALL DUCT MOUNTED DIFFUSERS ARE TO BE ANGLED DOWN 30° FROM HORIZONTAL AND FIELD PAINTED. REFER TO DETAIL ON SHEET M503.
  - 8 REFER TO SMOKE CONTROL PLAN ON SHEET M304 FOR DETAILS.
  - 9 REFER TO ARCH 200 SERIES SHEETS FOR SPECIFIC DIFFUSER LAYOUT.
  - 10 PROVIDE 1G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
  - 11 PROVIDE 14 GA DUCTWORK FOR SUPPLY MAIN AND 1G GA DUCTWORK FOR RETURN MAIN IN FLEX STUDIO.
  - 12 PROVIDE 10' OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
  - 13 PROVIDE 3' OF 1" DUCT LINER PRIOR TO RETURN GRILLE IN LEARNING STUDIO.
  - 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET 1207.
  - 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERRILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

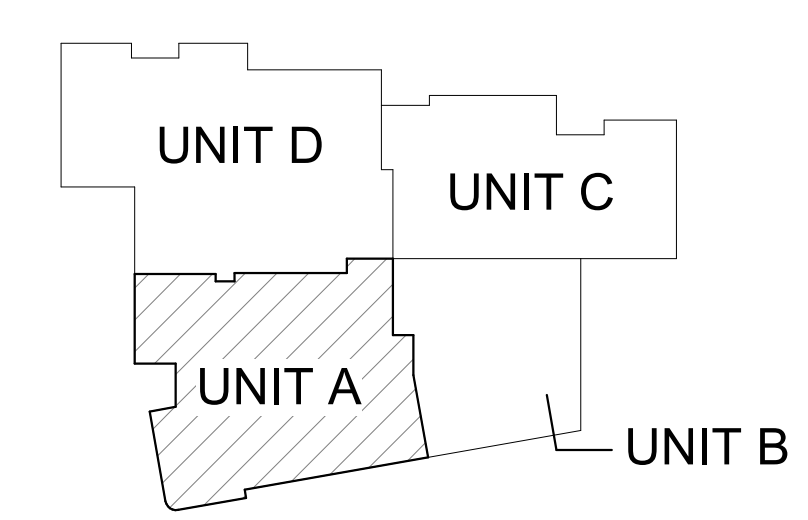
SHEET TITLE  
**FIRST FLOOR SHEET METAL PLAN - UNIT A**

Portage, Michigan

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 101A**  
21-237.20

**HAVERRILL ELEMENTARY**

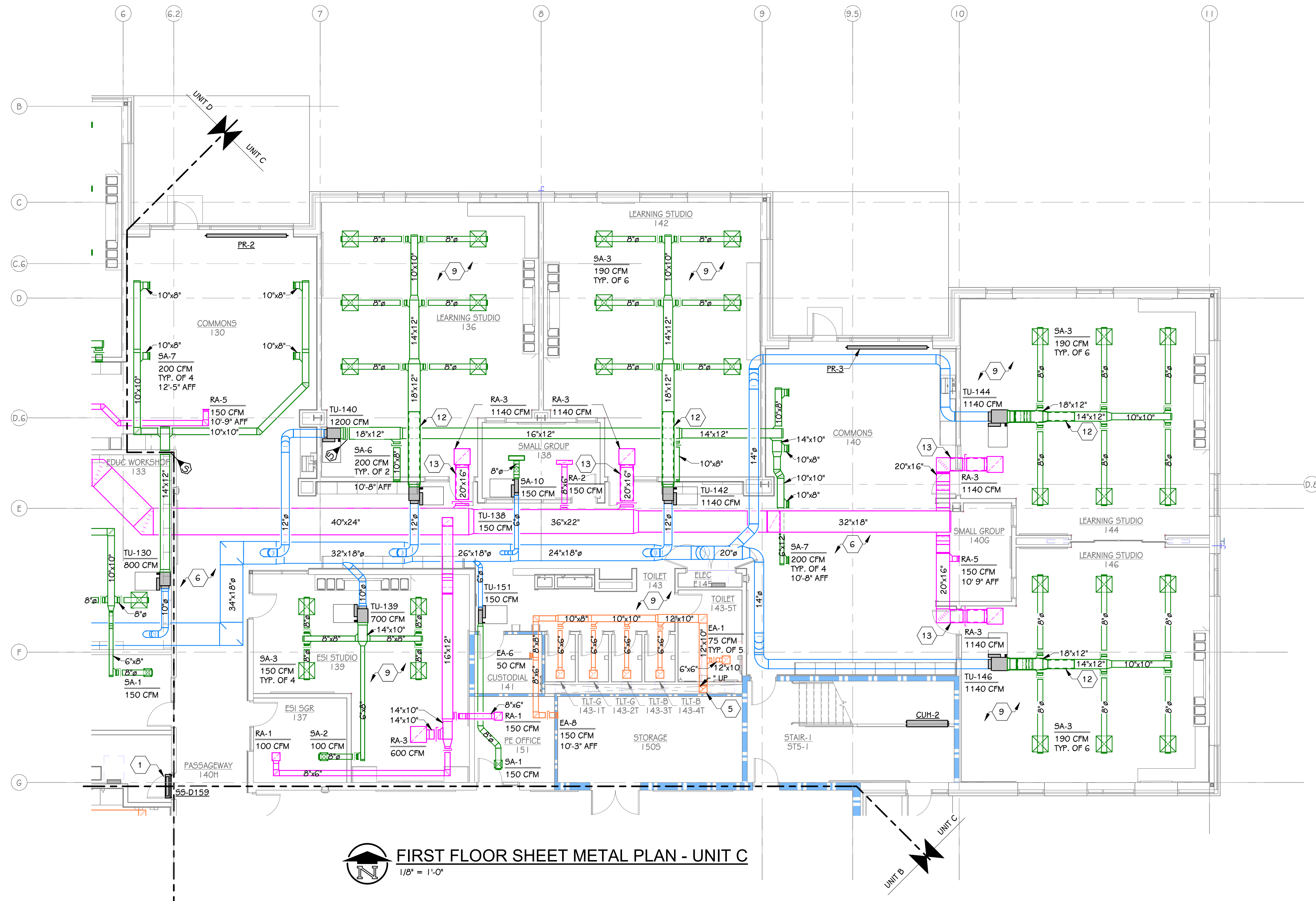


**KEY PLAN**  
SCALE: NO SCALE

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  - 10 PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
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  - 12 PROVIDE 1 0' OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
  - 13 PROVIDE 3' OF 1" DUCT LINER PRIOR TO RETURN GRILLE IN LEARNING STUDIO.
  - 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET I207.
  - 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.



**FIRST FLOOR SHEET METAL PLAN - UNIT C**  
1/8" = 1'-0"

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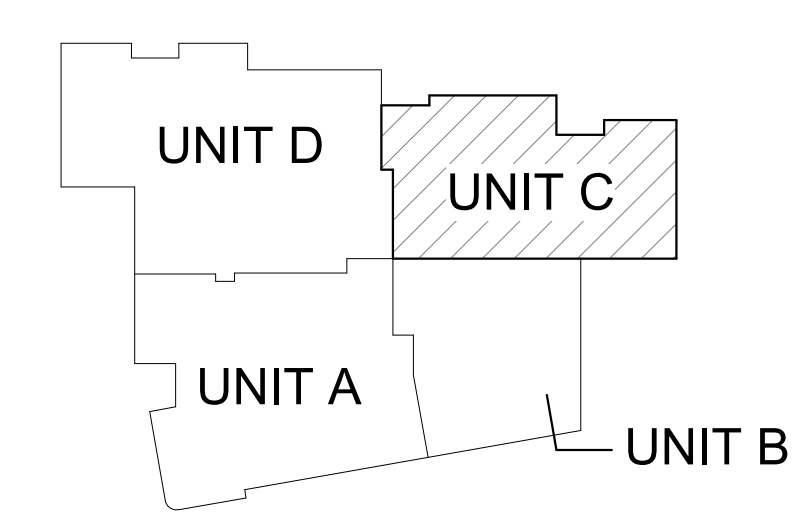
ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

SHEET TITLE  
**FIRST FLOOR SHEET METAL PLAN - UNIT C**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 101C**  
21-237.20



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

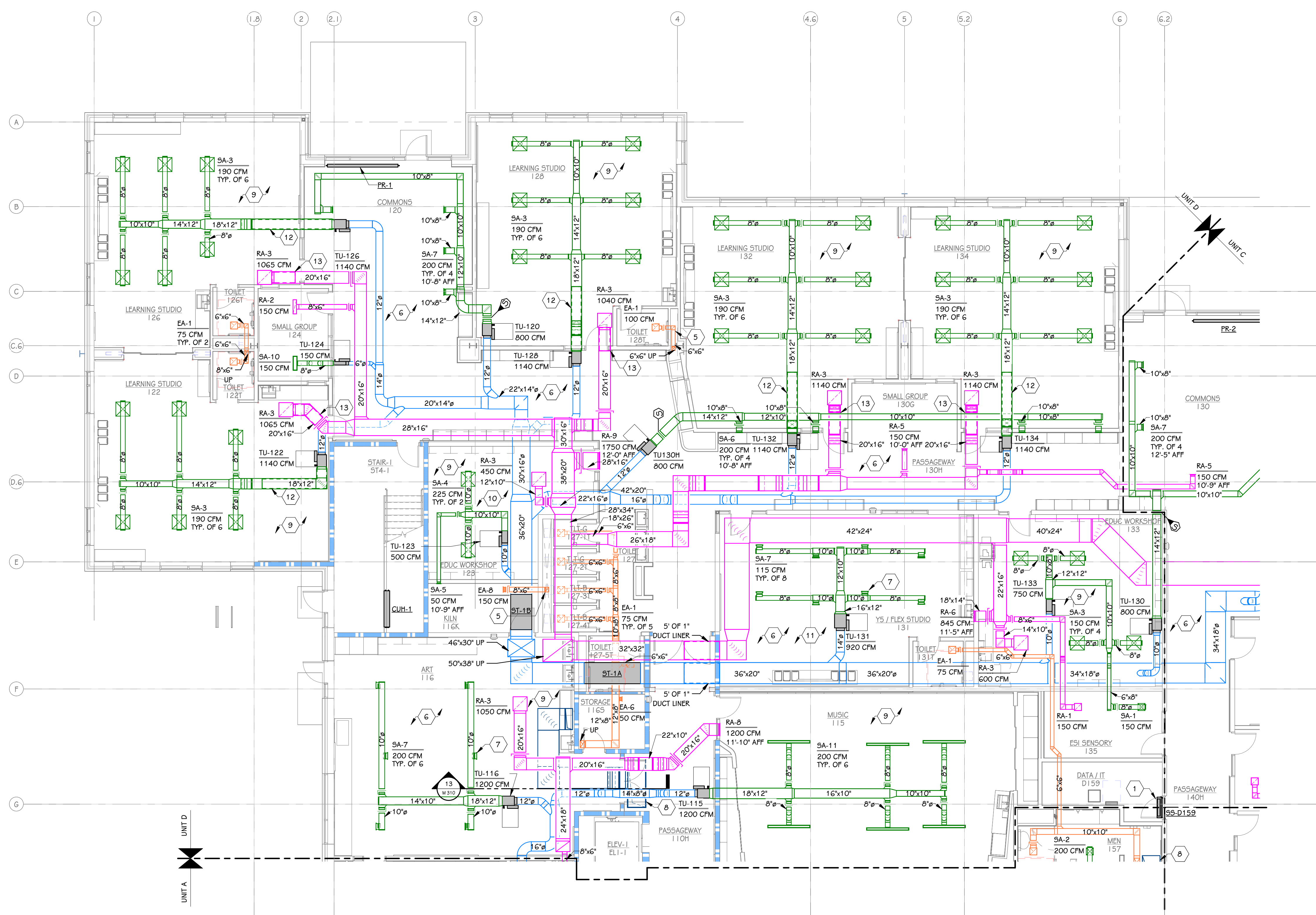
Portage, Michigan

SHEET TITLE  
FIRST FLOOR SHEET METAL PLAN - UNIT D

DATE  
JUNE 30, 2023

SHEET NUMBER  
**M 101D**  
21-237.20

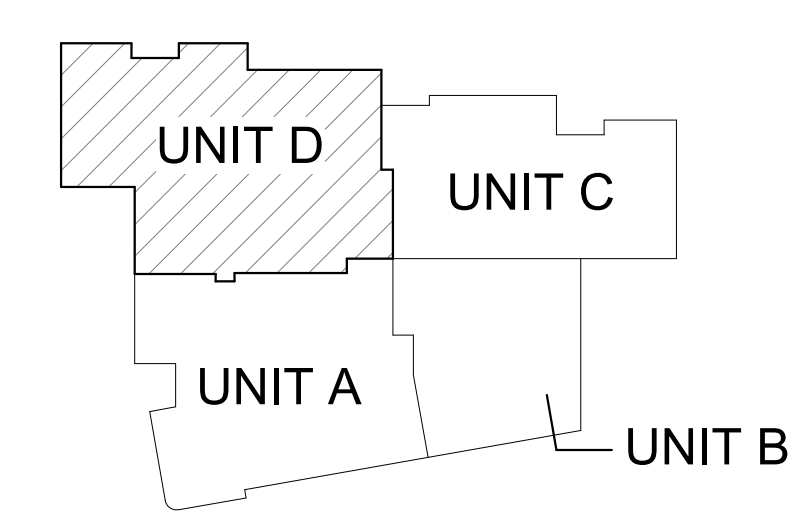
- KEYED NOTES - SHEET METAL**
- 1 SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
  - 2 REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
  - 3 4" DRYER VENT WITH GOOSENECK.
  - 4 PROVIDE 1 G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
  - 5 COORDINATE DUCTWORK WITH PIPING IN PLUMBING CHASE.
  - 6 PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING FOR ALL EXPOSED DUCTWORK.
  - 7 ALL DUCT MOUNTED DIFFUSERS ARE TO BE ANGLED DOWN 30° FROM HORIZONTAL AND FIELD PAINTED. REFER TO DETAIL ON SHEET M503.
  - 8 REFER TO SMOKE CONTROL PLAN ON SHEET M304 FOR DETAILS.
  - 9 REFER TO ARCH 200 SERIES SHEETS FOR SPECIFIC DIFFUSER LAYOUT.
  - 10 PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
  - 11 PROVIDE 14 GA DUCTWORK FOR SUPPLY MAIN AND 1 G GA DUCTWORK FOR RETURN MAIN IN FLEX STUDIO.
  - 12 PROVIDE 10' OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
  - 13 PROVIDE 3' OF 1" DUCT LINER PRIOR TO RETURN GRILLE IN LEARNING STUDIO.
  - 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET 1207.
  - 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.



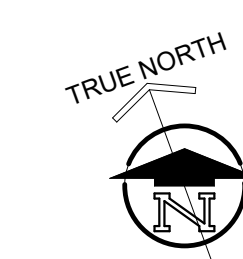
**FIRST FLOOR SHEET METAL PLAN - UNIT D**  
1/8" = 1'-0"

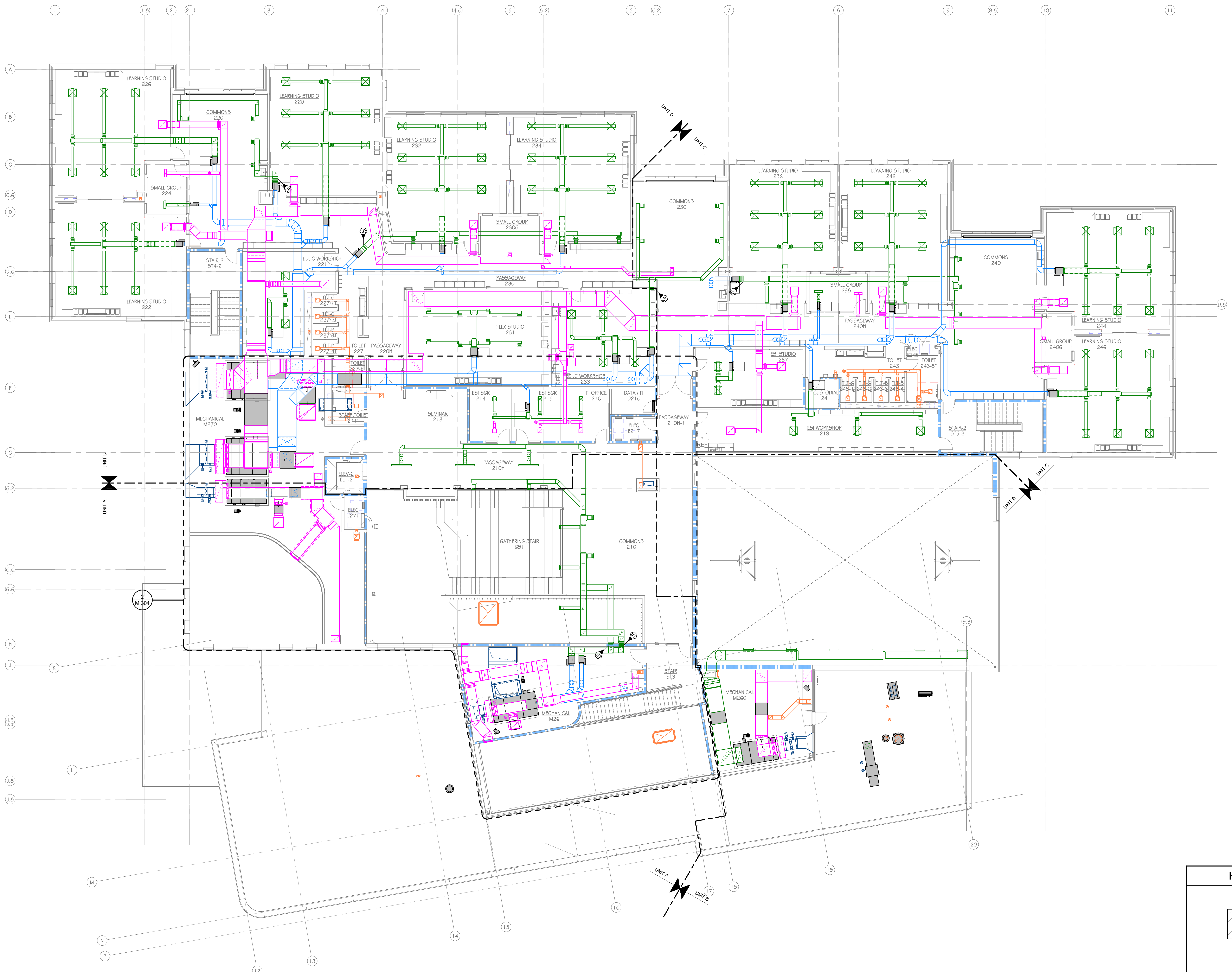
**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



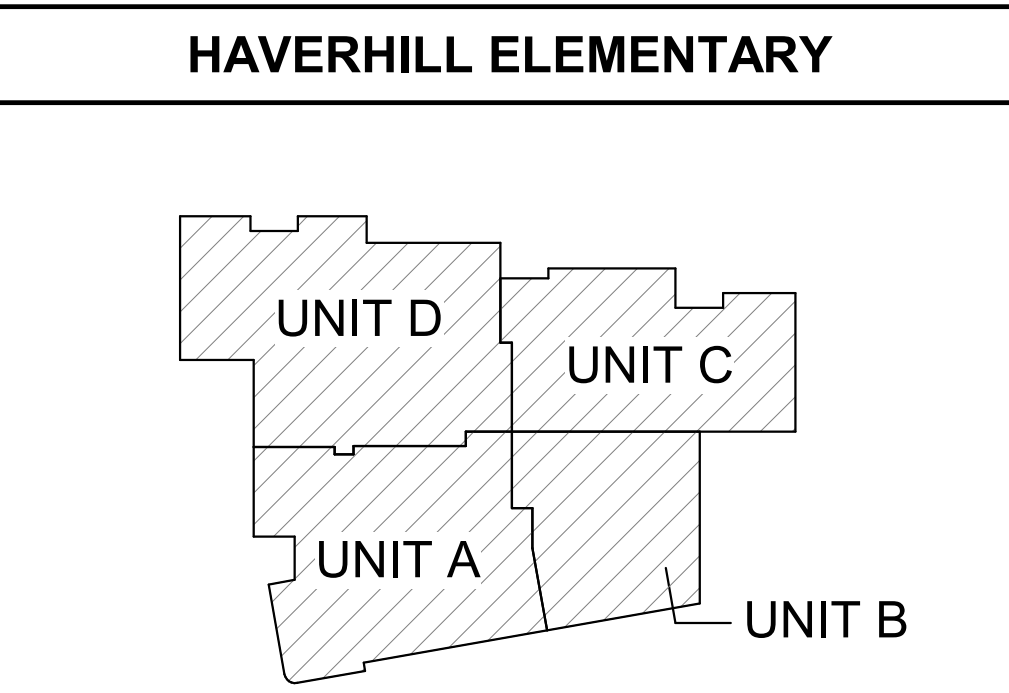
**KEY PLAN**  
SCALE: NO SCALE





**SECOND FLOOR SHEET METAL PLAN**  
1" = 10'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

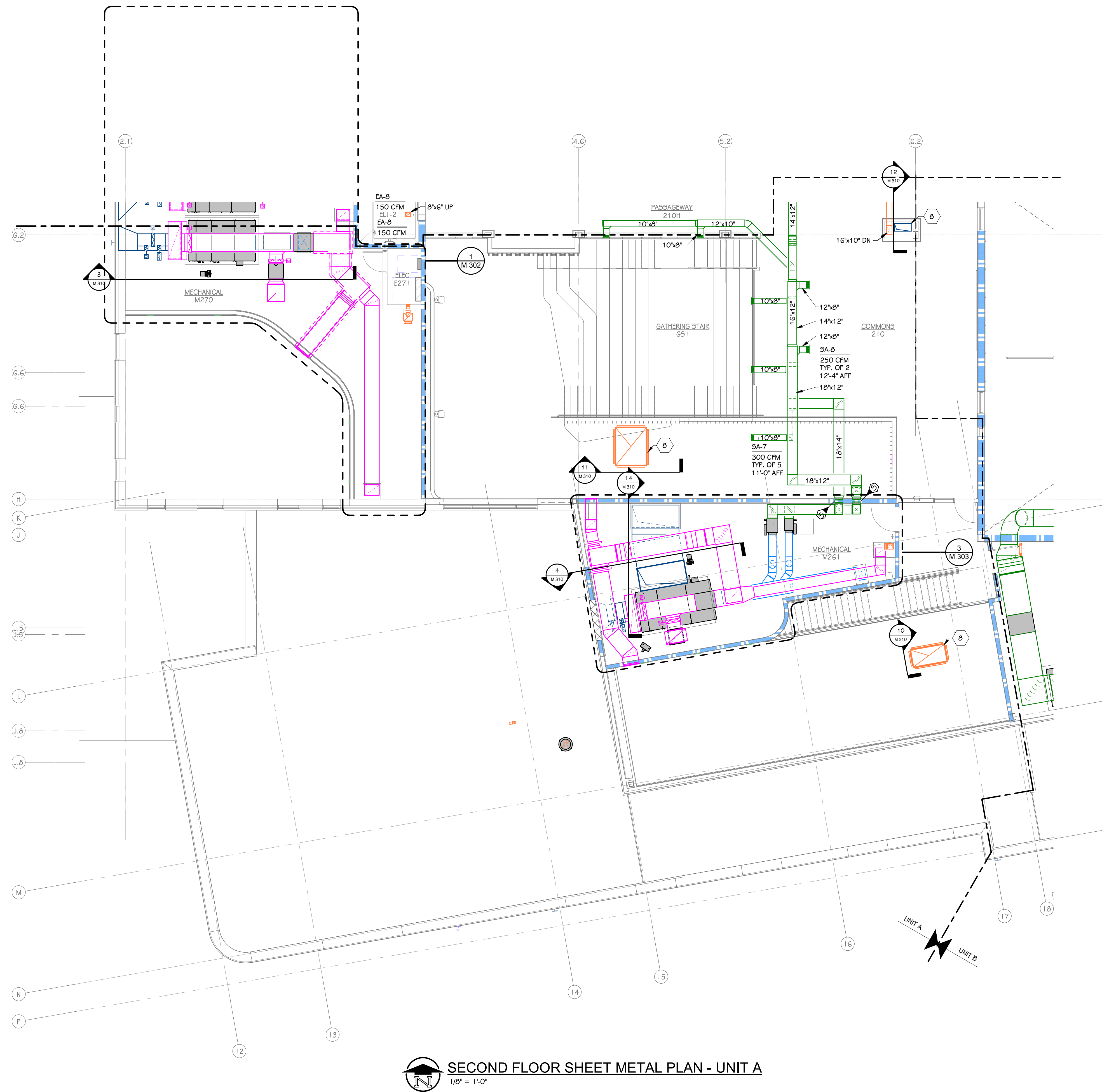
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**SECOND FLOOR SHEET METAL PLAN - OVERALL**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 102**  
21-237.20



SECOND FLOOR SHEET METAL PLAN - UNIT A  
1/8" = 1'-0"

- KEYED NOTES - SHEET METAL**
- 1 SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
  - 2 REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
  - 3 4" DRYER VENT WITH GOOSENECK.
  - 4 PROVIDE 1 G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
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  - 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET 1207.
  - 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.

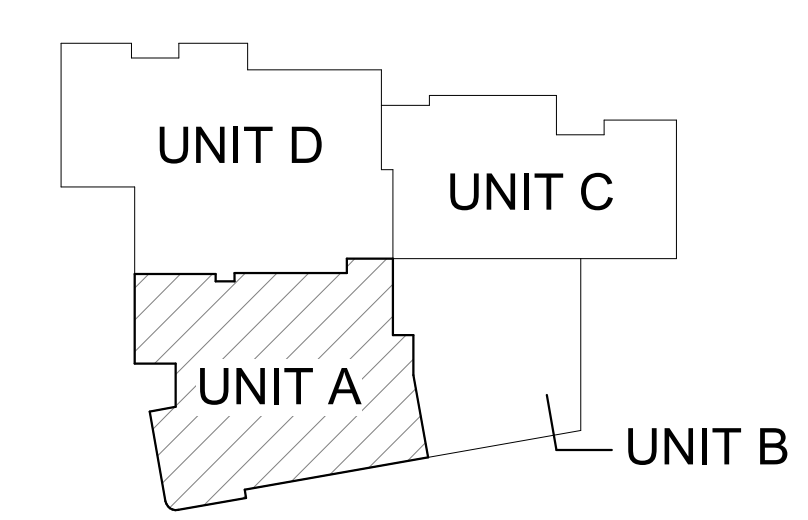
ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

HAVERHILL ELEMENTARY



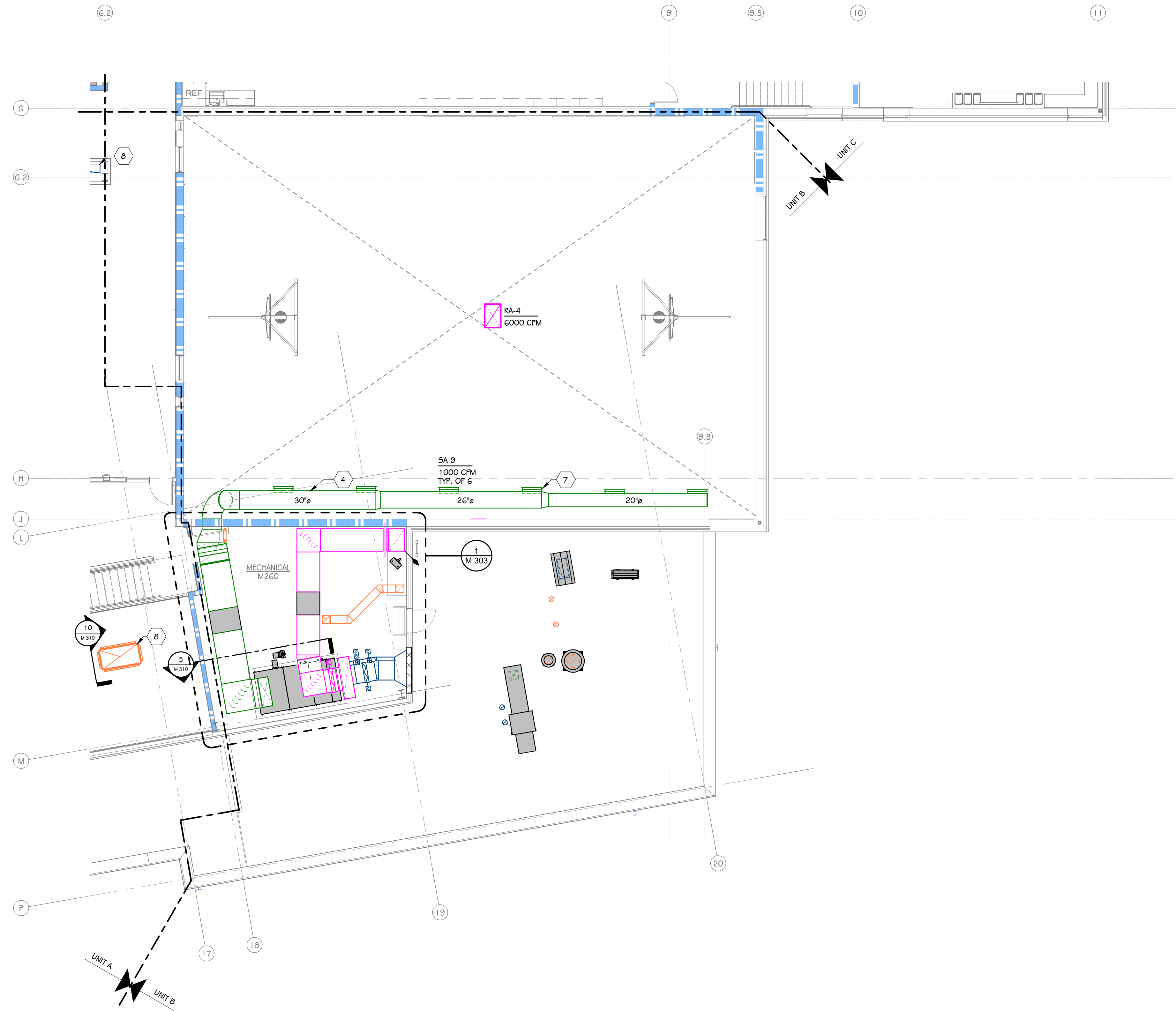
TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

SHEET TITLE  
SECOND FLOOR SHEET METAL PLAN - UNIT A

DATE  
JUNE 30, 2023

SHEET NUMBER  
**M 102A**  
21-237.20



SECOND FLOOR SHEET METAL PLAN - UNIT B  
1/8" = 1'-0"

KEYED NOTES - SHEET METAL

- 1 SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
- 2 REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
- 3 4" DRYER VENT WITH GOOSENECK.
- 4 PROVIDE 1 G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
- 5 COORDINATE DUCTWORK WITH PIPING IN PLUMBING CHASE.
- 6 PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING FOR ALL EXPOSED DUCTWORK.
- 7 ALL DUCT MOUNTED DIFFUSERS ARE TO BE ANGLED DOWN 30° FROM HORIZONTAL AND FIELD PAINTED. REFER TO DETAIL ON SHEET M503.
- 8 REFER TO SMOKE CONTROL PLAN ON SHEET M304 FOR DETAILS.
- 9 REFER TO ARCH 200 SERIES SHEETS FOR SPECIFIC DIFFUSER LAYOUT.
- 10 PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
- 11 PROVIDE 1 4 GA DUCTWORK FOR SUPPLY MAIN AND 1 G GA DUCTWORK FOR RETURN MAIN IN FLEX STUDIO.
- 12 PROVIDE 1' OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
- 13 PROVIDE 3' OF 1" DUCT LINER PRIOR TO RETURN GRILLE IN LEARNING STUDIO.
- 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET I207.
- 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.

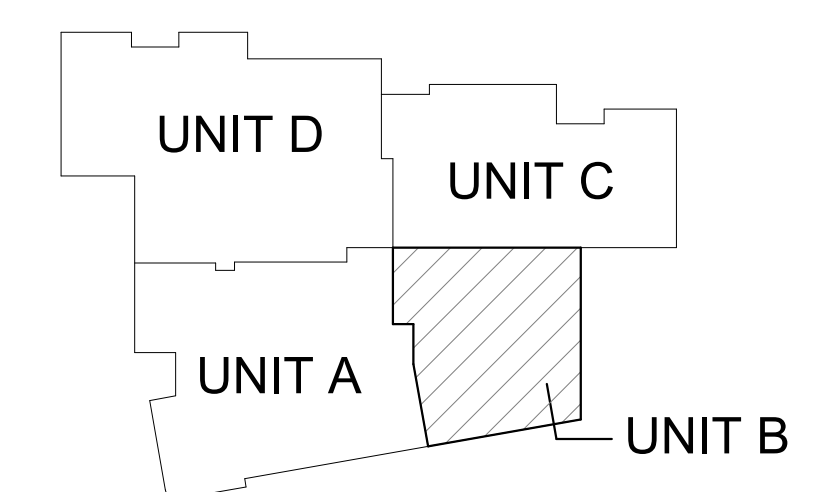
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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

HAVERHILL ELEMENTARY



TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

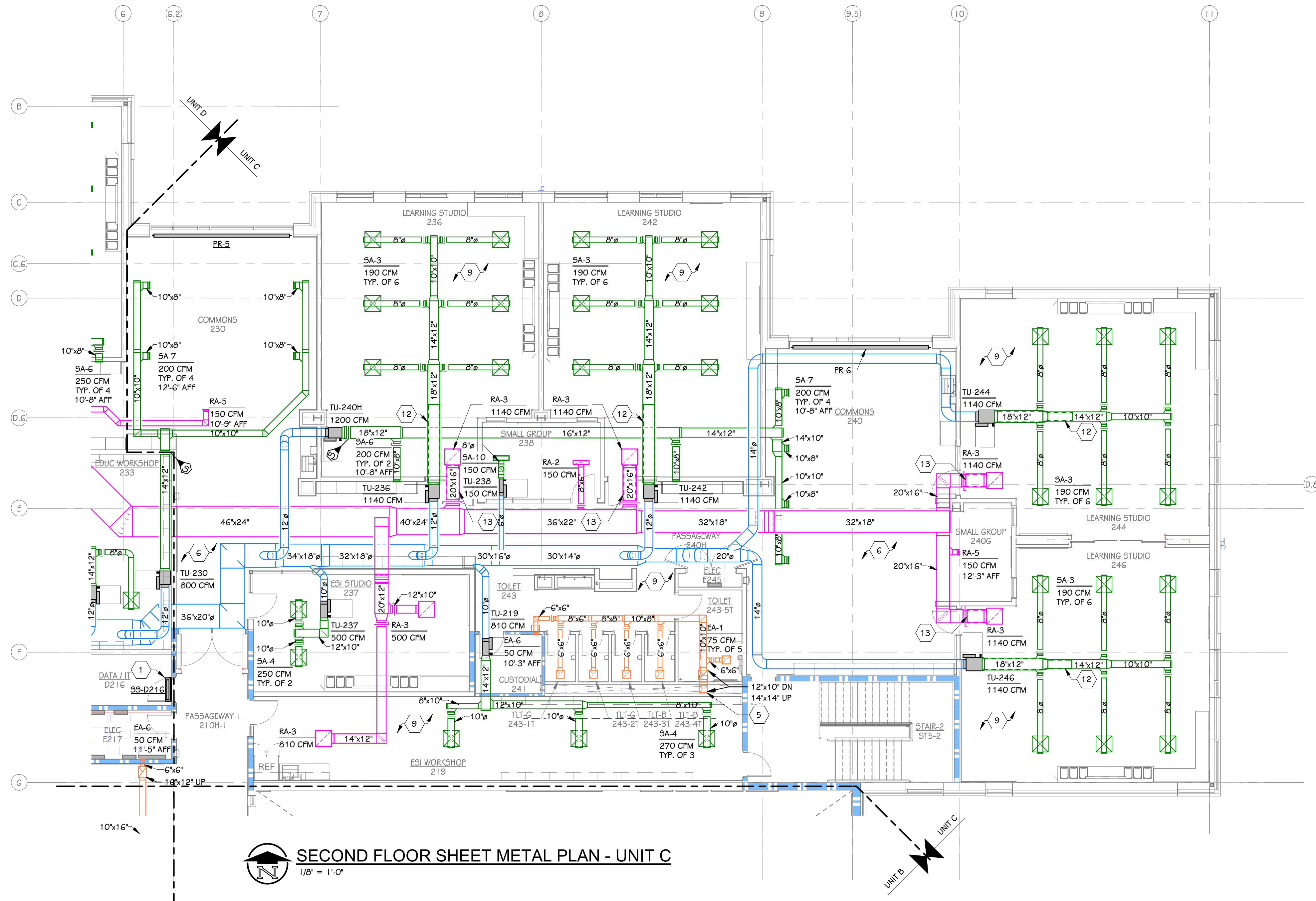
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SHEET TITLE  
SECOND FLOOR SHEET METAL PLAN - UNIT B

DATE  
JUNE 30, 2023

SHEET NUMBER  
**M 102B**  
21-237.20

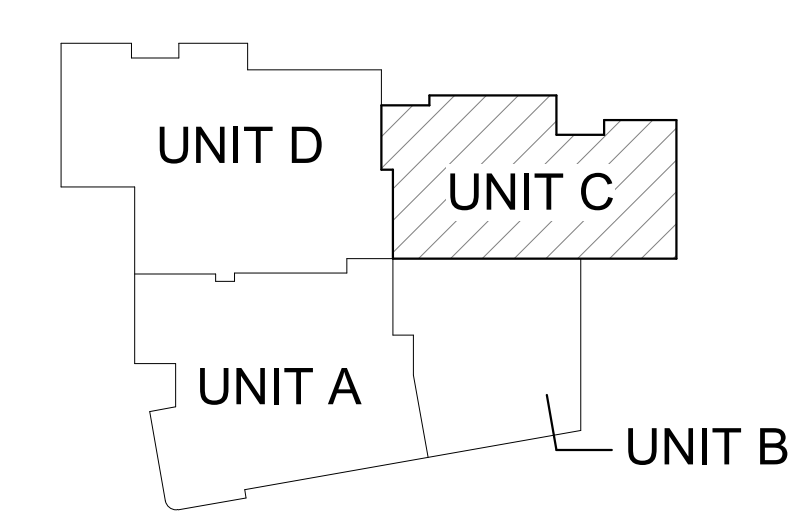
- KEYED NOTES - SHEET METAL**
- 1 SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
  - 2 REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
  - 3 4" DRYER VENT WITH GOOSENECK.
  - 4 PROVIDE 1 G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
  - 5 COORDINATE DUCTWORK WITH PIPING IN PLUMBING CHASE.
  - 6 PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING FOR ALL EXPOSED DUCTWORK.
  - 7 ALL DUCT MOUNTED DIFFUSERS ARE TO BE ANGLED DOWN 30° FROM HORIZONTAL AND FIELD PAINTED. REFER TO DETAIL ON SHEET M503.
  - 8 REFER TO SMOKE CONTROL PLAN ON SHEET M304 FOR DETAILS.
  - 9 REFER TO ARCH 200 SERIES SHEETS FOR SPECIFIC DIFFUSER LAYOUT.
  - 10 PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
  - 11 PROVIDE 14 GA DUCTWORK FOR SUPPLY MAIN AND 1 G GA DUCTWORK FOR RETURN MAIN IN FLEX STUDIO.
  - 12 PROVIDE 1 0' OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
  - 13 PROVIDE 3' OF 1" DUCT LINER PRIOR TO RETURN GRILLE IN LEARNING STUDIO.
  - 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET I207.
  - 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.



**SECOND FLOOR SHEET METAL PLAN - UNIT C**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

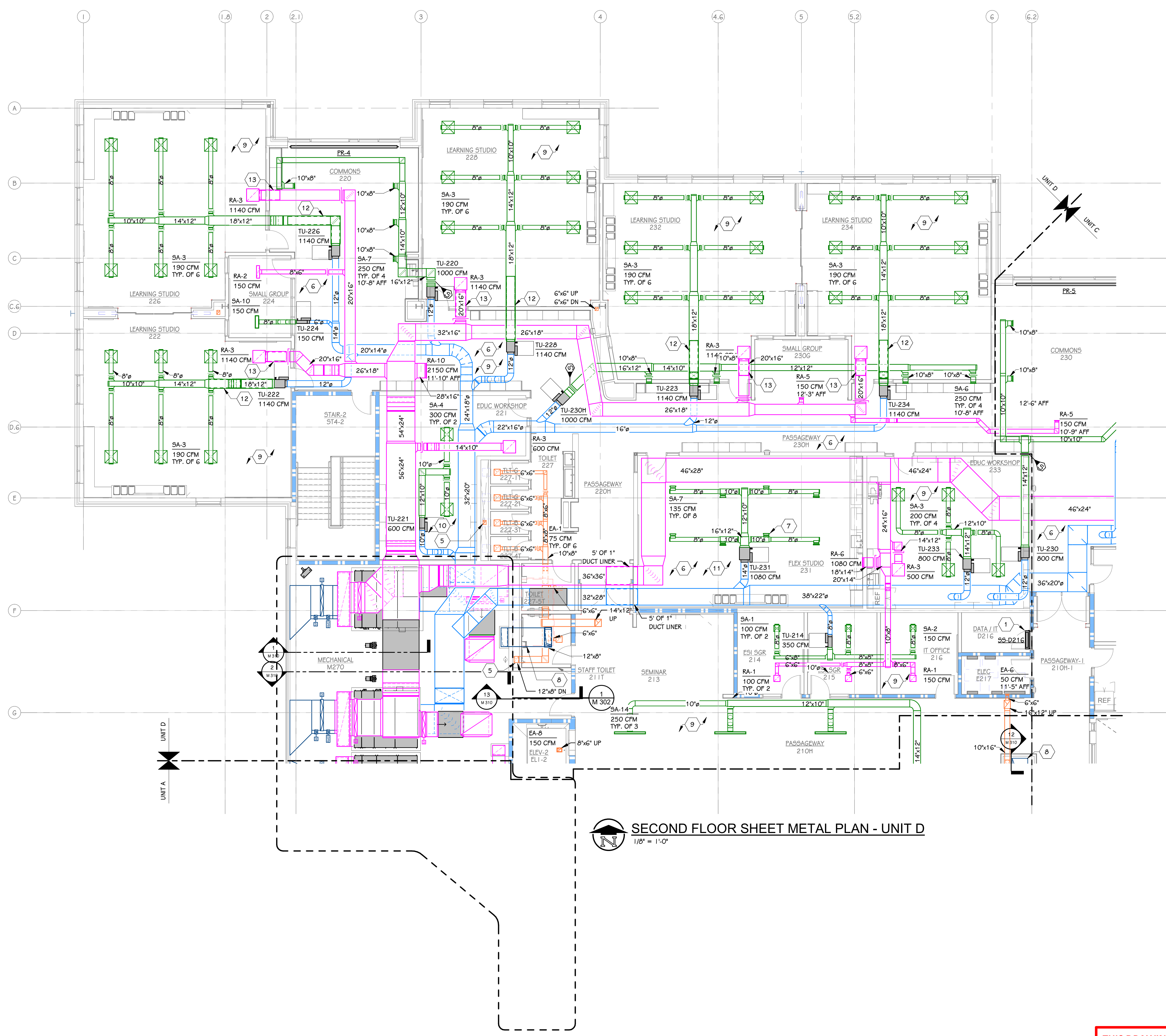
Portage, Michigan

SHEET TITLE  
**SECOND FLOOR SHEET METAL PLAN - UNIT C**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 102C**  
21-237.20

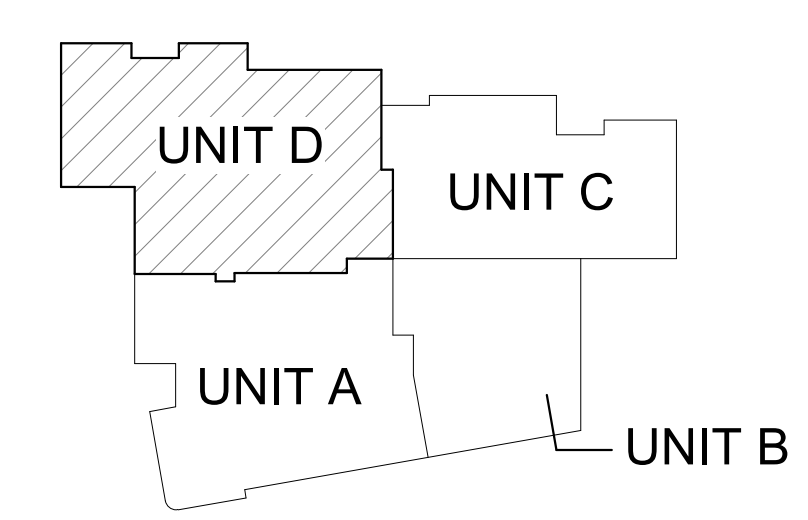
- KEYED NOTES - SHEET METAL**
- 1 SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
  - 2 REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
  - 3 4" DRYER VENT WITH GOOSENECK.
  - 4 PROVIDE 1 G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
  - 5 COORDINATE DUCTWORK WITH PIPING IN PLUMBING CHASE.
  - 6 PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING FOR ALL EXPOSED DUCTWORK.
  - 7 ALL DUCT MOUNTED DIFFUSERS ARE TO BE ANGLED DOWN 30° FROM HORIZONTAL AND FIELD PAINTED. REFER TO DETAIL ON SHEET M503.
  - 8 REFER TO SMOKE CONTROL PLAN ON SHEET M304 FOR DETAILS.
  - 9 REFER TO ARCH 200 SERIES SHEETS FOR SPECIFIC DIFFUSER LAYOUT.
  - 10 PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
  - 11 PROVIDE 14 GA DUCTWORK FOR SUPPLY MAIN AND 1 G GA DUCTWORK FOR RETURN MAIN IN FLEX STUDIO.
  - 12 PROVIDE 10' OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
  - 13 PROVIDE 3' OF 1" DUCT LINER PRIOR TO RETURN GRILLE IN LEARNING STUDIO.
  - 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET I207.
  - 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.



**SECOND FLOOR SHEET METAL PLAN - UNIT D**  
1/8" = 1'-0"

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**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

SHEET TITLE  
**SECOND FLOOR SHEET METAL PLAN - UNIT D**

Portage, Michigan

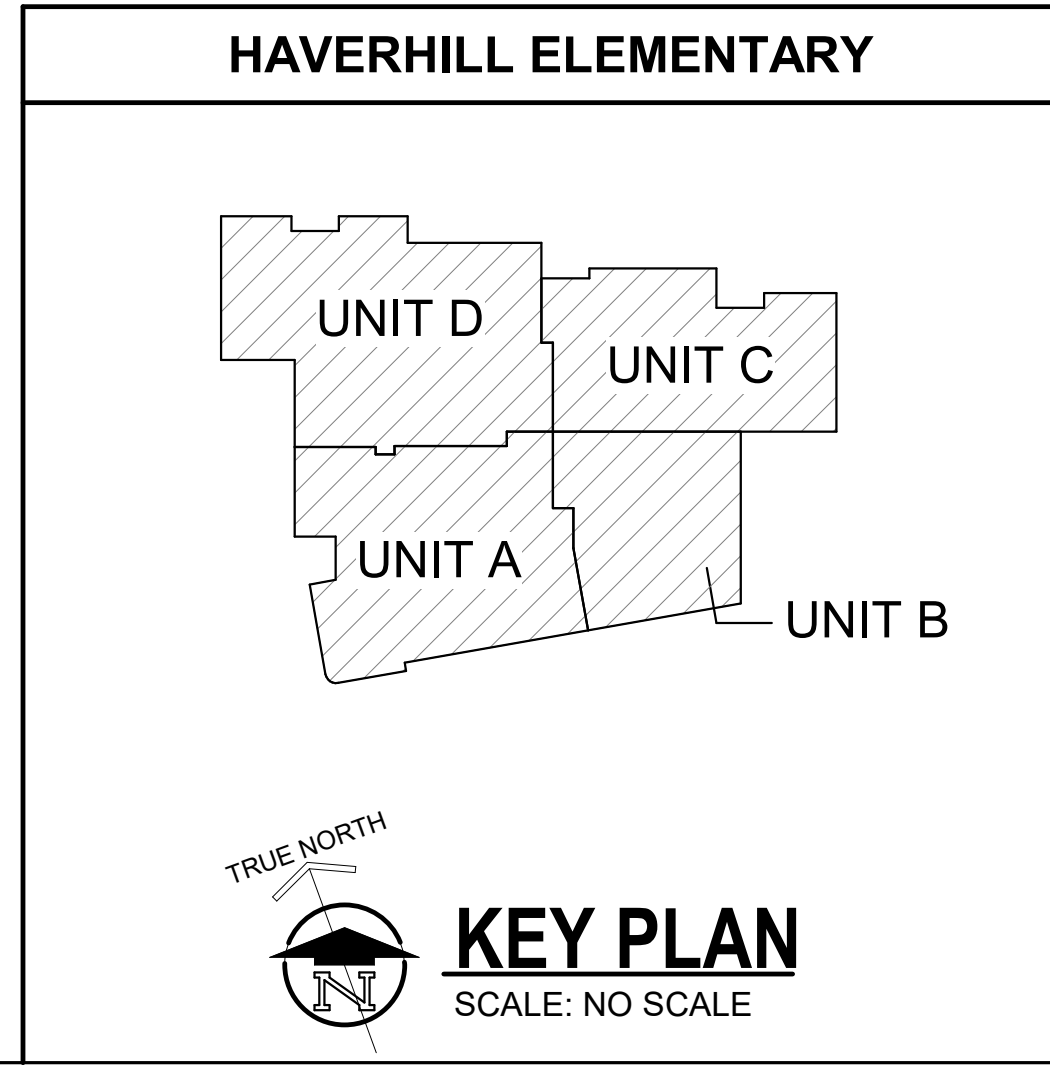
DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 102D**  
21-237.20



**ROOF MECHANICAL PLAN - OVERALL**  
 1" = 10'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



**KEY PLAN**  
 SCALE: NO SCALE

SHEET TITLE  
**ROOF MECHANICAL PLAN - OVERALL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

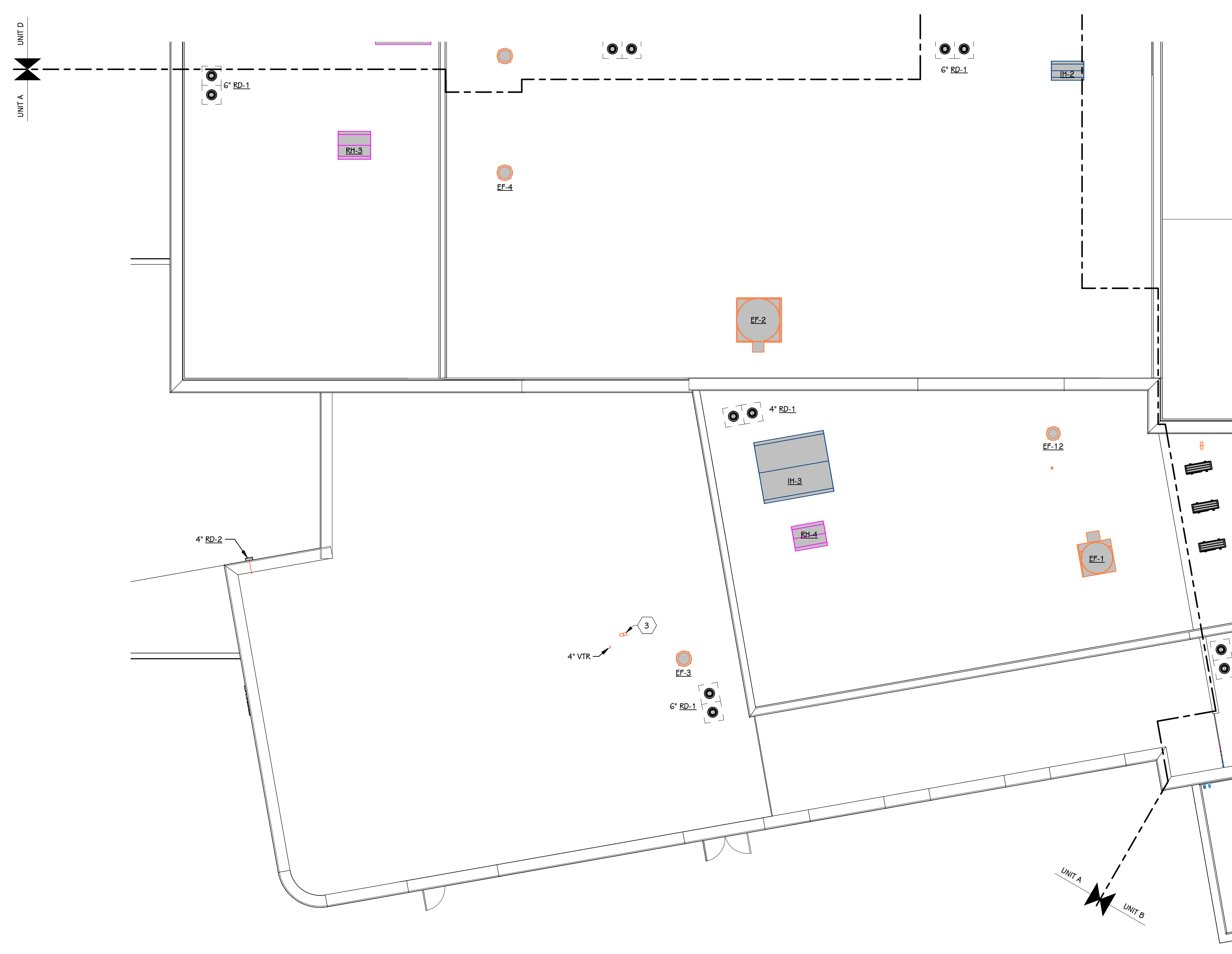
PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

SHEET NUMBER  
**M 150**  
 21-237.20

Portage, Michigan

DATE  
**JUNE 30, 2023**



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

KEYED NOTES - MECHANICAL

- 1 SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
- 2 REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
- 3 4" DRYER VENT WITH GOOSENECK.
- 4 PROVIDE 1 G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
- 5 COORDINATE DUCTWORK WITH PIPING IN PLUMBING CHASE.
- 6 PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING FOR ALL EXPOSED DUCTWORK.
- 7 ALL DUCT MOUNTED DIFFUSERS ARE TO BE ANGLED DOWN 30° FROM HORIZONTAL AND FIELD PAINTED. REFER TO DETAIL ON SHEET M503.
- 8 REFER TO SMOKE CONTROL PLAN ON SHEET M304 FOR DETAILS.
- 9 REFER TO ARCH 200 SERIES SHEETS FOR SPECIFIC DIFFUSER LAYOUT.
- 10 PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
- 11 PROVIDE 14 GA DUCTWORK FOR SUPPLY MAIN AND 1 G GA DUCTWORK FOR RETURN MAIN IN FLEX STUDIO.
- 12 PROVIDE 1 G OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
- 13 PROVIDE 3' OF 1" DUCT LINER PRIOR TO RETURN GRILLE IN LEARNING STUDIO.
- 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET I207.
- 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.

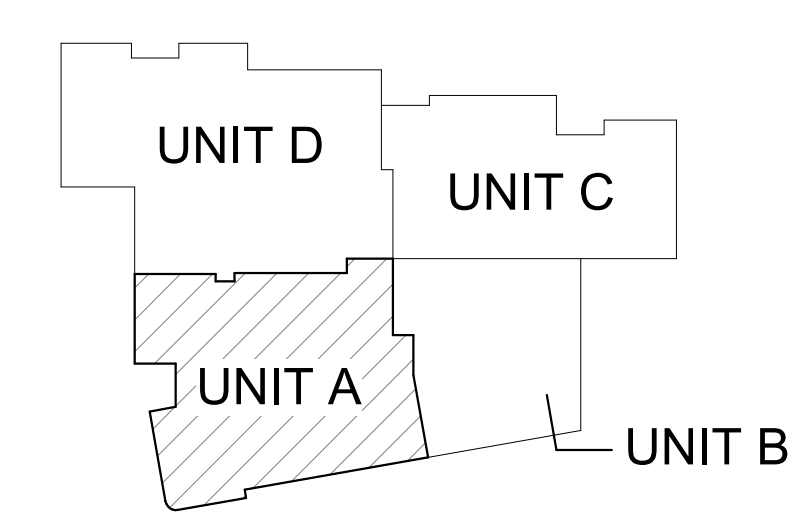
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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

HAVERHILL ELEMENTARY



TRUE NORTH  
KEY PLAN  
SCALE: NO SCALE

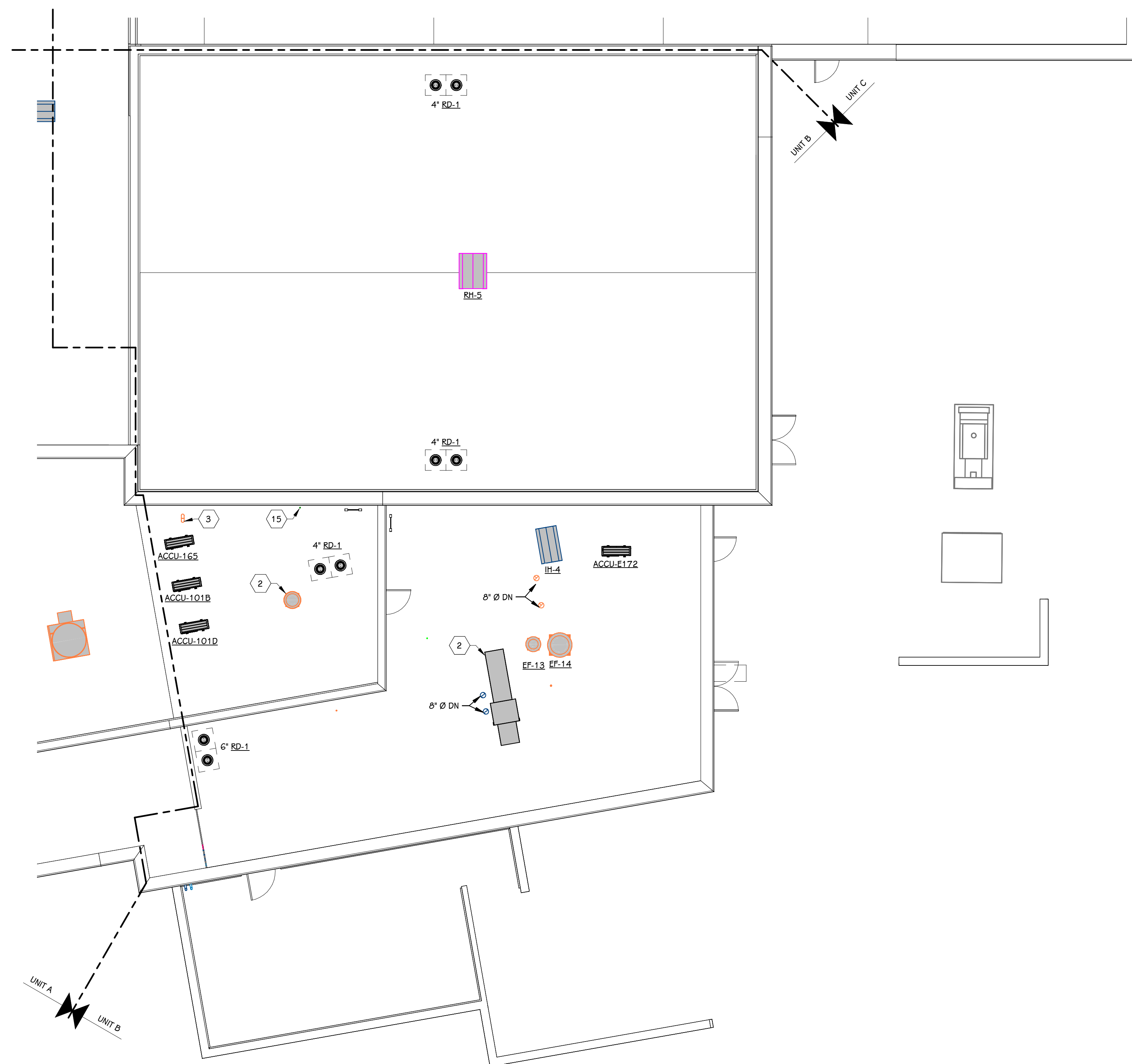
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SHEET TITLE  
ROOF MECHANICAL PLAN - UNIT A

DATE  
JUNE 30, 2023

SHEET NUMBER  
M 150A  
21-237.20





**ROOF MECHANICAL PLAN - UNIT B**  
 1/8" = 1'-0"

- KEYED NOTES - MECHANICAL**
- SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
  - REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
  - 4" DRYER VENT WITH GOOSENECK.
  - PROVIDE 1 G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
  - COORDINATE DUCTWORK WITH PIPING IN PLUMBING CHASE.
  - PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING FOR ALL EXPOSED DUCTWORK.
  - ALL DUCT MOUNTED DIFFUSERS ARE TO BE ANGLED DOWN 30° FROM HORIZONTAL AND FIELD PAINTED. REFER TO DETAIL ON SHEET M503.
  - REFER TO SMOKE CONTROL PLAN ON SHEET M304 FOR DETAILS.
  - REFER TO ARCH 200 SERIES SHEETS FOR SPECIFIC DIFFUSER LAYOUT.
  - PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
  - PROVIDE 14 GA DUCTWORK FOR SUPPLY MAIN AND 1 G GA DUCTWORK FOR RETURN MAIN IN FLEX STUDIO.
  - PROVIDE 1 G OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
  - PROVIDE 3' OF 1" DUCT LINER PRIOR TO RETURN GRILLE IN LEARNING STUDIO.
  - ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET I207.
  - 1" AIR INTAKE TO THREE-COMPARTMENT SINK.

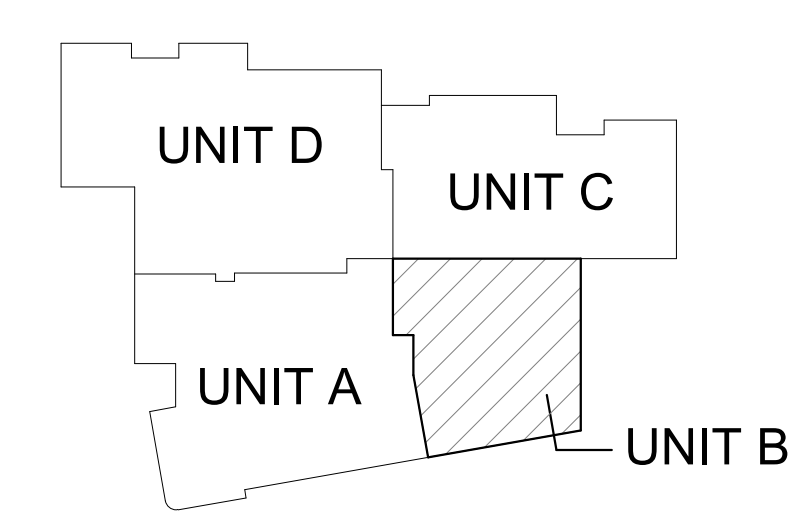
ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERRILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

**HAVERRILL ELEMENTARY**



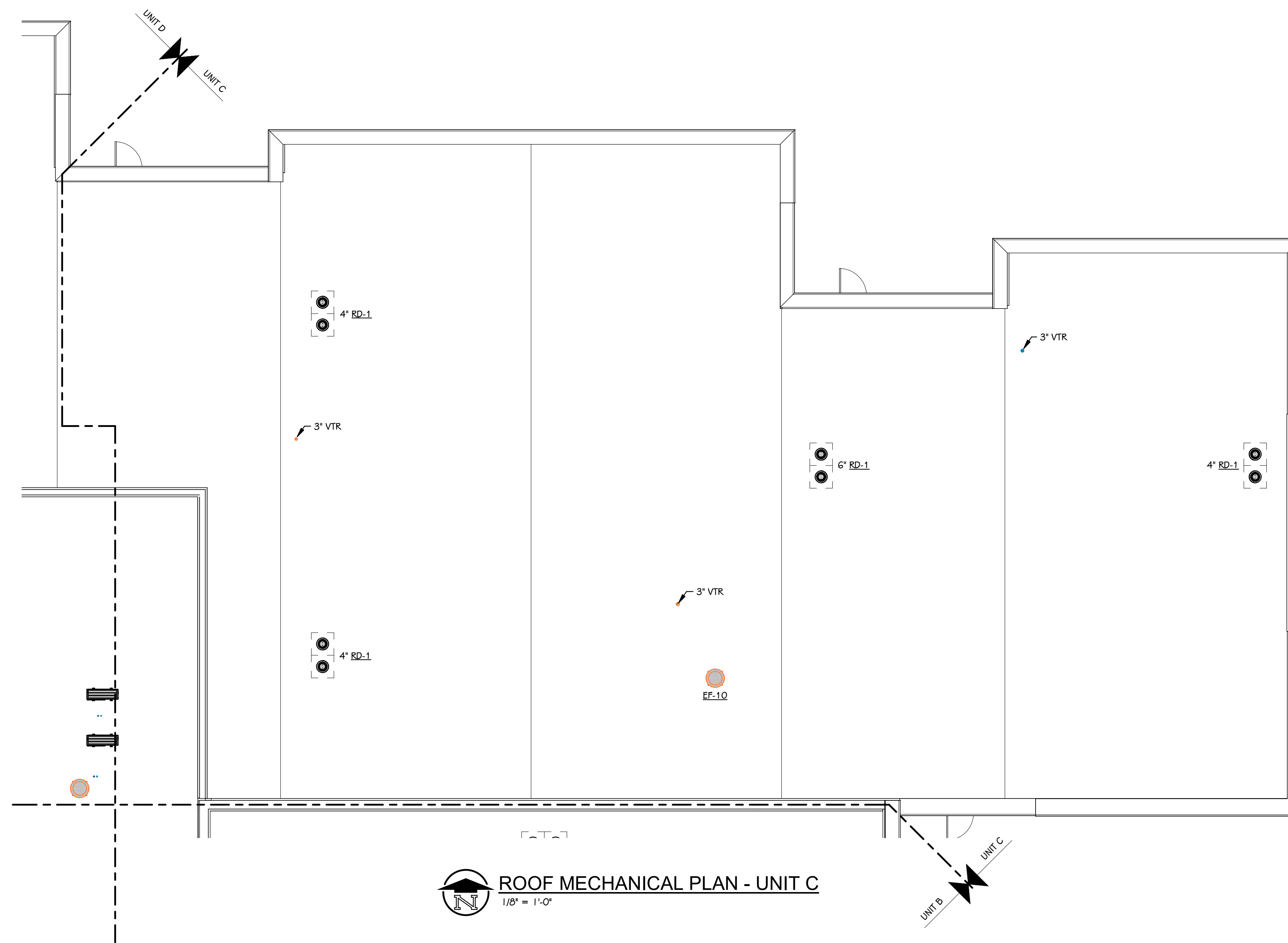
**KEY PLAN**  
 SCALE: NO SCALE

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SHEET TITLE  
**ROOF MECHANICAL PLAN - UNIT B**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 150B**  
 21-237.20



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

KEYED NOTES - MECHANICAL

- 1 SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
- 2 REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
- 3 4" DRYER VENT WITH GOOSENECK.
- 4 PROVIDE 1 G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
- 5 COORDINATE DUCTWORK WITH PIPING IN PLUMBING CHASE.
- 6 PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING FOR ALL EXPOSED DUCTWORK.
- 7 ALL DUCT MOUNTED DIFFUSERS ARE TO BE ANGLED DOWN 30° FROM HORIZONTAL AND FIELD PAINTED. REFER TO DETAIL ON SHEET M503.
- 8 REFER TO SMOKE CONTROL PLAN ON SHEET M304 FOR DETAILS.
- 9 REFER TO ARCH 200 SERIES SHEETS FOR SPECIFIC DIFFUSER LAYOUT.
- 10 PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
- 11 PROVIDE 14 GA DUCTWORK FOR SUPPLY MAIN AND 1 G GA DUCTWORK FOR RETURN MAIN IN FLEX STUDIO.
- 12 PROVIDE 1 G OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
- 13 PROVIDE 3' OF 1" DUCT LINER PRIOR TO RETURN GRILLE IN LEARNING STUDIO.
- 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET I207.
- 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.

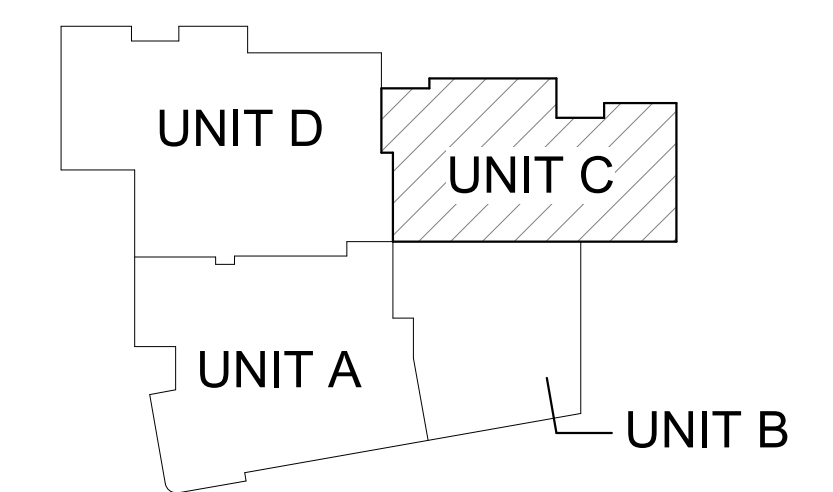
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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

HAVERHILL ELEMENTARY



TRUE NORTH  
KEY PLAN  
SCALE: NO SCALE

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SHEET TITLE  
ROOF MECHANICAL PLAN - UNIT C

DATE  
JUNE 30, 2023

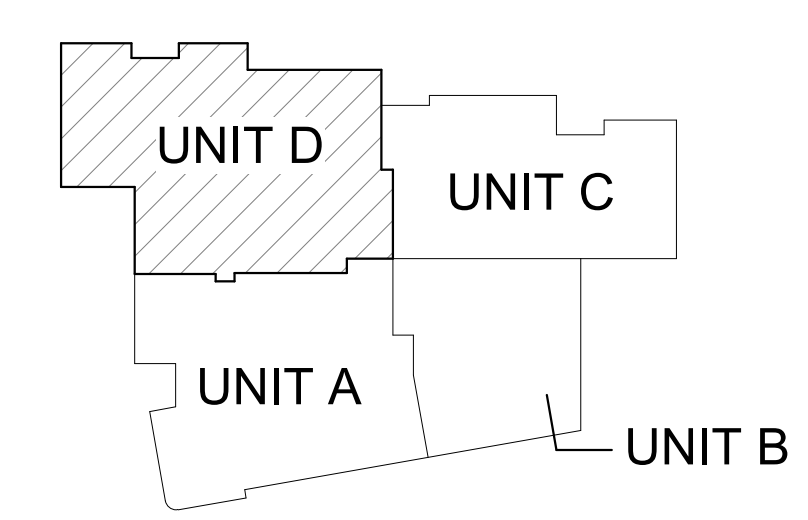
SHEET NUMBER  
M 150C  
21-237.20

- KEYED NOTES - MECHANICAL**
- 1 SPLIT SYSTEM TO BE MOUNTED ABOVE DOOR.
  - 2 REFER TO FOOD SERVICE EQUIPMENT PLAN ON SHEET FSE-5 FOR MAKEUP AIR AND EXHAUST DETAILS.
  - 3 4" DRYER VENT WITH GOOSENECK.
  - 4 PROVIDE 1 G GA DUCTWORK FOR ALL DUCTWORK IN GYM. PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING.
  - 5 COORDINATE DUCTWORK WITH PIPING IN PLUMBING CHASE.
  - 6 PROVIDE PAINT GRIP FINISH FOR FIELD PAINTING FOR ALL EXPOSED DUCTWORK.
  - 7 ALL DUCT MOUNTED DIFFUSERS ARE TO BE ANGLED DOWN 30° FROM HORIZONTAL AND FIELD PAINTED. REFER TO DETAIL ON SHEET M503.
  - 8 REFER TO SMOKE CONTROL PLAN ON SHEET M304 FOR DETAILS.
  - 9 REFER TO ARCH 200 SERIES SHEETS FOR SPECIFIC DIFFUSER LAYOUT.
  - 10 PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
  - 11 PROVIDE 1 1/2" GA DUCTWORK FOR SUPPLY MAIN AND 1 G GA DUCTWORK FOR RETURN MAIN IN FLEX STUDIO.
  - 12 PROVIDE 1 G GA DUCTWORK FOR SUPPLY AND RETURN MAINS IN EDUCATIONAL WORKSHOP.
  - 13 PROVIDE 3" OF 1" DUCT LINER DOWNSTREAM OF VAV BOX IN LEARNING STUDIO.
  - 14 ALL SIDEWALL DIFFUSERS IN LIBRARY ARE TO BE FIELD PAINTED TO MATCH WALL COLOR. REFER TO SHEET I207.
  - 15 1" AIR INTAKE TO THREE-COMPARTMENT SINK.



**ROOF MECHANICAL PLAN - UNIT D**  
 1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



**KEY PLAN**  
 SCALE: NO SCALE  
 TRUE NORTH

ISSUED FOR DATE

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

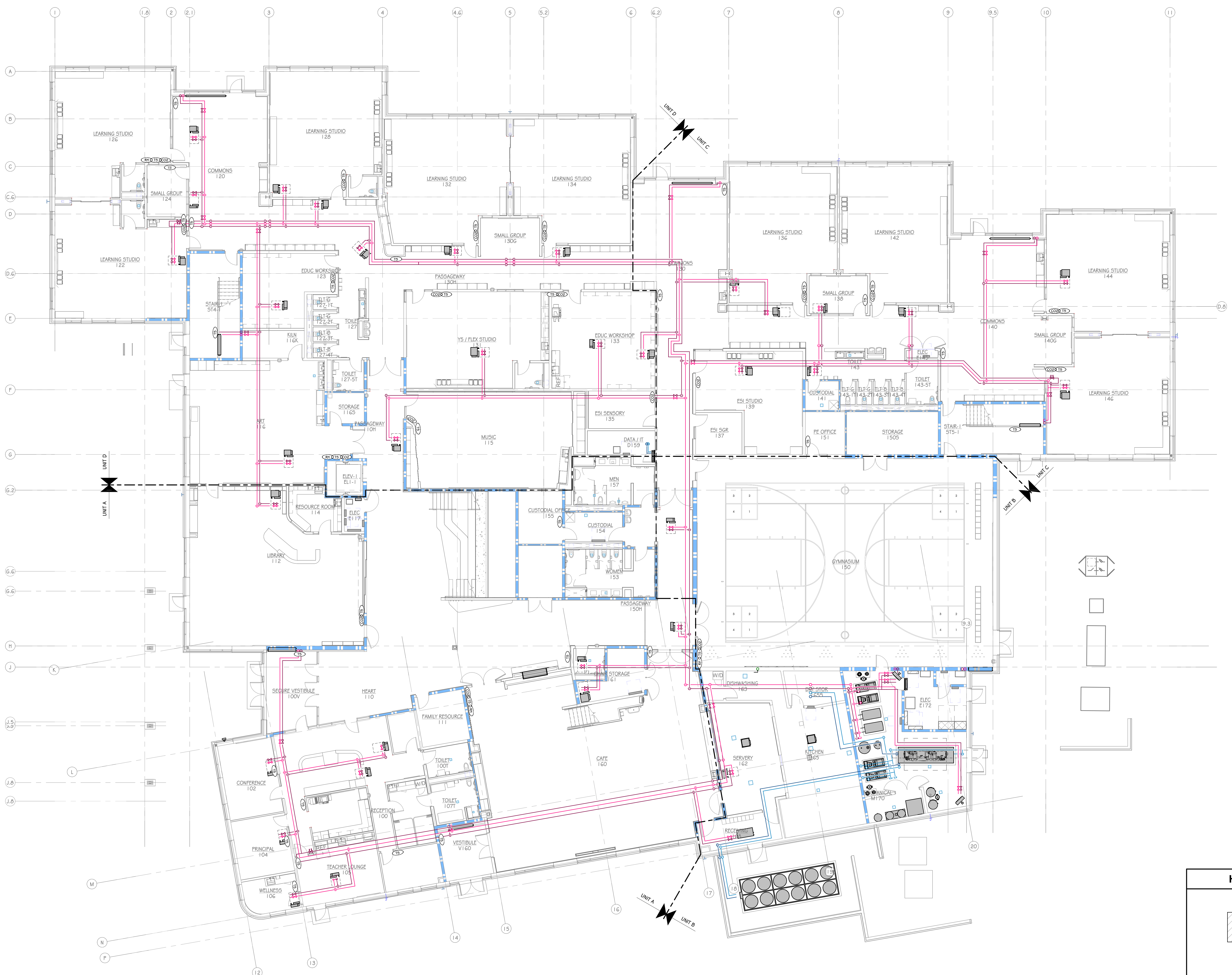
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**ROOF MECHANICAL PLAN - UNIT D**

DATE  
**JUNE 30, 2023**

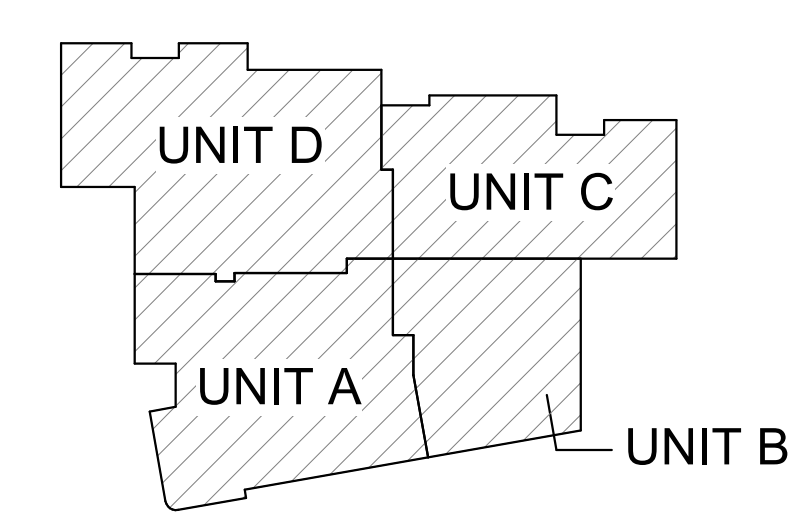
SHEET NUMBER  
**M 150D**  
 21-237.20



**FIRST FLOOR HVAC PIPING PLAN - OVERALL**  
1" = 10'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**Haverhill Elementary**



**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**Haverhill Elementary School**

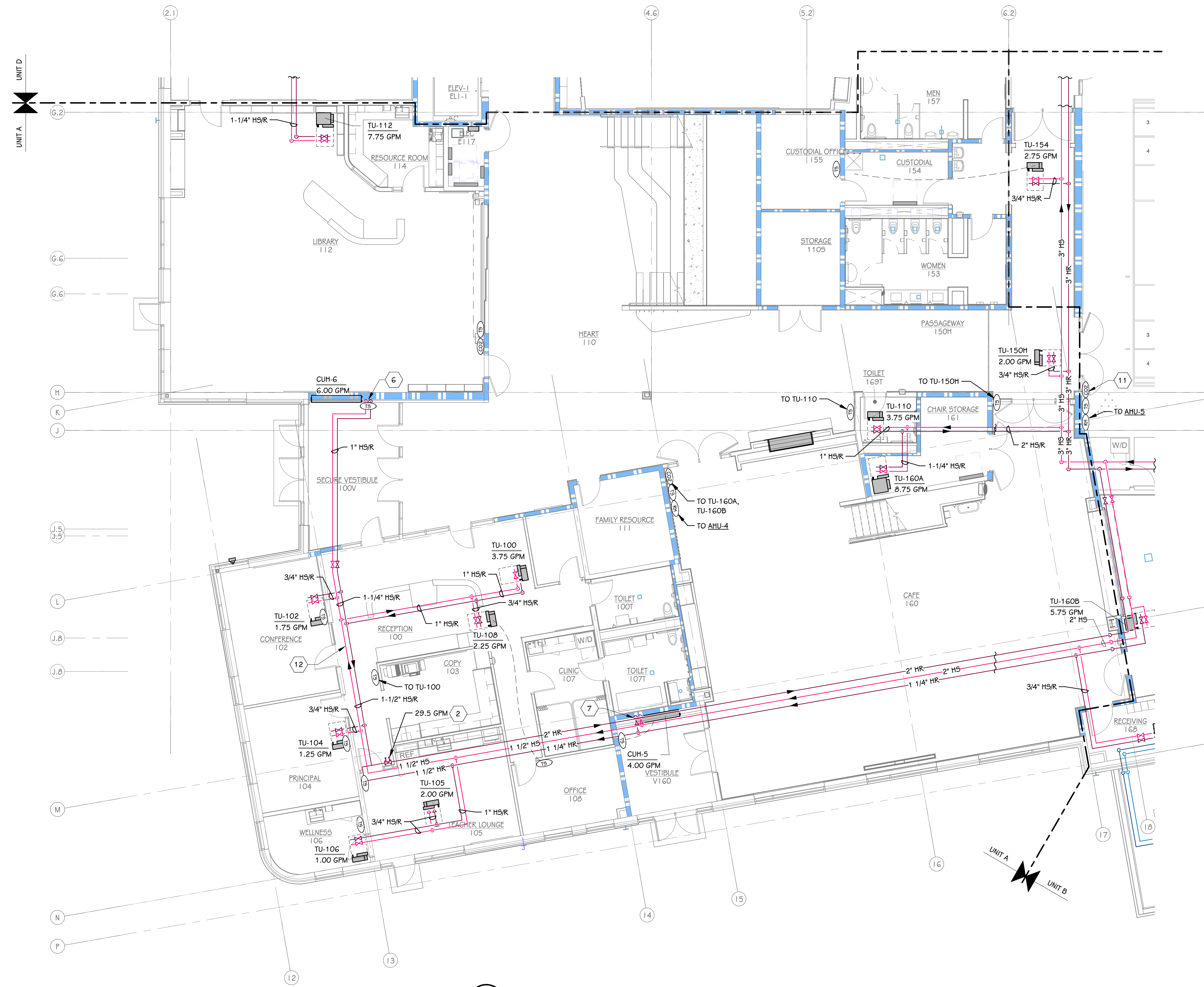
OWNER  
**Portage Public Schools**

SHEET TITLE  
**FIRST FLOOR HVAC PIPING PLAN - OVERALL**

Portage, Michigan

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 201**  
21-237.20



**FIRST FLOOR HVAC PIPING PLAN - UNIT A**  
1/8" = 1'-0"

**GENERAL NOTES - HVAC PIPING**

- 1 CONTRACTOR SHALL PROVIDE AIR VENTS AT ALL HIGH POINTS AND DRAINS AT ALL LOW POINTS IN HYDRONIC SYSTEMS.
  - 2 PROVIDE COMBINATION CARBON DIOXIDE / TEMPERATURE SENSOR FOR SPACES CALLING FOR BOTH SENSOR TYPES.
- KEYED NOTES - HVAC PIPING**
- 1 ROUTE REFRIGERANT PIPING UP TO APPROPRIATE CONDENSING ON ROOF. REFRIGERANT PIPING SIZED PER MANUFACTURER'S RECOMMENDATION.
  - 2 CALIBRATED BALANCE VALVE IS FOR FLOW MEASUREMENT. SEE PLANS FOR GPM.
  - 3 OFFSET PIPING TO AVOID STRUCTURAL ELEMENT.
  - 4 3/4" HSR DOWN IN WALL TO PANEL RADIATION.
  - 5 EXPANSION LOOP BASED ON "METRAFLEX" METROLOOP. REFER TO DETAIL.
  - 6 1" HSR DOWN IN WALL TO CABINET HEATER.
  - 7 1" HSR DOWN IN CHASE TO CABINET HEATER.
  - 8 3/4" HSR DOWN IN WALL TO CABINET HEATER.
  - 9 PIPE SIZES AND QUANTITY OF CIRCUITS PER MANUFACTURER'S RECOMMENDATION.
  - 10 MINIMUM FLOW BYPASS VALVE.
  - 11 PROVIDE WIRE CAGE FOR SENSOR(S) IN GYMNASIUM.
  - 12 PROPOSED LOCATION FOR DIFFERENTIAL PRESSURE SENSOR. CONTRACTOR TO VERIFY FINAL LOCATION WITH ENGINEER.

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERRILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

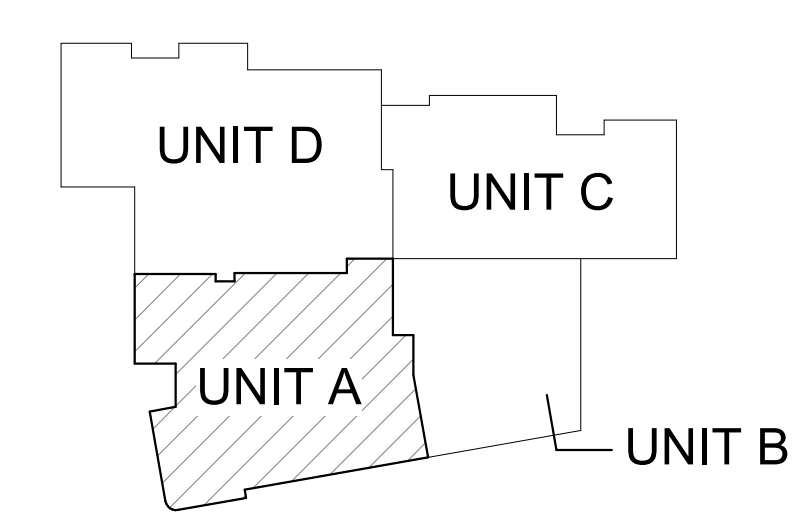
SHEET TITLE  
**FIRST FLOOR HVAC PIPING PLAN - UNIT A**

Portage, Michigan

DATE  
**JUNE 30, 2023**

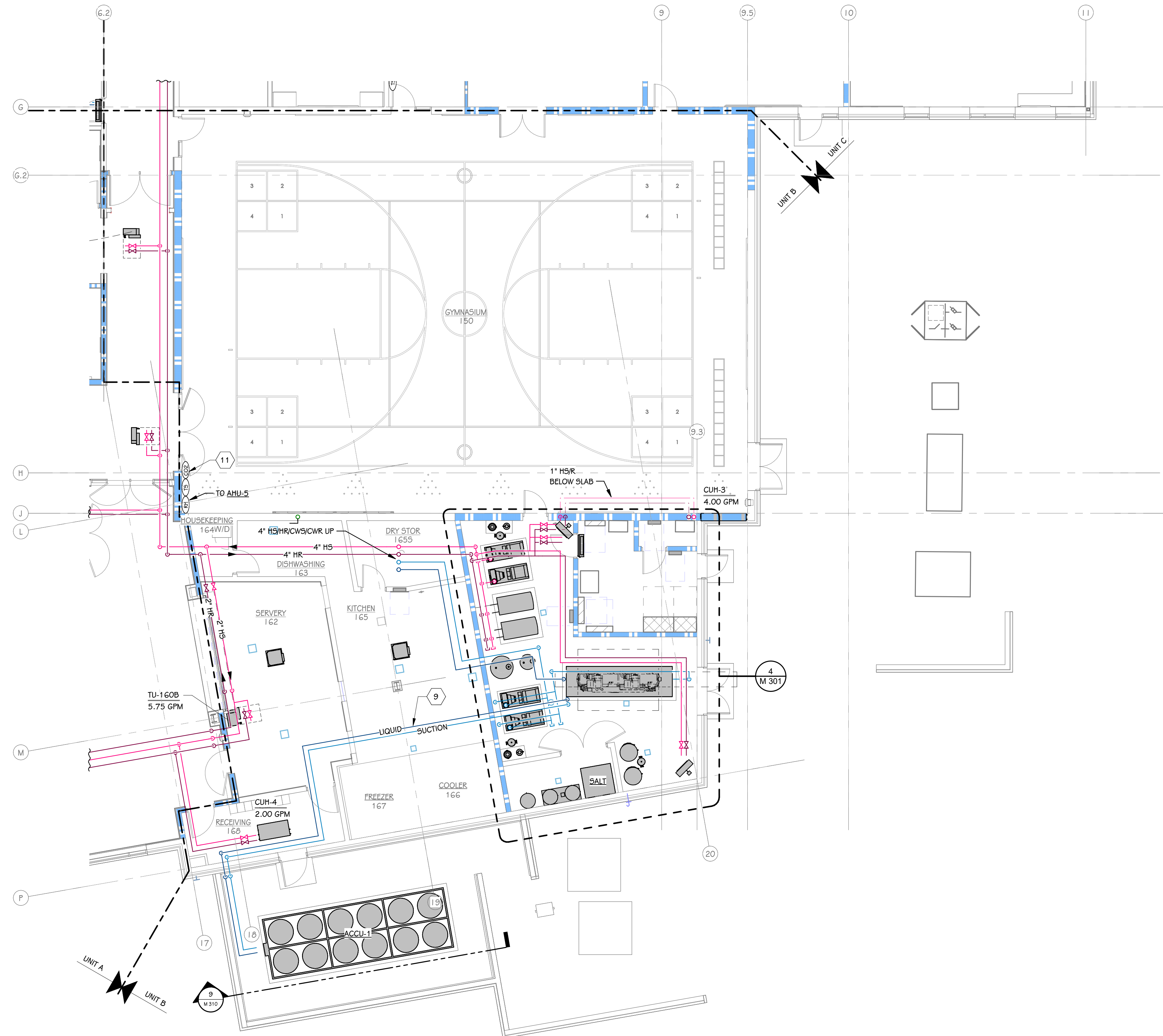
SHEET NUMBER  
**M 201A**  
21-237.20

**HAVERRILL ELEMENTARY**



TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



**FIRST FLOOR HVAC PIPING PLAN - UNIT B**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

- GENERAL NOTES - HVAC PIPING**
- CONTRACTOR SHALL PROVIDE AIR VENTS AT ALL HIGH POINTS AND DRAINS AT ALL LOW POINTS IN HYDRONIC SYSTEMS.
  - PROVIDE COMBINATION CARBON DIOXIDE / TEMPERATURE SENSOR FOR SPACES CALLING FOR BOTH SENSOR TYPES.
- KEYED NOTES - HVAC PIPING**
- ROUTE REFRIGERANT PIPING UP TO APPROPRIATE CONDENSING ON ROOF. REFRIGERANT PIPING SIZED PER MANUFACTURER'S RECOMMENDATION.
  - CALIBRATED BALANCE VALVE IS FOR FLOW MEASUREMENT. SEE PLANS FOR GPM.
  - OFFSET PIPING TO AVOID STRUCTURAL ELEMENT.
  - 3/4" HS/R DOWN IN WALL TO PANEL RADIATION.
  - EXPANSION LOOP BASED ON "METRAFLEX" METROLOOP. REFER TO DETAIL.
  - 1" HS/R DOWN IN WALL TO CABINET HEATER.
  - 1" HS/R DOWN IN CHASE TO CABINET HEATER.
  - 3/4" HS/R DOWN IN WALL TO CABINET HEATER.
  - PIPE SIZES AND QUANTITY OF CIRCUITS PER MANUFACTURER'S RECOMMENDATION.
  - MINIMUM FLOW BYPASS VALVE.
  - PROVIDE WIRE CAGE FOR SENSOR(S) IN GYMNASIUM.
  - PROPOSED LOCATION FOR DIFFERENTIAL PRESSURE SENSOR. CONTRACTOR TO VERIFY FINAL LOCATION WITH ENGINEER.

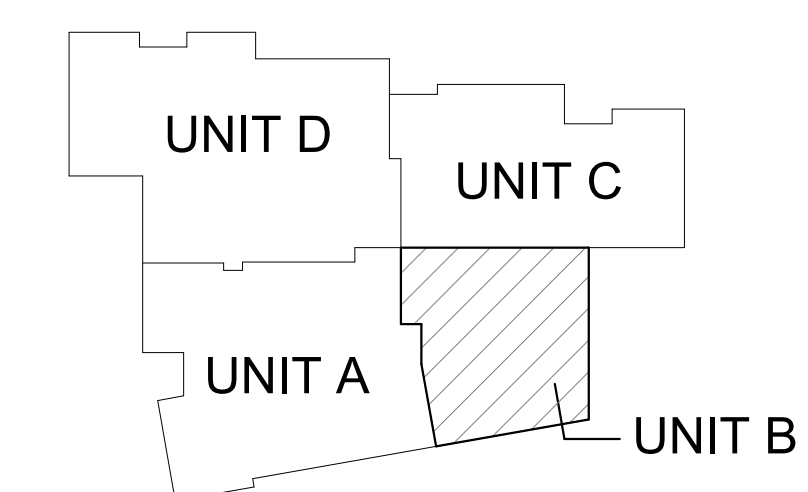
ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

**HAVERHILL ELEMENTARY**



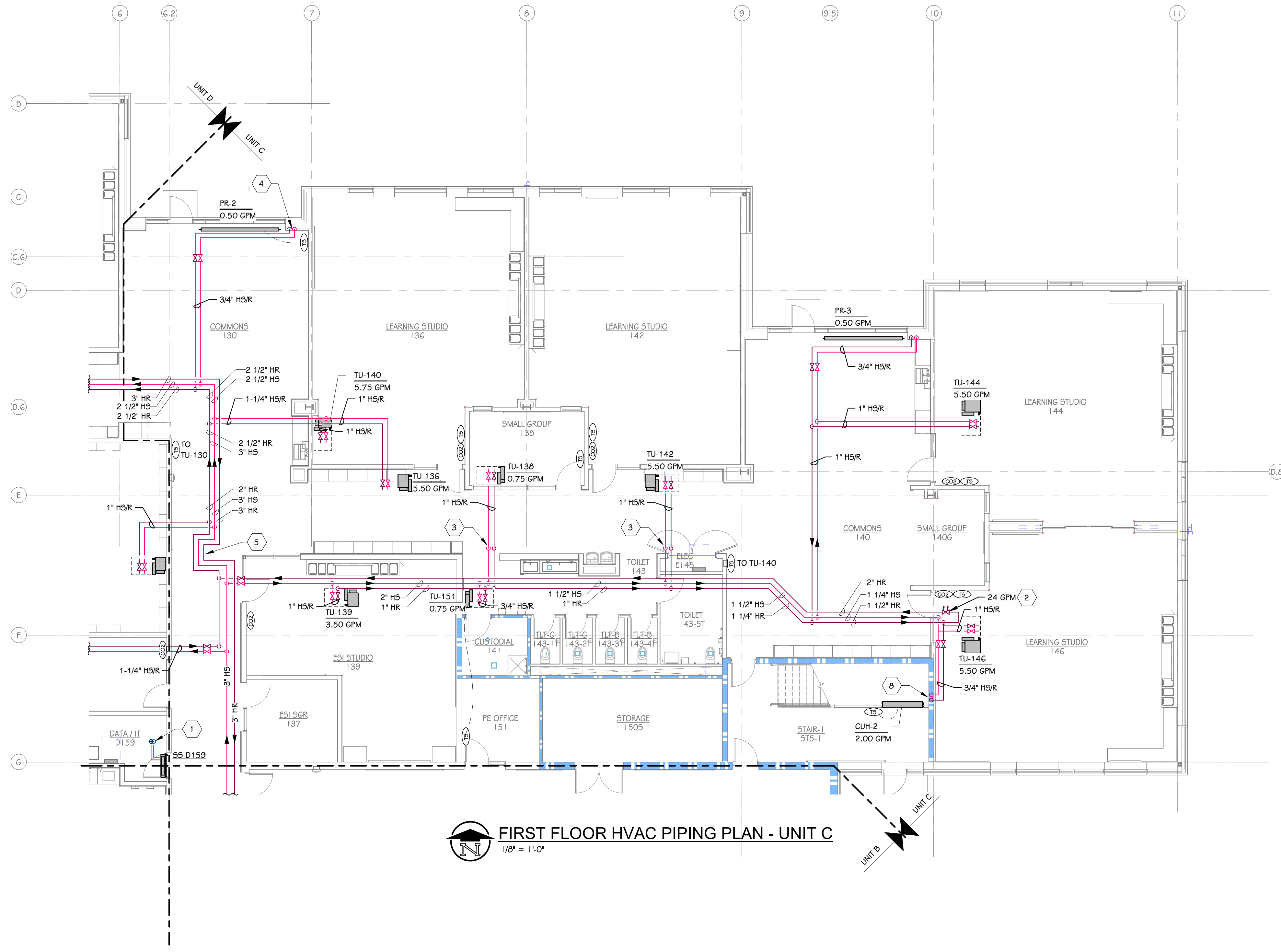
**KEY PLAN**  
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SHEET TITLE  
FIRST FLOOR HVAC PIPING PLAN - UNIT B

DATE  
JUNE 30, 2023

SHEET NUMBER  
**M 201B**  
21-237.20

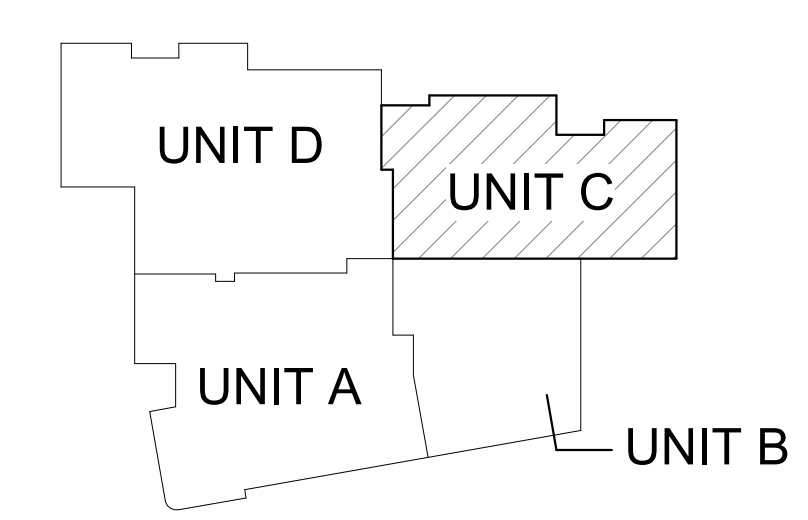
- GENERAL NOTES - HVAC PIPING**
- CONTRACTOR SHALL PROVIDE AIR VENTS AT ALL HIGH POINTS AND DRAINS AT ALL LOW POINTS IN HYDRONIC SYSTEMS.
  - PROVIDE COMBINATION CARBON DIOXIDE / TEMPERATURE SENSOR FOR SPACES CALLING FOR BOTH SENSOR TYPES.
- KEYED NOTES - HVAC PIPING**
- ROUTE REFRIGERANT PIPING UP TO APPROPRIATE CONDENSING ON ROOF. REFRIGERANT PIPING SIZED PER MANUFACTURER'S RECOMMENDATION.
  - CALIBRATED BALANCE VALVE IS FOR FLOW MEASUREMENT. SEE PLANS FOR GPM.
  - OFFSET PIPING TO AVOID STRUCTURAL ELEMENT.
  - 3/4" HSR DOWN IN WALL TO PANEL RADIATION.
  - EXPANSION LOOP BASED ON "METRAFLEX" METROLOOP. REFER TO DETAIL.
  - 1" HSR DOWN IN WALL TO CABINET HEATER.
  - 1" HSR DOWN IN CHASE TO CABINET HEATER.
  - 3/4" HSR DOWN IN WALL TO CABINET HEATER.
  - PIPE SIZES AND QUANTITY OF CIRCUITS PER MANUFACTURER'S RECOMMENDATION.
  - MINIMUM FLOW BYPASS VALVE.
  - PROVIDE WIRE CAGE FOR SENSOR(S) IN GYMNASIUM.
  - PROPOSED LOCATION FOR DIFFERENTIAL PRESSURE SENSOR. CONTRACTOR TO VERIFY FINAL LOCATION WITH ENGINEER.



**FIRST FLOOR HVAC PIPING PLAN - UNIT C**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR: DATE:

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

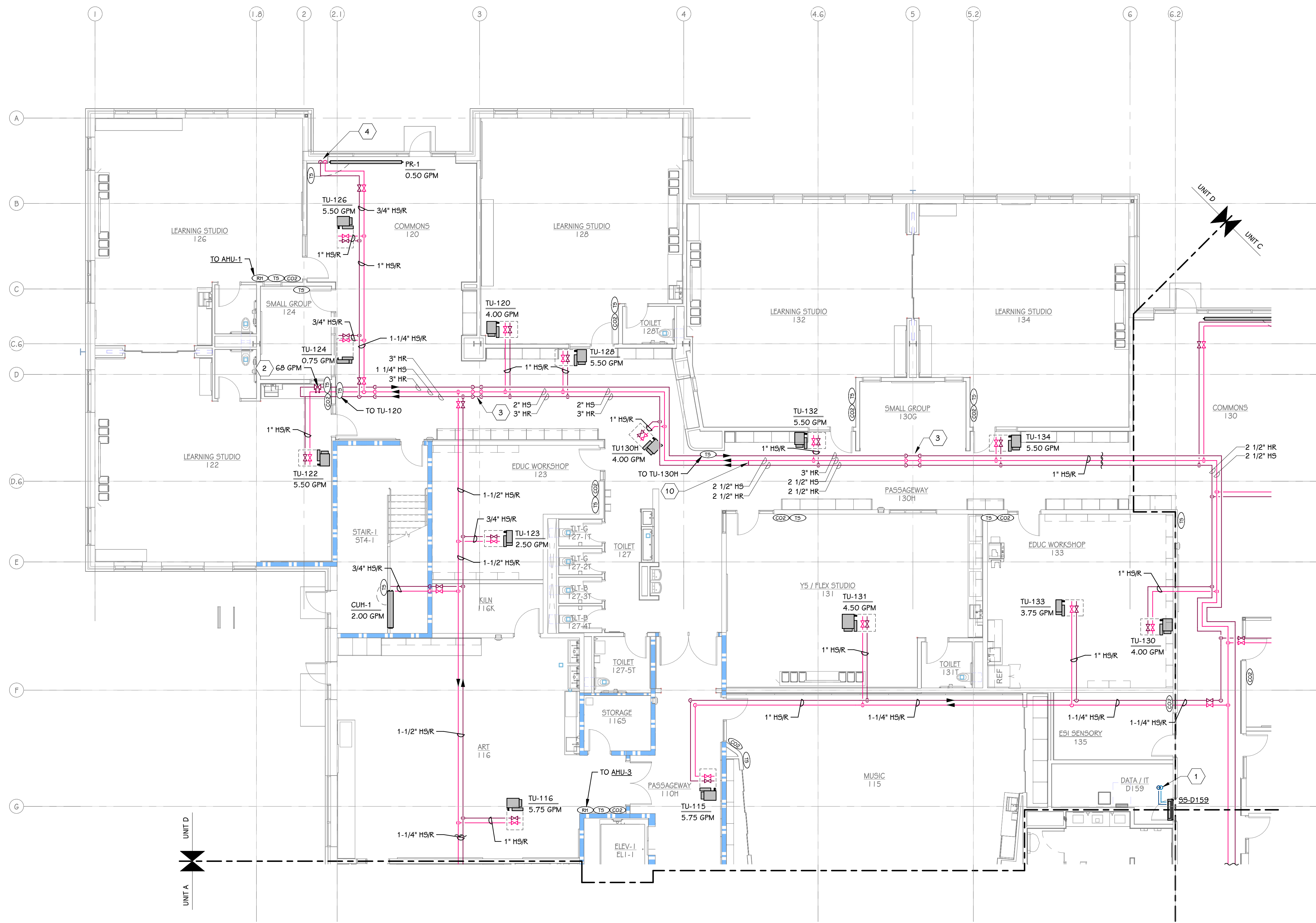
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**FIRST FLOOR HVAC PIPING PLAN - UNIT C**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 201C**  
21-237-20



**FIRST FLOOR HVAC PIPING PLAN - UNIT D**  
1/8" = 1'-0"

**GENERAL NOTES - HVAC PIPING**

- CONTRACTOR SHALL PROVIDE AIR VENTS AT ALL HIGH POINTS AND DRAINS AT ALL LOW POINTS IN HYDRONIC SYSTEMS.
- PROVIDE COMBINATION CARBON DIOXIDE / TEMPERATURE SENSOR FOR SPACES CALLING FOR BOTH SENSOR TYPES.

**KEYED NOTES - HVAC PIPING**

- ROUTE REFRIGERANT PIPING UP TO APPROPRIATE CONDENSING ON ROOF. REFRIGERANT PIPING SIZED PER MANUFACTURER'S RECOMMENDATION.
- CALIBRATED BALANCE VALVE IS FOR FLOW MEASUREMENT. SEE PLANS FOR GPM.
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- 3/4" HSR DOWN IN WALL TO PANEL RADIATION.
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- 1" HSR DOWN IN WALL TO CABINET HEATER.
- 1" HSR DOWN IN CHASE TO CABINET HEATER.
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- PIPE SIZES AND QUANTITY OF CIRCUITS PER MANUFACTURER'S RECOMMENDATION.
- MINIMUM FLOW BYPASS VALVE.
- PROVIDE WIRE CAGE FOR SENSOR(S) IN GYMNASIUM.
- PROPOSED LOCATION FOR DIFFERENTIAL PRESSURE SENSOR. CONTRACTOR TO VERIFY FINAL LOCATION WITH ENGINEER.

ISSUED FOR DATE

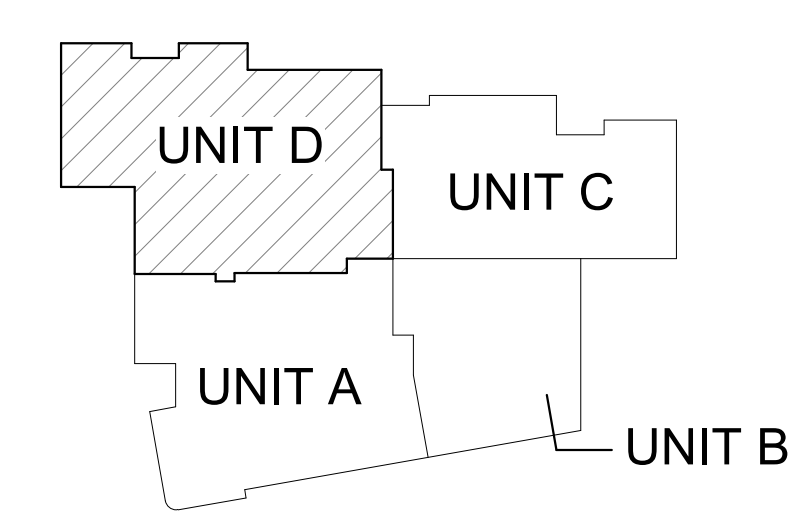
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
FIRST FLOOR HVAC PIPING PLAN - UNIT D

Portage, Michigan

**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

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JUNE 30, 2023

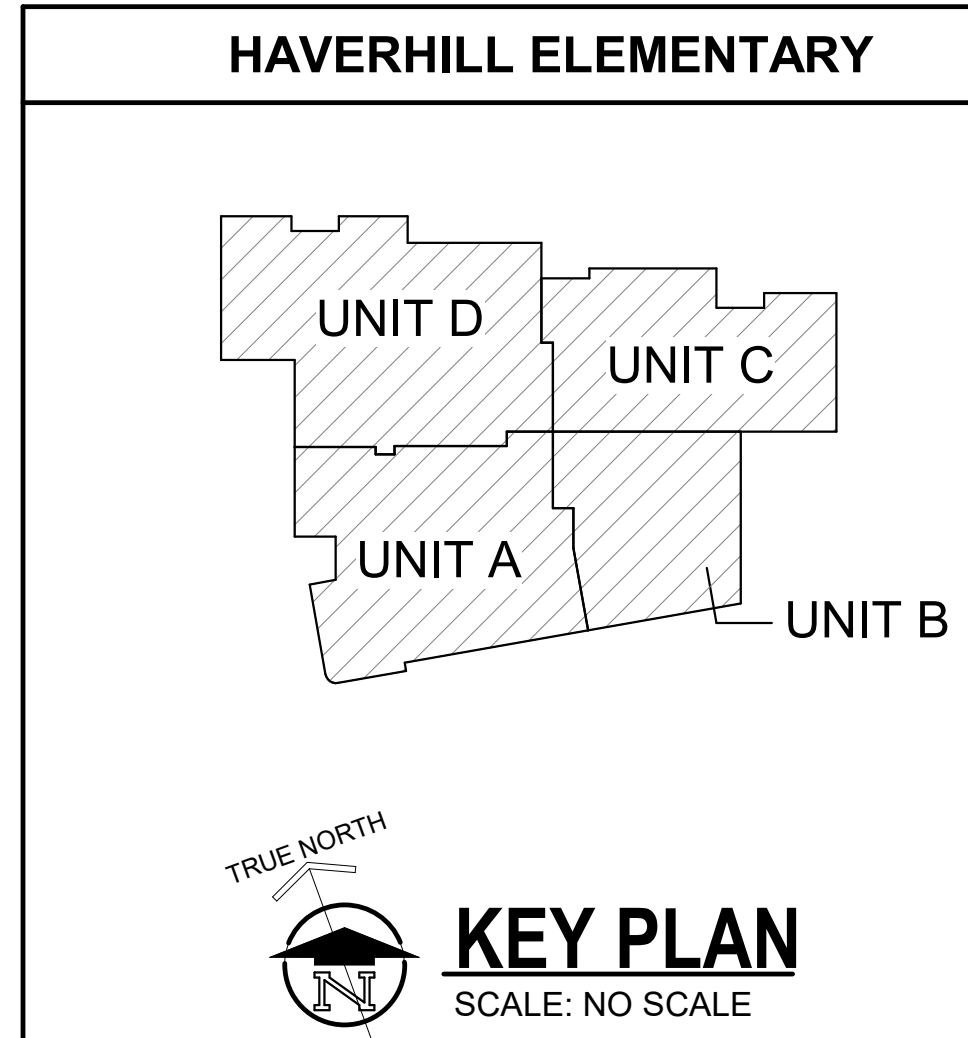
SHEET NUMBER  
**M 201D**  
21-237-20





**SECOND FLOOR HVAC PIPING PLAN - OVERALL**  
 1" = 10'-0"

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**HAVERHILL ELEMENTARY SCHOOL**

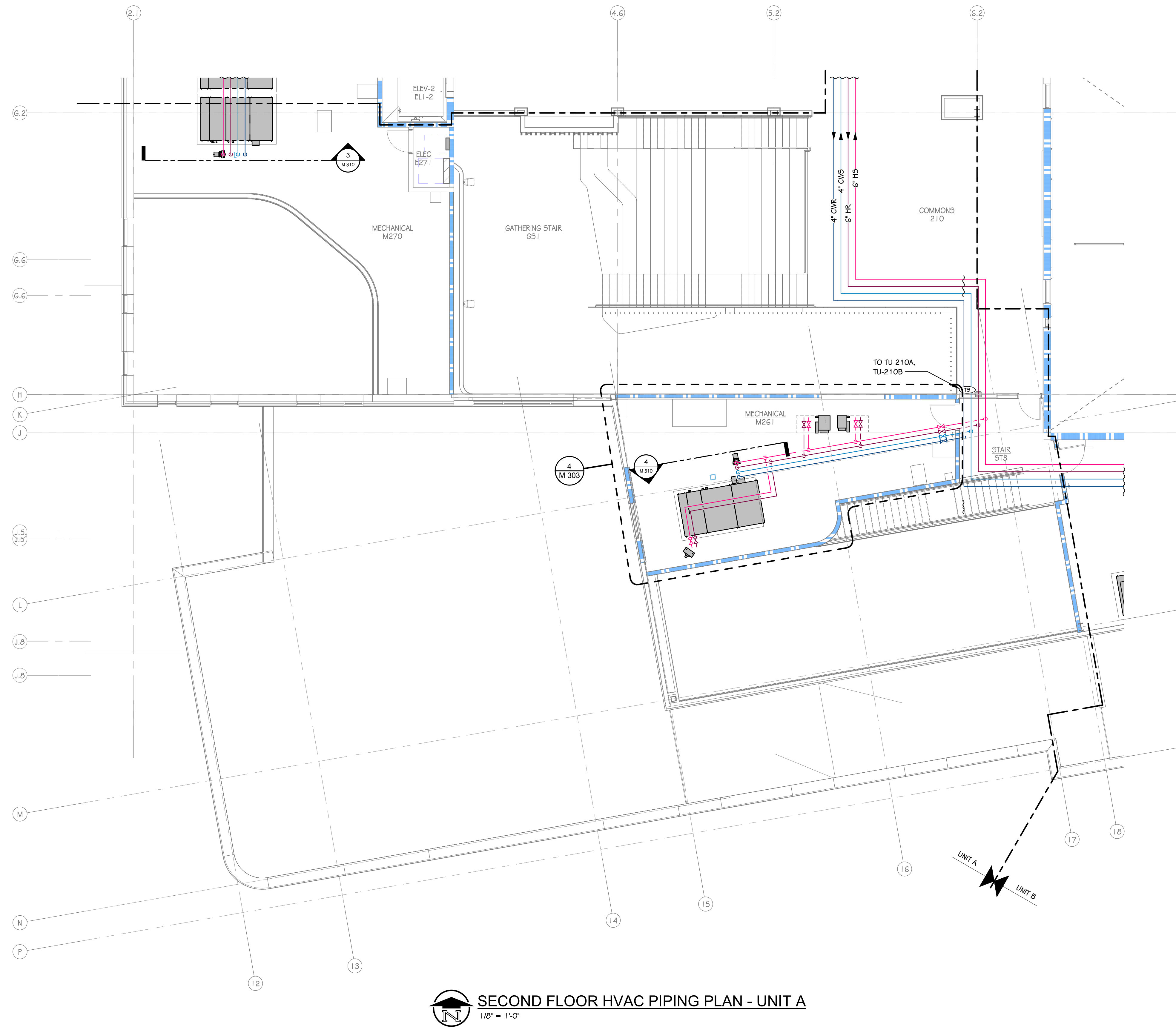
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET TITLE  
**SECOND FLOOR HVAC PIPING PLAN - OVERALL**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**M 202**  
 21-237.20



**SECOND FLOOR HVAC PIPING PLAN - UNIT A**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

- GENERAL NOTES - HVAC PIPING**
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  - CALIBRATED BALANCE VALVE IS FOR FLOW MEASUREMENT. SEE PLANS FOR GPM.
  - OFFSET PIPING TO AVOID STRUCTURAL ELEMENT.
  - 3/4" HS/R DOWN IN WALL TO PANEL RADIATION.
  - EXPANSION LOOP BASED ON "METRAFLEX" METROLOOP. REFER TO DETAIL.
  - 1" HS/R DOWN IN WALL TO CABINET HEATER.
  - 1" HS/R DOWN IN CHASE TO CABINET HEATER.
  - 3/4" HS/R DOWN IN WALL TO CABINET HEATER.
  - PIPE SIZES AND QUANTITY OF CIRCUITS PER MANUFACTURER'S RECOMMENDATION.
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  - PROVIDE WIRE CAGE FOR SENSOR(S) IN GYMNASIUM.
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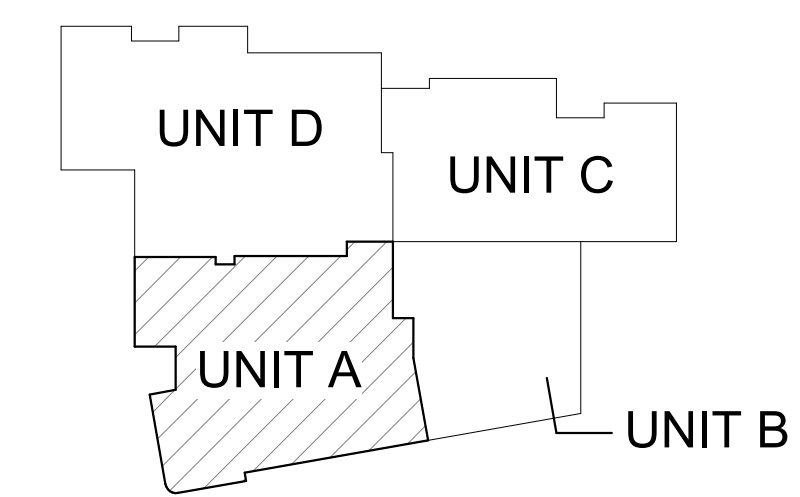
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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

HAVERHILL ELEMENTARY

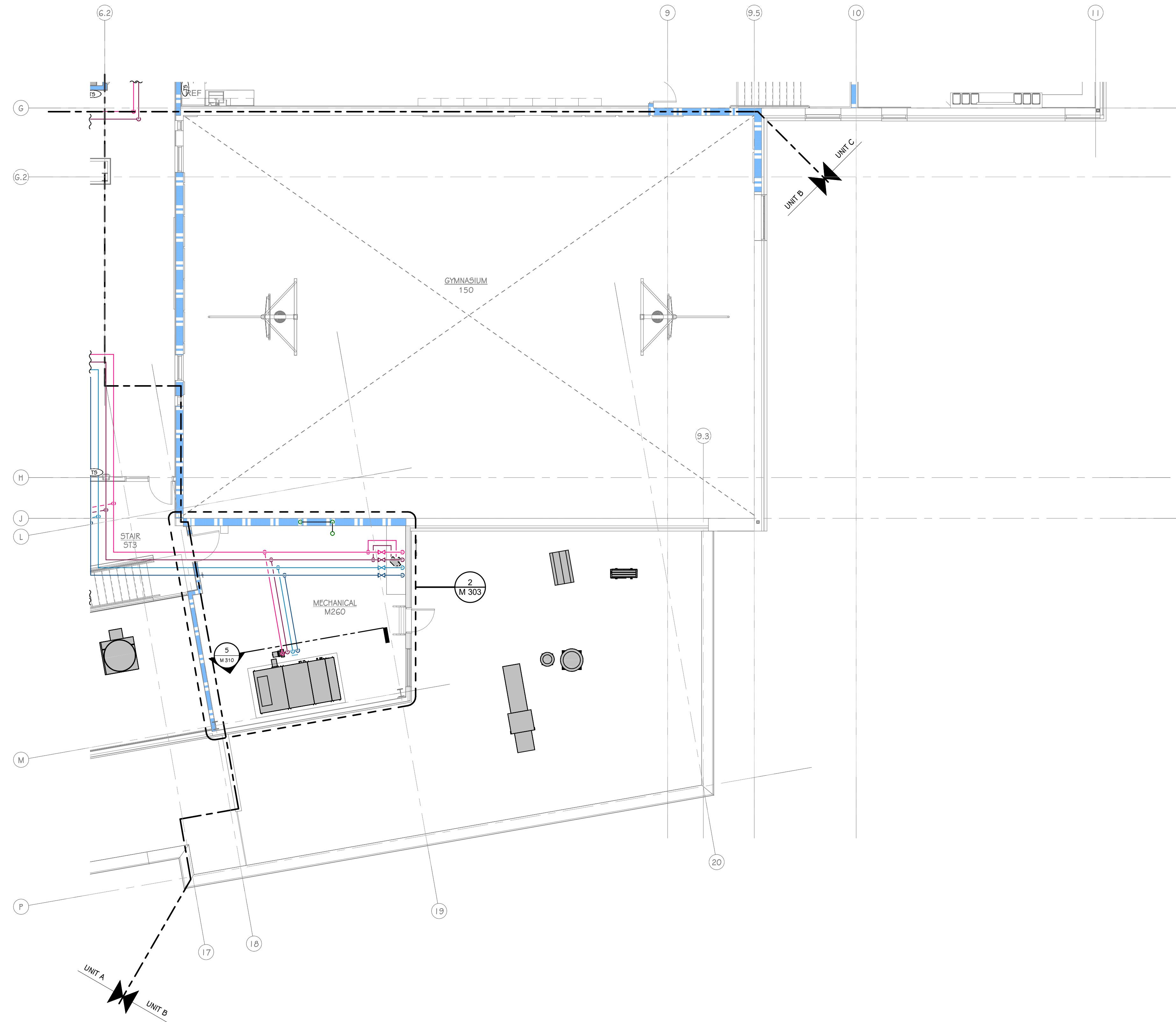


TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

SHEET TITLE  
SECOND FLOOR HVAC PIPING PLAN -  
UNIT A

DATE  
JUNE 30, 2023

SHEET NUMBER  
**M 202A**  
21-237.20



FIRST FLOOR HVAC PIPING PLAN - UNIT B  
1/8" = 1'-0"

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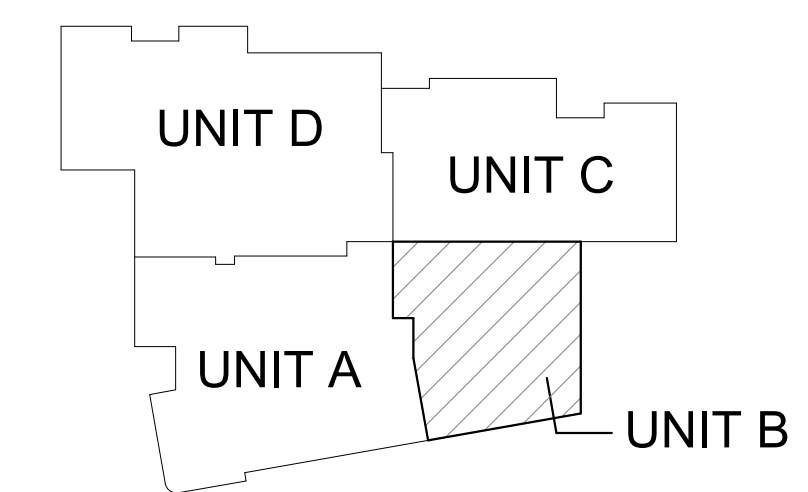
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PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

HAVERHILL ELEMENTARY



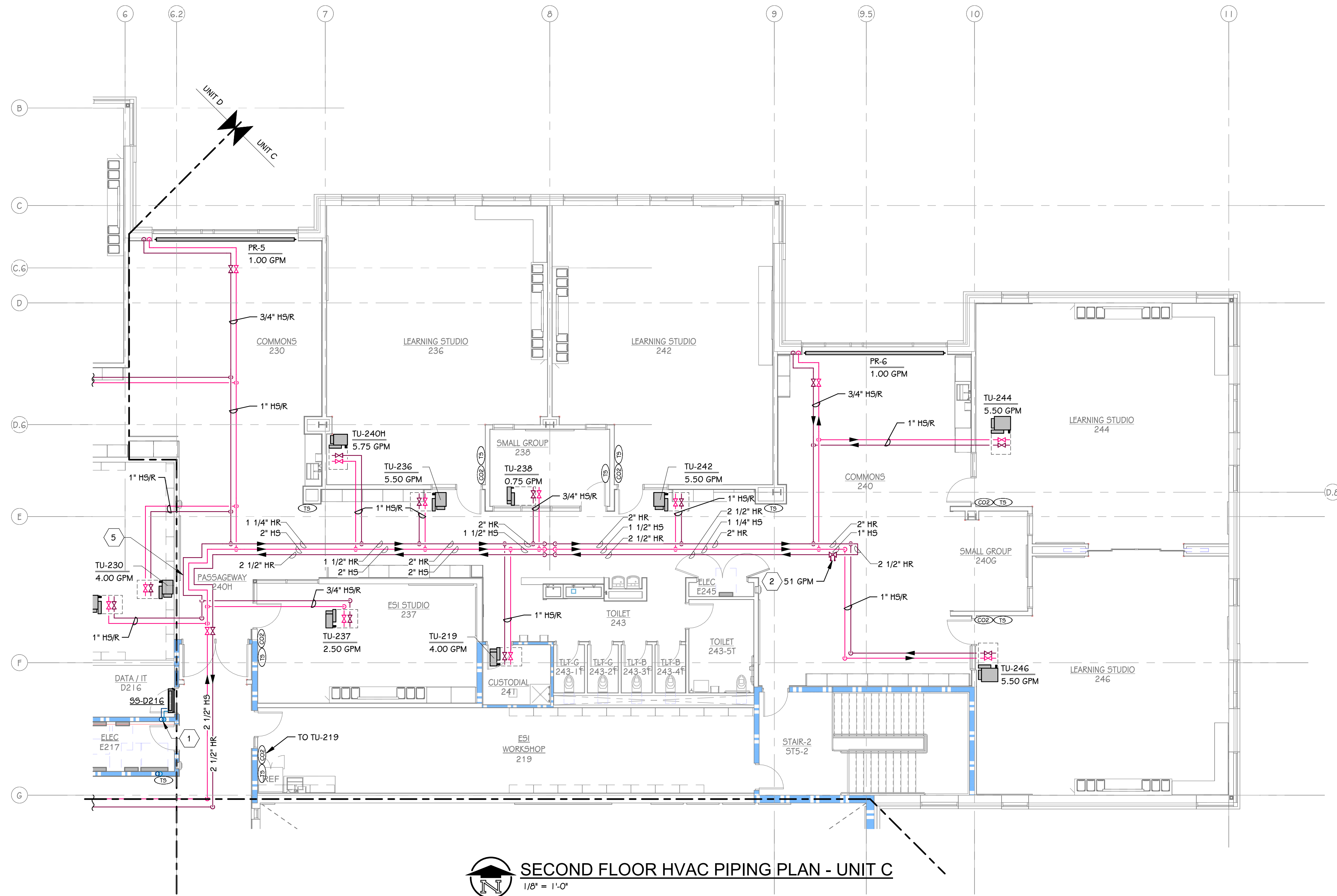
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SHEET TITLE  
SECOND FLOOR HVAC PIPING PLAN - UNIT B

DATE  
JUNE 30, 2023

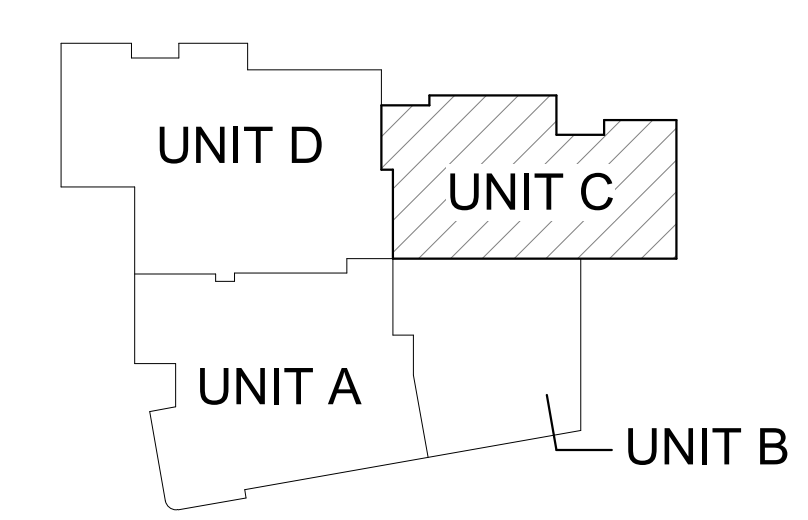
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**M 202B**  
21-237.20

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  - PROVIDE WIRE CAGE FOR SENSOR(S) IN GYMNASIUM.
  - PROPOSED LOCATION FOR DIFFERENTIAL PRESSURE SENSOR. CONTRACTOR TO VERIFY FINAL LOCATION WITH ENGINEER.



**SECOND FLOOR HVAC PIPING PLAN - UNIT C**  
1/8" = 1'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**



**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR: DATE:

PROJECT TITLE: HAVERHILL ELEMENTARY SCHOOL

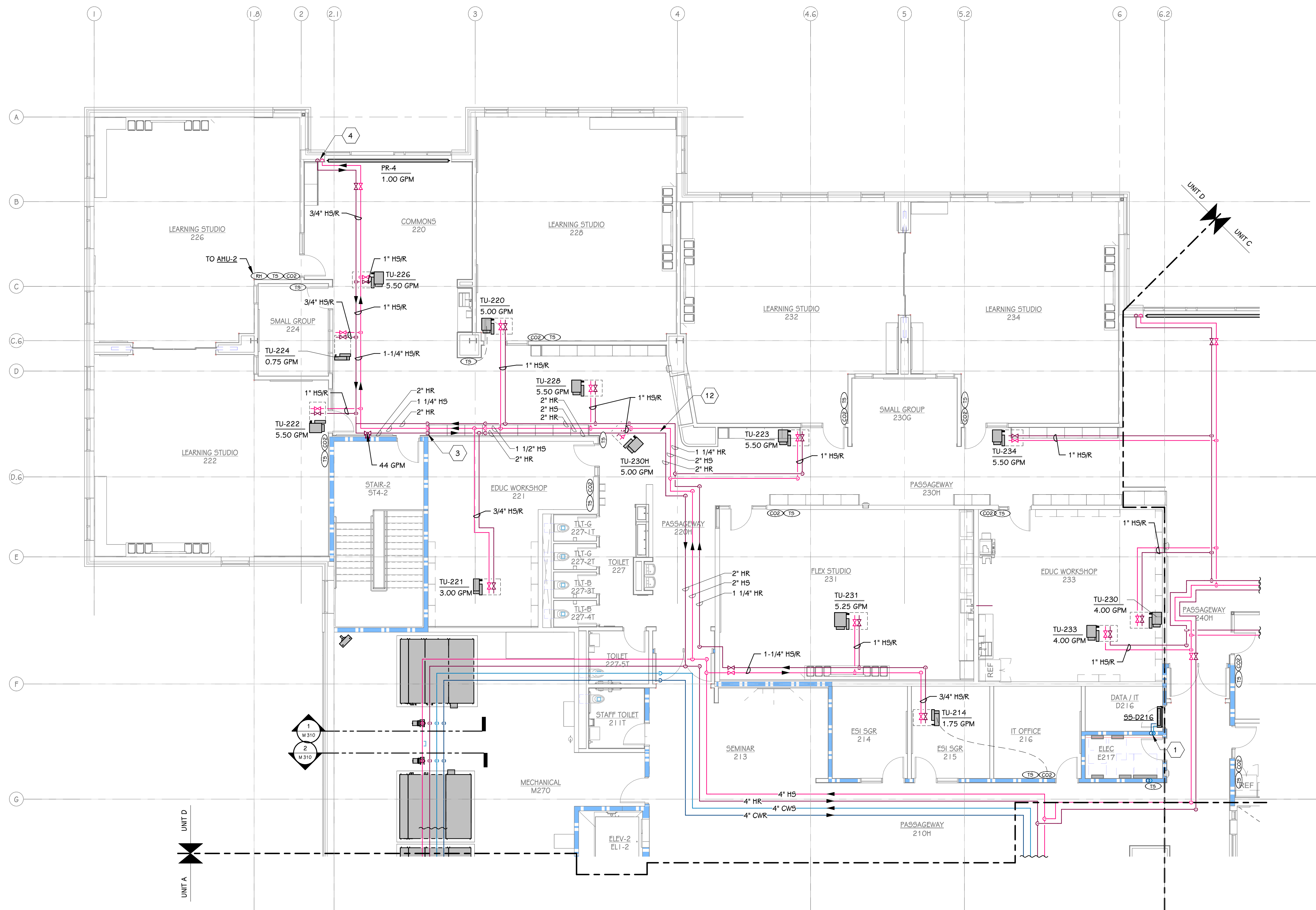
OWNER: PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE: SECOND FLOOR HVAC PIPING PLAN - UNIT C

DATE: JUNE 30, 2023

SHEET NUMBER: M 202C  
21-237.20



**SECOND FLOOR HVAC PIPING PLAN - UNIT D**  
1/8" = 1'-0"

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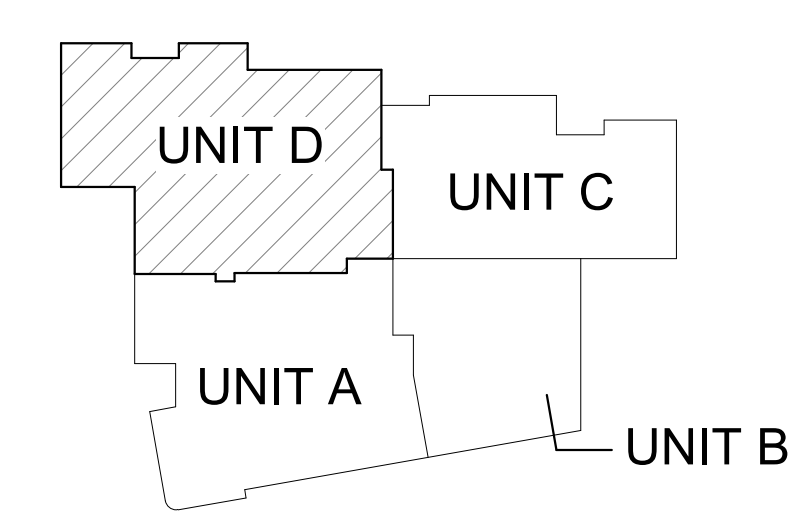
ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

**HAVERHILL ELEMENTARY**

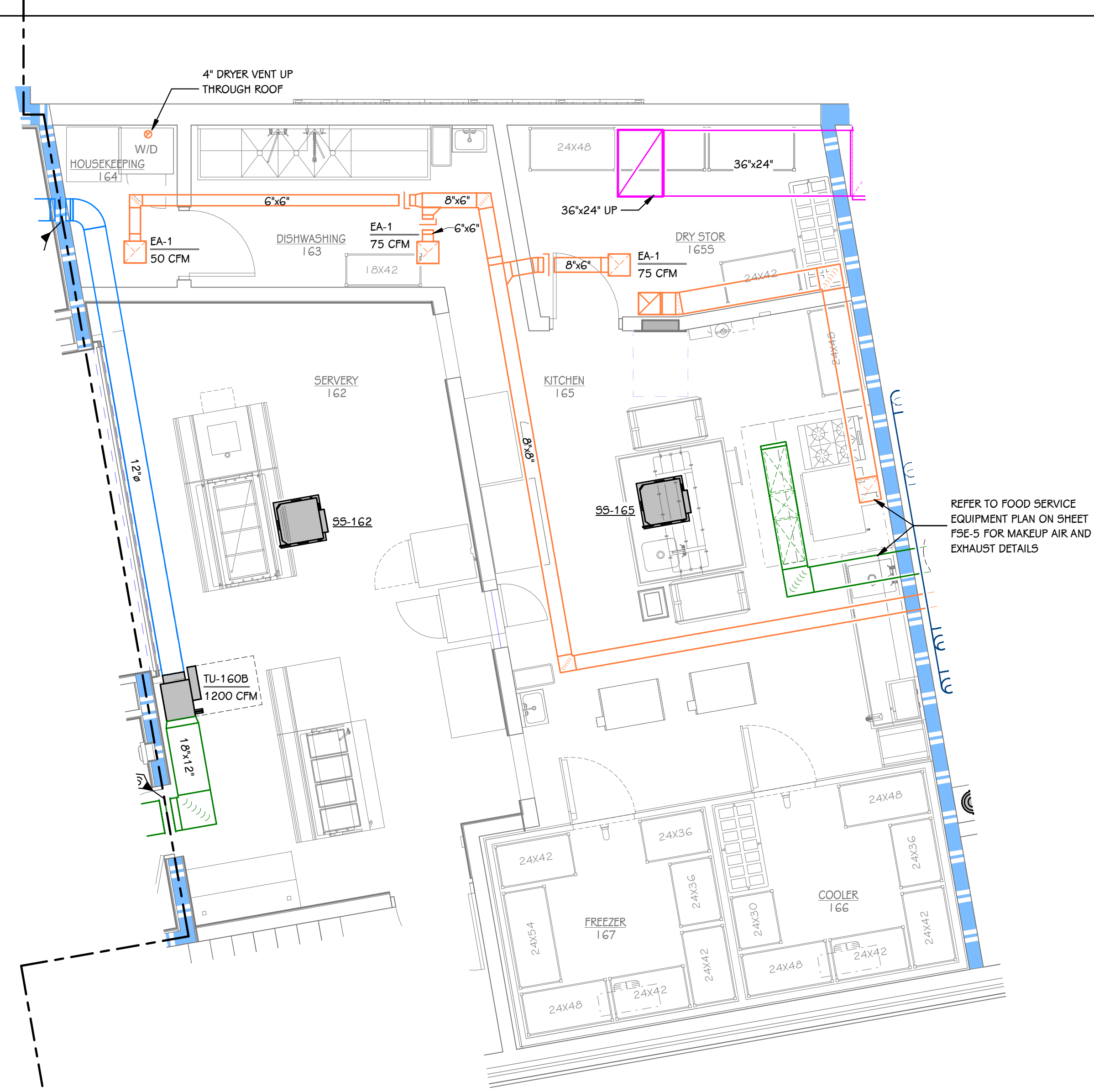


**KEY PLAN**  
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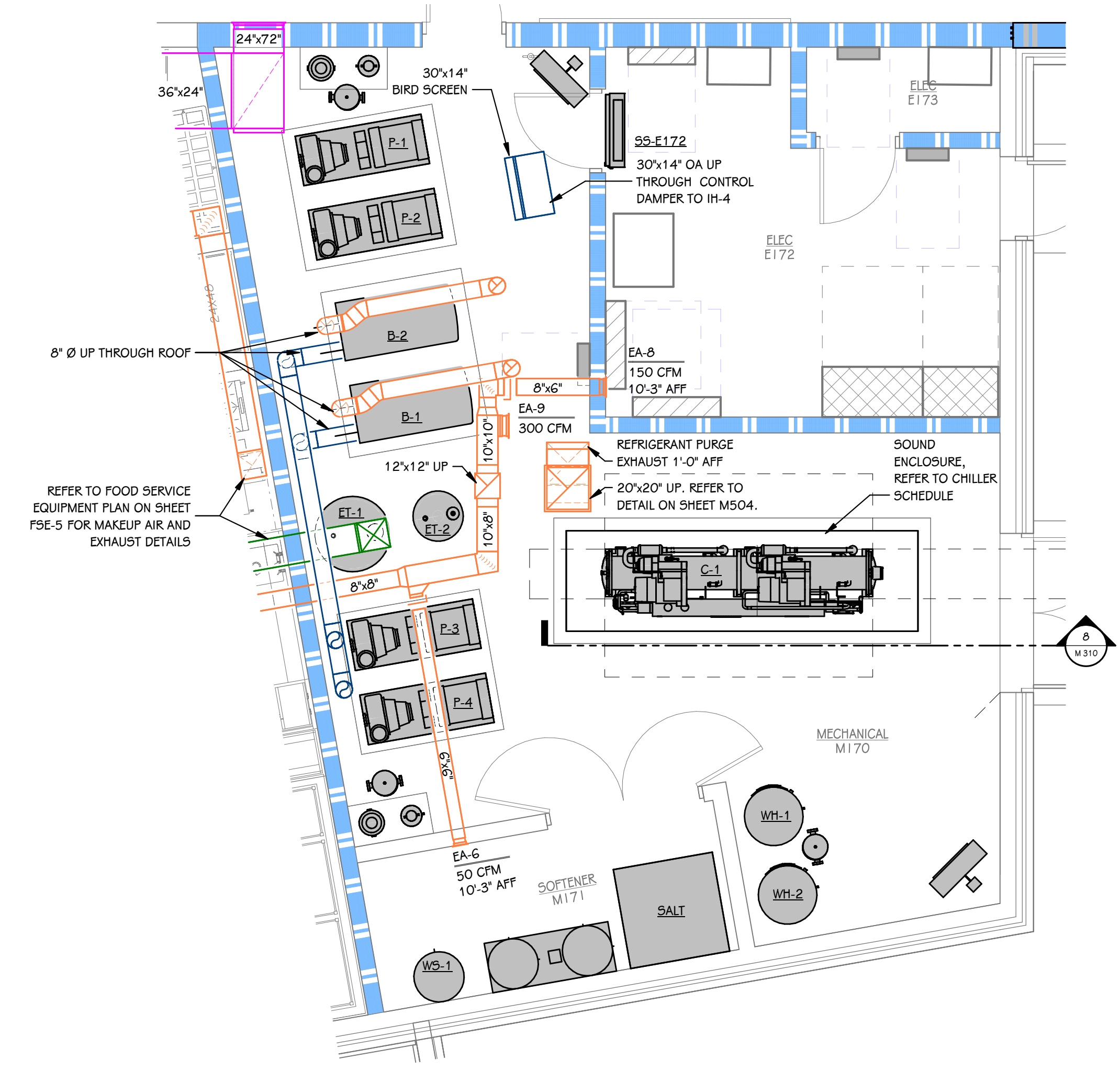
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**SECOND FLOOR HVAC PIPING PLAN - UNIT D**

DATE  
**JUNE 30, 2023**

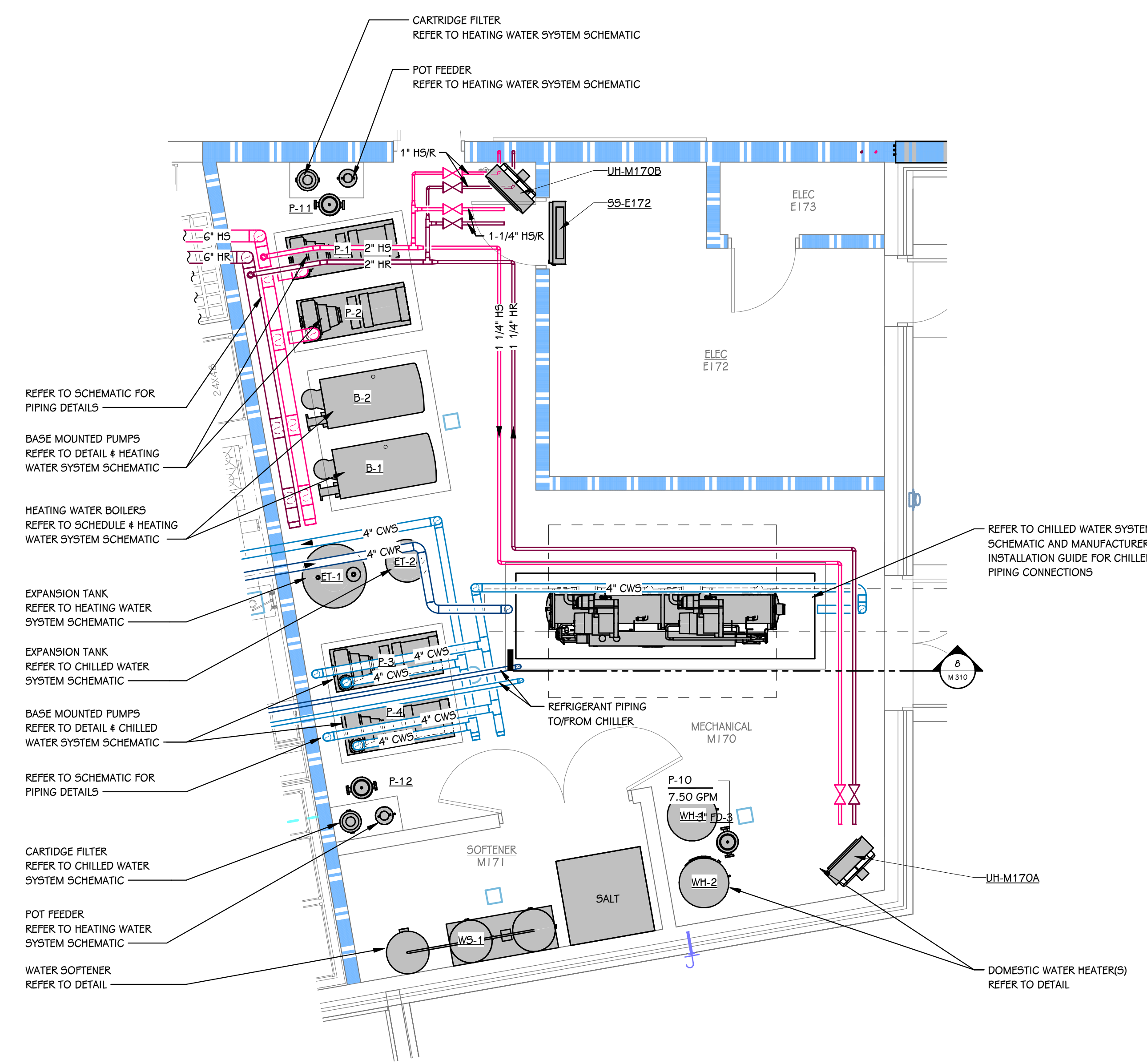
SHEET NUMBER  
**M 202D**  
21-237-20



1 ENLARGED SHEET METAL PLAN - KITCHEN  
1/4" = 1'-0"



3 ENLARGED SHEET METAL PLAN - MECH ROOM M170  
1/4" = 1'-0"



4 ENLARGED PIPING PLAN - MECH ROOM M170  
1/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

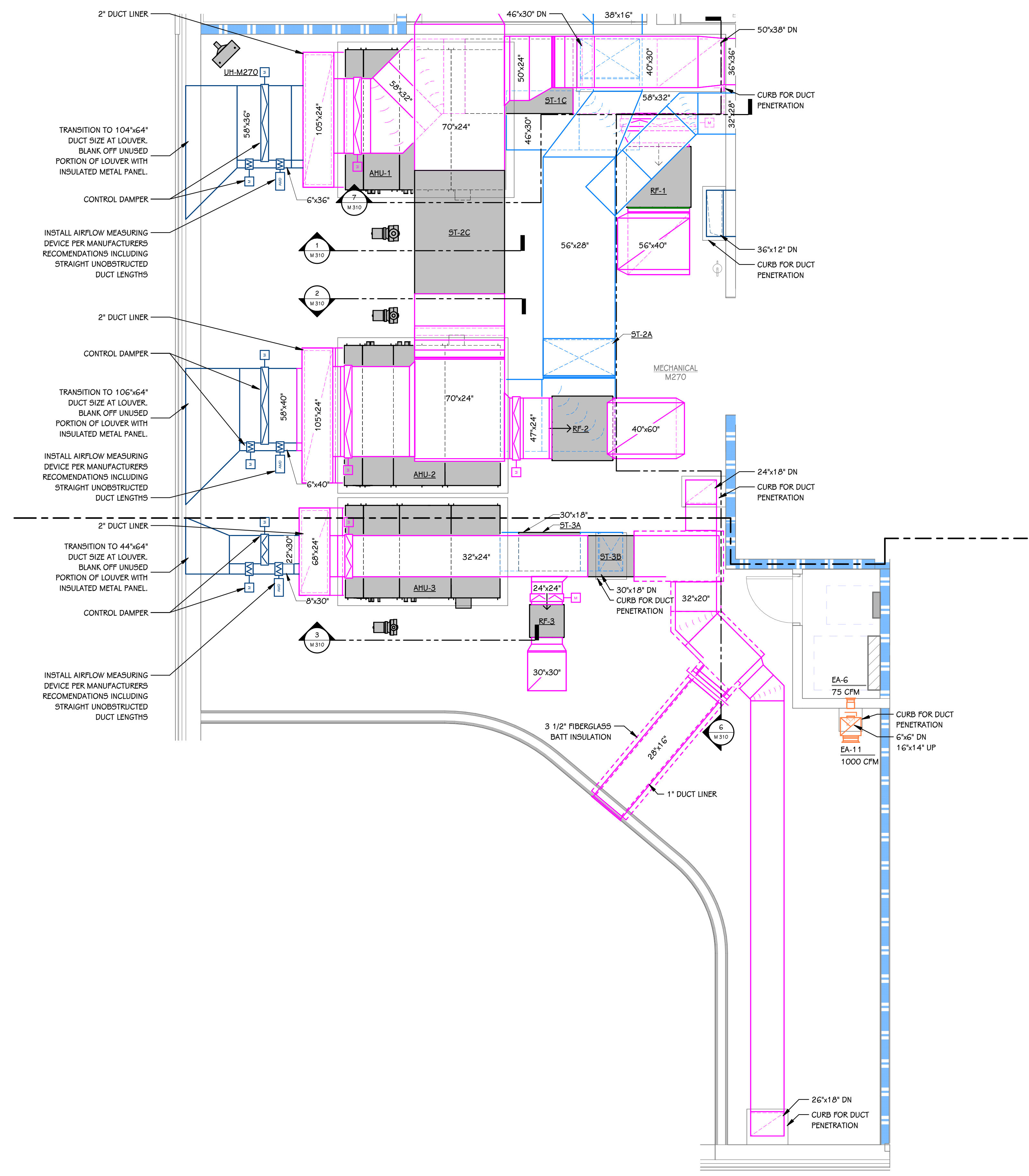
OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
ENLARGED MECHANICAL PLANS

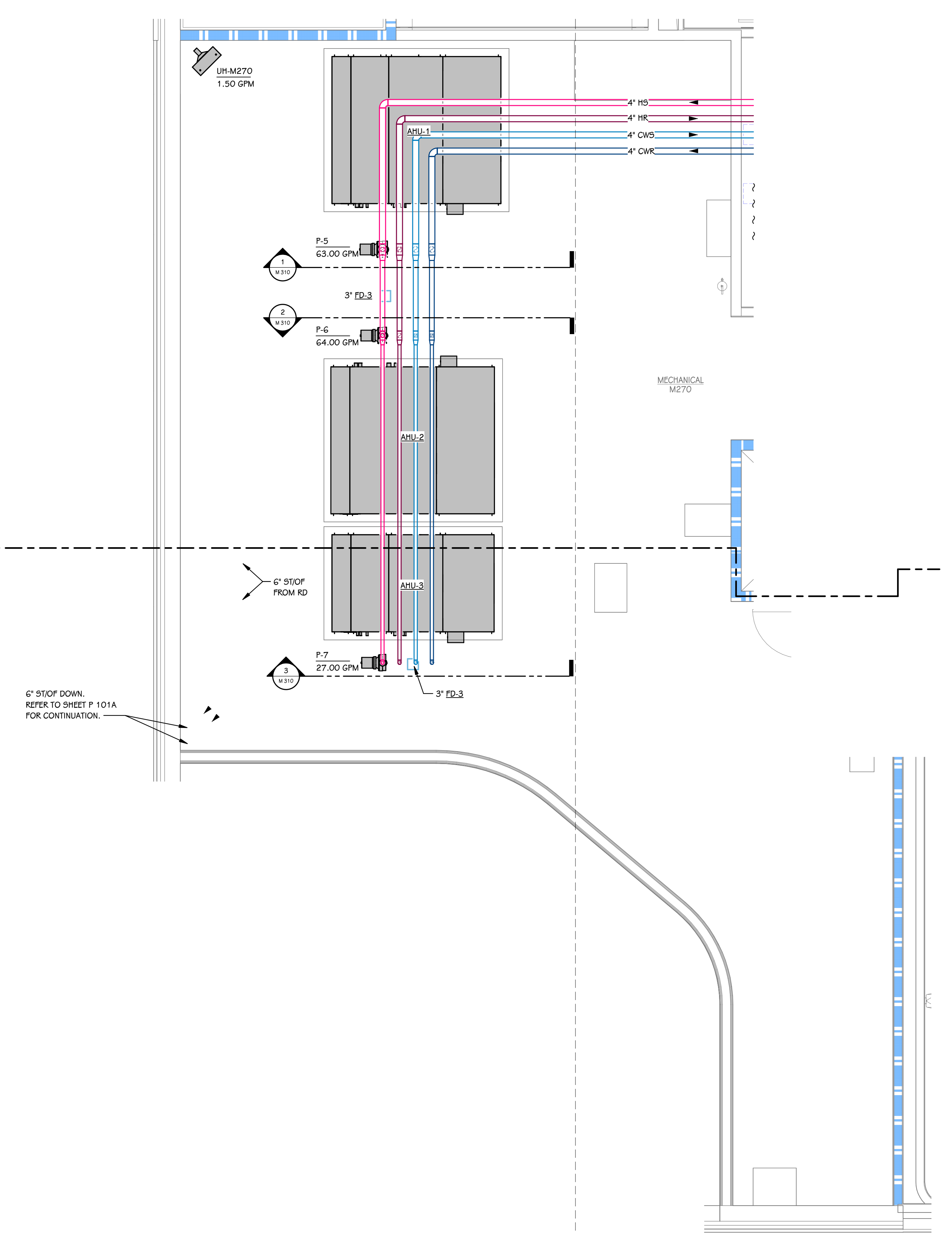
Portage, Michigan

DATE  
JUNE 30, 2023

SHEET NUMBER  
M 301  
21-237.20



1 ENLARGED SHEET METAL PLAN - MECH ROOM M270  
 1/4" = 1'-0"



2 ENLARGED PIPING PLAN - MECH ROOM M270  
 1/4" = 1'-0"

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PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL

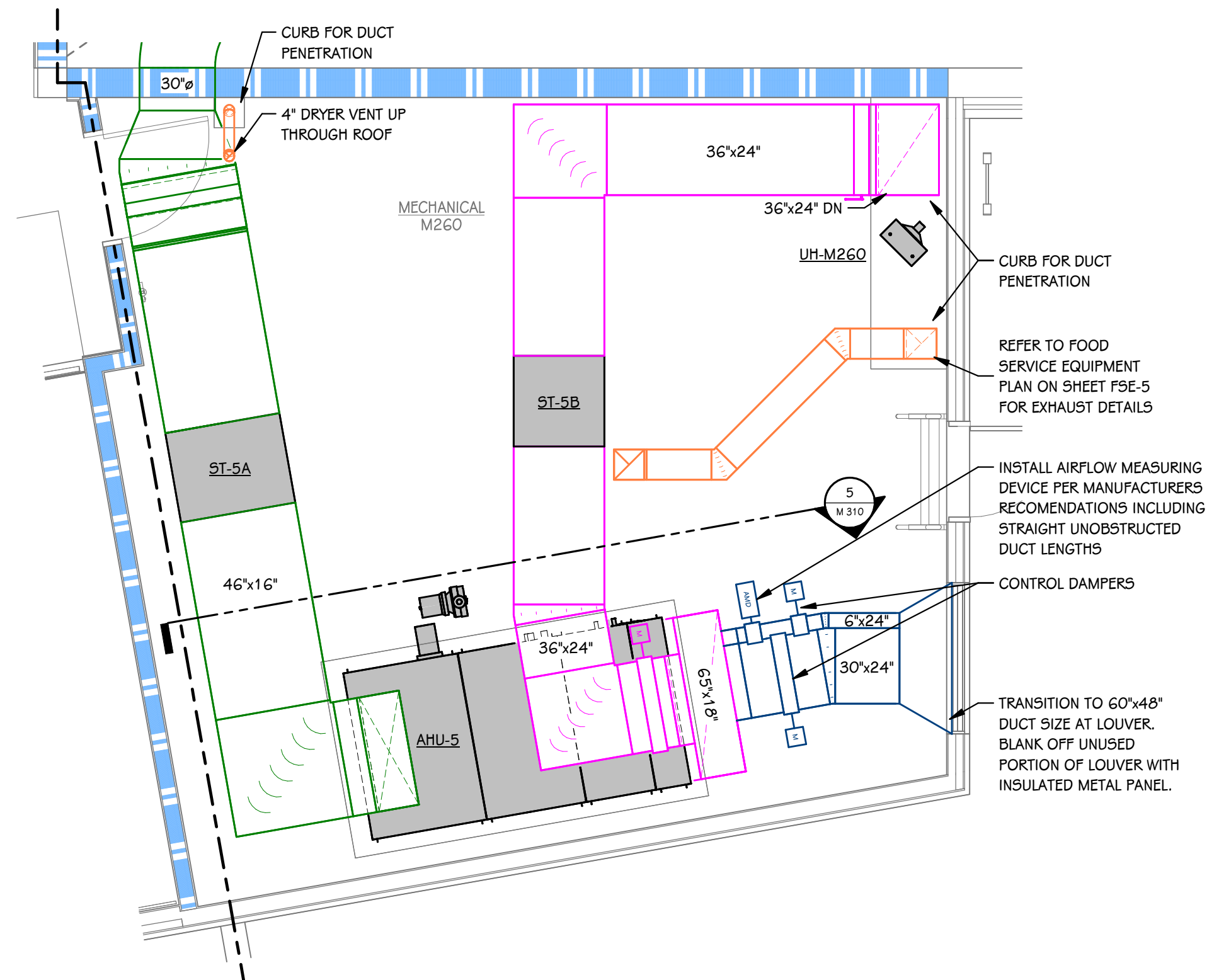
OWNER  
 PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
 ENLARGED MECHANICAL PLANS

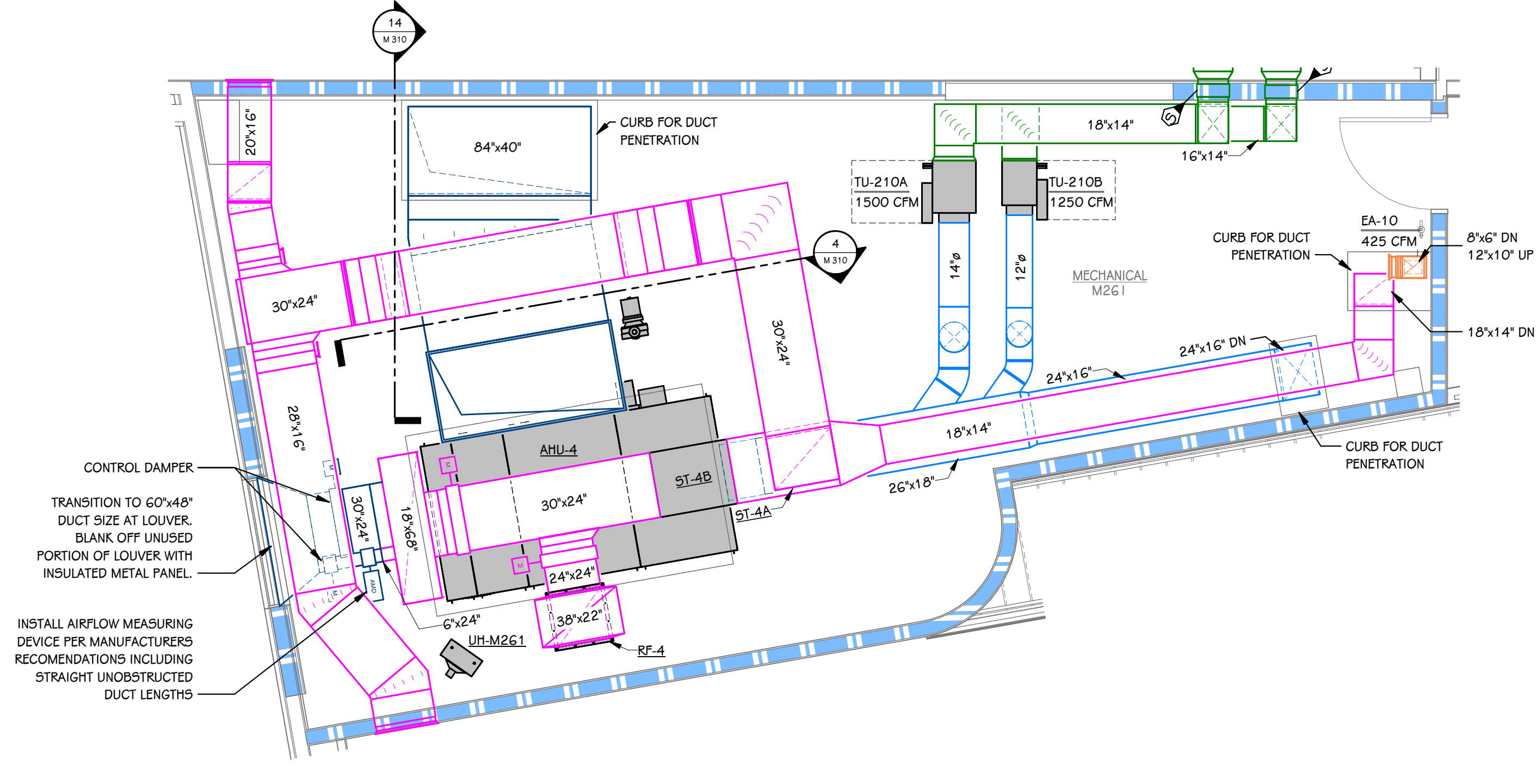
Portage, Michigan

DATE  
 JUNE 30, 2023

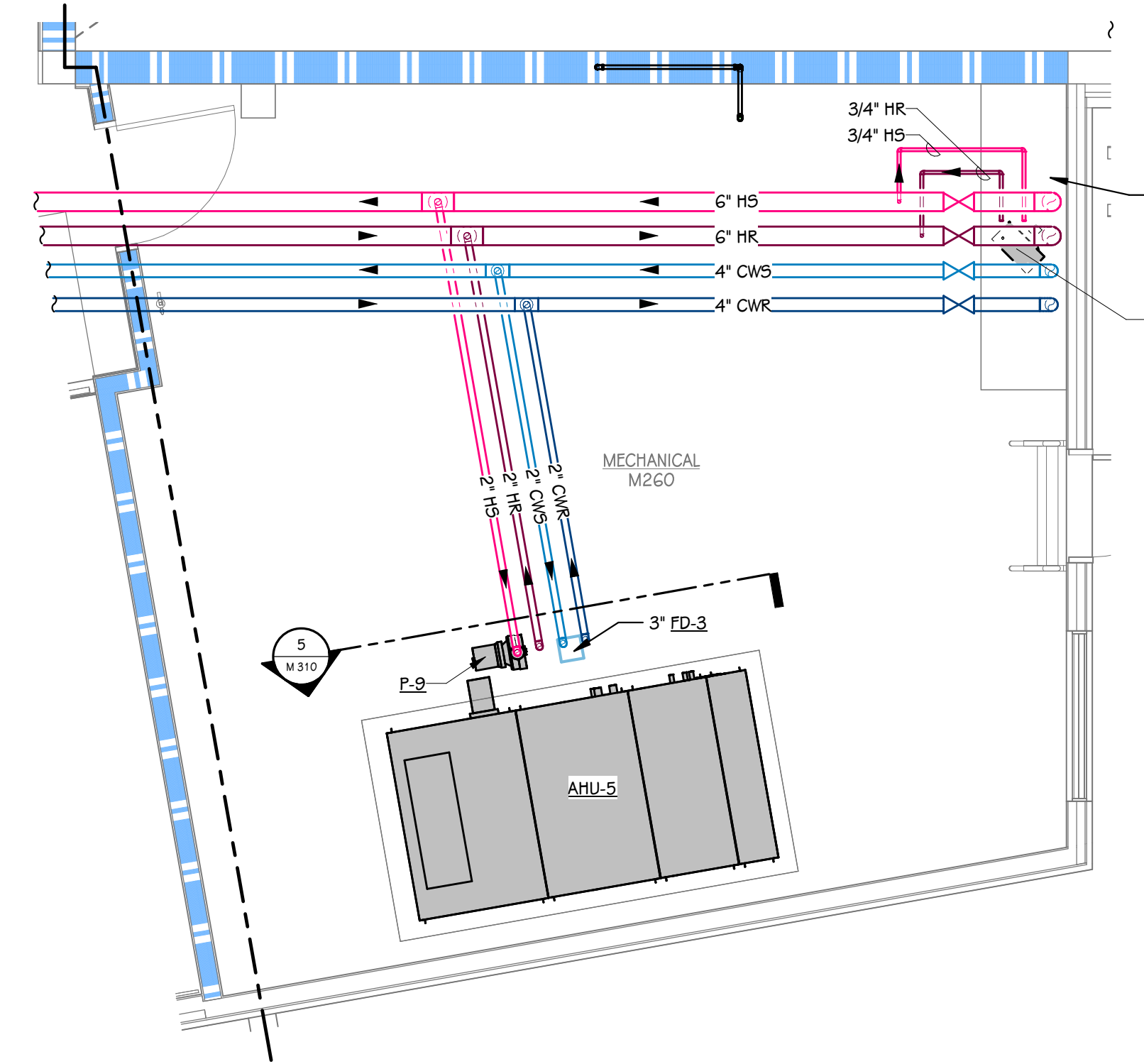
SHEET NUMBER  
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 21-237.20



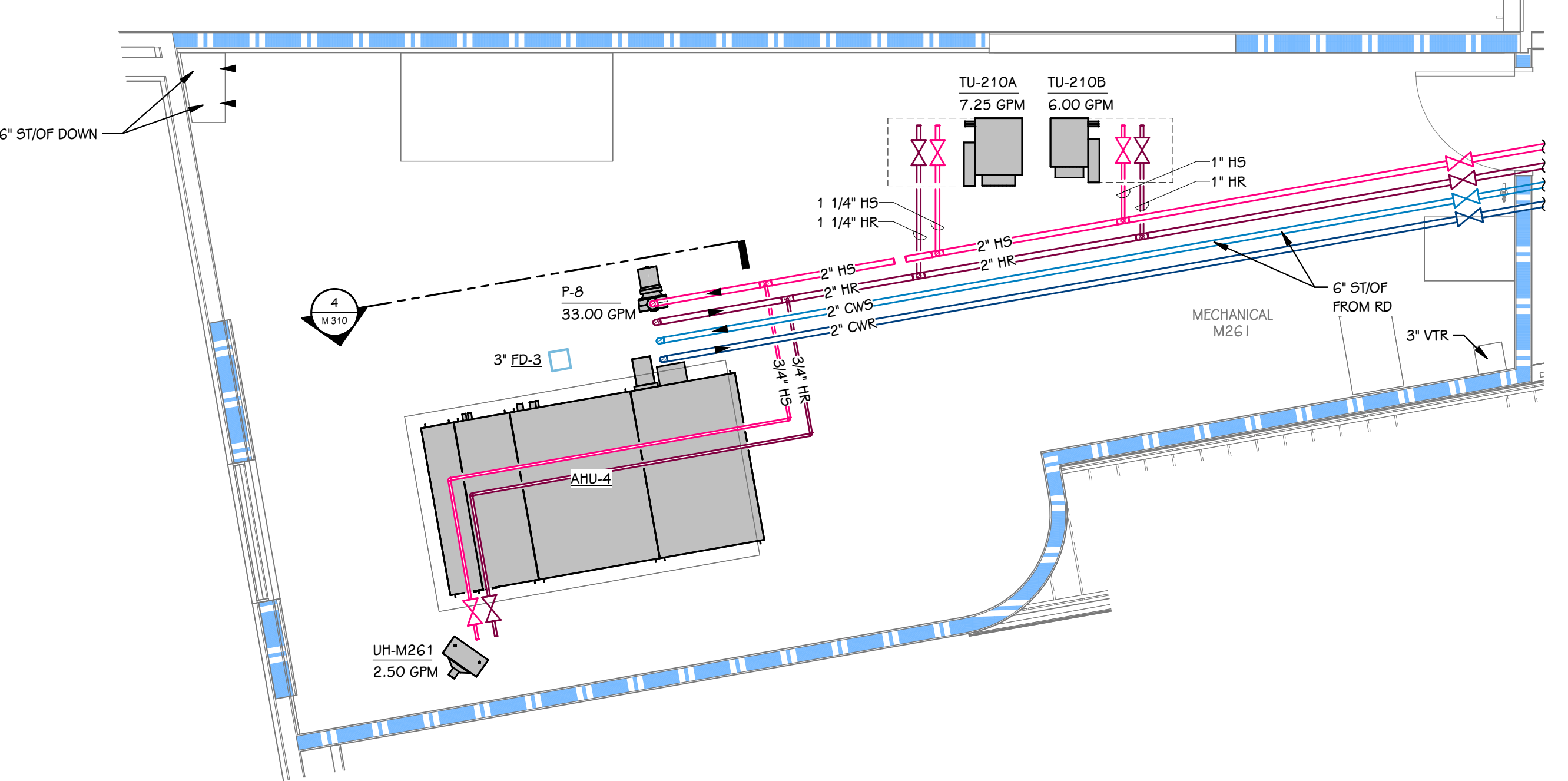
1 ENLARGED SHEET METAL PLAN - MECH ROOM M260  
M 303 1/4" = 1'-0"



3 ENLARGED SHEET METAL PLAN - MECH ROOM M261  
M 303 1/4" = 1'-0"



2 ENLARGED PIPING PLAN - MECH ROOM M260  
M 303 1/4" = 1'-0"



4 ENLARGED PIPING PLAN - MECH ROOM M261  
M 303 1/4" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

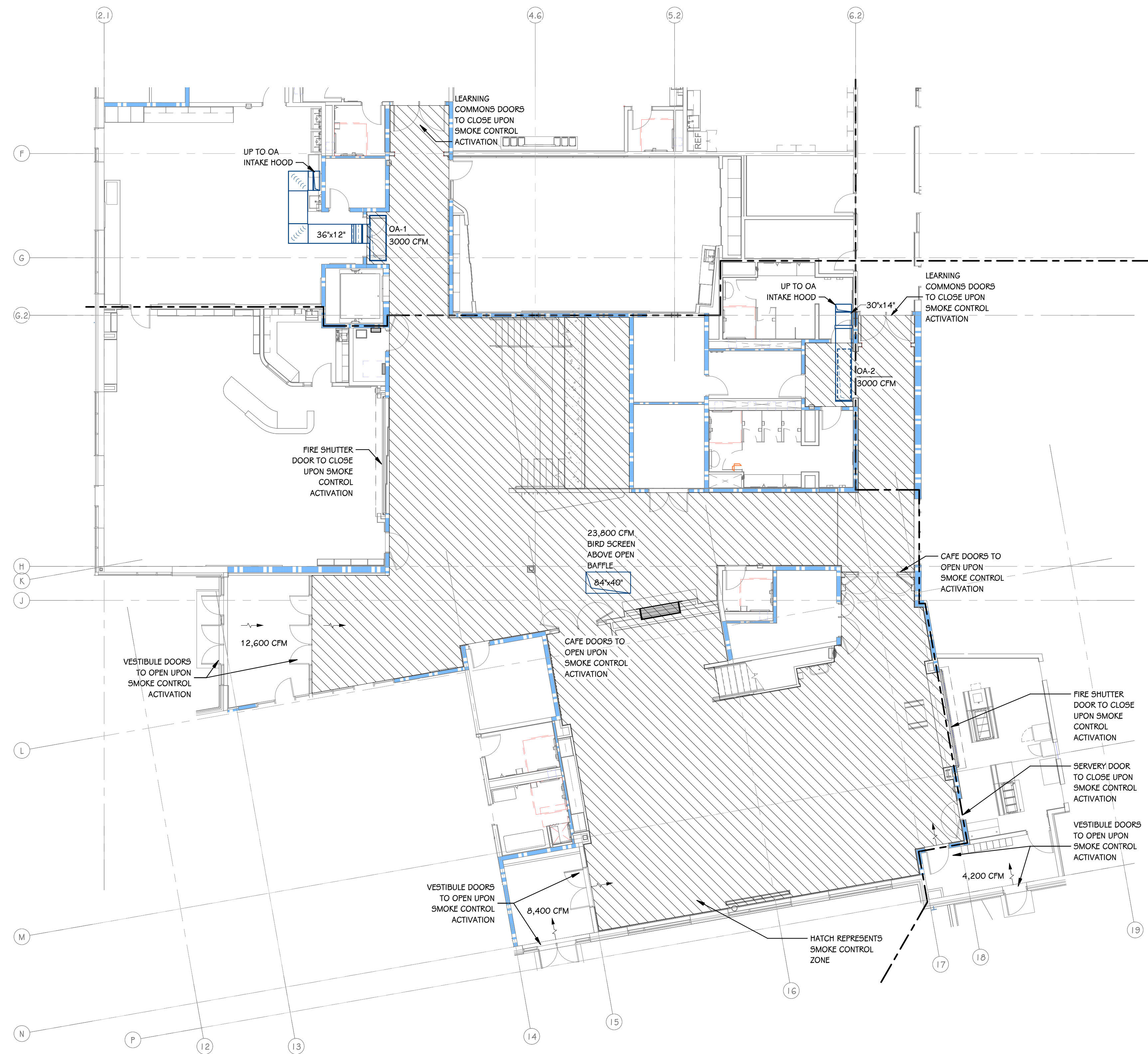
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ENLARGED MECHANICAL PLANS

Portage, Michigan

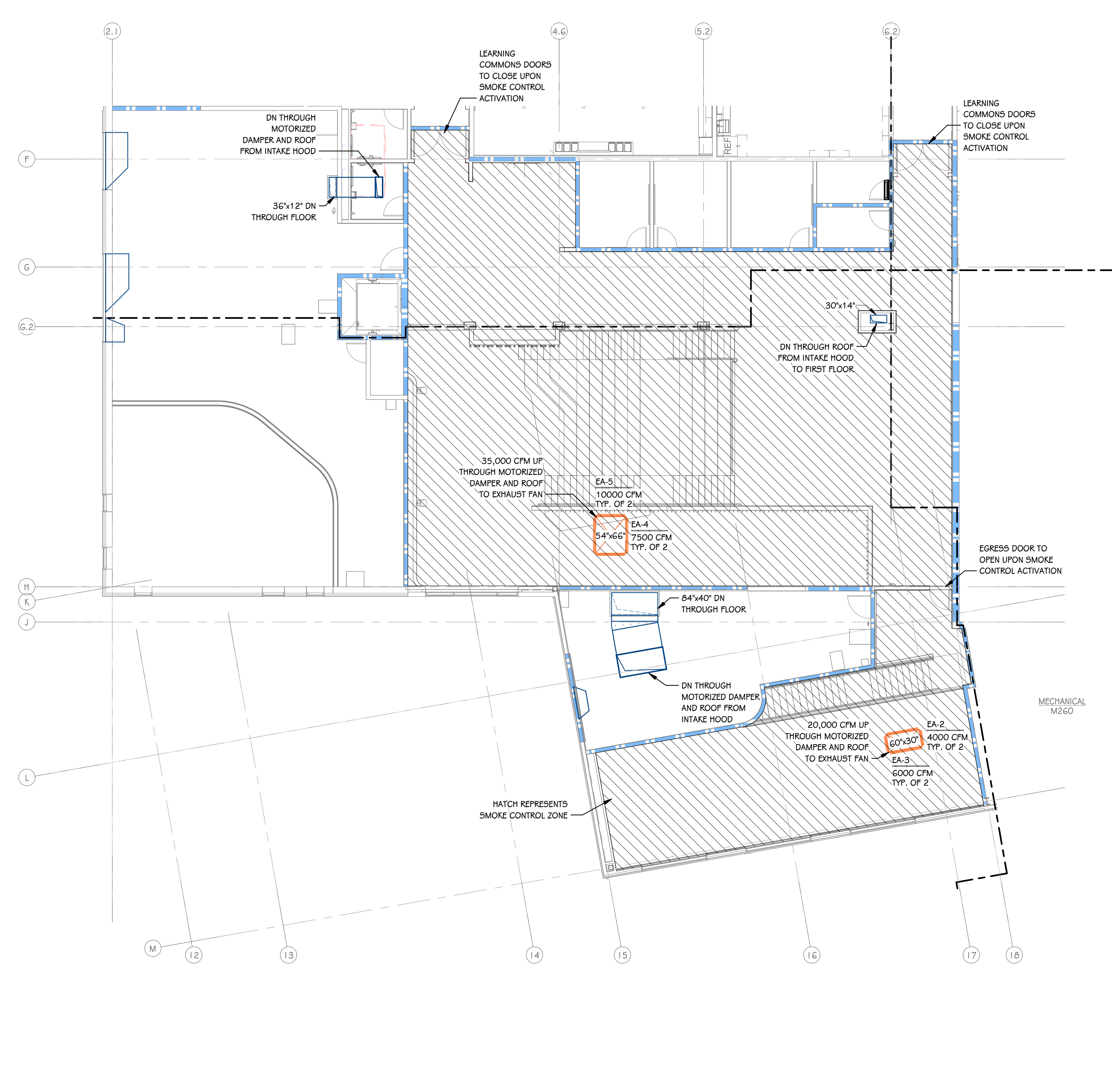
DATE  
JUNE 30, 2023

SHEET NUMBER  
M 303  
21-237.20





**FIRST FLOOR SMOKE CONTROL PLAN**  
1" = 10'-0"



**SECOND FLOOR SMOKE CONTROL PLAN**  
1" = 10'-0"

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PROJECT TITLE  
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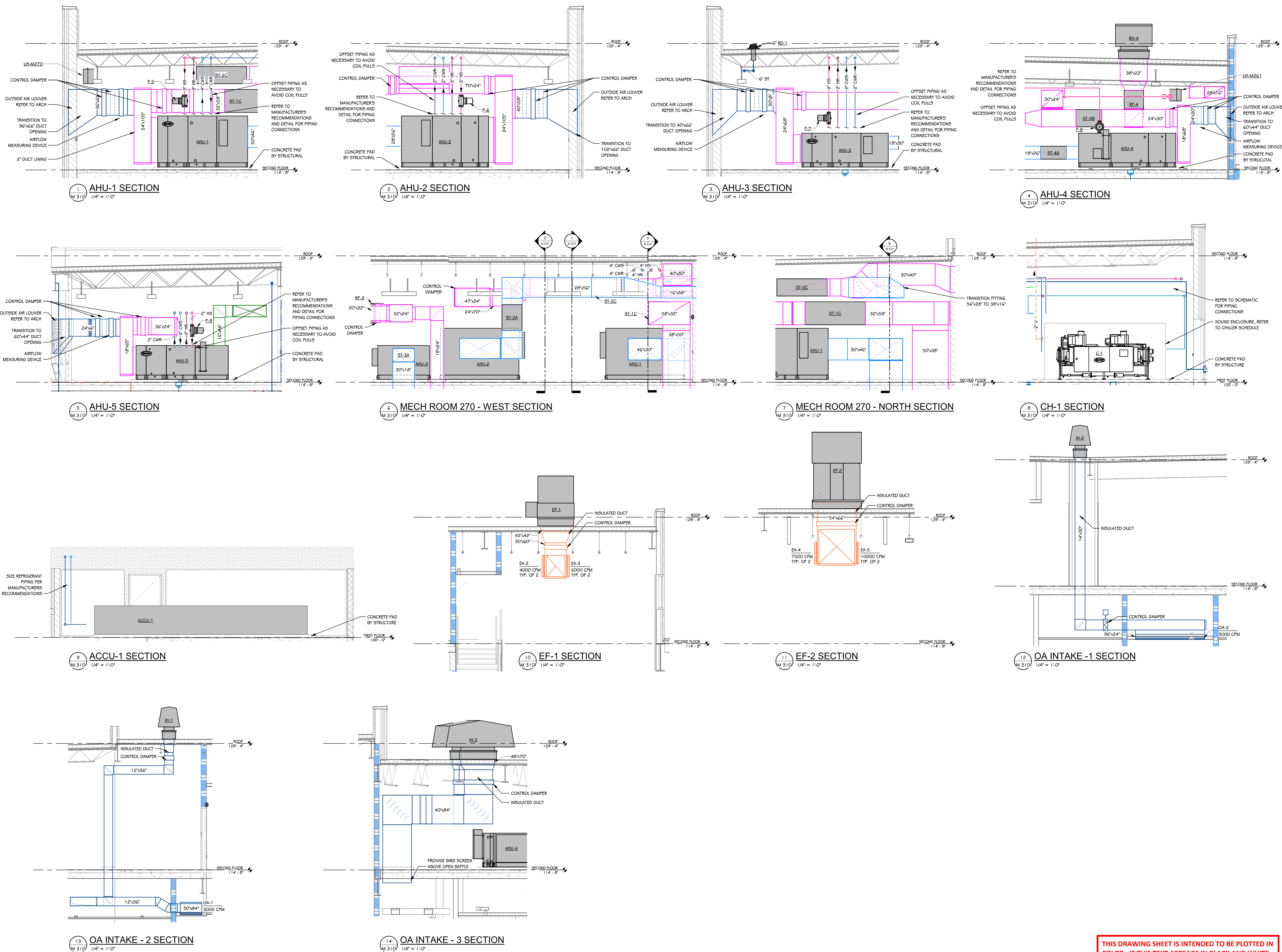
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ENLARGED MECHANICAL PLANS

DATE  
JUNE 30, 2023

SHEET NUMBER  
M 304  
21-237.20



**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

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OWNER  
PORTAGE PUBLIC SCHOOLS

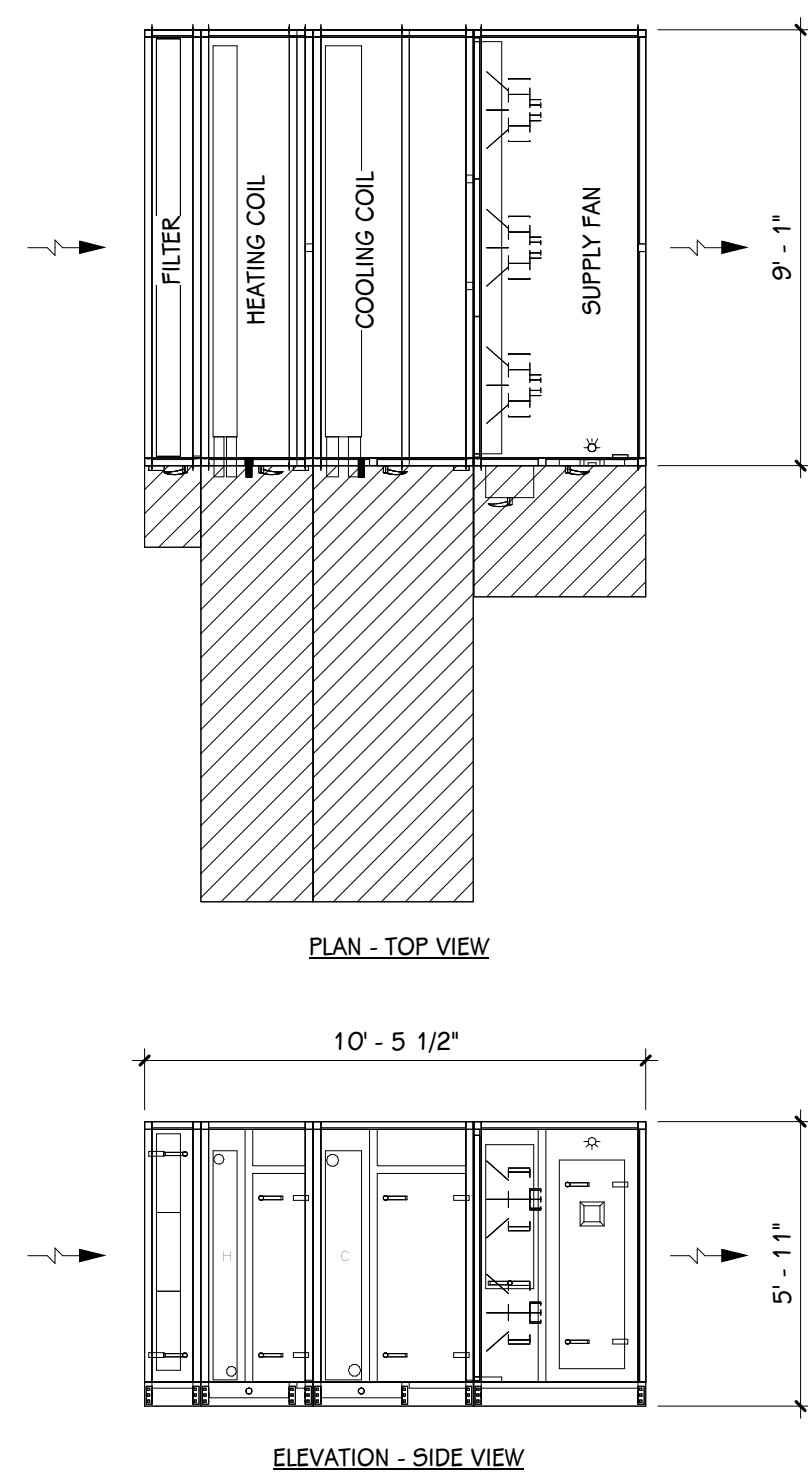
SHEET TITLE  
MECHANICAL SECTIONS

Portage, Michigan

DATE  
JUNE 30, 2023

SHEET NUMBER  
M 310  
21-237.20





**INDOOR VAV AIR HANDLING UNIT (AHU-1)**

**BASED ON:** CARRIER SERIES 39 MN  
**AREA SERVED:** FIRST FLOOR CLASSROOMS  
**TYPE:** MODULAR, INDOOR VARIABLE AIR VOLUME, 15,500 CFM NOMINAL, SIZE 36W.  
**OUTSIDE AIR:** 1,500 MIN CFM - 5,500 MAX CFM BASED ON CO2  
**WEIGHT:** 4,958 LB  
**UNIT MOUNTING:** FLOOR MOUNTED ON HOUSEKEEPING PAD.  
**ACOUSTICS (ft@db):**  
 DISCHARGE: 63/97, 125/93, 250/102, 500/101, 1K/100, 2K/101, 4K/97, 8K/93  
 INLET: 63/92, 125/87, 250/95, 500/94, 1K/89, 2K/85, 4K/83, 8K/82  
**FILTERS:** 2" PLEATED MERV-8 PRE-FILTER, 4" PLEATED MERV-13 FILTER, INCLUDE LED MARINE LIGHT AND RIGHT SIDE ACCESS DOOR.

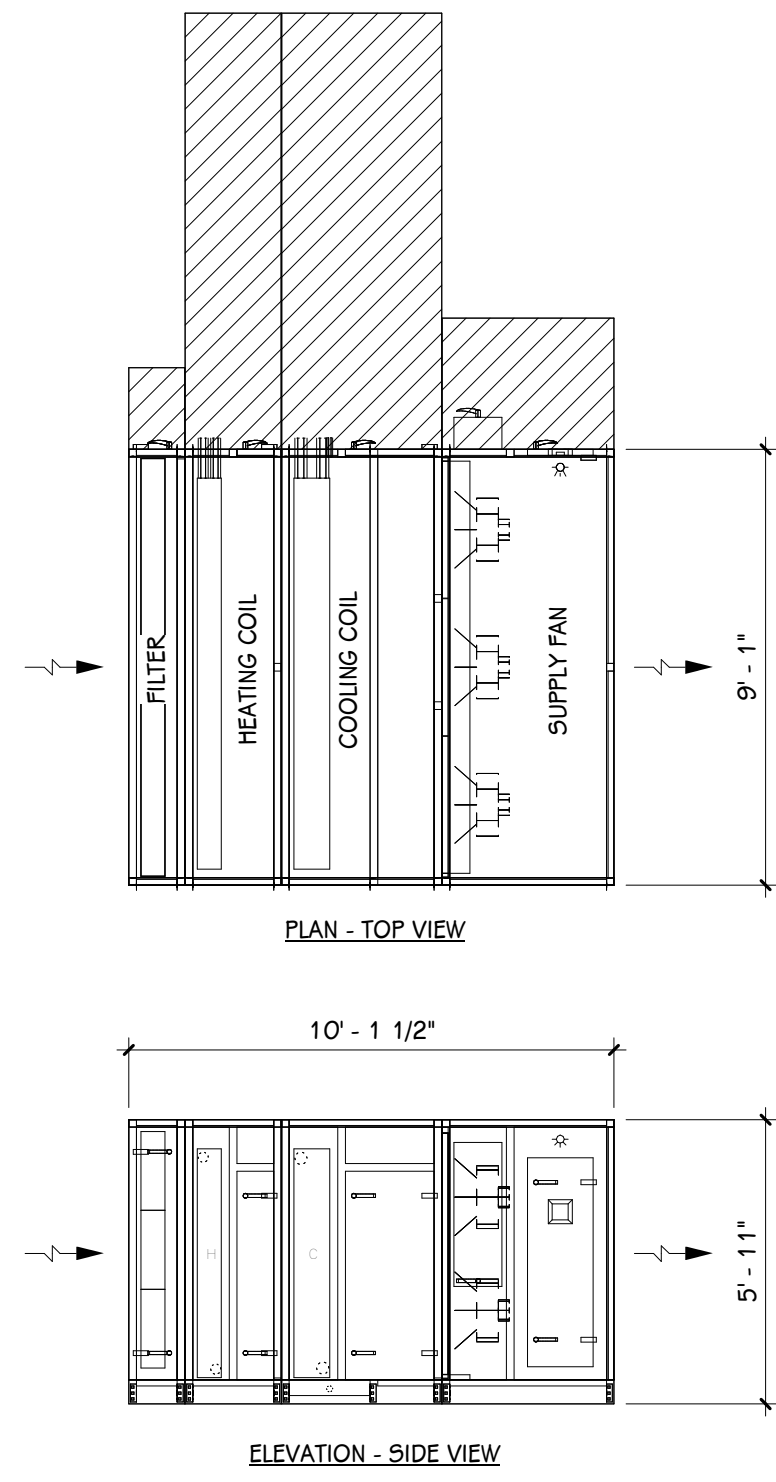
**HOT WATER COIL:** TWO ROWS, 11 FPI, 709 MBH, 72 GPM, 130°F EWT, 110°F LWT, 40°F EDB, 80°F LDB, 0.20" APD, 3.8" WPD, 450 FPM MAX FACE VELOCITY. INCLUDE LED MARINE LIGHT AND RIGHT SIDE ACCESS DOOR.

**CHILLED WATER COOLING COIL:** EIGHT ROWS, 13 FPI, 623 TMBH, 414 5MBH, 79°F EDB, 66°F EWB, 53°F LDB, 52°F LWB, 42°F EWT, 54°F LWT, 103 GPM, 0.84" APD, 17" WPD, 450 FPM MAX FACE VELOCITY, WITH 59 IAQ DRAIN PAN. INCLUDE LED MARINE LIGHT AND RIGHT SIDE ACCESS DOOR.

**SUPPLY FANS:** SIX DIRECT DRIVE PLENUM FANS TOTALING 15,500 CFM @ 3.25" ESP, 3,097 FAN RPM, 4.9 BHP EACH, SIX 7.5 HP PREMIUM EFF. EC MOTORS, 480/360. INCLUDE LED MARINE LIGHT, RIGHT SIDE ACCESS DOOR, AND BACKDRAFT DAMPER ON EACH FAN.

**ELECTRICAL:** SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE, 480/360, 46.8 FLA, 48.8 MCA, 50 MOCF, AND DEDICATED 120/160 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

**OPTIONS:** PROVIDE WITH MINIMUM 2 YEAR MANUFACTURERS WARRANTY, DUCT DETECTORS, 4 CONVENIENCE RECEPTACLE.



**INDOOR VAV AIR HANDLING UNIT (AHU-2)**

**BASED ON:** CARRIER SERIES 39 MN  
**AREA SERVED:** SECOND FLOOR CLASSROOMS  
**TYPE:** MODULAR, INDOOR VARIABLE AIR VOLUME, 17,100 CFM NOMINAL, SIZE 36W.  
**OUTSIDE AIR:** 1,650 MIN CFM - 5,700 MAX CFM BASED ON CO2  
**WEIGHT:** 4,871 LB  
**UNIT MOUNTING:** FLOOR MOUNTED ON HOUSEKEEPING PAD.  
**ACOUSTICS (ft@db):**  
 DISCHARGE: 63/97, 125/92, 250/101, 500/102, 1K/101, 2K/101, 4K/98, 8K/93  
 INLET: 63/92, 125/86, 250/94, 500/95, 1K/90, 2K/86, 4K/84, 8K/83  
**FILTERS:** 2" PLEATED MERV-8 PRE-FILTER, 4" PLEATED MERV-13 FILTER, INCLUDE LED MARINE LIGHT AND LEFT SIDE ACCESS DOOR.

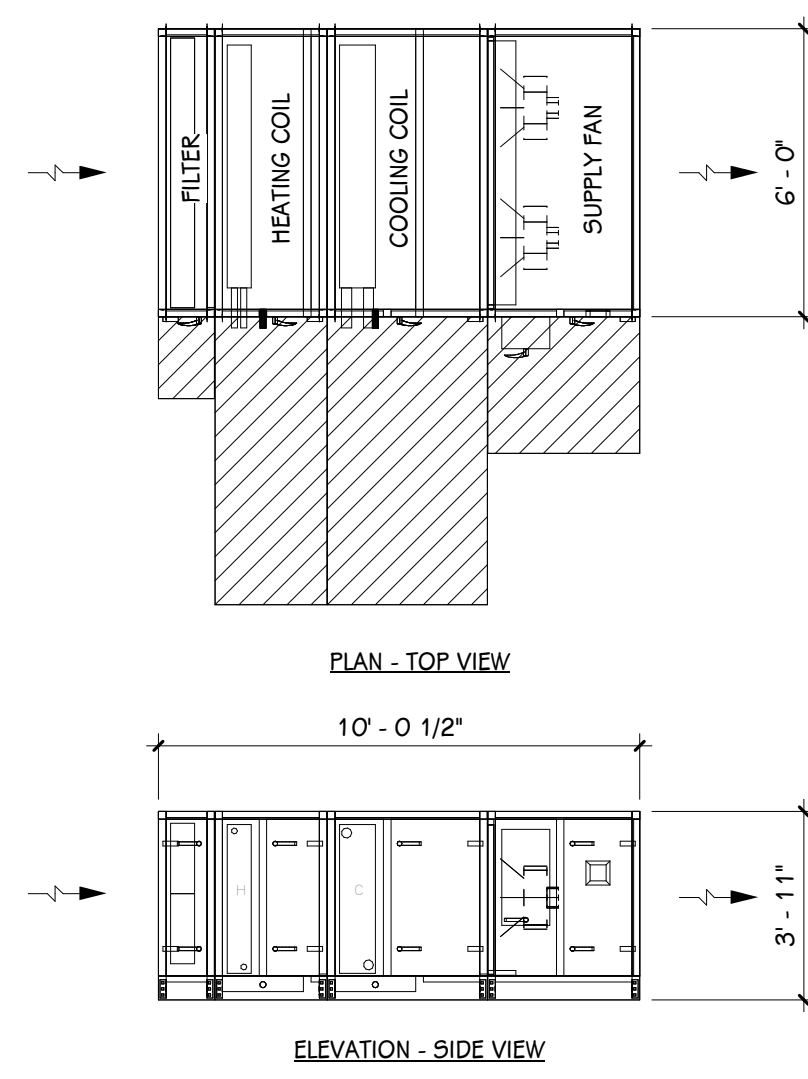
**HOT WATER COIL:** TWO ROWS, 12 FPI, 801 MBH, 69 GPM, 130°F EWT, 110°F LWT, 40°F EDB, 81°F LDB, 0.26" APD, 14.9" WPD, 450 FPM MAX FACE VELOCITY. INCLUDE LED MARINE LIGHT AND LEFT SIDE ACCESS DOOR.

**CHILLED WATER COOLING COIL:** EIGHT ROWS, 14 FPI, 705 TMBH, 461 5MBH, 79°F EDB, 66°F EWB, 53°F LDB, 52°F LWB, 42°F EWT, 54°F LWT, 117 GPM, 1.05" APD, 21.3" WPD, 450 FPM MAX FACE VELOCITY, WITH 59 IAQ DRAIN PAN. INCLUDE LED MARINE LIGHT AND LEFT SIDE ACCESS DOOR.

**SUPPLY FANS:** SIX DIRECT DRIVE PLENUM FANS TOTALING 17,300 CFM @ 3.00" ESP, 3,172 FAN RPM, 5.3 BHP EACH, SIX 7.5 HP PREMIUM EFF. EC MOTORS, 480/360. INCLUDE LED MARINE LIGHT, LEFT SIDE ACCESS DOOR, AND BACKDRAFT DAMPER ON EACH FAN.

**ELECTRICAL:** SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE, 480/360, 46.8 FLA, 48.8 MCA, 50 MOCF, AND DEDICATED 120/160 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

**OPTIONS:** PROVIDE WITH MINIMUM 2 YEAR MANUFACTURERS WARRANTY, DUCT DETECTORS, 4 CONVENIENCE RECEPTACLE.



**INDOOR VAV AIR HANDLING UNIT (AHU-3)**

**BASED ON:** CARRIER SERIES 39 MN  
**AREA SERVED:** LIBRARY 4 ADMIN  
**TYPE:** MODULAR, INDOOR VARIABLE AIR VOLUME, 5,850 CFM NOMINAL, SIZE 14W.  
**OUTSIDE AIR:** MINIMUM 475 CFM - 2,050 CFM BASED ON CO2  
**WEIGHT:** 2,323 LB  
**UNIT MOUNTING:** FLOOR MOUNTED ON HOUSEKEEPING PAD.  
**ACOUSTICS (ft@db):**  
 DISCHARGE: 63/93, 125/88, 250/99, 500/100, 1K/92, 2K/88, 4K/86, 8K/82  
 INLET: 63/88, 125/81, 250/91, 500/93, 1K/80, 2K/76, 4K/74, 8K/73  
**FILTERS:** 2" PLEATED MERV-8 PRE-FILTER, 4" PLEATED MERV-13 FILTER, INCLUDE LED MARINE LIGHT AND RIGHT SIDE ACCESS DOOR.

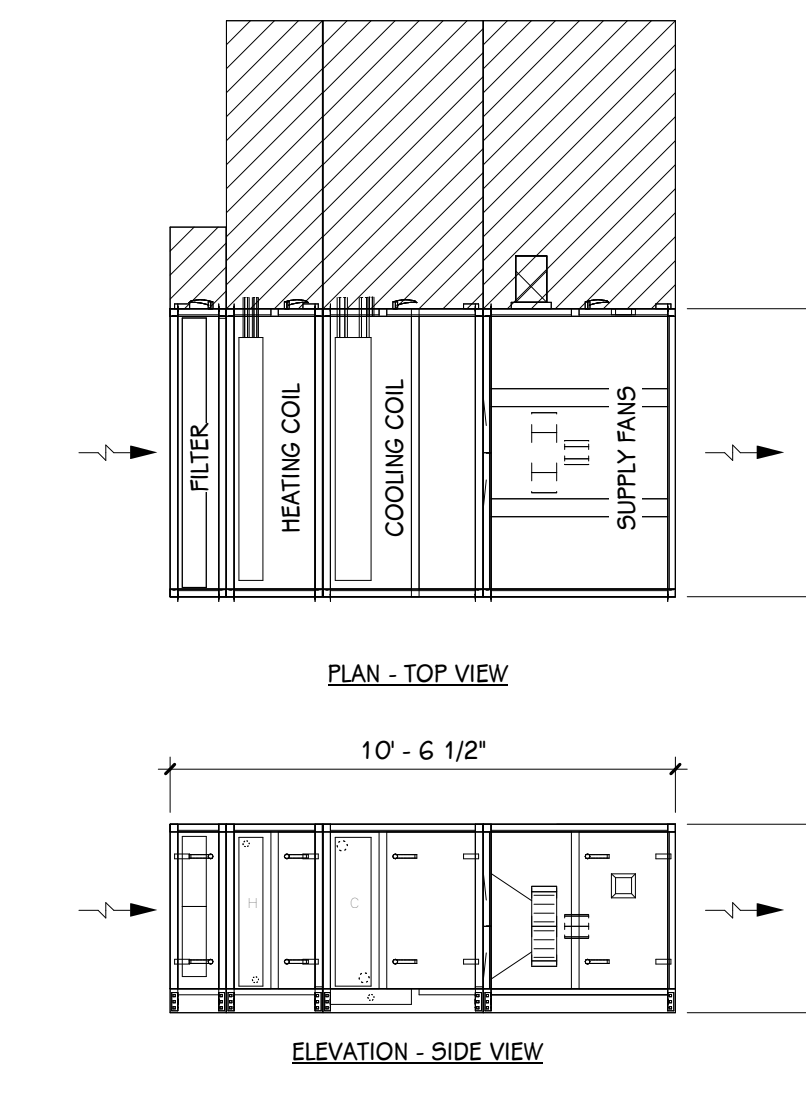
**HOT WATER COIL:** TWO ROWS, 14 FPI, 275 MBH, 28 GPM, 130.0°F EWT, 110.0°F LWT, 40°F EDB, 81°F LDB, 0.21" APD, 2.2" WPD, 450 FPM MAX FACE VELOCITY. INCLUDE LED MARINE LIGHT AND RIGHT SIDE ACCESS DOOR.

**CHILLED WATER COOLING COIL:** EIGHT ROWS, 14 FPI, 245 TMBH, 159 5MBH, 80°F EDB, 67°F EWB, 54°F LDB, 52°F LWB, 42°F EWT, 54°F LWT, 41 GPM, 0.92" APD, 3.1" WPD, 450 FPM MAX FACE VELOCITY, WITH 59 IAQ DRAIN PAN. INCLUDE LED MARINE LIGHT AND RIGHT SIDE ACCESS DOOR.

**SUPPLY FANS:** TWO DIRECT DRIVE PLENUM FAN TOTALING 5,850 CFM @ 2.00" ESP, 2,966 FAN RPM, 4.0 BHP EACH, TWO 5 HP PREMIUM EFF. EC MOTORS, 480/360. INCLUDE LED MARINE LIGHT, RIGHT SIDE ACCESS DOOR, AND BACKDRAFT DAMPER ON EACH FAN.

**ELECTRICAL:** SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE, 480/360, 14.2 FLA, 16.0 MCA, 20 MOCF, AND DEDICATED 120/160 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

**OPTIONS:** PROVIDE WITH MINIMUM 2 YEAR MANUFACTURERS WARRANTY, DUCT DETECTORS, 4 CONVENIENCE RECEPTACLE.



**INDOOR VAV AIR HANDLING UNIT (AHU-4)**

**BASED ON:** CARRIER SERIES 39 MN  
**AREA SERVED:** CAFE  
**TYPE:** MODULAR, INDOOR VARIABLE AIR VOLUME, 5,650 CFM NOMINAL, SIZE 14W.  
**OUTSIDE AIR:** 400 MIN CFM - 2,100 MAX CFM BASED ON CO2  
**WEIGHT:** 2,650 LB  
**UNIT MOUNTING:** FLOOR MOUNTED ON HOUSEKEEPING PAD.  
**ACOUSTICS (ft@db):**  
 DISCHARGE: 63/88, 125/80, 250/91, 500/91, 1K/83, 2K/82, 4K/80, 8K/78  
 INLET: 63/80, 125/82, 250/88, 500/88, 1K/81, 2K/79, 4K/73, 8K/70  
**FILTERS:** 2" PLEATED MERV-8 PRE-FILTER, 4" PLEATED MERV-13 FILTER, INCLUDE LED MARINE LIGHT AND LEFT SIDE ACCESS DOOR.

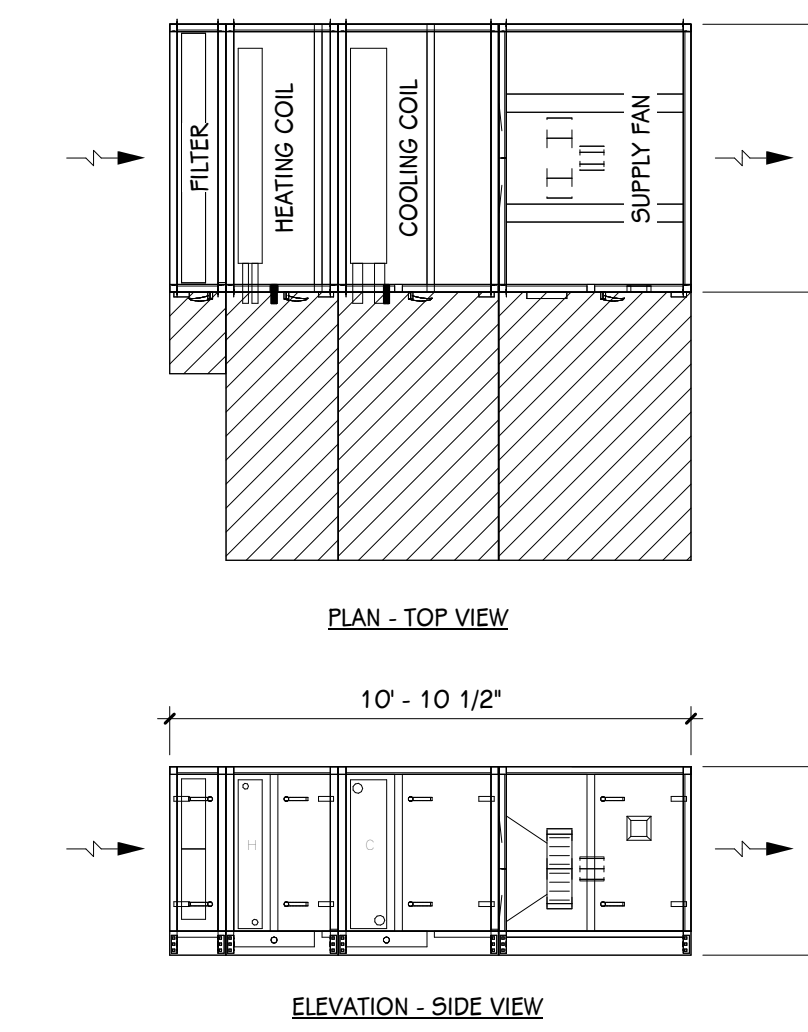
**HOT WATER COIL:** TWO ROWS, 11 FPI, 268 MBH, 36 GPM, 130°F EWT, 110°F LWT, 40°F EDB, 82°F LDB, 0.18" APD, 3.5" WPD, 450 FPM MAX FACE VELOCITY. INCLUDE LED MARINE LIGHT AND LEFT SIDE ACCESS DOOR.

**CHILLED WATER COOLING COIL:** EIGHT ROWS, 14 FPI, 238 TMBH, 155 5MBH, 79°F EDB, 66°F EWB, 53°F LDB, 52°F LWB, 42°F EWT, 53°F LWT, 45 GPM, 0.81" APD, 6.2" WPD, 450 FPM MAX FACE VELOCITY, WITH 59 IAQ DRAIN PAN. INCLUDE LED MARINE LIGHT AND LEFT SIDE ACCESS DOOR.

**SUPPLY FANS:** TWO DIRECT DRIVE PLENUM FANS TOTALING 5,650 CFM @ 2.00" ESP, 1,800 FAN RPM, 5.2 BHP EACH, TWO 5 HP PREMIUM EFF. MOTOR, 480/360. INCLUDE LED MARINE LIGHT, LEFT SIDE ACCESS DOOR, AND BACKDRAFT DAMPER ON EACH FAN. TWO VFDs BY TEMPERATURE CONTROLS CONTRACTOR.

**ELECTRICAL:** SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE, 480/360, 13.2 FLA, AND DEDICATED 120/160 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

**OPTIONS:** PROVIDE WITH MINIMUM 2 YEAR MANUFACTURERS WARRANTY, DUCT DETECTORS, 4 CONVENIENCE RECEPTACLE.



**INDOOR VAV AIR HANDLING UNIT (AHU-5)**

**BASED ON:** CARRIER SERIES 39 MN  
**AREA SERVED:** GYMNASIUM  
**TYPE:** MODULAR, INDOOR VARIABLE AIR VOLUME, 6,000 CFM NOMINAL, SIZE 12W.  
**OUTSIDE AIR:** 250 MIN CFM - 2,000 MAX CFM BASED ON CO2  
**WEIGHT:** 2,387 LB  
**UNIT MOUNTING:** FLOOR MOUNTED ON HOUSEKEEPING PAD.  
**ACOUSTICS (ft@db):**  
 DISCHARGE: 63/88, 125/80, 250/91, 500/95, 1K/85, 2K/83, 4K/81, 8K/80  
 INLET: 63/80, 125/82, 250/87, 500/90, 1K/81, 2K/73, 4K/73, 8K/71  
**FILTERS:** 2" PLEATED MERV-8 PRE-FILTER, 4" PLEATED MERV-13 FILTER, INCLUDE LED MARINE LIGHT AND RIGHT SIDE ACCESS DOOR.

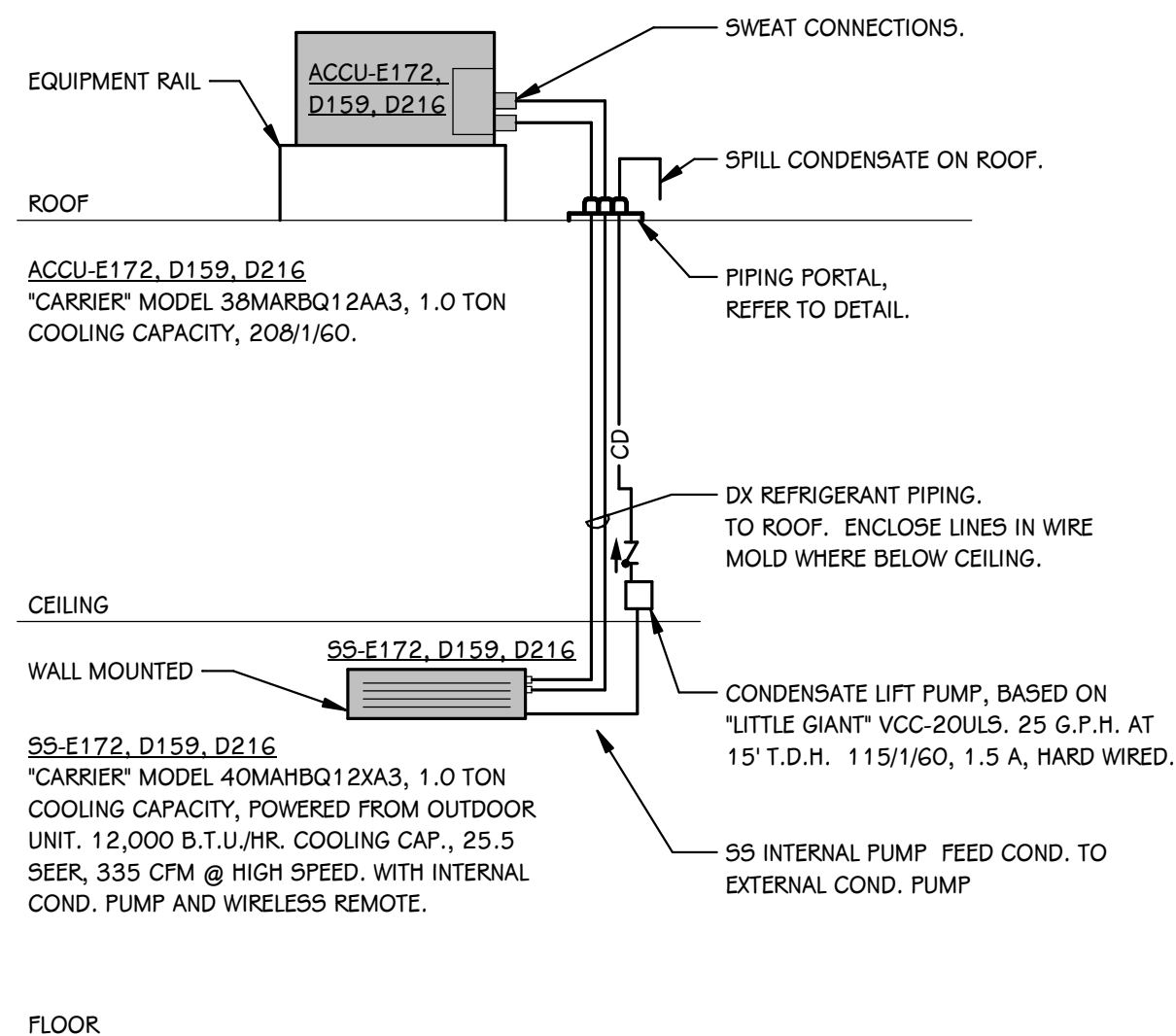
**HOT WATER COIL:** TWO ROWS, 13 FPI, 274 MBH, 28 GPM, 130.0°F EWT, 110.0°F LWT, 40°F EDB, 80°F LDB, 0.26" APD, 5.6" WPD, 450 FPM MAX FACE VELOCITY. INCLUDE LED MARINE LIGHT AND RIGHT SIDE ACCESS DOOR.

**CHILLED WATER COOLING COIL:** EIGHT ROWS, 14 FPI, 234 TMBH, 155 5MBH, 80°F EDB, 67°F EWB, 55°F LDB, 54°F LWB, 42°F EWT, 54°F LWT, 39 GPM, 1.05" APD, 4.4" WPD, 450 FPM MAX FACE VELOCITY, WITH 59 IAQ DRAIN PAN. INCLUDE LED MARINE LIGHT AND RIGHT SIDE ACCESS DOOR.

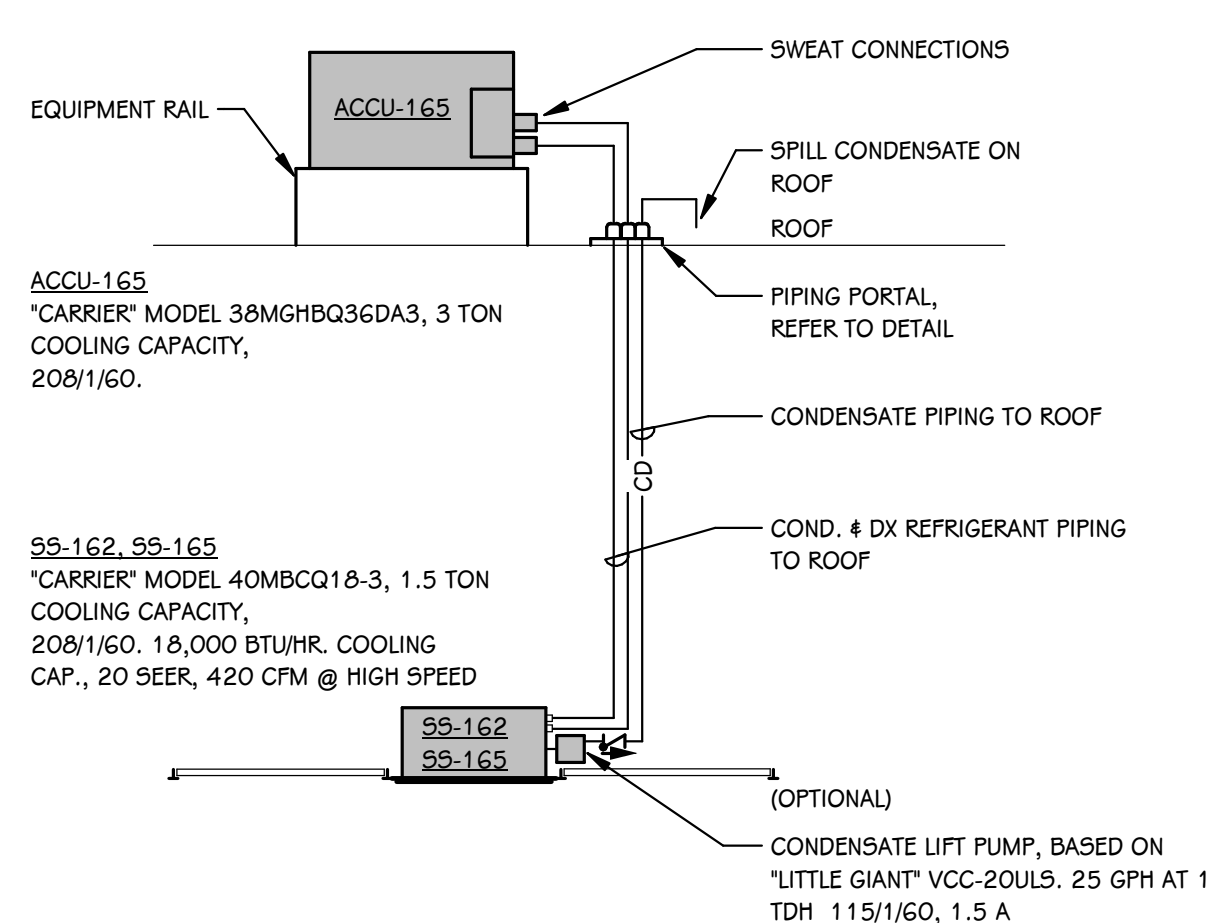
**SUPPLY FANS:** ONE DIRECT DRIVE PLENUM FAN TOTALING 6,000 CFM @ 1.75" ESP, 2,709 FAN RPM, 8.0 BHP, ONE 10 HP PREMIUM EFF. MOTOR, 480/360. INCLUDE LED MARINE LIGHT, RIGHT SIDE ACCESS DOOR, AND BACKDRAFT DAMPER ON FAN. ONE VFD BY TEMPERATURE CONTROLS CONTRACTOR.

**ELECTRICAL:** SINGLE-POINT POWER CONNECTION WITH FACTORY FUSED DISCONNECT W/ LOCKING HANDLE, 480/360, 13.2 FLA, AND DEDICATED 120/160 POWER CONNECTION FOR CONVENIENCE RECEPTACLE AND LIGHTS.

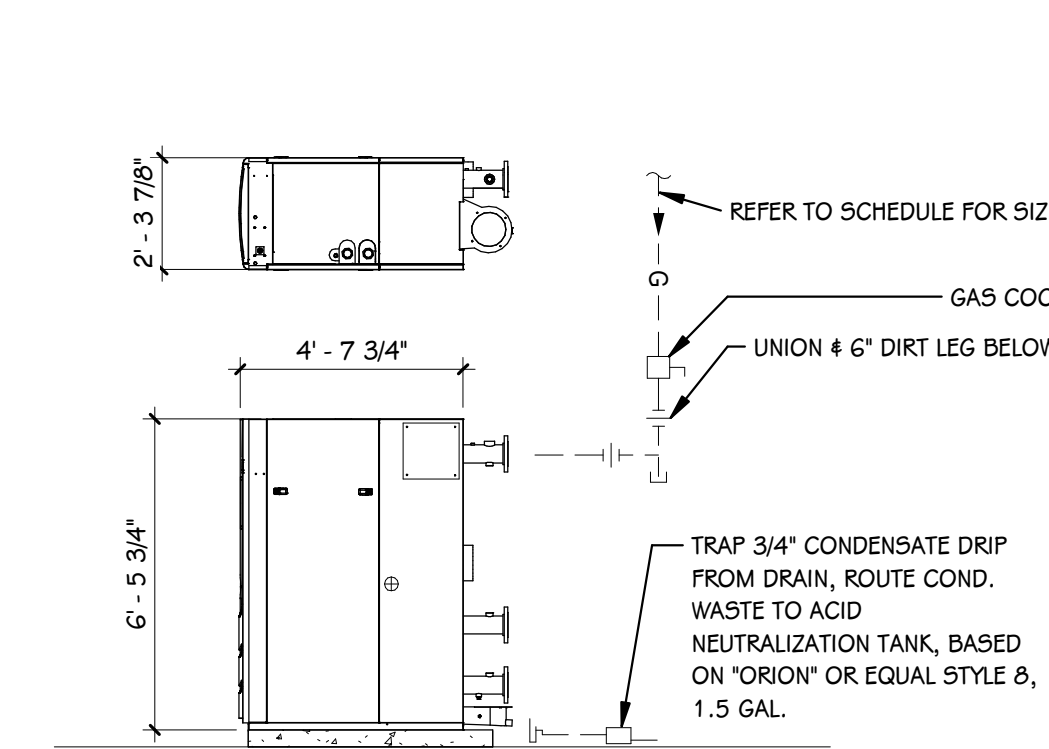
**OPTIONS:** PROVIDE WITH MINIMUM 2 YEAR MANUFACTURERS WARRANTY, DUCT DETECTORS, 4 CONVENIENCE RECEPTACLE.



**SPLIT SYSTEM UNIT PIPING DETAIL - WALL MOUNT**  
SCALE: NONE



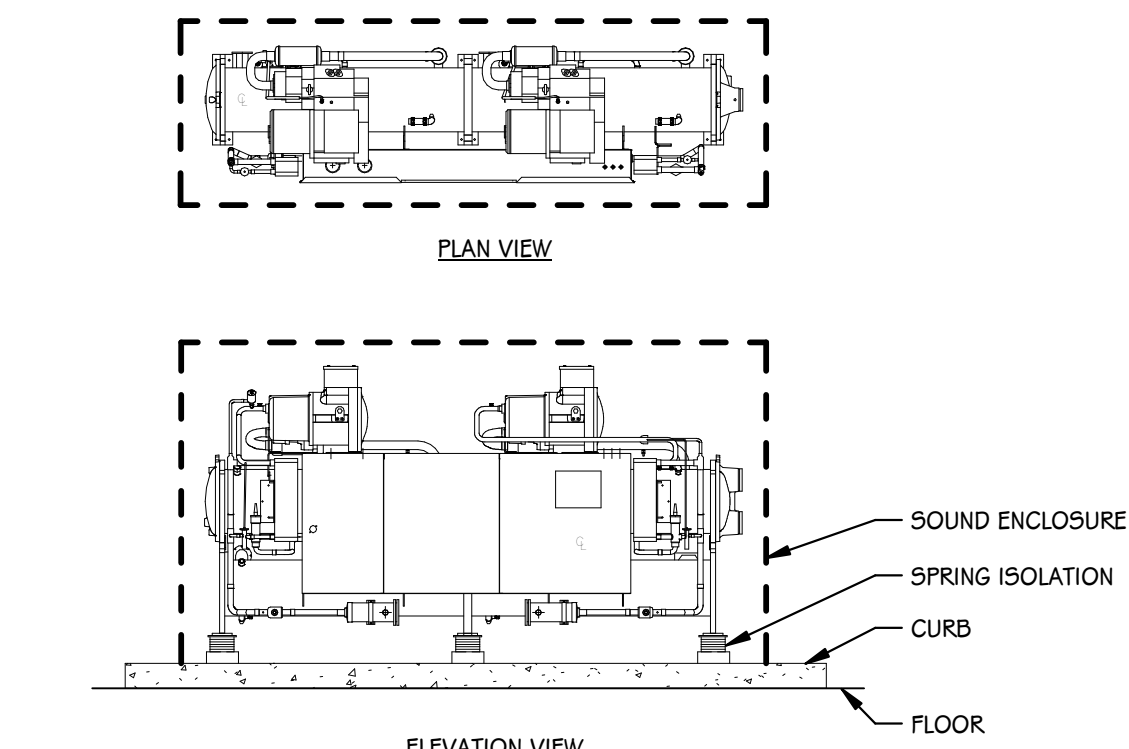
**SPLIT SYSTEM UNIT PIPING DETAIL - CEILING MOUNT**  
SCALE: NONE



**BOILERS (B-1 & B-2)**

BASED ON "AERCO" MODEL BMK 2500. 93.5% AHRJ THERMAL EFFICIENCY, 4" TO 14" W.G. INLET NAT GAS PRESSURE, 20 DEG. F.T.R. DUCTED PVC AIR INLET & AL29-4C POLYPRO EXHAUST, WITH BUILT IN MULTI-UNIT SEQUENCER. PROVIDE WITH BUBBLE TIGHT, LOCKUP TYPE REGULATOR VALVE AND CONTROL VALVE. VENT PER MFR RECOMMENDATIONS. ELECTRICAL REQUIREMENTS: 460-V/3-PH/60-HZ, 5 FLA.

MARK	MODEL	OUTPUT	W.P.D.	GPM	GAS LINE	AIR	VENT	SERVICE
B-1	BMK-2500	2,175 MBH	3.2"	250	3"	8"	8"	HEATING WATER
B-2	BMK-2500	2,175 MBH	3.2"	250	3"	8"	8"	HEATING WATER



**SCREW CHILLER (C-1)**

		CORRECTED INDOOR UNIT ACOUSTIC REQUIREMENTS								
		31.5 HZ	63 HZ	125 HZ	250 HZ	500 HZ	1 KHZ	2 KHZ	4 KHZ	8 KHZ
100% LOAD	57	57	57	59	66	66	61	55	49	

**TYPE:** 167 TON SCREW CHILLER WITH SINGLE REMOTE AIR COOLED CONDENSING UNIT  
**BASED ON:** CARRIER MODEL 30HX186  
**WEIGHT:** 5,946 LB  
**REFRIGERANT:** R-134A  
**EVAPORATOR:** TWO-CIRCUIT  
**CAPACITY:** 167.2 TONS (DESIGN CONDITIONS)  
**W/TON:** 100%: 203.3 kW (DESIGN CONDITIONS)  
**NPLV:** 1.216 kW/TON  
**100% FRESH WATER:**  
 54°F EWT, 42°F LWT, 334 GPM, 9.0G WPD  
**COMPRESSORS:** 2 VARIABLE SPEED SCREW  
**ELECTRICAL:** SINGLE-POINT POWER CONNECTION WITH NON-FUSED DISCONNECT W/ LOCKING HANDLE, 480/360, 355.3 MCA, 500 MOCF.  
**OPTIONS:** VIBRATION ISOLATION PADS, INSULATION KIT, SOUND REDUCTION ENCLOSURE, Y-DELTA STARTER, HOT GAS BYPASS, SUCTION SERVICE VALVES

**REMOTE CONDENSER (ACQU-1):**  
**TYPE:** SINGLE CIRCUIT AIR-COOLED  
**BASED ON:** CARRIER MODEL 09AZV182  
**FANS:** 12  
**ENTERING AIR TEMPERATURE:** 89°F DB  
**ELECTRICAL:** 480/360, 30 MCA, 45 MOCF, SINGLE-POINT POWER CONNECTION WITH NON-FUSED DISCONNECT W/ LOCKING HANDLE.

**TERMINAL UNITS** **BASED ON PRICE**

MARK	TYPE	MAX CFM	MIN CFM	NC (MAX)	SP DROP (MAX)	INLET SIZE	MBH	TR	W.P.D.	GPM	REHEAT COIL	REMARKS
TU1-30H	SDV	800	267	25	0.4"	12	39.1	45	5" MAX	4.00	1, 2, 3, 4	
TU1-100	SDV	775	258	25	0.4"	10	37.9	45	5" MAX	3.75	1, 2, 3, 4	
TU1-102	SDV	350	117	25	0.4"	08	17.1	45	5" MAX	1.75	1, 2, 3, 4	
TU-104	SDV	250	83	25	0.4"	08	12.2	45	5" MAX	1.25	1, 2, 3, 4	
TU-105	SDV	400	133	25	0.4"	08	19.5	45	5" MAX	2.00	1, 2, 3, 4	
TU-106	SDV	200	67	25	0.4"	08	9.8	45	5" MAX	1.00	1, 2, 3, 4	
TU-108	SDV	450	150	25	0.4"	10	22.0	45	5" MAX	2.25	1, 2, 3, 4	
TU-110	SDV	750	250	25	0.4"	10	36.6	45	5" MAX	3.75	1, 2, 3, 4	
TU-112	SDV	1,600	533	25	0.4"	14	78.1	45	5" MAX	7.75	1, 2, 3, 4	
TU-115	SDV	1,200	400	25	0.4"	12	58.6	45	5" MAX	5.75	1, 2, 3, 4	
TU-116	SDV	1,200	400	25	0.4"	12	58.6	45	5" MAX	5.75	1, 2, 3, 4	
TU-120	SDV	800	267	25	0.4"	12	39.1	45	5" MAX	4.00	1, 2, 3, 4	
TU-122	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-123	SDV	500	167	25	0.4"	10	24.4	45	5" MAX	2.50	1, 2, 3, 4	
TU-124	SDV	150	50	25	0.4"	06	7.3	45	5" MAX	0.75	1, 2, 3, 4	
TU-126	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-128	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-130	SDV	800	267	25	0.4"	12	39.1	45	5" MAX	4.00	1, 2, 3, 4	
TU-131	SDV	920	307	25	0.4"	14	44.9	45	5" MAX	4.50	1, 2, 3, 4	
TU-132	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-133	SDV	750	250	25	0.4"	10	36.6	45	5" MAX	3.75	1, 2, 3, 4	
TU-134	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-136	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-138	SDV	150	50	25	0.4"	06	7.3	45	5" MAX	0.75	1, 2, 3, 4	
TU-139	SDV	700	233	25	0.4"	12	34.2	45	5" MAX	3.50	1, 2, 3, 4	
TU-140	SDV	1,200	400	25	0.4"	12	58.6	45	5" MAX	5.75	1, 2, 3, 4	
TU-142	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-144	SDV	1,140	380	25	0.4"	14	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-146	SDV	1,140	380	25	0.4"	14	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-150H	SDV	400	133	25	0.4"	08	19.5	45	5" MAX	2.00	1, 2, 3, 4	
TU-151	SDV	150	50	25	0.4"	06	7.3	45	5" MAX	0.75	1, 2, 3, 4	
TU-154	SDV	550	183	25	0.4"	10	26.9	45	5" MAX	2.75	1, 2, 3, 4	
TU-160A	SDV	1,800	600	25	0.4"	16	87.9	45	5" MAX	8.75	1, 2, 3, 4	
TU-160B	SDV	1,200	400	25	0.4"	12	58.6	45	5" MAX	5.75	1, 2, 3, 4	
TU-210A	SDV	1,500	500	25	0.4"	14	73.2	45	5" MAX	7.25	1, 2, 3, 4	
TU-210B	SDV	1,250	417	25	0.4"	12	61.0	45	5" MAX	6.00	1, 2, 3, 4	
TU-214	SDV	350	117	25	0.4"	08	17.1	45	5" MAX	1.75	1, 2, 3, 4	
TU-219	SDV	810	270	25	0.4"	10	39.5	45	5" MAX	4.00	1, 2, 3, 4	
TU-220	SDV	1,000	333	25	0.4"	12	48.8	45	5" MAX	5.00	1, 2, 3, 4	
TU-221	SDV	600	200	25	0.4"	10	29.3	45	5" MAX	3.00	1, 2, 3, 4	
TU-222	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-223	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-224	SDV	150	50	25	0.4"	06	7.3	45	5" MAX	0.75	1, 2, 3, 4	
TU-226	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-228	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-230	SDV	800	267	25	0.4"	12	39.1	45	5" MAX	4.00	1, 2, 3, 4	
TU-230H	SDV	1,000	333	25	0.4"	12	48.8	45	5" MAX	5.00	1, 2, 3, 4	
TU-231	SDV	1,080	360	25	0.4"	14	52.7	45	5" MAX	5.25	1, 2, 3, 4	
TU-233	SDV	800	267	25	0.4"	12	39.1	45	5" MAX	4.00	1, 2, 3, 4	
TU-234	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-236	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-237	SDV	500	167	25	0.4"	10	24.4	45	5" MAX	2.50	1, 2, 3, 4	
TU-238	SDV	150	50	25	0.4"	06	7.3	45	5" MAX	0.75	1, 2, 3, 4	
TU-240H	SDV	1,200	400	25	0.4"	12	58.6	45	5" MAX	5.75	1, 2, 3, 4	
TU-242	SDV	1,140	380	25	0.4"	12	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-244	SDV	1,140	380	25	0.4"	14	55.7	45	5" MAX	5.50	1, 2, 3, 4	
TU-246	SDV	1,140	380	25	0.4"	14	55.7	45	5" MAX	5.50	1, 2, 3, 4	
Grand total: 57							2429.3					

- NOTES:
- REHEAT COIL SIZING BASED ON 55°F EAT, 130°F EWT, 110°F LWT, W/ BOX AT MAXIMUM FLOW.
  - MINIMUM 4-ROW HEATING COIL.
  - ROOM MOUNTED CO2 SENSOR BASED BY TEMPERATURE CONTROLS CONTRACTOR.
  - OCCUPANCY SENSOR INTEGRAL WITH LIGHT SWITCH BY DIVISION 26.

**GRILLES, REGISTERS, & DIFFUSERS** **BASED ON PRICE**

MARK	PANEL SIZE	FACE SIZE	NECK SIZE	MODEL	CFM RANGE	VCD	THROW	MATERIAL	FINISH	INSTALLATION	REMARKS
SA-1	24" x 24"	12" x 12"	6" x 6"	ASCPA	75 - 125	NO	3 - 5 - 8	ALUMINUM	WHITE	LAY-IN	
SA-2	24" x 24"	12" x 12"	8" x 8"	ASCPA	125 - 200	NO	5 - 7 - 11	ALUMINUM	WHITE	LAY-IN	
SA-3	24" x 24"	24" x 24"	8" x 8"	ASCPA	100 - 210	NO	3 - 4 - 8	ALUMINUM	WHITE	LAY-IN	
SA-4	24" x 24"	24" x 24"	10" x 10"	ASCPA	210 - 300	NO	3 - 5 - 9	ALUMINUM	WHITE	LAY-IN	
SA-5	-	6" x 6"	6" x 6"	620	0 - 50	NO	2 - 3 - 7	ALUMINUM	WHITE	SURFACE	
SA-6	-	10" x 8"	10" x 8"	620	50 - 200	NO	5 - 7 - 12	ALUMINUM	WHITE	SURFACE	
SA-7	-	10" x 8"	10" x 8"	620	50 - 200	YES	5 - 7 - 12	ALUMINUM	WHITE	SURFACE	1
SA-8	-	12" x 10"	12" x 10"	620	200 - 500	YES	10 - 14 - 20	ALUMINUM	WHITE	SURFACE	1
SA-9	-	30" x 12"	30" x 12"	HCD	0 - 1000	YES	41 - 61 - 86	STEEL	FIELD PAINTED	DUCT MOUNTED	2
SA-10	-	24" x 6 3/4"	8" x 8"	SDS100	0 - 150	YES	10 - 16 - 23	ALUMINUM	WHITE	LAY-IN	3, 4
SA-11	-	72" x 6 3/4"	8" x 8"	SDS100	150 - 200	NO	4 - 10 - 19	ALUMINUM	WHITE	LAY-IN	4
SA-12	-	72" x 6 3/4"	8" x 8"	SDS100	150 - 200	YES	4 - 10 - 19	ALUMINUM	WHITE	SURFACE	3, 4
SA-13	-	60" x 6 3/4"	10" x 10"	SDS100	200 - 300	NO	10 - 16 - 23	ALUMINUM	WHITE	LAY-IN	4
SA-14	-	60" x 6 3/4"	10" x 10"	SDS100	200 - 300	YES	10 - 16 - 23	ALUMINUM	WHITE	SURFACE	3, 4
RA-1	24" x 24"	12" x 12"	12" x 12"	80	0 - 150	NO	-	ALUMINUM	WHITE	LAY-IN	
RA-2	6" x 24"	6" x 24"	6" x 24"	80	0 - 150	NO	-	ALUMINUM	WHITE	LAY-IN	
RA-3	24" x 24"	24" x 24"	24" x 24"	80	150 - 1140	NO	-	ALUMINUM	WHITE	LAY-IN	
RA-4	-	36" x 24"	36" x 24"	80	1140 - 6000	NO	-	ALUMINUM	WHITE	DUCT MOUNTED	
RA-5	-	8" x 6"	8" x 6"	635	0 - 150	YES	-	ALUMINUM	WHITE	SURFACE	1
RA-6	-	18" x 14"	18" x 14"	635	150 - 1300	NO	-	ALUMINUM	WHITE	SURFACE	1
RA-7	-	18" x 14"	18" x 14"	635	150 - 1300	YES	-	ALUMINUM	WHITE	SURFACE	1
RA-8	-	20" x 16"	20" x 16"	635	1300 - 1825	NO	-	ALUMINUM	WHITE	SURFACE	1
RA-9	-	28" x 16"	28" x 16"	635	1825 - 2925	NO	-	ALUMINUM	WHITE	SURFACE	1
RA-10	-	28" x 16"	28" x 16"	635	1825 - 2925	YES	-	ALUMINUM	WHITE	SURFACE	1
RA-11	-	24" x 72"	24" x 72"	99	0 - 6000	NO	-	ALUMINUM	WHITE	SURFACE	
EA-1	24" x 24"	12" x 12"	12" x 12"	80	0 - 100	NO	-	ALUMINUM	WHITE	LAY-IN	
EA-2	-	26" x 30"	26" x 30"	80	100 - 4000	NO	-	ALUMINUM	WHITE	DUCT MOUNTED	
EA-3	-	56" x 30"	56" x 30"	80	4000 - 6000	NO	-	ALUMINUM	WHITE	DUCT MOUNTED	
EA-4	-	62" x 30"	62" x 30"	80	6000 - 7500	NO	-	ALUMINUM	WHITE	DUCT MOUNTED	
EA-5	-	50" x 48"	50" x 30"	80	7500 - 10000	NO	-	ALUMINUM	WHITE	DUCT MOUNTED	
EA-6	-	6" x 6"	6" x 6"	635	0 - 100	NO	-	ALUMINUM	WHITE	SURFACE	
EA-7	-	6" x 6"	6" x 6"	635	0 - 100	YES	-	ALUMINUM	WHITE	SURFACE	1
EA-8	-	8" x 6"	8" x 6"	635	100 - 150	NO	-	ALUMINUM	WHITE	SURFACE	
EA-9	-	10" x 8"	10" x 8"	635	150 - 300	NO	-	ALUMINUM	WHITE	SURFACE	
EA-10	-	12" x 10"	12" x 10"	635	300 - 425	NO	-	ALUMINUM	WHITE	SURFACE	
EA-11	-	16" x 12"	16" x 12"	635	425 - 1000	NO	-	ALUMINUM	WHITE	SURFACE	
OA-1	-	84" x 30"	84" x 30"	620	0 - 3000	NO	-	ALUMINUM	WHITE	SURFACE	
OA-2	-	96" x 24"	96" x 24"	620	0 - 3000	NO	-	ALUMINUM	WHITE	SURFACE	

- NOTES:
- V5C3 VOLUME DAMPER.
  - V5C5 VOLUME DAMPER.
  - VCR8EC VOLUME DAMPER.
  - 3 LINEAR SLOTS.

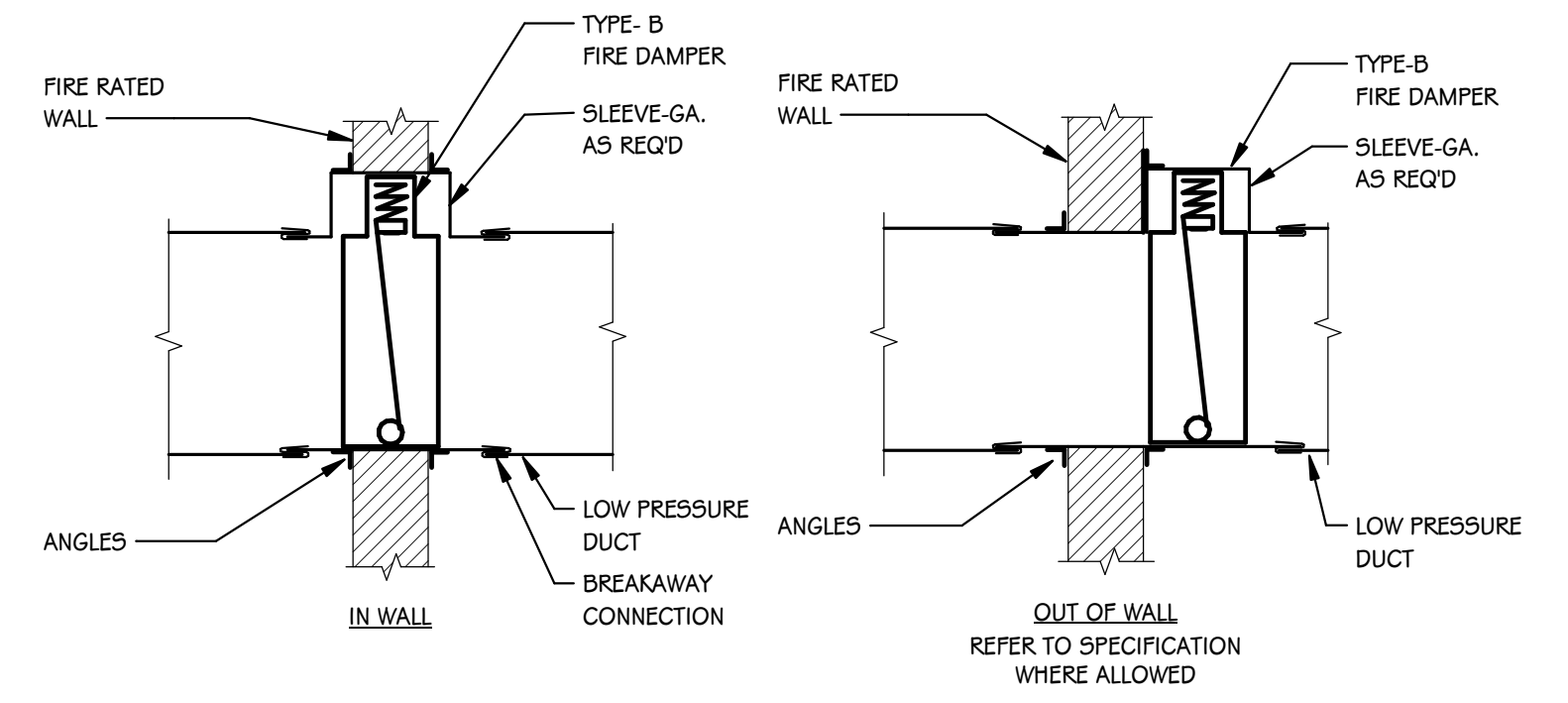
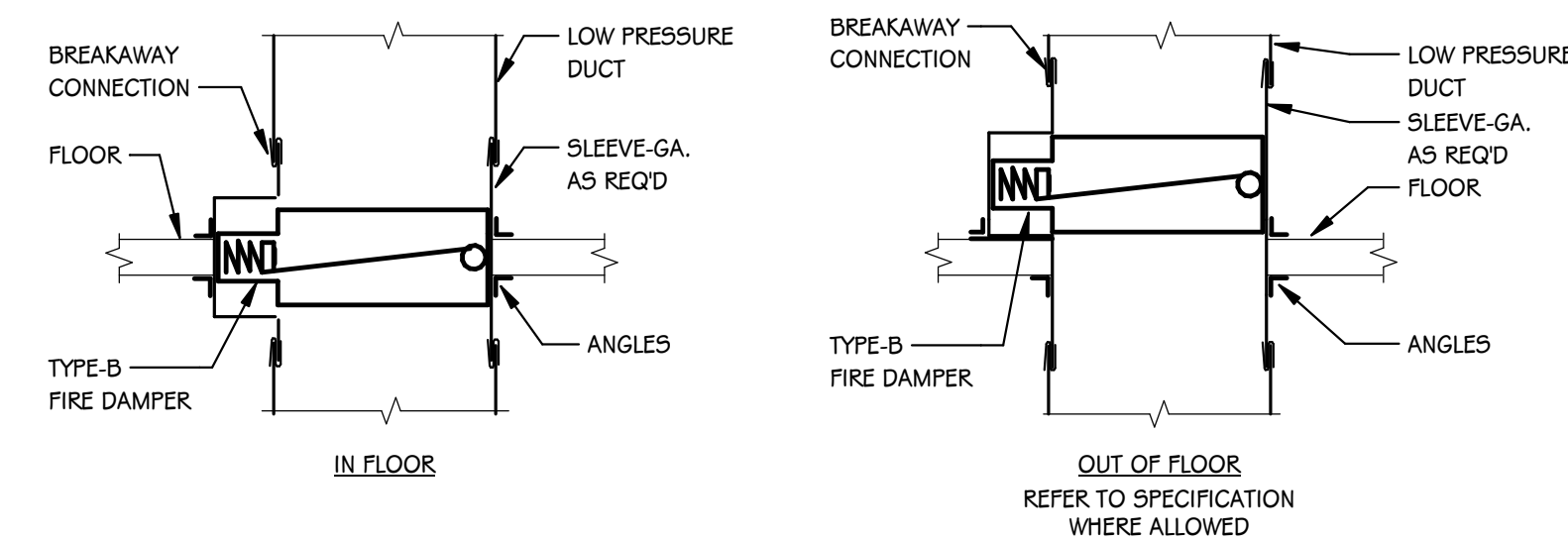
**RELIEF FANS** **BASED ON GREENHECK**

MARK	MODEL	TYPE	AIR FLOW (CFM)	ESP (IN WC)	SONES	EC MOTOR	NOMINAL HP	BRAKE HP	RPM	VOLTAGE	REMARKS
RF-1	5Q-33-M2-VG	INLINE FAN	15,500	1.00	17	Yes	7.5	4.2	725	480/360	1
RF-2	5Q-33-M2-VG	INLINE FAN	17,000	1.00	19.5	Yes	7.5	4.8	764	480/360	1
RF-3	5Q-16-M2-VG	INLINE FAN	5,800	1.00	20	Yes	3	1.69	1848	480/360	1
RF-4	5Q-16-M2-VG	INLINE FAN	5,700	1.00	21	Yes	3	1.8	1895	480/360	1

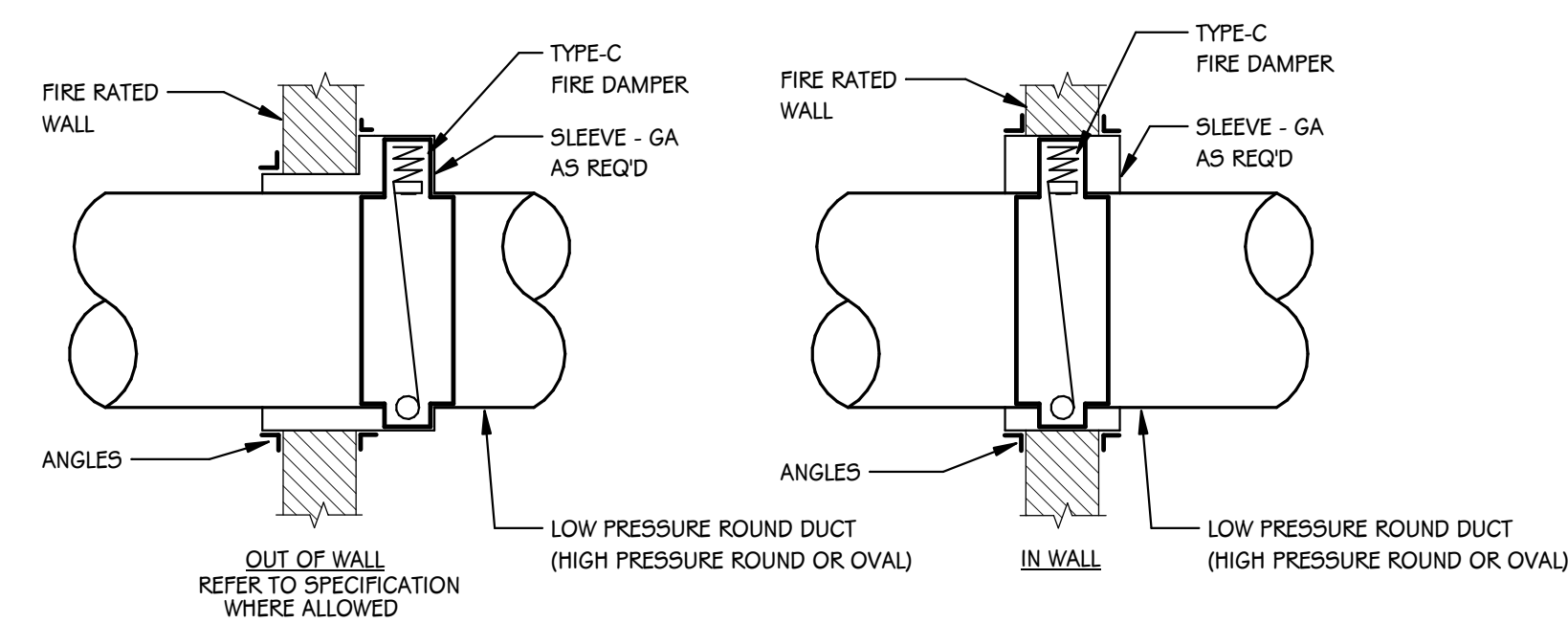
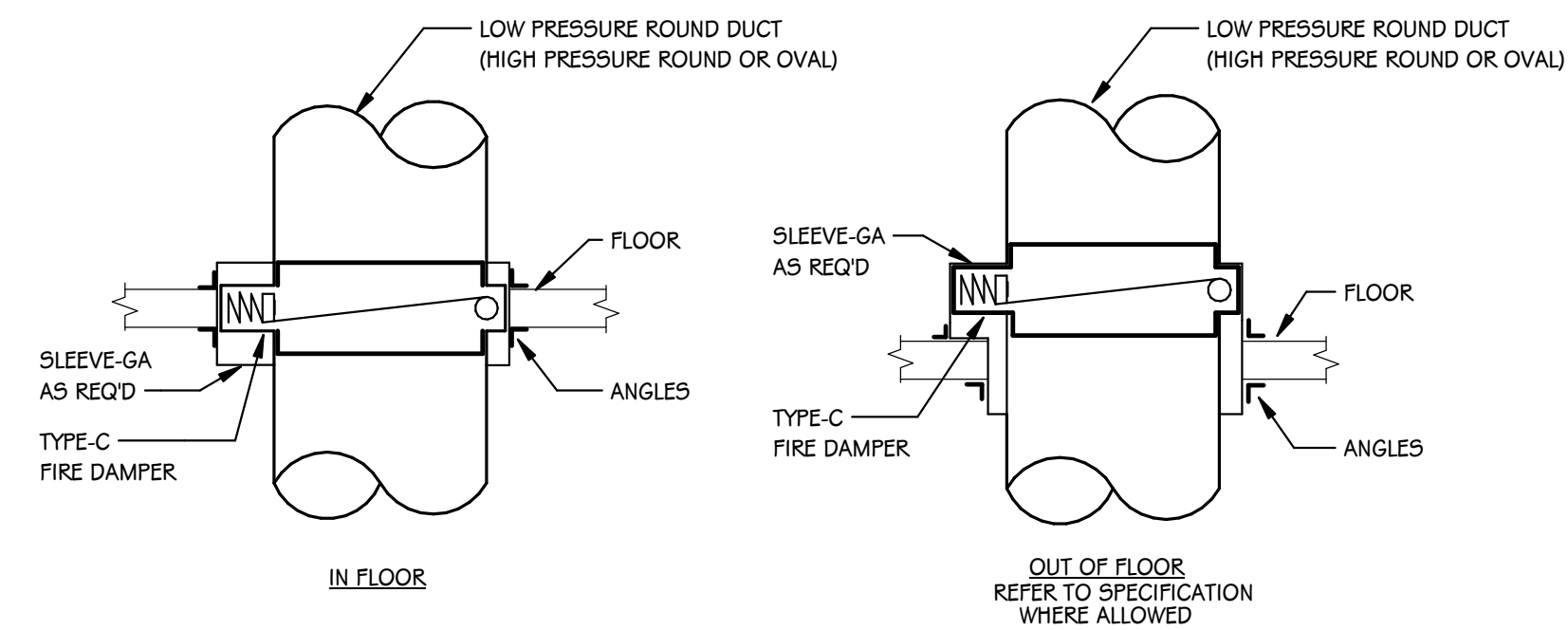
- NOTES:
- PROVIDE WITH FUSIBLE DISCONNECT.

**EXHAUST FANS** **BASED ON GREENHECK**

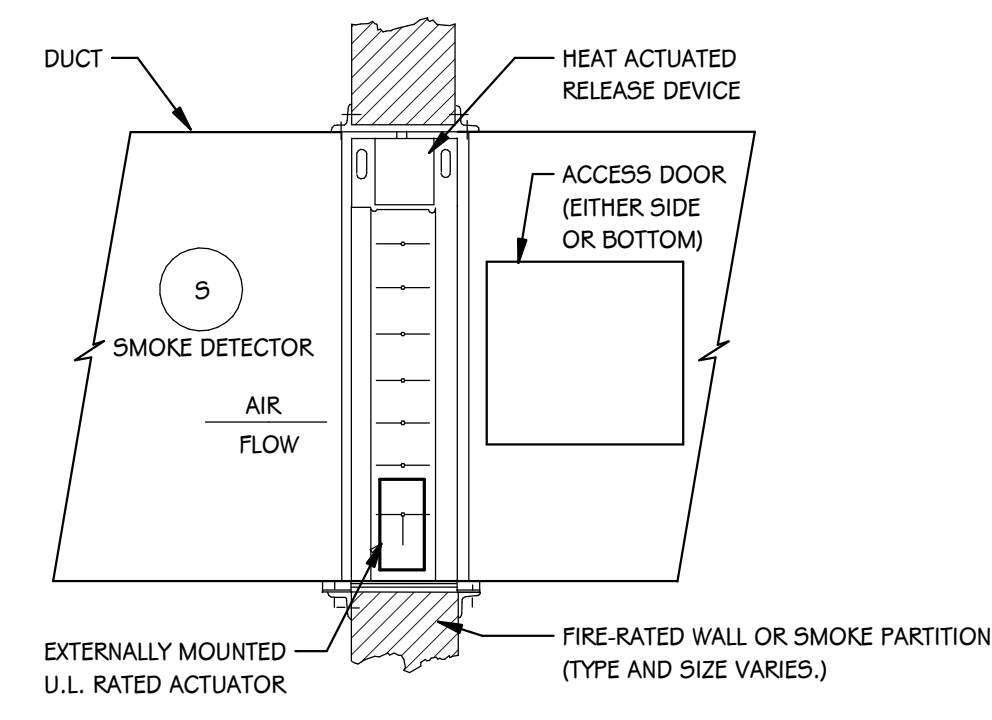
Mark	MODEL	TYPE	AIR FLOW (CFM)	ESP (IN WC)	SONES	EC MOTOR	NOMINAL HP	BRAKE HP	RPM	VOLTAGE	REMARKS
EF-1	RBUMG-2L42	UPBLAST	20000	0.25	28	Yes	5	3.3	583	480/360	1, 2, 3, 4, 5
EF-2	TAB-60H	DOWNBLAST	35000	0.25	43	Yes	5	4.9	503	480/360	1, 2, 3, 4, 5



**RECTANGULAR FIRE DAMPER DETAILS - LOW PRESSURE**  
SCALE: NONE

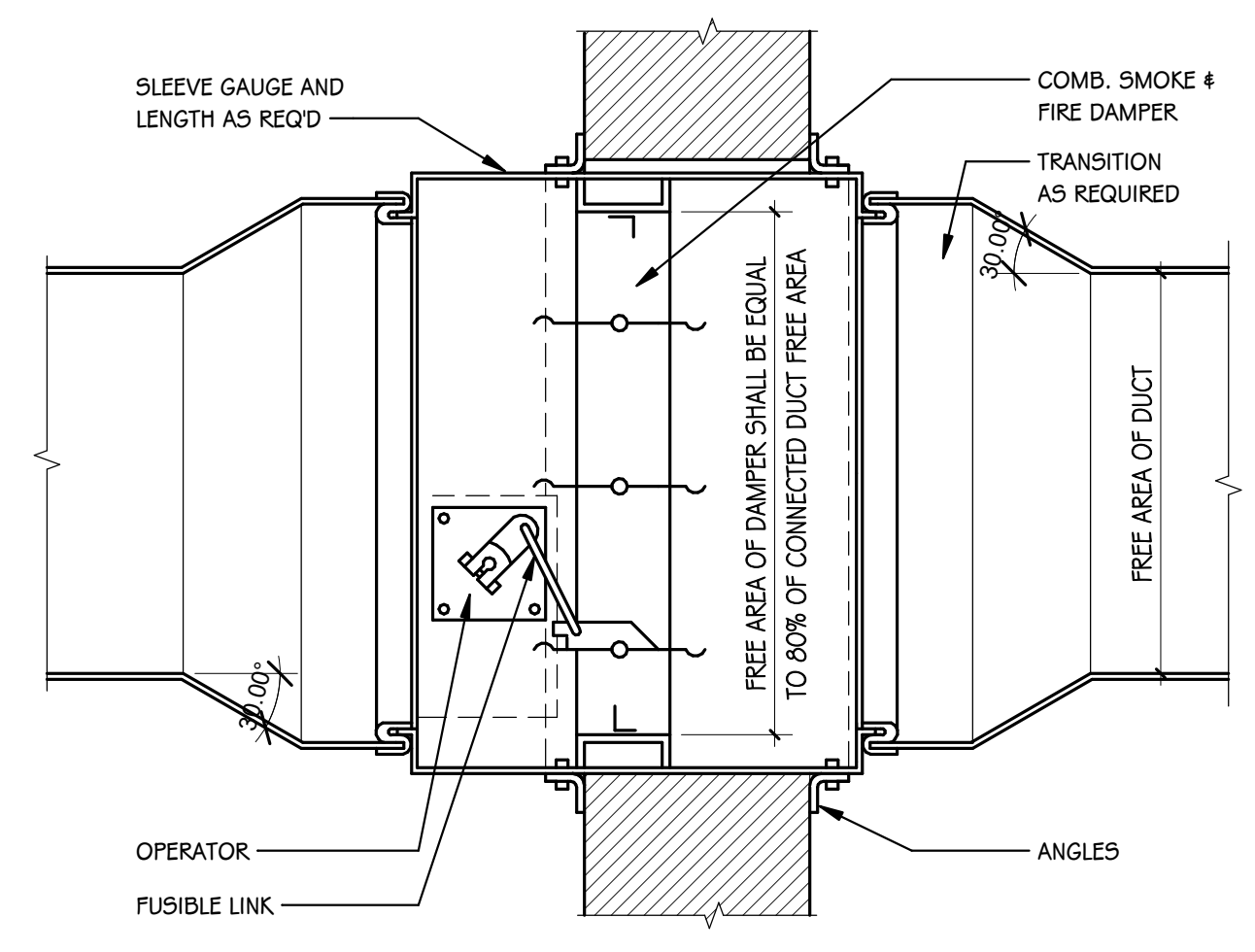


**ROUND FIRE DAMPER DETAILS - LOW AND HIGH PRESSURE**  
SCALE: NONE

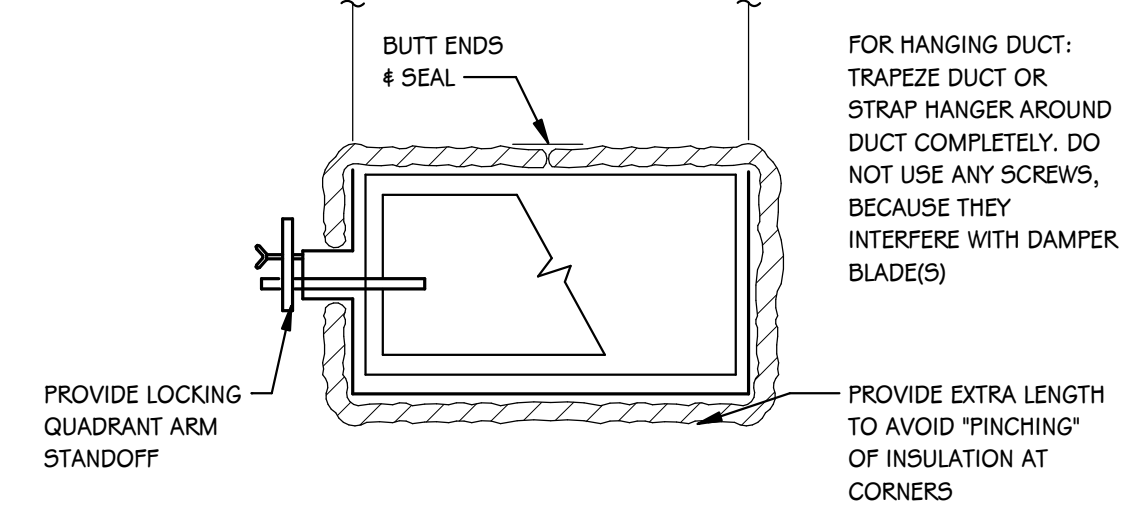


- NOTES:
1. ANY CLEARANCE BETWEEN FIRE-RATED WALL OR SMOKE PARTITION AND DAMPER SLEEVE OR DAMPER SHALL BE FILLED WITH FIRE-RESISTANT PACKING ON ALL SIDES TO MAINTAIN FIRE RATING.
  2. WHEN DUCTWORK IS INSULATED OR LINED, PROVIDED INSULATED ACCESS DOOR.
  3. ACCESS DOOR SHALL BE 12" x 12" OR LARGER IF REQUIRED FOR HEAT ACTUATED RELEASE DEVICE REPLACEMENT.
  4. INSTALLATION SHOWN AS AN EXAMPLE. SPECIFIC INSTALLATION SHALL CONFORM WITH MANUFACTURERS, U.L. APPROVED INSTRUCTIONS.
  5. DUCT MOUNTED SMOKE DETECTOR SHALL BE PROVIDED BY DIV. 25, INSTALLED BY DIV. 23 AND WIRED TO FIRE ALARM SYSTEM UNDER DIV. 28.

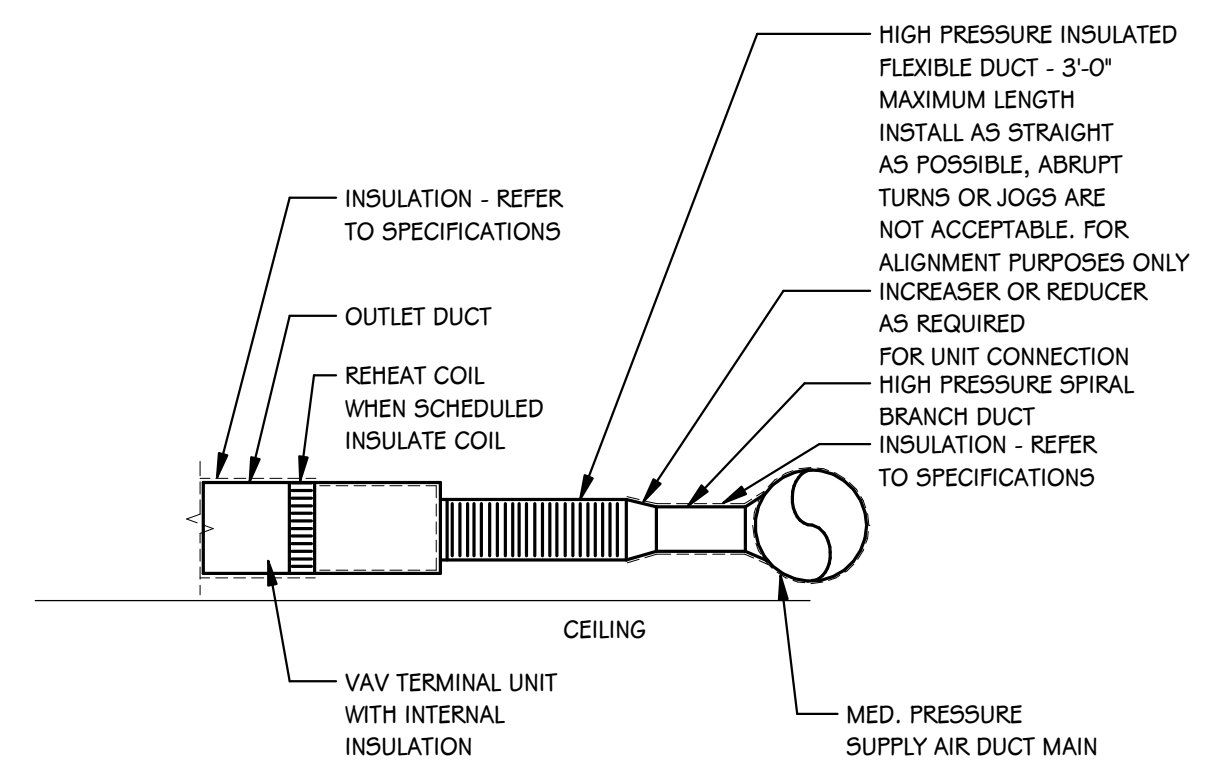
**FIRE / SMOKE DAMPER DETAIL**  
SCALE: NONE



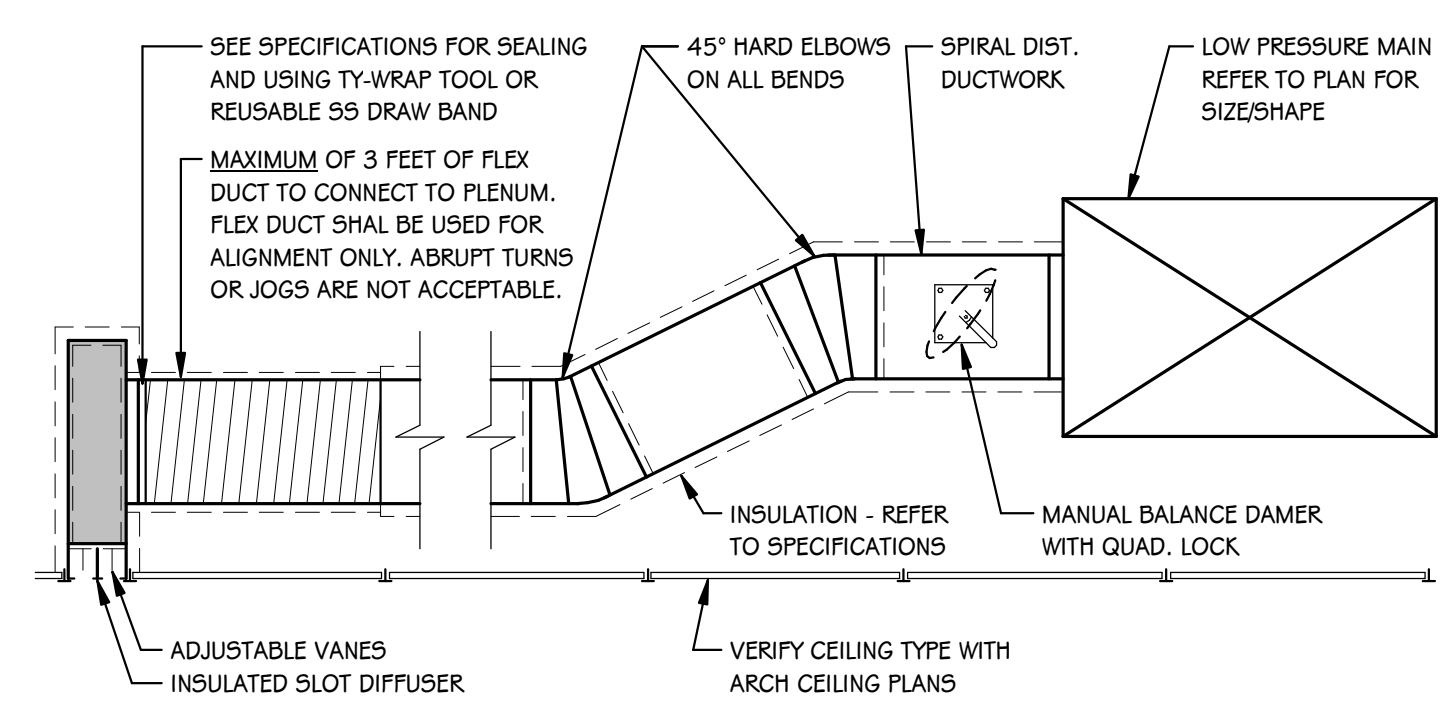
**COMB. SMOKE AND FIRE DAMPER DETAIL**  
SCALE: NONE



**VOLUME DAMPER SUPPORT DETAIL**  
SCALE: NONE

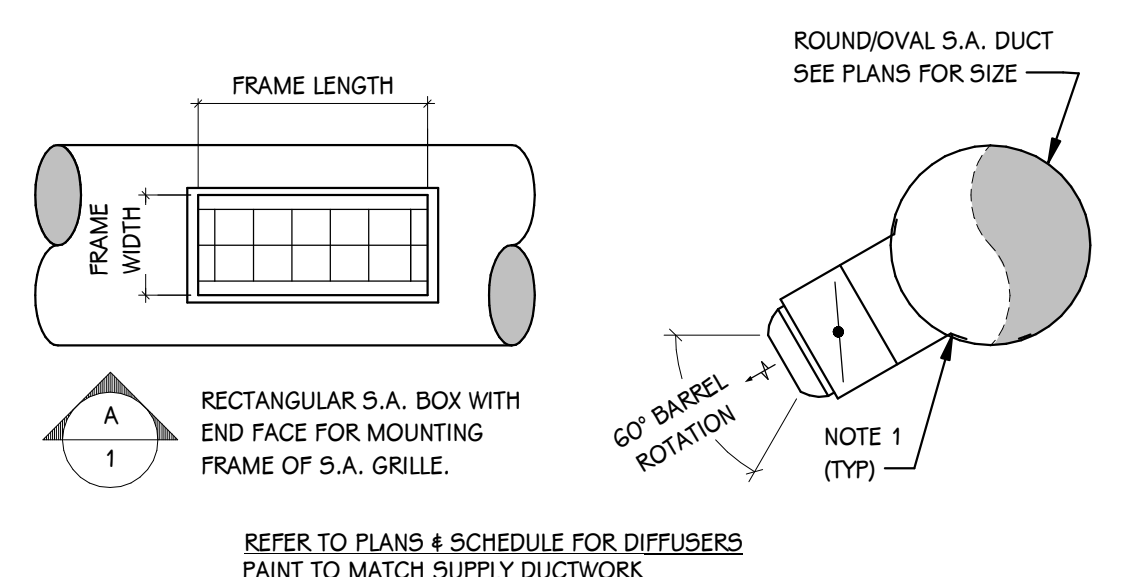


**TERMINAL UNIT DUCTWORK DETAIL**  
SCALE: NONE



- NOTES:
1. OFFSET WITH FLEX DUCT SHALL NOT EXCEED 30° AND SHALL BE GRADUAL. OFFSETS IN EXCESS OF 30° SHALL BE HARD DUCTED.
  2. AT EXTERIOR WALLS, BLOW PATTERN SHALL BE ADJUSTED SO ONE SLOT DIRECTS AIR DOWN AGAINST THE WALL AND REMAINING SLOTS BLOW ACROSS CEILING TOWARDS INTERIOR.

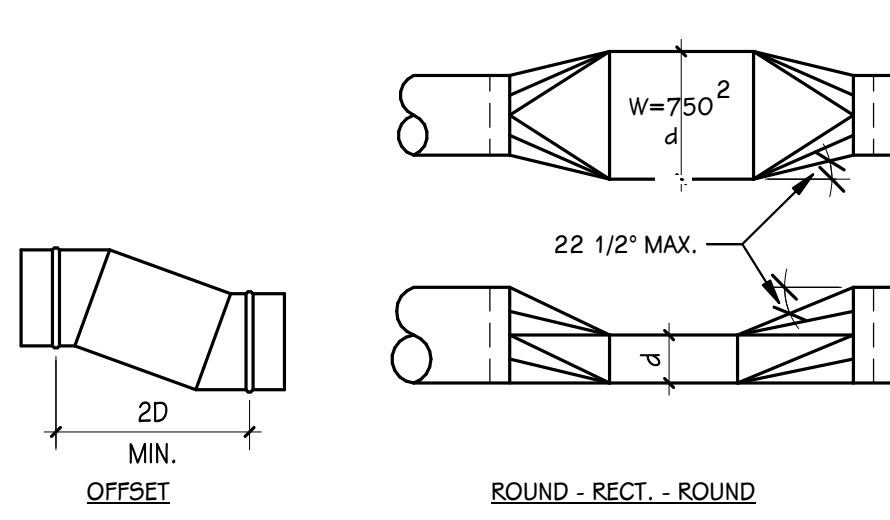
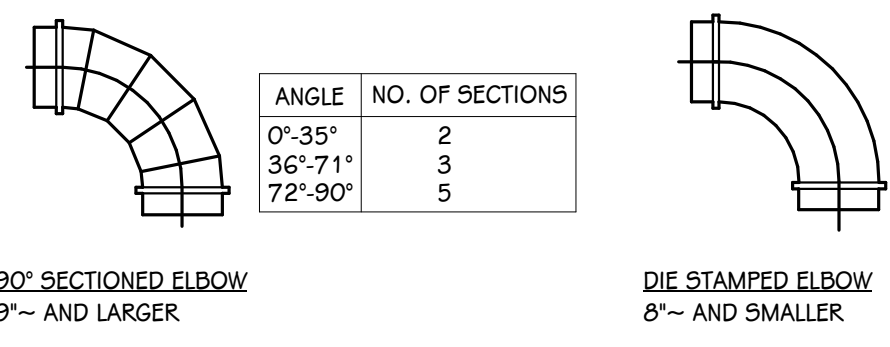
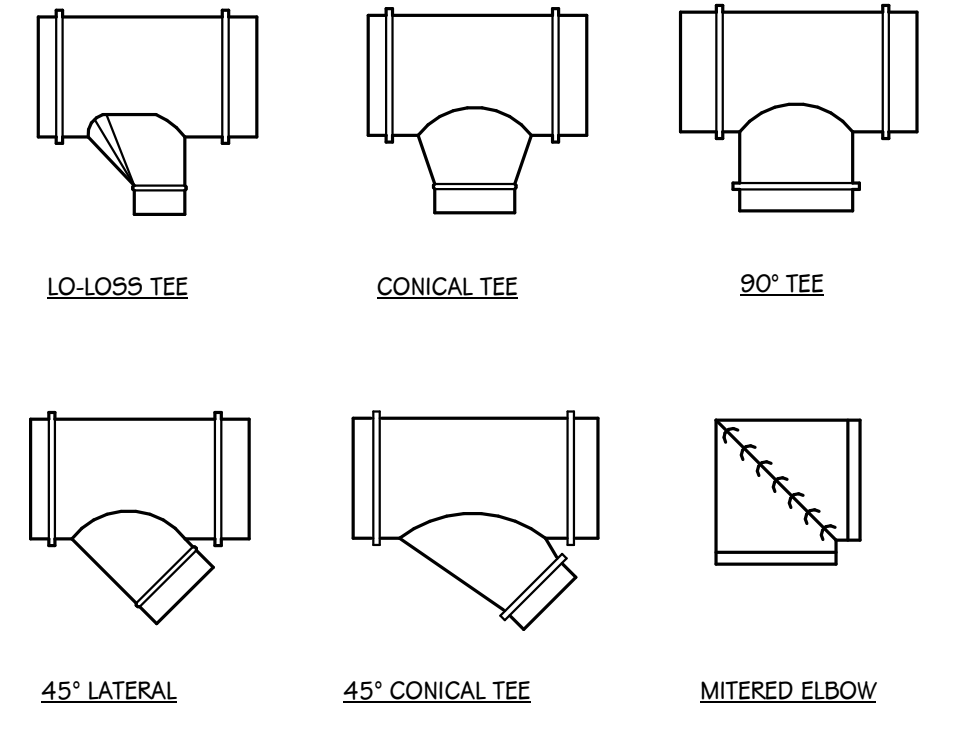
**TYPICAL SLOT DIFFUSER BRANCH DETAIL**  
SCALE: NONE



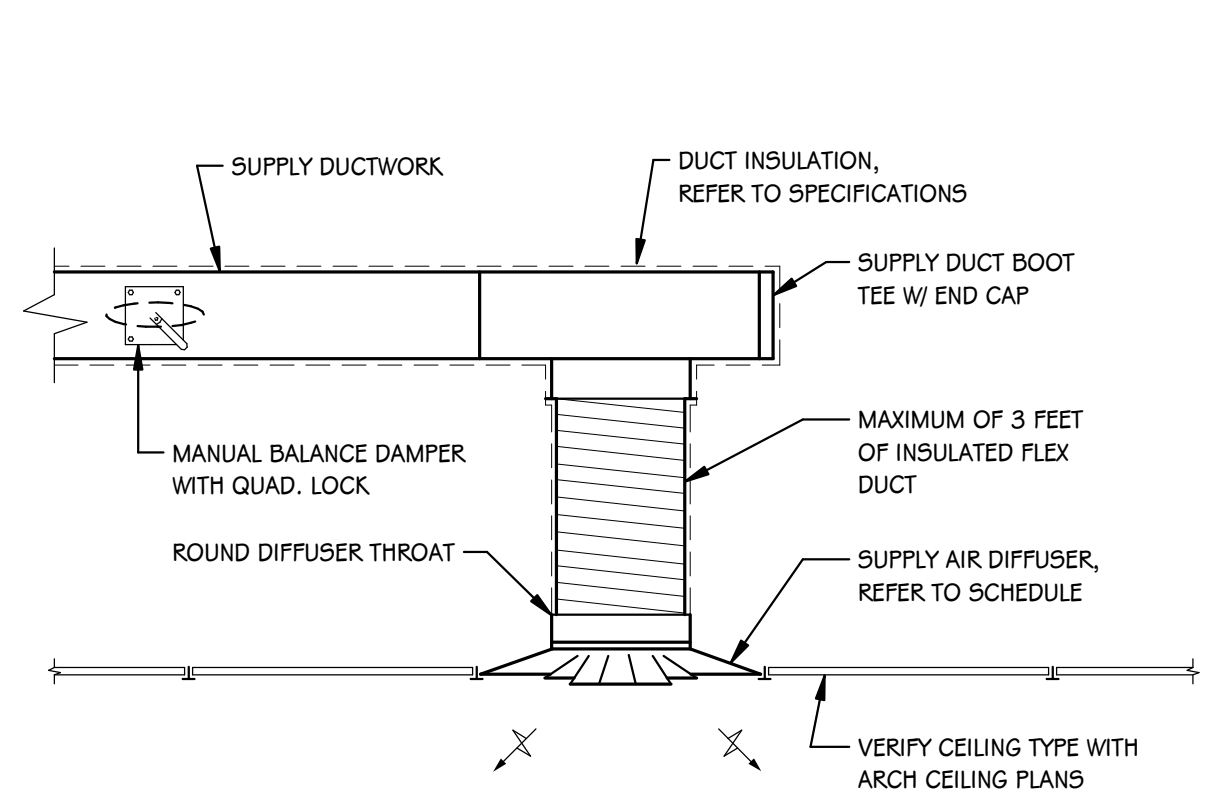
- NOTES:
1. SEAL (SUITABLE FOR PAINTING) ALL SEAMS AND JOINTS AIR TIGHT (TYP.)

**DUCT MOUNTED DIFFUSER DETAIL**  
SCALE: NONE

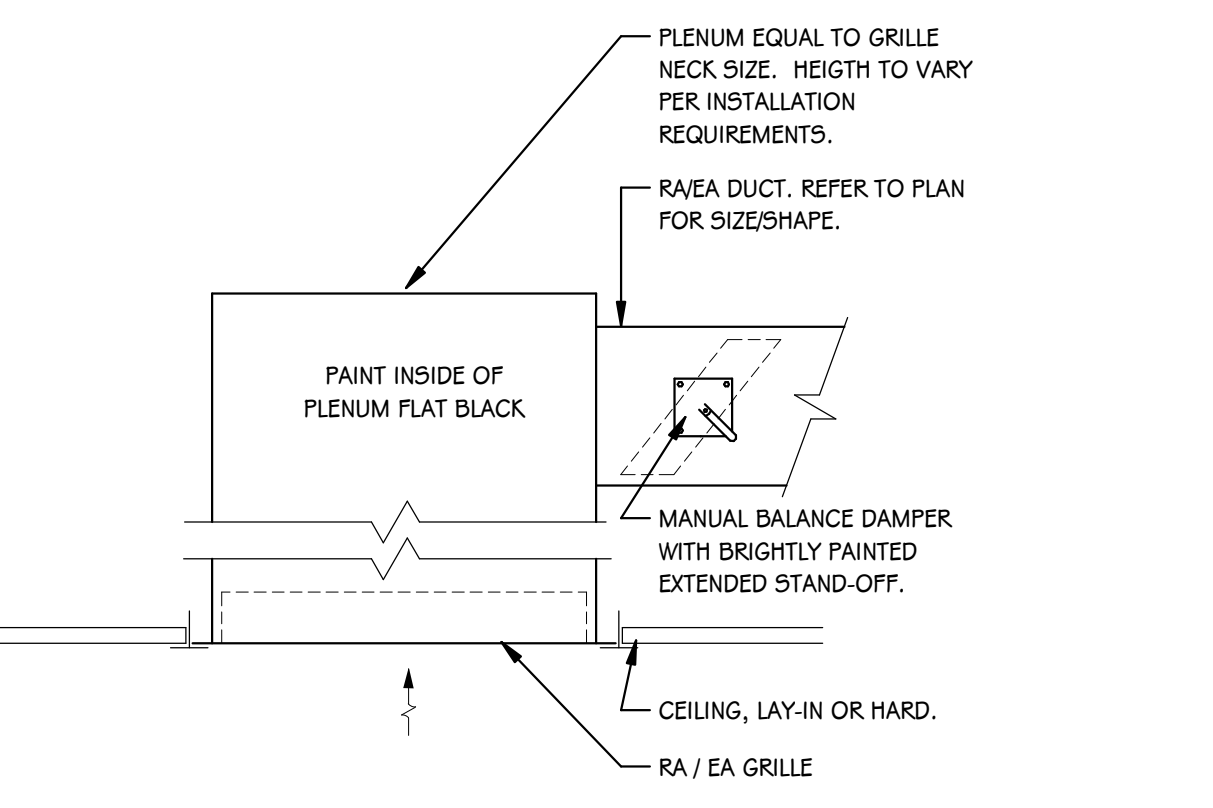
- DUCTWORK GENERAL NOTES**
1. ALL JOINTS, CORNERS AND SEAMS TO BE FULLY SEALED WITH SMACNA APPROVED DUCTWORK SEALANT.
  2. ALL DUCTWORK IS TO BE LEAK TESTED AT PRESSURES SPECIFIED.
  3. ALL RADIUS ELBOWS SHALL HAVE MINIMUM 1.5 CENTERLINE RADIUS.
  4. USE MITERED ELBOW WITH TURNING VANES WHEN CENTERLINE RADIUS IS LESS THAN 1.5.



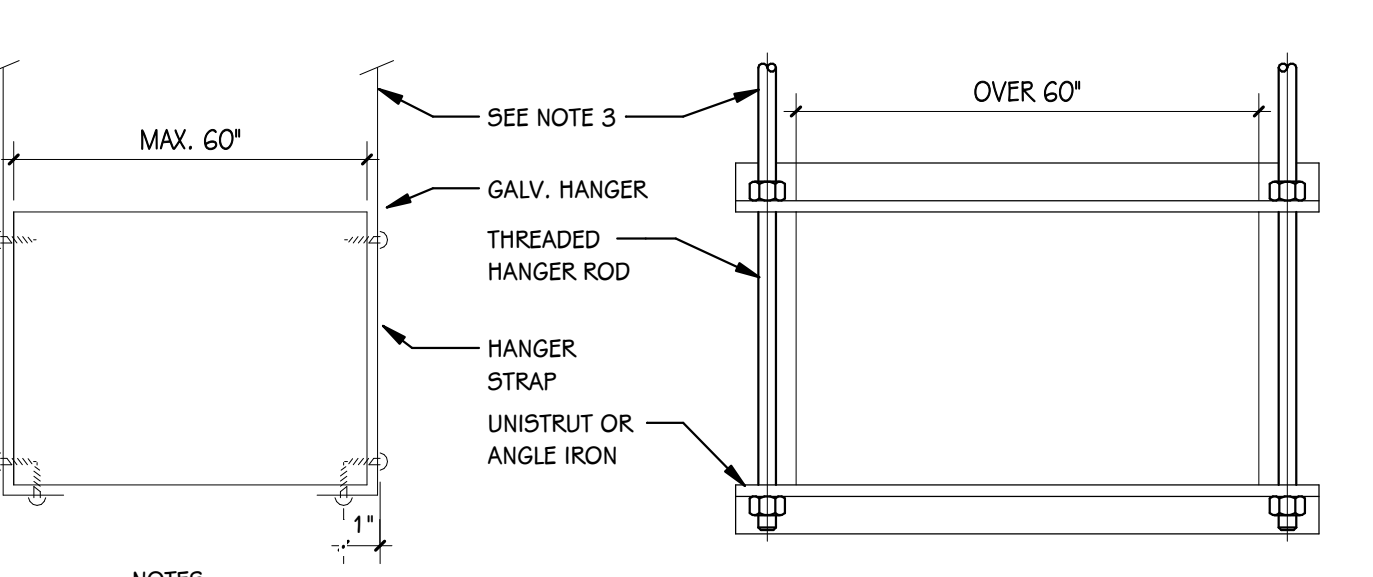
**DUCTWORK FITTING DETAILS - ROUND/OVAL**  
SCALE: NONE



**CEILING MOUNTED SUPPLY DIFFUSER DETAIL - TYPICAL**  
SCALE: NONE

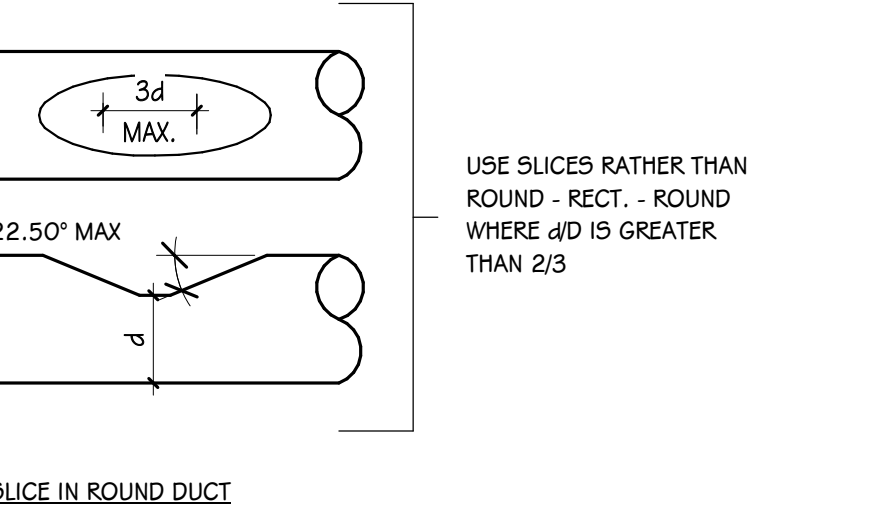
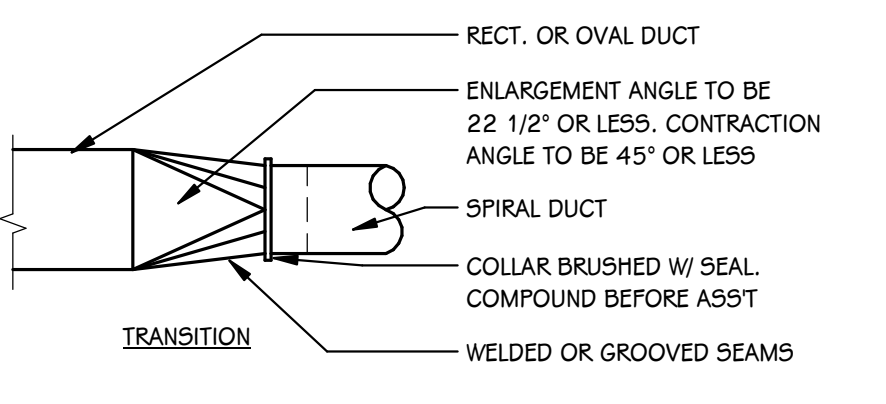


**RETURN / EXHAUST AIR GRILLE PLENUM DETAIL**  
SCALE: NONE



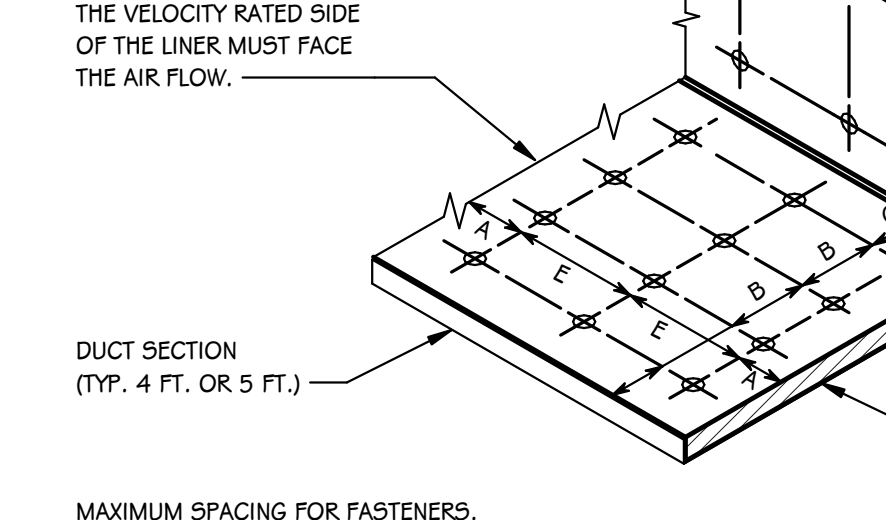
- NOTES:
1. ON DUCTS OVER 48" WIDE, BOTTOM SHALL BE BRACE BY ANGLE. FOR CROSS SECTION AREA MORE THAN 4 SQ FT, DUCT SHALL BE BRACED BY ANGLES ON ALL FOUR SIDES.
  2. CUTTING AND PATCHING SHALL BE LIMITED TO A MINIMUM AS REQUIRED FOR PROPER INSTALLATION.
  3. SUPPORTS SHALL BE SPACED AND SIZED PER SMACNA.

**DUCT HANGER SUPPORT DETAIL**  
SCALE: NONE



**DUCTWORK FITTING DETAILS - ROUND/OVAL**  
SCALE: NONE

NO. PINS	LINER INTERIOR WIDTH
0	8" DN
2	9"-16"
3	17"-28"
4	29"-40"
5	41"-52"
6	53"-64"
7	65"-76"
8	77"-88"
9	89"-100"



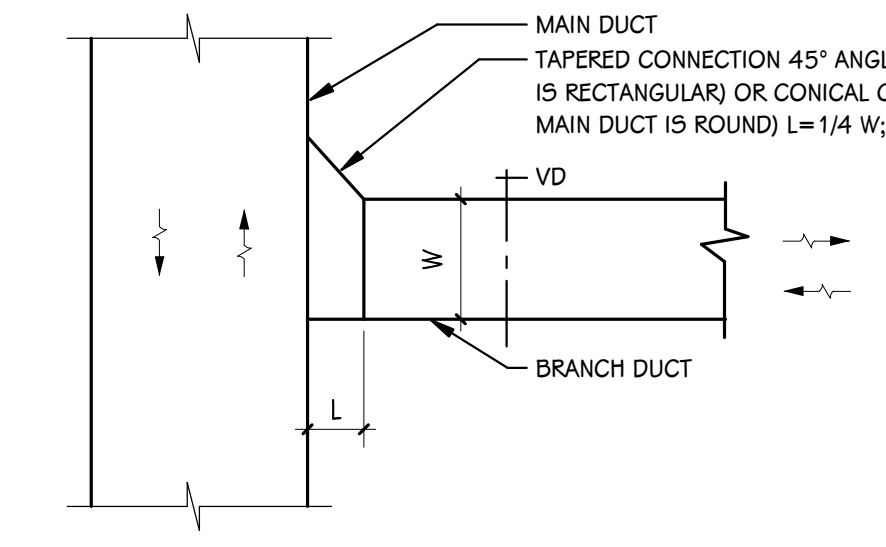
THE VELOCITY RATED SIDE OF THE LINER MUST FACE THE AIR FLOW.

DUCT SECTION (TYP. 4 FT. OR 5 FT.)

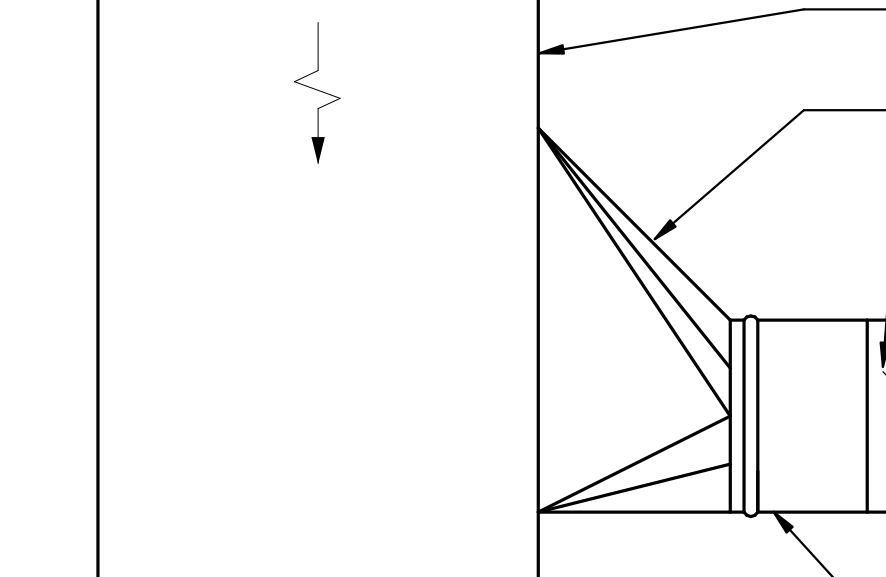
MAXIMUM SPACING FOR FASTENERS. ACTUAL INTERVALS ARE APPROXIMATE.

VELOCITY	DIMENSIONS			
	A	B	C	E
0-2500 FPM	3"	12"	4"	18"
2501-6000 FPM	3"	6"	4"	16"

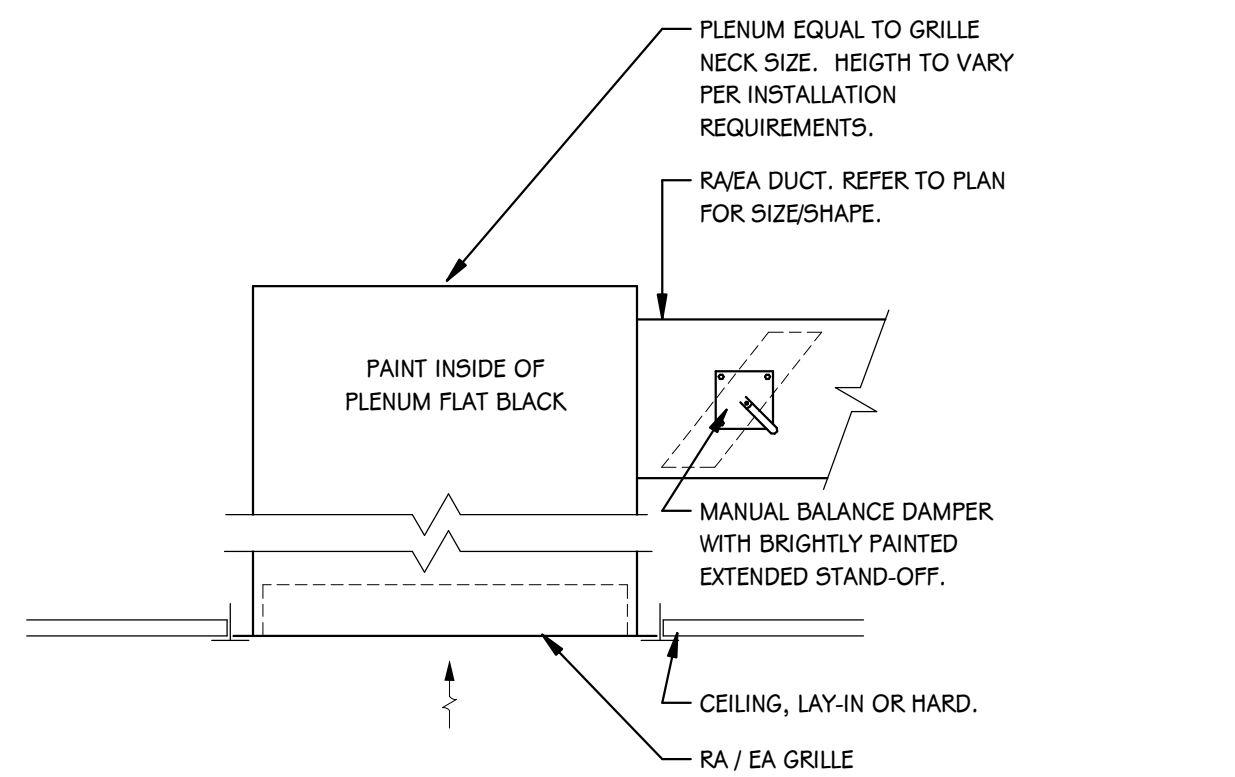
**DUCT LINER INSTALLATION DETAIL**  
SCALE: NONE



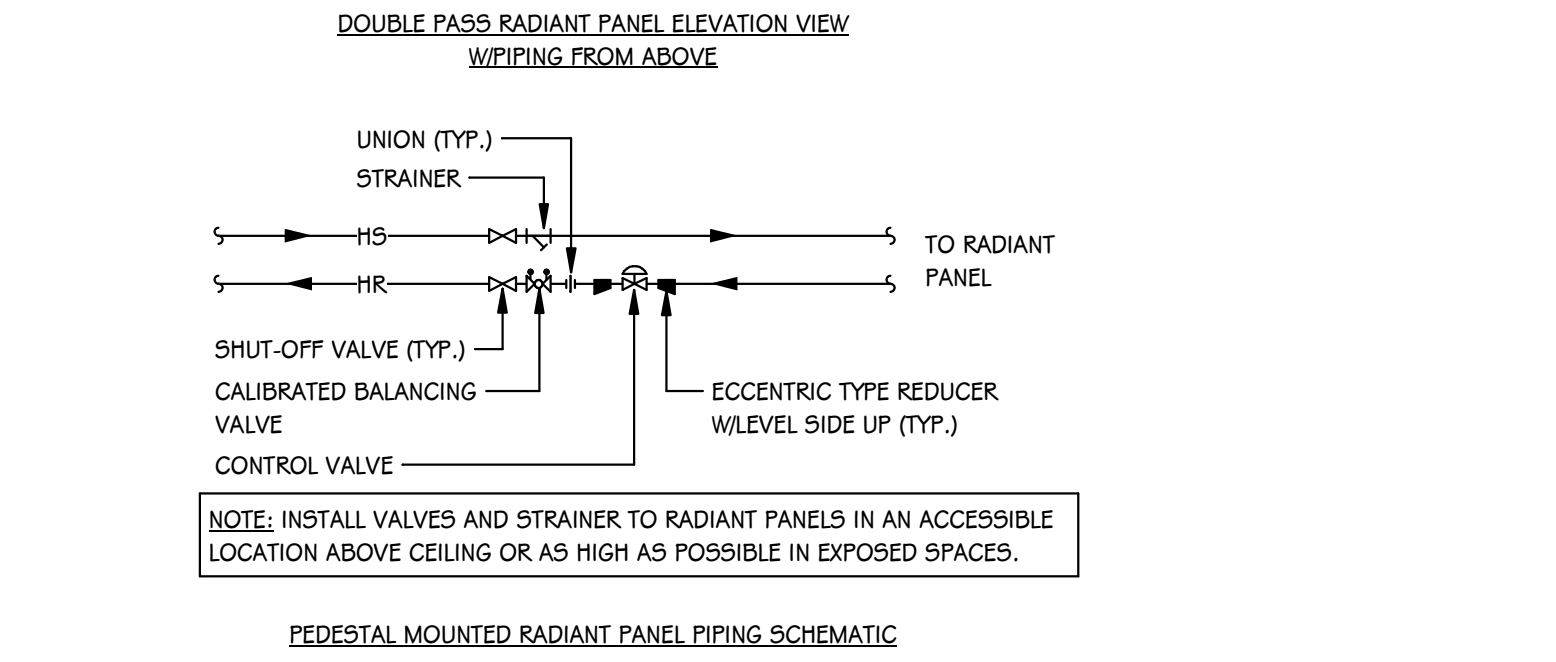
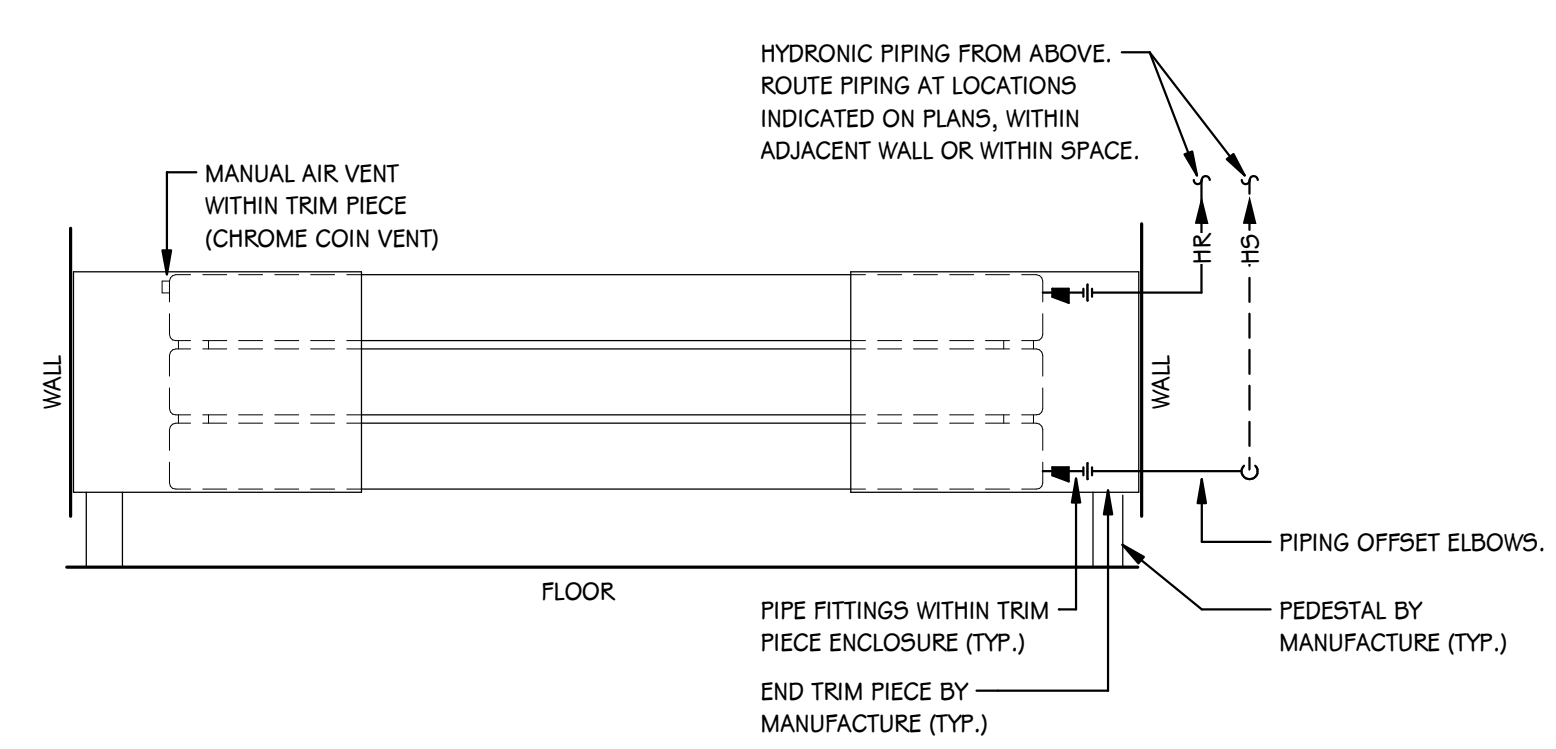
**BRANCH TAKE OFFS DETAIL**  
SCALE: NONE



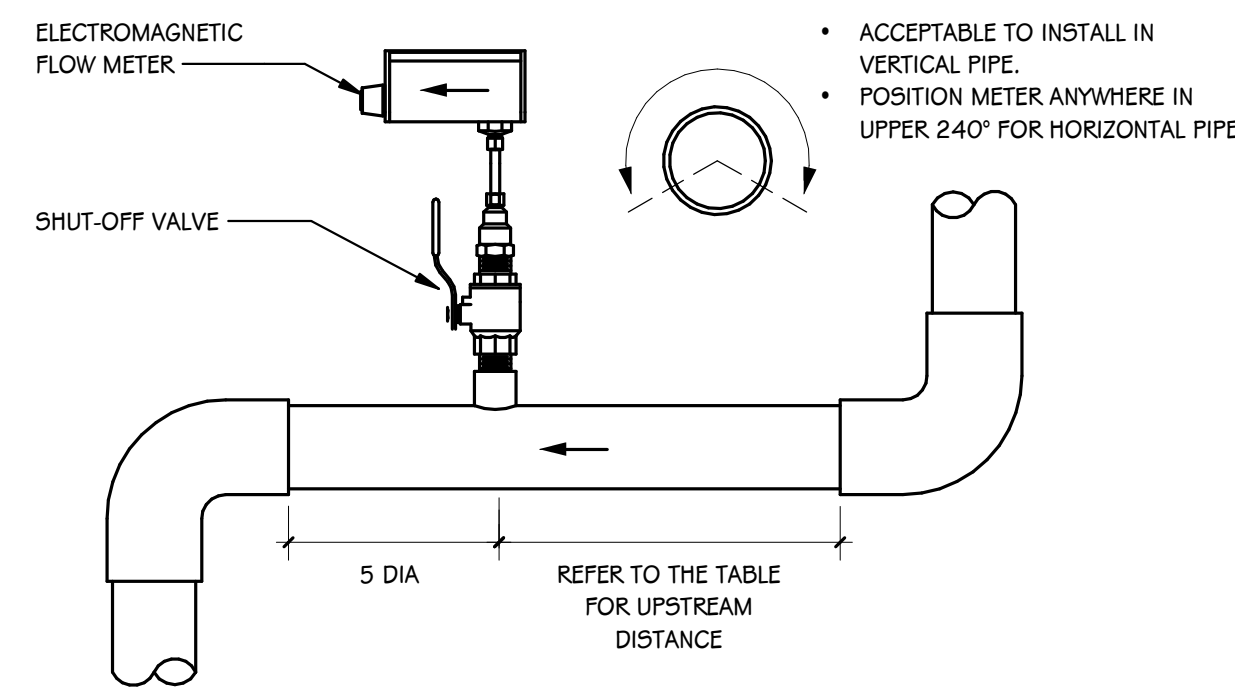
**TAKEOFF DETAIL - RECTANGULAR TO ROUND**  
SCALE: NONE



**RETURN / EXHAUST AIR GRILLE PLENUM DETAIL**  
SCALE: NONE

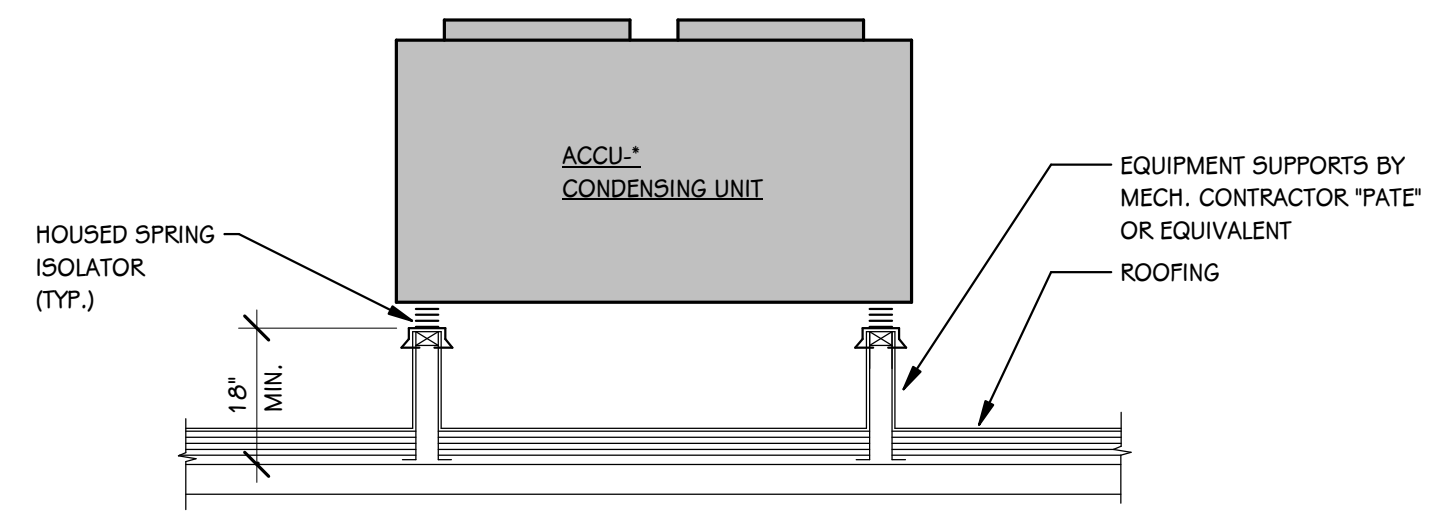


**RADIANT PANEL PEDESTAL MOUNTED PIPING DETAIL**  
SCALE: NONE

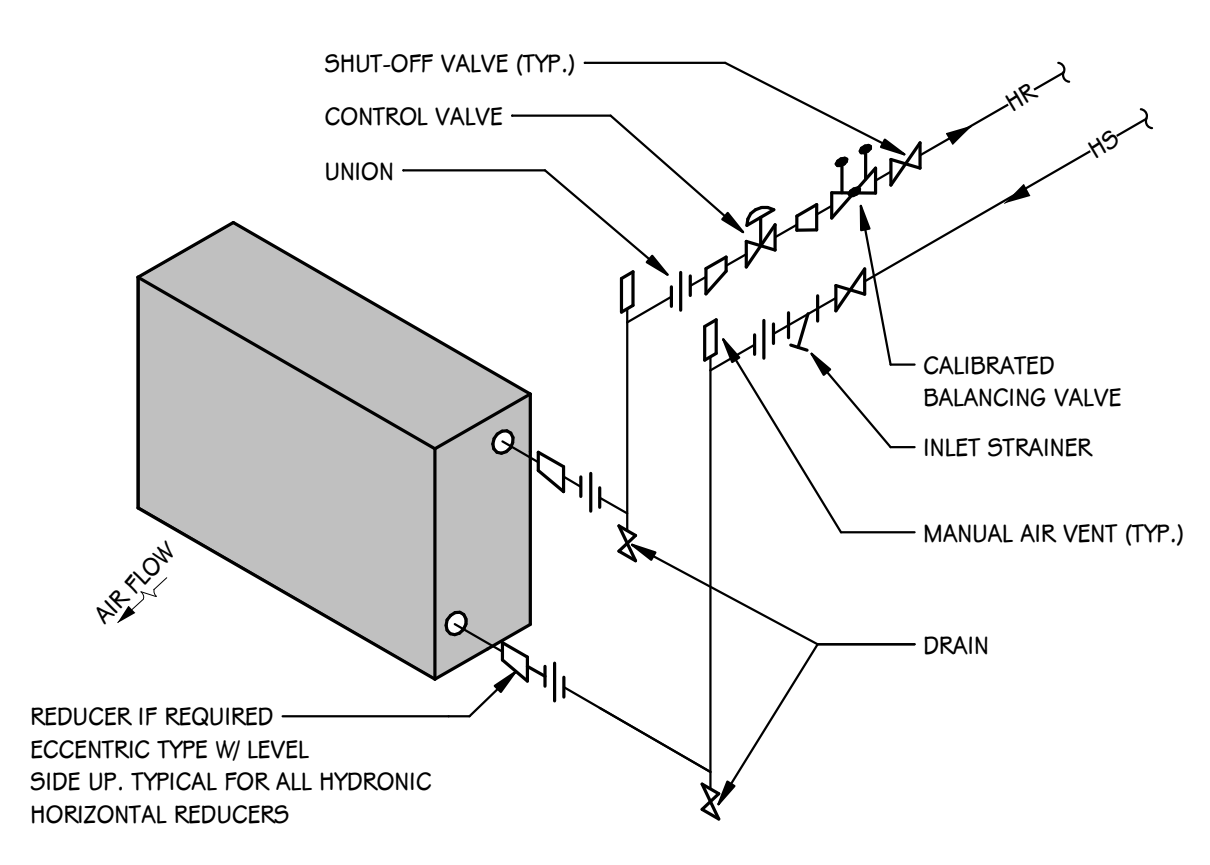


MINIMUM UPSTREAM STRAIGHT RUN REQUIRED (1)	
OBSTRUCTION	UPSTREAM
SINGLE BEND PRECEDED BY ≥ 9 DIAMETERS OF STRAIGHT PIPE RUN	10 DIA
PIPE SIZE REDUCTION / EXPANSION IN STRAIGHT RUN	10 DIA
SINGLE BEND PRECEDED BY ≥ 9 DIAMETERS OF STRAIGHT PIPE RUN	15 DIA
OUTFLOWING TEE / PUMP OUTFLOW	20 DIA
MULTIPLE BENDS OUT OF PLANE	30 DIA
INFLOWING TEE	30 DIA
VALVE	30 DIA

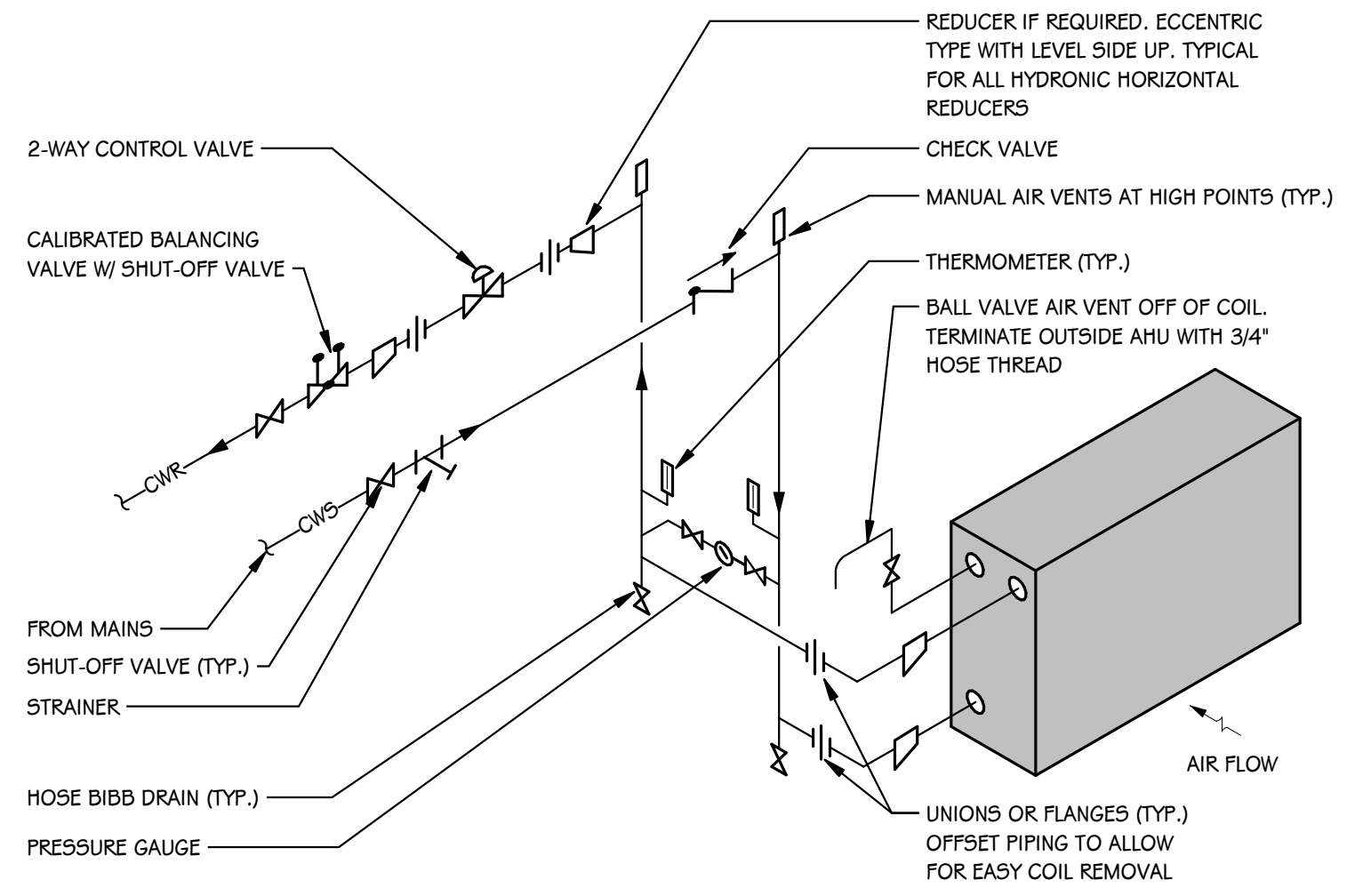
**FLOW METER INSTALLATION DETAIL**  
SCALE: NONE



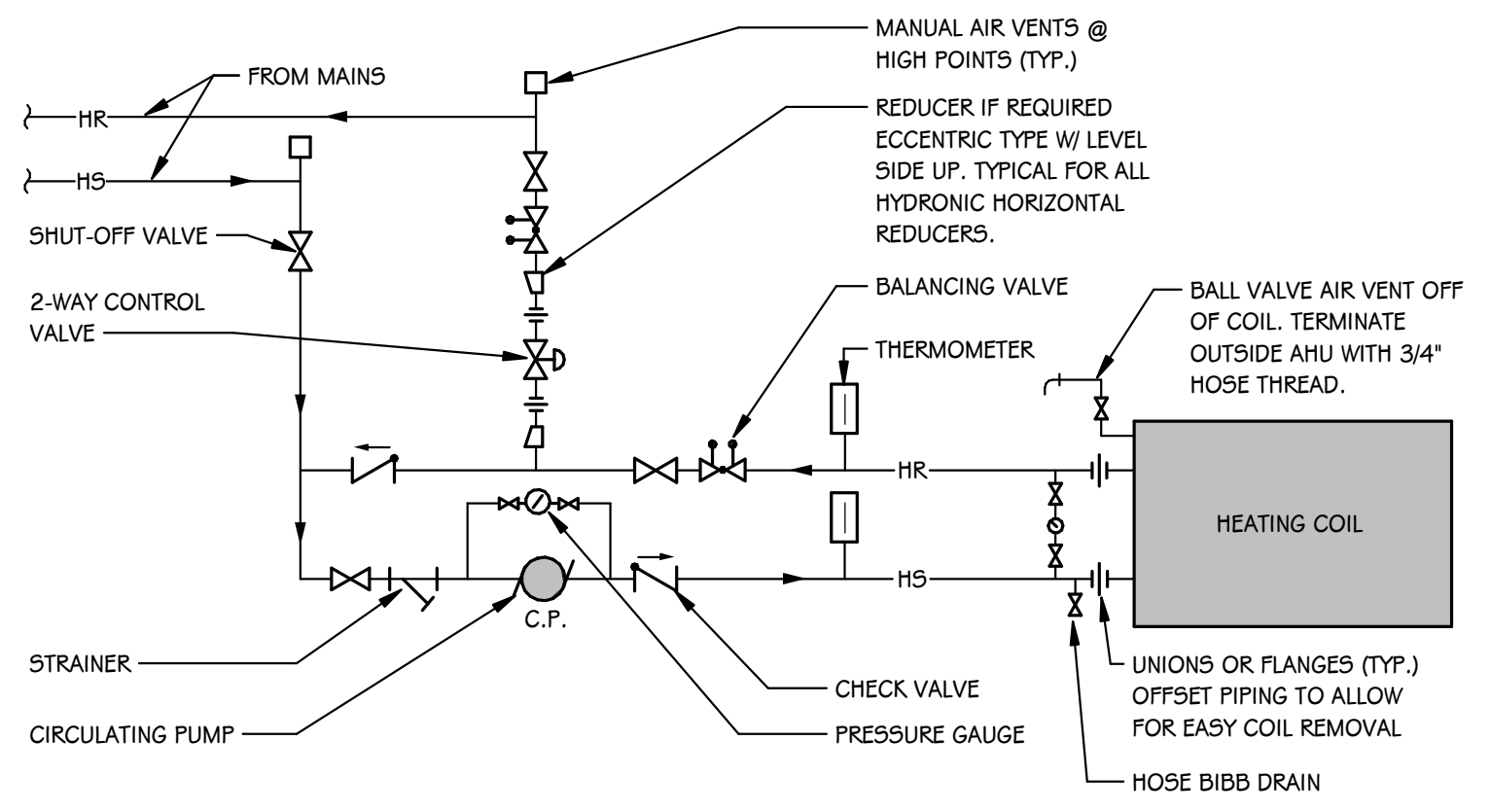
**ROOF MOUNTED CONDENSING UNIT**  
SCALE: NONE



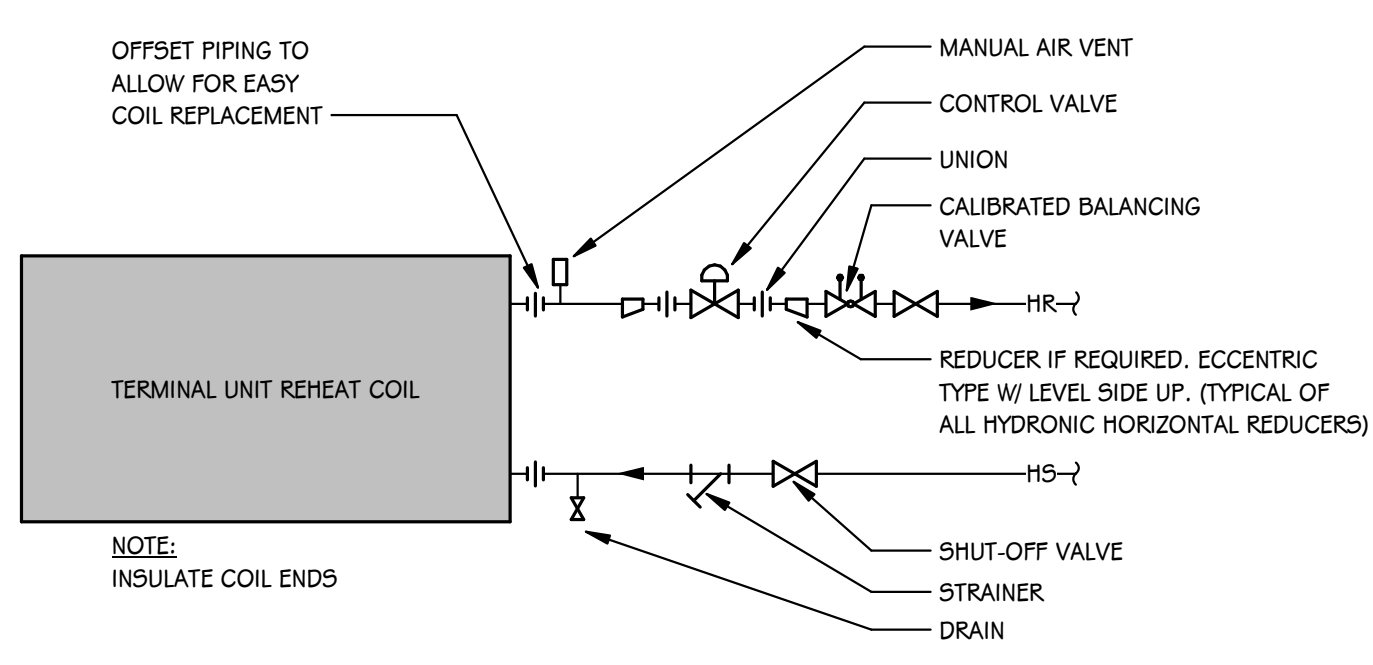
**CABINET HEATER PIPING DETAIL**  
SCALE: NONE



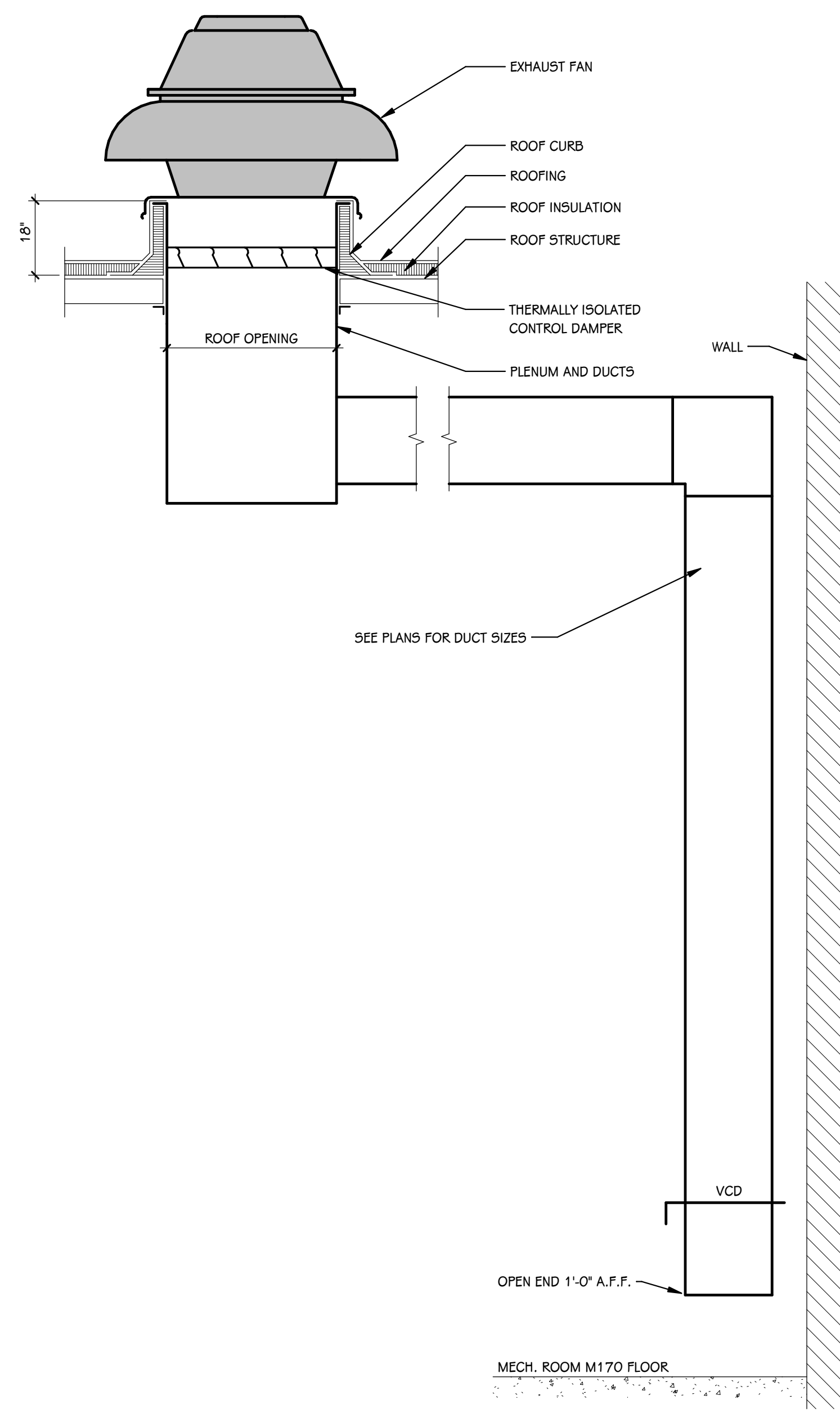
**AHU COOLING COIL PIPING DETAIL - SINGLE COIL 2-WAY VALVE**  
SCALE: NONE



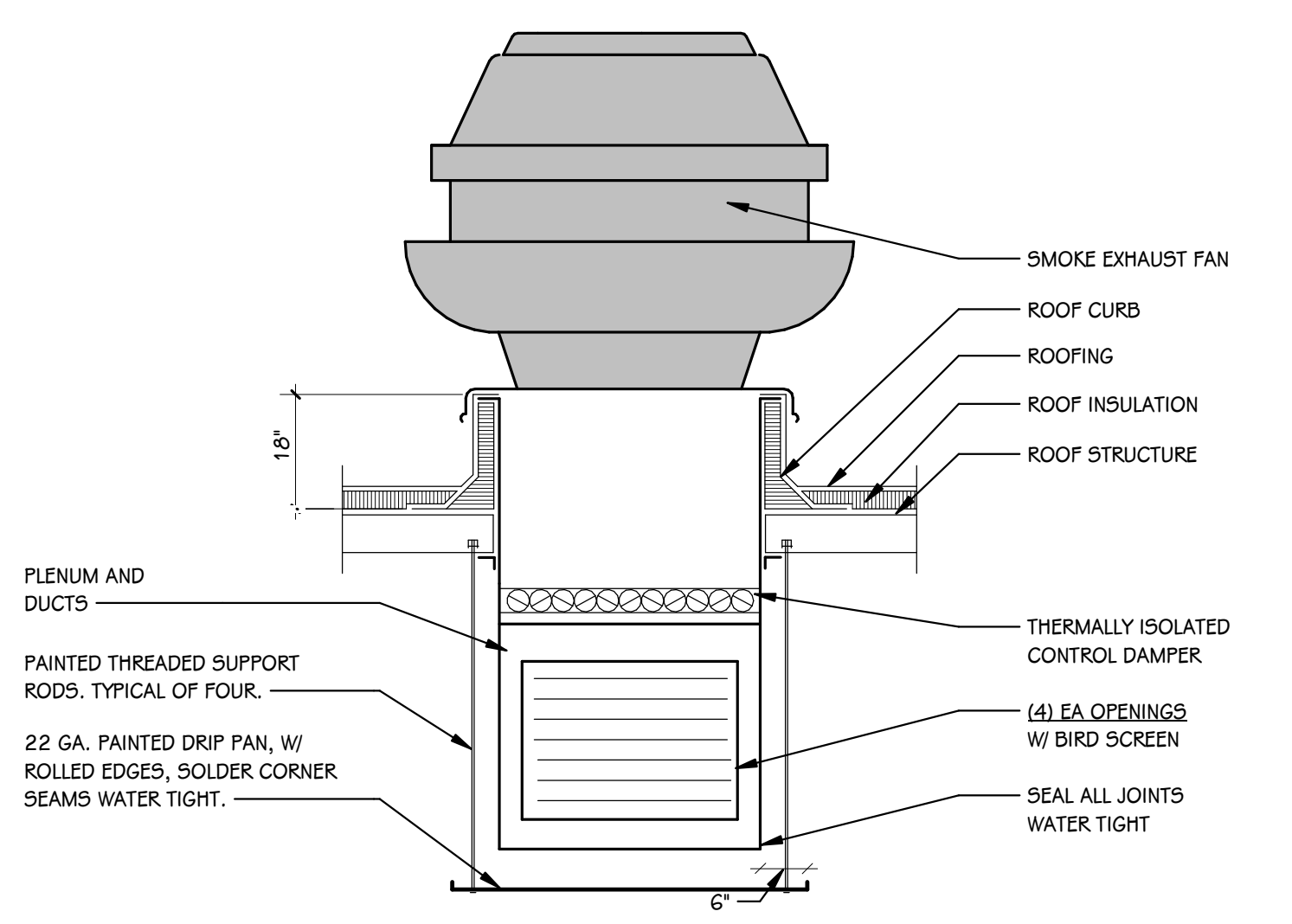
**AHU HEATING COIL PIPING DETAIL - SINGLE COIL 2-WAY VALVE**  
SCALE: NONE



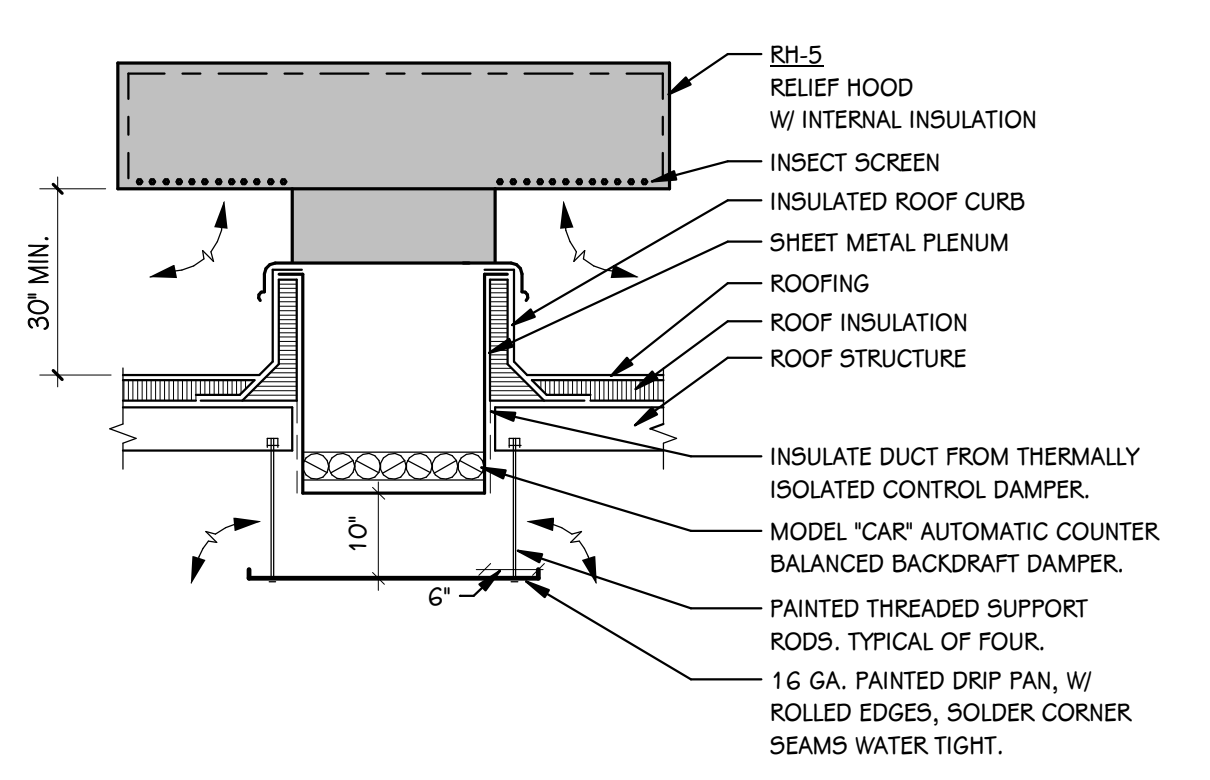
**TERMINAL UNIT REHEAT COIL PIPING DETAIL (2-WAY)**  
SCALE: NONE



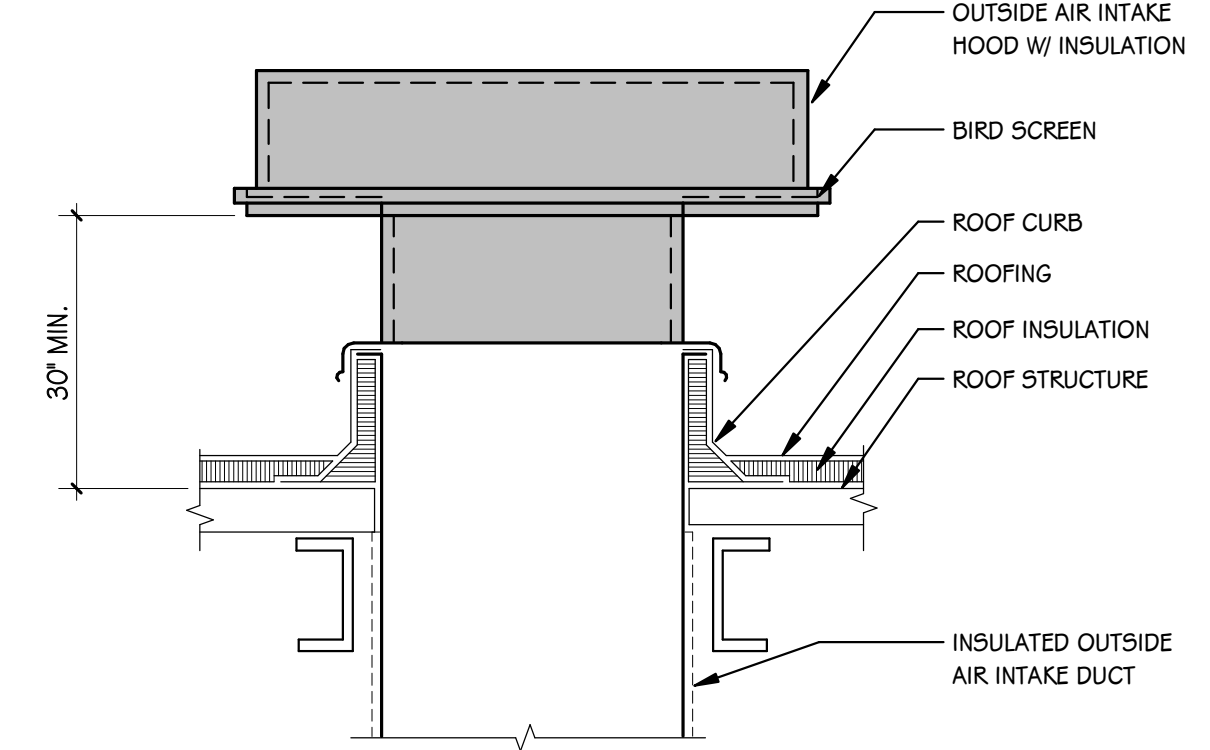
**REFRIGERANT PURGE EXHAUST FAN INSTALLATION DETAIL**  
SCALE: NONE



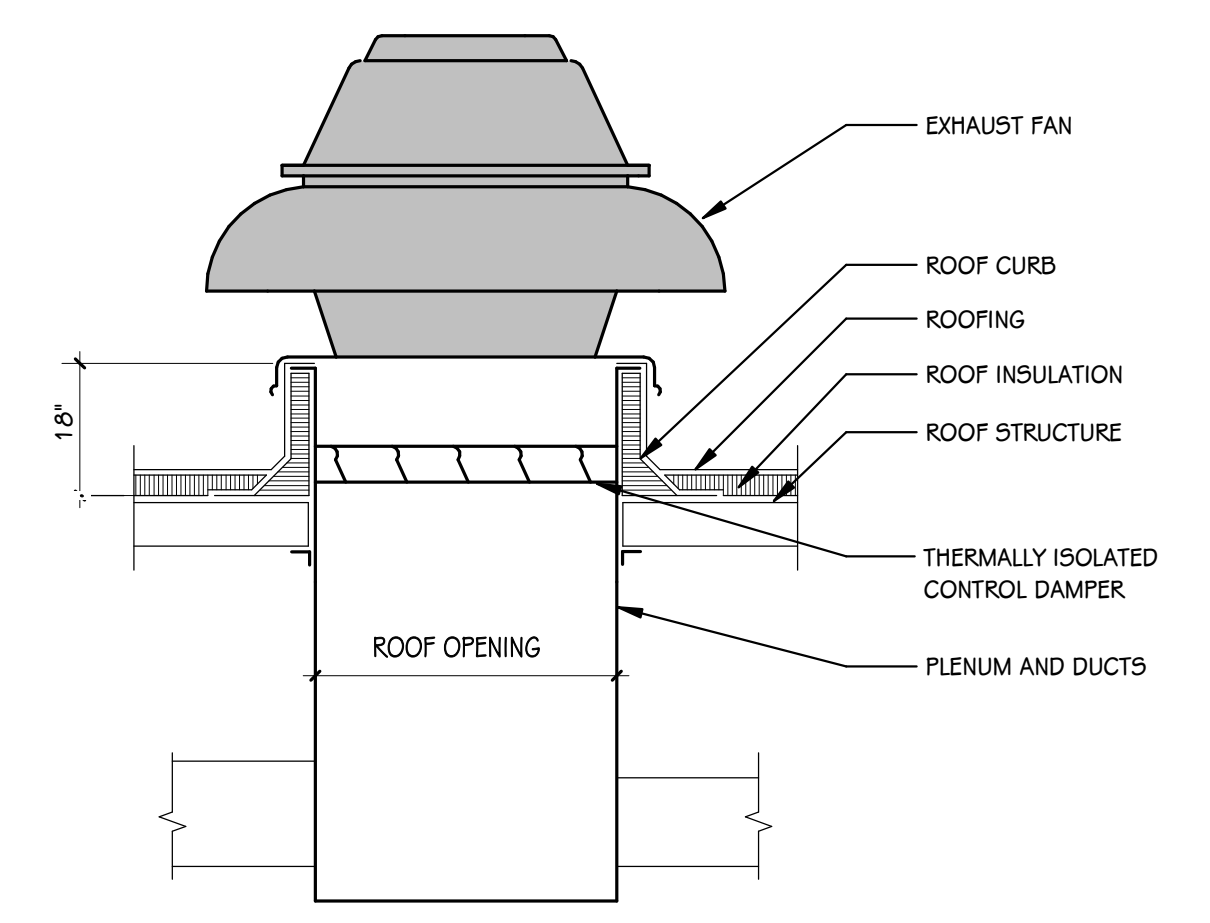
**SMOKE EXHAUST FAN DETAIL**  
SCALE: NONE



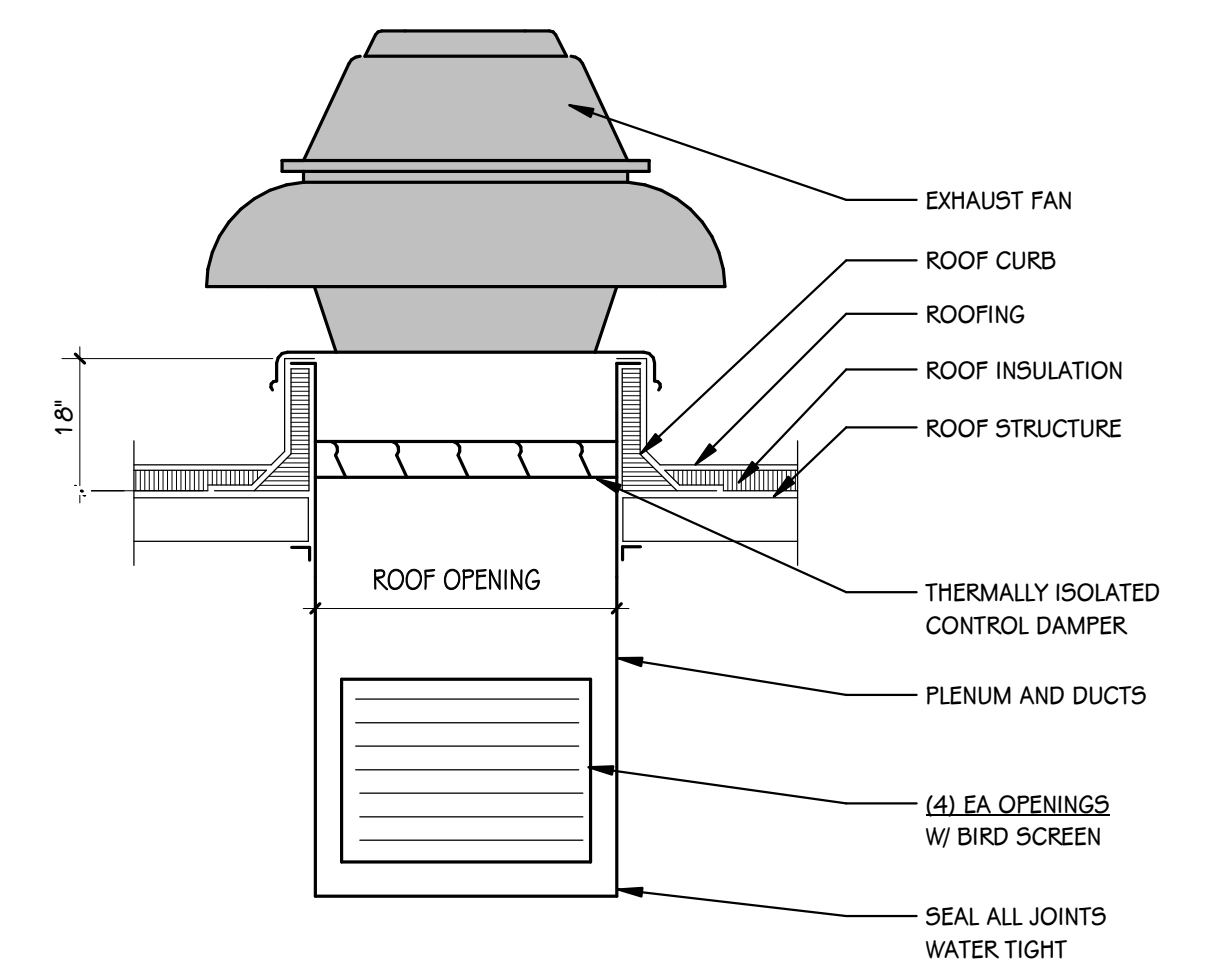
**GYMNASIUM RELIEF AIR HOOD DETAIL**  
SCALE: NONE



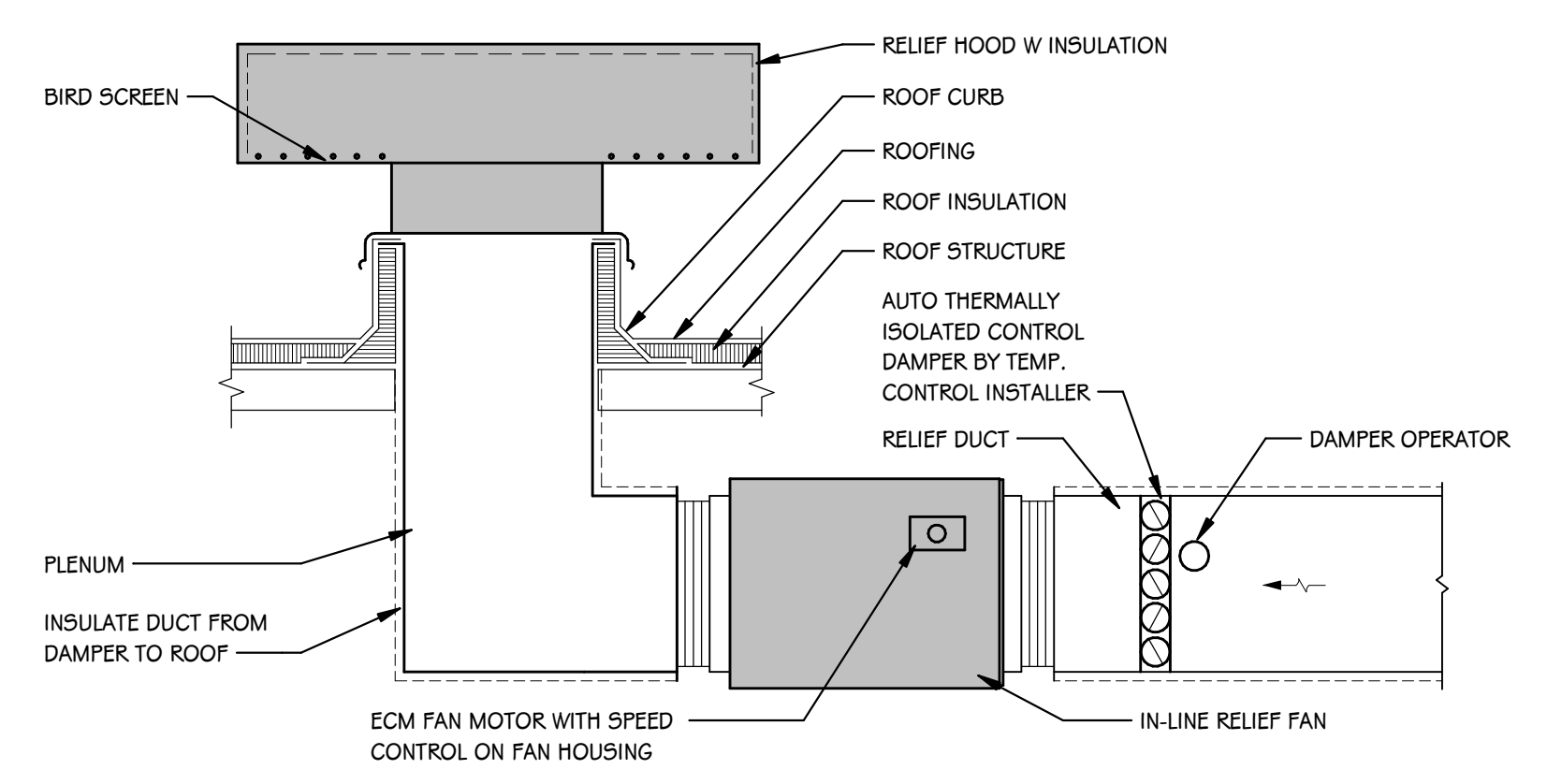
**OUTSIDE AIR INTAKE DETAIL**  
SCALE: NONE



**ROOF EXHAUSTER DETAIL**  
SCALE: NONE



**MECHANICAL ROOM EXHAUST FAN DETAIL**  
SCALE: NONE



**RELIEF FAN AND HOOD DETAIL**  
SCALE: NONE

PRELIMINARY  
NOT FOR CONSTRUCTION

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

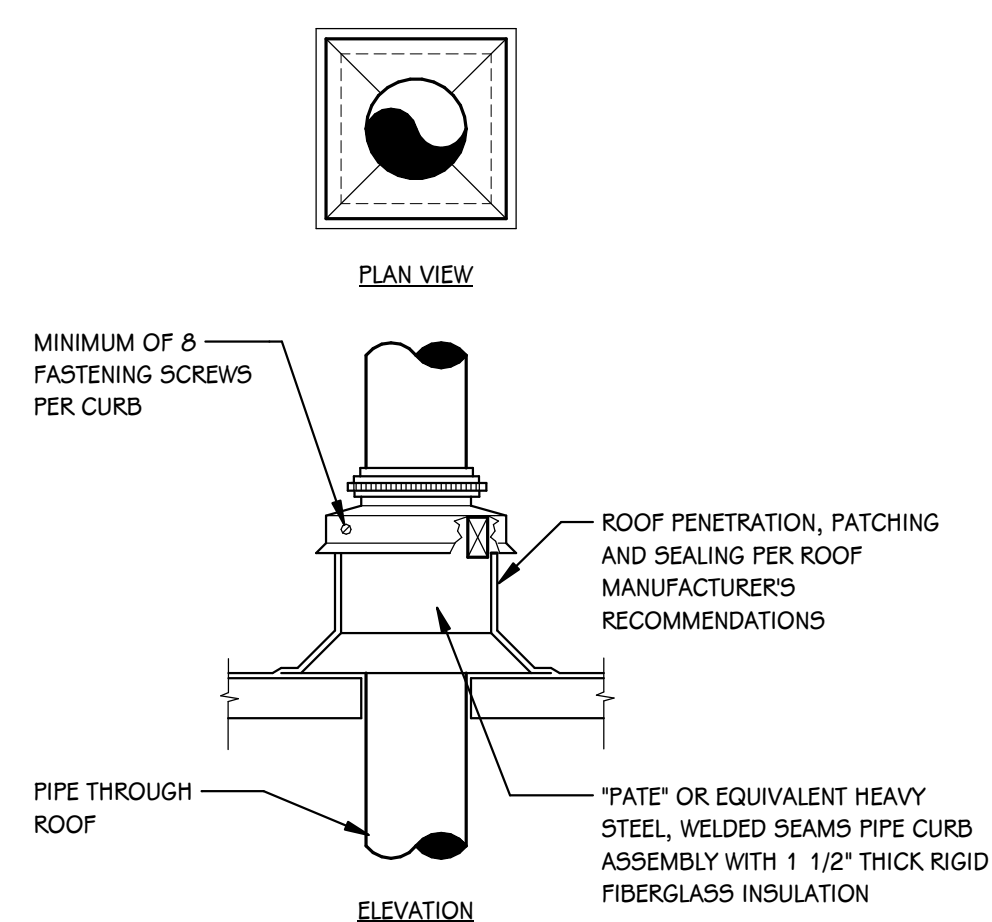
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

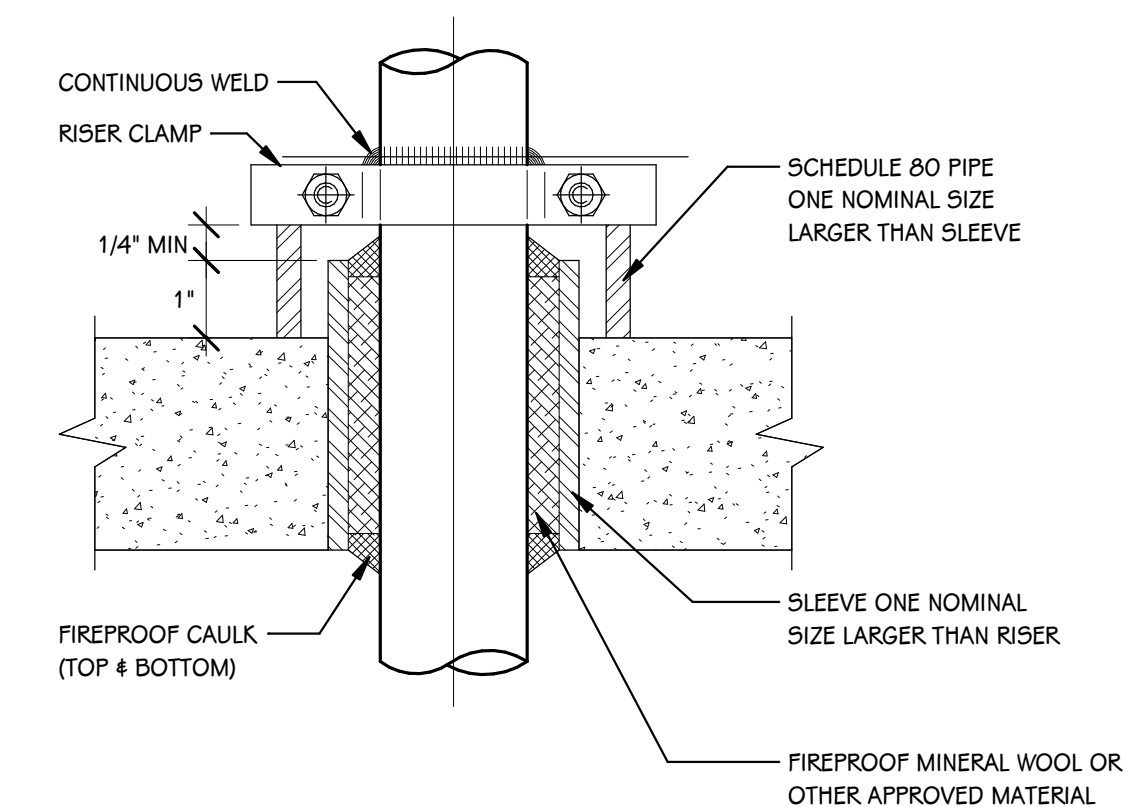
SHEET TITLE  
MECHANICAL DETAILS

DATE  
JUNE 30, 2023

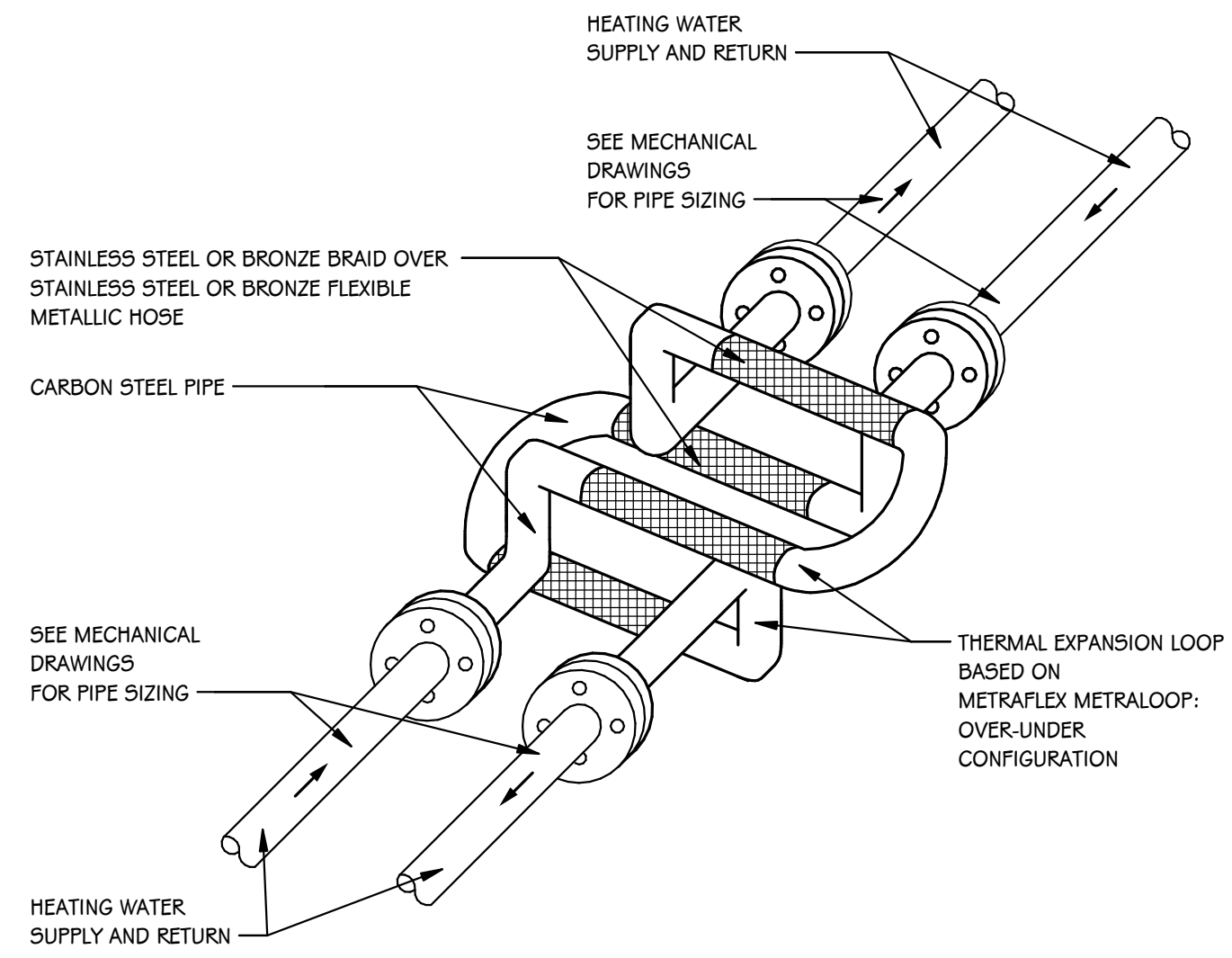
SHEET NUMBER  
M 504  
21-237.20



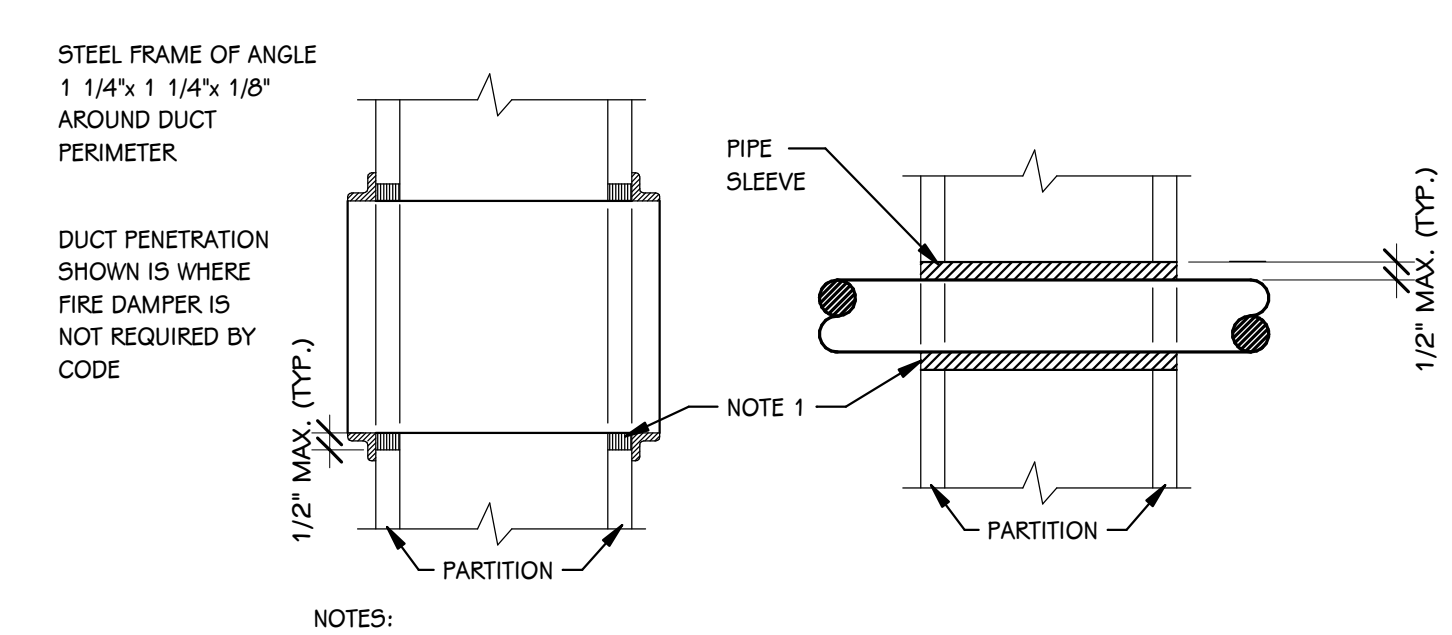
**PIPE CURB DETAIL - SINGLE**  
SCALE: NONE



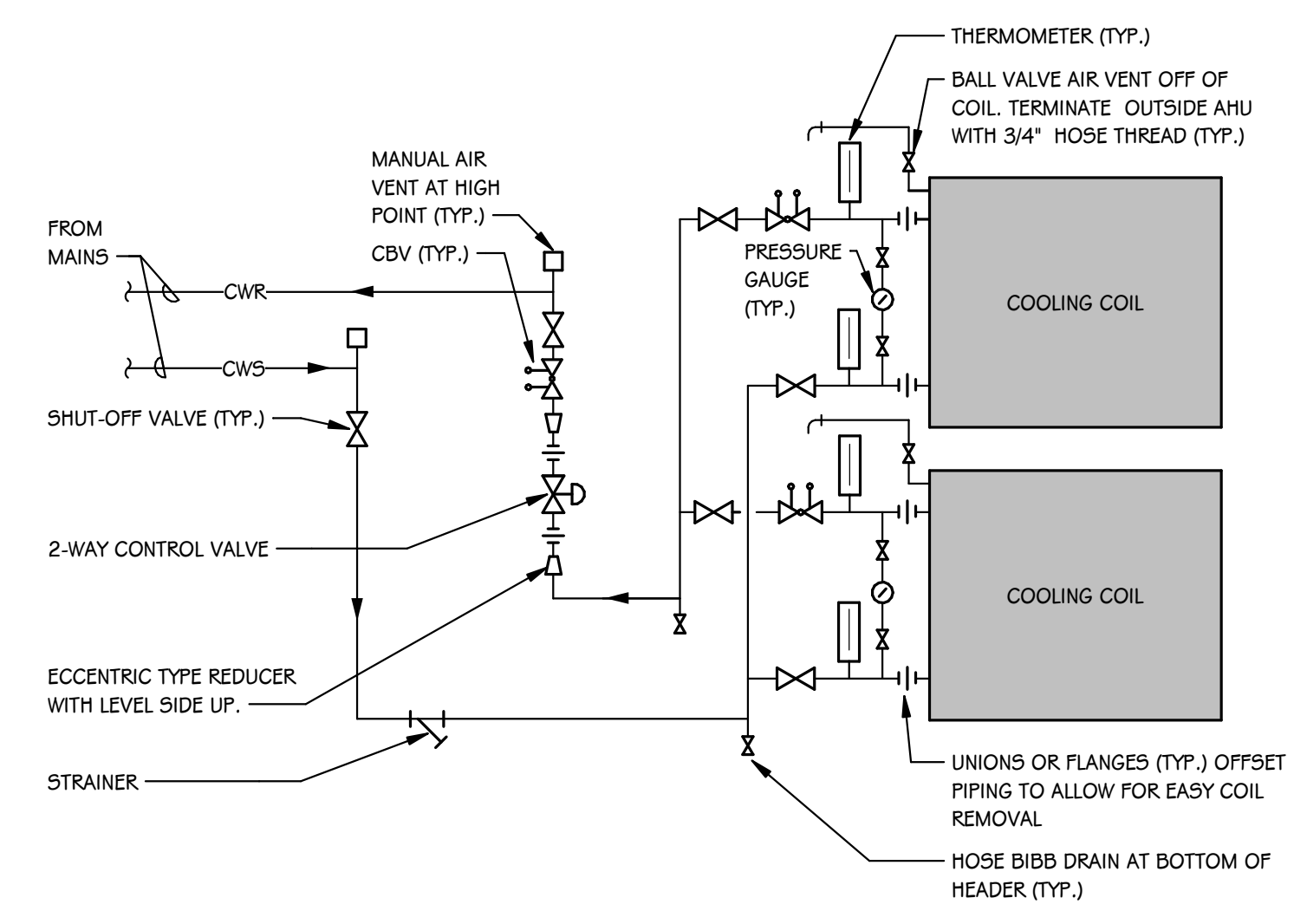
**PIPE RISER SUPPORT DETAIL**  
SCALE: NONE



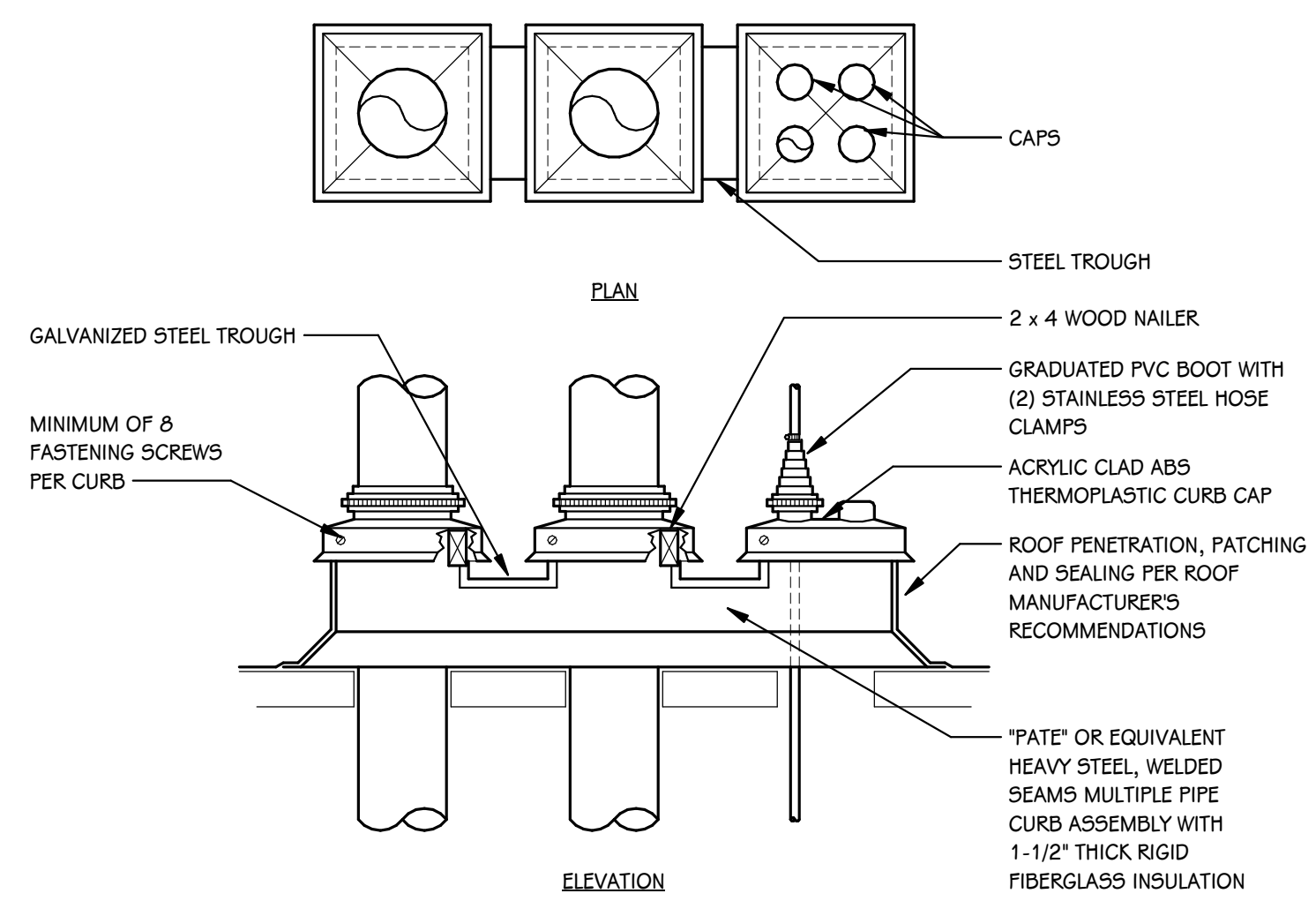
**THERMAL EXPANSION DETAIL**  
SCALE: NONE



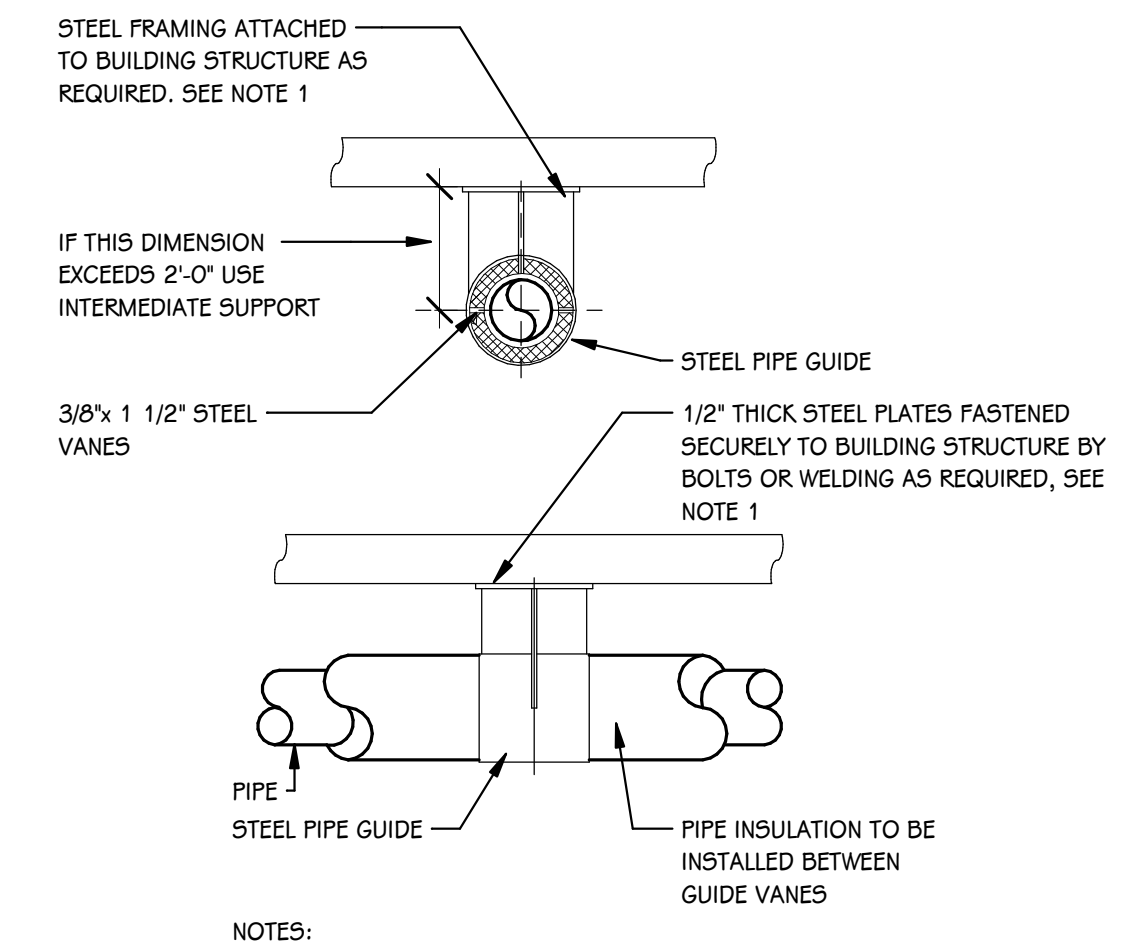
**DUCT AND PIPE PENETRATIONS DETAIL**  
SCALE: NONE



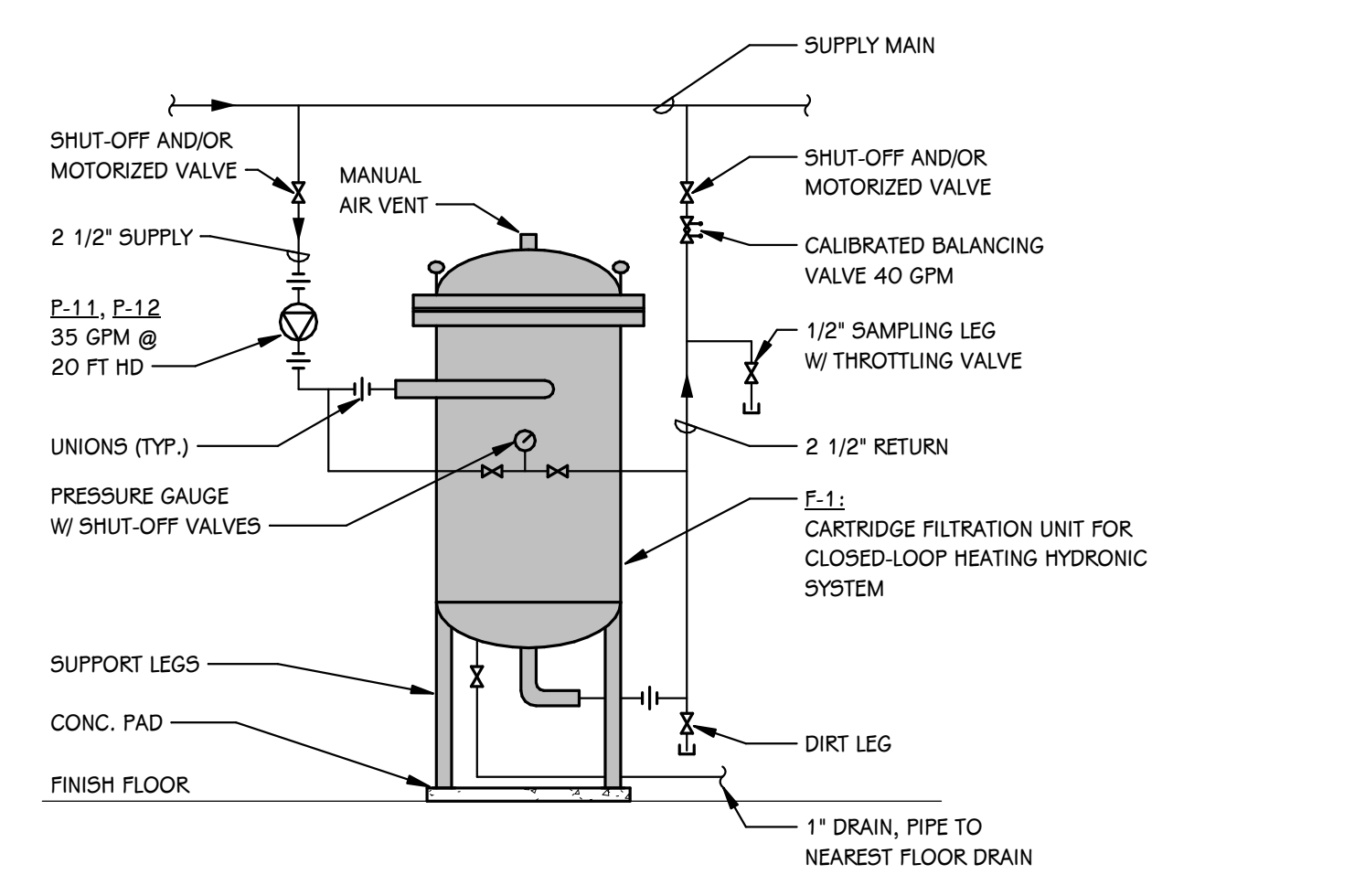
**AHU COOLING COIL PIPING DETAIL 2-WAY - (2 COILS)**  
SCALE: NONE



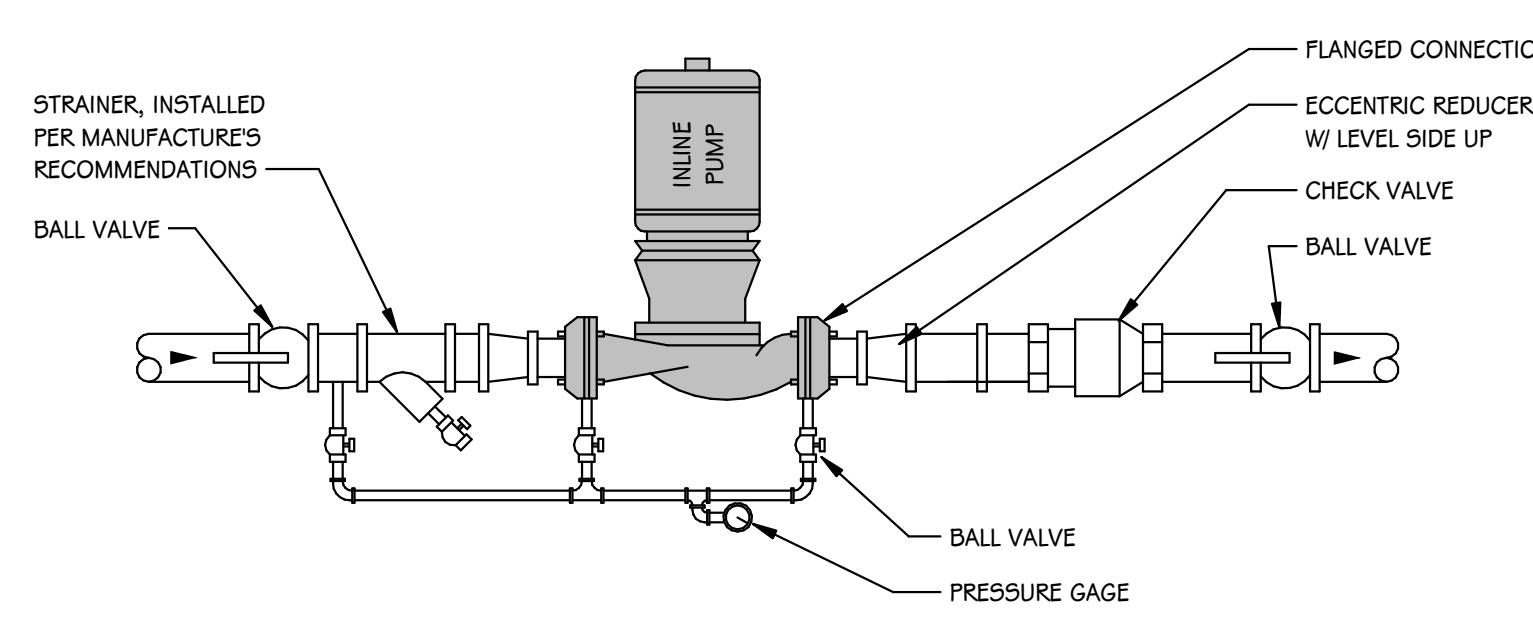
**PIPE CURB DETAIL - MULTIPLE**  
SCALE: NONE



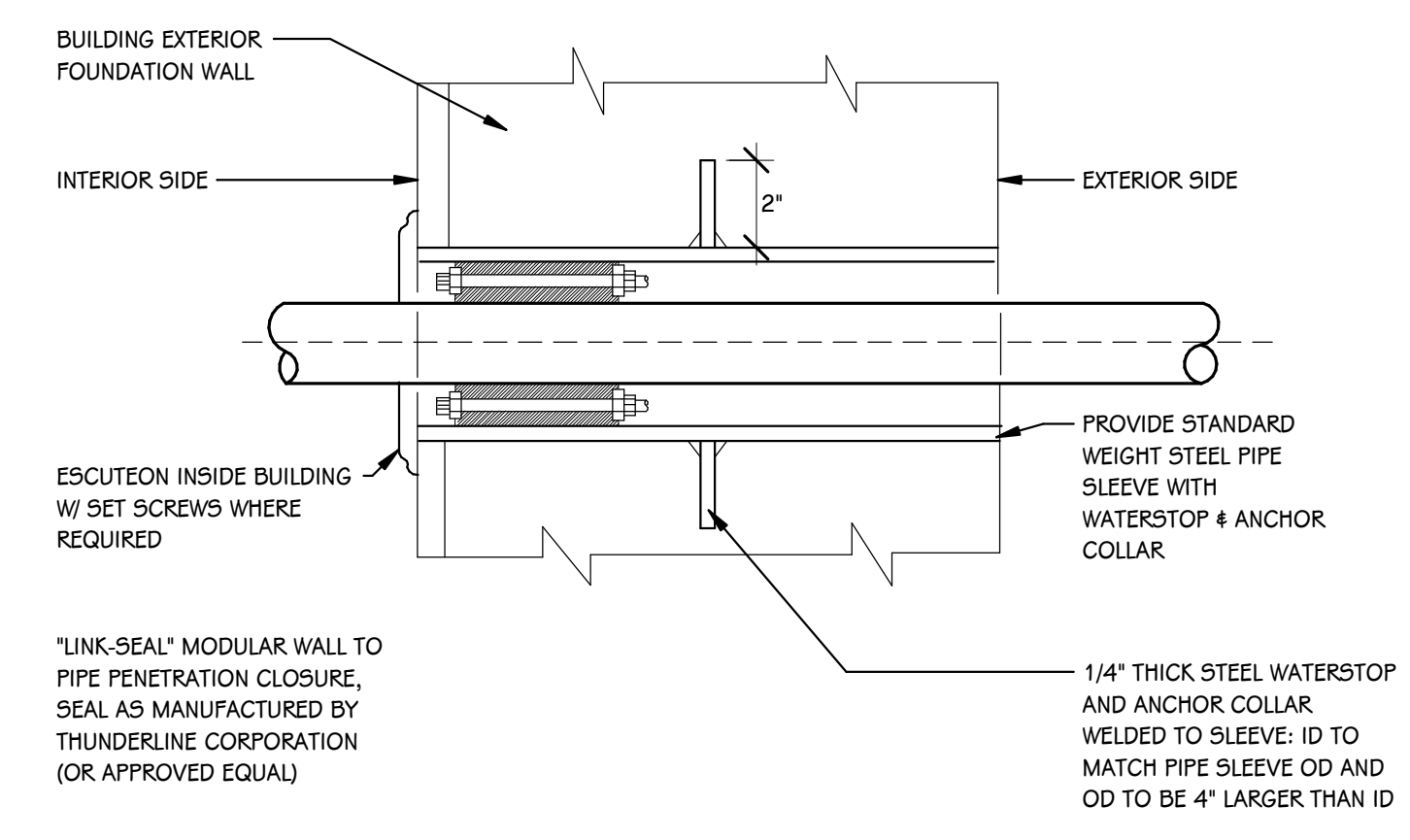
**PIPE GUIDE DETAIL**  
SCALE: NONE



**CARTRIDGE FILTER PIPING DETAIL**  
SCALE: NONE



**PUMP - INLINE PIPING DETAIL**  
SCALE: NONE



**EXTERIOR WALL SLEEVE DETAIL**  
SCALE: NONE

**PRELIMINARY**  
NOT FOR CONSTRUCTION

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
MECHANICAL DETAILS

DATE  
JUNE 30, 2023

SHEET NUMBER  
M 505  
21-237.20



CONTROL POINTS						
NUMBER	TAG	DESCRIPTION	ALARM	TREND	MISC.	REMARKS
<b>HEATING HOT WATER SYSTEM</b>						
01	T-1	OUTDOOR AIR TEMPERATURE				GLOBAL
02	DPS-1	HEATING LOOP DIFFERENTIAL PRESSURE	■	■		
03	T-2	HEATING WATER RETURN TEMPERATURE				
04	T-3	HEATING SUPPLY WATER TEMPERATURE	■	■		
05	FP-1	ENABLE/DISABLE				FILTER PUMP
06	FP-1	RUN STATUS	■	■		FILTER PUMP
07	DPS-2	FILTER DIFFERENTIAL PRESSURE	■	■		
08	P-1	ENABLE/DISABLE				
09	P-1	RUN STATUS	■	■		
10	P-1	SPEED CONTROL				
11	P-1	VFD FAULT STATUS	■	■		
12	P-2	ENABLE/DISABLE				
13	P-2	RUN STATUS	■	■		
14	P-2	SPEED CONTROL				
15	P-2	VFD FAULT STATUS	■	■		
16	FM-1	LOOP FLOW (GPM)				
17	T-4	LEAVING WATER TEMPERATURE				
18	V-1	ISOLATION VALVE OPEN/CLOSE				CONTROLLED BY BOILER CONTROLLER
19	V-1	ISOLATION VALVE POSITION	■	■		CONTROLLED BY BOILER CONTROLLER
20	B-1	ENABLE/DISABLE				SENT FROM BMS (SYSTEM) TO BOILER CONTROLLER
21	B-1	STATUS	■	■		MODBUS/BACNET DATA (FIRE RATE/HOURS...)
22	B-1	ALARM STATUS	■	■		
23	T-5	LEAVING WATER TEMPERATURE				
24	V-2	ISOLATION VALVE OPEN/CLOSE				CONTROLLED BY BOILER CONTROLLER
25	V-2	ISOLATION VALVE POSITION	■	■		CONTROLLED BY BOILER CONTROLLER
26	B-2	ENABLE/DISABLE				SENT FROM BMS (SYSTEM) TO BOILER CONTROLLER
27	B-2	STATUS	■	■		MODBUS/BACNET DATA (FIRE RATE/HOURS...)
28	B-2	ALARM STATUS	■	■		
29	DPS-2	HEATING LOOP DIFFERENTIAL PRESSURE	■	■		
<b>AIR COOLED CHILLED WATER SYSTEM</b>						
01	ACCU-1	ENABLE/DISABLE				
02	ACCU-1	CHILLED WATER TEMPERATURE SETPOINT				
03	ACCU-1	CHILLER STATUS	■	■		MODBUS/BACNET DATA (FIRE RATE/HOURS...)
04	ACCU-1	CHILLER ALARM	■	■		
05	C-1	CHILLER ENABLE/DISABLE				
06	C-1	CHILLER RUN STATUS	■	■		
07	C-1	CHILLER RUN STATUS	■	■		
08	C-1	CHILLER RUN STATUS	■	■		
09	C-1	CHILLER BACNET INTEGRATION				% LOAD, (2) ENT, (2) LMT, KW/HOT, TONS, CYCLES, RUNTIME
10	C-1	CHILLER FAULT STATUS	■	■		
11	FM-1	COOLING LOOP FLOW RATE				
12	T-1	CHILLED WATER RETURN TEMPERATURE				
13	DPS-1	HEATING LOOP DIFFERENTIAL PRESSURE				
14	CP-1	PUMP ENABLE/DISABLE				
15	CP-1	PUMP RUN STATUS	■	■		
16	DPS-2	DIFFERENTIAL PRESSURE FILTER STATUS	■	■		
17	T-2	CHILLED WATER SUPPLY TEMPERATURE				
18	P-4	ENABLE/DISABLE				
19	P-4	RUN STATUS	■	■		
20	P-4	SPEED CONTROL				
21	P-4	VFD FAULT STATUS	■	■		
22	P-3	ENABLE/DISABLE				
23	P-3	RUN STATUS	■	■		
24	P-3	SPEED CONTROL				
25	P-3	VFD FAULT STATUS	■	■		
26	T-1	OUTDOOR AIR TEMPERATURE				GLOBAL

**SEQUENCE OF OPERATIONS**

NOTE: ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY INDICATED WITHIN CONTROL DRAWINGS THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE SEQUENCE OF OPERATIONS SHALL BE PROVIDED WITHOUT ADDITIONAL COST. POINT LISTS SHALL BE A GUIDE TO THE POINTS REQUIRED FOR CONTROL SYSTEM. FINAL POINTS SHALL BE DETERMINED BY SEQUENCE OF OPERATIONS. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS. ALL POINTS SHALL BE TRENDABLE.

**HEATING HOT WATER SYSTEM:**

A. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR HEATING HOT WATER SYSTEM OPERATION. SYSTEM IS A COMBINATION OF VARIABLE VOLUME BASE MOUNTED CENTRIFUGAL PUMPS, VARIABLE FREQUENCY CONTROLLER(S), MODULAR HOT WATER CONDENSING BOILER(S) WITH MANUFACTURER MULTIPLE BOILER CASCADING CONTROLLER, ISOLATION CONTROL VALVE(S), FURNISHED BACNET INTERFACE CONTROLLER(S) AND CHILLER OPTIMIZER CONTROL PANEL, ISOLATION CONTROL VALVE(S) (CV) AND ACTUATOR(S), SIDE STREAM FILTER WITH CONSTANT VOLUME INLINE PUMP AND WATER TEMPERATURE/AIR TEMPERATURE/FLOW SENSOR(S).

B. SYSTEM ENABLE/DISABLE BASED ON THE FOLLOWING:

- UPON A CALL FOR HEAT BY ANY PIECE OF HEATING EQUIPMENT.
  - INCLUDE CAPABILITY TO OMIT ANY INDIVIDUAL PIECE OF HEATING EQUIPMENT.
  - AT AN ADJUSTABLE 55°F OUTDOOR AIR TEMPERATURE.
  - BY OPERATOR COMMAND.

C. SYSTEM START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:

- WHEN INDEXED TO STOP:
  - DISABLE BOILER CONTROLLER.
  - AFTER DELAY OF TEN (10) MINUTE HOLD TO EQUALIZE SYSTEM, DISABLE LEAD PUMP. LEAD BOILER ISOLATION VALVE 100% OPEN.
- WHEN INDEXED TO START:
  - LEAD BOILER ISOLATION VALVE (CONTROLLED BY BOILER CONTROLLER) 100% OPEN.
  - ENABLE LEAD PUMP.
  - AFTER DELAY OF TEN (10) MINUTE HOLD TO ESTABLISH FLOW IN SYSTEM, ENABLE BOILER CONTROLLER.

D. INITIAL START-UP CONTROL - WHEN INDEXED TO START, SYSTEM CONTROLLER SHALL ENABLE LEAD PUMP BASED ON THE FOLLOWING:

- WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, DDC SHALL INDICATE A CRITICAL ALARM.
  - START LAG PUMP SHOULD LEAD PUMP FAIL.
- WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A TOTALIZES OF RUN HOURS FOR UNIT WILL BE ACTIVE.
- ALTERNATE OF LEAD AND LAG PUMPS (15 DAYS ADJUSTABLE) TO EVEN OUT OPERATING TIME OF EACH PUMP.
  - UTILIZE CALENDAR DAYS) AND TOTALIZED HOURS TO DETERMINE LEAD PUMP FOR DURATION.

E. PUMP PRESSURE CONTROL (VALVE% RESET) - SYSTEM CONTROLLER SHALL MODULATE PUMP MOTOR(S) VARIABLE FREQUENCY CONTROLLER(S) TO MAINTAIN AN ADJUSTABLE PRESSURE DIFFERENTIAL (PSID) SETPOINT MEASURED BY PRESSURE DIFFERENTIAL CONTROLLER LOCATED 75% OF MAXIMUM MAIN PIPE DISTANCE DOWNSTREAM OF SYSTEM (FINAL POSITION TO BE APPROVED BY ENGINEER). RESET PRESSURE DIFFERENTIAL SETPOINT BASED ON THE FOLLOWING:

- INITIAL STARTUP SET PRESSURE DIFFERENTIAL SETPOINT AT 6 PSID (ADJ.).
- PRESSURE DIFFERENTIAL SETPOINT SHALL BE RESET USING "TRIM AND RESPOND" LOGIC WITH THE RANGE OF 6 PSID (ADJ.) TO 12 PSID (ADJ.). WHEN THE SYSTEM IS OFF, THE SETPOINT SHALL BE AT MINIMUM. WHEN SYSTEM IS ON, EVERY TWO (2) MINUTES, TRIM THE SETPOINT BY 0.25 PSID IF THERE ARE TWO(2) OR FEWER REQUESTS. IF THERE ARE MORE THAN TWO (2) REQUESTS, RESPOND BY INCREASING THE SETPOINT BY 0.5 PSID.
  - A REQUEST IS GENERATED WHENEVER ANY HEATING EQUIPMENT CONTROL VALVE POSITION IS GREATER THAN 95% (ADJ.) OPEN UNTIL IT DROPS TO 85% (ADJ.) OPEN.
  - EXCLUDE ANY TERMINAL HEATING UNITS SIMILAR TO RADIANT HEAT, CABINET HEATER, UNIT HEATER.
  - PROVIDE THE ABILITY TO OMIT OTHER HEATING UNITS FROM "TRIM AND RESPOND" LOGIC.
  - SETPOINTS TO BE DETERMINED BY TEST AND BALANCE CONTRACTOR.

F. PUMP VARIABLE FREQUENCY CONTROLLER(S) SHALL BE MONITORED BASED ON THE FOLLOWING:

- VIA BACNET/MODBUS CONNECTION.
  - POWER USAGE / SPEED % AND HZ / HOURS / FAULT / ALARM.

G. TEMPERATURE CONTROL (OAT RESET) - SYSTEM CONTROLLER SHALL SEND TO MULTIPLE BOILER CASCADING CONTROLLER AN ADJUSTABLE HEATING HOT WATER TEMPERATURE SETPOINT MEASURED BY MAIN SUPPLY WATER TEMPERATURE SENSOR LOCATED DOWNSTREAM OF HEATING SYSTEM. RESET HOT WATER SUPPLY TEMPERATURE SETPOINT BASED ON THE FOLLOWING:

- INITIAL STARTUP SET SUPPLY WATER TEMPERATURE SETPOINT AT 85°F (ADJ.).
- MAIN SUPPLY WATER TEMPERATURE SETPOINT SHALL BE RESET BASED ON THE FOLLOWING:
  - AT 0°F (ADJ.) OUTDOOR AIR TEMPERATURE, SET SUPPLY WATER TEMPERATURE AT 130°F (ADJ.).
  - AT 55°F (ADJ.) OUTDOOR AIR TEMPERATURE, SET SUPPLY WATER TEMPERATURE AT 95°F (ADJ.).

H. SYSTEM CONTROLLER SHALL MONITOR HEATING HOT WATER SYSTEM GALLONS PER MINUTE (GPM).

- COORDINATE MINIMUM FLOW RATE WITH ACTUAL BOILER(S)/PUMP(S) INSTALLED.

I. SIDE STREAM FILTER CONTROL - SYSTEM CONTROLLER SHALL ENABLE FILTER PUMP AND MONITOR FILTER PRESSURE DIFFERENTIAL BASED ON THE FOLLOWING:

- FILTER PUMP ENERGIZED WHEN SYSTEM IS ENABLED.
  - WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, THE DDC SHALL INDICATE A GENERAL ALARM.
    - ALARM SETPOINT SHALL BE 10 PSID (ADJ.).

J. SYSTEM SAFETY SHUTDOWNS - WHEN EMERGENCY BUTTON(S) LOCATED OUTSIDE OF BOILER ROOM IS ACTIVE, SYSTEM CONTROLLER SHALL RESPOND BASED ON THE FOLLOWING:

- SYSTEM SHALL BE DISABLED WHEN EMERGENCY BUTTON(S) IS ACTIVE.
- DE-ENERGIZED BOILERS, PUMPS DISABLED AND ALARM GENERATED.
  - PUMPS SHALL REMAIN ON FOR A PERIOD OF TIME PRIOR TO BE DISABLED.

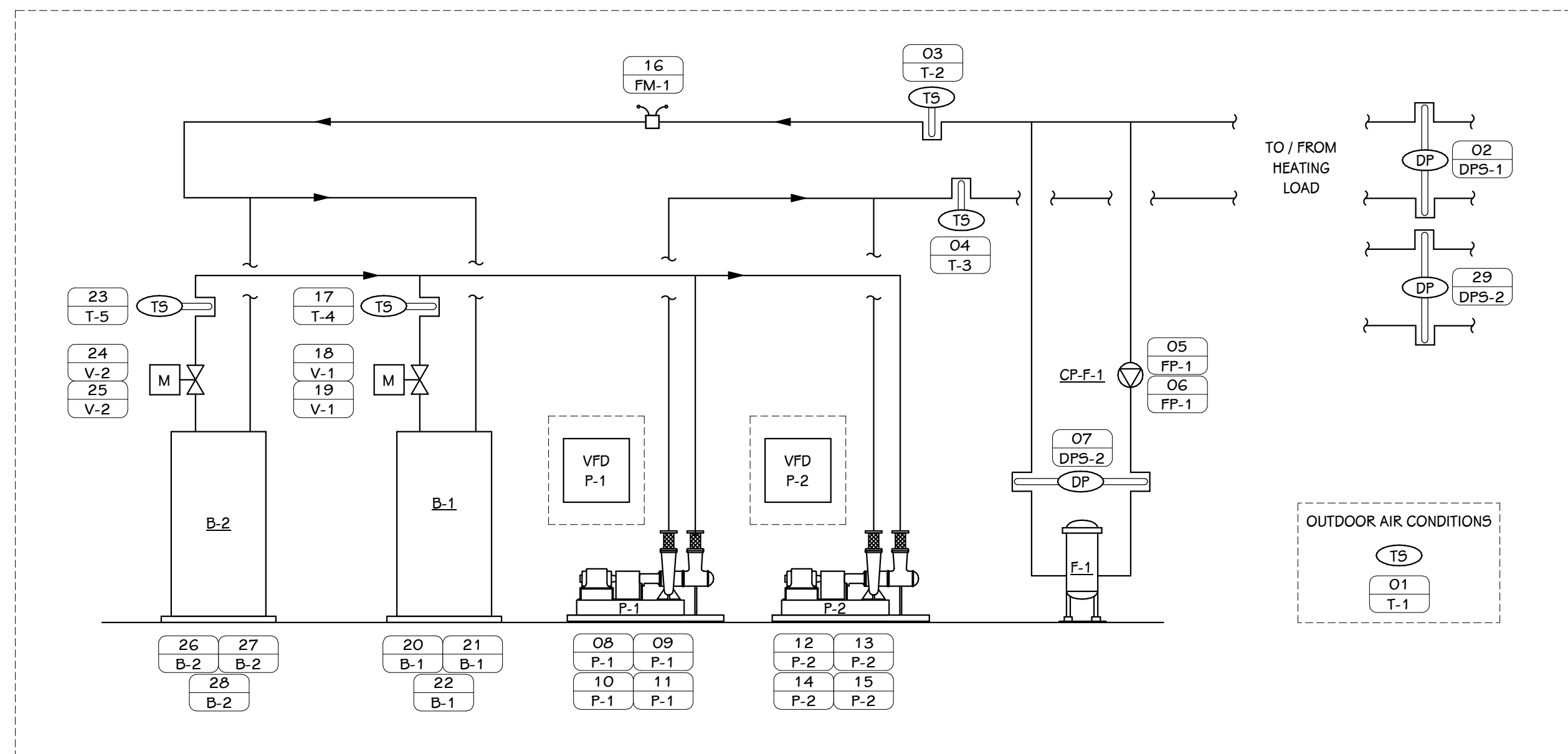
K. EMERGENCY POWER CONTROL - WHEN BUILDING IS ON EMERGENCY POWER, SYSTEM CONTROLLER SHALL RESPOND BASED ON THE FOLLOWING:

- SYSTEM SHALL BE ENABLED DURING EMERGENCY POWER. MASTER BOILER AND ASSOCIATED PUMP SHALL BE ENABLED AND OPERATE AS NOTED ABOVE DURING EMERGENCY POWER.

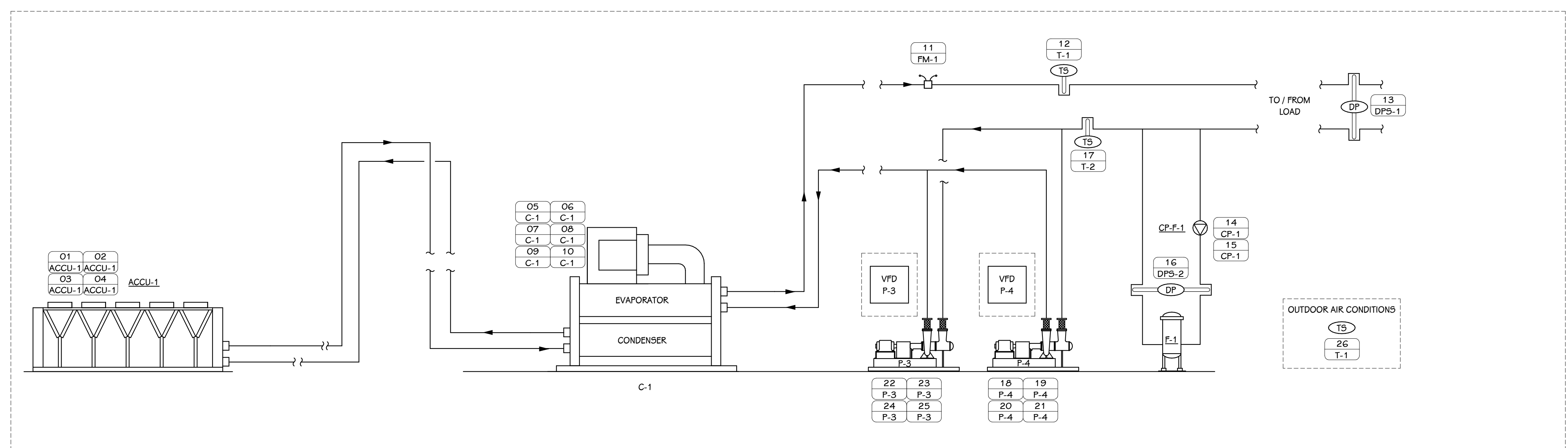
**SEQUENCE OF OPERATIONS (CONT'D)**

**GENERAL TEMPERATURE CONTROLS NOTES:**

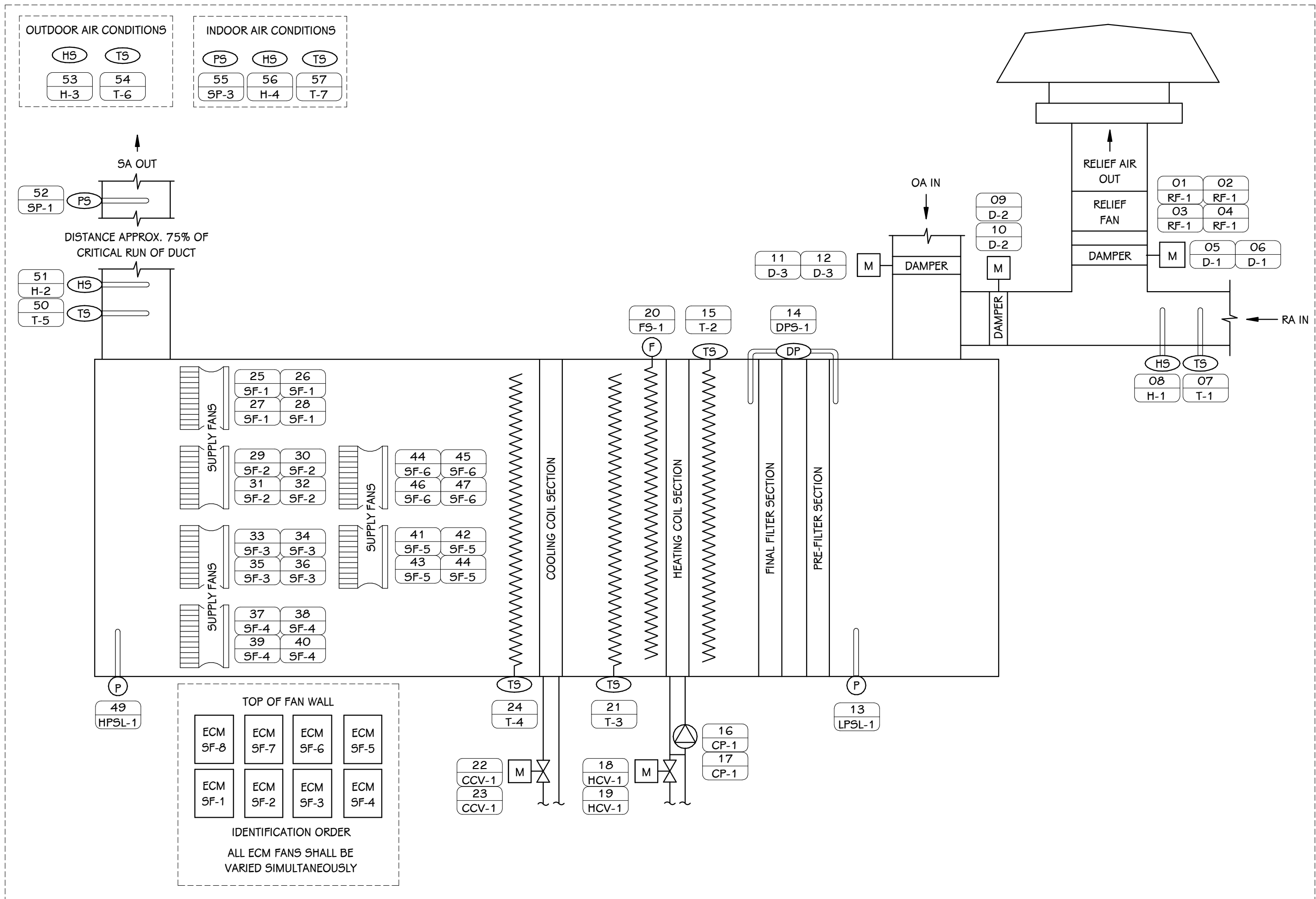
- EACH TEMPERATURE CONTROL PANEL SHALL BE POWERED WITH AN UNINTERRUPTABLE POWER SUPPLY.
- BMS CONTRACTOR TO SUBMIT DETAILED STEP BY STEP CONTROL SEQUENCES AND NOT JUST COPY THESE SEQUENCES INTO THE SUBMITTALS.
- ALL INITIAL ADJUSTABLE RANGES AND SETPOINT VALUES SHALL BE INDICATED. GRAPHIC CONTROL LOGIC FLOW CHARTS FOR EACH CONTROL SYSTEM SHALL BE INCLUDED TO SUPPORT SEQUENCES.
- ALL SETPOINTS AND PARAMETERS SHALL BE ADJUSTABLE OR MODIFIED AS REQUIRED DURING SUBMITTAL REVIEW, SETUP, AND COMMISSIONING AT NO EXTRA COST.
- THE DIRECT DIGITAL CONTROLS (DDC) SHALL BE PROGRAMMED TO THE SEQUENCE OF OPERATION AS DESCRIBED WITHIN THE CONTRACT DOCUMENTS. PROVIDE AND INSTALL ALL NECESSARY COMPONENTS AND ACCESSORIES FOR A COMPLETE AND OPERATIONAL SYSTEM INCLUDING, BUT NOT LIMITED TO, SENSORS, RELAYS, GATEWAYS, COMMUNICATION WIRING AND CONDUIT, AND ALL NECESSARY ELECTRICAL DEVICES, WIRING, AND CONDUIT.
- ALL SETPOINTS, DEAD BANDS, AND TIME DELAY INTERVALS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS. APPROPRIATE DEAD BANDS AND TIME DELAYS SHALL BE USED TO PREVENT SHORT CYCLING SITUATIONS.
- ALL VARIABLE FREQUENCY CONTROLLERS AND STARTER HAND-OFF-AUTO SWITCHES NORMALLY REMAIN IN THE AUTO POSITION AND THE HAND AND OFF POSITIONS ARE USED FOR MAINTENANCE SITUATIONS.
- BUILDING MANAGEMENT SYSTEM WILL MONITOR, AND CONTROL SYSTEMS AS NOTED BELOW UNLESS OTHERWISE NOTED.
- PROVIDE FINAL CALIBRATION K-FACTORS FOR ALL DEVICES INCLUDING, BUT NOT LIMITED TO, TERMINAL AIR UNITS, AIRFLOW STATIONS, AND FAN OFFSETS.
- PROVIDE NON-INTEGRAL CONTROL VOLTAGE TRANSFORMER FOR LOW VOLTAGE WIRING. TERMINAL UNITS SHALL BE GROUPED INTO A MAXIMUM OF FOUR (4) TERMINAL UNITS PER TRANSFORMER. TRANSFORMER SHALL BE SIZED PER TERMINAL UNIT REQUIREMENTS.
- REFER TO ELECTRICAL GENERAL NOTES AND COORDINATE WITH ELECTRICAL CONTRACTOR.
- THE ACRONYM DDC IS USED INTERCHANGEABLY WITH BMS.
- REFER TO E001 FOR GUIDANCE ON LOCATING WALL MOUNTED SENSORS.
- ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY INDICATED WITHIN CONTROL DRAWINGS THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE SEQUENCE OF OPERATIONS SHALL BE PROVIDED WITHOUT ADDITIONAL COST.
- POINT LISTS SHALL BE A GUIDE TO THE POINTS REQUIRED FOR CONTROL SYSTEM.
- FINAL POINTS SHALL BE DETERMINED BY SEQUENCE OF OPERATIONS.
- ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS.
- ALL POINT SHALL BE TRENDABLE.



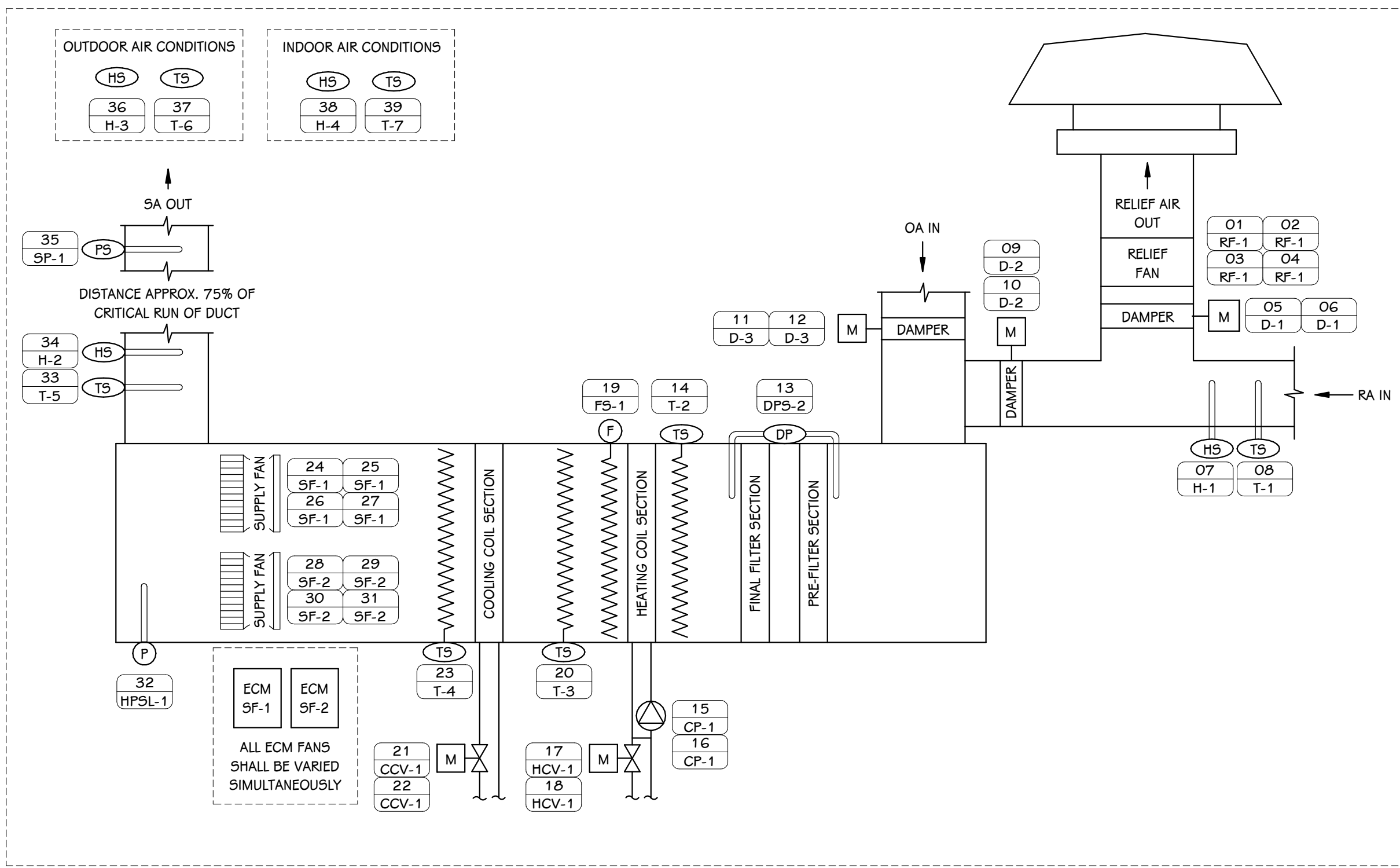
**HEATING HOT WATER CONTROLS DIAGRAM**  
SCALE: NONE



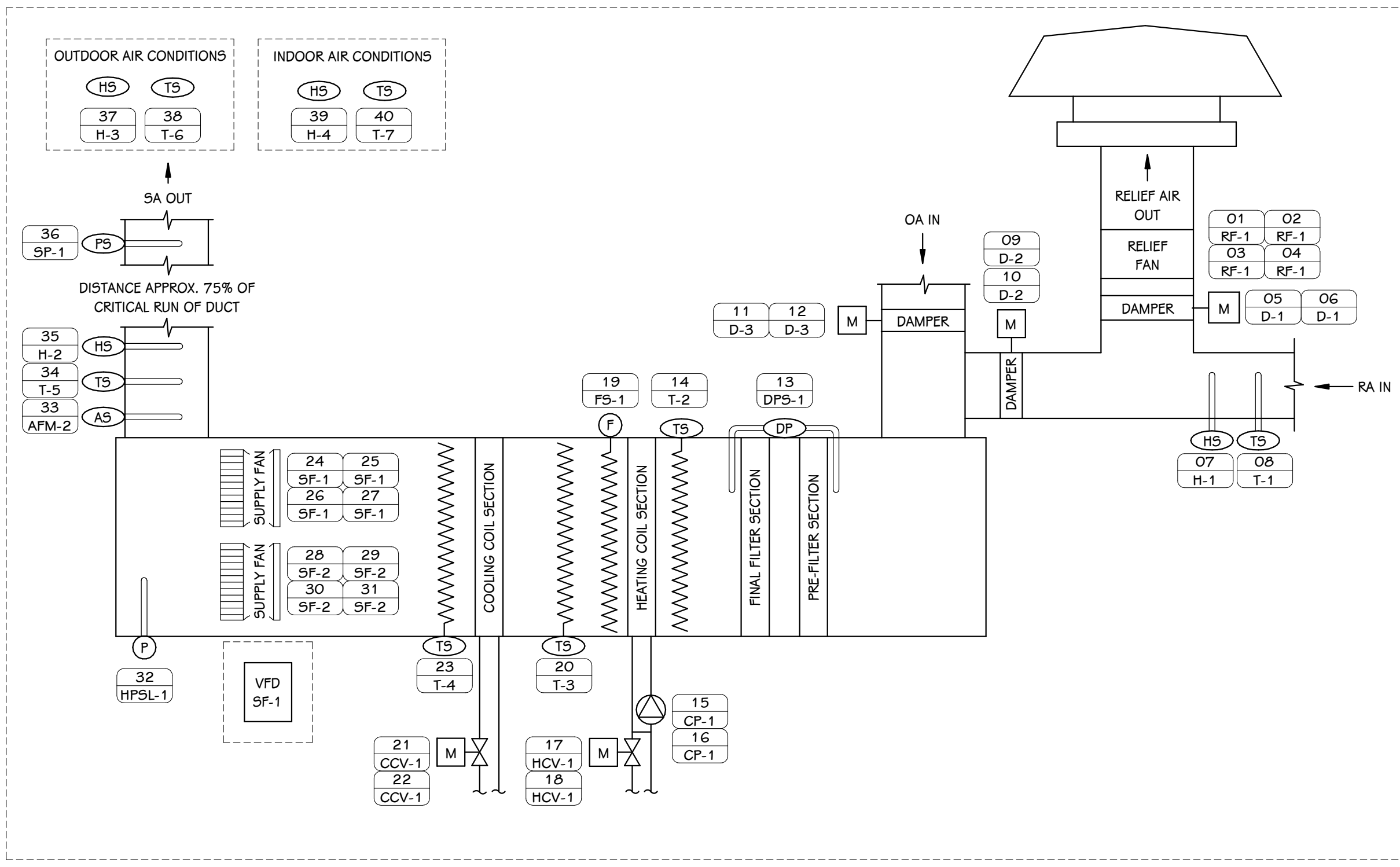
**CHILLED WATER SYSTEM CONTROLS DIAGRAM**  
SCALE: NONE



**AHU-1 & AHU-2 CONTROLS DIAGRAM**  
 SCALE: NONE



**AHU-3 CONTROLS DIAGRAM**  
 SCALE: NONE



**AHU-4 CONTROLS DIAGRAM**  
 SCALE: NONE

NUMBER	TAG	DESCRIPTION	ALARM	TREND	MISC.	REMARKS
01	RF-1	FAN AIR FLOW	■	■		
02	RF-1	FAN SPEED CONTROL	■	■		
03	RF-1	FAN ENABLE/DISABLE	■	■		
04	RF-1	FAN STATUS	■	■		
05	D-1	RELIEF AIR DAMPER OUTPUT	■	■		MODULATOR TO MAINTAIN SPACE PRESSURE
06	D-1	RELIEF AIR DAMPER POSITION	■	■		MODULATOR TO MAINTAIN SPACE PRESSURE
07	H-1	RETURN AIR HUMIDITY	■	■		DISPLAY ENTHALPY BASED ON TH READINGS
08	D-2	RETURN AIR DAMPER POSITION	■	■		
09	D-2	RETURN AIR DAMPER OUTPUT	■	■		
10	D-2	RETURN AIR DAMPER POSITION	■	■		
11	D-3	OUTDOOR AIR DAMPER POSITION	■	■		
12	D-3	OUTDOOR AIR DAMPER OUTPUT	■	■		
13	LPSL-1	LOW PRESSURE STATIC LIMIT	■	■		HARD WIRED SAFETY - MANUAL RESET
14	DPS-1	FINAL FILTER STATUS	■	■		
15	T-2	MIXED AIR TEMPERATURE	■	■		
16	CP-1	HEATING COIL PUMP STATUS	■	■		
17	CP-1	HEATING COIL PUMP ENABLE/DISABLE	■	■		
18	HCV-1	HEATING CONTROL VALVE OUTPUT	■	■		
19	HCV-1	HEATING CONTROL VALVE POSITION	■	■		
20	FS-1	FREEZE STAT ALARM STATUS	■	■		HARD WIRED SAFETY - MANUAL RESET
21	T-3	HEATING COIL DISCHARGE TEMPERATURE	■	■		
22	CCV-1	COOLING CONTROL VALVE OUTPUT	■	■		
23	CCV-1	COOLING CONTROL VALVE POSITION	■	■		
24	T-4	COOLING COIL DISCHARGE TEMPERATURE	■	■		
25	SF-1	FAN AIR FLOW	■	■		
26	SF-1	FAN SPEED CONTROL	■	■		
27	SF-1	FAN ENABLE/DISABLE	■	■		
28	SF-1	FAN STATUS	■	■		
29	SF-2	FAN AIR FLOW	■	■		
30	SF-2	FAN SPEED CONTROL	■	■		
31	SF-2	FAN ENABLE/DISABLE	■	■		
32	SF-2	FAN STATUS	■	■		
33	SF-3	FAN AIR FLOW	■	■		
34	SF-3	FAN SPEED CONTROL	■	■		
35	SF-3	FAN ENABLE/DISABLE	■	■		
36	SF-3	FAN STATUS	■	■		
37	SF-4	FAN AIR FLOW	■	■		
38	SF-4	FAN SPEED CONTROL	■	■		
39	SF-4	FAN ENABLE/DISABLE	■	■		
40	SF-4	FAN STATUS	■	■		
41	SF-5	FAN AIR FLOW	■	■		
42	SF-5	FAN SPEED CONTROL	■	■		
43	SF-5	FAN ENABLE/DISABLE	■	■		
44	SF-5	FAN STATUS	■	■		
45	SF-6	FAN AIR FLOW	■	■		
46	SF-6	FAN SPEED CONTROL	■	■		
47	SF-6	FAN ENABLE/DISABLE	■	■		
48	SF-6	FAN STATUS	■	■		
49	HPSL-1	HIGH PRESSURE STATIC LIMIT	■	■		HARD WIRED SAFETY - MANUAL RESET
50	T-5	DISCHARGE AIR TEMPERATURE	■	■		DISPLAY ENTHALPY BASED ON TH READINGS
51	H-2	DISCHARGE AIR HUMIDITY	■	■		DISPLAY ENTHALPY BASED ON TH READINGS
52	SF-1	SUPPLY AIR STATIC PRESSURE	■	■		NOTE LOCATION ON AS-BUILTS
53	H-3	OUTDOOR AIR HUMIDITY	■	■		GLOBAL
54	T-6	OUTDOOR AIR TEMPERATURE	■	■		GLOBAL
55	SP-3	ROOM STATIC PRESSURE	■	■		
56	H-4	INDOOR AIR HUMIDITY SENSOR	■	■		
57	T-7	INDOOR AIR TEMPERATURE	■	■		

SEQUENCE OF OPERATIONS	SEQUENCE OF OPERATIONS (CONT'D)
NOTE: ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY INDICATED WITHIN CONTROLS DRAWINGS THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE SEQUENCE OF OPERATIONS SHALL BE PROVIDED WITHOUT ADDITIONAL COST. POINT LISTS SHALL BE A GUIDE TO THE POINTS REQUIRED FOR CONTROL SYSTEM. FINAL POINTS SHALL BE DETERMINED BY SEQUENCE OF OPERATIONS. ALL SETPOINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS. ALL POINTS SHALL BE RENDABLE.	NOTE: UNOCCUPIED CONTROL - SYSTEM CONTROLLER SHALL INITIATE THE FOLLOWING BASED ON A FALL OR RISE IN SPACE TEMPERATURE.
AHU-1, 2, 3, 4, 5 CONTROLS:	1. HEATING - SYSTEM CONTROLLER SHALL CYCLE SYSTEM ON (UNOCCUPIED HEATING MODE) WHEN A CALL FOR HEAT IS INITIATED BY ANY SPACE TEMPERATURE SENSOR DURING UNOCCUPIED MODE AND HEATING WATER SYSTEM IS OR CAN BE ENABLED. SYSTEM SHALL RESPOND BASED ON THE FOLLOWING:
A. PROVIDE DDC CONTROL AND MONITORING FOR AIR HANDLING SYSTEM. SYSTEM INCLUDES INDOOR VARIABLE VOLUME UNIT WITH SUPPLY FAN, EC MOTORS, ECONOMIZER, PRE-FILTER, FINAL FILTER, PUMPED HOT WATER PREHEATING COIL WITH CONTROL VALVE AND ACTUATOR, CHILLED WATER COIL WITH CONTROL VALVE AND ACTUATOR, AND REMOTE RELIEF FAN WITH VFD, TEMPERATURE, HUMIDITY, AIRFLOW, AND PRESSURE SENSORS ARE REQUIRED.	a. ENABLE FANS AND SYSTEM SHALL FUNCTION AS DESCRIBED IN OCCUPIED TEMPERATURE CONTROL OPERATION TO PROVIDE HEATING TO ZONE WITH THE EXCEPTION TO THE FOLLOWING:
B. REFER TO VARIABLE AIR VOLUME (VAV) TERMINAL UNIT CONTROL ARTICLES FOR VAV TERMINAL UNIT OPERATION.	1. OUTDOOR AIR AND RELIEF AIR DAMPERS 100% CLOSED.
C. AIR HANDLING UNIT ADJUSTABLE SCHEDULE BASED ON THE FOLLOWING:	• COOLING SHALL BE DISABLED.
1. TIME OF DAY (TOD) SCHEDULE.	• VAV BOX DAMPERS 100% OPEN.
a. TO BE DETERMINED BY OWNER (CONSULT WITH OWNER).	b. SYSTEM DISABLED UPON SATISFYING THE CALL FOR HEAT AND HEATING CV SHALL REMAIN UNDER CONTROL OF COIL DISCHARGE AIR TEMPERATURE CONTROL.
b. SUGGESTED OCCUPIED SCHEDULE: 7AM-5PM M-F, OFF SAT-SUN, OFF HOLIDAYS	
2. ENABLED AND DISABLED BASED ON MANUAL OVERRIDE FROM DDC.	
D. AIR HANDLING UNIT ADJUSTABLE SETPOINTS:	
1. OCCUPIED 75°F COOLING / 70°F HEATING	
2. STANDBY 77°F COOLING / 68°F HEATING (BASED ON LIGHTING OCCUPANCY SENSORS)	
3. UNOCCUPIED 55°F COOLING / 62°F HEATING	
4. CO2 800 PPM MINIMUM / 1,000 PPM MAXIMUM	
E. STARTUP/STOP CONTROL DEVICES SHALL RESPOND AS FOLLOWS:	
1. WHEN INDICED TO STOP:	
a. DISABLE SUPPLY AND RETURN FANS SIMULTANEOUSLY.	
b. COOLING CV 100% CLOSED.	
c. HEATING CV SHALL MODULATE TO MAINTAIN COIL DISCHARGE AIR TEMPERATURE SENSOR AT 80°F (ADJ.), WHEN OUTDOOR AIR TEMPERATURE IS BELOW 45°F (ADJ.).	
d. OUTDOOR AND RELIEF AIR DAMPERS 100% CLOSED.	
e. RETURN AIR DAMPER 100% OPENED.	
f. BPI IS DISABLED.	
2. WHEN INDICED TO START:	
a. ENABLE RETURN FANS FIRST, THEN SUPPLY FANS AFTER A DELAY.	
b. OPERATION OF SYSTEM TO RESUME AFTER START-UP DELAY.	
F. SUPPLY FAN CONTROL (STATIC RESET) - SYSTEM CONTROLLER SHALL MODULATE SUPPLY FAN EC MOTORS TO MAINTAIN AN ADJUSTABLE DUCT STATIC PRESSURE MEASURED BY A DUCT STATIC PRESSURE CONTROLLER LOCATED 75% OF MAXIMUM MAIN DUCT DISTANCE DOWNSTREAM OF SYSTEM (FINAL POSITION TO BE DETERMINED BY CONTRACTOR AND APPROVED BY ENGINEER). RESET STATIC PRESSURE DIFFERENTIAL SETPOINT BASED ON THE FOLLOWING:	
1. STATIC PRESSURE SETPOINT SHALL BE RESET USING "TRIM AND RESPOND" LOGIC WITHIN THE RANGE OF 0.15" W.C. TO 1.75" W.C. (ADJ.), WHEN THE SYSTEM IS OFF, THE SETPOINT SHALL BE 0.5" W.C. (ADJ.). WHEN SYSTEM IS ON, EVERY TEN (10) MINUTES, TRIM THE SETPOINT BY 0.4" W.C. IF THERE ARE TWO (2) OR FEWER ZONE PRESSURE REQUESTS, IF THERE ARE MORE THAN TWO (2) ZONE PRESSURE REQUESTS, RESPOND BY INCREASING THE SETPOINT BY 0.05" W.C.. A REQUEST IS GENERATED WHENEVER TERMINAL UNIT DAMPER IS GREATER THAN 50% (ADJ.) OPEN UNTIL IT DROPS TO 50% (ADJ.) CLOSURE.	
2. SYSTEM DISABLED UPON SATISFYING THE CALL FOR HIGH HUMIDITY.	
3. INITIAL STARTUP CONTROL - SYSTEM CONTROLLER SHALL ENABLE UNIT PRIOR TO SCHEDULED OCCUPANCY UTILIZING OPTIMUM START LOGIC TO ADJUST STARTUP TIME FOR UNIT BASED ON OUTDOOR AIR TEMPERATURE, BUILDING TEMPERATURE AND HISTORIC ELAPSE TIME TO REACH SETPOINT.	
4. UNIT SHALL ENERGIZE AND PROVIDE HEATING AND COOLING BASED ON THE SPACE TEMPERATURE SENSORS TO BRING SPACE TO OCCUPIED SETPOINT. THE OUTDOOR AND RELIEF AIR DAMPERS SHALL BE CLOSED UNLESS VFD ECONOMIZER IS ENABLED. ONCE OCCUPIED SETPOINT HAS BEEN REACHED, THE UNIT SHALL SWITCH TO OCCUPIED MODE.	
5. PRE OCCUPIED MODE - WHEN ENABLED BY THE OPERATOR THE UNIT CONTROLLER WILL BEGIN THE OCCUPIED OPERATION 2 HOURS (ADJ.) PRIOR TO THE SCHEDULED OCCUPANCY.	
6. OUTDOOR AND RELIEF AIR DAMPERS SHALL BE AT THEIR MAXIMUM OPEN POSITION WHILE MAINTAINING THE MIXED AIR TEMPERATURE LIMIT.	
7. INTEGRATE PRE-PURGE FEATURE WITH THE OPTIMUM START LOGIC TO ALLOW BOTH OPERATIONS TO FUNCTION CONCURRENTLY (OUTDOOR AND RELIEF AIR DAMPERS OPEN) THUS NOT RUNNING SEQUENCES END-TO-END.	
8. DUCT MOUNTED TEMPERATURE SENSORS SHALL BE INSTALLED BY TEMPERATURE CONTROL INSTALLER.	
9. ASSOCIATED TERMINAL UNIT TIME OVERRIDE (2 HOURS) IS ENABLED, SYSTEM SHALL BE ENABLED AND FUNCTION AS IN OCCUPIED MODE.	
10. BI-POLAR IONIZATION (BPI) - ENABLE BPI WHENEVER THE SUPPLY FANS ARE PROVEN ON. DISABLE BPI WHENEVER THE SUPPLY FANS ARE OFF.	
11. WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A RUN TIMER WILL BE ACTIVE.	
12. SAFETY SHUTDOWNS:	
1. PROVIDE A LOW-TEMPERATURE PROTECTION THERMOSTAT(S) ON THE LEAVING SIDE OF HEATING HOT WATER COIL WHICH CLOSURE MIXED AIR DAMPERS (CLOSING OUTDOOR AND RELIEF AIR DAMPERS), CLOSE CHILLED WATER COIL CONTROL VALVE AND THE HEATING HOT WATER COIL CONTROL VALVE SHALL BE FULLY OPENED AND COIL PUMP ENERGIZED. PROVIDE MANUAL RESET.	
2. PROVIDE A HIGH STATIC PRESSURE SENSOR IN THE SUPPLY DISCHARGE PLENUM TO DE-ENERGIZE THE UNIT UPON SENSING A HIGH STATIC PRESSURE OF 4.0" W.C.. PROVIDE MANUAL RESET.	
3. PROVIDE A LOW-PRESSURE STATIC LIMIT IN THE RETURN PLENUM TO DE-ENERGIZE THE UNIT UPON SENSING A HIGH NEGATIVE STATIC PRESSURE OF -4.0" W.C.. PROVIDE MANUAL RESET.	
4. DUCT MOUNTED IONIZATION SMOKE DETECTOR(S) PROVIDED BY DIVISION 28 SHALL DE-ENERGIZE THE UNIT WHENEVER PRODUCTS OF COMBUSTION ARE SENSED.	
5. DISABLE THE BI-POLAR IONIZATION UPON OPENING OF THE ACCESS DOOR.	
6. THE FOLLOWING SHALL BE SUPPLIED AND INSTALLED BY TEMPERATURE CONTROL INSTALLER:	
1. SENSORS (TEMPERATURE, RELATIVE HUMIDITY, CO2, PRESSURE, AIRFLOW MEASURING DEVICES)	
2. CONTROL VALVES	
3. DAMPERS	
7. DEHUMIDIFICATION CONTROL - SYSTEM CONTROLLER SHALL ENABLE DE-HUMIDIFICATION MODE TO MAINTAIN A ZONE HUMIDITY SETPOINT OF 60%RH (ADJ.) MEASURED BY A WALL-MOUNTED HUMIDISTAT.	
1. DE-HUMIDIFICATION CONTROL SHALL OVERRIDE DISCHARGE AIR TEMPERATURE FUNCTION AND RESET DOWN TO 45°F (ADJ.).	
2. DISCHARGE AIR TEMPERATURE SHALL BE RESET BACK UP TO ITS NORMAL (NON-DEHUMIDIFICATION) SETPOINT UPON SATISFACTION OF THE ZONE HUMIDITY SENSOR.	
8. MIXED AIR TEMPERATURE CONTROL - SYSTEM CONTROLLER SHALL MODULATE MIXED AIR DAMPERS WHEN MIXED AIR TEMPERATURE SENSOR FALLS BELOW 45°F (ADJ.), THE OUTDOOR-RELIEF-RETURN DAMPERS SHALL MODULATE TO MAINTAIN A MIXED AIR TEMPERATURE A MINIMUM OF 40°F (ADJ.).	
1. PROVIDE OVERRIDE OF MINIMUM OUTDOOR AIR VOLUME SETPOINT IN THE HEATING MODE TO MAINTAIN A 55°F (ADJ.) MIXED AIR TEMPERATURE.	
9. FILTER MONITORING - SYSTEM CONTROLLER SHALL MONITOR AND ALARM FILTER DIFFERENTIAL PRESSURE FOR THE FOLLOWING:	
1. FINAL FILTERS	
a. MONITORING OF INCHES OF W.C.	
b. ALARM SETPOINT, COORDINATE WITH FILTER MFR. DIRTY FILTER VALUE, SUGGEST 1.00" W.C. (ADJ.)	
2. PRE-FILTERS	
a. MONITORING OF INCHES OF W.C.	
b. ALARM SETPOINT, COORDINATE WITH FILTER MFR. DIRTY FILTER VALUE, SUGGEST 0.5" W.C. (ADJ.)	

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PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

SHEET NUMBER  
**M 602**  
 21-237.20

DATE  
**JUNE 30, 2023**

SHEET TITLE  
**TEMPERATURE CONTROLS**

PRELIMINARY  
NOT FOR CONSTRUCTION

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
TEMPERATURE CONTROLS

DATE  
JUNE 30, 2023

SHEET NUMBER  
M 603  
1-237.20

CONTROL POINTS						
NUMBER	TAG	DESCRIPTION	ALARM	TREND	MISC.	REMARKS
<b>AHU-5</b>						
01	H-1	RETURN AIR HUMIDITY				DISPLAY ENTHALPY BASED ON T4H READINGS
02	T-1	RETURN AIR TEMPERATURE				DISPLAY ENTHALPY BASED ON T4H READINGS
03	CO2-1	RETURN AIR CARBON DIOXIDE				
04	D-1	RETURN AIR DAMPER OUTPUT				
05	D-1	RETURN AIR DAMPER POSITION				
06	AFM-1	OUTDOOR AIR FLOW				
07	D-2	OUTDOOR AIR DAMPER POSITION				
08	D-2	OUTDOOR AIR DAMPER OUTPUT				
09	DPS-1	FINAL FILTER STATUS				
10	T-2	MIXED AIR TEMPERATURE				
11	CP-1	HEATING COIL PUMP STATUS				
12	CP-1	HEATING COIL PUMP ENABLE/DISABLE				
13	HCV-1	HEATING CONTROL VALVE OUTPUT				
14	HCV-1	HEATING CONTROL VALVE POSITION				
15	FS-1	FREEZE STAT ALARM STATUS				HARD WIRED SAFETY - MANUAL RESET
16	T-3	HEATING COIL DISCHARGE TEMPERATURE				
17	CCV-1	COOLING CONTROL VALVE OUTPUT				
18	CCV-1	COOLING CONTROL VALVE POSITION				
19	T-4	COOLING COIL DISCHARGE TEMPERATURE				
20	SF-1	FAN AIR FLOW				
21	SF-1	FAN SPEED CONTROL				
22	SF-1	FAN ENABLE/DISABLE				
23	SF-1	FAN RUN STATUS				
24	HPSL-1	HIGH PRESSURE STATIC LIMIT				HARD WIRED SAFETY - MANUAL RESET
25	AFM-2	TOTAL SUPPLY AIR FLOW				
26	HS-1	HUMIDIFIER HIGH LIMIT				HARD WIRED
27	T-5	DISCHARGE AIR TEMPERATURE				DISPLAY ENTHALPY BASED ON T4H READINGS
28	H-2	DISCHARGE AIR HUMIDITY				DISPLAY ENTHALPY BASED ON T4H READINGS
29	H-3	OUTDOOR AIR HUMIDITY				GLOBAL
30	T-6	OUTDOOR AIR TEMPERATURE				GLOBAL
31	H-4	INDOOR AIR HUMIDITY SENSOR				
32	T-7	INDOOR AIR TEMPERATURE				
33	D-1	RELIEF AIR DAMPER OUTPUT				MODULATION TO MAINTAIN SPACE PRESSURE
34	D-1	RELIEF AIR DAMPER POSITION				MODULATION TO MAINTAIN SPACE PRESSURE
<b>ROOF MOUNTED EXHAUST FAN CONTROL POINTS</b>						
03	EF-1	FAN SPEED CONTROL				
04	EF-1	FAN ENABLE/DISABLE				
05	EF-1	FAN STATUS				
12	EF-2	FAN SPEED CONTROL				
13	EF-2	FAN ENABLE/DISABLE				
14	EF-2	FAN STATUS				
<b>SMOKE CONTROL SYSTEM</b>						
01	D-1	EXHAUST AIR DAMPER POSITION				OPEN/CLOSE
02	D-1	EXHAUST AIR DAMPER OUTPUT				OPEN/CLOSE
06	D-2	OUTSIDE AIR DAMPER POSITION				OPEN/CLOSE
07	D-2	OUTSIDE AIR DAMPER OUTPUT				OPEN/CLOSE
08	D-3	OUTSIDE AIR DAMPER POSITION				OPEN/CLOSE
09	D-3	OUTSIDE AIR DAMPER OUTPUT				OPEN/CLOSE
10	D-4	EXHAUST AIR DAMPER POSITION				OPEN/CLOSE
11	D-4	EXHAUST AIR DAMPER OUTPUT				OPEN/CLOSE
14	D-5	OUTSIDE AIR DAMPER POSITION				OPEN/CLOSE
15	D-5	OUTSIDE AIR DAMPER OUTPUT				OPEN/CLOSE
16	SF-1	FAN SPEED CONTROL				FIRE ALARM SIGNAL
17	DC-1	DRY CONTACT				LOSS OF POWER
<b>DOMESTIC HOT WATER SYSTEM</b>						
01	WH-1	RUN STATUS				
02	WH-1	ENABLE/DISABLE				
03	T-1	STORAGE TANK TEMPERATURE				140°F
04	WH-2	ENABLE/DISABLE				
05	WH-2	RUN STATUS				
06	T-2	STORAGE TANK TEMPERATURE				140°F
07	T-3	SUPPLY WATER TEMPERATURE				140°F
08	T-4	SUPPLY WATER TEMPERATURE				140°F
09	T-5	DOMESTIC SUPPLY WATER TEMPERATURE				120°F
10	T-6	DOMESTIC RETURN WATER TEMPERATURE				
11	CP-1	PUMP ENABLE/DISABLE				
12	CP-1	PUMP STATUS				

**SEQUENCE OF OPERATIONS**

NOTE: ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY INDICATED WITHIN CONTROL DRAWINGS THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE SEQUENCE OF OPERATIONS SHALL BE PROVIDED WITHOUT ADDITIONAL COST. POINT LISTS SHALL BE A GUIDE TO THE POINTS REQUIRED FOR CONTROL SYSTEM. FINAL POINTS SHALL BE DETERMINED BY SEQUENCE OF OPERATIONS. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS. ALL POINTS SHALL BE TRENDBLE.

**AHU-5 CONTROLS:**

A. PROVIDE DIRECT DIGITAL CONTROLS FOR AIR HANDLING SYSTEM OPERATION. UNIT IS AN INDOOR SINGLE ZONE VARIABLE VOLUME UNIT WITH RELIEF HOOD, ECONOMIZER, PUMPED HOT WATER PREHEATING COIL WITH CONTROL VALVE AND ACTUATOR, CHILLED WATER PREHEATING COIL WITH CONTROL VALVE AND ACTUATOR, AND SUPPLY FAN.

B. AIR HANDLING UNIT ADJUSTABLE SCHEDULE BASED ON THE FOLLOWING:

- TIME OF DAY (TOD) SCHEDULE.
- TO BE DETERMINED BY OWNER (CONSULT WITH OWNER).

C. ENABLED AND DISABLED BASED ON MANUAL OVERRIDE FROM DDC.

C. AIR HANDLING UNIT ADJUSTABLE SETPOINTS:

- OCCUPIED 75°F COOLING / 68°F HEATING (BASED ON LIGHTING OCCUPANCY SENSOR(S)).
- UNOCCUPIED 95°F COOLING / 55°F HEATING.
- CO2 800 PPM MINIMUM / 1,200 PPM MAXIMUM.

D. START/STOP CONTROL DEVICES SHALL RESPOND AS FOLLOWS:

- WHEN INDEXED TO STOP:
  - COOLING CV 100% CLOSED.
  - HEATING COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN COIL DISCHARGE AIR TEMPERATURE SENSOR AT 55°F (ADJ.), WHEN OUTDOOR AIR TEMPERATURE IS BELOW 45°F (ADJ.).
  - OUTDOOR AND RELIEF AIR DAMPERS 100% CLOSED.
- WHEN INDEXED TO START:
  - OPERATION OF SYSTEM TO RESUME AFTER START-UP DELAY.

E. SUPPLY FAN 4 TEMPERATURE CONTROL - SYSTEM CONTROLLER SHALL MODULATE SUPPLY FAN MOTOR VARIABLE FREQUENCY DRIVE, HEATING AND COOLING SOURCES AND MIXED AIR DAMPERS TO MAINTAIN AN ADJUSTABLE SPACE TEMPERATURE SETPOINT MEASURED BY A SPACE TEMPERATURE THERMOSTAT.

1. HEATING - UPON A FALL IN SPACE TEMPERATURE BELOW SPACE TEMPERATURE SETPOINT, CONTROLLER SHALL RESPOND BASED ON THE FOLLOWING:

- MODULATE HEATING SOURCE (AS FIRST STAGE HEATING) TO MAINTAIN SPACE TEMPERATURE SETPOINT.
  - INCLUDE A MAXIMUM HEATING DISCHARGE TEMPERATURE OF 95°F (ADJ.).
  - SUPPLY FAN AT MINIMUM CFM/SPEED SETPOINT.
- MODULATE SUPPLY FAN SPEED (AS SECOND STAGE HEATING) TO MAINTAIN ACTIVE CFM SETPOINT MEASURED BY A DUCT/FAN INLET AIR FLOW MEASURING STATION TO MAINTAIN SPACE TEMPERATURE SETPOINT.
  - MINIMUM (50% OF DESIGN CFM) AND MAXIMUM (100% OF DESIGN CFM) CFM SETPOINTS (ADJ.).
  - ECONOMIZER INTEGRATED WITH COOLING COIL SHALL BE UTILIZED (AS FIRST STAGE COOLING).
  - DISCHARGE AIR TEMPERATURE IS 60°F.

2. COOLING - UPON A RISE IN SPACE TEMPERATURE ABOVE SPACE TEMPERATURE SETPOINT, CONTROLLER SHALL RESPOND BASED ON THE FOLLOWING:

- MODULATE SUPPLY FAN SPEED (AS FIRST STAGE COOLING) TO MAINTAIN ACTIVE CFM SETPOINT MEASURED BY FAN INLET AIR FLOW MEASURING STATION TO MAINTAIN SPACE TEMPERATURE SETPOINT.
  - MINIMUM (50% OF DESIGN CFM) AND MAXIMUM (100% OF DESIGN CFM) CFM SETPOINTS (ADJ.).
  - ECONOMIZER INTEGRATED WITH COOLING COIL SHALL BE UTILIZED (AS FIRST STAGE COOLING).
  - DISCHARGE AIR TEMPERATURE IS 60°F.
- MODULATE COOLING SOURCE (AS SECOND STAGE COOLING) TO MAINTAIN SPACE TEMPERATURE SETPOINT.
  - SUPPLY FAN(S) SHALL BE AT MAXIMUM CFM SETPOINT.
  - DISCHARGE AIR TEMPERATURE MODULATED BETWEEN 60°F AND 55°F.
  - ECONOMIZER INTEGRATED WITH COOLING COIL SHALL BE UTILIZED.

F. FAN VARIABLE FREQUENCY CONTROLLER(S) SHALL BE MONITORED BASED ON THE FOLLOWING:

- VIA BACNET/MODBUS CONNECTION (POWER USAGE / SPEED % AND HZ / HOURS / FALLT / ALARM).

G. FAN(S) INITIAL START-UP CONTROL - WHEN INDEXED TO START, SYSTEM CONTROLLER SHALL ENABLE FAN(S) BASED ON THE FOLLOWING:

- WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, DDC SHALL INDICATE A CRITICAL ALARM.
- IF ANY FAN STATUS IS NOT SENSED, THE SYSTEM SHALL BE DISABLED.
- WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A TOTALIZED OF RUN HOURS FOR FAN WILL BE ACTIVE.

H. COIL PUMP CONTROL BASED ON THE FOLLOWING:

- HEATING HOT WATER COIL PUMP SHALL RUN WHEN THE SYSTEM IS IN HEATING MODE (WHEN CV IS GREATER THAN 10% OPEN).
- PUMP SHALL RUN CONTINUOUSLY WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN 30°F.

I. ECONOMIZER CONTROL - SYSTEM CONTROLLER SHALL MODULATE MIXED AIR DAMPERS TO MEET UNIT DISCHARGE AIR TEMPERATURE SETPOINT WHEN OUTDOOR AIR ENTHALPY IS BELOW THE RETURN AIR ENTHALPY BUT ABOVE ECONOMIZING SETPOINT.

- WHEN BTU CALCULATION FOR OUTDOOR AIR CONDITIONS EXCEEDS 25 BTU/HLB (ADJ.), ECONOMIZER SHALL BE DISABLED.

J. MINIMUM OUTDOOR AIR CONTROL - SYSTEM CONTROLLER SHALL MODULATE MIXED AIR DAMPERS TO MAINTAIN MINIMUM CFM SETPOINT MEASURED BY AN OUTDOOR AIR FLOW MEASURING STATION. LIMIT THE CLOSING OF THE OUTDOOR AIR DAMPER TO PROVIDE ABSOLUTE MINIMUM OUTDOOR AIR FLOW.

- OUTDOOR - RELIEF/EXHAUST - RETURN MODULATING WITH ONE SIGNAL FROM CONTROLLER.
- REFER TO UNIT SCHEDULE FOR THE ABSOLUTE MINIMUM OUTDOOR AIRFLOW CFM SETPOINT.

K. CO2 CONTROL - SYSTEM CONTROLLER SHALL OVERRIDE MIXED AIR DAMPER CONTROLS IN NON-ECONOMIZING MODE USING SPACE CO2 SENSOR TO INCREASE OUTDOOR MINIMUM CFM TO A MAXIMUM CFM. INCLUDE CORRESPONDING CLOSING RETURN AIR DAMPER AND OPENING OF RELIEF/EXHAUST AIR DAMPERS.

- UPON RETURN SPACE CO2 SENSOR EXCEEDING SETPOINT (800 PPM ADJ.), START TO MODULATE MIXED AIR DAMPERS (OUTDOOR AIR DAMPER OPENING) IN GRADUAL INCREMENTS UNTIL CO2 SENSOR SETPOINT IS SATISFIED.
- MODULATE MIXED AIR DAMPERS DOWN TO ITS ABSOLUTE MINIMUM POSITION UPON SATISFYING SENSOR SETPOINT.
- ALARM HIGH CO2, 1,200 PPM (ADJ.).

L. REFER TO UNIT SCHEDULE FOR THE MAXIMUM OUTDOOR AIRFLOW CFM SETPOINT.

M. MIXED AIR TEMPERATURE CONTROL - SYSTEM CONTROLLER SHALL MODULATE MIXED AIR DAMPERS WHEN MIXED AIR TEMPERATURE SENSOR FALLS BELOW 45°F. THE OUTDOOR - RELIEF/EXHAUST - RETURN DAMPERS SHALL MODULATE TO MAINTAIN A MIXED AIR TEMPERATURE OF 55°F.

- PROVIDE OVERRIDE OF MINIMUM OUTDOOR AIR VOLUME SETPOINT IN THE HEATING MODE TO MAINTAIN A 55°F MIXED AIR TEMPERATURE.

N. FILTER MONITORING - SYSTEM CONTROLLER SHALL MONITOR AND ALARM FILTER PRESSURE DIFFERENTIAL PRESSURE DROP FOR THE FOLLOWING:

- FILTERS.
  - MONITORING OF DIFFERENTIAL PRESSURE.
  - ALARM SETPOINT 1.00" W.C. (ADJ.).

O. UNOCCUPIED CONTROL - SYSTEM CONTROLLER SHALL INITIATE THE FOLLOWING BASED ON A FALL OR RISE IN SPACE TEMPERATURE.

- HEATING - SYSTEM CONTROLLER SHALL CYCLE SYSTEM ON UNOCCUPIED HEATING MODE) WHEN A CALL FOR HEAT IS INITIATED BY A SPACE TEMPERATURE SENSOR(S) DURING UNOCCUPIED MODE AND HEATING SYSTEM IS OR CAN BE ENABLED. SYSTEM SHALL RESPOND BASED ON THE FOLLOWING:
  - ENABLE FAN(S) AND SYSTEM SHALL FUNCTION AS DESCRIBED IN TEMPERATURE CONTROL OPERATION TO PROVIDE HEATING TO ZONE WITH THE EXCEPTION TO THE FOLLOWING:
    - MIXED AIR DAMPERS SHALL REMAIN CLOSED WITH RETURN DAMPER 100% OPENED AND OUTDOOR AND RELIEF/EXHAUST 100% CLOSED.
    - COOLING SHALL BE DISABLED.
  - SYSTEM DISABLED UPON SATISFYING THE CALL FOR HEAT AND HEATING COIL CONTROL VALVE SHALL REMAIN UNDER CONTROL OF COIL DISCHARGE AIR TEMPERATURE CONTROL.
- COOLING - NO UNOCCUPIED COOLING.

P. INITIAL STARTUP CONTROL - SYSTEM CONTROLLER SHALL ENABLE UNIT PRIOR TO SCHEDULED OCCUPANCY UTILIZING OPTIMUM START LOGIC TO ADJUST STARTUP TIME FOR UNIT BASED ON OUTDOOR AIR TEMPERATURE, BUILDING TEMPERATURE AND HISTORIC ELAPSE TIME TO REACH SETPOINT.

- UNIT SHALL ENERGIZE AND PROVIDE HEATING AND COOLING BASED ON THE SPACE TEMPERATURE SENSOR(S) TO BRING SPACE TO OCCUPIED SETPOINT. THE OUTDOOR AND RELIEF/EXHAUST AIR DAMPERS SHALL BE CLOSED UNLESS ECONOMIZER IS ENABLED. ONCE OCCUPIED SETPOINT HAS BEEN REACHED, THE UNIT SHALL SWITCH TO OCCUPIED MODE.

Q. TIMED OVERRIDE CONTROL - SYSTEM CONTROLLER SHALL ENABLE UNIT WHEN ASSOCIATED TEMPERATURE SENSOR OVERRIDE BUTTON IS PUSHED. A 2 HOUR (ADJ) RUNTIME IS ENABLED, SYSTEM SHALL BE ENABLE AND FUNCTION AS IN OCCUPIED MODE.

R. SAFETY SHUTDOWNS:

- PROVIDE A LOW-TEMPERATURE PROTECTION THERMOSTAT(S) ON THE LEAVING SIDE OF HEATING HOT WATER COIL WHICH WILL DE-ENERGIZE UNIT, CLOSE MIXED AIR DAMPERS (CLOSING OUTDOOR/RELIEF/EXHAUST AIR DAMPERS), CLOSE CHILLED WATER COIL CONTROL VALVE AND THE HEATING HOT WATER COIL CONTROL VALVE SHALL BE FULLY OPENED AND COIL PUMP ENERGIZED. PROVIDE MANUAL RESET.
- PROVIDE A HIGH STATIC PRESSURE SENSOR IN THE SUPPLY DISCHARGE PLENUM TO DE-ENERGIZE THE UNIT UPON SENSING A HIGH STATIC PRESSURE OF 4.0" W.C. PROVIDE MANUAL RESET.
- PROVIDE A LOW PRESSURE STATIC LIMIT IN THE RETURN PLENUM TO DE-ENERGIZE THE UNIT UPON SENSING A HIGH NEGATIVE STATIC PRESSURE OF -4.0" W.C. PROVIDE MANUAL RESET.
- DUCT MOUNTED IONIZATION SMOKE DETECTOR(S) PROVIDED BY DIVISION 28 SHALL DE-ENERGIZE THE UNIT WHENEVER PRODUCTS OF COMBUSTION ARE SENSED.
- THE FOLLOWING SHALL BE SUPPLIED AND INSTALLED BY TEMPERATURE CONTROL INSTALLER:
  - CONTROL VALVE AND DAMPER ACTUATORS.

**SEQUENCE OF OPERATIONS (CONT'D)**

**DOMESTIC WATER HEATER SYSTEM:**

A. PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR WATER HEATER SYSTEM MONITORING.

- SYSTEM SHALL BE MONITORED BY DDC BASED ON THE FOLLOWING:
  - WATER HEATER RUN STATUS.
  - WHEN RUNNING, A RUN TIMER WILL BE ACTIVE FOR HEATER.
  - WATER HEATER CYCLE COUNT.
  - STORAGE TANK TEMPERATURE.
  - ALARM STATUS.
  - HOT WATER SUPPLY TEMP (MIXED).
  - HOT WATER RETURN TEMPERATURE.
  - PUMP STATUS.

**SMOKE CONTROL SYSTEM:**

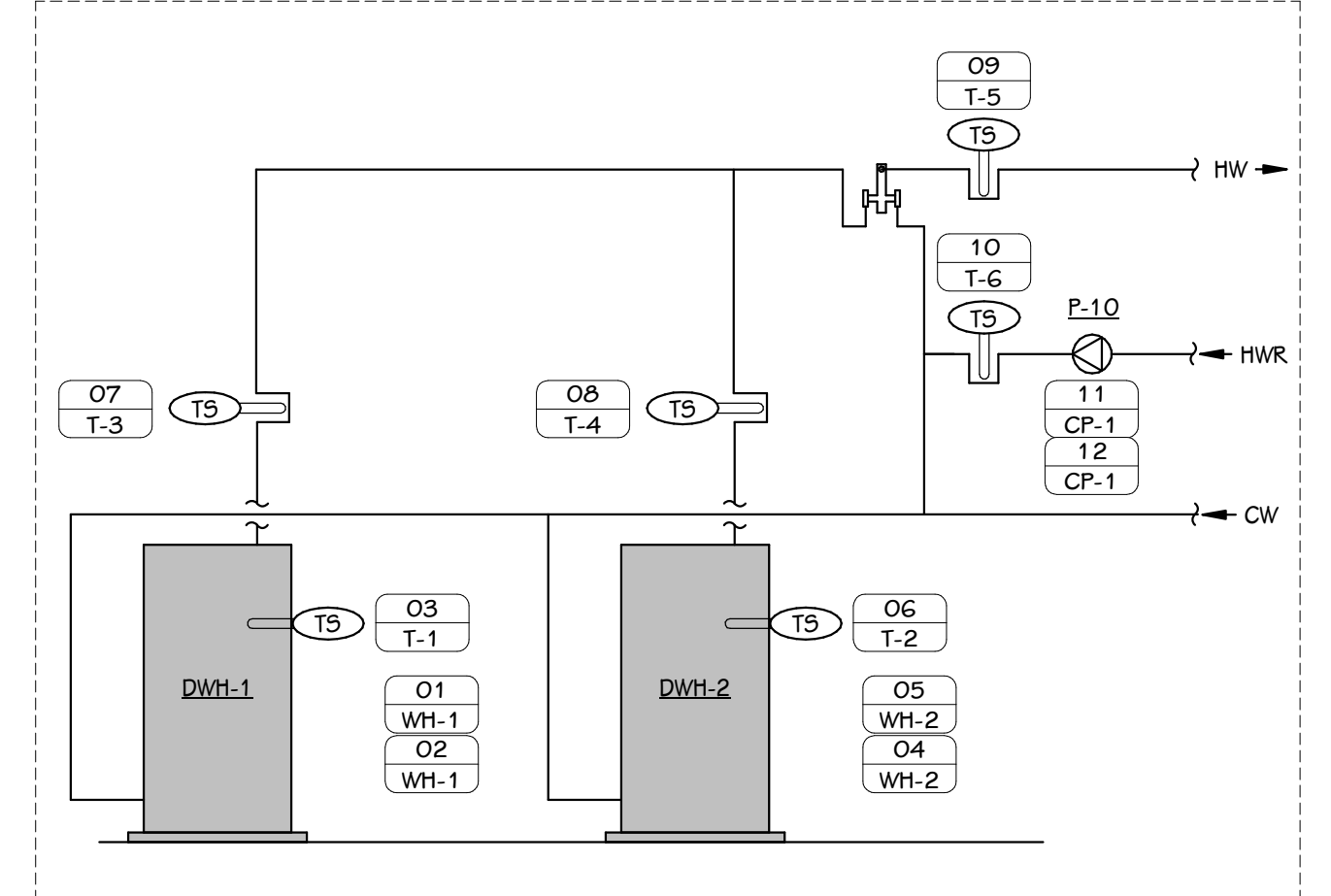
A. PROVIDE HARD-WIRED DISCRETE ILL LISTED FOR SMOKE CONTROL FIELD CONTROLLERS AND HARD-WIRED ILL LISTED FOR SMOKE CONTROL ENGINE FOR SYSTEM OPERATION. ALL WIRING SHALL BE ENCLOSED WITHIN CONDUIT. ILL LISTED ENGINE FEEDS DATA UP TO VARIABLE VOLUME EXHAUST FAN, ISOLATION INTAKE/RELIEF AIR DAMPERS WITH ACTUATORS, VARIABLE FREQUENCY CONTROLLER, AND SPACE DIFFERENTIAL PRESSURE SENSOR(S).

- PROVIDE POSITIVE CONFIRMATION OF ACTUATION, TESTING, MANUAL OVERRIDE, AND THE PRESENCE OF POWER DOWNSTREAM OF ALL DISCONNECTS.
- PROVIDE A WHEEL TEST SEQUENCE THAT REPORTS ABNORMAL CONDITIONS AUDIBLY, VISUALLY, AND BY PRINTED REPORT. THIS TEST SHALL OPERATE ALL DEVICES, EQUIPMENT, AND COMPONENTS USED FOR PRESSURIZATION (SMOKE CONTROL).
- OPERATION SHALL BE BASED ON FIRE ALARM SIGNAL:
  - ENABLE WHENEVER FIRE ALARM IS ACTIVE.
- SYSTEM START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
  - WHEN INDEXED TO STOP: DISABLE EXHAUST FAN.
    - ISOLATION AIR DAMPER 100% CLOSED.
    - OUTDOOR AND RELIEF AIR DAMPERS 100% CLOSED.
    - EMERGENCY DOOR ACTUATOR MODULATES 100% OPEN.
  - WHEN INDEXED TO START:
    - ISOLATION AIR DAMPER 100% OPEN.
    - INTAKE HOOD AIR DAMPER 100% OPEN.
    - EMERGENCY DOOR ACTUATOR MODULATES 100% CLOSED OR 100% OPEN, DEPENDING ON DESIGNATION.
    - FAN MOTOR MODULATES TO MAINTAIN ROOM PRESSURE SETPOINT OF 0.20" W.C. (ADJ.).
    - MINIMUM PRESSURE EQUALS 0.18" W.C.
    - MAXIMUM PRESSURE EQUALS 0.37" W.C.

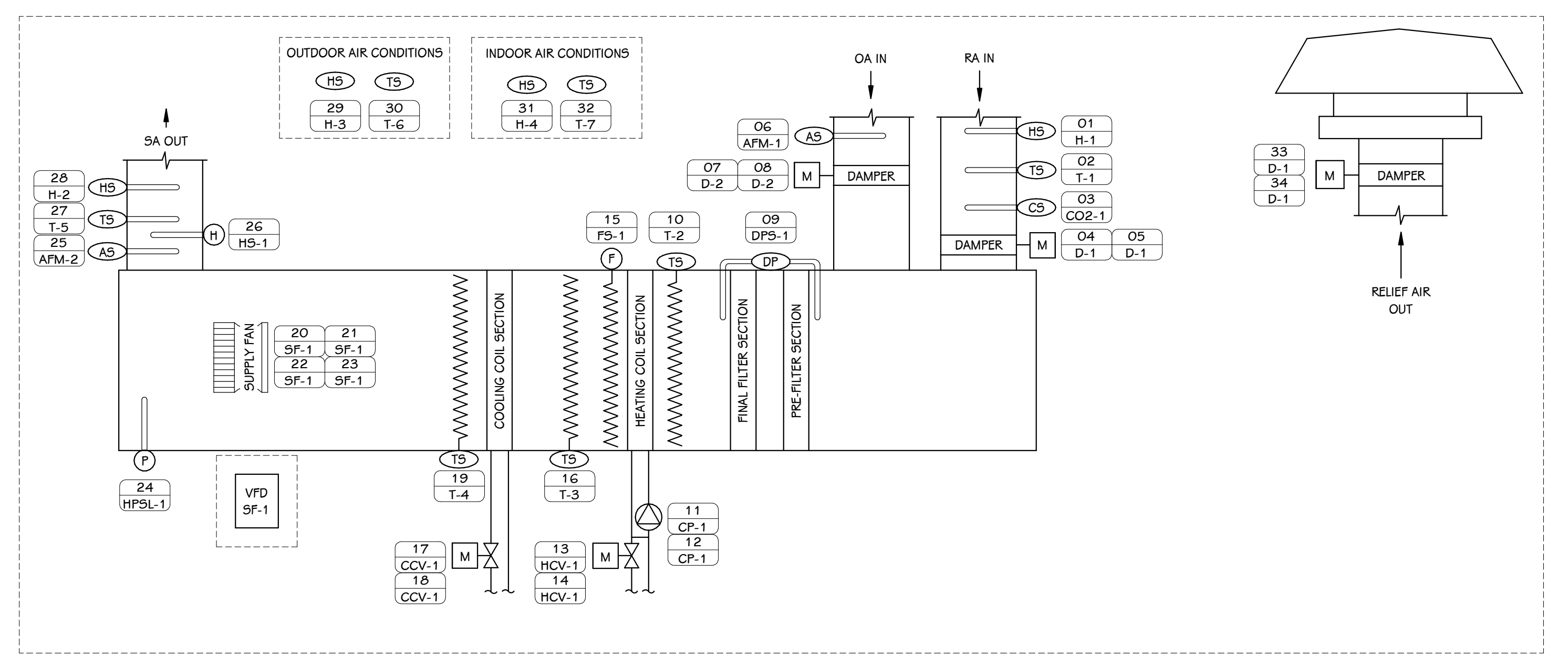
SYSTEM DDC MONITORING AND ALARMING OF THE FOLLOWING:

- EXHAUST FAN MOTOR STATUS.
  - WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO ISSUES SENSED, THE DDC SHALL INDICATE A GENERAL ALARM.
  - WHEN ENABLED AND STATUS IS SENSED BY A CURRENT SENSOR, A TOTALIZED OF RUN HOURS OF EXHAUST FAN WILL BE ACTIVE.

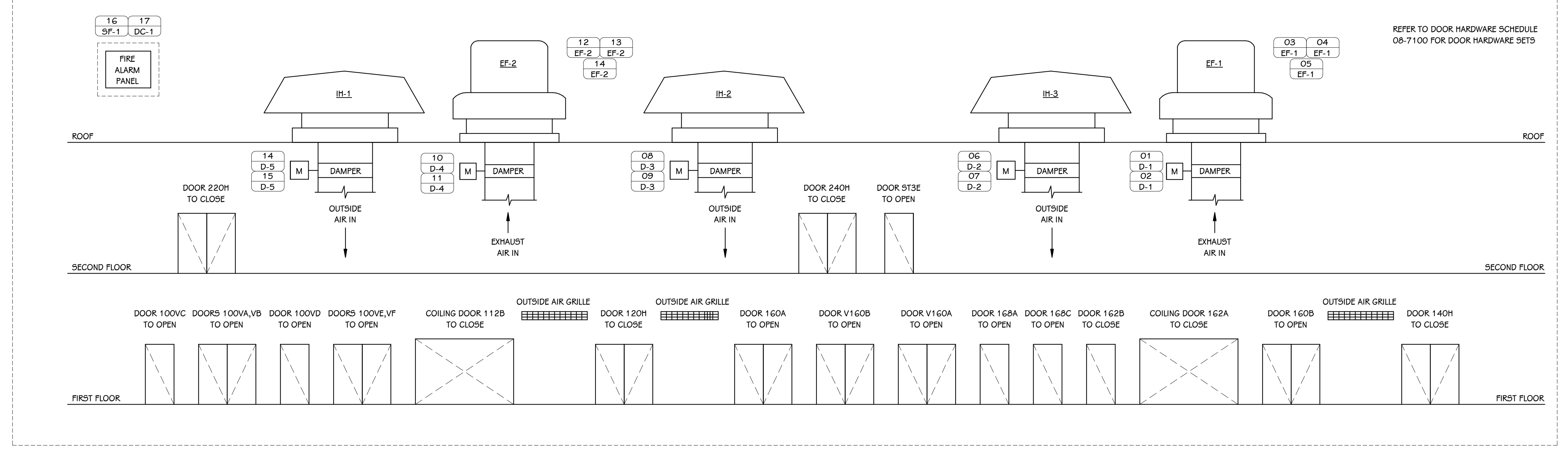
D. PROVIDE HARD WIRED MANUAL CONTROL (OVERRIDE) CAPABILITY WITHIN MECHANICAL ROOM M170.



**DOMESTIC WATER HEATER CONTROL DIAGRAM**  
SCALE: NONE



**AHU-5 CONTROLS DIAGRAM**  
SCALE: NONE



**SMOKE CONTROL SYSTEM CONTROLS DIAGRAM**  
SCALE: NONE

CONTROL POINTS						
NUMBER	TAG	DESCRIPTION	ALARM	TREND	MISC.	REMARKS
<b>MINI-SPLIT SYSTEM</b>						
01	T-1	SPACE TEMPERATURE				
<b>ROOF MOUNTED EXHAUST FAN CONTROL POINTS</b>						
01	D-1	OUTSIDE AIR DAMPER OUTPUT				OPENCLOSE
02	D-1	OUTDOOR AIR DAMPER POSITION				OPENCLOSE
03	D-2	EXHAUST AIR DAMPER OUTPUT				OPENCLOSE
04	D-2	EXHAUST AIR DAMPER POSITION				OPENCLOSE
05	EF-1	FAN SPEED CONTROL				
06	EF-1	FAN ENABLE/DISABLE				
07	EF-1	FAN STATUS				
08	OS-1	OCCUPANCY SENSOR				
09	T-1	ZONE AIR TEMPERATURE				
<b>AIR TERMINAL (VAV W/RHC) CONTROL POINTS</b>						
01	T-1	DISCHARGE AIR TEMPERATURE				
02	D-1	AIR DAMPER POSITION				
03	D-1	AIR DAMPER OUTPUT				
04	AFM-1	SUPPLY AIR FLOW				
05	V-1	HEATING CONTROL VALVE POSITION				
06	V-1	HEATING CONTROL VALVE OUTPUT				
07	T-2	ZONE AIR TEMPERATURE				
08	C-1	ZONE CARBON DIOXIDE LEVEL				
09	H-1	ZONE HUMIDITY				
<b>REFRIGERANT PURGE EXHAUST FAN CONTROL POINTS</b>						
01	D-1	OUTSIDE AIR DAMPER OUTPUT				OPENCLOSE
02	D-1	OUTDOOR AIR DAMPER POSITION				OPENCLOSE
03	D-2	EXHAUST AIR DAMPER OUTPUT				OPENCLOSE
04	D-2	EXHAUST AIR DAMPER POSITION				OPENCLOSE
05	EF-1	FAN SPEED CONTROL				
06	EF-1	FAN ENABLE/DISABLE				
07	EF-1	FAN STATUS				
08	RD-1	REFRIGERANT DETECTOR				
09	T-1	ZONE AIR TEMPERATURE				
<b>CABINET UNIT HEATERS</b>						
01	T-1	ZONE AIR TEMPERATURE				
02	T-2	DISCHARGE AIR TEMPERATURE				
03	SF-1	FAN STATUS				
04	SF-1	ENABLE/DISABLE				
05	V-1	CONTROL VALVE POSITION				
06	V-1	CONTROL VALVE OUTPUT				
<b>UNIT HEATERS</b>						
01	T-1	ZONE AIR TEMPERATURE				
02	T-2	DISCHARGE AIR TEMPERATURE				
03	SF-1	FAN STATUS				
04	SF-1	ENABLE/DISABLE				
05	V-1	CONTROL VALVE POSITION				
06	V-1	CONTROL VALVE OUTPUT				
<b>ELEVATOR SUMP PUMP CONTROL POINTS</b>						
01	DC-1	DRY CONTACT				LOSS OF POWER
02	DC-2	DRY CONTACT				HIGH LEVEL ALARM FLOAT
03	DC-3	DRY CONTACT				PUMP ON
04	DC-4	DRY CONTACT				PUMP OFF
<b>PANEL RADIATION</b>						
01	T-1	ZONE AIR TEMPERATURE				
02	V-1	CONTROL VALVE OUTPUT				
03	V-1	CONTROL VALVE POSITION				

**SEQUENCE OF OPERATIONS**

NOTE: ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY INDICATED WITHIN CONTROL DRAWINGS THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE SEQUENCE OF OPERATIONS SHALL BE PROVIDED WITHOUT ADDITIONAL COST. POINT LISTS SHALL BE A GUIDE TO THE POINTS REQUIRED FOR CONTROL SYSTEM. FINAL POINTS SHALL BE DETERMINED BY SEQUENCE OF OPERATIONS. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS. ALL POINTS SHALL BE TRENDABLE.

**CABINET UNIT HEATER:**

- PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR CABINET HEATER OPERATION. CABINET HEATER IS A COMBINATION OF A CONSTANT VOLUME FAN, FILTER, HEATING COIL, CONTROL VALVE(CV) AND ACTUATOR, AND AIR TEMPERATURE SENSOR.
- CABINET HEATER ADJUSTABLE SCHEDULE BASED ON THE FOLLOWING:
  - SCHEDULED WITH MAIN BUILDING SCHEDULE.
  - CABINET HEATER ADJUSTABLE SETPOINTS:
    - OCCUPIED 60°F HEATING
    - UNOCCUPIED 60°F HEATING
- OPERATION SHALL BE BASED ON THE FOLLOWING:
  - OPERATION BASED ON WALL MOUNTED SPACE TEMPERATURE SENSOR THAT WILL ENABLE UNIT WHENEVER SPACE TEMPERATURE FALLS BELOW HEATING SETPOINT.
    - WHEN INDEXED TO STOP, CONTROLLED DEVICES SHALL RESPOND AS NOTED:
      - DISABLE FAN.
      - HEATING CV 100% CLOSED.
    - WHEN INDEXED TO START, CONTROLLED DEVICES SHALL RESPOND AS NOTED:
      - HEATING CV 100% OPENED.
      - ENABLE FAN.
  - MONITORING AND ALARMING OF THE FOLLOWING:
    - FAN MOTOR STATUS.
      - WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, THE DDC SHALL INDICATE A GENERAL ALARM.
      - WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A TOTALIZES OF RUN HOURS FOR CABINET HEATER WILL BE ACTIVE.
    - SPACE AIR TEMPERATURE.

**UNIT HEATER:**

- PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR UNIT HEATER OPERATION. UNIT HEATER IS A COMBINATION OF A FAN, HEATING COIL, CONTROL VALVE (CV) AND ACTUATOR AND AIR TEMPERATURE SENSOR.
- UNIT HEATER ADJUSTABLE SCHEDULE BASED ON THE FOLLOWING:
  - SCHEDULED WITH MAIN BUILDING SCHEDULE.
  - UNIT HEATER ADJUSTABLE SETPOINTS:
    - OCCUPIED 60°F HEATING
    - UNOCCUPIED 60°F HEATING
- OPERATION SHALL BE BASED ON THE FOLLOWING:
  - OPERATION BASED ON WALL MOUNTED THERMOSTAT THAT WILL ENABLE UNIT WHENEVER SPACE TEMPERATURE FALLS BELOW HEATING SETPOINT.
  - START/STOP, CONTROLLED DEVICES SHALL RESPOND AS FOLLOWS:
    - WHEN INDEXED TO STOP, CONTROLLED DEVICES SHALL RESPOND AS NOTED:
      - DISABLE FAN.
      - HEATING CV 100% CLOSED.
    - WHEN INDEXED TO START, CONTROLLED DEVICES SHALL RESPOND AS NOTED:
      - HEATING CV 100% OPENED.
      - ENABLE FAN.
  - MONITORING AND ALARMING OF THE FOLLOWING:
    - FAN MOTOR STATUS.
      - WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, THE DDC SHALL INDICATE A GENERAL ALARM.
    - SPACE AIR TEMPERATURE.

**MINI-SPLIT SYSTEM:**

- MANUFACTURER PACKAGED CONTROLLER(S) SHALL CONTROL SPLIT SYSTEM AIR CONDITIONER OPERATION BASED ON THE FOLLOWING:
  - AUTOMATIC TEMPERATURE CONTROL- MANUFACTURER PROVIDED CONTROLLER(S), THERMOSTATS), INDOOR FAN, EVAPORATOR AND OUTDOOR CONDENSER SHALL MAINTAIN SYSTEM TEMPERATURE COOLING SETPOINT BASED ON AN ADJUSTABLE SETPOINT OF 76°F (ADJ.).
- MONITOR, ALARM AND ADJUST INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
  - SPACE TEMPERATURE.

**FIRE ALARM MONITORING:**

- PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR FIRE ALARM SYSTEM MONITORING.
  - MONITOR FIRE ALARM EVENTS AND PROVIDE AN ALARM AND/OR NOTIFICATION WHEN ACTIVATED.

**EXHAUST FAN (REFRIGERANT PURGE):**

- PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR SYSTEM OPERATION. SYSTEM IS A COMBINATION OF CONSTANT VOLUME EXHAUST FAN, ISOLATION OUTLET AND INTAKE AIR DAMPERS WITH ACTUATORS AND REFRIGERANT DETECTION DEVICE.
  - OPERATION SHALL BE BASED ON WALL MOUNTED REFRIGERANT DETECTION DEVICE. ENABLE SYSTEM WHENEVER REFRIGERANT IS DETECTED.
    - REFRIGERANT DETECTOR PROVIDE BY CHILLER MANUFACTURER.
    - MINIMUM RUN TIME EQUALS 30 MINUTES (ADJ.)
      - INTAKE HOOD AIR DAMPER 100% CLOSED.
      - WHEN INDEXED TO START: ENABLE EXHAUST FAN.
        - ISOLATION AIR DAMPER 100% OPENED.
        - INTAKE HOOD AIR DAMPER 100% OPENED.
  - SYSTEM DDC MONITORING AND ALARMING OF THE FOLLOWING:
    - EXHAUST FAN MOTOR STATUS:
      - WHEN ENABLED, AND AFTER A DELAY OF TWO (2) MINUTES (ADJ.) WITH NO STATUS SENSED, THE DDC SHALL INDICATE A GENERAL ALARM.
      - WHEN ENABLED AND STATUS IS SENSED BY THE CURRENT SENSOR, A RUN TIMER WILL BE ACTIVE.

**EXHAUST FANS:**

- MONITOR AND ALARM THE OPERATION OF ALL FANS.
  - THE FOLLOWING EXHAUST FANS SHALL BE CONTROLLED BY BMS USING OCCUPIED/UNOCCUPIED TIME SEQUENCING TO CYCLE FAN MOTOR AND OPEN CONTROL DAMPER. EACH FAN SHALL HAVE ITS OWN SCHEDULE:
    - EF-3, EF-8, EF-9, EF-10, EF-11, EF-13, EF-14 (TOILET ROOMS)
    - EF-5E (KITCHEN)
  - THE FOLLOWING EXHAUST FANS SHALL BE RUN CONTINUOUSLY 24/7:
    - EF-4, EF-12 (MECHANICAL ROOMS)
  - THE FOLLOWING EXHAUST FANS SHALL BE CONTROLLED BASED ON WALL MOUNTED ROOM AIR TEMPERATURE SENSOR. ENABLE SYSTEM WHENEVER SPACE TEMPERATURE RISES ABOVE COOLING SETPOINT OF 79°F (ADJ.).
    - EF-5 (ELEVATOR)
    - EF-7 (KLN)

**SEQUENCE OF OPERATIONS (CONTD)**

**HOT WATER PANEL RADIATION:**

- PROVIDE DDC CONTROL SYSTEM TO OPERATE SYSTEM. THERE IS ONE MODULATING CONTROL VALVE AND ONE CIRCULATING PUMP.
- UPON A CALL FOR HEAT BY A ZONE'S VAV BOX TEMPERATURE SENSORS, CONTROL VALVE TO MAINTAIN ZONE TEMPERATURE HEATING SETPOINT.
  - PANEL RADIATION TO ACT AS ZONE'S FIRST STAGE OF HEATING BEFORE AIR SYSTEM. PROVIDE OPTIMUM START.
    - ENABLE HEATING HOT WATER SYSTEM IF NOT ALREADY ENABLED.

**ELEVATOR SUMP PUMP:**

- PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR SUMP PUMP SYSTEM MONITORING.
  - SYSTEM SHALL BE MONITORED BY DDC BASED ON THE FOLLOWING:
    - COMMON ALARM CONTACT.
    - PUMP OFF.
    - PUMP #1 CUL.
    - HIGH WATER ALARM.

**AIR TERMINAL (VAV W/RHC):**

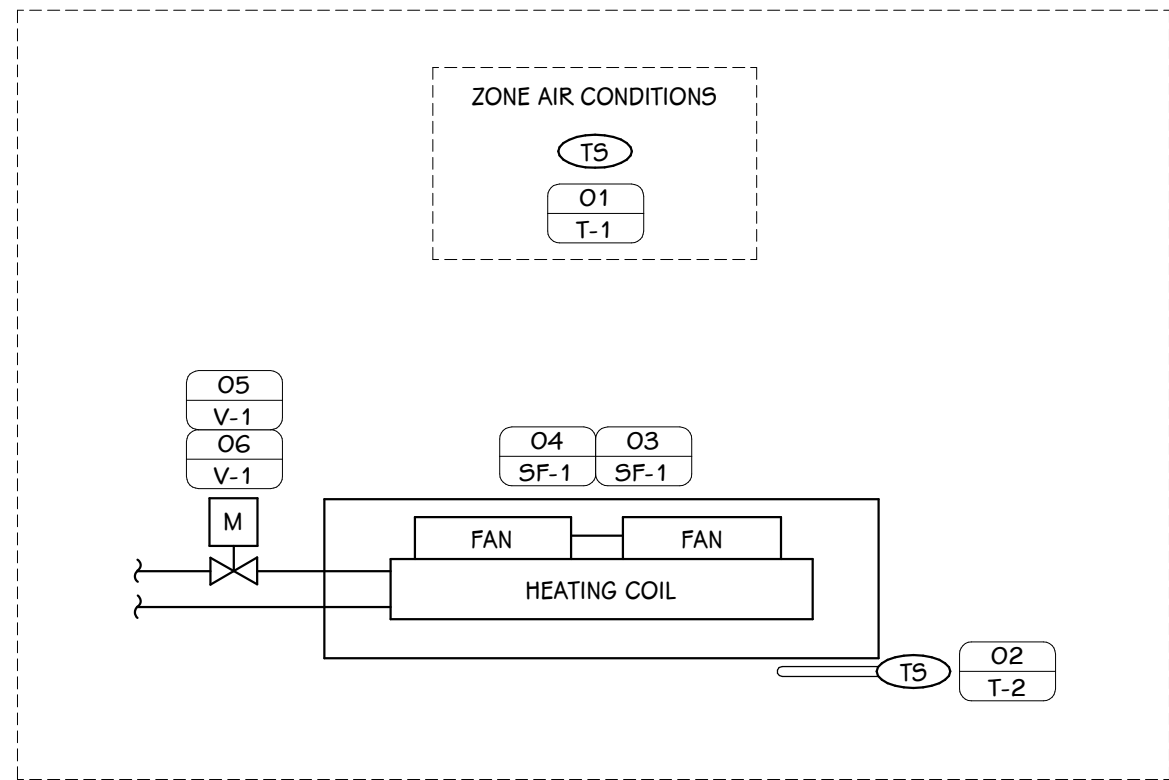
- PROVIDE A DDC CONTROL SYSTEM FOR EACH UNIT THAT INCLUDES A BOX CONTROLLER, DAMPER OPERATOR, ELECTRONIC HEATING WATER VALVE AND ROOM SENSOR TO MAINTAIN SPACE TEMPERATURE SETPOINT BY AUTOMATICALLY SEQUENCING THE TERMINAL UNIT DAMPER AND NORMALLY CLOSED MODULATING HEATING VALVE. THE BOX CONTROLLER SHALL ALLOW ADJUSTMENT OF THE MAXIMUM AND MINIMUM SUPPLY DAMPER POSITION. REFER TO SECTION 23.3600 - AIR TERMINAL UNITS.
  - PROVIDE 120V/24V TRANSFORMERS WITH TOGGLE SWITCH TO POWER BOX CONTROLS.
    - MAXIMUM OF THREE TERMINAL UNITS PER TRANSFORMER.
  - ROOM COMBINATION TEMPERATURE AND CO2 SENSOR TO HAVE LIMITED TEMPERATURE ADJUSTMENT AND OVERRIDE BUTTON.
  - UPON A CALL FOR COOLING BY THE ROOM SENSOR, THE HEATING VALVE SHALL BE CLOSED AND THE SUPPLY DAMPER SHALL MODULATE BETWEEN THE MINIMUM DAMPER POSITION AND THE MAXIMUM DAMPER POSITION TO SATISFY SETPOINT.
    - UPON A CALL FOR HEATING BY THE ROOM SENSOR, THE SUPPLY DAMPER SHALL MAINTAIN MINIMUM DAMPER POSITION AND THE HEATING VALVE SHALL MODULATE TO SATISFY ROOM SETPOINT WITH AN ADJUSTABLE MAXIMUM UNIT DISCHARGE AIR TEMPERATURE OF 105°F.
      - EXCLUDE T1-242 FOR MECHANICAL ROOM FROM UNOCCUPIED STANDBY MODE (NO ROOM LIGHT OCCUPANCY SENSOR).
  - ROOM TEMPERATURE SETPOINT SHALL BE RESET IN ROOM UNOCCUPIED STANDBY MODE AS DETERMINED BY LIGHTING OCCUPANCY SENSORS). THE HEATING SETPOINT SHALL BE LOWERED AND THE COOLING SETPOINT SHALL BE RAISED 5°F ADJUSTABLE. THE VAV BOX DAMPER SHALL GO FULL CLOSED WHEN THE SPACE IS UNOCCUPIED AND THE SPACE TEMPERATURE SENSOR IS IN ITS DEADBAND.
    - EXCLUDE T1-242 FOR MECHANICAL ROOM FROM UNOCCUPIED STANDBY MODE (NO ROOM LIGHT OCCUPANCY SENSOR).
    - UPON CO2 LEVEL REACHING 600 PPM THE DAMPER RESET ITS POSITION BETWEEN MINIMUM AND MAXIMUM BETWEEN 800 AND 1200 PPM. MAINTAIN TEMPERATURE CONTROL WHILE SATISFYING CO2. MONITOR QUANTITY OF ROOMS WITH HIGH CO2 LEVEL. REFER TO AHU SEQUENCING FOR ACTIONS BY AHU DUE TO HIGH CO2 LEVELS.

**DOMESTIC WATER HEATER SYSTEM:**

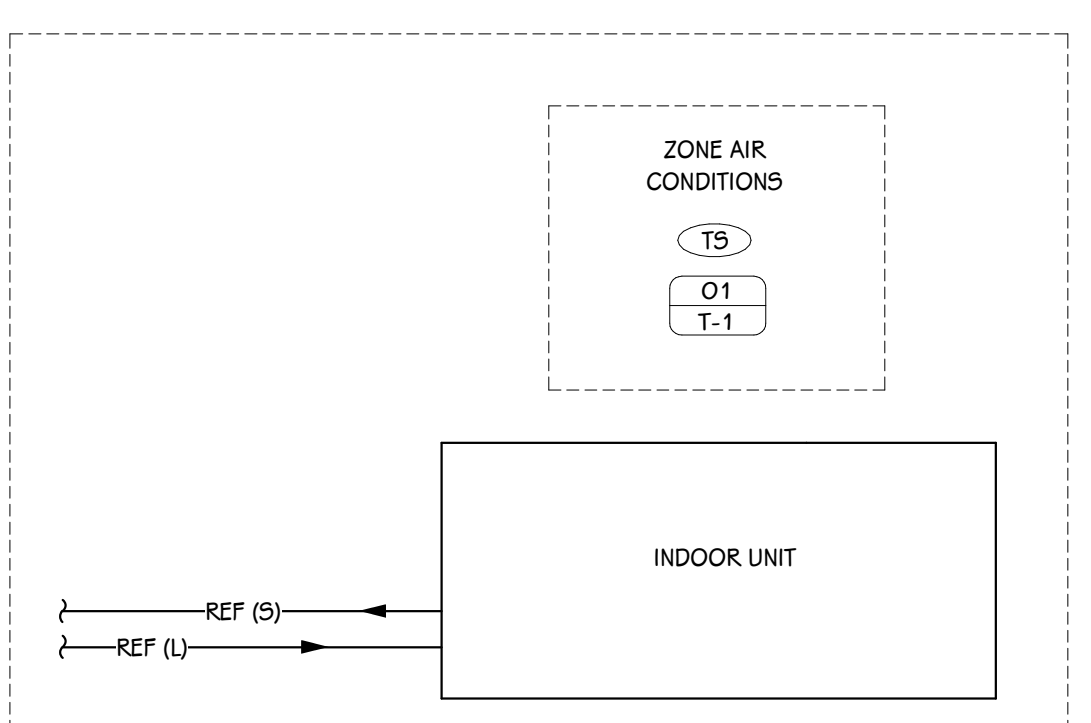
- PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR WATER HEATER SYSTEM MONITORING.
  - SYSTEM SHALL BE MONITORED BY DDC BASED ON THE FOLLOWING:
    - WATER HEATER RUN STATUS
    - WHEN RUNNING, A RUN TIMER WILL BE ACTIVE FOR HEATER
    - WATER HEATER CYCLE COUNT
    - STORAGE TANK TEMPERATURE
    - ALARM STATUS
    - HOT WATER SUPPLY TEMP (MIXED)
    - HOT WATER RETURN TEMPERATURE
    - PUMP STATUS

**ENERGY MONITORING:**

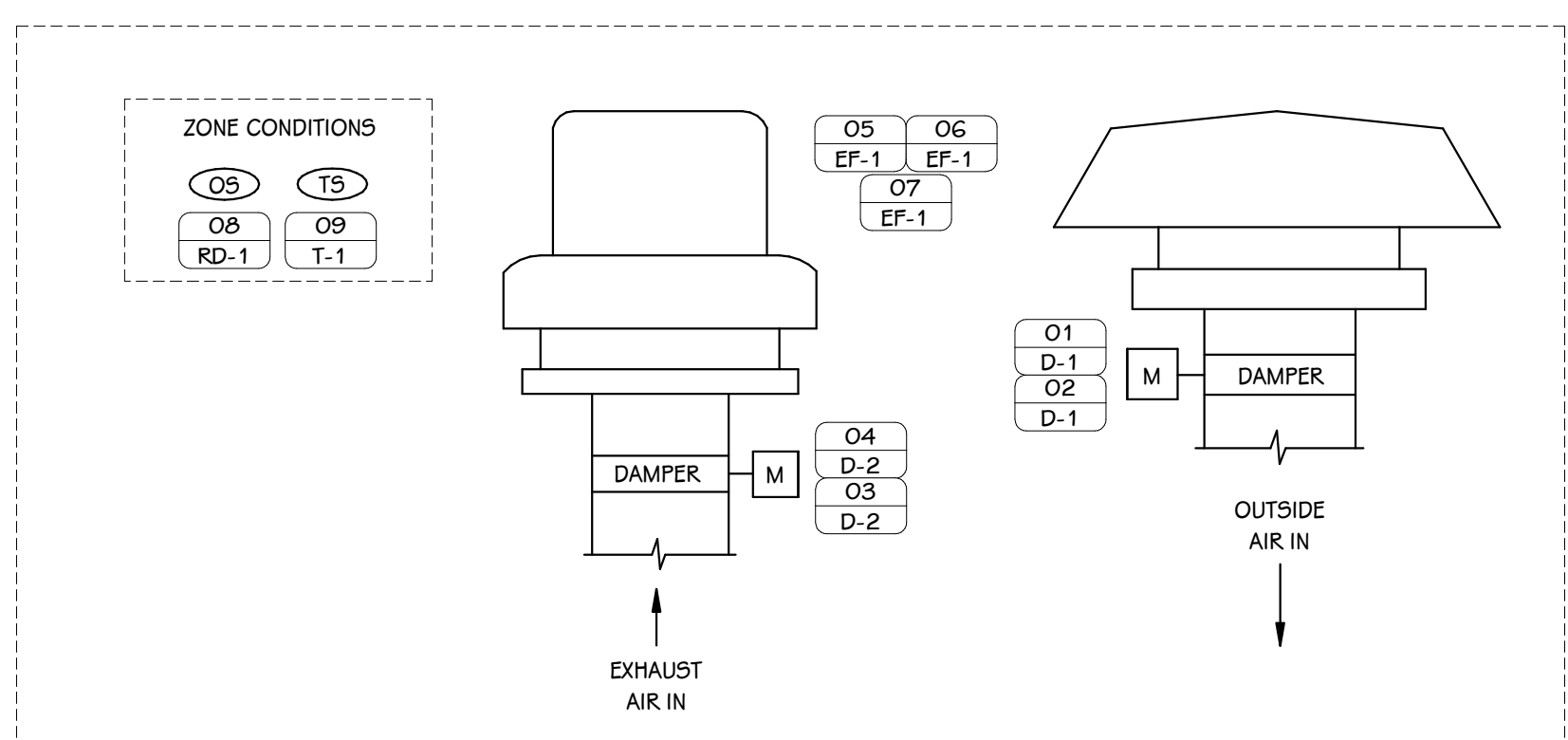
- PROVIDE DIRECT DIGITAL CONTROLS (DDC) FOR TOTAL BUILDING BTU, NATURAL GAS, AND ELECTRICAL LOAD MONITORING, LOGGING, AND TRENDING.
  - OBTAIN GAS USAGE FROM UTILITY FURNISHED GAS METER PULSED OUTPUT.
  - OBTAIN ELECTRICAL USAGE DIRECTLY FROM MAIN ELECTRICAL PANEL METER.
  - OBTAIN BTU USAGE FROM BTU METERS SPECIFIED IN SECTION 23.0900.
- PROVIDE ON THE OPERATOR WORKSTATION A READ/COMPREHEND DATA PRESENTATION TO SHOW HISTORIC AND LIVE IN REAL TIME ENERGY DATA. PRESENTATION SHALL COMPARE TOTAL BUILDING LOAD WITH AN AVERAGE BUILDING LOAD, AND OVER TIME, THE BUILDING'S HISTORIC ENERGY USAGE.
- THE SYSTEM SHALL PERFORM MEASUREMENT, DATA ACQUISITION, CALCULATIONS, RECORD KEEPING, ANALYSIS, NOTIFICATION, AND REPORTING OF ENERGY USAGE FOR THE FOLLOWING:
  - TOTAL FACILITY NATURAL GAS USAGE IN SCFPH.
  - TOTAL FACILITY ELECTRICAL USAGE IN KW-H.
  - TOTAL FACILITY CHILLED WATER USAGE IN BTU-H.
  - TOTAL FACILITY HEATING WATER USAGE IN BTU-H.
  - THE FOLLOWING POINT SHALL BE MONITORED, LOGGED, AND TRENDED:
    - NATURAL GAS (CFH) - LAST 30 DAYS, LAST 365 DAYS, NOW (INSTANT CONSUMPTION), TODAY (MIDNIGHT TO PRESENT), MONTH TO DATE, YEAR TO DATE, LAST YEAR.
    - ELECTRICAL POWER (KW-H) - LAST 30 DAYS, LAST 365 DAYS, NOW (INSTANT CONSUMPTION), TODAY (MIDNIGHT TO PRESENT), MONTH TO DATE, YEAR TO DATE, LAST YEAR.
    - ELECTRICAL DEMAND (KW) - LAST 30 DAYS, LAST 365 DAYS, NOW (INSTANT CONSUMPTION), TODAY (MIDNIGHT TO PRESENT), MONTH TO DATE, YEAR TO DATE, LAST YEAR.
    - CHILLED WATER USAGE (BTU-H) - LAST 30 DAYS, LAST 365 DAYS, NOW (INSTANT CONSUMPTION), TODAY (MIDNIGHT TO PRESENT), MONTH TO DATE, YEAR TO DATE, LAST YEAR.
    - HEATING WATER USAGE (BTU-H) - LAST 30 DAYS, LAST 365 DAYS, NOW (INSTANT CONSUMPTION), TODAY (MIDNIGHT TO PRESENT), MONTH TO DATE, YEAR TO DATE, LAST YEAR.



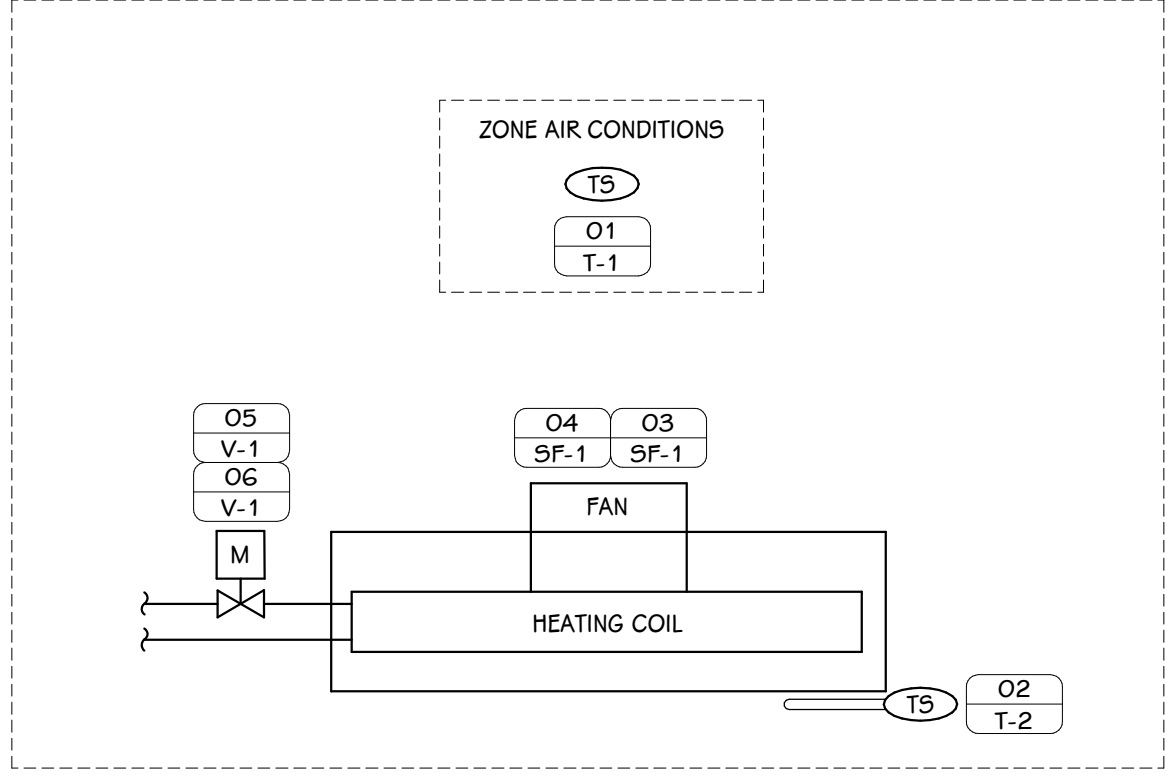
**CABINET UNIT HEATER (HW) CONTROLS DIAGRAM**  
SCALE: NONE



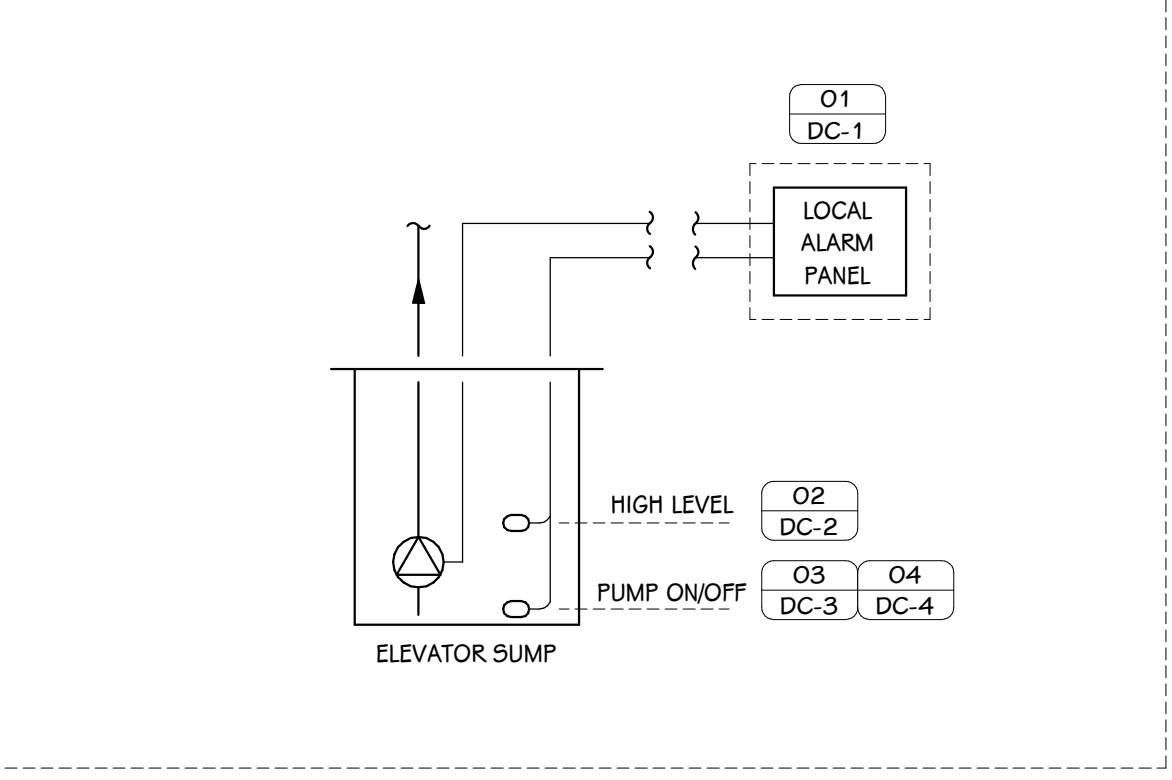
**MINI-SPLIT CONTROLS DIAGRAM**  
SCALE: NONE



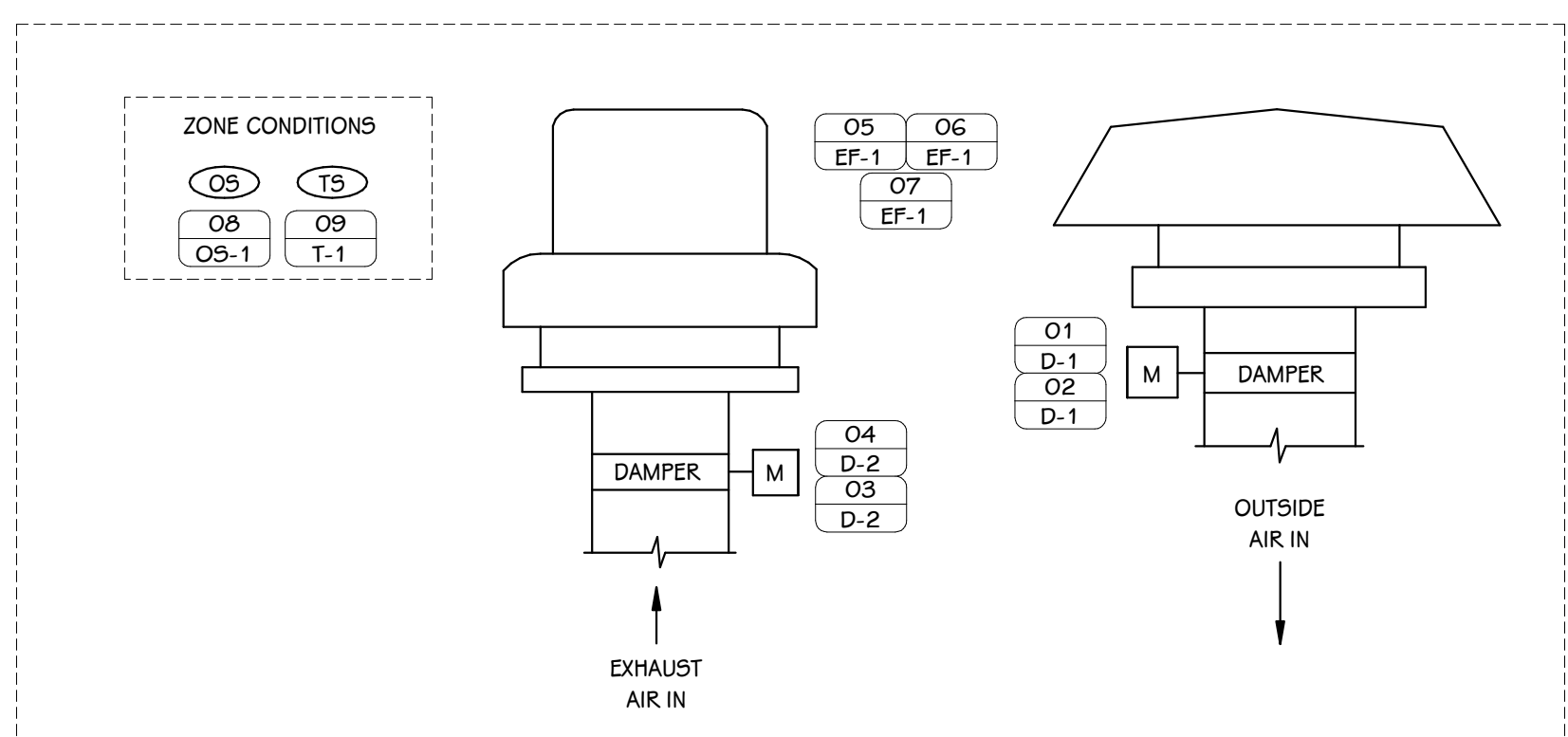
**REFRIGERANT PURGE EXHAUST FAN (ROOF) CONTROLS DIAGRAM**  
SCALE: NONE



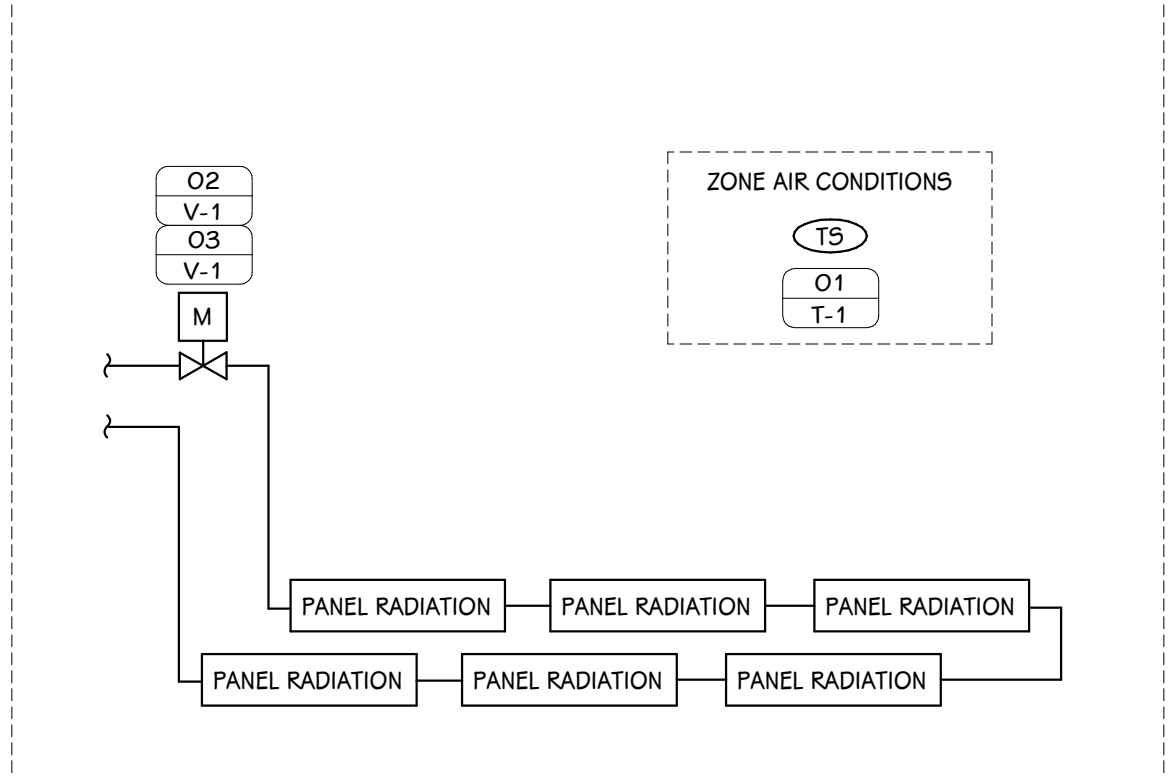
**UNIT HEATER (HW) CONTROLS DIAGRAM**  
SCALE: NONE



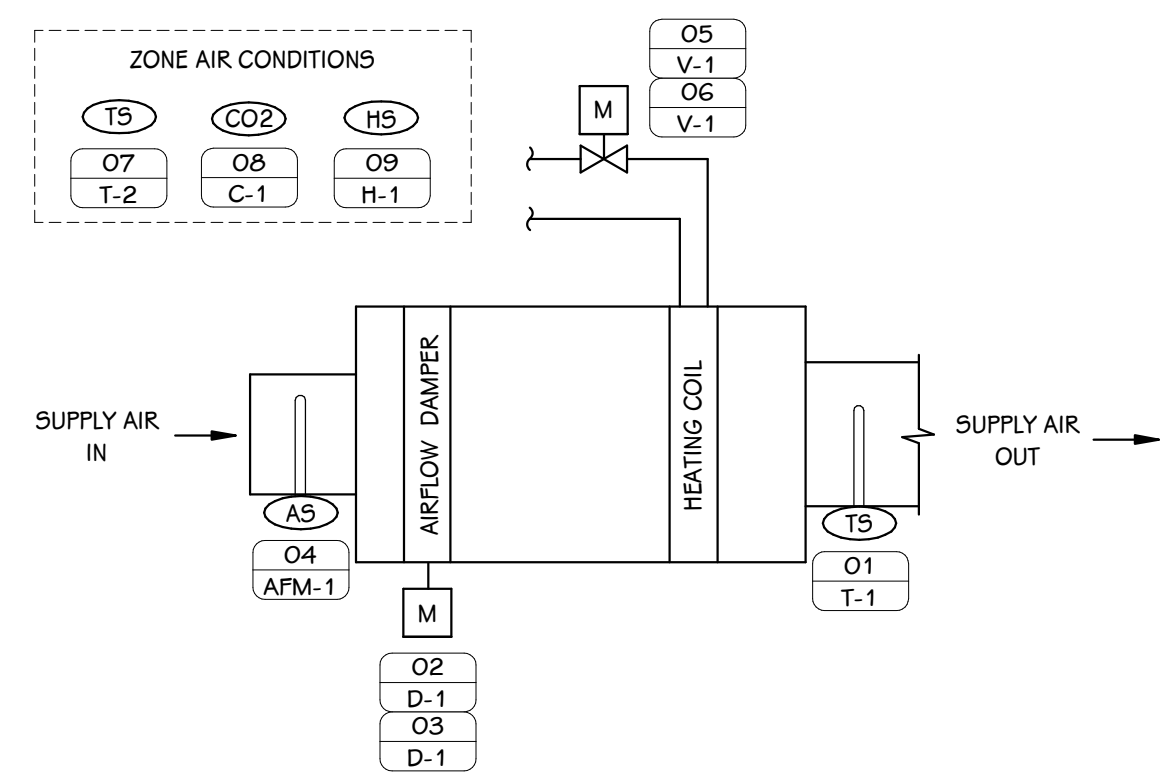
**ELEVATOR SUMP PUMP MONITORING**  
SCALE: NONE



**EXHAUST FAN / INTAKE HOOD CONTROLS DIAGRAM**  
SCALE: NONE



**PANEL RADIATION (HW) CONTROLS DIAGRAM**  
SCALE: NONE



**AIR TERMINAL (VAV W/RHC) CONTROLS DIAGRAM**  
SCALE: NONE

PROVIDE A HIGH-INTENSITY RADIANT FLOOR BAND IN PERIMETER ROOMS. THE RADIANT FLOOR WILL BE CONTROLLED WITH THE ACCOMPANYING AIR SYSTEM AND WILL BE ZONED THE SAME AS THE AIR SYSTEM. BOTH THE FIRST-FLOOR AND SECOND-FLOOR RADIANT FLOORS WILL BE FED FROM THE FIRST-FLOOR PIPING LOOP. CONTROL VALVES WILL BE ABOVE THE FIRST-FLOOR CEILING WHILE MANIFOLD BOXES WILL BE CONCEALED IN WALLS NEAR THE FLOOR SERVED.



FIRST FLOOR HVAC PIPING PLAN - ALT #3  
1" = 10'-0"

THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING

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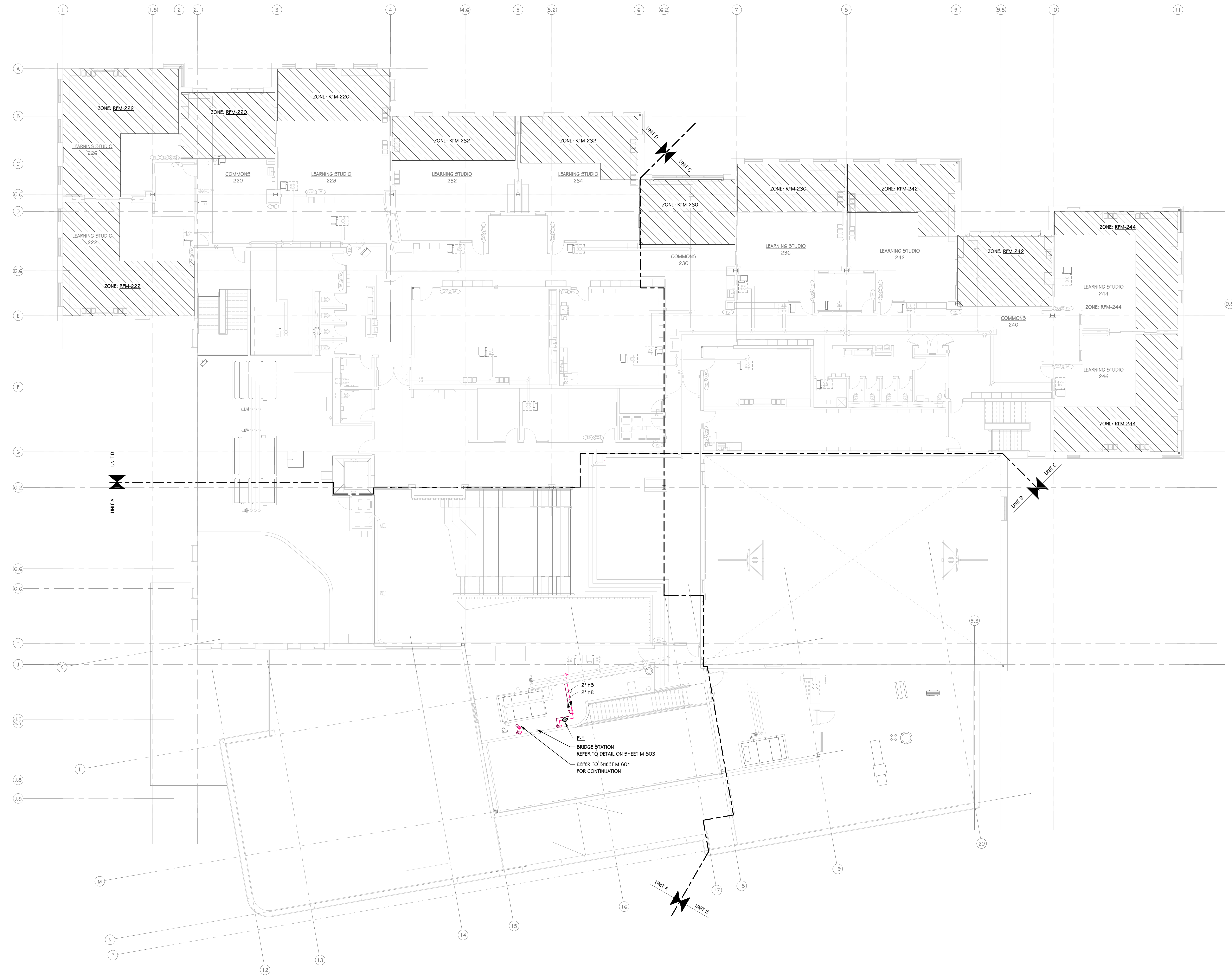
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PROJECT TITLE: HAVERHILL ELEMENTARY SCHOOL  
 OWNER: PORTAGE PUBLIC SCHOOLS  
 SHEET NUMBER: **M 801**  
 DATE: JUNE 30, 2023  
 LOCATION: Portage, Michigan

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SHEET TITLE: ALTERNATE FIRST FLOOR HVAC PIPING PLAN  
 ISSUED FOR: \_\_\_\_\_ DATE: \_\_\_\_\_

PROVIDE A HIGH-INTENSITY RADIANT FLOOR BAND IN PERIMETER ROOMS. THE RADIANT FLOOR WILL BE CONTROLLED WITH THE ACCOMPANYING AIR SYSTEM AND WILL BE ZONED THE SAME AS THE AIR SYSTEM. BOTH THE FIRST-FLOOR AND SECOND-FLOOR RADIANT FLOORS WILL BE FED FROM THE FIRST-FLOOR PIPING LOOP. CONTROL VALVES WILL BE ABOVE THE FIRST-FLOOR CEILING WHILE MANIFOLD BOXES WILL BE CONCEALED IN WALLS NEAR THE FLOOR SERVED.



**ALTERANTE SECOND FLOOR HVAC PIPING PLAN**  
1" = 10'-0"

**THIS DRAWING SHEET IS INTENDED TO BE PLOTTED IN COLOR. IF THIS TEXT APPEARS IN BLACK AND WHITE, IT IS PLOTTED INCORRECTLY. DISCARD AND OBTAIN AN ACCURATE DRAWING**

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ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

OWNER  
**Portage, Michigan**

SHEET TITLE  
**ALTERANTE SECOND FLOOR HVAC PIPING PLAN**

SHEET NUMBER  
**M 802**

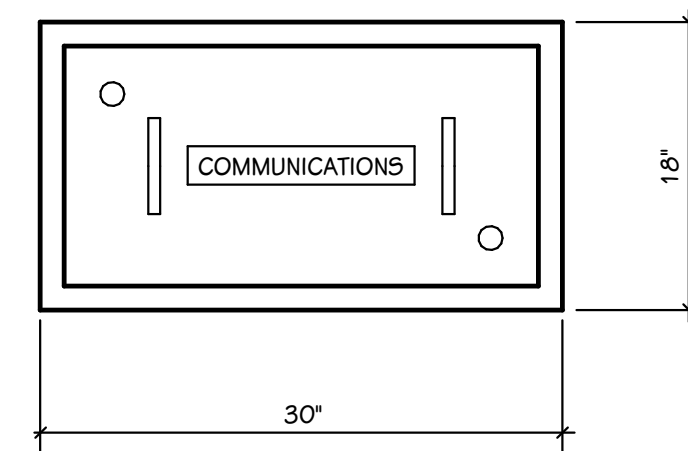
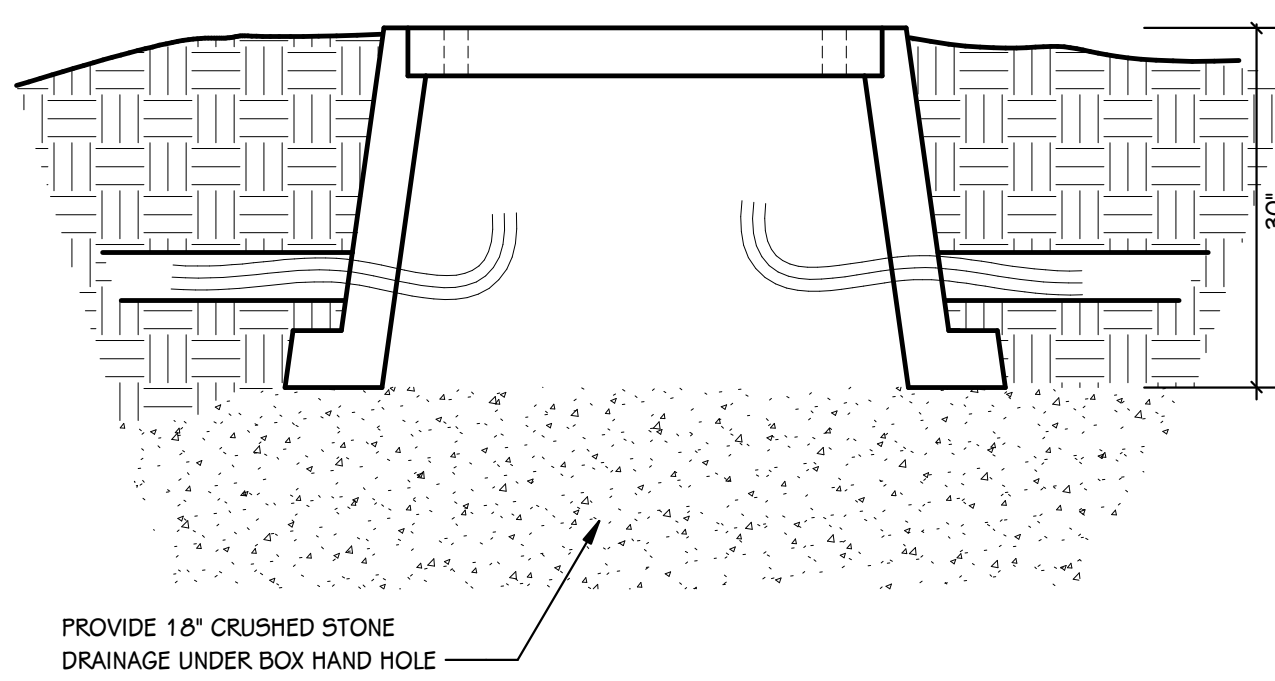
DATE  
**JUNE 30, 2023**

DATE  
**21-237.20**









**HAND HOLE DETAILS**  
SCALE: NONE

LIGHT FIXTURE SCHEDULE (SITE POLES)					
TYPE	DESCRIPTION	MOUNTING	WATTS	MANUFACTURER	NOTES
SA2HS	AREA SITE LIGHT	25' ROUND TAPERED ALUMINUM POLE	138 VA	LITHONIA: #DSX1 LED P5 40K 80CRI T2M MVOLT H5 RFA NLTAR2 PIRHN DBLXD	
SA3	AREA SITE LIGHT	25' ROUND TAPERED ALUMINUM POLE	138 VA	LITHONIA: # DSX1 LED P5-40K-T3M-277-RFA-PIR-DBLXD	1, 2
SA4	AREA SITE LIGHT	25' ROUND TAPERED ALUMINUM POLE	138 VA	LITHONIA: # DSX1 LED P5-40K-T4M-277-RFA-PIR-DBLXD	1, 2
SA4HS	AREA SITE LIGHT	25' ROUND TAPERED ALUMINUM POLE	138 VA	LITHONIA: # DSX1 LED P5-40K-T4M-277-RFA-PIR-HS-DBLXD	1, 2
SB5	AREA PATHWAY LIGHT	12' ROUND ALUMINUM POLE	86 VA	LITHONIA: # RADPT LED P4 40K 9YM MVOLT PT4 NLTAR2 DBLBD	1, 2
SC	SIGN FLOOD LIGHT	6" CONCRETE BASE	60 VA	HYDREL: 4750L-4-500-40K-MVOLT-WFL-KM-PS9A-INJB-ZT-BL	1, 2

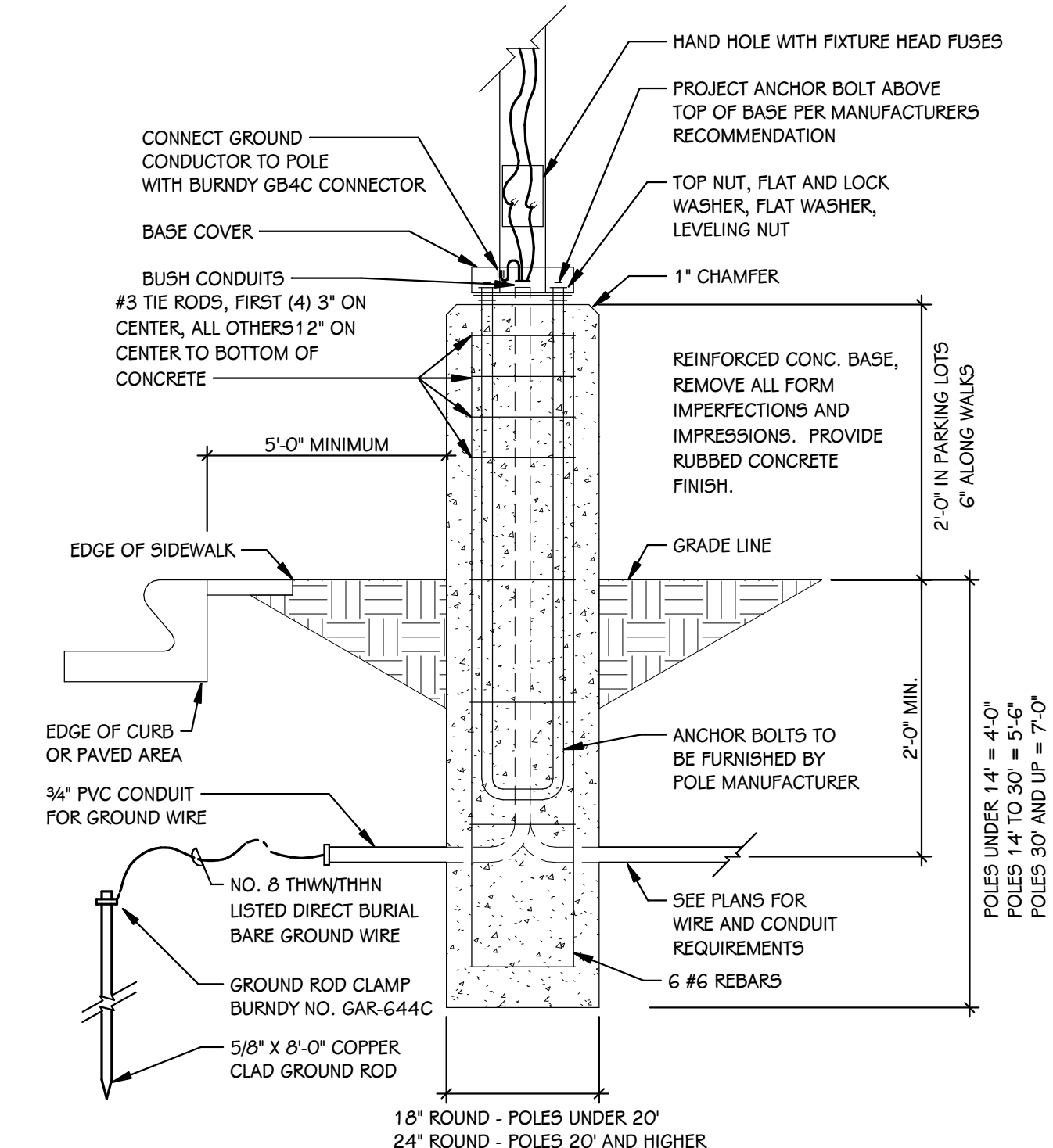
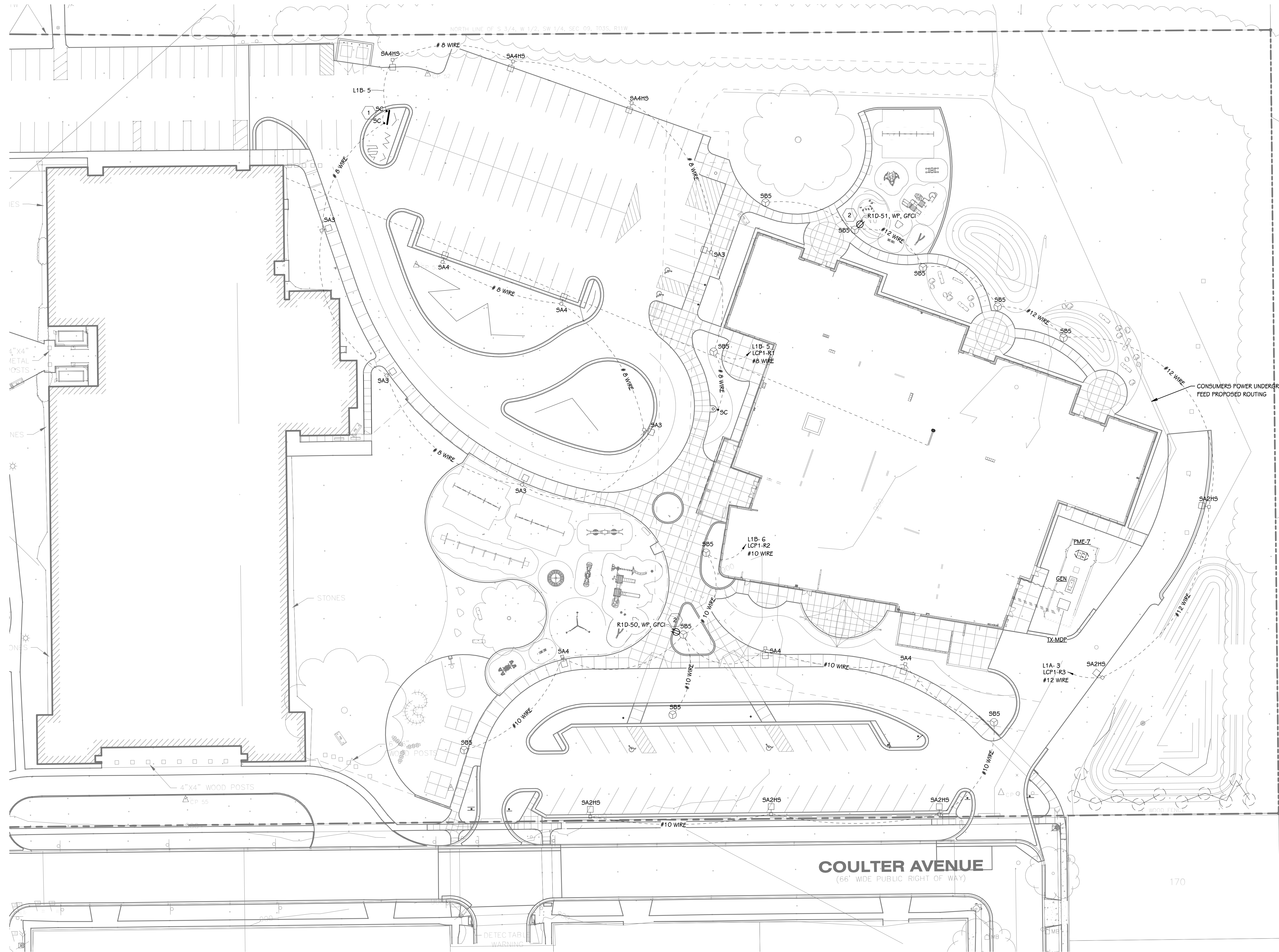
- ALL LED FIXTURES TO HAVE WARRANTY TO MEET OR EXCEED WARRANTY INCLUDED IN BASIS OF DESIGN. FIXTURES LISTED AS EQUALS SHALL MEET DELIVERED LUMENS, CRI, EFFICACY AND OPTIONS OF THAT SPECIFIED. REFER TO SPECIFICATIONS 265100 AND 265600 FOR ADDITIONAL REQUIREMENTS.
- THE MOUNTING DESCRIPTION IS GENERAL. REFER TO SHOP DRAWINGS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR SPECIFIC MOUNTING DETAILS.

**ELECTRICAL SITE NOTES**

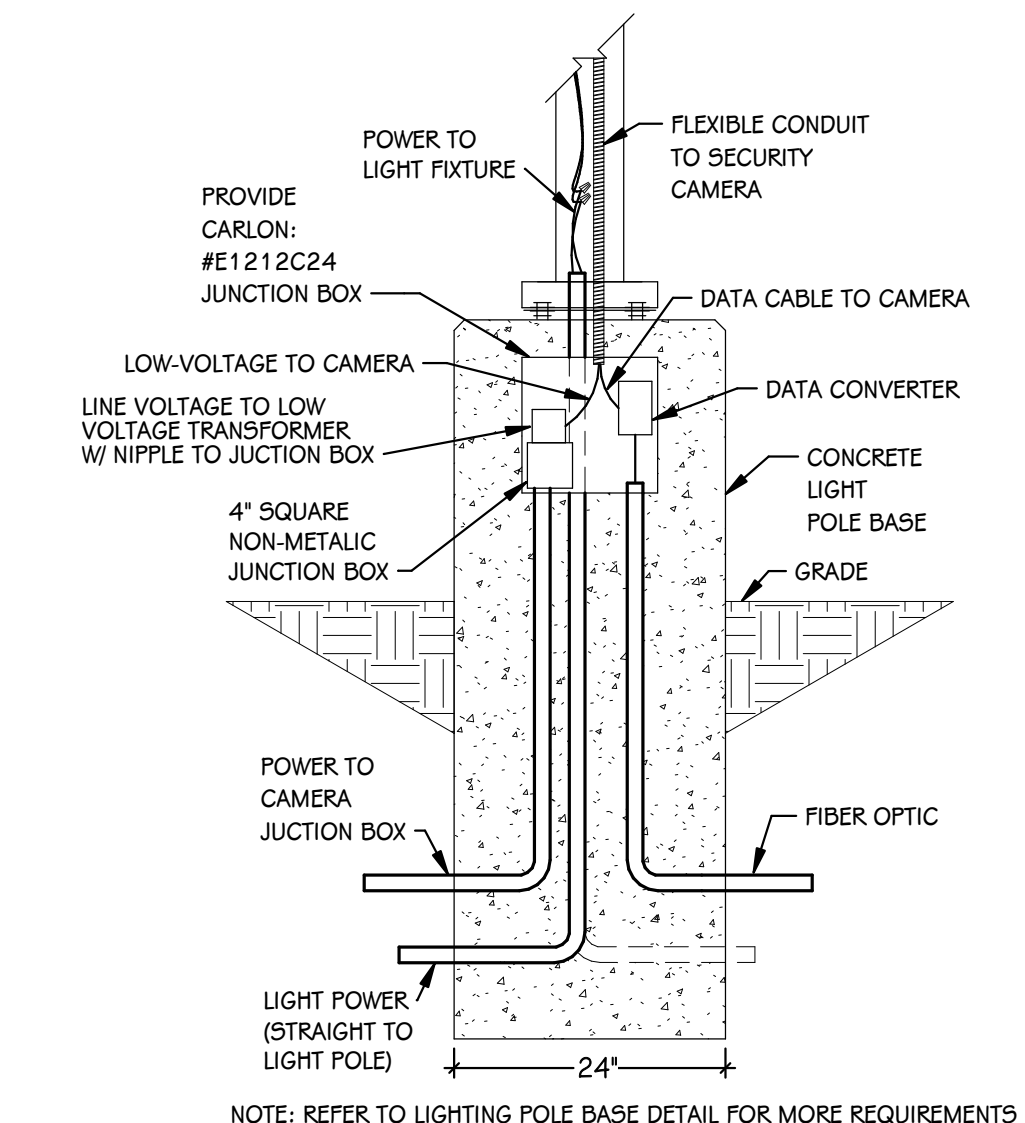
- WIRE UPSIZING IS NOTED WHERE APPROPRIATE TO ACCOMMODATE FOR VOLTAGE DROP. WIRE SIZES SHALL BE #10 UNLESS OTHERWISE NOTED.
- WIRE UPSIZING SHOWN IS ONLY ACCURATE FOR THE WIRING CONFIGURATION SHOWN. CONTRACTOR SHALL ENSURE THAT ALL VOLTAGE DROP REQUIREMENTS ARE MET IF WIRING CONFIGURATION CHANGES.
- WHERE VOLTAGE DROPS ARE NOT SHOWN, CONTRACTOR SHALL PROPERLY SIZE FEEDER WIRE.
- PROVIDE TRENCHING AND DIRECTIONAL BORING AS REQUIRED FOR ALL ELECTRICAL SITE WORK.
- ALL CONDUITS SHALL ENTER/EXIT THE BUILDING BELOW GRADE. CUT AND PATCH AS REQUIRED. NO EXPOSED CONDUIT SHALL BE ALLOWED.

**ELECTRICAL SITE KEYED NOTES**

- COORDINATE LOCATION WITH FINAL MONUMENT SIGN PRIOR TO INSTALLATION. FIELD AIM AND ADJUST. PROVIDE 277 VOLT BUTTON TYPE PHOTOCELL IN WEATHERPROOF BOX BEHIND SIGN TO CONTROL THE LIGHTS.
- MOUNT RECEPTACLE TO POLE BASE AT 24" ABOVE GRADE.



**LIGHTING POLE BASE DETAIL**  
SCALE: NONE



**CAMERA JUNCTION BOX IN LIGHT POLE**  
SCALE: NONE

**ELECTRICAL SITE PLAN**  
1" = 30'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

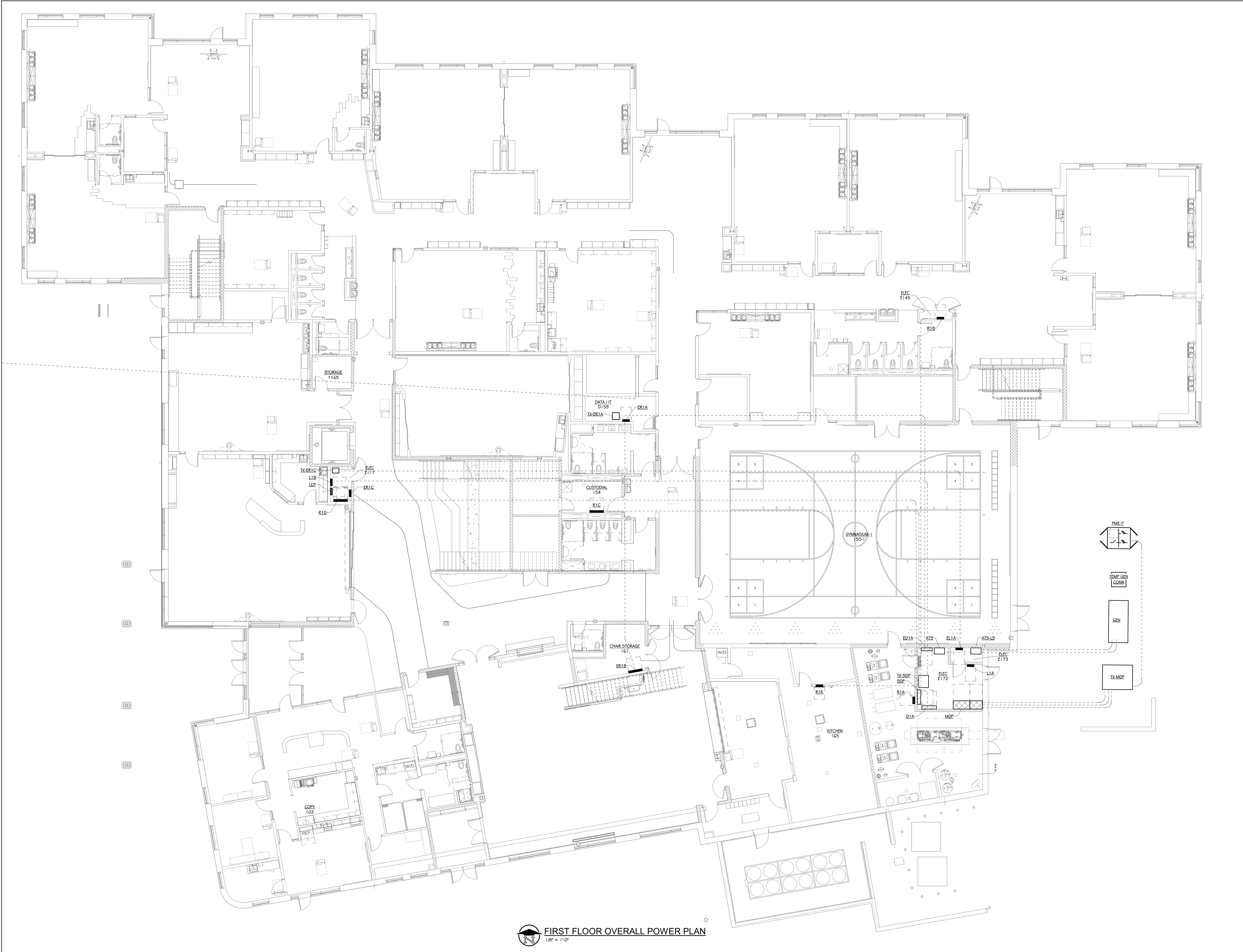
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ELECTRICAL SITE PLAN

DATE  
JUNE 30, 2023

SHEET NUMBER  
ES 101  
21-237.20



FIRST FLOOR OVERALL POWER PLAN  
1/8" = 1'-0"

SHEET TITLE  
FIRST FLOOR OVERALL POWER PLAN

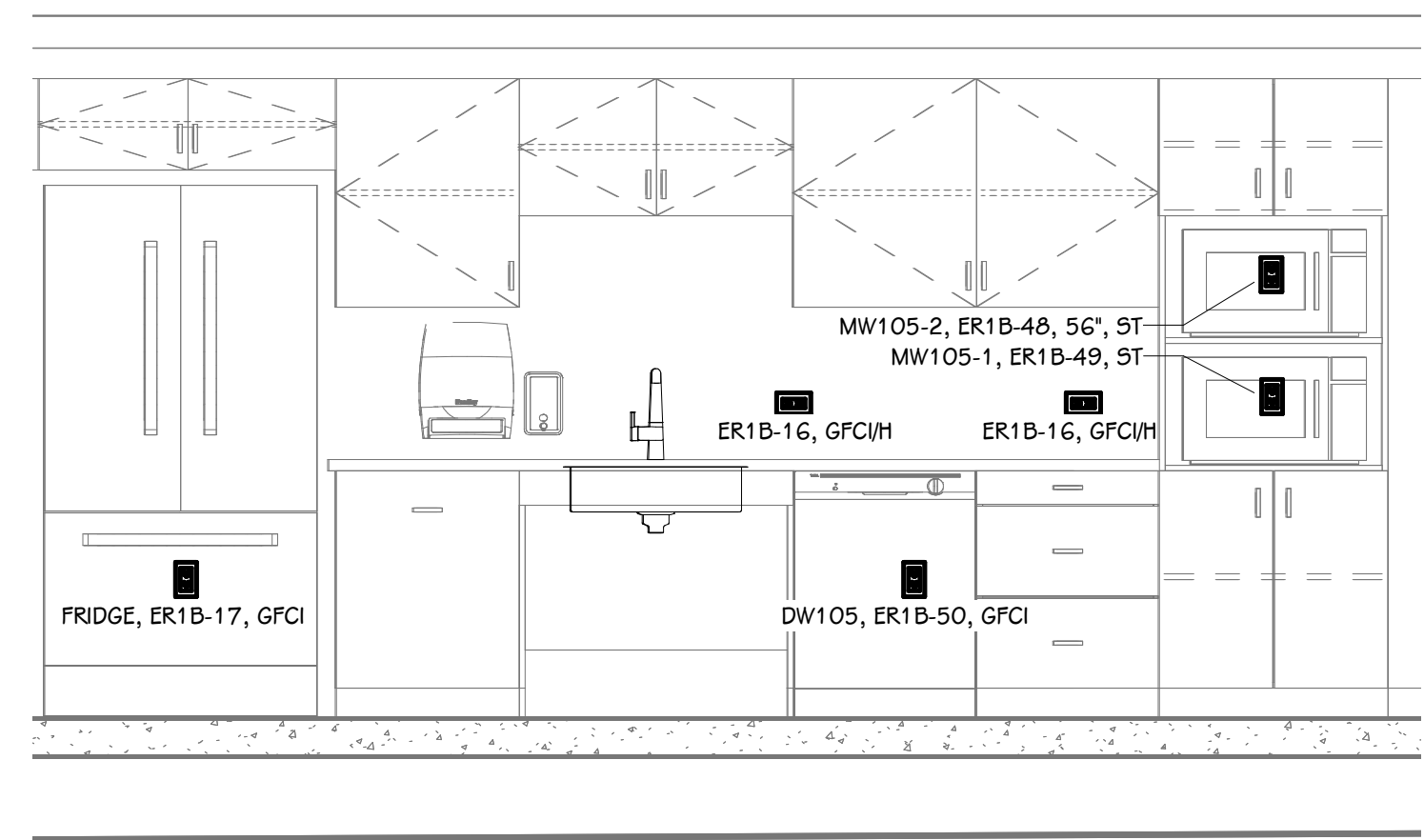
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**E 101**  
21-237.20

OWNER  
PORTAGE PUBLIC SCHOOLS

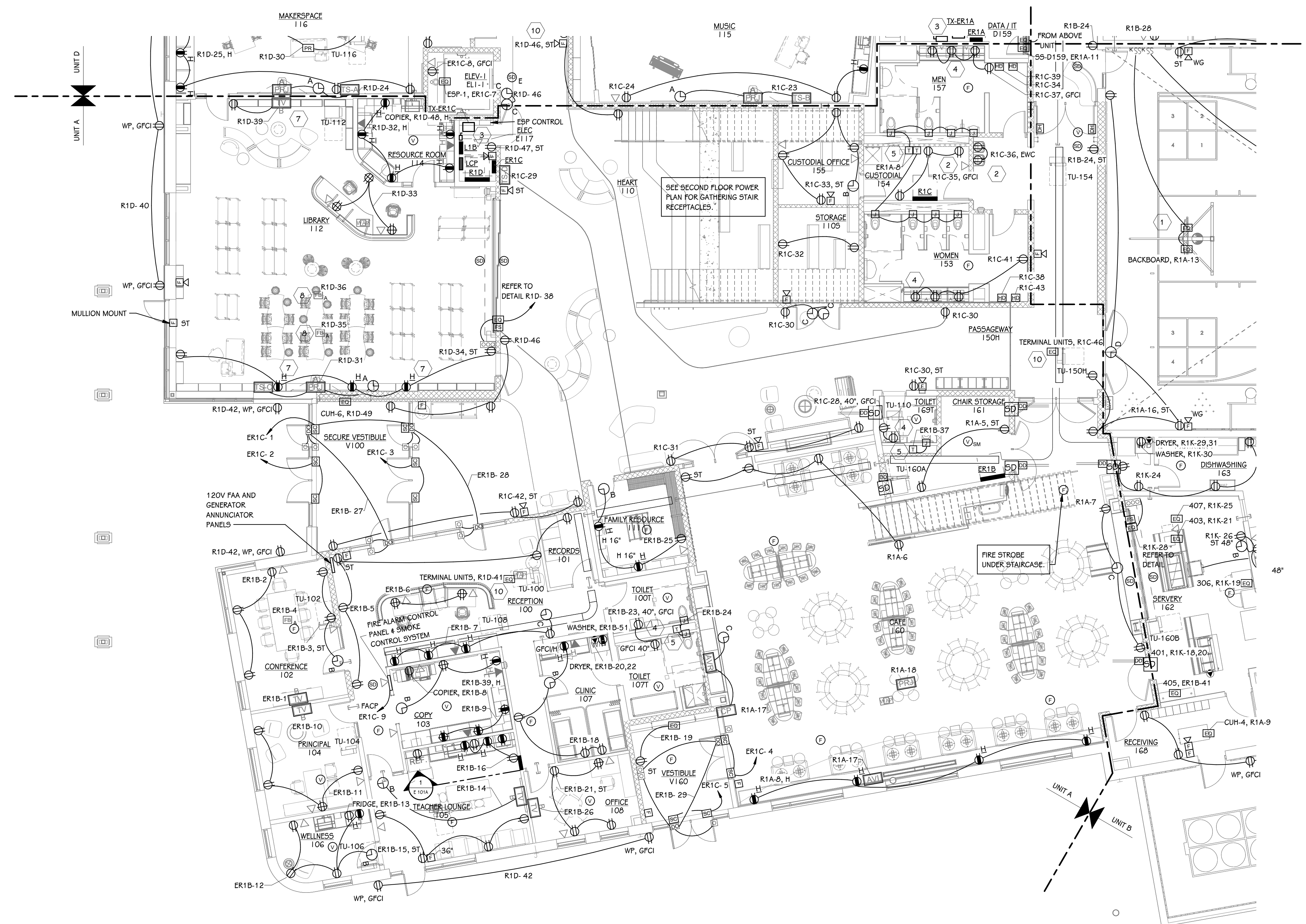
Portage, Michigan

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

ISSUED FOR  
DATE



TEACHER LOUNGE 105 NORTH WALL  
1/2" = 1'-0"



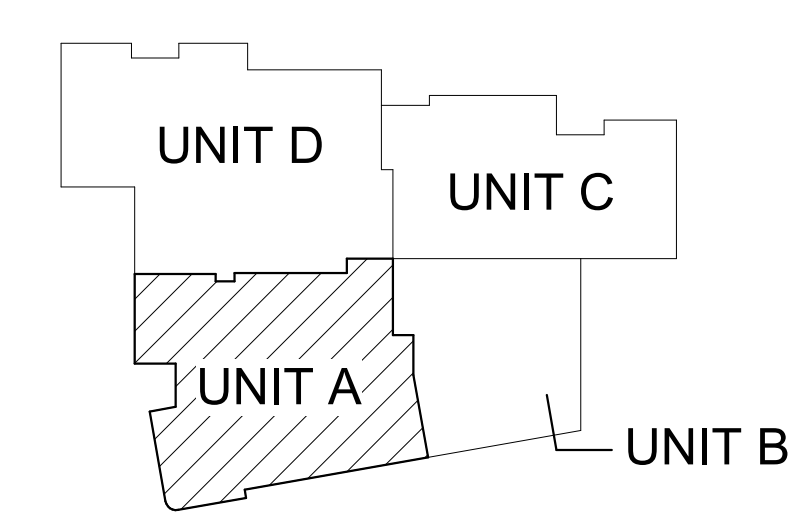
FIRST FLOOR POWER PLAN - UNIT A  
1/2" = 1'-0"

- POWER KEYED NOTES**
- BACKBOARD CONTROLS SHALL HAVE RAISE/LOWER SWITCH AND HEIGHT ADJUSTMENT CONTROLS.
  - EWG OUTLETS TO BE SERVED FROM LOAD SIDE OF GFCI OUTLET OR BREAKER.
  - REFER TO GENERAL NOTES: PROVIDE 4" HOUSEKEEPING PADS FOR MDF, ALL TRANSFORMERS, AND ALL FLOOR MOUNTED EQUIPMENT. PROVIDE FLEXIBLE CONNECTION TO TRANSFORMERS AND SIMILAR EQUIPMENT PER SPECIFICATIONS. AREAS WITHOUT KEYNOTE DO NOT ALLEVIATE CONTRACTOR FROM GENERAL NOTE REQUIREMENTS.
  - CONCEAL SINK SENSOR RECEPTACLES BEHIND LAV SHIELD. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF UNDER SINK RECEPTACLES WITH MECHANICAL PLUMBING CONTRACTOR PRIOR TO INSTALLATION. FEED FROM LOAD SIDE OF ABOVE COUNTER GFCI RECEPTACLE.
  - LOW VOLTAGE TRANSFORMER AND BACKBOXES FOR FLUSH VALVES. COORDINATE EXACT LOCATION AND ADDITIONAL INSTALLATION REQUIREMENTS WITH MECHANICAL CONTRACTOR.
  - ELECTRIC ELEVATOR: CONNECT TO FIRE ALARM SYSTEM AND TELEPHONE SYSTEM WITH DEDICATED PHONE LINE. ALL DISCONNECTS SHALL HAVE AUX CONTACTS. COORDINATE FUSE SIZE FOR ELEVATOR POWER CIRCUIT WITH SHOP DRAWINGS. COORDINATE ALL INSTALLATION REQUIREMENTS WITH ELEVATOR CONTRACTOR. CONCEAL MAIN POWER DISCONNECT IN LOCKABLE CABINET.
  - MOUNT DEVICE(S) IN THE KICK AREA OF CASEWORK; CONCEAL ALL CONDUIT IN CAVITIES OF CASEWORK. COORDINATE WITH GENERAL TRADES.
  - FLOOR BOX SHALL BE WIREMOLD #FEB65-06 PROVIDE WITH TWO DUPLEX RECEPTACLES AND TWO DATA PLATES. PROVIDE DIVIDER AS REQUIRED FOR ONE SIDE. PROVIDE TUNNEL AS REQUIRED. PROVIDE WHITE DEVICES AND WHITE COVER PLATES AS REQUIRED. COVER SHALL BE #FEB61 0B7CGY.
  - IF ALTERNATE No. 3 IS ACCEPTED, PROVIDE 120V/1P CONNECTION TO INLINE PUMP FROM PANEL ER1B.
  - PROVIDE CIRCUIT TO TERMINAL UNIT TRANSFORMERS, TRANSFORMERS AND LV CABLING BY MECHANICAL CONTRACTOR. COORDINATE LOCATION AND QUANTITY WITH MECHANICAL CONTRACTOR.

- FIRE ALARM NOTES:**
- THE FIRE ALARM CONTRACTOR SHALL SUBMIT FINAL FIRE ALARM SHOP DRAWINGS AS A DELEGATED DESIGN SUBMITTAL TO THE AUTHORITY HAVING JURISDICTION
  - FIRE ALARM DEVICES SHOWN ON PLANS ARE INDICATED TO ILLUSTRATE GENERAL DESIGN INTENT TO ASSIST THE CONTRACTOR IN SCOPING, PRICING, AND COORDINATION WITH OTHER SYSTEMS
  - FIRE ALARM DEVICES SHOWN ARE NOT INTENDED TO REPRESENT A COMPLETE ENGINEERED FIRE ALARM DESIGN
  - THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL NECESSARY DEVICES AND ACCESSORIES FOR A COMPLETE SYSTEM, COMPLIANT WITH APPLICABLE CODES AND JURISDICTIONAL REQUIREMENTS, EVEN IF SUCH DEVICES ARE NOT INDICATED IN THESE DOCUMENTS
  - THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH MECHANICAL CONTRACTOR AND ALL OTHER TRADES NECESSARY FOR DOOR HOLDS, SMOKE DAMPERS, DUCT DETECTORS, FLOW / TAMPER SWITCHES AND ANY OTHER DEVICES

NOTE:  
REFER TO TECHNOLOGY DRAWINGS AND MECHANICAL DRAWINGS FOR MORE SCOPE OF CONDUIT, ROUGH-IN LOCATIONS AND DETAILS THAT MAY NOT BE INDICATED ON THESE PLANS.

**HAVERHILL ELEMENTARY**



KEY PLAN  
SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

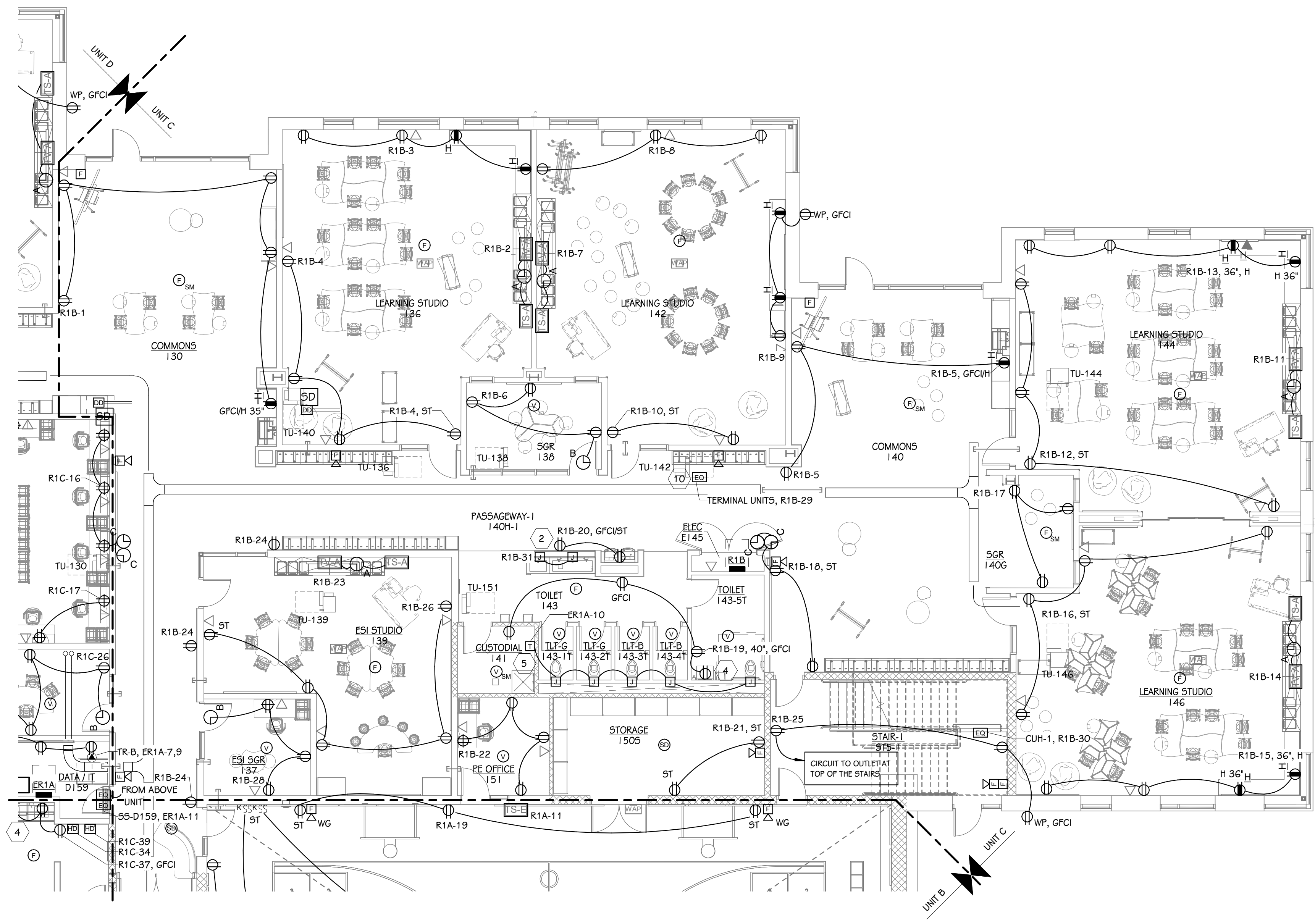
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
FIRST FLOOR POWER PLAN - UNIT A

SHEET NUMBER  
E 101A  
DATE  
JUNE 30, 2023  
21-237.20





FIRST FLOOR POWER PLAN - UNIT C  
1/8" = 1'-0"

- ELECTRICAL KEYED NOTES**
- BACKBOARD CONTROLS SHALL HAVE RAISE/LOWER SWITCH AND HEIGHT ADJUSTMENT CONTROLS.
  - EWV OUTLETS TO BE SERVED FROM LOAD SIDE OF GFCI OUTLET OR BREAKER.
  - REFER TO GENERAL NOTES: PROVIDE 4" HOUSEKEEPING PADS FOR MDF, ALL TRANSFORMERS, AND ALL FLOOR MOUNTED EQUIPMENT. PROVIDE FLEXIBLE CONNECTION TO TRANSFORMERS AND SIMILAR EQUIPMENT PER SPECIFICATIONS. AREAS WITHOUT KEYNOTE DO NOT ALLEVIATE CONTRACTOR FROM GENERAL NOTE REQUIREMENTS.
  - CONCEAL SINK SENSOR RECEPTACLES BEHIND LAV SHIELD. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF UNDER SINK RECEPTACLES WITH MECHANICAL PLUMBING CONTRACTOR PRIOR TO INSTALLATION. FEED FROM LOAD SIDE OF ABOVE COUNTER GFCI RECEPTACLE.
  - LOW VOLTAGE TRANSFORMER AND BACKBOXES FOR FLUSH VALVES. COORDINATE EXACT LOCATION AND ADDITIONAL INSTALLATION REQUIREMENTS WITH MECHANICAL CONTRACTOR.
  - ELECTRIC ELEVATOR: CONNECT TO FIRE ALARM SYSTEM AND TELEPHONE SYSTEM WITH DEDICATED PHONE LINE. ALL DISCONNECTS SHALL HAVE AUX CONTACTS. COORDINATE FUSE SIZE FOR ELEVATOR POWER CIRCUIT WITH SHOP DRAWINGS. COORDINATE ALL INSTALLATION REQUIREMENTS WITH ELEVATOR CONTRACTOR. CONCEAL MAIN POWER DISCONNECT IN LOCKABLE CABINET.
  - MOUNT DEVICE(S) IN THE KICK AREA OF CASEWORK; CONCEAL ALL CONDUIT IN CAVITIES OF CASEWORK. COORDINATE WITH GENERAL TRADES.
  - FLOOR BOX SHALL BE WIREMOLD #EFB65-06 PROVIDE WITH TWO DUPLEX RECEPTACLES AND TWO DATA PLATES. PROVIDE DIVIDER AS REQUIRED FOR ONE SIDE. PROVIDE TUNNEL AS REQUIRED. PROVIDE WHITE DEVICES AND WHITE COVER PLATES AS REQUIRED. COVER SHALL BE #EFB61 08TCGY.
  - IF ALTERNATE No. 3 IS ACCEPTED, PROVIDE 120V/1P CONNECTION TO INLINE PUMP FROM PANEL ER1B.
  - PROVIDE CIRCUIT TO TERMINAL UNIT TRANSFORMERS, TRANSFORMERS AND LV CABLING BY MECHANICAL CONTRACTOR. COORDINATE LOCATION AND QUANTITY WITH MECHANICAL CONTRACTOR.

**FIRE ALARM NOTES:**

THE FIRE ALARM CONTRACTOR SHALL SUBMIT FINAL FIRE ALARM SHOP DRAWINGS AS A DELEGATED DESIGN SUBMITTAL TO THE AUTHORITY HAVING JURISDICTION

FIRE ALARM DEVICES SHOWN ON PLANS ARE INDICATED TO ILLUSTRATE GENERAL DESIGN INTENT TO ASSIST THE CONTRACTOR IN SCOPING, PRICING, AND COORDINATION WITH OTHER SYSTEMS

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THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH MECHANICAL CONTRACTOR AND ALL OTHER TRADES NECESSARY FOR DOOR HOLDS, SMOKE DAMPERS, DUCT DETECTORS, FLOW / TAMPER SWITCHES AND ANY OTHER DEVICES

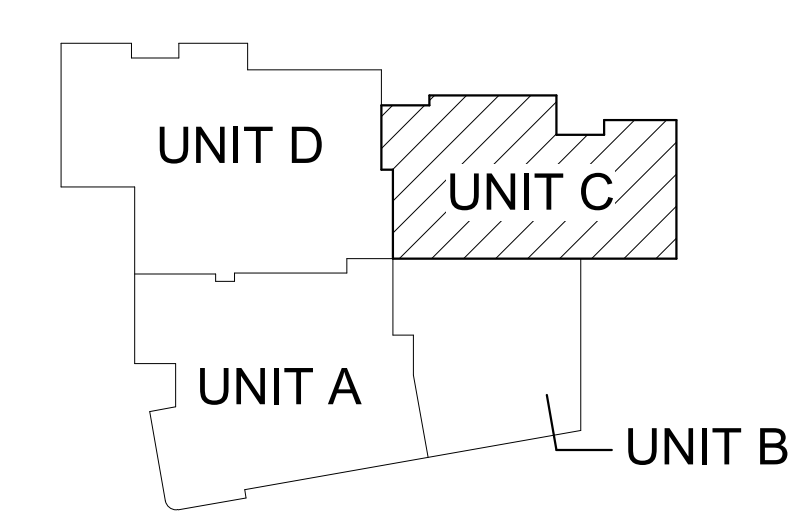
ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

HAVERHILL ELEMENTARY

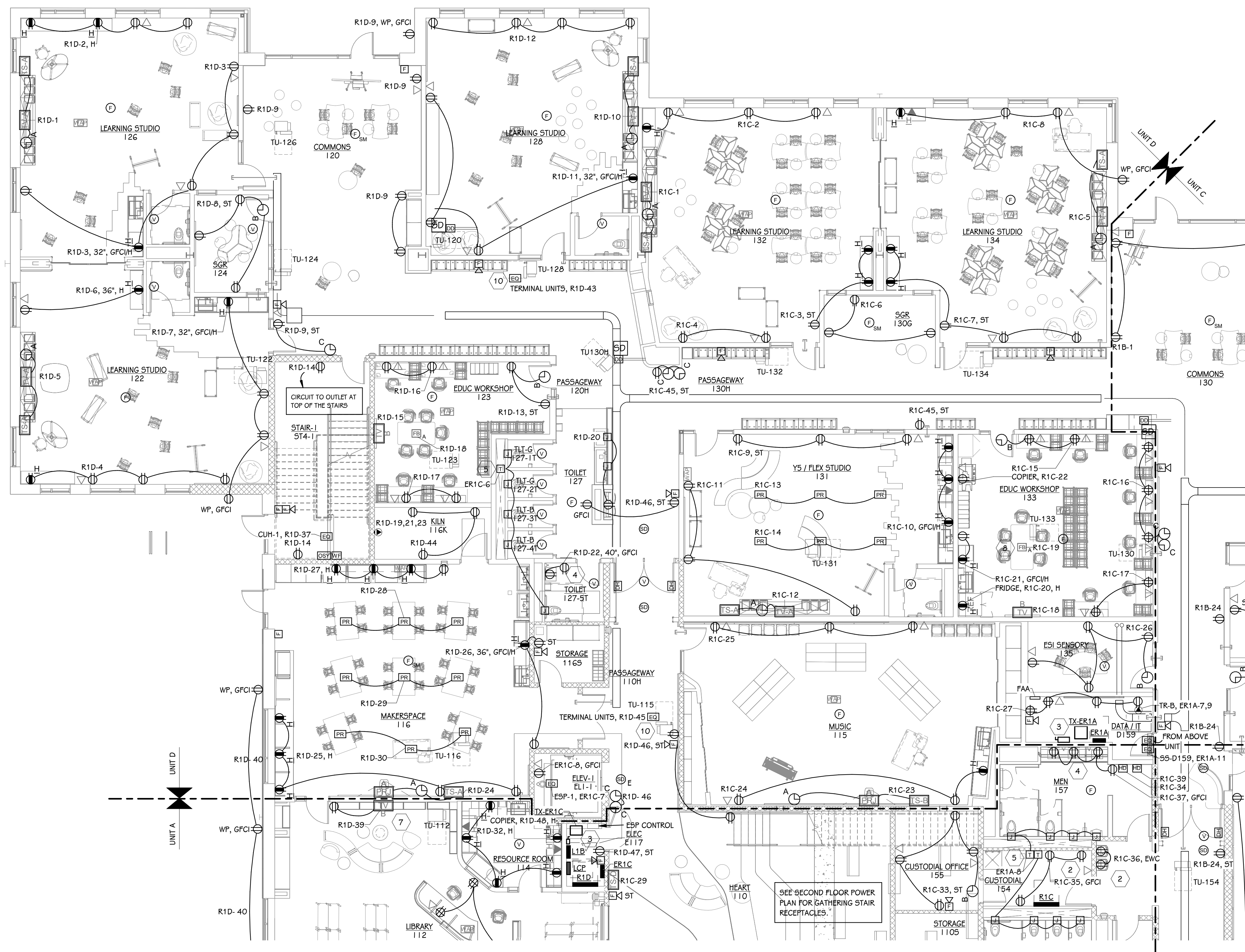


TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

SHEET TITLE  
FIRST FLOOR POWER PLAN - UNIT C

SHEET NUMBER  
**E 101C**  
21-237.20

DATE  
JUNE 30, 2023



**FIRST FLOOR POWER PLAN - UNIT D**  
1/8" = 1'-0"

- ELECTRICAL KEYED NOTES**
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  - EWV OUTLETS TO BE SERVED FROM LOAD SIDE OF GFCI OUTLET OR BREAKER.
  - REFER TO GENERAL NOTES: PROVIDE 4" HOUSEKEEPING PADS FOR MDF, ALL TRANSFORMERS, AND ALL FLOOR MOUNTED EQUIPMENT. PROVIDE FLEXIBLE CONNECTION TO TRANSFORMERS AND SIMILAR EQUIPMENT PER SPECIFICATIONS. AREAS WITHOUT KEYNOTE DO NOT ALLEVIATE CONTRACTOR FROM GENERAL NOTE REQUIREMENTS.
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  - MOUNT DEVICE(S) IN THE KICK AREA OF CASEWORK; CONCEAL ALL CONDUIT IN CAVITIES OF CASEWORK. COORDINATE WITH GENERAL TRADES.
  - FLOOR BOX SHALL BE WIREMOLD #EFB85-06 PROVIDE WITH TWO DUPLEX RECEPTACLES AND TWO DATA PLATES. PROVIDE DIVIDER AS REQUIRED FOR ONE SIDE. PROVIDE TUNNEL AS REQUIRED. PROVIDE WHITE DEVICES AND WHITE COVER PLATES AS REQUIRED. COVER SHALL BE #EFB61 0B7CGY.
  - IF ALTERNATE No. 3 IS ACCEPTED, PROVIDE 120V/1P CONNECTION TO INLINE PUMP FROM PANEL ER1B.
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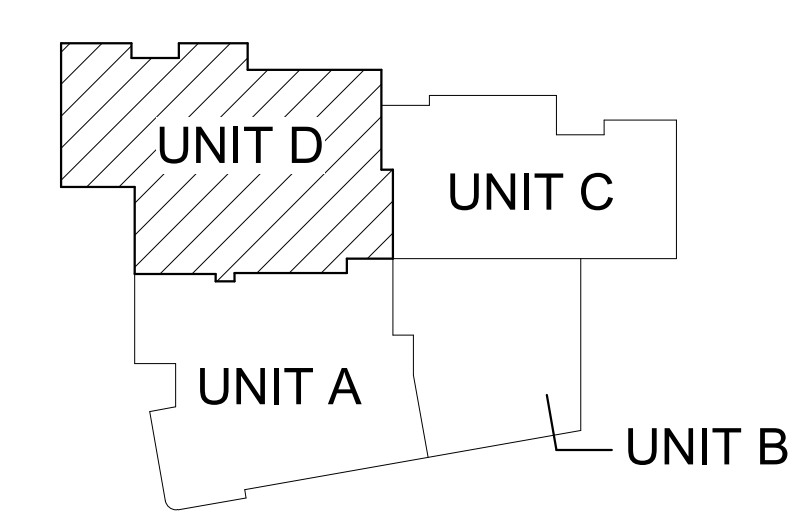
ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

**HAVERHILL ELEMENTARY**

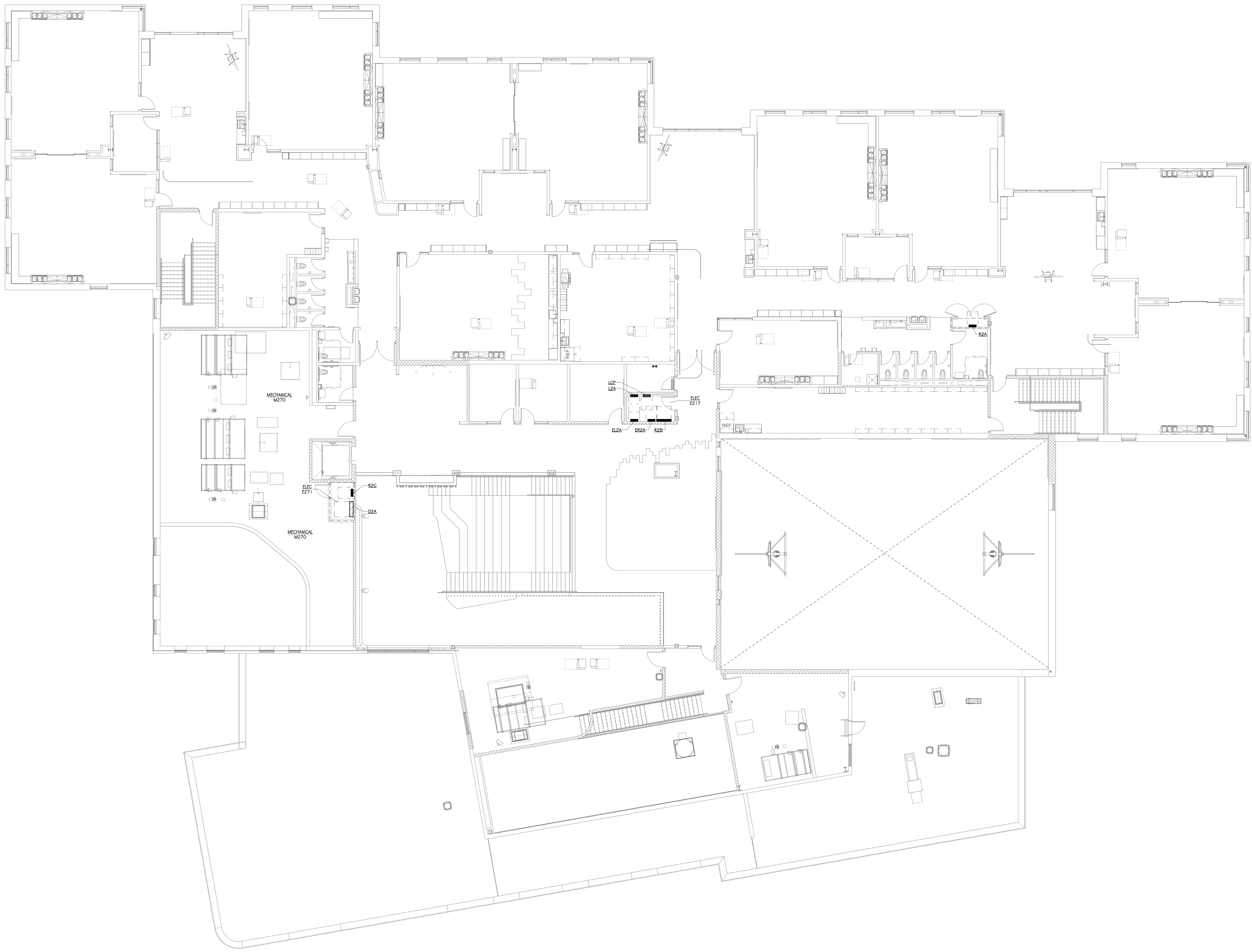


**KEY PLAN**  
SCALE: NO SCALE

SHEET TITLE  
FIRST FLOOR POWER PLAN - UNIT D

SHEET NUMBER  
**E 101D**  
21-237.20

DATE  
JUNE 30, 2023




**SECOND FLOOR OVERALL POWER PLAN**  
 1/8" = 1'-0"

SHEET TITLE  
**SECOND FLOOR OVERALL POWER PLAN**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION**

ISSUED FOR

SHEET NUMBER  
**E 102**  
 21-237.20

DATE  
**JUNE 30, 2023**

Portage, Michigan

DATE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR POWER PLAN - UNIT A

DATE  
JUNE 30, 2023

SHEET NUMBER  
**E 102A**  
21-237.20

**ELECTRICAL KEYED NOTES**

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- EWV OUTLETS TO BE SERVED FROM LOAD SIDE OF GFCI OUTLET OR BREAKER.
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- MOUNT DEVICE(S) IN THE KICK AREA OF CASEWORK; CONCEAL ALL CONDUIT IN CAVITIES OF CASEWORK. COORDINATE WITH GENERAL TRADES.
- FLOOR BOX SHALL BE WIREMOLD #EPB85-0G PROVIDE WITH TWO DUPLEX RECEPTACLES AND TWO DATA PLATES. PROVIDE DIVIDER AS REQUIRED FOR ONE SIDE. PROVIDE TUNNEL AS REQUIRED. PROVIDE WHITE DEVICES AND WHITE COVER PLATES AS REQUIRED. COVER SHALL BE #EPB61 0B7CGY.
- IF ALTERNATE No. 3 IS ACCEPTED, PROVIDE 120V/1P CONNECTION TO INLINE PUMP FROM PANEL ER1B.
- PROVIDE CIRCUIT TO TERMINAL UNIT TRANSFORMERS, TRANSFORMERS AND LV CABLING BY MECHANICAL CONTRACTOR. COORDINATE LOCATION AND QUANTITY WITH MECHANICAL CONTRACTOR.

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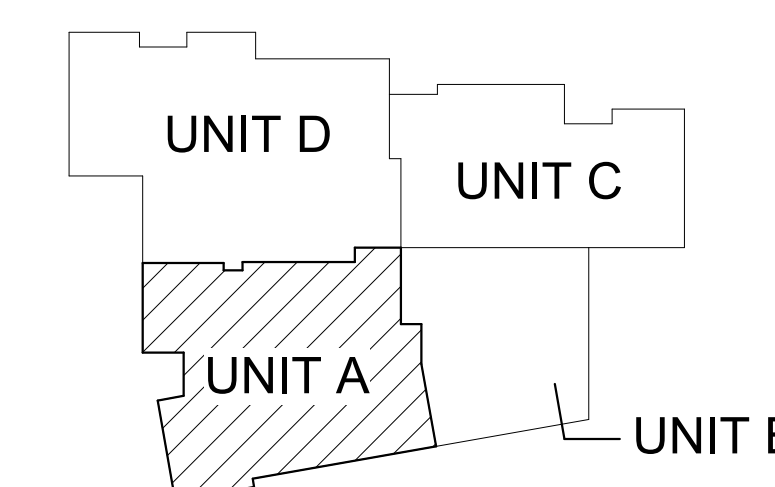
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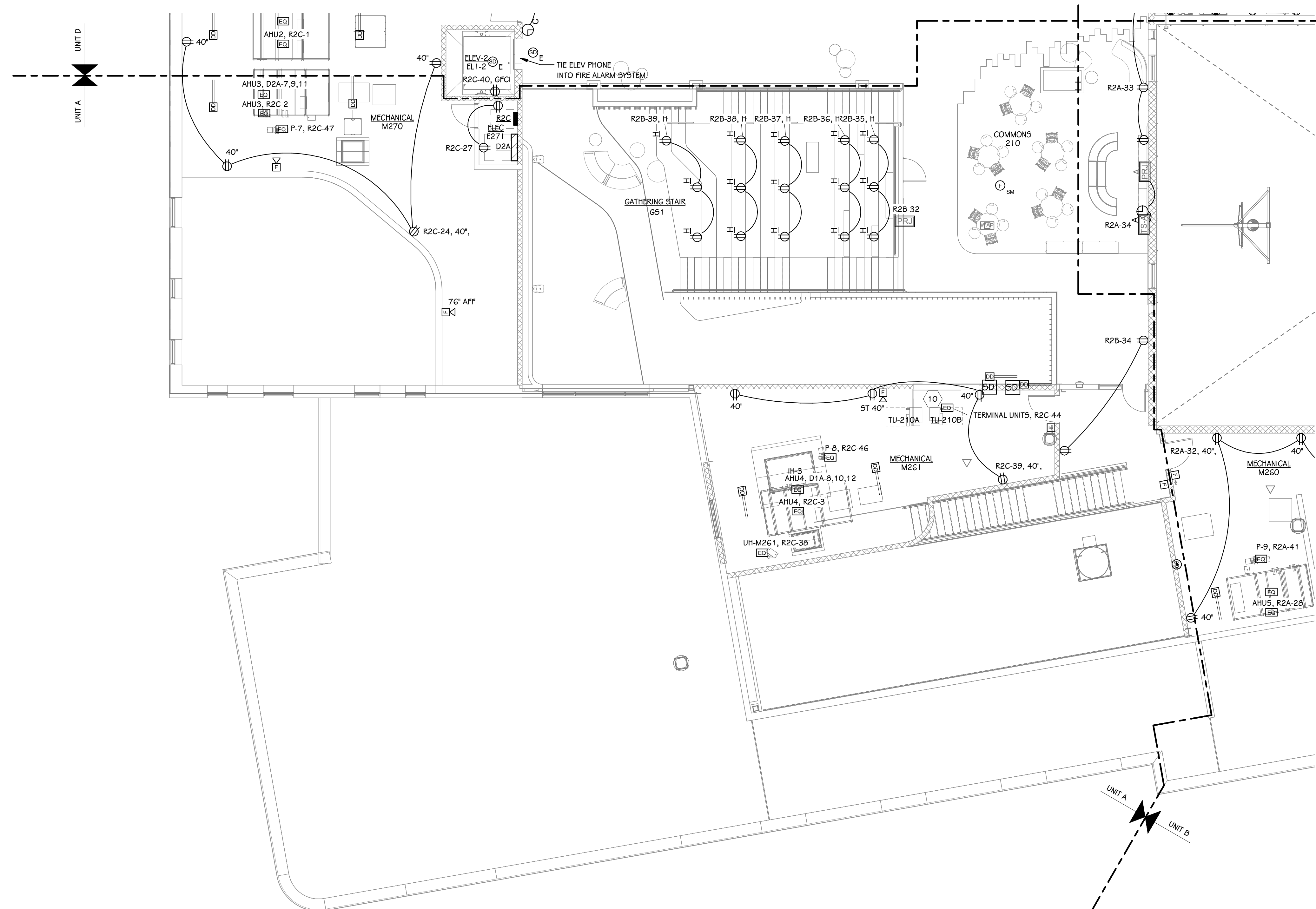
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NOTE:  
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**HAVERHILL ELEMENTARY**

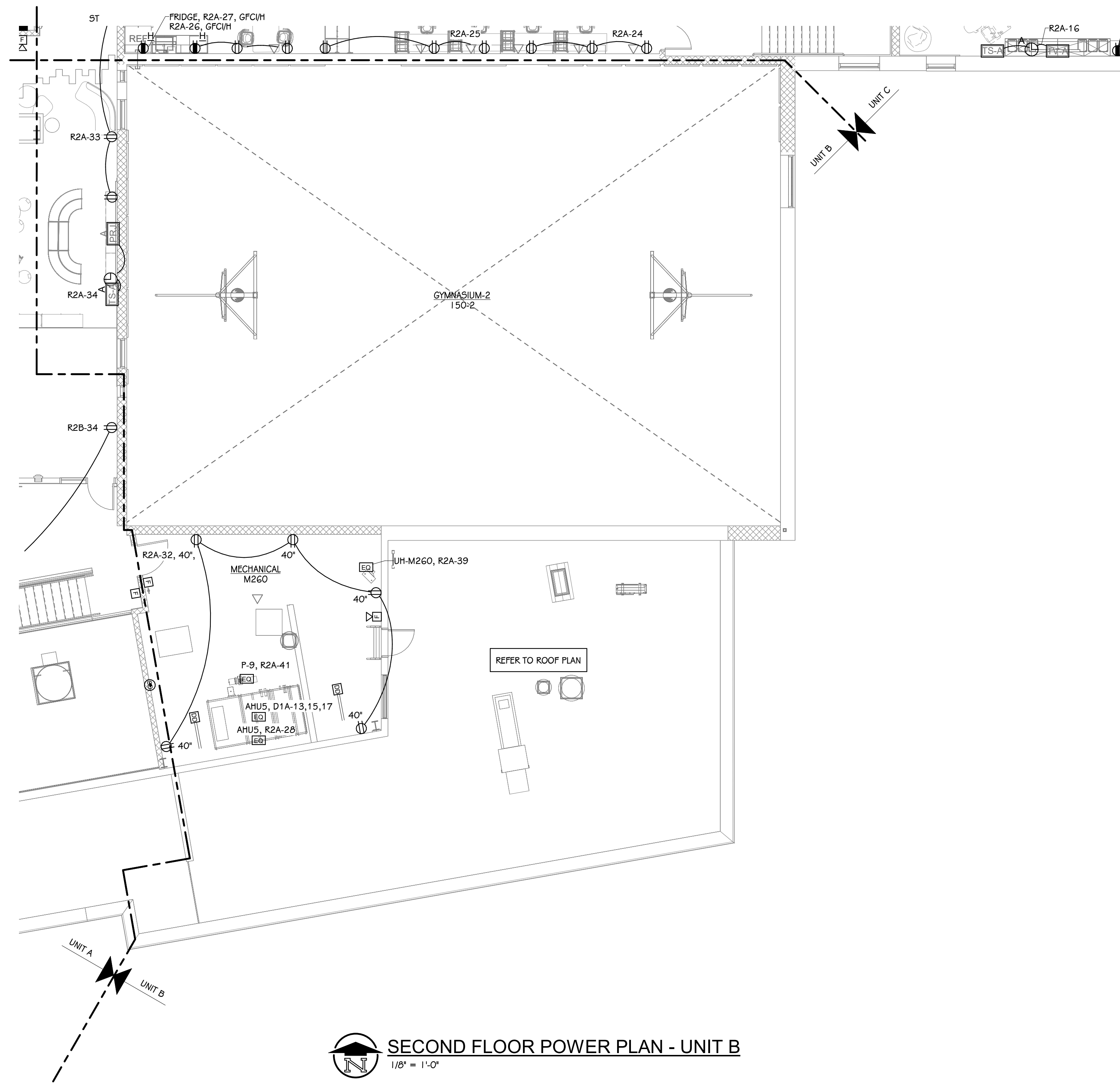


TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE



**SECOND FLOOR POWER PLAN - UNIT A**  
1/8" = 1'-0"





SECOND FLOOR POWER PLAN - UNIT B  
1/8" = 1'-0"

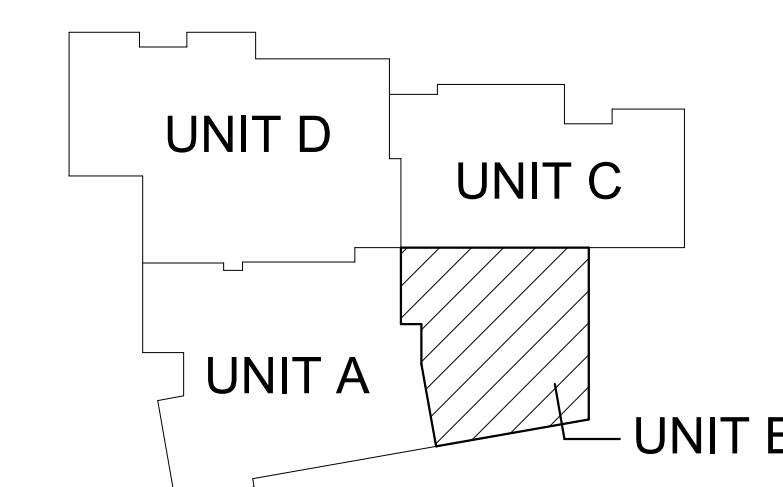
**ELECTRICAL KEYED NOTES**

- 1 BACKBOARD CONTROLS SHALL HAVE RAISE/LOWER SWITCH AND HEIGHT ADJUSTMENT CONTROLS.
- 2 EWC OUTLETS TO BE SERVED FROM LOAD SIDE OF GFCI OUTLET OR BREAKER.
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- 9 IF ALTERNATE No. 3 IS ACCEPTED, PROVIDE 120V/1P CONNECTION TO IN LINE PUMP FROM PANTRY ER1B.  
**FIRE ALARM NOTES:**
- 10 PROVIDE CIRCUIT TO TERMINAL UNITS TRANSFORMERS, TRANSFORMERS AND WIRING IN MECHANICAL CONTRACTOR SHOP DRAWINGS. COORDINATE LOCATION AND QUANTITY WITH MECHANICAL CONTRACTOR. DEVICES SHOWN ON PLANS ARE INDICATED TO ILLUSTRATE GENERAL DESIGN INTENT TO ASSIST THE CONTRACTOR IN SCOPING, PRICING, AND COORDINATION WITH OTHER SYSTEMS.

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**HAVERHILL ELEMENTARY**



TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR POWER PLAN - UNIT B

DATE  
JUNE 30, 2023

SHEET NUMBER  
**E 102B**  
21-237.20

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR POWER PLAN - UNIT C

DATE  
JUNE 30, 2023

SHEET NUMBER  
**E 102C**  
21-237.20

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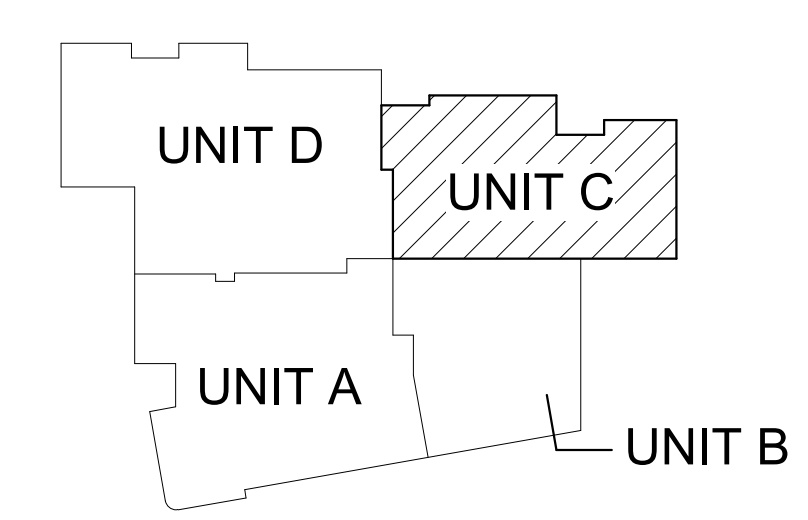
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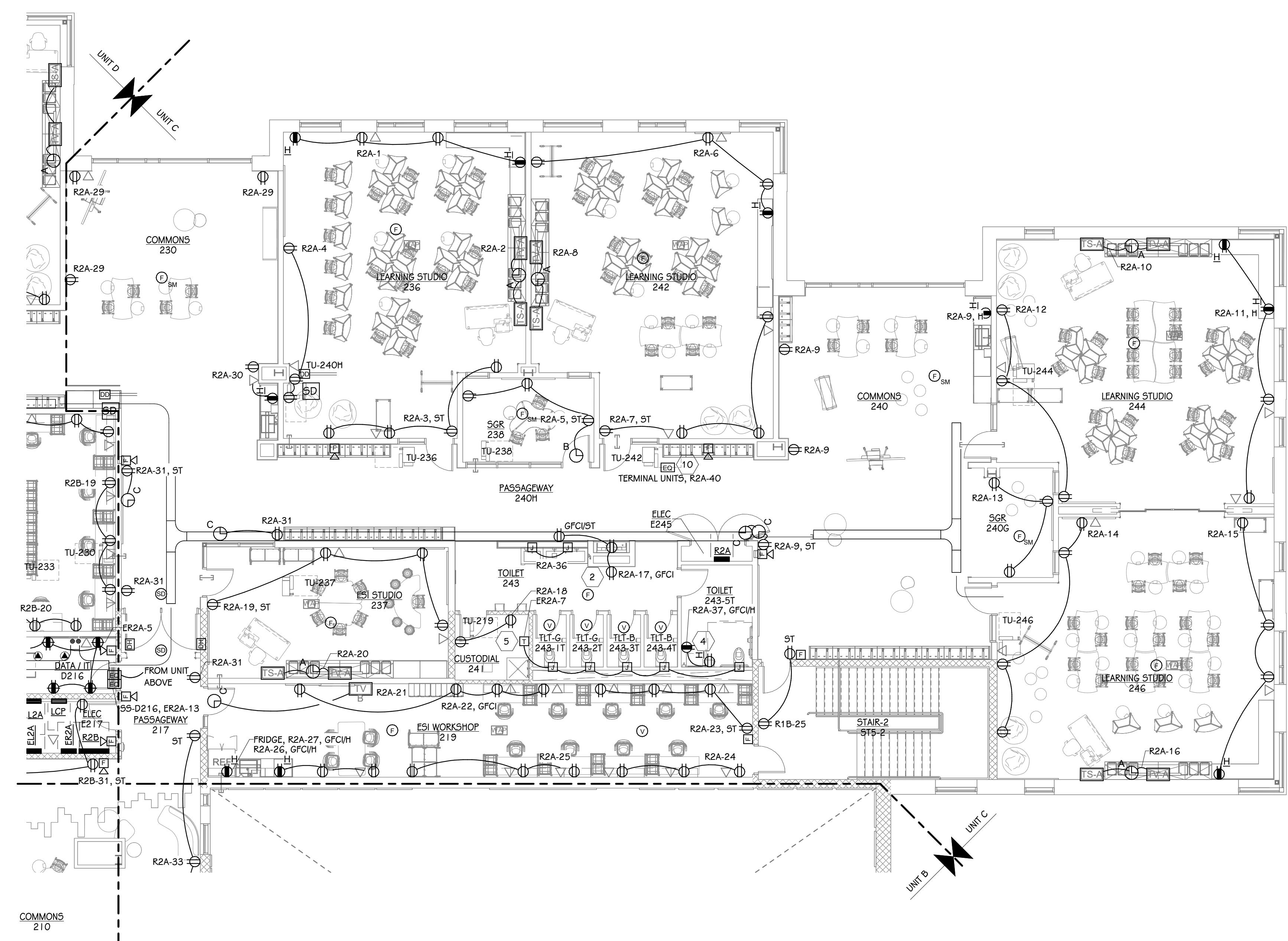
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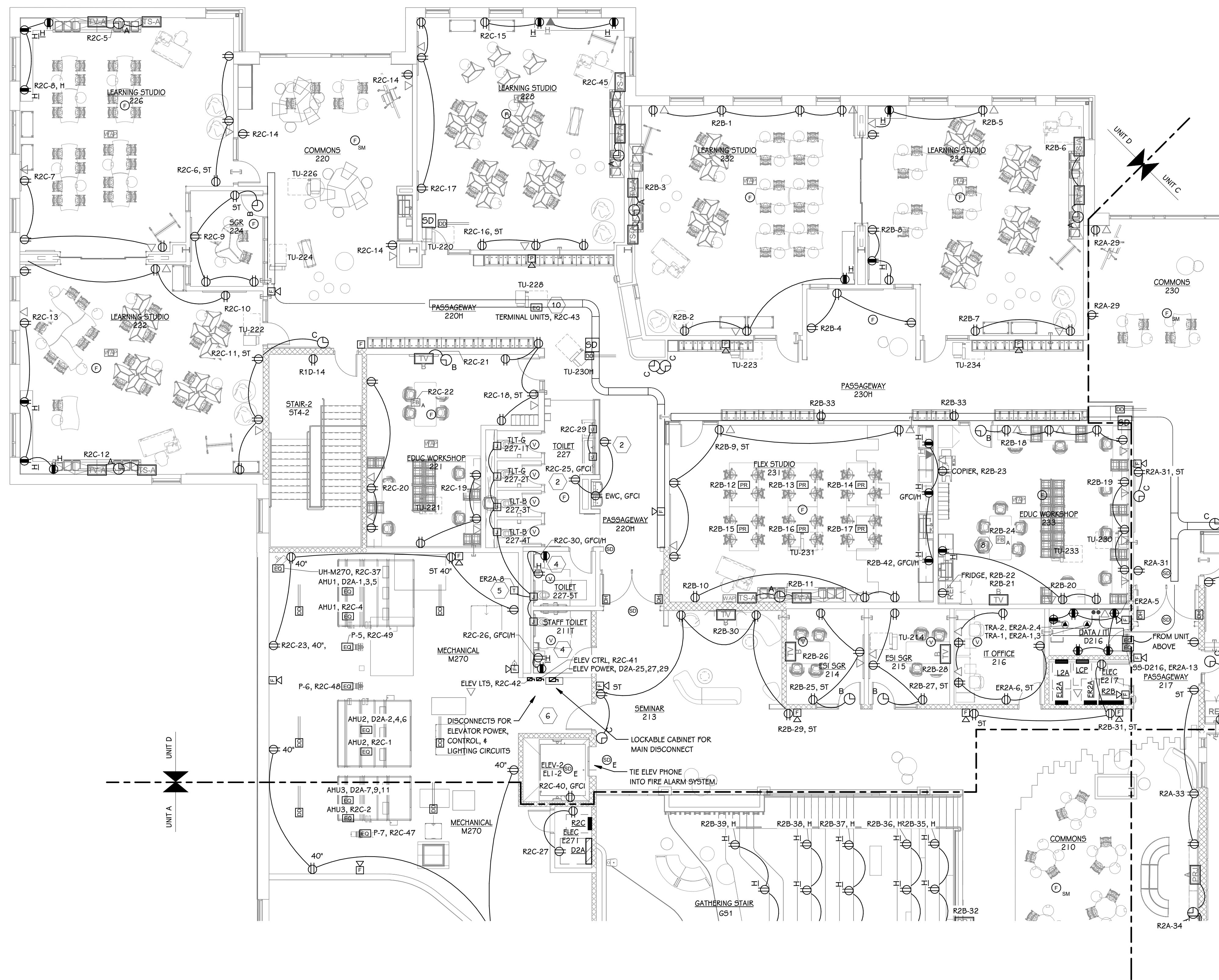
**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE



**SECOND FLOOR POWER PLAN - UNIT C**  
1/8" = 1'-0"



**SECOND FLOOR POWER PLAN - UNIT D**  
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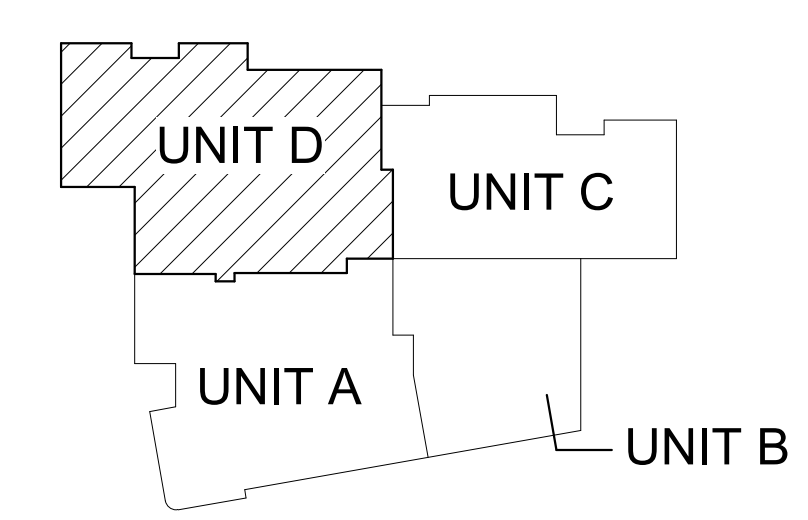
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**HAVERHILL ELEMENTARY**



**KEY PLAN**  
SCALE: NO SCALE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ROOF POWER PLAN

DATE  
JUNE 30, 2023

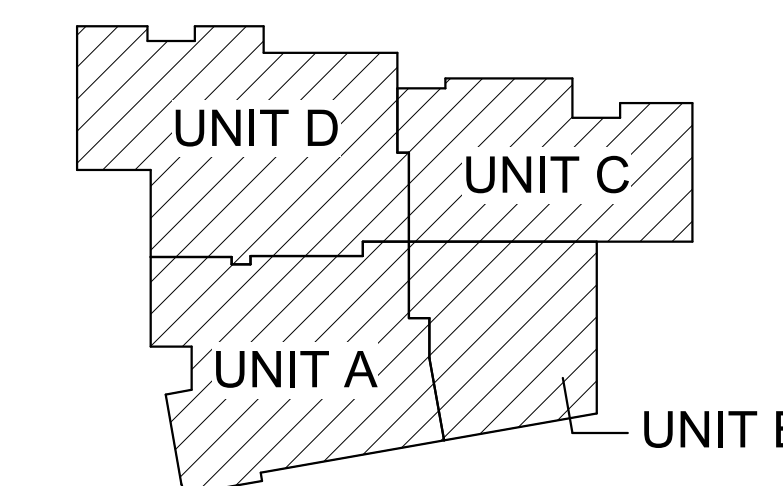
SHEET NUMBER  
**E 150**  
21-237.20

**ELECTRICAL KEYED NOTES**

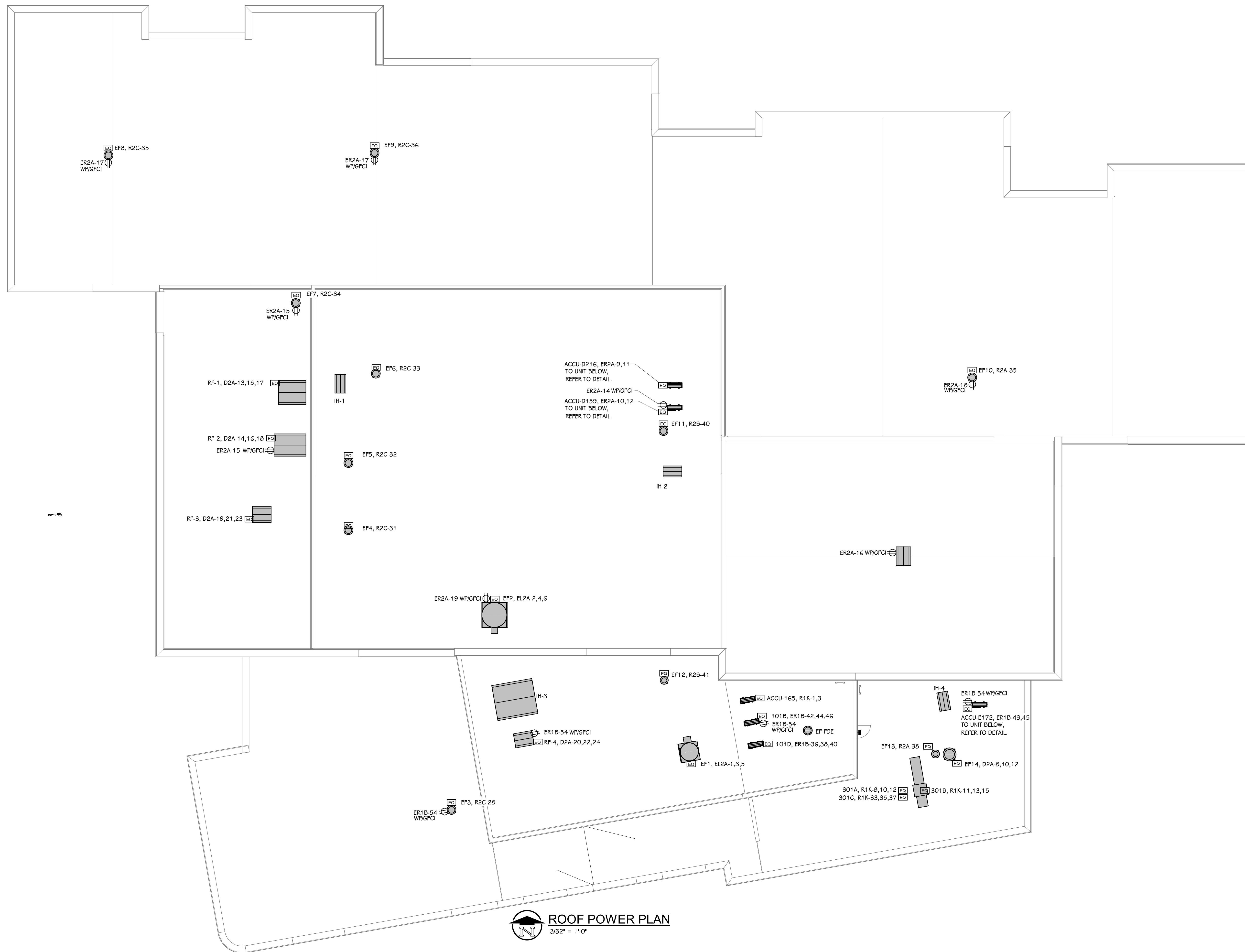
- 1 BACKBOARD CONTROLS SHALL HAVE RAISE/LOWER SWITCH AND HEIGHT ADJUSTMENT CONTROLS.
- 2 EWC OUTLETS TO BE SERVED FROM LOAD SIDE OF GFCI OUTLET OR BREAKER.
- 3 REFER TO GENERAL NOTES: PROVIDE 4" HOUSEKEEPING PADS FOR MDF, ALL TRANSFORMERS, AND ALL FLOOR MOUNTED EQUIPMENT. PROVIDE FLEXIBLE CONNECTION TO TRANSFORMERS AND SIMILAR EQUIPMENT PER SPECIFICATIONS. AREAS WITHOUT KEYNOTE DO NOT ALLEVIATE CONTRACTOR FROM GENERAL NOTE REQUIREMENTS.
- 4 CONCEAL SINK SENSOR RECEPTACLES BEHIND LAV SHIELD. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF UNDER SINK RECEPTACLES WITH MECHANICAL PLUMBING CONTRACTOR PRIOR TO INSTALLATION. FEED FROM LOAD SIDE OF ABOVE COUNTER GFCI RECEPTACLE.
- 5 LOW VOLTAGE TRANSFORMER AND BACKBOXES FOR FLUSH VALVES. COORDINATE EXACT LOCATION AND ADDITIONAL INSTALLATION REQUIREMENTS WITH MECHANICAL CONTRACTOR.
- 6 ELECTRIC ELEVATOR; CONNECT TO FIRE ALARM SYSTEM AND TELEPHONE SYSTEM WITH DEDICATED PHONE LINE. ALL DISCONNECTS SHALL HAVE AUX CONTACTS. COORDINATE FUSE SIZE FOR ELEVATOR POWER CIRCUIT WITH SHOP DRAWINGS. COORDINATE ALL INSTALLATION REQUIREMENTS WITH ELEVATOR CONTRACTOR. CONCEAL MAIN POWER DISCONNECT IN LOCKABLE CABINET.
- 7 MOUNT DEVICE(S) IN THE KICK AREA OF CASEWORK; CONCEAL ALL CONDUIT IN CAVITIES OF CASEWORK. COORDINATE WITH GENERAL TRADES.
- 8 FLOOR BOX SHALL BE WIREMOLD #EFB85-06 PROVIDE WITH TWO DUPLEX RECEPTACLES AND TWO DATA PLATES. PROVIDE DIVIDER AS REQUIRED FOR ONE SIDE. PROVIDE TUNNEL AS REQUIRED. PROVIDE WHITE DEVICES AND WHITE COVER PLATES AS REQUIRED. COVER SHALL BE #EFB61 08TCGY.
- 9 IF ALTERNATE No. 3 IS ACCEPTED, PROVIDE 120V/1P CONNECTION TO INLINE PUMP FROM PANEL ER1B.
- 10 PROVIDE CIRCUIT TO TERMINAL UNIT TRANSFORMERS, TRANSFORMERS AND LV CABLING BY MECHANICAL CONTRACTOR. COORDINATE LOCATION AND QUANTITY WITH MECHANICAL CONTRACTOR.

NOTE:  
REFER TO TECHNOLOGY DRAWINGS AND MECHANICAL DRAWINGS FOR MORE SCOPE OF CONDUIT, ROUGH-IN LOCATIONS AND DETAILS THAT MAY NOT BE INDICATED ON THESE PLANS.

**HAVERHILL ELEMENTARY**

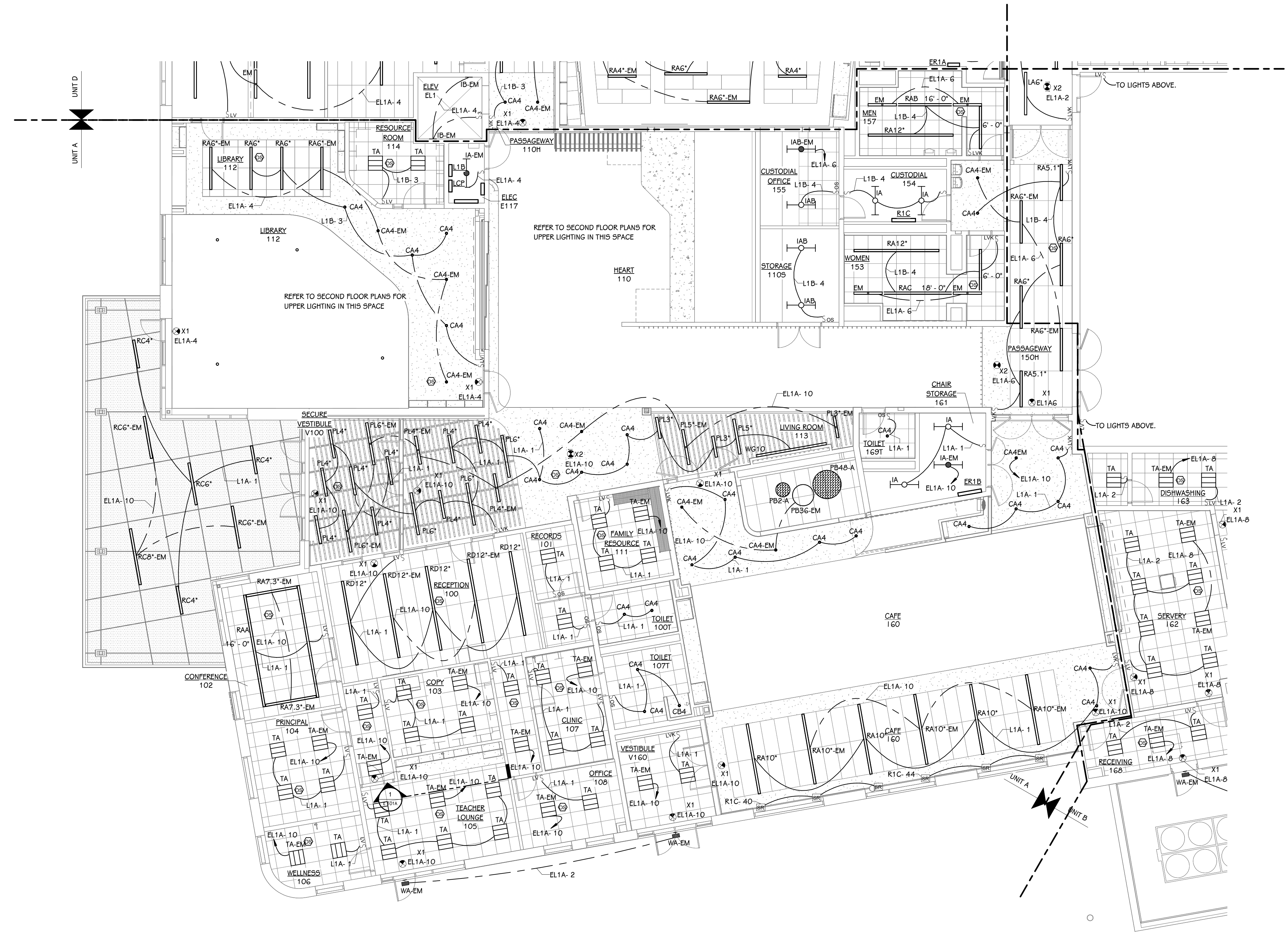


TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE

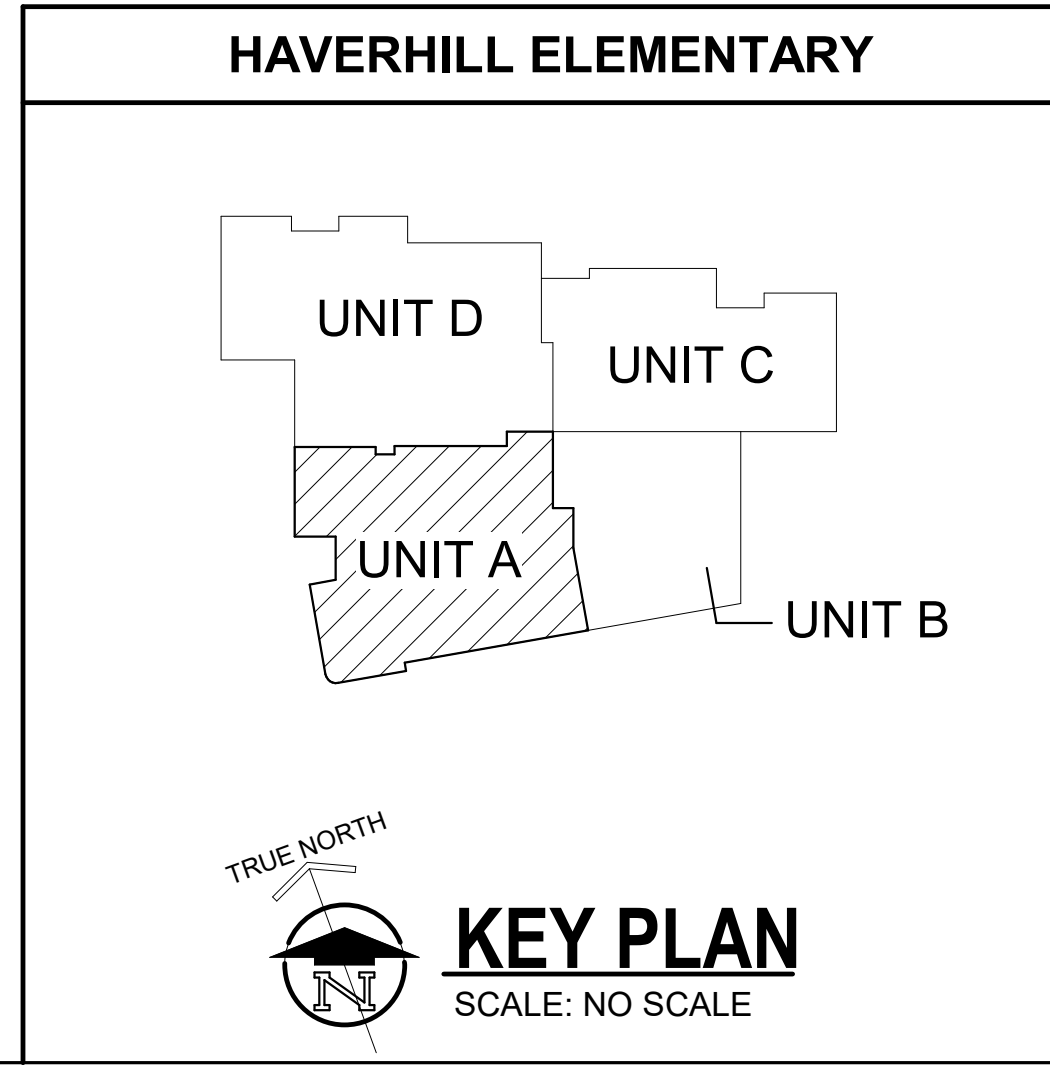


**ROOF POWER PLAN**  
3/32" = 1'-0"

- GENERAL ELECTRICAL NOTES**
- 1 ALL OCCUPANCY SENSORS AND PHOTOCELLS MOUNTED IN THE SAME ROOM SHALL BE CONNECTED TOGETHER AND OPERATE AS ONE SYSTEM. DAYLIGHT HARVESTING SHALL BE SELF CONTAINED WITHIN EACH ROOM AND SHALL BE FIELD ADJUSTED WITH ENGINEER. MANUFACTURER SHALL PROVIDE FLOOR PLANS DURING SHOP DRAWING PHASE SHOWING EXACT LOCATIONS AND QUANTITIES AS REQUIRED FOR A COMPLETE SYSTEM.
  - 2 ALL OCCUPANCY SENSOR WIRING SHALL BE CONCEALED WITHIN CONDUIT WHERE EXPOSED. NO LOW VOLTAGE WIRING SHALL BE EXPOSED.
  - 3 ALL CONDUITS SHALL RUN AS TIGHT TO DECK AS POSSIBLE. CONDUITS SHALL BE RUN IN A NEAT MANNER. MAINTAIN THE SAME SPACING WHEN CONDUITS ARE RUN TOGETHER. CONCEAL JUNCTION BOXES OVER LAY-IN CEILING AND USE EMT DROPS DOWN TO CLOUDS. LOCATE CONDUIT DROPS TO CLOUDS AND CEILING ELEMENTS IN LEAST VISIBLE LOCATION. NO MC-CABLE TO LIGHT FIXTURES SHALL BE VISIBLE FROM ANY ANGLE.
  - 4 COORDINATE LIGHTING RUNS FOR LINEAR FIXTURES ALL TRADES. NO PIPES, DUCTS, CONDUIT, CABLE TRAY OR ANY OTHER SYSTEMS SHALL BE ROUTED UNDER LIGHTS.



**FIRST FLOOR LIGHTING PLAN - UNIT A**  
1/8" = 1'-0"



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

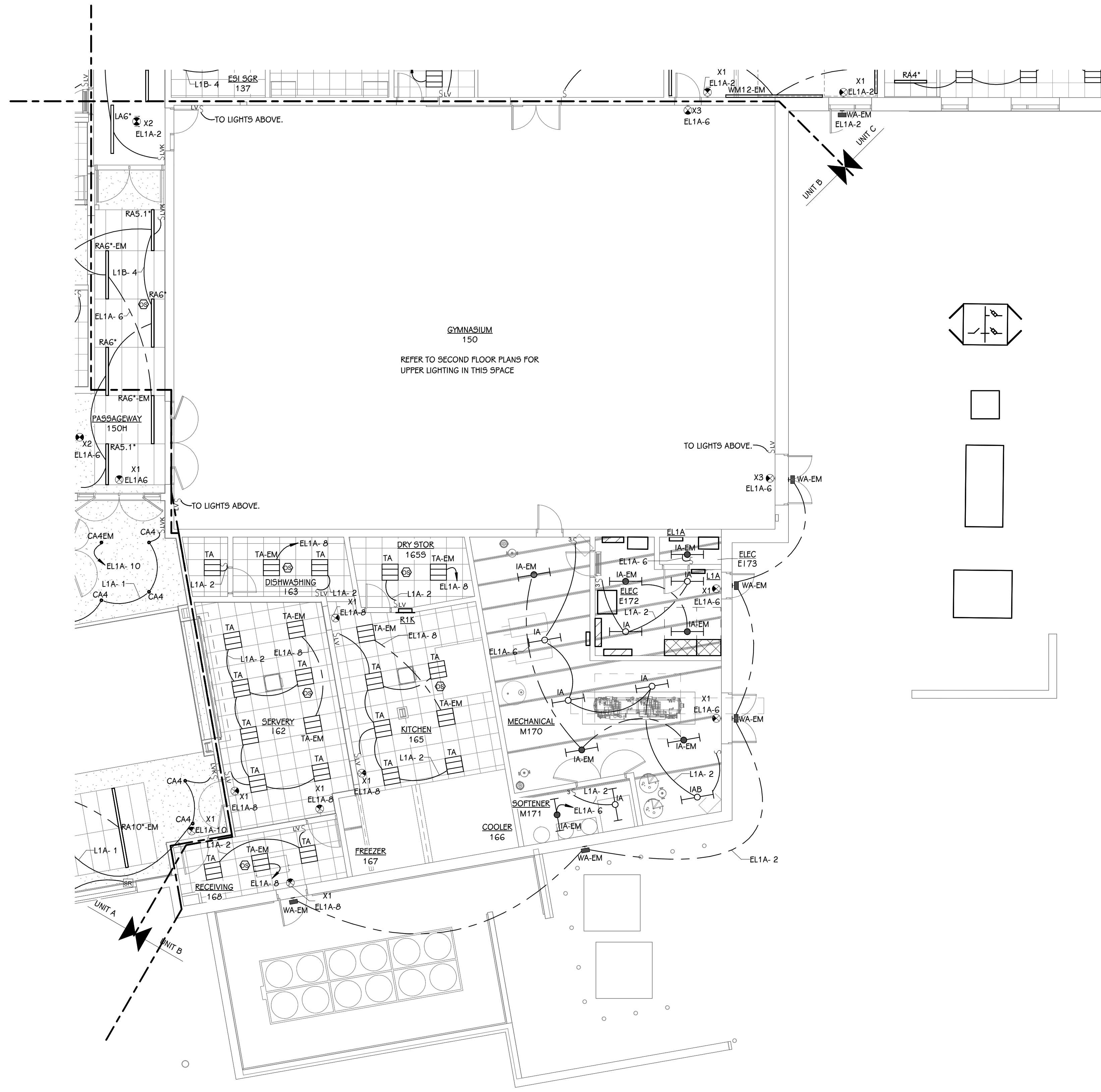
OWNER  
PORTAGE PUBLIC SCHOOLS  
Portage, Michigan

SHEET TITLE  
FIRST FLOOR LIGHTING PLAN - UNIT A

Portage, Michigan

SHEET NUMBER  
**E 201A**  
21-237.20

DATE  
JUNE 30, 2023



FIRST FLOOR LIGHTING PLAN - UNIT B  
1/8" = 1'-0"

- GENERAL ELECTRICAL NOTES**
- 1 ALL OCCUPANCY SENSORS AND PHOTOCELLS MOUNTED IN THE SAME ROOM SHALL BE CONNECTED TOGETHER AND OPERATE AS ONE SYSTEM. DAYLIGHT HARVESTING SHALL BE SELF CONTAINED WITHIN EACH ROOM AND SHALL BE FIELD ADJUSTED WITH ENGINEER. MANUFACTURER SHALL PROVIDE FLOOR PLANS DURING SHOP DRAWING PHASE SHOWING EXACT LOCATIONS AND QUANTITIES AS REQUIRED FOR A COMPLETE SYSTEM.
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ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

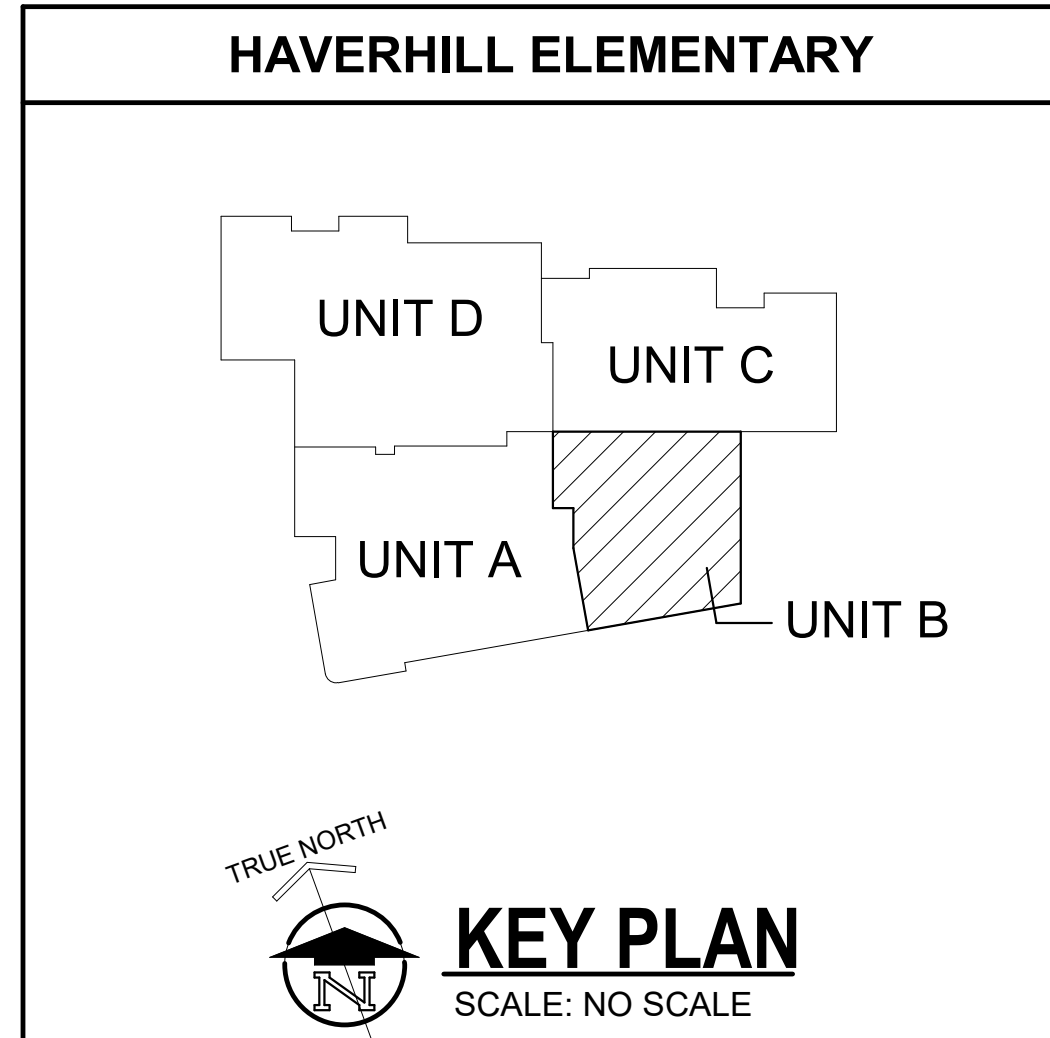
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

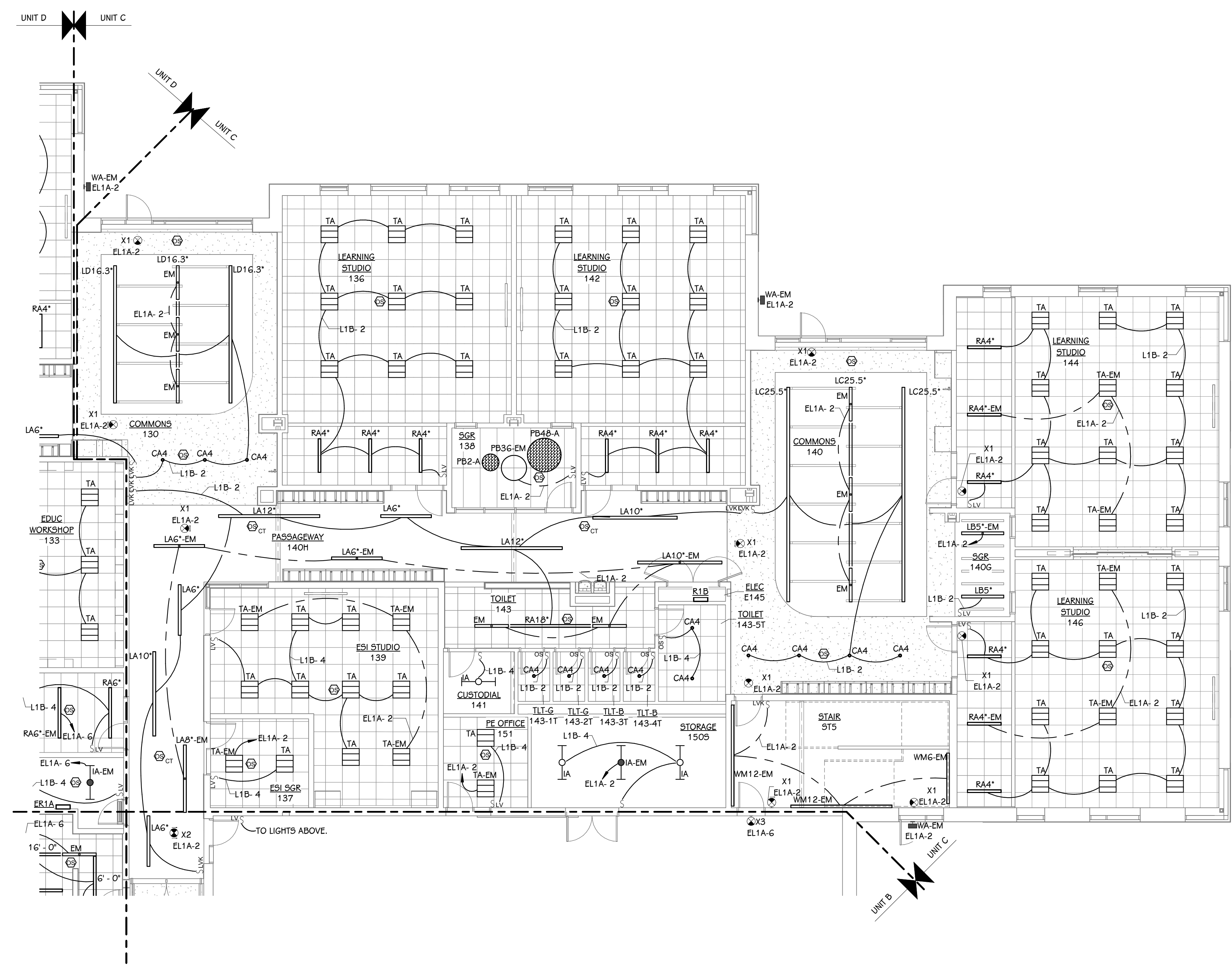
SHEET TITLE  
FIRST FLOOR LIGHTING PLAN - UNIT B

DATE  
JUNE 30, 2023

SHEET NUMBER  
E 201B  
21-237.20



- GENERAL ELECTRICAL NOTES**
- 1 ALL OCCUPANCY SENSORS AND PHOTOCELLS MOUNTED IN THE SAME ROOM SHALL BE CONNECTED TOGETHER AND OPERATE AS ONE SYSTEM. DAYLIGHT HARVESTING SHALL BE SELF CONTAINED WITHIN EACH ROOM AND SHALL BE FIELD ADJUSTED WITH ENGINEER. MANUFACTURER SHALL PROVIDE FLOOR PLANS DURING SHOP DRAWING PHASE SHOWING EXACT LOCATIONS AND QUANTITIES AS REQUIRED FOR A COMPLETE SYSTEM.
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**FIRST FLOOR LIGHTING PLAN - UNIT C**  
 1/8" = 1'-0"

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**HAVERRILL ELEMENTARY SCHOOL**  
 BID PACKAGE 6: CONSTRUCTION

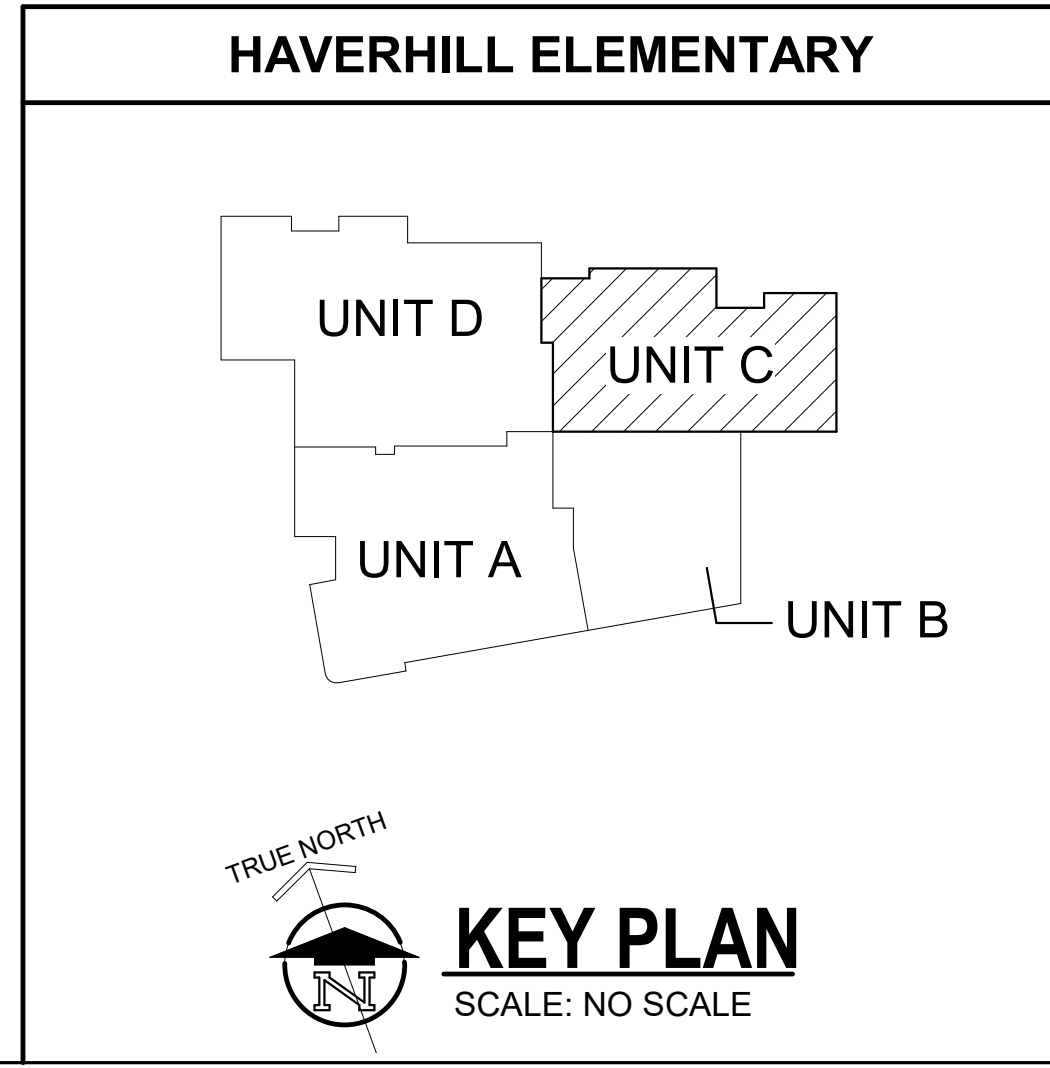
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

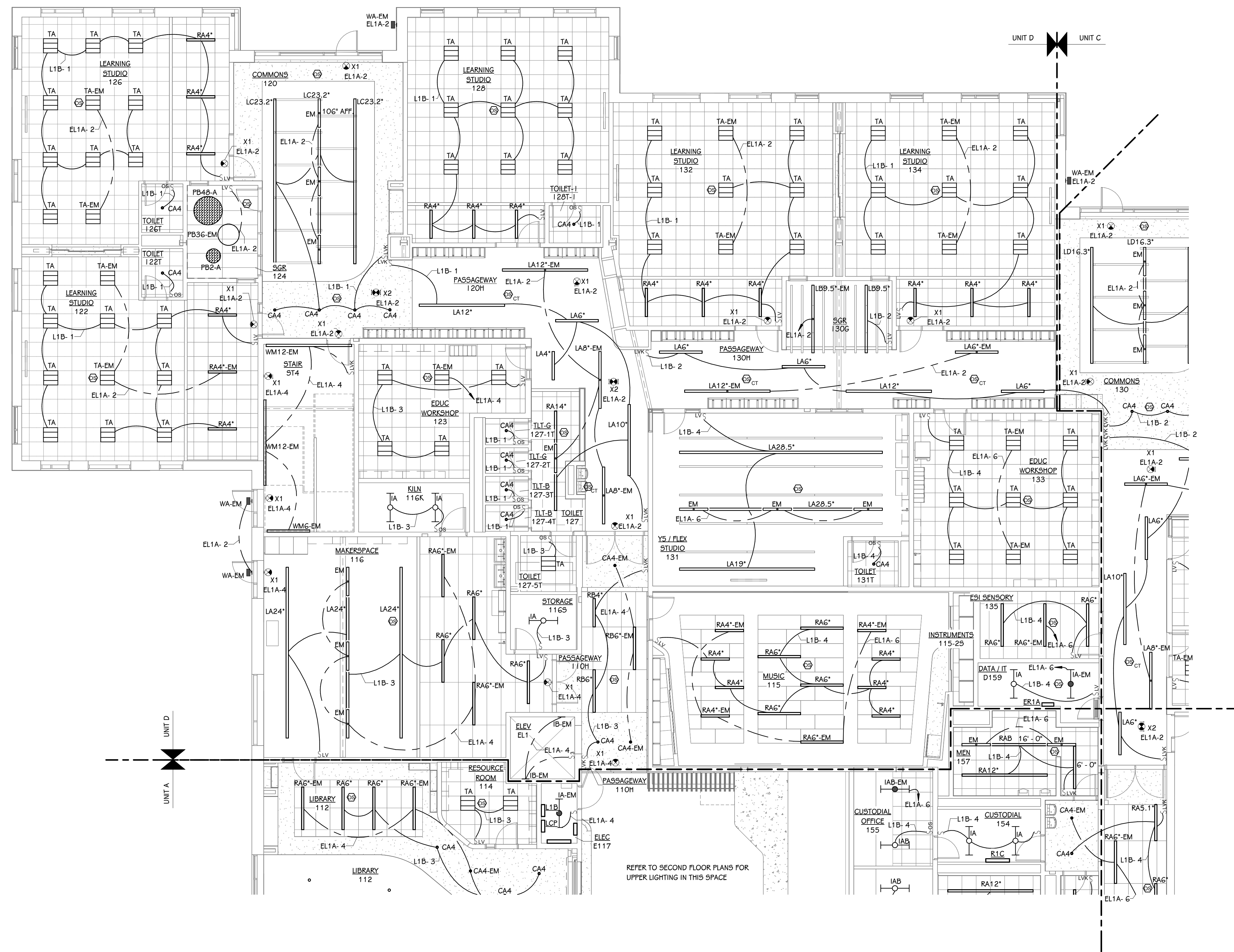
SHEET TITLE  
**FIRST FLOOR LIGHTING PLAN - UNIT C**

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**E 201C**  
 21-237.20



- GENERAL ELECTRICAL NOTES**
- 1 ALL OCCUPANCY SENSORS AND PHOTOCELLS MOUNTED IN THE SAME ROOM SHALL BE CONNECTED TOGETHER AND OPERATE AS ONE SYSTEM. DAYLIGHT HARVESTING SHALL BE SELF CONTAINED WITHIN EACH ROOM AND SHALL BE FIELD ADJUSTED WITH ENGINEER. MANUFACTURER SHALL PROVIDE FLOOR PLANS DURING SHOP DRAWING PHASE SHOWING EXACT LOCATIONS AND QUANTITIES AS REQUIRED FOR A COMPLETE SYSTEM.
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**FIRST FLOOR LIGHTING PLAN - UNIT D**  
1/8" = 1'-0"

REFER TO SECOND FLOOR PLANS FOR UPPER LIGHTING IN THIS SPACE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

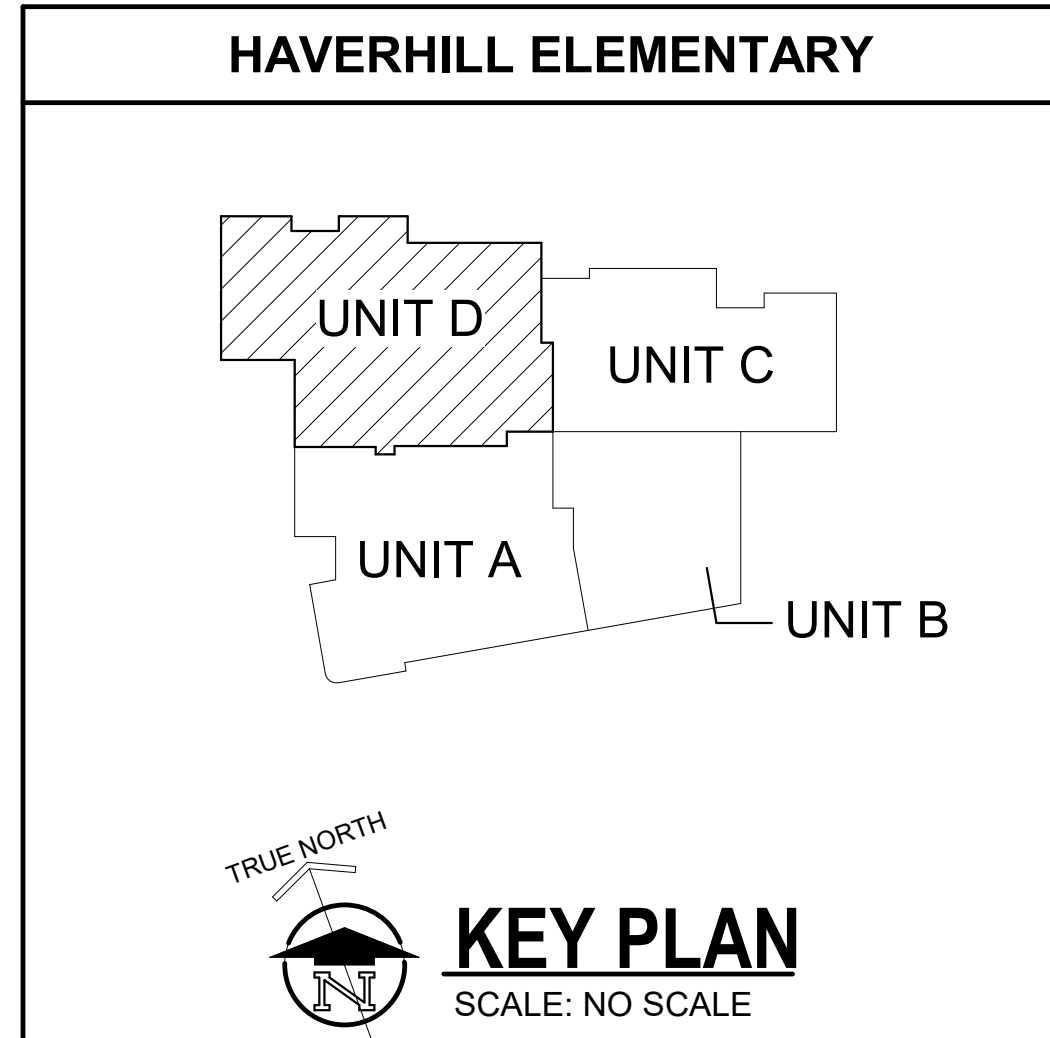
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
FIRST FLOOR LIGHTING PLAN - UNIT D

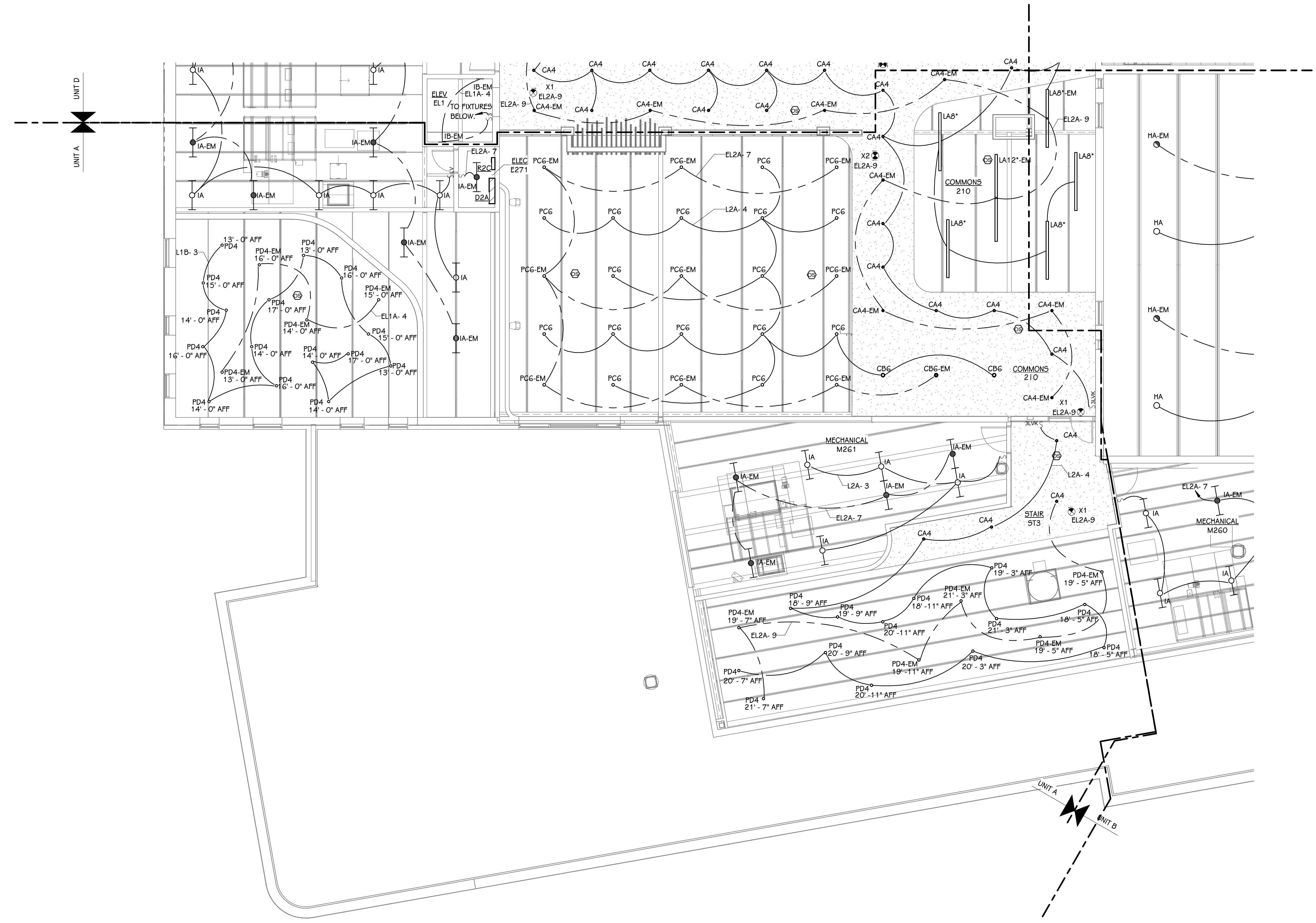
DATE  
JUNE 30, 2023

SHEET NUMBER  
E 201D  
21-237.20

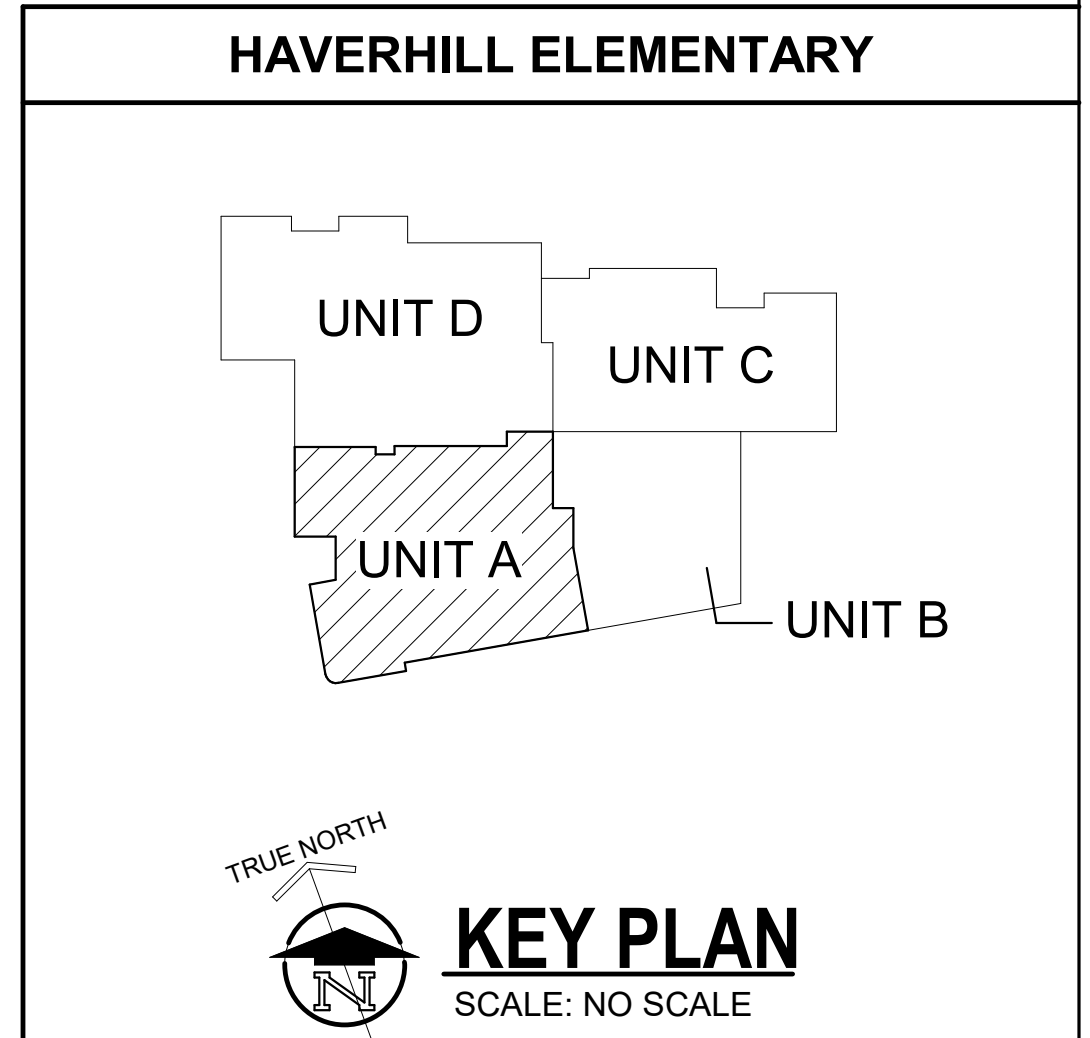


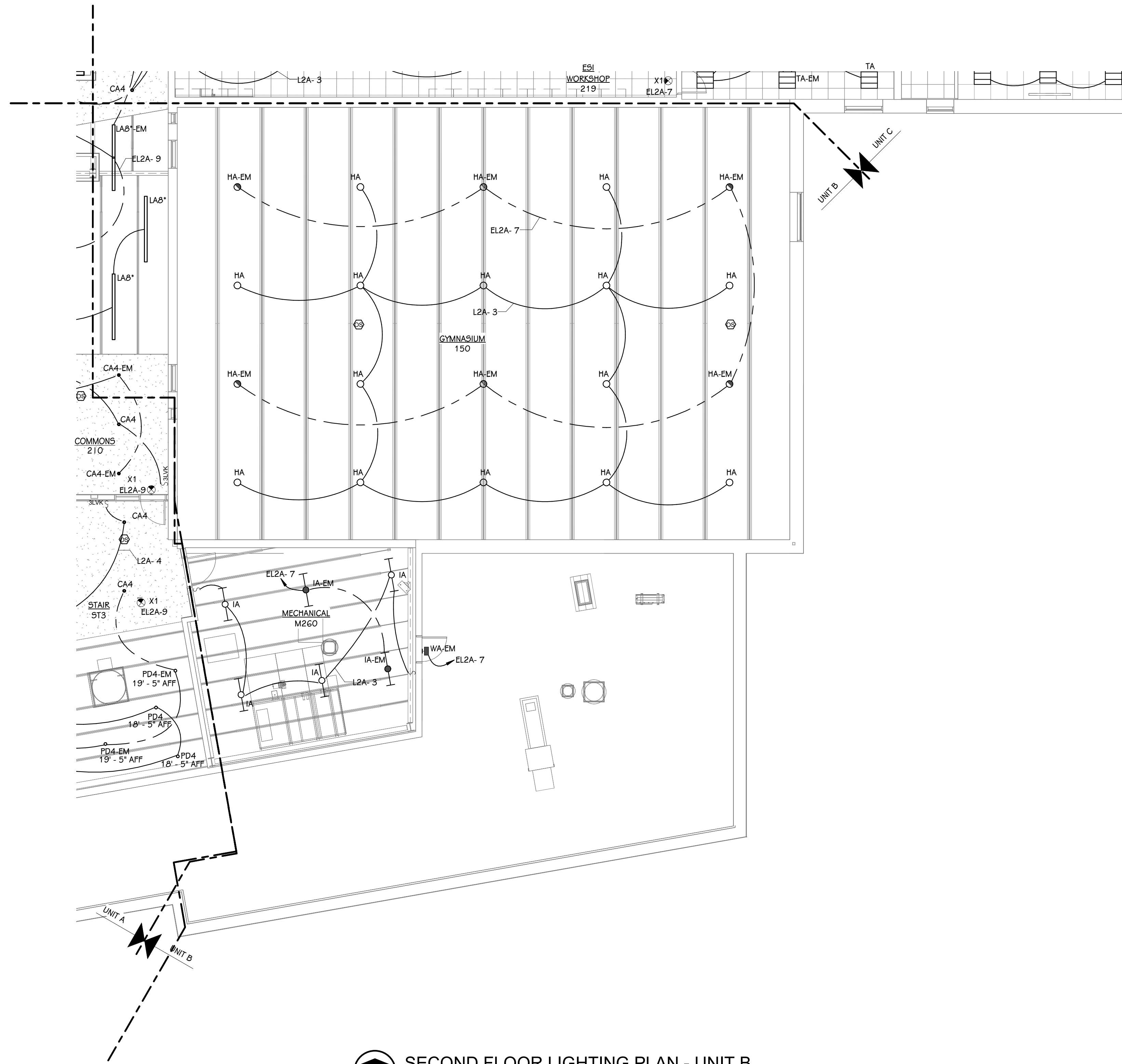


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**SECOND FLOOR LIGHTING PLAN - UNIT A**  
1/8" = 1'-0"





**SECOND FLOOR LIGHTING PLAN - UNIT B**  
1/8" = 1'-0"

- GENERAL ELECTRICAL NOTES**
- 1 ALL OCCUPANCY SENSORS AND PHOTOCELLS MOUNTED IN THE SAME ROOM SHALL BE CONNECTED TOGETHER AND OPERATE AS ONE SYSTEM. DAYLIGHT HARVESTING SHALL BE SELF CONTAINED WITHIN EACH ROOM AND SHALL BE FIELD ADJUSTED WITH ENGINEER. MANUFACTURER SHALL PROVIDE FLOOR PLANS DURING SHOP DRAWING PHASE SHOWING EXACT LOCATIONS AND QUANTITIES AS REQUIRED FOR A COMPLETE SYSTEM.
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ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

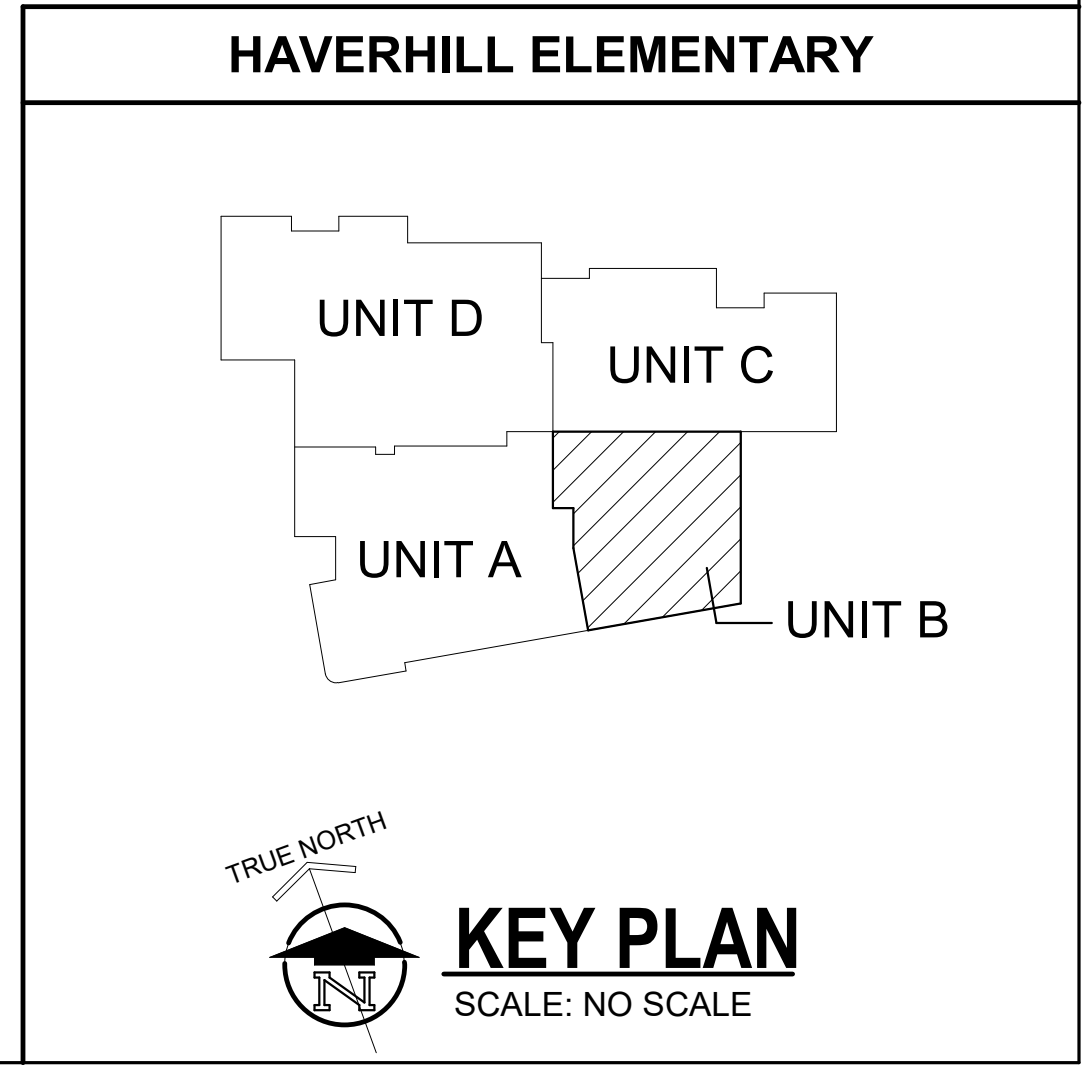
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
SECOND FLOOR LIGHTING PLAN - UNIT B

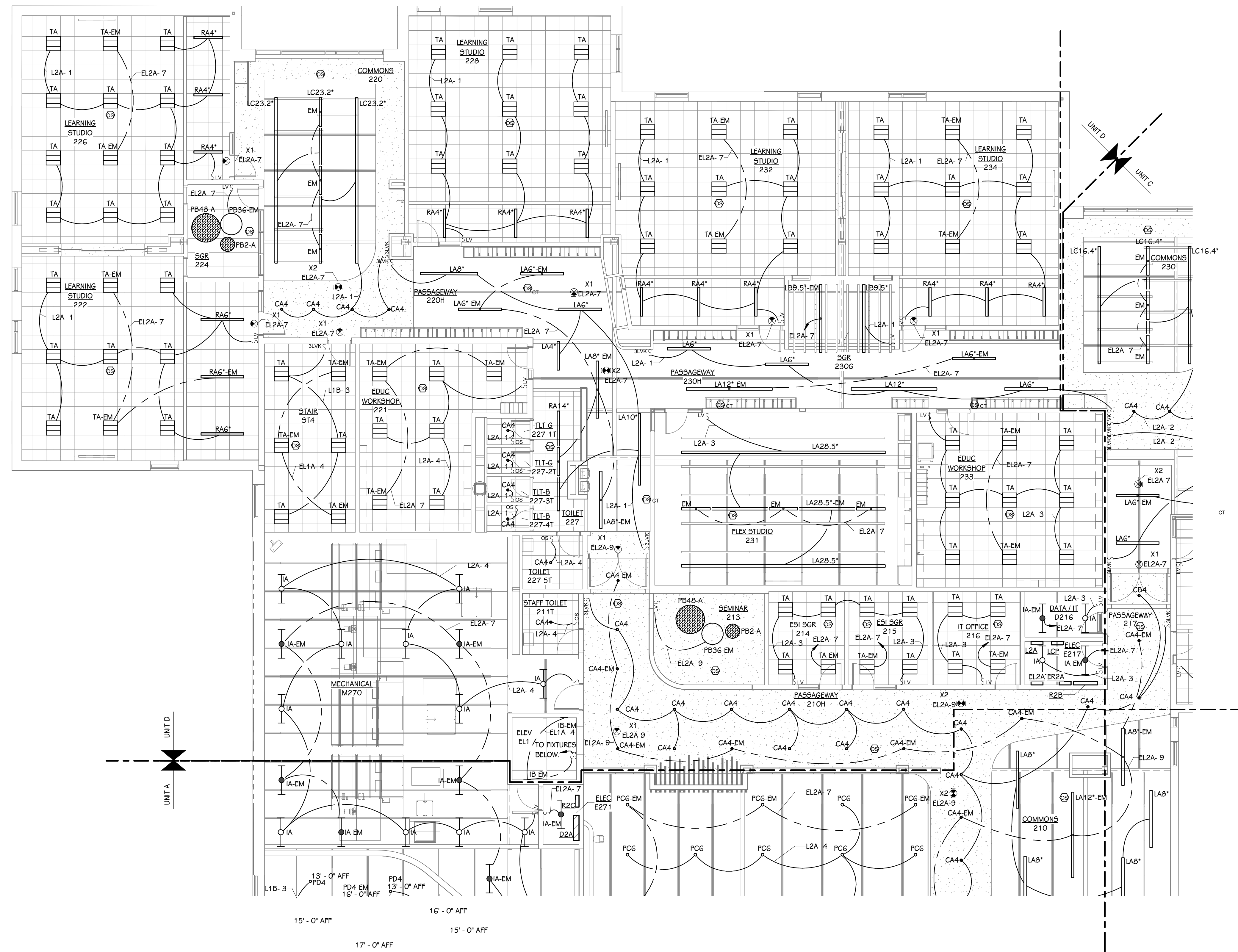
DATE  
JUNE 30, 2023

SHEET NUMBER  
E 202B  
21-237.20





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**SECOND FLOOR LIGHTING PLAN - UNIT D**  
1/8" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

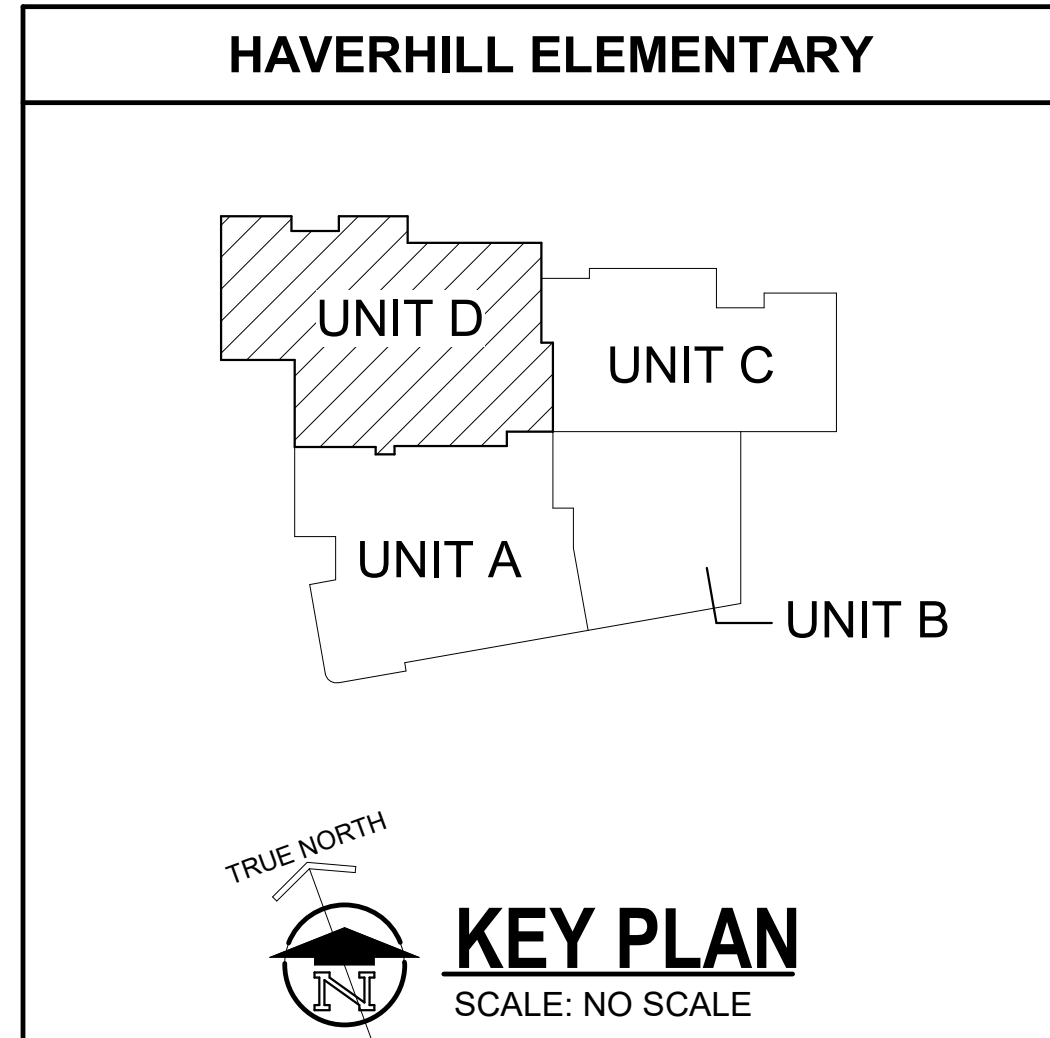
OWNER  
PORTAGE PUBLIC SCHOOLS  
Portage, Michigan

SHEET TITLE  
SECOND FLOOR LIGHTING PLAN - UNIT D

Portage, Michigan

DATE  
JUNE 30, 2023

SHEET NUMBER  
E 202D  
21-237.20



ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ELECTRICAL ONE LINE

DATE  
JUNE 30, 2023

SHEET NUMBER  
**E 401**  
21-237.20

**SERVICE ENTRANCE SPD SCHEDULE**

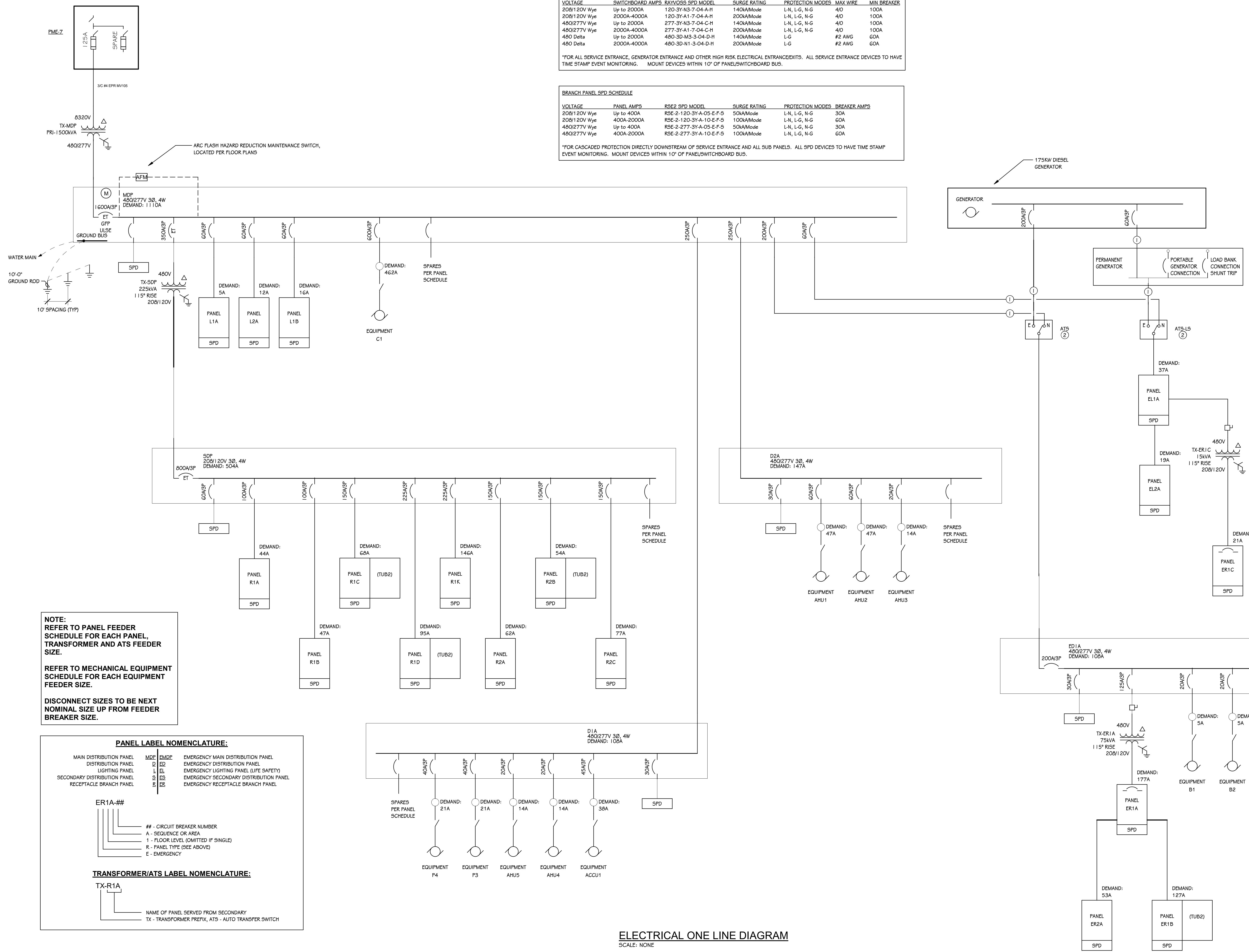
VOLTAGE	SWITCHBOARD AMPS	RAY/OSS SPD MODEL	SURGE RATING	PROTECTION MODES	MAX WIRE	MIN BREAKER
208/120V Wye	Up to 2000A	120-3Y-N3-7-04-A-H	140kA@mode	L-N, L-G, N-G	4/0	100A
208/120V Wye	2000A-4000A	120-3Y-A1-7-04-A-H	200kA@mode	L-N, L-G, N-G	4/0	100A
480/277V Wye	Up to 2000A	277-3Y-N3-7-04-C-H	140kA@mode	L-N, L-G, N-G	4/0	100A
480/277V Wye	2000A-4000A	277-3Y-A1-7-04-C-H	200kA@mode	L-N, L-G, N-G	4/0	100A
480 Delta	Up to 2000A	480-3D-M3-3-04-D-H	140kA@mode	L-G	#2 AWG	60A
480 Delta	2000A-4000A	480-3D-N1-3-04-D-H	200kA@mode	L-G	#2 AWG	60A

\*FOR ALL SERVICE ENTRANCE, GENERATOR ENTRANCE AND OTHER HIGH RISK ELECTRICAL ENTRANCE/EXITS. ALL SERVICE ENTRANCE DEVICES TO HAVE TIME STAMP EVENT MONITORING. MOUNT DEVICES WITHIN 10' OF PANEL/SWITCHBOARD BUS.

**BRANCH PANEL SPD SCHEDULE**

VOLTAGE	PANEL AMPS	RSE2 SPD MODEL	SURGE RATING	PROTECTION MODES	BREAKER AMPS
208/120V Wye	Up to 400A	RSE-2-120-3Y-A-05-E-F-5	50kA@mode	L-N, L-G, N-G	30A
208/120V Wye	400A-2000A	RSE-2-120-3Y-A-10-E-F-5	100kA@mode	L-N, L-G, N-G	60A
480/277V Wye	Up to 400A	RSE-2-277-3Y-A-05-E-F-5	50kA@mode	L-N, L-G, N-G	30A
480/277V Wye	400A-2000A	RSE-2-277-3Y-A-10-E-F-5	100kA@mode	L-N, L-G, N-G	60A

\*FOR CASCADED PROTECTION DIRECTLY DOWNSTREAM OF SERVICE ENTRANCE AND ALL SUB PANELS. ALL SPD DEVICES TO HAVE TIME STAMP EVENT MONITORING. MOUNT DEVICES WITHIN 10' OF PANEL/SWITCHBOARD BUS.



- TEMPORARY GENERATOR CONNECTION REQUIREMENTS:**
- MARK TEMP CONNECTION WITH PHASE ROTATION AND BONDING REQUIREMENTS.
  - PROVIDE CONTACT TO GENERATOR ANNUNCIATOR PANEL TO MONITOR PERMANENT GENERATOR IS DISCONNECTED.
- ① ATS FEEDERS TO MATCH FEEDER TO PANEL SERVED FROM ATS LOAD TERMINALS.  
② OPEN TRANSITION, 4 POLE

**NOTE:**  
REFER TO PANEL FEEDER SCHEDULE FOR EACH PANEL, TRANSFORMER AND ATS FEEDER SIZE.  
REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR EACH EQUIPMENT FEEDER SIZE.  
DISCONNECT SIZES TO BE NEXT NOMINAL SIZE UP FROM FEEDER BREAKER SIZE.

**PANEL LABEL NOMENCLATURE:**

MAIN DISTRIBUTION PANEL	MDP	EMERGENCY MAIN DISTRIBUTION PANEL	EMD
DISTRIBUTION PANEL	D	EMERGENCY DISTRIBUTION PANEL	ED
LIGHTING PANEL	L	EMERGENCY LIGHTING PANEL (LIFE SAFETY)	EL
SECONDARY DISTRIBUTION PANEL	S	EMERGENCY SECONDARY DISTRIBUTION PANEL	ES
RECEPTACLE BRANCH PANEL	R	EMERGENCY RECEPTACLE BRANCH PANEL	ER

**ER1A-##**

- ## - CIRCUIT BREAKER NUMBER
- A - SEQUENCE OR AREA
- 1 - FLOOR LEVEL (OMITTED IF SINGLE)
- R - PANEL TYPE (SEE ABOVE)
- E - EMERGENCY

**TRANSFORMER/ATS LABEL NOMENCLATURE:**

**TX-R1A**

- NAME OF PANEL SERVED FROM SECONDARY
- TX - TRANSFORMER PREFIX, ATS - AUTO TRANSFER SWITCH

**ELECTRICAL ONE LINE DIAGRAM**  
SCALE: NONE

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
ELECTRICAL CONNECTION SCHEDULES

DATE  
JUNE 30, 2023

SHEET NUMBER  
E 402  
21-237.20

TERMINAL UNITS	
LEVEL	COUNT

FIRST FLOOR	34
SECOND FLOOR	23
<b>Grand total:</b>	<b>57</b>

ELECTRICAL HVAC FEEDER SCHEDULE											
DESCRIPTION	FED FROM	DISCONNECT MEANS	CURRENT (FLA)	DEMAND (FLA)	BREAKER / POLES	# OF SETS	FEEDER			ACCUM VOLT DROP %	NOTES
							WIRE	GROUND	EMT		
<b>480 V</b>											
HVAC - ACCU1	D1A	FUSIBLE DISCONNECT	38 A	38 A	45 A / 3	1 SET	3 #6	#10 GND.	1"	1.1%	
HVAC - AHU1	D2A	FUSIBLE DISCONNECT	47 A	47 A	60 A / 3	1 SET	3 #6	#10 GND.	1"	2.1%	
HVAC - AHU2	D2A	FUSIBLE DISCONNECT	47 A	47 A	60 A / 3	1 SET	3 #6	#10 GND.	1"	1.9%	
HVAC - AHU3	D2A	FUSIBLE DISCONNECT	14 A	14 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	2.0%	
HVAC - AHU4	D1A	FUSIBLE DISCONNECT	14 A	14 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	2.0%	
HVAC - AHU5	D1A	FUSIBLE DISCONNECT	14 A	14 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	1.3%	
HVAC - B1	ED1A	FUSIBLE DISCONNECT	5 A	5 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	0.8%	
HVAC - B2	ED1A	FUSIBLE DISCONNECT	5 A	5 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	0.8%	
HVAC - C1	MDP	MDP BREAKER	462 A	462 A	600 A / 3	2 SETS	3 #500 KCMIL	#1 GND.	3 1/2"	0.5%	3
HVAC - EF1	EL2A	FUSIBLE DISCONNECT	8 A	8 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	2.2%	1
HVAC - EF2	EL2A	FUSIBLE DISCONNECT	8 A	8 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	2.1%	1
HVAC - EF14	D2A	FUSIBLE DISCONNECT	2 A	2 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	1.6%	1
HVAC - P1	ED1A	VFD DISCONNECT	11 A	11 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	1.0%	
HVAC - P2	ED1A	VFD DISCONNECT	11 A	11 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	1.0%	
HVAC - P3	D1A	VFD DISCONNECT	21 A	21 A	40 A / 3	1 SET	3 #8	#10 GND.	3/4"	0.7%	
HVAC - P4	D1A	VFD DISCONNECT	21 A	21 A	40 A / 3	1 SET	3 #8	#10 GND.	3/4"	0.7%	
HVAC - RF-1	D2A	FUSIBLE DISCONNECT	14 A	14 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	2.2%	
HVAC - RF-2	D2A	FUSIBLE DISCONNECT	14 A	14 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	2.1%	
HVAC - RF-3	D2A	FUSIBLE DISCONNECT	5 A	5 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	1.5%	
HVAC - RF-4	D2A	FUSIBLE DISCONNECT	5 A	5 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	1.7%	
POWER - ELEV POWER	D2A	FUSIBLE DISCONNECT	0 A	0 A	20 A / 3	1 SET	4			0.0%	
<b>208 V</b>											
RECEPTACLE - KILN 116K	R1D	FUSIBLE DISCONNECT	40 A	40 A	60 A / 3	1 SET	3 #6	#8 GND.	1"	3.5%	
<b>208 V</b>											
HVAC - ACCU-165	R1K	FUSIBLE DISCONNECT	40 A	40 A	60 A / 2	1 SET	3 #6	#10 GND.	1"	2.5%	2
HVAC - ACCU-D159	ER2A	NON-FUSED DISCONNECT	15 A	15 A	20 A / 2	1 SET	3 #12	#12 GND.	3/4"	2.6%	2
HVAC - ACCU-D216	ER2A	NON-FUSED DISCONNECT	15 A	15 A	20 A / 2	1 SET	3 #12	#12 GND.	3/4"	2.7%	2
HVAC - ACCU-E172	ER1B	NON-FUSED DISCONNECT	15 A	15 A	20 A / 2	1 SET	3 #10	#10 GND.	3/4"	3.8%	2
HVAC - 55-165A,B	R1K	NON-FUSED DISCONNECT	2 A	2 A	20 A / 2	1 SET	3 #12	#12 GND.	3/4"	1.0%	2
RECEPTACLE - DRYER	ER1B	N/A	30 A	30 A	40 A / 2	1 SET	3 #8	#10 GND.	3/4"	3.8%	
RECEPTACLE - DRYER	R1K	N/A	30 A	30 A	40 A / 2	1 SET	3 #6	#10 GND.	1"	1.7%	
RECEPTACLE - TR-B	ER1A	N/A	24 A	24 A	30 A / 2	1 SET	3 #10	#10 GND.	3/4"	1.6%	
RECEPTACLE - TRA-1	ER2A	N/A	24 A	24 A	30 A / 2	1 SET	3 #10	#10 GND.	3/4"	2.3%	
RECEPTACLE - TRA-2	ER2A	N/A	24 A	24 A	30 A / 2	1 SET	3 #10	#10 GND.	3/4"	2.4%	

- GENERAL: CONDUIT SIZES BASED ON EMT AND COPPER CONDUCTORS UNLESS OTHERWISE NOTED. UPSIZE AS REQUIRED WHERE PVC OR GALVANIZED IS USED OR REQUIRED PER SPECIFICATIONS.
- 1 PROVIDE RAIN-TIGHT DISCONNECT AT EQUIPMENT ON ROOF AND REMOTE STARTER IN ELECTRICAL ROOM.
  - 2 PROVIDE CONNECTION TO ROOFTOP EQUIPMENT AND INTERCONNECT BETWEEN OUTSIDE UNIT AND INTERIOR UNIT. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE RAIN-TIGHT DISCONNECT ON EXTERIOR UNIT.
  - 3 PROVIDE COPPER CONDUCTORS ONLY FOR CHILLER. ALUMINUM CONDUCTORS ARE NOT ACCEPTABLE FOR USE WITH CHILLER CONNECTIONS. DO NOT INCLUDE CHILLER FEEDS IN ANY ALUMINUM FEEDER ALTERNATES (VOLUNTARY OR ON DRAWINGS).

ELECTRICAL KITCHEN FEEDER SCHEDULE											
DESCRIPTION	FED FROM	CURRENT (FLA)	DEMAND (FLA)	BREAKER / POLES	# OF SETS	FEEDER			ACCUM VOLT DROP %	NOTES	
						WIRE	GROUND	EMT			
<b>208 V</b>											
KITCHEN - 101B	ER1B	10 A	10 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	2.8%		
KITCHEN - 101D	ER1B	15 A	15 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	3.7%		
KITCHEN - 301A	R1K	10 A	10 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	2.2%		
KITCHEN - 301B	R1K	15 A	15 A	20 A / 3	1 SET	3 #12	#12 GND.	3/4"	3.1%		
KITCHEN - 301C	R1K	14 A	14 A	20 A / 3	1 SET	4 #12	#12 GND.	3/4"	2.9%		
<b>208 V</b>											
KITCHEN - 101C	ER1B	15 A	15 A	20 A / 2	1 SET	3 #12	#12 GND.	3/4"	4.3%		
KITCHEN EQUIPMENT - 206	R1K	8 A	8 A	20 A / 2	1 SET	3 #12	#12 GND.	3/4"	1.5%		
KITCHEN EQUIPMENT - 401	R1K	34 A	34 A	45 A / 2	1 SET	3 #8	#10 GND.	3/4"	2.5%		

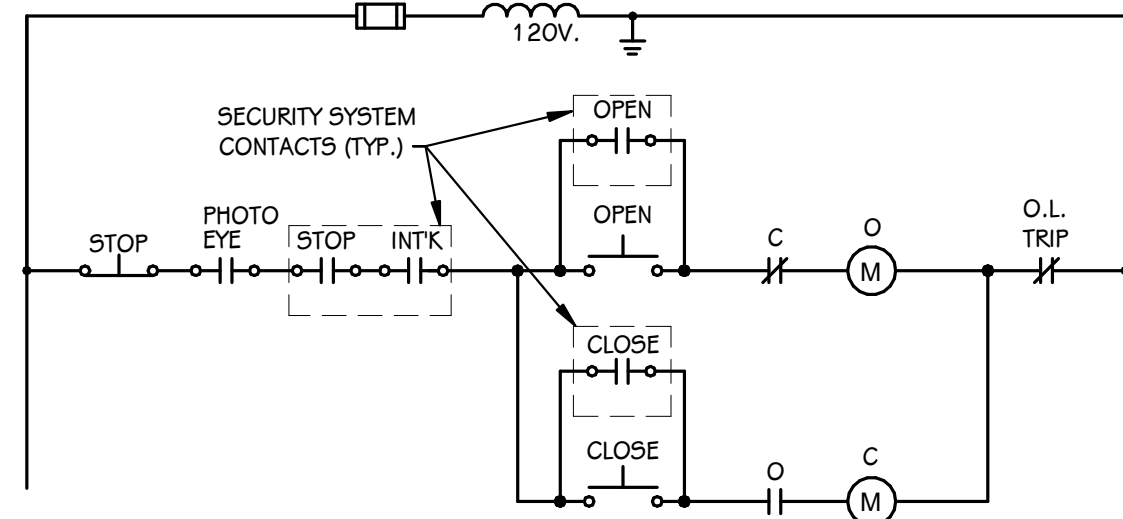
ELECTRICAL PANEL FEEDER SCHEDULE											
DESCRIPTION	FED FROM	CURRENT (FLA)	DEMAND (FLA)	BREAKER / POLES	# OF SETS	FEEDER			ACCUM VOLT DROP %	NOTES	
						WIRE	GROUND	EMT			
<b>480 V</b>											
ATS	MDP	124 A	108 A	200 A / 3	1 SET	4 #350 KCMIL AL	#4 AL GND.	3"	0.5%		
ATS-L5	MDP	37 A	37 A	75 A / 3	1 SET	4 #4	#8 GND.	1 1/4"	0.5%		
D1A	MDP	108 A	108 A	250 A / 3	1 SET	4 #500 KCMIL AL	#2 AL GND.	3 1/2"	0.4%		
D2A	MDP	147 A	147 A	250 A / 3	1 SET	4 #500 KCMIL AL	#2 AL GND.	3 1/2"	1.3%		
ED1A	ATS	124 A	108 A	200 A / 3	1 SET	4 #350 KCMIL AL	#4 AL GND.	3"	0.6%		
EL1A	ATS-L5	37 A	37 A	60 A / 3	1 SET	4 #6	#10 GND.	1"	0.8%		
EL2A	EL1A	20 A	20 A	60 A / 3	1 SET	4 #6	#10 GND.	1"	1.4%		
L1A	MDP	5 A	5 A	60 A / 3	1 SET	4 #6	#10 GND.	1"	0.3%		
L1B	MDP	16 A	17 A	60 A / 3	1 SET	4 #6	#10 GND.	1"	1.1%		
L2A	MDP	12 A	12 A	60 A / 3	1 SET	4 #6	#10 GND.	1"	0.8%		
MDP	TX-MDP	1206 A	1110 A	1600 A / 3	6 SETS	4 #600 KCMIL AL	#3/O G.E.C.	4"	0.3%		
MDP		0 A	1110 A	20 A / 3	1 SET	4			0.0%		
<b>208 V</b>											
ER1A	TX-ER1A	213 A	177 A	225 A / 3	1 SET	4 #400 KCMIL AL	#1/O AL G.E.C.	3 1/2"	0.4%		
ER1B	ER1A	138 A	127 A	175 A / 3	1 SET	4 #300 KCMIL AL	#4 AL GND.	3"	1.4%		
ER1C	TX-ER1C	22 A	22 A	50 A / 3	1 SET	4 #6	#8 G.E.C.	1"	0.4%		
ER2A	ER1A	58 A	53 A	75 A / 3	1 SET	4 #4	#8 GND.	1 1/4"	1.1%		
R1A	SDP	45 A	45 A	100 A / 3	1 SET	4 #3	#8 GND.	1 1/4"	0.5%		
R1B	SDP	56 A	48 A	100 A / 3	1 SET	4 #3	#8 GND.	1 1/4"	1.6%		
R1C	SDP	80 A	69 A	150 A / 3	1 SET	4 #4/O AL	#4 AL GND.	2 1/2"	1.3%		
R1D	SDP	130 A	96 A	225 A / 3	1 SET	4 #400 KCMIL AL	#2 AL GND.	3 1/2"	1.7%		
R1K	SDP	147 A	147 A	225 A / 3	1 SET	4 #400 KCMIL AL	#2 AL GND.	3 1/2"	0.8%		
R2A	SDP	74 A	62 A	150 A / 3	1 SET	4 #4/O AL	#4 AL GND.	2 1/2"	1.1%		
R2B	SDP	63 A	55 A	150 A / 3	1 SET	4 #4/O AL	#4 AL GND.	2 1/2"	1.2%		
R2C	SDP	83 A	78 A	150 A / 3	1 SET	4 #4/O AL	#4 AL GND.	2 1/2"	2.1%		
SDP	TX-SDP	678 A	505 A	800 A / 3	4 SETS	4 #600 KCMIL AL	#3/O G.E.C.	4"	0.2%		

GENERAL: CONDUIT SIZES BASED ON EMT AND COPPER CONDUCTORS (UNLESS OTHERWISE INDICATED WITH AN "AL" FOR ALUMINUM). UPSIZE AS REQUIRED WHERE PVC OR GALVANIZED IS USED OR REQUIRED PER SPECIFICATIONS.

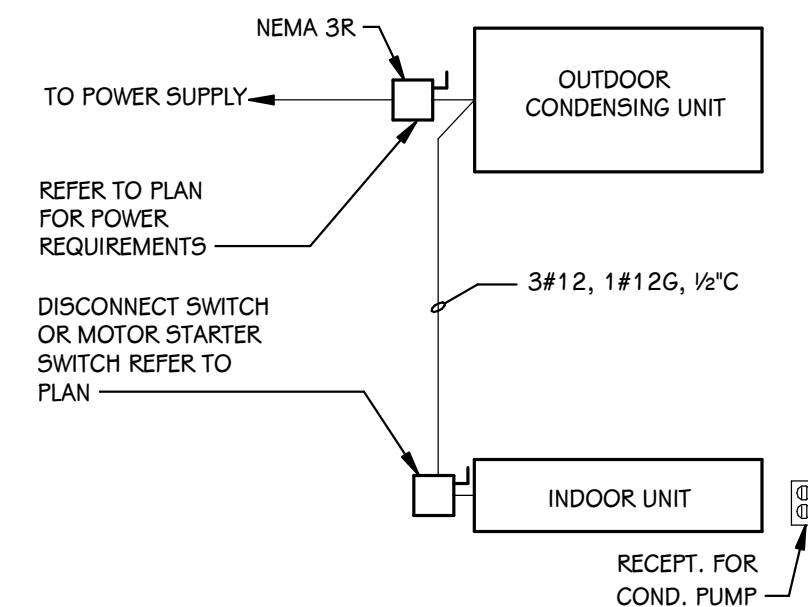
G.E.C. = GROUNDING ELECTRODE CONDUCTOR FOR SEPARATELY DERIVED SYSTEM (PER SET, USE EQUIVALENT CML AND GEC FROM 250.66)

GND. = EQUIPMENT GROUNDING CONDUCTOR (E.G.C.)

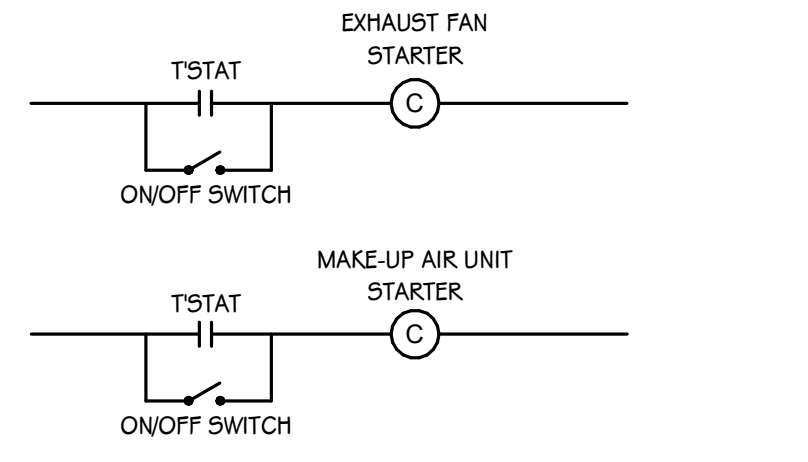
ELECTRICAL TRANSFORMER SCHEDULE									
TRANSFORMER NAME	FED FROM	SIZE	PRIMARY VOLTAGE (V)	BREAKER / POLES	# OF SETS	PRIMARY FEEDER			
						WIRE	GROUND	EMT	
TX-SDP	MDP	225 kVA	480 V	350 A / 3	2 SETS	3 #400 KCMIL AL	#1/O AL GND.	3"	
TX-ER1A	ED1A	75 kVA	480 V	125 A / 3	1 SET	3 #3/O AL	#4 AL GND.	2"	
TX-ER1C	EL1A	15 kVA	480 V	25 A / 3	1 SET	3 #10	#10 GND.	3/4"	



**OVERHEAD DOOR CONTROL**  
SCALE: NONE

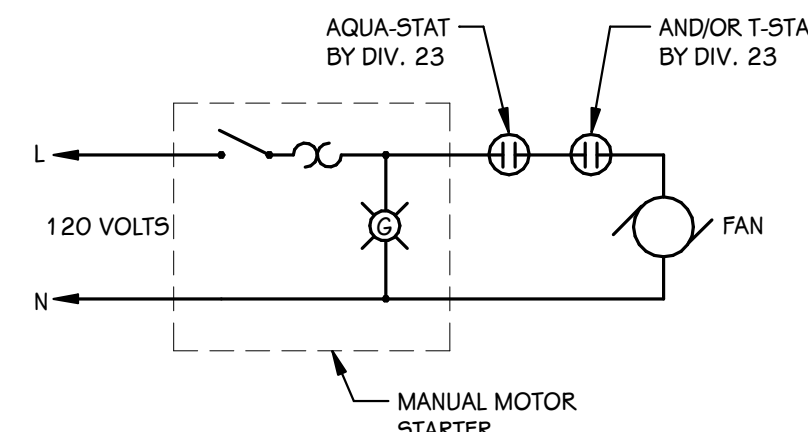


**TYPICAL AC SPLIT SYSTEM**  
SCALE: NONE

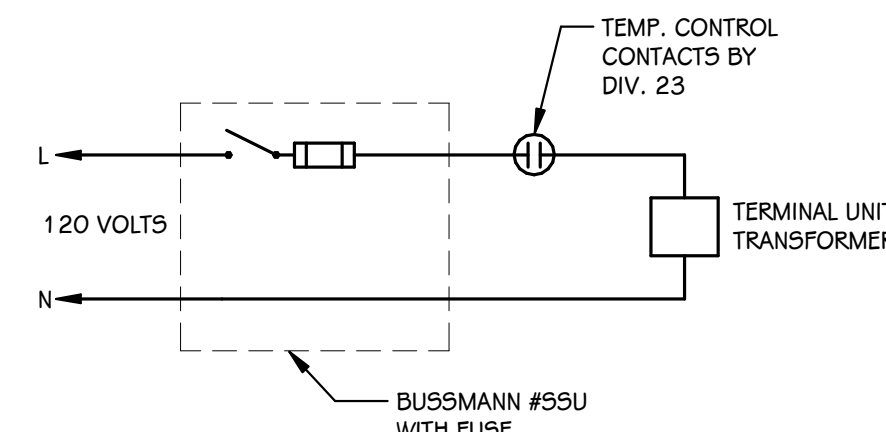


**KITCHEN EXHAUST HOOD INTERLOCK WIRING**  
SCALE: NONE

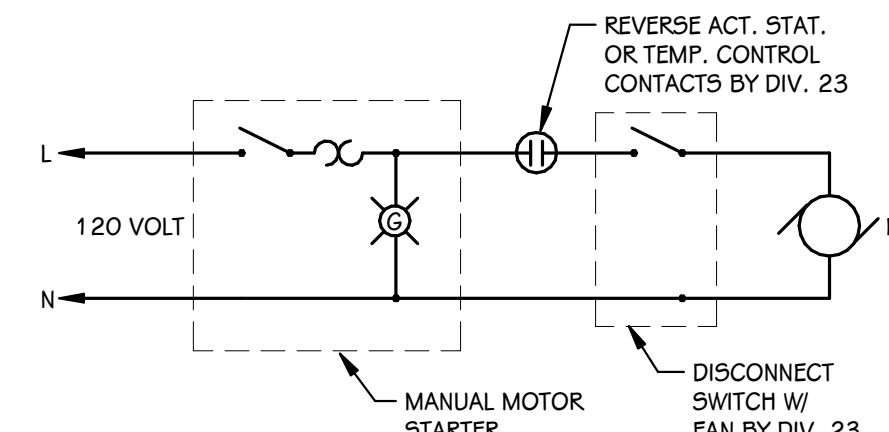
THERMOSTATS LOCATED IN EXHAUST DUCT COLLAR. WHEN TEMPERATURE REACHES 90 DEG. F. THERMOSTATS SHALL TURN ON EXHAUST AND SUPPLY FANS.



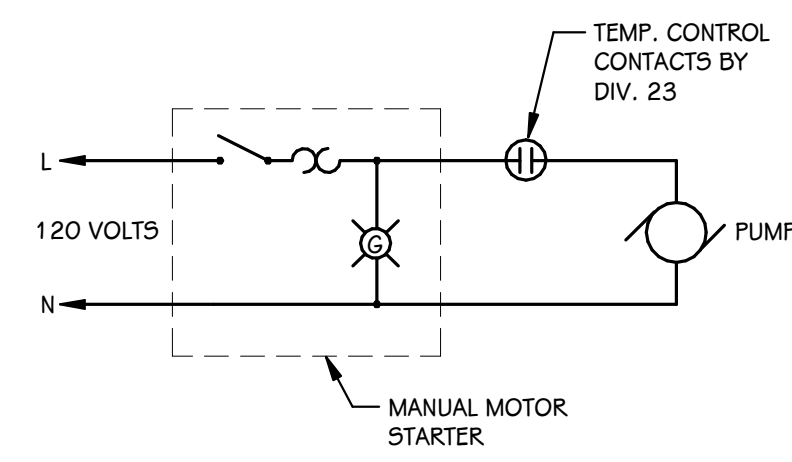
**UNIT HEATER CONTROL**  
SCALE: NONE



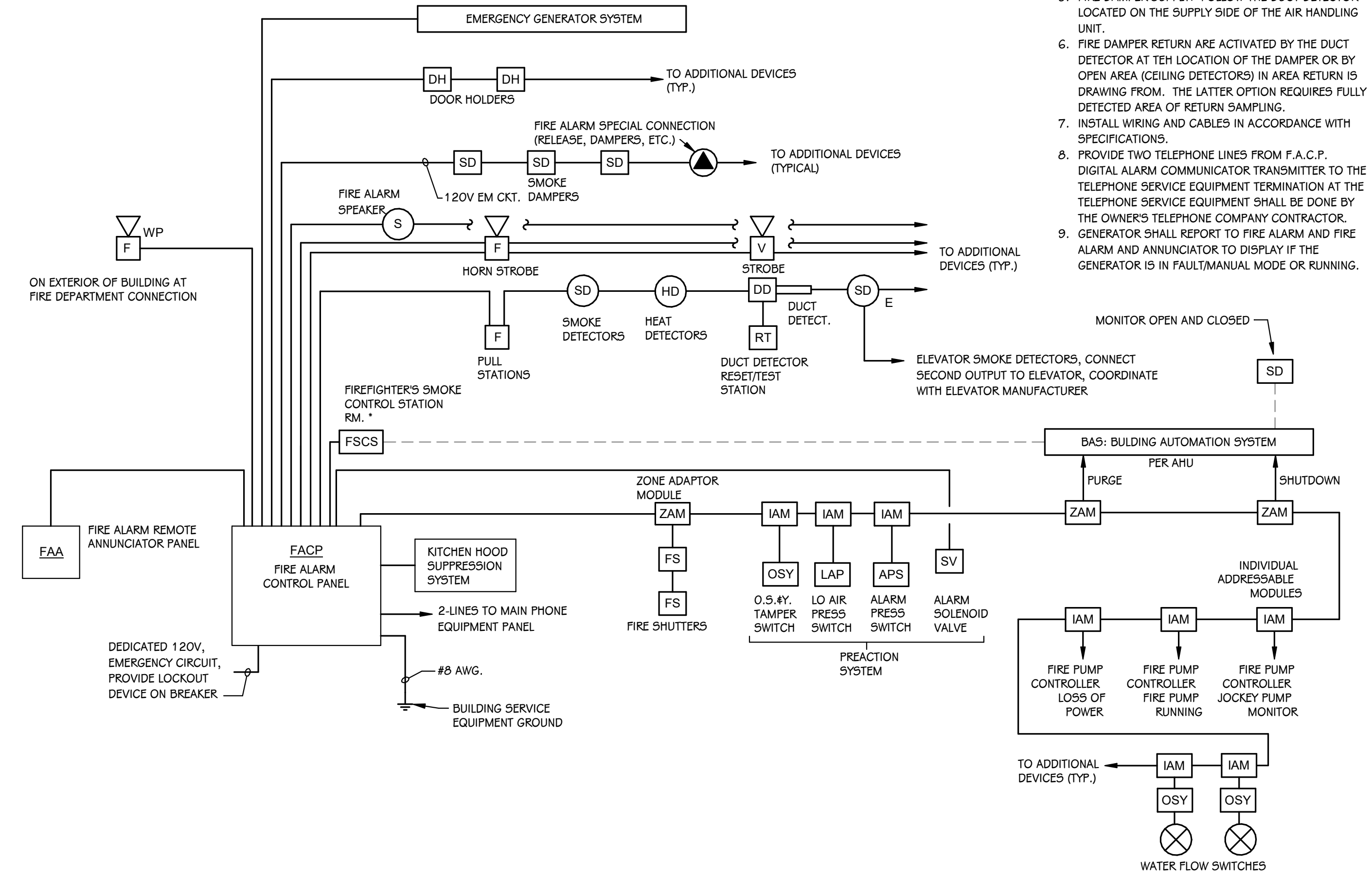
**TERMINAL UNIT (TU) CONTROL**  
SCALE: NONE



**EXHAUST FAN CONTROL**  
SCALE: NONE

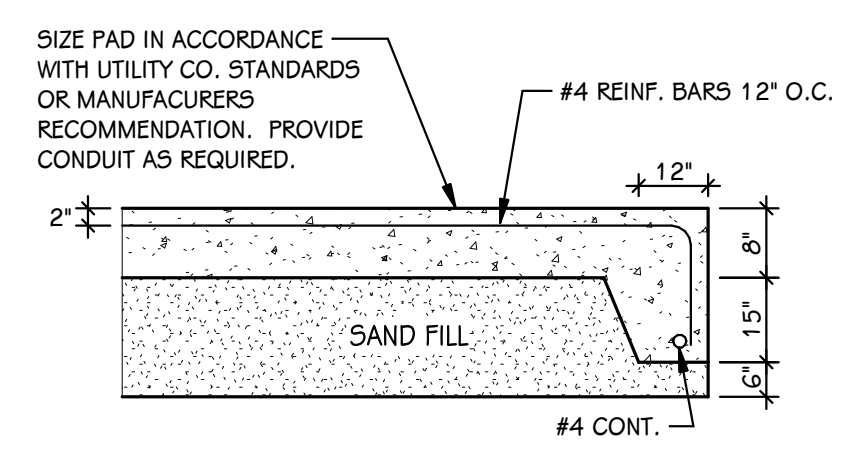


**CIRCULATOR PUMP CONTROL**  
SCALE: NONE

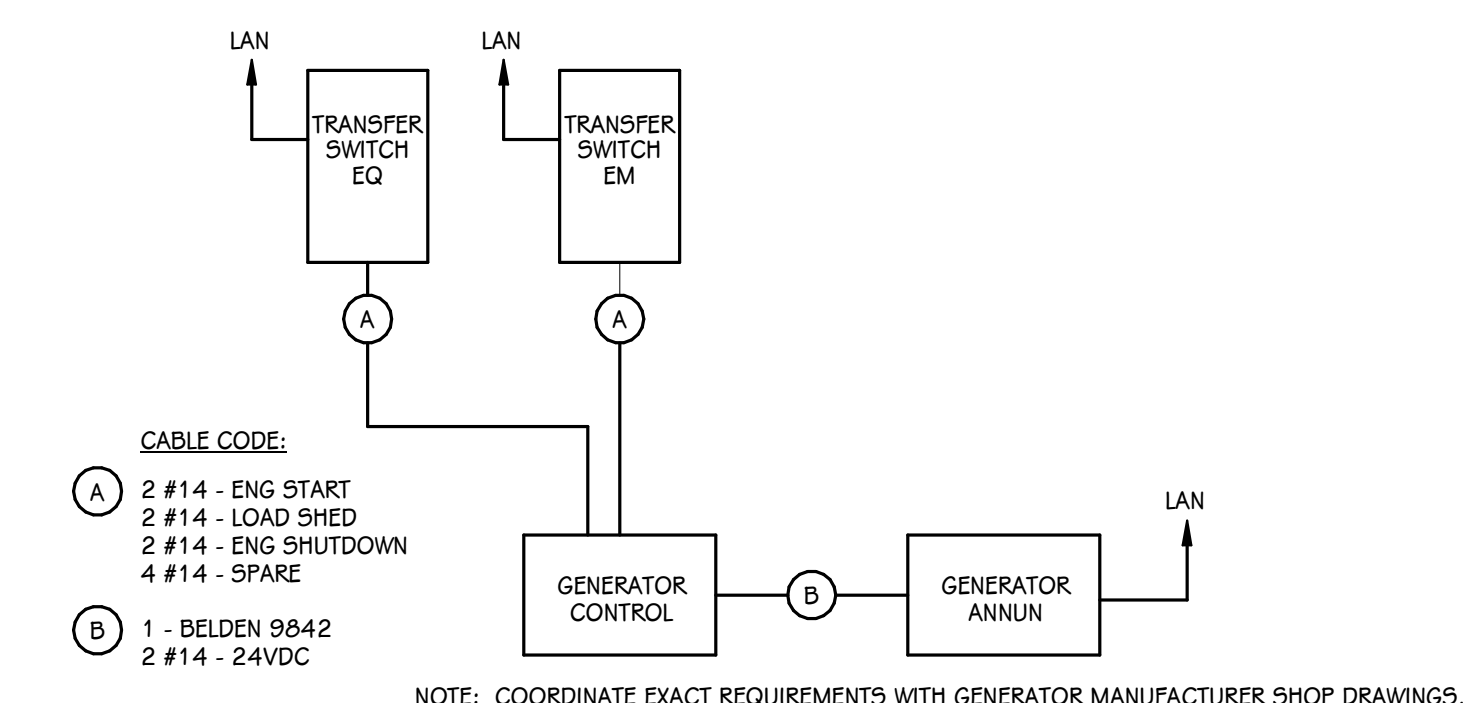


**FIRE ALARM SYSTEM RISER DIAGRAM**  
SCALE: NONE

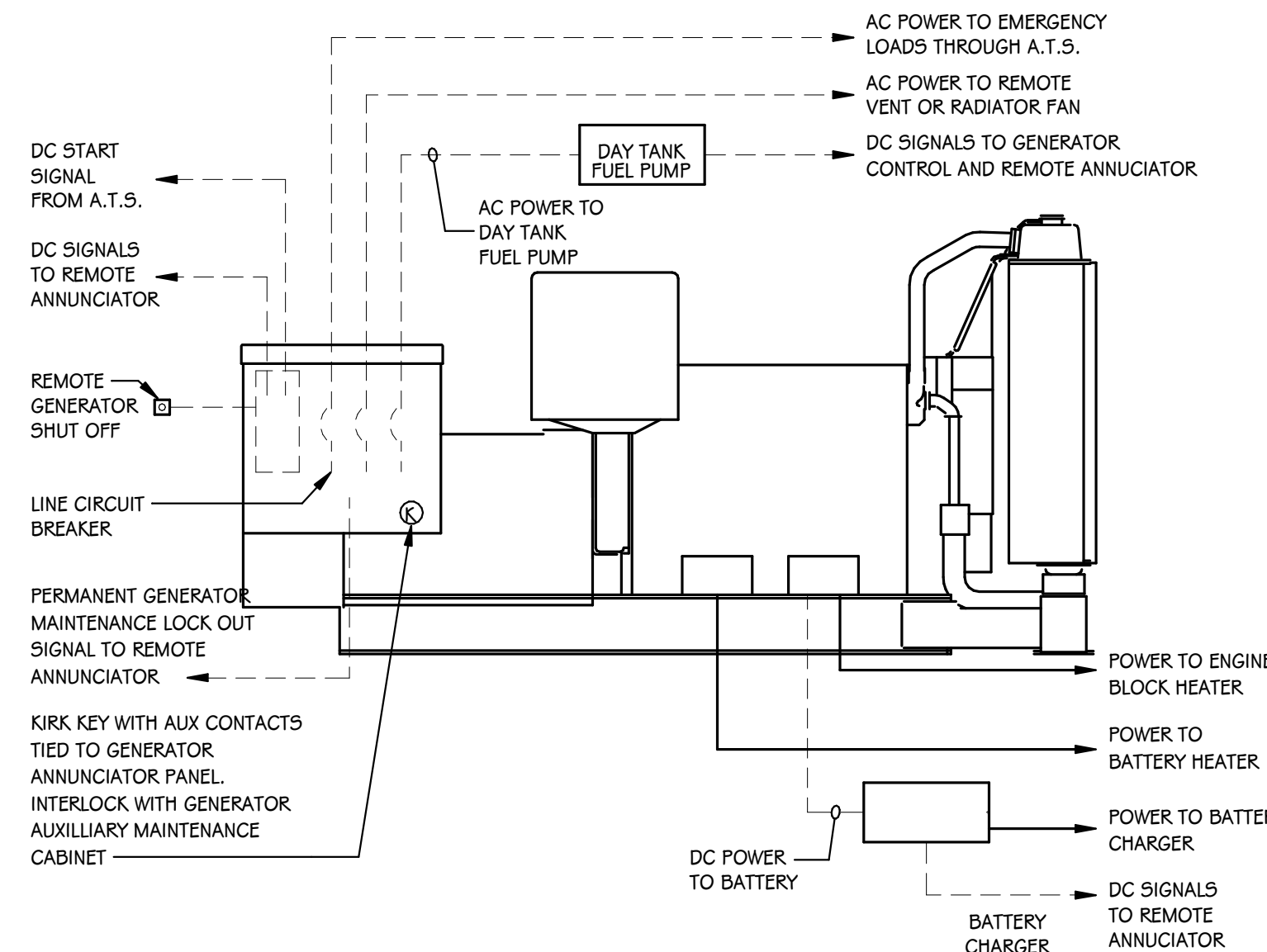
- FIRE ALARM SYSTEM NOTES:**
- REFERENCE SPECIFICATION SECTION 283100 FOR ADDITIONAL REQUIREMENTS.
  - FIRE SHUTTERS SHALL BE WIRED THRU A CORNELL MODEL #58A RELEASING MECHANISM (OR FIREFLEX EQUIV.) AND RELEASED BY A ZAM MODULE FOR RELIABLE "FAIL-SAFE" OPERATION.
  - FIRE SHUTTER SMOKE DETECTORS SHALL BE SYSTEM DETECTORS. ONLY DETECTORS LOCATED BY SHUTTERS SHALL OPERATE THE RELEASE MECHANISM. (SHUTTERS SHALL NOT OPERATE ON GENERAL ALARM).
  - ZAM MODULE IS PROGRAMMED TO FOLLOW ACTION OF THE DETECTORS AT THE SHUTTER.
  - FIRE DAMPER SUPPLY: FOLLOW THE DUCT DETECTOR LOCATED ON THE SUPPLY SIDE OF THE AIR HANDLING UNIT.
  - FIRE DAMPER RETURN ARE ACTIVATED BY THE DUCT DETECTOR AT THE LOCATION OF THE DAMPER OR BY OPEN AREA (CEILING DETECTORS) IN AREA RETURN IS DRAWING FROM. THE LATTER OPTION REQUIRES FULLY DETECTED AREA OF RETURN SAMPLING.
  - INSTALL WIRING AND CABLES IN ACCORDANCE WITH SPECIFICATIONS.
  - PROVIDE TWO TELEPHONE LINES FROM F.A.C.P. DIGITAL ALARM COMMUNICATOR TRANSMITTER TO THE TELEPHONE SERVICE EQUIPMENT TERMINATION AT THE OWNER'S TELEPHONE COMPANY CONTRACTOR.
  - GENERATOR SHALL REPORT TO FIRE ALARM AND FIRE ALARM ANNUNCIATOR TO DISPLAY IF THE GENERATOR IS IN FAULT/MANUAL MODE OR RUNNING.



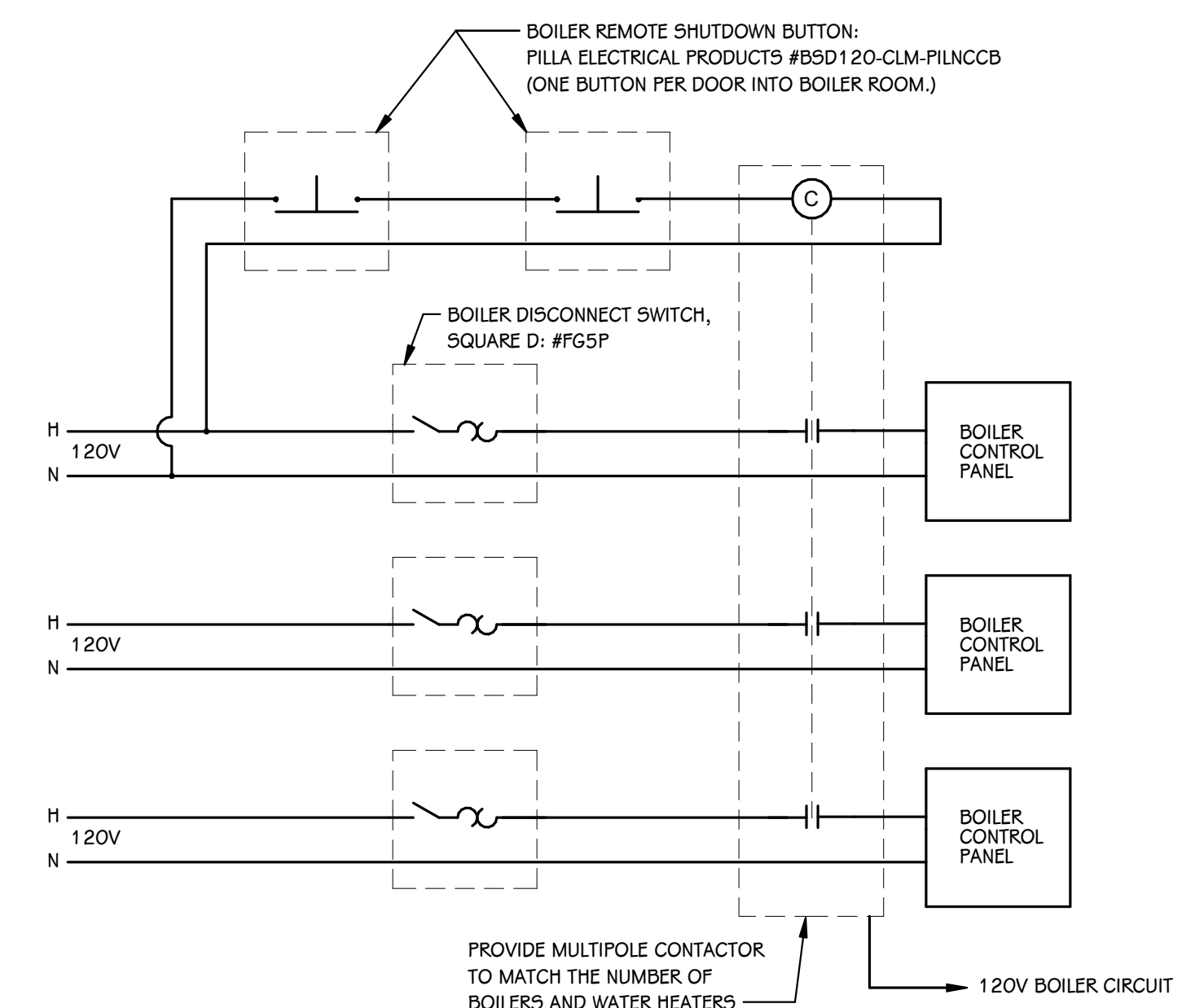
**OUTDOOR GENERATOR/TRANSFORMER PAD**  
SCALE: NONE



**TYPICAL GENERATOR CONTROL WIRING DIAGRAM**  
SCALE: NONE



**GENERATOR SET CONTROL AND ACCESSORY WIRING**  
SCALE: NONE



**BOILER SHUTDOWN DETAIL**  
SCALE: NONE

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
POWER DETAILS

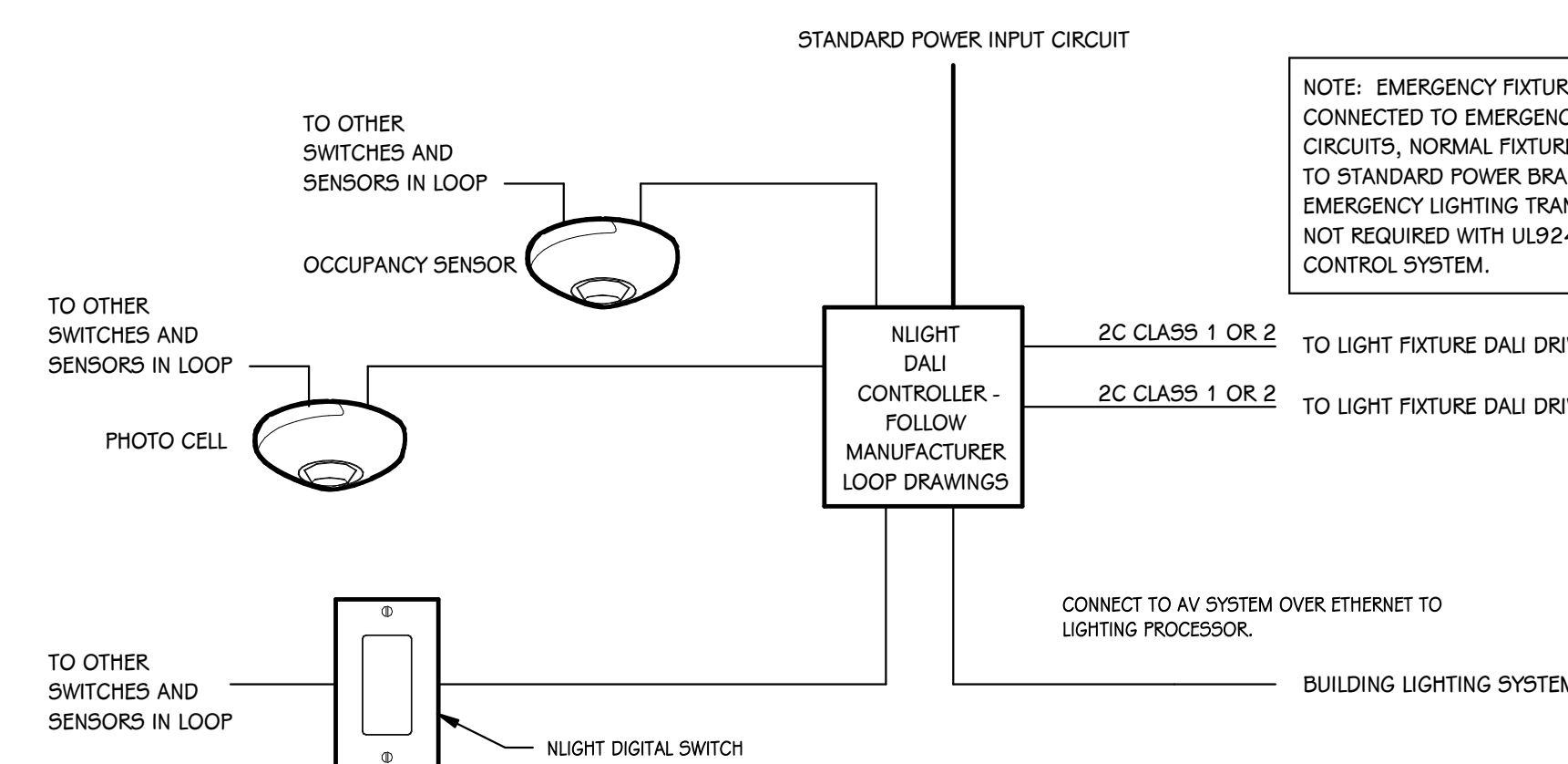
DATE  
JUNE 30, 2023  
SHEET NUMBER  
E 410  
21-237.20

LIGHT FIXTURE SCHEDULE										
TYPE	SERIES	DESCRIPTION	MOUNTING	DRIVER	WATTS	MANUFACTURER		NOTES		
CA4	CA4	4" ROUND DOWNLIGHT	RECESSED	DALI	15 VA	GOTHAM #IC04-4Q15-AR-LD-45D-277-EDAB				1, 2, 3
CB4	CB4	4" ROUND DOWNLIGHT	RECESSED	DALI	9 VA	GOTHAM: #EVO4RSH 4Q10 DFR 5MO 277 EDAB				1, 2, 3
CB6	CB6	6" ROUND DOWNLIGHT	RECESSED	DALI	40 VA	GOTHAM: #IC06-4Q40-AR-L55-45D-277-EDAB				1, 2, 3
HA	HA	HIGH BAY	CABLE	DALI	30 VA	LITHONIA: #JHBL 24000LM GL MD MVOLT ME090365 40K 80CRI DWYD				1, 2, 3
IA	IA	INDUSTRIAL STRIP	CABLE	DALI	32 VA	LITHONIA: # CLX LED LINEAR-L48-5000LM-HEF-FDL-MVOLT-GZ10-40K-80CRI				1, 2, 3
IAB	IAB	INDUSTRIAL STRIP - BATT	SURFACE	DALI	32 VA	LITHONIA: # CLX LED LINEAR-L48-5000LM-HEF-FDL-MVOLT-GZ10-40K-80CRI				1, 2, 3
IB	IB	ELEVATOR STRIP LIGHT, 4' - 0" LONG	RECESSED	DALI	74 VA	LITHONIA #CLX LED L48 3000LM HEF FDL MVOLT ME2080365 40K 80CRI				1, 2, 3
LA4"	LA	PENDANT LINEAR, 4' - 0" LONG	CABLE	DALI	28 VA	FINELITE #HP4 F D XX H 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LA6"	LA	PENDANT LINEAR, 6' - 0" LONG	CABLE	DALI	42 VA	FINELITE #HP4 F D XX H 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LA8"	LA	PENDANT LINEAR, 8' - 0" LONG	CABLE	DALI	56 VA	FINELITE #HP4 F D XX H 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LA10"	LA	PENDANT LINEAR, 10' - 0" LONG	CABLE	DALI	70 VA	FINELITE #HP4 F D XX H 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LA12"	LA	PENDANT LINEAR, 12' - 0" LONG	CABLE	DALI	84 VA	FINELITE #HP4 F D XX H 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LA19"	LA	PENDANT LINEAR, 19' - 0" LONG	CABLE	DALI	133 VA	FINELITE #HP4 F D XX H 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LA24"	LA	PENDANT LINEAR, 24' - 0" LONG	CABLE	DALI	168 VA	FINELITE #HP4 F D XX H 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LA28.5"	LA	PENDANT LINEAR, 28' - 6" LONG	CABLE	DALI	200 VA	FINELITE #HP4 F D XX H 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LB5.5"	LB	PENDANT LINEAR, 5' - 0" LONG	CABLE	DALI	35 VA	FINELITE #HP4 P D XX B 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LB9.5"	LB	PENDANT LINEAR, 9' - 6" LONG	CABLE	DALI	67 VA	FINELITE #HP4 P D XX B 840 F 96LG 277 5C FC DALI 1%				1, 2, 3, 4, 5
LC16.4"	LC	PENDANT LINEAR SMALL, 16' - 5" LONG	CABLE	DALI	66 VA	LUMIUM #00 C50 XX 840 VL DALI MB MB 44 MB P95 Ø				1, 2, 3, 4, 5
LC23.2"	LC	PENDANT LINEAR SMALL, 23' - 2" LONG	CABLE	DALI	93 VA	LUMIUM #00 C50 XX 840 VL DALI MB MB 44 MB P95 Ø				1, 2, 3, 4, 5
LC25.5"	LC	PENDANT LINEAR SMALL, 25' - 5 1/2" LONG	CABLE	DALI	102 VA	LUMIUM #00 C50 XX 840 VL DALI MB MB 44 MB P95 Ø				1, 2, 3, 4, 5
LC25.5"	LC	PENDANT LINEAR SMALL, 25' - 6" LONG	CABLE	DALI	102 VA	LUMIUM #00 C50 XX 840 VL DALI MB MB 44 MB P95 Ø				1, 2, 3, 4, 5
LD16.3"	LD	PENDANT LINEAR SMALL, 16' - 3 1/2" LONG	CABLE	DALI	65 VA	LUMIUM #00 C50 XX 840 L DALI MB MB 44 MB P95 Ø				1, 2, 3, 4, 5
PB2-A	PB2-A	SURFACE ROUND 24" ACOUSTIC	SURFACE	DALI	0 VA	FOCAL POINT #AUSDEP 2 5M CHG BK				1, 2
PB36	PB36	SURFACE ROUND 36"	SURFACE	DALI	35 VA	FOCAL POINT #FSDPEP 3 FL 4000DN OUP 4000K, 80CRI 1C UNV D11 5M RAL075 40 10				1, 2
PB48-A	PB48-A	SURFACE ROUND 48" ACOUSTIC	SURFACE	DALI	0 VA	FOCAL POINT #AUSDEP 2 5M NTL WH				1, 2
PC6	PC6	PENDANT CYLINDAR	CABLE	DALI	34 VA	GOTHAM #IC0 CYL 40/35 GWR L59 20D 277 EDAB ACC				1, 2, 3
PD4	PD4	PENDANT CYLINDAR GLOW	CABLE	DALI	29 VA	VISA #CP2024 L40K L40K - MVOLT WIDE GLWT				1, 2, 3
PL3"	PL	PENDANT LINEAR BAFFLE, 3' - 0" LONG	CABLE	DALI	21 VA	FINELITE #HP 2 P D XX B 840 F 96LG 277 5C FC DALI-1% FASO				1, 2, 3, 4, 5
PL4"	PL	PENDANT LINEAR BAFFLE, 4' - 0" LONG	CABLE	DALI	28 VA	FINELITE #HP 2 P D XX B 840 F 96LG 277 5C FC DALI-1% FASO				1, 2, 3, 4, 5
PL5"	PL	PENDANT LINEAR BAFFLE, 5' - 0" LONG	CABLE	DALI	35 VA	FINELITE #HP 2 P D XX B 840 F 96LG 277 5C FC DALI-1% FASO				1, 2, 3, 4, 5
PL6"	PL	PENDANT LINEAR BAFFLE, 6' - 0" LONG	CABLE	DALI	42 VA	FINELITE #HP 2 P D XX B 840 F 96LG 277 5C FC DALI-1% FASO				1, 2, 3, 4, 5
RA4"	RA	LINEAR RECESSED, 3' - 11 3/4" LONG	RECESSED GRID	DALI	28 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RA4"	RA	LINEAR RECESSED, 4' - 0" LONG	RECESSED GRID	DALI	28 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RA5.1"	RA	LINEAR RECESSED, 5' - 1" LONG	RECESSED GRID	DALI	36 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RA6"	RA	LINEAR RECESSED, 5' - 11 3/4" LONG	RECESSED GRID	DALI	42 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RA6"	RA	LINEAR RECESSED, 6' - 0" LONG	RECESSED GRID	DALI	42 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RA10"	RA	LINEAR RECESSED, 10' - 0" LONG	RECESSED GRID	DALI	70 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RA12"	RA	LINEAR RECESSED, 12' - 0" LONG	RECESSED GRID	DALI	84 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RA14"	RA	LINEAR RECESSED, 14' - 0" LONG	RECESSED GRID	DALI	98 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RA18"	RA	LINEAR RECESSED, 18' - 0" LONG	RECESSED GRID	DALI	126 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RA20"	RA	LINEAR RECESSED, 20' - 0" LONG	RECESSED GRID	DALI	140 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RB4"	RB	LINEAR RECESSED, 4' - 0" LONG	RECESSED GRID	DALI	28 VA	FINELITE #HP4 R D XX V 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RB6"	RB	LINEAR RECESSED, 6' - 0" LONG	RECESSED GRID	DALI	42 VA	FINELITE #HP4 R D XX V 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
RC4"	RC	LINEAR RECESSED, 4' - 0" LONG	RECESSED	DALI	28 VA	FAL #ML3WL65D-HO-K40-80-XX-R-LOH-F111-TF-277-DIM1				1, 2, 3, 4, 5
RC6"	RC	LINEAR RECESSED, 6' - 0" LONG	RECESSED	DALI	42 VA	FAL #ML3WL65D-HO-K40-80-XX-R-LOH-F111-TF-277-DIM1				1, 2, 3, 4, 5
RC8"	RC	LINEAR RECESSED, 8' - 0" LONG	RECESSED	DALI	56 VA	FAL #ML3WL65D-HO-K40-80-XX-R-LOH-F111-TF-277-DIM1				1, 2, 3, 4, 5
RD12"	RD	LINEAR RECESSED, 12' - 0" LONG	RECESSED GRID	DALI	84 VA	FINELITE #HP4 R D XX S 840 F 96LG 277 5C FC DALI-1%				1, 2, 3, 4, 5
TA	TA	2x2 TROFFER, 2' - 0" LONG	RECESSED GRID	DALI	37 VA	FINELITE #HPR LED-F-2X2-DCO-B-840-277V-SC-C1				1, 2, 3
WA	WA	LED WALL PACK	RECESSED GRID	DALI	56 VA	LITHONIA: #DSBW1 LED-20C-700-40K-13M-MVOLT-SBW-PE-OBKLD				1, 2
WG10	WG10	WALL MOUNT LINEAR, 10' - 0" LONG	WALL	DALI	120 VA	FOCAL POINT #FSMZPR GR2 250L F 40K 1C UNV D11 XF WH 10FT OIN				1, 2, 3, 4, 5
WM6	WM6	WALL MOUNT LINEAR, 6' - 0" LONG	WALL	DALI	72 VA	FINELITE #HP 4 WM D XX V 840 F 96LG 277 5C FC DALI 1 % MB FE XXXX				1, 2, 3, 4, 5
WM12	WM12	WALL MOUNT LINEAR, 12' - 0" LONG	WALL	DALI	144 VA	FINELITE #HP 4 WM D XX V 840 F 96LG 277 5C FC DALI 1 % MB FE XXXX				1, 2, 3, 4, 5
X1	X1	EXIT SIGN - EDGE LIT	SURFACE		5 VA	EVENLITE #90V-AC-R-(FACES)M-CC-(MOUNT)-A(ARROW)				1, 2, 6
X2	X2	EXIT SIGN - EDGE LIT	SURFACE		5 VA	EVENLITE #90V-AC-R-(FACES)M-CC-(MOUNT)-A(ARROW)				1, 2, 6
X3	X3	EXIT SIGN - EDGE LIT	SURFACE		5 VA	EVENLITE #90V-AC-R-(FACES)M-CC-(MOUNT)-A(ARROW)				1, 2, 6

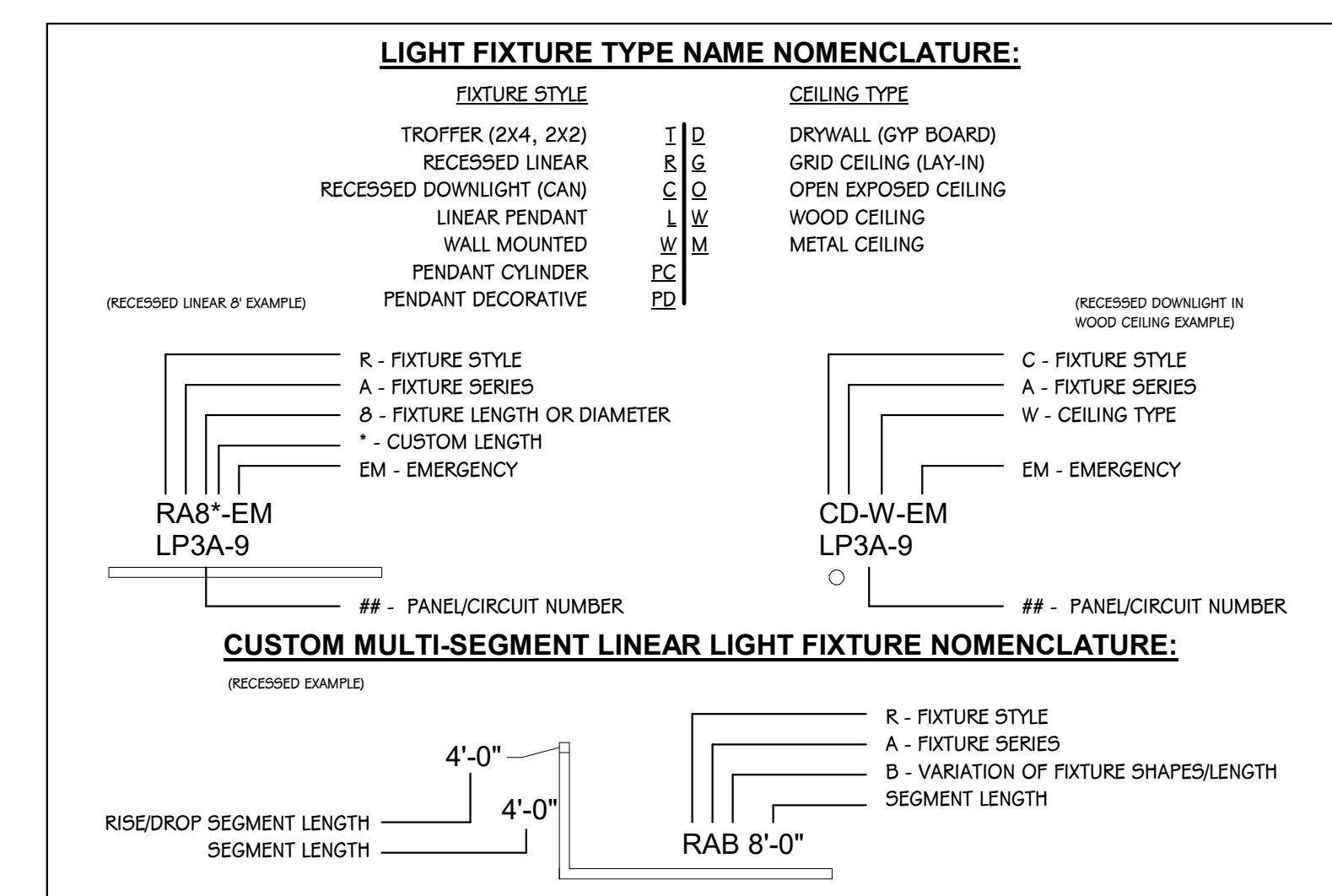
LIGHT FIXTURE SCHEDULE - CUSTOM MITERED ASSEMBLIES										
CUSTOM	SERIES	DESCRIPTION	ESTIMATED TOTAL LENGTH	MOUNTING	DRIVER	WATTS	MANUFACTURER		NOTES	
RAA	RA	LINEAR RECESSED	46' - 6"	RECESSED GRID	DALI	326 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC-DALI-1%			1, 2, 3, 4, 5
RAB	RA	LINEAR RECESSED	22' - 0"	RECESSED GRID	DALI	154 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC-DALI-1%			1, 2, 3, 4, 5
RAC	RA	LINEAR RECESSED	24' - 0"	RECESSED GRID	DALI	168 VA	FINELITE #HP4 R D XX H 840 F 96LG 277 5C FC-DALI-1%			1, 2, 3, 4, 5

FIXTURES WITH MULTIPLE SEGMENTS, MITERED TRANSITIONS AND CUSTOM ASSEMBLIES. REFER TO DRAWINGS FOR LENGTHS AND CONFIGURATION.

- \* FIELD COORDINATE AND FIELD MEASURE FOR CUSTOM LENGTH FIXTURES, LENGTHS PROVIDED ARE ROUNDED AND DEPEND ON FIELD CONDITIONS.
- 1 ALL LED FIXTURES TO HAVE WARRANTY TO MEET OR EXCEED WARRANTY INCLUDED IN BASIS OF DESIGN. FIXTURES LISTED AS EQUALS SHALL MEET DELIVERED LUMENS, CRI, EFFICACY AND OPTIONS OF THAT SPECIFIED. REFER TO SPECIFICATIONS 265100 AND 265600 FOR ADDITIONAL REQUIREMENTS.
- 2 THE MOUNTING DESCRIPTION IS GENERAL. REFER TO SHOP DRAWINGS AND MANUFACTURERS' INSTALLATION INSTRUCTIONS FOR SPECIFIC MOUNTING DETAILS.
- 3 FIXTURES WITH THE CENTER CIRCLE SHADED SHALL BE CONNECTED TO EMERGENCY POWER. DALI SYSTEM SHALL TURN THE FIXTURE "ON" WHEN NORMAL POWER FAILS AT 100% OUTPUT.
- 4 FIXTURE LENGTH PER DRAWINGS.
- 5 ONLY SUBMIT ONE SET OF LINEAR FIXTURE INFORMATION PER FIXTURE SERIES WHERE VARIOUS LENGTH FIXTURES OF SAME SERIES ARE USED.
- 6 EXIT SIGNS DIRECTIONAL ARROWS TO BE CONFIRMED ON PLANS PRIOR TO ORDERING. ARROWS ON GRAPHICS MAY NOT MATCH THOSE OF DESCRIPTION DUE TO FACE DIRECTION IN REFERENCE.
- 7 PROVIDE SEPERATE UN-SWITCHED LEG OF LOCAL LIGHTING CIRCUIT TO THE FIXTURES INTERNAL BATTERY.



TYPICAL DALI CONTROL DIAGRAM  
SCALE: NONE





DISTRIBUTION PANEL "MDP" LOAD SCHEDULE				
SWITCHBOARD: MDP		VOLTAGE: 480/277V		
LOCATION: ELEC E172		FED FROM: TX-MDP		
OPTIONS: SPD		MAINS RATING: 1600 A		
		A.I.C. RATING: 31828 A		
CIRCUIT NUMBER	LOAD NAME	RATING (A)	NUMBER OF POLES	CURRENT (A)
1	D1A	250 A	3	108 A
2	ATS	200 A	3	124 A
3	L1B	60 A	3	16 A
4	TX-SDP	350 A	3	294 A
5	L2A	60 A	3	12 A
6	D2A	250 A	3	147 A
7	HVAC - C1	600 A	3	462 A
8	ATS-LS	75 A	3	37 A
9	L1A	60 A	3	5 A
10	SPARE	250 A	3	--
11	SPARE	100 A	3	--
12	SPARE	60 A	3	--
13	SPARE	60 A	3	--
14	SPARE	30 A	3	--
15	SPD	100 A	3	--
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
TOTAL CONNECTED VA: 1002485 VA				
TOTAL CONNECTED AMPS: 1208 A				
TOTAL DEMAND VA: 922430 VA				
TOTAL DEMAND AMPS: 1110 A				

PANELBOARD "D1A" LOAD SCHEDULE										
PANEL: D1A		MOUNTING: SURFACE			VOLTAGE: 480/277V, 3PH, 4W					
LOCATION: ELEC E172 / FIRST FLOOR		AMPS: 400 A MLO			FED FROM: MDP					
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...			A.I.C. VALUE: 25971 A					
					(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION		
1 HVAC - P3	40	3	5817	5817			3	40	HVAC - P4	2
3 --	--	--	--	5817	5817		--	--	--	4
5 --	--	--	--	--	--		--	--	--	6
7 HVAC - ACCU1	45	3	10517	3935			3	20	HVAC - AHU4	8
9 --	--	--	--	10517	3935		--	--	--	10
11 --	--	--	--	--	10517	3935	--	--	--	12
13 HVAC - AHU5	20	3	3935	0			3	20	SPARE	14
15 --	--	--	--	3935	0		--	--	--	16
17 --	--	--	--	--	3935	0	--	--	--	18
19 SPARE	40	3	0	0			3	20	SPARE	20
21 --	--	--	--	0	0		--	--	--	22
23 --	--	--	--	0	0		--	--	--	24
25 SPARE	20	3	0	0			3	20	SPARE	26
27 --	--	--	--	0	0		--	--	--	28
29 --	--	--	--	0	0		--	--	--	30
31 SPARE	--	1	--	--			1	--	SPARE	32
33 SPARE	--	1	--	--			1	--	SPARE	34
35 SPARE	--	1	--	--			1	--	SPARE	36
37 SPARE	--	1	--	0			3	60	SPD	38
39 SPARE	--	1	--	0			--	--	--	40
41 SPARE	--	1	--	0			--	--	--	42
TOTAL LOAD:		30021 VA		30021 VA		30021 VA				
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA		0 VA		0 A				
TOTAL AMPS:		108 A		108 A		108 A				
LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS						
HVAC -	90063 VA	100.00%	90063 VA							
				TOTAL CONNECTED LOAD: 90063 VA						
				TOTAL ESTIMATED DEMAND: 90063 VA						
				TOTAL CONNECTED LOAD (A): 108 A						
				TOTAL ESTIMATED DEMAND... 108 A						
NOTES:										
PROVIDE SPD BREAKER PER ONELINE SCHEDULE.					RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER					
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.										

PANELBOARD "D2A" LOAD SCHEDULE										
PANEL: D2A		MOUNTING: SURFACE			VOLTAGE: 480/277V, 3PH, 4W					
LOCATION: ELEC E271 / SECOND FLOOR		AMPS: 400 A MLO			FED FROM: MDP					
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...			A.I.C. VALUE: 12741 A					
					(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION		
1 HVAC - AHU1	60	3	12969	12969			3	60	HVAC - AHU2	2
3 --	--	--	--	12969	12969		--	--	--	4
5 --	--	--	--	--	--		--	--	--	6
7 HVAC - AHU3	20	3	3935	582			3	20	HVAC - EF14	8
9 --	--	--	--	3935	582		--	--	--	10
11 --	--	--	--	--	3935	582	--	--	--	12
13 HVAC - RF-1	20	3	3878	3878			3	20	HVAC - RF-2	14
15 --	--	--	--	3878	3878		--	--	--	16
17 --	--	--	--	--	3878	3878	--	--	--	18
19 HVAC - RF-3	20	3	1330	1330			3	20	HVAC - RF-4	20
21 --	--	--	--	1330	1330		--	--	--	22
23 --	--	--	--	--	1330	1330	--	--	--	24
25 POWER - ELEV POWER	20	3	0	0			3	20	SPARE	26
27 --	--	--	--	0	0		--	--	--	28
29 --	--	--	--	0	0		--	--	--	30
31 SPARE	60	3	0	0			3	20	SPARE	32
33 --	--	--	--	0	0		--	--	--	34
35 --	--	--	--	0	0		--	--	--	36
37 SPARE	--	1	--	--			1	--	SPARE	38
39 SPARE	--	1	--	--			1	--	SPARE	40
41 SPARE	--	1	--	--			1	--	SPARE	42
43 SPARE	--	1	--	--			1	--	SPARE	44
45 SPARE	--	1	--	--			1	--	SPARE	46
47 SPARE	--	1	--	0			1	--	SPARE	48
49 SPARE	--	1	--	0			3	60	SPD	50
51 SPARE	--	1	--	0			--	--	--	52
53 SPARE	--	1	--	0			--	--	--	54
TOTAL LOAD:		40870 VA		40870 VA		40870 VA				
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA		0 VA		0 A				
TOTAL AMPS:		148 A		148 A		148 A				
LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS						
HVAC -	122610 VA	100.00%	122610 VA							
POWER -	0 VA	0.00%	0 VA	TOTAL CONNECTED LOAD: 122610 VA						
				TOTAL ESTIMATED DEMAND: 122610 VA						
				TOTAL CONNECTED LOAD (A): 147 A						
				TOTAL ESTIMATED DEMAND... 147 A						
NOTES:										
PROVIDE SPD BREAKER PER ONELINE SCHEDULE.					RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER					
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.										

PANELBOARD "L1A" LOAD SCHEDULE										
PANEL: L1A		MOUNTING: SURFACE			VOLTAGE: 480/277V, 3PH, 4W					
LOCATION: ELEC E172 / FIRST FLOOR		AMPS: 125 A MLO			FED FROM: MDP					
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...			A.I.C. VALUE: 9598 A					
					(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION		
1 LIGHTING -	20	1	2665	816			1	20	LIGHTING -	2
3 EXTERIOR LIGHTING	20	1		706	0		1	20	SPARE	4
5 SPARE	20	1			0	0	1	20	SPARE	6
7 SPARE	20	1	0	0			1	20	SPARE	8
9 SPARE	--	1	--	--			1	--	SPARE	10
11 SPARE	--	1	--	--			1	--	SPARE	12
13 SPARE	--	1	--	--			1	--	SPARE	14
15 SPARE	--	1	--	--			1	--	SPARE	16
17 SPARE	--	1	--	--			1	--	SPARE	18
19 SPARE	--	1	--	0			3	30	SPD	20
21 SPARE	--	1	--	0			--	--	--	22
23 SPARE	--	1	--	0			--	--	--	24
TOTAL LOAD:		3481 VA		706 VA		0 VA				
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA		0 VA		0 A				
TOTAL AMPS:		13 A		3 A		0 A				
LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS						
LIGHTING -	3361 VA	100.00%	3361 VA	TOTAL CONNECTED LOAD: 4187 VA						
Other	706 VA	100.00%	706 VA	TOTAL ESTIMATED DEMAND: 4187 VA						
EMERGENCY LIGHTING-	120 VA	100.00%	120 VA	TOTAL CONNECTED LOAD (A): 5 A						
				TOTAL ESTIMATED DEMAND... 5 A						
NOTES:										
PROVIDE SPD BREAKER PER ONELINE SCHEDULE.					RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER					
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.										

PANELBOARD "L1B" LOAD SCHEDULE										
PANEL: L1B		MOUNTING: SURFACE			VOLTAGE: 480/277V, 3PH, 4W					
LOCATION: ELEC E117 / FIRST FLOOR		AMPS: 125 A MLO			FED FROM: MDP					
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...			A.I.C. VALUE: 2304 A					
					(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION		
1 LIGHTING -	20	1	2665	3225			1	20	LIGHTING -	2
3 LIGHTING -	20	1		1761	2620		1	20	LIGHTING - TOILET 143-ST	4
5 EXTERIOR LIGHTING	20	1			1646	1258	1	20	EXTERIOR LIGHTING	6
7 SPARE	20	1	0	0			1	20	SPARE	8
9 SPARE	--	1	--	--			1	--	SPARE	10
11 SPARE	--	1	--	--			1	--	SPARE	12
13 SPARE	--	1	--	--			1	--	SPARE	14
15 SPARE	--	1	--	--			1	--	SPARE	16
17 SPARE	--	1	--	--			1	--	SPARE	18
19 SPARE	--	1	--	0			3	30	SPD	20
21 SPARE	--	1	--	0			--	--	--	22
23 SPARE	--	1	--	0			--	--	--	24
TOTAL LOAD:		5910 VA		4381 VA		2904 VA				
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA		0 VA		0 A				
TOTAL AMPS:		22 A		17 A		10 A				
LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS						
LIGHTING -	10471 VA	100.00%	10471 VA	TOTAL CONNECTED LOAD: 13195 VA						
Other	2724 VA	100.00%	2724 VA	TOTAL ESTIMATED DEMAND: 13195 VA						
				TOTAL CONNECTED LOAD (A): 16 A						
				TOTAL ESTIMATED DEMAND... 16 A						
NOTES:										
PROVIDE SPD BREAKER PER ONELINE SCHEDULE.					RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER					
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.										

PANELBOARD "L2A" LOAD SCHEDULE										
PANEL: L2A		MOUNTING: SURFACE			VOLTAGE: 480/277V, 3PH, 4W					
LOCATION: ELEC E217 / SECOND FLOOR		AMPS: 125 A MLO			FED FROM: MDP					
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...			A.I.C. VALUE: 2628 A					
					(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION		
1 LIGHTING -	20	1	2869	2872			1	20	LIGHTING -	2
3 LIGHTING -	20	1		2264	2066		1	20	LIGHTING - Room 221	4
5 SPARE	20	1			0	0	1	20	SPARE	6
7 SPARE	20	1	0	0			1	20	SPARE	8
9 SPARE	--	1	--	--			1	--	SPARE	10
11 SPARE	--	1	--	--			1	--	SPARE	12
13 SPARE	--	1	--	--			1	--	SPARE	14
15 SPARE	--	1	--	--			1	--	SPARE	16
17 SPARE	--	1	--	--			1	--	SPARE	18
19 SPARE	--	1	--	0			3	30	SPD	20
21 SPARE	--	1	--	0			--	--	--	22
23 SPARE	--	1	--	0			--	--	--	24
TOTAL LOAD:		5742 VA		4329 VA		0 VA				
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA		0 VA		0 A				
TOTAL AMPS:		23 A		18 A		0 A				
LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS						
LIGHTING -	10071 VA	100.00%	10071 VA	TOTAL CONNECTED LOAD: 10071 VA						
				TOTAL ESTIMATED DEMAND: 10071 VA						
				TOTAL CONNECTED LOAD (A):						

ISSUED FOR DATE

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION**

OWNER  
**PORTAGE PUBLIC SCHOOLS**

SHEET NUMBER  
**E 502**  
DATE  
**JUNE 30, 2023**  
SHEET TITLE  
**ELECTRICAL PANEL LOAD SHEETS**

Portage, Michigan

### PANELBOARD " R1A" LOAD SCHEDULE

PANEL: R1A		MOUNTING: SURFACE		VOLTAGE: 208/120V, 3PH, 4W	
LOCATION: MECHANICAL M170 / FIRST FLOOR		AMPS: 100 A MLO		FED FROM: SDP	
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...		A.I.C. VALUE: 10977 A	
(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)
1 HVAC - C1 CONTROLS	20	1	500	720	
3 RECEPTACLE - Room M171, E172	20	1		720	720
5 RECEPTACLE - Room 161, 160T	20	1			360
7 CAFE 160	20	1	420	720	
9 HVAC - RECEIVING 168	20	1		250	1200
11 Room 150-1	20	1			360
13 POWER - BACKBOARD	20	1	360	600	
15 HVAC - CUH-3	20	1		610	780
17 CAFE 160	20	1			1140
19 RECEPTACLE - GYMNASIUM-1 150-1	20	1	540	1176	
21 HVAC - P-10	20	1		1176	250
23 HVAC - MECHANICAL M170	20	1			528
25 SPARE	20	1	0	0	
27 SPARE	20	1		0	0
29 SPARE	20	1		0	0
31 SPARE	--	1	--	--	--
33 SPARE	--	1	--	--	--
35 SPARE	--	1	--	--	--
37 SPARE	--	1	--	0	--
39 SPARE	--	1	--	0	--
41 SPARE	--	1	--	0	--

TOTAL LOAD:		5036 VA	5706 VA	5364 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA	0 VA	0 A
TOTAL AMPS:		42 A	48 A	45 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
HVAC -	6506 VA	100.00%	6506 VA	
POWER -	720 VA	100.00%	720 VA	
RECEPTACLE -	7440 VA	100.00%	7440 VA	
TECHNOLOGY -	1440 VA	100.00%	1440 VA	
<b>TOTAL CONNECTED LOAD:</b>				<b>16106 VA</b>
<b>TOTAL ESTIMATED DEMAND:</b>				<b>16106 VA</b>
<b>TOTAL CONNECTED LOAD (A):</b>				<b>45 A</b>
<b>TOTAL ESTIMATED DEMAND:</b>				<b>45 A</b>

**NOTES:**  
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

### PANELBOARD " R1B" LOAD SCHEDULE

PANEL: R1B		MOUNTING: SURFACE		VOLTAGE: 208/120V, 3PH, 4W	
LOCATION: ELEC E145 / FIRST FLOOR		AMPS: 100 A MLO		FED FROM: SDP	
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...		A.I.C. VALUE: 3596 A	
(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)
1 COMMONS 130	20	1	900	780	
3 RECEPTACLE - LEARNING STUDIO 136	20	1		720	720
5 COMMONS 140	20	1		540	600
7 LEARNING STUDIO 142	20	1	780	540	
9 RECEPTACLE - LEARNING STUDIO 142	20	1		720	360
11 LEARNING STUDIO 144	20	1		780	720
13 RECEPTACLE - LEARNING STUDIO 144	20	1	720	780	
15 RECEPTACLE - LEARNING STUDIO 146	20	1		720	720
17 RECEPTACLE - SMALL GROUP 140G	20	1		540	480
19 RECEPTACLE - Room 141, 143	20	1	720	360	
21 RECEPTACLE - STORAGE 160S	20	1		360	720
23 TECHNOLOGY - ESI STUDIO 139	20	1		780	720
25 RECEPTACLE - STAIR-1 STS-1	20	1	900	900	
27 TECHNOLOGY - GYMNASIUM-1 150-1	20	1		360	600
29 HVAC - TERMINAL UNITS	20	1		500	250
31 POWER - TOILET 143	20	1	1000	0	
33 SPARE	20	1		0	0
35 SPARE	20	1		0	0
37 SPARE	--	1	--	0	--
39 SPARE	--	1	--	0	--
41 SPARE	--	1	--	0	--

TOTAL LOAD:		8380 VA	6000 VA	5910 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA	0 VA	0 A
TOTAL AMPS:		70 A	50 A	49 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
HVAC -	750 VA	100.00%	750 VA	
Other	300 VA	100.00%	300 VA	
POWER -	1000 VA	100.00%	1000 VA	
RECEPTACLE -	16080 VA	81.09%	13040 VA	
TECHNOLOGY -	2160 VA	100.00%	2160 VA	
<b>TOTAL CONNECTED LOAD:</b>				<b>20290 VA</b>
<b>TOTAL ESTIMATED DEMAND:</b>				<b>17250 VA</b>
<b>TOTAL CONNECTED LOAD (A):</b>				<b>56 A</b>
<b>TOTAL ESTIMATED DEMAND:</b>				<b>48 A</b>

**NOTES:**  
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

### PANELBOARD " SDP" LOAD SCHEDULE

PANEL: SDP		MOUNTING: SURFACE		VOLTAGE: 208/120V, 3PH, 4W	
LOCATION: ELEC E172 / FIRST FLOOR		AMPS: 800 A MB		FED FROM: TX-SDP	
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...		A.I.C. VALUE: 28003 A	
(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)
1 R1A	100	3	5036	20116	
3	--	--	--	5706	16744
5	--	--	--	5364	15988
7 R1C	150	3	12180	8380	
9	--	--	--	8780	6000
11	--	--	--	7860	5910
13 R2B	150	3	7540	15623	
15	--	--	--	7156	16223
17	--	--	--	7948	15083
19 R2A	150	3	9468	10482	
21	--	--	--	8168	9724
23	--	--	--	8992	9704
25 SPACE	--	1	--	--	--
27 SPACE	--	1	--	--	--
29 SPACE	--	1	--	--	--
31 SPACE	--	1	--	--	--
33 SPACE	--	1	--	--	--
35 SPACE	--	1	--	--	--
37 SPACE	--	1	--	0	--
39 SPACE	--	1	--	0	--
41 SPACE	--	1	--	0	--

TOTAL LOAD:		88825 VA	78502 VA	76850 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA	0 VA	0 A
TOTAL AMPS:		742 A	656 A	640 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
HVAC -	38128 VA	100.00%	38128 VA	
KITCHEN EQUIPMENT -	8697 VA	100.00%	8697 VA	
LIGHTING -	1080 VA	100.00%	1080 VA	
Other	1560 VA	100.00%	1560 VA	
POWER -	18020 VA	100.00%	18020 VA	
RECEPTACLE -	134170 VA	53.73%	72085 VA	
TECHNOLOGY -	16200 VA	100.00%	16200 VA	
KITCHEN -	22721 VA	100.00%	22721 VA	
HAND DRYER -	3600 VA	100.00%	3600 VA	
<b>TOTAL CONNECTED LOAD:</b>				<b>244176 VA</b>
<b>TOTAL ESTIMATED DEMAND:</b>				<b>182091 VA</b>
<b>TOTAL CONNECTED LOAD (A):</b>				<b>678 A</b>
<b>TOTAL ESTIMATED DEMAND:</b>				<b>505 A</b>

**NOTES:**  
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

### PANELBOARD " R1C" LOAD SCHEDULE

PANEL: R1C		MOUNTING: SURFACE		VOLTAGE: 208/120V, 3PH, 4W	
LOCATION: CUSTODIAL 154 / FIRST FLOOR		AMPS: 150 A MLO		FED FROM: SDP	
ADDED ACCESSORIES: DOUBLE TUB, SPD		FEED-THRU LUGS...		A.I.C. VALUE: 6186 A	
(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C
1 LEARNING STUDIO 132	20	1	780	720	
3 RECEPTACLE - LEARNING STUDIO 132	20	1		540	360
5 LEARNING STUDIO 134	20	1			780
7 RECEPTACLE - LEARNING STUDIO 134	20	1	900	720	
9 RECEPTACLE - Y5 / FLEX STUDIO 131	20	1		540	540
11 RECEPTACLE - Y5 / FLEX STUDIO 131	20	1			540
13 POWER - Y5 / FLEX STUDIO 131	20	1	1500	1500	
15 EDUC WORKSHOP 133	20	1		420	660
17 RECEPTACLE - EDUC WORKSHOP 133	20	1			360
19 RECEPTACLE - EDUC WORKSHOP 133	20	1	600	180	
21 RECEPTACLE - EDUC WORKSHOP 133	20	1		360	180
23 MUSIC 115	20	1			780
25 RECEPTACLE - MUSIC 115	20	1	540	780	
27 RECEPTACLE - DATA / IT D159	20	1		720	360
29 TECHNOLOGY - HEART 110	20	1			360
31 RECEPTACLE - Room 113, 110	20	1	540	360	
33 CUSTODIAL OFFICE 155	20	1		780	900
35 RECEPTACLE - CUSTODIAN 154	20	1			540
37 RECEPTACLE - MEN 157	20	1	720	900	
39 HAND DRYER - MEN 157	20	1			900
41 RECEPTACLE - WOMEN 153	20	1			720
43 HAND DRYER - WOMEN 153	20	1	900	540	
45 RECEPTACLE - Room 130H	20	1		480	500
47 SPARE	20	1		0	0
49 SPARE	20	1	0	0	
51 SPARE	20	1		0	0
53 SPARE	20	1		0	0
55 SPARE	20	1	0	0	
57 SPARE	20	1		0	0
59 SPARE	20	1		0	0
61 SPACE	--	1	--	--	--
63 SPACE	--	1	--	--	--
65 SPACE	--	1	--	--	--
67 SPACE	--	1	--	0	--
69 SPACE	--	1	--	0	--
71 SPACE	--	1	--	0	--

TOTAL LOAD:		12180 VA	8780 VA	7980 VA
ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):		0 VA	0 VA	0 A
TOTAL AMPS:		103 A	74 A	66 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
HVAC -	500 VA	100.00%	500 VA	
LIGHTING -	1080 VA	100.00%	1080 VA	
Other	240 VA	100.00%	240 VA	
POWER -	3000 VA	100.00%	3000 VA	
RECEPTACLE -	17880 VA	77.96%	13940 VA	
TECHNOLOGY -	2520 VA	100.00%	2520 VA	
HAND DRYER -	3600 VA	100.00%	3600 VA	
<b>TOTAL CONNECTED LOAD:</b>				<b>24820 VA</b>
<b>TOTAL ESTIMATED DEMAND:</b>				<b>24880 VA</b>
<b>TOTAL CONNECTED LOAD (A):</b>				<b>80 A</b>
<b>TOTAL ESTIMATED DEMAND:</b>				<b>69 A</b>

**NOTES:**  
PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
AIC RATING IS CALCULATED VALUE, PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

### PANELBOARD " R1D" LOAD SCHEDULE

PANEL: R1D		MOUNTING: SURFACE		VOLTAGE: 208/120V, 3PH, 4W	
LOCATION: ELEC E117 / FIRST FLOOR		AMPS: 225 A MLO		FED FROM: SDP	
ADDED ACCESSORIES: DOUBLE TUB, SPD		FEED-THRU LUGS...		A.I.C. VALUE: 6884 A	
(PROVIDE 25% HIGHER A.I.C. RATING)					
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C
1 LEARNING STUDIO 126	20	1	780	720	
3 RECEPTACLE - LEARNING STUDIO 126	20	1		900	720
5 LEARNING STUDIO 122	20	1			780
7 RECEPTACLE - LEARNING STUDIO 122	20	1	720	600	
9 RECEPTACLE - C-CLOCK - COMMONS 120	20	1		1140	780
11 RECEPTACLE - LEARNING STUDIO 128	20	1		720	720
13 EDUC WORKSHOP 123	20	1	420	540	
15 TECHNOLOGY - EDUC WORKSHOP 123	20	1		360	360
17 RECEPTACLE - EDUC WORKSHOP 123	20	1			360
19 RECEPTACLE - KLN 116K	60	3	4803	1180	
21	--	--	--	4803	360
23	--	--	--	4803	780
25 RECEPTACLE - ART 116	20	1	900	540	
27 RECEPTACLE - ART 116	20	1		720	1500
29 POWER - ART 116	20	1			1500
31 TECHNOLOGY - LIBRARY 112	20	1	780	720	
33 RECEPTACLE - LIBRARY 112	20	1		540	900
35 RECEPTACLE - LIBRARY 112	20	1			600
37 HVAC - CUH-4	20	1	250	1200	
39 TECHNOLOGY - LIBRARY 112	20	1		540	540
41 HVAC - TERMINAL UNITS	20	1			500
43 HVAC - TERMINAL UNITS	20	1	500	540	
45 HVAC - TERMINAL UNITS	20	1		500	1380
47 RECEPTACLE - ELEC E117	20	1		180	180
49 HVAC - CUH-6	20	1	250	180	
51 RECEPTACLE -	20	1		180	0
53 SPARE	20	1		0	0
55 SPARE	20	1	0	0	
57 SPARE	20	1		0	0
59 SPARE	20	1		0	0
61 SPACE	--	1	--	--	--
63 SPACE	--	1	--	--	--
65 SPACE	--	1	--	--	--
67 SPACE	--	1	--	0	--
69 SPACE	--	1	--	0	--
71 SPACE	--	1	--	0	--

TOTAL LOAD:		15623 VA	16223 VA	15083 VA
ADDITIONAL FEED THRU LUGS LOAD (IF AP				

**PANELBOARD " R2A" LOAD SCHEDULE**

PANEL: R2A		MOUNTING: SURFACE		VOLTAGE: 208/120V, 3PH, 4W					
LOCATION: ELEC-2 E245-2 / SECOND FLOOR		AMP: 150 A MLO		FED FROM: SDP					
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...		A.I.C. VALUE: 6548 A					
(PROVIDE 25% HIGHER A.I.C. RATING)									
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	TRIP (A)
1 RECEPTACLE - LEARNING STUDIO 236	20	1	720	780			1	20 TECHNOLOGY - LEARNING STUDIO 236	2
3 RECEPTACLE - LEARNING STUDIO 236	20	1			720	540	1	20 RECEPTACLE - LEARNING STUDIO 236	4
5 RECEPTACLE - SMALL GROUP 238	20	1				600	720	1 20 RECEPTACLE - LEARNING STUDIO 242	6
7 RECEPTACLE - LEARNING STUDIO 242	20	1	720	780			1	20 TECHNOLOGY - LEARNING STUDIO 242	8
9 RECEPTACLE - COMMONS 240	20	1			960	780	1	20 TECHNOLOGY - LEARNING STUDIO 244	10
11 RECEPTACLE - LEARNING STUDIO 244	20	1			720	540	1	20 RECEPTACLE - LEARNING STUDIO 244	12
13 RECEPTACLE - SMALL GROUP 240G	20	1	540	720			1	20 RECEPTACLE - LEARNING STUDIO 246	14
15 RECEPTACLE - SMALL GROUP 246	20	1		720	780		1	20 TECHNOLOGY - LEARNING STUDIO 246	16
17 RECEPTACLE - 243. PASSAGEWAY 240H	20	1			540	360	1	20 RECEPTACLE - CUST CLO 241	18
19 RECEPTACLE - ESI STUDIO 237	20	1	720	780			1	20 TECHNOLOGY - ESI STUDIO 237	20
21 TECHNOLOGY - ESI WORKSHOP 219	20	1		420	720		1	20 RECEPTACLE - ESI WORKSHOP 219	22
23 RECEPTACLE - ESI WORKSHOP 219	20	1			720	540	1	20 RECEPTACLE - ESI WORKSHOP 219	24
25 RECEPTACLE - ESI WORKSHOP 219	20	1	540	540			1	20 RECEPTACLE - ESI WORKSHOP 219	26
27 RECEPTACLE - FRIDGE	20	1		180	0		1	20 HVAC - AHU5	28
29 RECEPTACLE - COMMONS 230	20	1			540	360	1	20 RECEPTACLE - COMMONS 230	30
31 RECEPTACLE - PASSAGEWAY 240H	20	1	840	900			1	20 RECEPTACLE - MECHANICAL M260	32
33 RECEPTACLE - COMMONS 210	20	1		540	780		1	20 TECHNOLOGY - COMMONS 210	34
35 HVAC - EF10	20	1			1176	1000	1	20 POWER - AUTO SINK - 243	36
37 RECEPTACLE - TOILET 243-5T	20	1	360	528			1	20 HVAC - EF13	38
39 HVAC - UH-M260	20	1		528	500		1	20 HVAC - TERMINAL UNITS	40
41 HVAC - MECHANICAL M260	20	1	0	0	1176	0	1	20 SPARE	42
43 SPARE	20	1	0	0			1	20 SPARE	44
45 SPARE	20	1		0	0		1	20 SPARE	46
47 SPARE	20	1			0	0	1	20 SPARE	48
49 SPARE	--	1	--	0			3	30 SPD	50
51 SPARE	--	1	--	0			--	--	52
53 SPARE	--	1	--	0			--	--	54
<b>ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):</b>		TOTAL LOAD: 9468 VA		8168 VA		8992 VA			
		CONNECTED LOAD:		DEMAND FACTOR:		ESTIMATED DEMAND:		PANEL TOTALS	
HVAC -		3908 VA		100.00%		3908 VA			
Other		360 VA		100.00%		360 VA		<b>TOTAL CONNECTED LOAD:</b> 28628 VA	
POWER -		1000 VA		100.00%		1000 VA		<b>TOTAL ESTIMATED DEMAND:</b> 22388 VA	
RECEPTACLE -		18480 VA		77.06%		14240 VA		<b>TOTAL CONNECTED LOAD (A):</b> 74 A	
TECHNOLOGY -		2880 VA		100.00%		2880 VA		<b>TOTAL ESTIMATED DEMAND:</b> 62 A	

NOTES: PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
AIC RATING IS CALCULATED VALUE. PROVIDE I.C. RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

**PANELBOARD " R2B" LOAD SCHEDULE**

PANEL: R2B		MOUNTING: SURFACE		VOLTAGE: 208/120V, 3PH, 4W					
LOCATION: ELEC E217 / SECOND FLOOR		AMP: 150 A MLO		FED FROM: SDP					
ADDED ACCESSORIES: DOUBLE TUB, SPD		FEED-THRU LUGS...		A.I.C. VALUE: 6548 A					
(PROVIDE 25% HIGHER A.I.C. RATING)									
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	TRIP (A)
1 RECEPTACLE - LEARNING STUDIO 232	20	1	720	540			1	20 RECEPTACLE - LEARNING STUDIO 232	2
3 LEARNING STUDIO 232	20	1		780	540		1	20 RECEPTACLE - SMALL GROUP 230G	4
5 RECEPTACLE - LEARNING STUDIO 234	20	1			540	780	1	20 Room 234	6
7 RECEPTACLE - LEARNING STUDIO 234	20	1	360	540			1	20 RECEPTACLE - LEARNING STUDIO 234	8
9 RECEPTACLE - FLEX STUDIO 231	20	1		720	540		1	20 RECEPTACLE - FLEX STUDIO 231	10
11 TECHNOLOGY - FLEX STUDIO 231	20	1			780	500	1	20 POWER - FLEX STUDIO 231	12
13 POWER - FLEX STUDIO 231	20	1	500	500			1	20 POWER - FLEX STUDIO 231	14
15 POWER - FLEX STUDIO 231	20	1		500	500		1	20 POWER - FLEX STUDIO 231	16
17 POWER - FLEX STUDIO 231	20	1			500	780	1	20 RECEPTACLE - EDUC WORKSHOP 233	18
19 RECEPTACLE - EDUC WORKSHOP 233	20	1	540	540			1	20 RECEPTACLE - EDUC WORKSHOP 233	20
21 TECHNOLOGY - EDUC WORKSHOP 233	20	1		360	180		1	20 RECEPTACLE - FRIDGE	22
23 RECEPTACLE - COPIER	20	1			180	600	1	20 RECEPTACLE - EDUC WORKSHOP 233	24
25 RECEPTACLE - ESI SGR 214	20	1	600	360			1	20 TECHNOLOGY - ESI SGR 214	26
27 RECEPTACLE - ESI SGR 215	20	1		600	360		1	20 TECHNOLOGY - ESI SGR 215	28
29 RECEPTACLE - SEMINAR 213	20	1			780	360	1	20 TECHNOLOGY - SEMINAR 213	30
31 RECEPTACLE - COMMONS 210	20	1	540	720			1	20 RECEPTACLE - PROJECTOR - COMMONS 210	32
33 RECEPTACLE - PASSAGEWAY 230H,220H	20	1		480	360		1	20 RECEPTACLE - STAIR ST3	34
35 RECEPTACLE - GATHERING STAIR	20	1			540	540	1	20 RECEPTACLE - GATHERING STAIR	36
37 RECEPTACLE - GATHERING STAIR	20	1	540	540			1	20 RECEPTACLE - GATHERING STAIR	38
39 RECEPTACLE - GATHERING STAIR	20	1		540	696		1	20 HVAC - EF11	40
41 HVAC - EF12	20	1			528	540	1	20 RECEPTACLE - FLEX STUDIO 231	42
43 SPARE	20	1	0	0			1	20 SPARE	44
45 SPARE	20	1		0	0		1	20 SPARE	46
47 SPARE	20	1			0	0	1	20 SPARE	48
49 SPARE	20	1	0	0			1	20 SPARE	50
51 SPARE	20	1		0	0		1	20 SPARE	52
53 SPARE	20	1			0	0	1	20 SPARE	54
55 SPARE	--	1	--	--			1	-- SPARE	56
57 SPARE	--	1	--	--	--	--	1	-- SPARE	58
59 SPARE	--	1	--	--	--	--	1	-- SPARE	60
61 SPARE	--	1	--	--	--	--	1	-- SPARE	62
63 SPARE	--	1	--	--	--	--	1	-- SPARE	64
65 SPARE	--	1	--	--	--	--	1	-- SPARE	66
67 SPARE	--	1	--	0			3	30 SPD	68
69 SPARE	--	1	--	--	0		--	--	70
71 SPARE	--	1	--	--	--	0	--	--	72
<b>ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):</b>		TOTAL LOAD: 7540 VA		7156 VA		7948 VA			
		CONNECTED LOAD:		DEMAND FACTOR:		ESTIMATED DEMAND:		PANEL TOTALS	
HVAC -		1224 VA		100.00%		1224 VA			
Other		180 VA		100.00%		180 VA		<b>TOTAL CONNECTED LOAD:</b> 22644 VA	
POWER -		3000 VA		100.00%		3000 VA		<b>TOTAL ESTIMATED DEMAND:</b> 19784 VA	
RECEPTACLE -		15720 VA		81.81%		12860 VA		<b>TOTAL CONNECTED LOAD (A):</b> 63 A	
TECHNOLOGY -		2520 VA		100.00%		2520 VA		<b>TOTAL ESTIMATED DEMAND:</b> 55 A	

NOTES: PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
AIC RATING IS CALCULATED VALUE. PROVIDE I.C. RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

**PANELBOARD " R2C" LOAD SCHEDULE**

PANEL: R2C		MOUNTING: SURFACE		VOLTAGE: 208/120V, 3PH, 4W						
LOCATION: ELEC E271 / SECOND FLOOR		AMP: 150 A MLO		FED FROM: SDP						
ADDED ACCESSORIES: SPD		FEED-THRU LUGS...		A.I.C. VALUE: 4302 A						
(PROVIDE 25% HIGHER A.I.C. RATING)										
CIRCUIT DESCRIPTION	TRIP (A)	POLES	A	B	C	POLES	TRIP (A)	CIRCUIT DESCRIPTION	TRIP (A)	
1 HVAC - AHU2	20	1	500	500			1	20 HVAC - AHU3	2	
3 HVAC - AHU4	20	1		500	500		1	20 HVAC - AHU1	4	
5 TECHNOLOGY - LEARNING STUDIO 226	20	1			780	540	1	20 RECEPTACLE - LEARNING STUDIO 226	6	
7 RECEPTACLE - LEARNING STUDIO 226	20	1	540	540			1	20 RECEPTACLE - LEARNING STUDIO 226	8	
9 RECEPTACLE - SMALL GROUP 224	20	1			780	540	1	20 RECEPTACLE - LEARNING STUDIO 222	10	
11 RECEPTACLE - LEARNING STUDIO 222	20	1			600	780	1	20 TECHNOLOGY - LEARNING STUDIO 222	12	
13 RECEPTACLE - LEARNING STUDIO 222	20	1	720	540			1	20 RECEPTACLE - COMMONS 220	14	
15 RECEPTACLE - LEARNING STUDIO 228	20	1		540	540		1	20 RECEPTACLE - LEARNING STUDIO 228	16	
17 RECEPTACLE - LEARNING STUDIO 228	20	1			540	720	1	20 RECEPTACLE - EDUC WORKSHOP 221	18	
19 RECEPTACLE - EDUC WORKSHOP 221	20	1	540	540			1	20 RECEPTACLE - EDUC WORKSHOP 221	20	
21 TECHNOLOGY - EDUC WORKSHOP 221	20	1		420	600		1	20 RECEPTACLE - EDUC WORKSHOP 221	22	
23 RECEPTACLE - MECHANICAL M270	20	1			720	720	1	20 RECEPTACLE - MECHANICAL M270	24	
25 RECEPTACLE - TOILET 227, PASSAGEWAY 220H	20	1	540	360			1	20 RECEPTACLE - STAFF TOILET 211T	26	
27 RECEPTACLE - ELEC E271	20	1		360	696		1	20 HVAC - EF3	28	
29 POWER - TOILET 227	20	1			200	360	1	20 RECEPTACLE - TOILET 227-5T	30	
31 HVAC - EF4	20	1	1176	696			1	20 HVAC - EF5	32	
33 HVAC - EF6	20	1		696	696		1	20 HVAC - EF7	34	
35 HVAC - EF8	20	1			696	696	1	20 HVAC - EF9	36	
37 HVAC - UH-M270	20	1	864	250			1	20 HVAC - MECHANICAL M261	38	
39 RECEPTACLE - MECHANICAL M261	20	1			720	180	1	20 RECEPTACLE - ELEV-2 EL1-2	40	
41 POWER - ELEV CTRL	20	1			0	0	1	20 POWER - ELEV LTS	42	
43 HVAC - TERMINAL UNITS	20	1	500	500			1	20 HVAC - TERMINAL UNITS	44	
45 TECHNOLOGY - LEARNING STUDIO 228	20	1		780	1176		1	20 HVAC - MECHANICAL M261	46	
47 HVAC - MECHANICAL M270	20	1	1176	0			1176	1176	1 20 HVAC - MECHANICAL M270	48
49 HVAC - MECHANICAL M270	20	1	1176	0			1	20 SPARE	50	
51 SPARE	20	1		0	0		1	20 SPARE	52	
53 SPARE	20	1			0	0	1	20 SPARE	54	
55 SPARE	20	1	0	0			1	20 SPARE	56	
57 SPARE	20	1			0	0	1	20 SPARE	58	
59 SPARE	20	1			0	0	1	20 SPARE	60	
61 SPARE	--	1	--	--			1	-- SPARE	62	
63 SPARE	--	1	--	--			1	-- SPARE	64	
65 SPARE	--	1	--	--	--	--	1	-- SPARE	66	
67 SPARE	--	1	--	0			3	30 SPD	68	
69 SPARE	--	1	--	--	0		--	--	70	
71 SPARE	--	1	--	--	--	0	--	--	72	
<b>ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):</b>		TOTAL LOAD: 10452 VA		9724 VA		9704 VA				
		CONNECTED LOAD:		DEMAND FACTOR:		ESTIMATED DEMAND:		PANEL TOTALS		
HVAC -		14170 VA		100.00%		14170 VA				
Other		180 VA		100.00%		180 VA		<b>TOTAL CONNECTED LOAD:</b> 29910 VA		
POWER -		200 VA		100.00%		200 VA		<b>TOTAL ESTIMATED DEMAND:</b> 27950 VA		
RECEPTACLE -		13920 VA		85.92%		11960 VA		<b>TOTAL CONNECTED LOAD (A):</b> 83 A		
TECHNOLOGY -		1440 VA		100.00%		1440 VA		<b>TOTAL ESTIMATED DEMAND:</b> 78 A		

NOTES: PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
AIC RATING IS CALCULATED VALUE. PROVIDE I.C. RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS  
Portage, Michigan

SHEET TITLE  
ELECTRICAL PANEL LOAD SHEETS

SHEET NUMBER  
E 503

DATE  
JUNE 30, 2023

21-237-20



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### PANELBOARD " ED1A" LOAD SCHEDULE

PANEL: ED1A      MOUNTING: SURFACE      VOLTAGE: 480/277V, 3PH, 4W  
 LOCATION: ELEC E172 / FIRST FLOOR      AMPS: 225 A MB      FED FROM: ATS  
 ADDED ACCESSORIES: SPD      FEED-THRU LUGS...      A.I.C. VALUE: 19302 A  
 (PROVIDE 25% HIGHER A.I.C. RATING)

CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION		
1 TX-ER1A	125	3	26702	1328			3	20	HVAC - B2	2
3	--	--	--	29882	1328		--	--		4
5	--	--	--		20172	1328	--	--		6
7 HVAC - B1	20	3	1328	3047			3	20	HVAC - P2	8
9	--	--	--	1328	3047		--	--		10
11	--	--	--			1328	3047	--		12
13 HVAC - P1	20	3	3047	0			3	20	SPARE	14
15	--	--	--		3047	0	--	--		16
17	--	--	--			3047	0	--		18
19 SPACE	--	1	--	--			1	--	SPACE	20
21 SPACE	--	1	--	--			1	--	SPACE	22
23 SPACE	--	1	--	--			1	--	SPACE	24
25 SPACE	--	1	--	0			3	30	SPD	26
27 SPACE	--	1	--	0			--	--		28
29 SPACE	--	1	--	0			--	--		30

**TOTAL LOAD:** 35452 VA      38632 VA      28922 VA  
 (IF APPLICABLE): 0 VA      0 VA      0 A

**ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):**  
**TOTAL AMPS:** 132 A      143 A      104 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
HVAC -	36360 VA	100.00%	36360 VA	
POWER -	13300 VA	100.00%	13300 VA	<b>TOTAL CONNECTED LOAD:</b> 103007 VA
RECEPTACLE -	35760 VA	63.98%	22880 VA	<b>TOTAL ESTIMATED DEMAND:</b> 90127 VA
TECHNOLOGY -	1440 VA	100.00%	1440 VA	<b>TOTAL CONNECTED LOAD (A):</b> 124 A
KITCHEN -	16147 VA	100.00%	16147 VA	<b>TOTAL ESTIMATED DEMAND...</b> 108 A

**NOTES:**  
 PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
 AIC RATING IS CALCULATED VALUE. PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

### PANELBOARD " EL1A" LOAD SCHEDULE

PANEL: EL1A      MOUNTING: SURFACE      VOLTAGE: 480/277V, 3PH, 4W  
 LOCATION: ELEC E173 / FIRST FLOOR      AMPS: 125 A MLO      FED FROM: ATS-LS  
 ADDED ACCESSORIES: SPD      FEED-THRU LUGS...      A.I.C. VALUE: 7008 A  
 (PROVIDE 25% HIGHER A.I.C. RATING)

CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION			
1 EL2A	60	3	7322	3154			1	20	EM LIGHTING -	2	
3	--	--	--	4727	1357		1	20	Other STAIR-1 ST4-1	4	
5	--	--	--		4211	855	--	--	EM LIGHTING -	6	
7 TX-ER1C	25	3	3805	284			1	20	EM LIGHTING -	8	
9	--	--	--	2500	1363		--	--	EM LIGHTING -	10	
11	--	--	--			1500	0	1	20	SPARE	12
13 SPACE	--	1	--	0			1	20	SPARE	14	
15 SPACE	--	1	--	0			1	20	SPARE	16	
17 SPACE	--	1	--	0			1	20	SPARE	18	
19 SPACE	--	1	--	0			3	30	SPD	20	
21 SPACE	--	1	--	0			--	--		22	
23 SPACE	--	1	--	0			--	--		24	

**TOTAL LOAD:** 14566 VA      9946 VA      6566 VA  
 (IF APPLICABLE): 0 VA      0 VA      0 A

**ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):**  
**TOTAL AMPS:** 54 A      38 A      24 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
HVAC -	14257 VA	100.00%	14257 VA	
LIGHTING -	1139 VA	100.00%	1139 VA	<b>TOTAL CONNECTED LOAD:</b> 31077 VA
Other	500 VA	100.00%	500 VA	<b>TOTAL ESTIMATED DEMAND:</b> 31077 VA
POWER -	500 VA	100.00%	500 VA	<b>TOTAL CONNECTED LOAD (A):</b> 37 A
RECEPTACLE -	180 VA	100.00%	180 VA	<b>TOTAL ESTIMATED DEMAND...</b> 37 A
EM LIGHTING -	8782 VA	100.00%	8782 VA	
FIRE ALARM -	5000 VA	100.00%	5000 VA	
EMERGENCY LIGHTING -	720 VA	100.00%	720 VA	

**NOTES:**  
 PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
 AIC RATING IS CALCULATED VALUE. PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

### PANELBOARD " EL2A" LOAD SCHEDULE

PANEL: EL2A      MOUNTING: SURFACE      VOLTAGE: 480/277V, 3PH, 4W  
 LOCATION: ELEC E217 / SECOND FLOOR      AMPS: 125 A MLO      FED FROM: EL1A  
 ADDED ACCESSORIES: SPD      FEED-THRU LUGS...      A.I.C. VALUE: 2221 A  
 (PROVIDE 25% HIGHER A.I.C. RATING)

CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION		
1 HVAC - EF1	20	3	2105	2105			3	20	HVAC - EF2	2
3	--	--	--	2105	2105		--	--		4
5	--	--	--		2105	2105	--	--		6
7 EM LIGHTING -	20	1	3112	0			3	20	SPARE	8
9 EM LIGHTING - SEMINAR 213	20	1		516	0		--	--		10
11 SPARE	20	1			0	0	--	--		12
13 SPARE	20	1	0	--			1	--	SPACE	14
15 SPARE	20	1			0	--	--	--	SPACE	16
17 SPARE	20	1				0	--	--	SPACE	18
19 SPACE	--	1	--	0			3	30	SPD	20
21 SPACE	--	1	--	0			--	--		22
23 SPACE	--	1	--	0			--	--		24

**TOTAL LOAD:** 7322 VA      4727 VA      4211 VA  
 (IF APPLICABLE): 0 VA      0 VA      0 A

**ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):**  
**TOTAL AMPS:** 27 A      17 A      15 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
HVAC -	12632 VA	100.00%	12632 VA	
LIGHTING -	166 VA	100.00%	166 VA	<b>TOTAL CONNECTED LOAD:</b> 16259 VA
EM LIGHTING -	3462 VA	100.00%	3462 VA	<b>TOTAL ESTIMATED DEMAND:</b> 16259 VA
				<b>TOTAL CONNECTED LOAD (A):</b> 20 A
				<b>TOTAL ESTIMATED DEMAND...</b> 20 A

**NOTES:**  
 PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
 AIC RATING IS CALCULATED VALUE. PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

### PANELBOARD " ER1A" LOAD SCHEDULE

PANEL: ER1A      MOUNTING: SURFACE      VOLTAGE: 208/120V, 3PH, 4W  
 LOCATION: DATA / IT D159 / FIRST FLOOR      AMPS: 225 A MB      FED FROM: TX-ER1A  
 ADDED ACCESSORIES: SPD      FEED-THRU LUGS...      A.I.C. VALUE: 8704 A  
 (PROVIDE 25% HIGHER A.I.C. RATING)

CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION		
1 ER2A	75	3	8710	16692			3	175	ER1B	2
3	--	--	--	8660	18222		--	--		4
5	--	--	--		5460	14712	--	--		6
7 RECEPTACLE - TR-B	30	2	2500	800			1	20	POWER - Room 154, 153	8
9	--	--	--	2500	500		1	20	POWER - Room 141	10
11 HVAC - SS-D159	20	1			0	0	1	20	SPARE	12
13 SPARE	20	1	0	0			1	20	SPARE	14
15 SPARE	20	1		0	0		1	20	SPARE	16
17 SPARE	20	1			0	0	1	20	SPARE	18
19 SPACE	--	1	--	--			1	--	SPACE	20
21 SPACE	--	1	--	--			1	--	SPACE	22
23 SPACE	--	1	--	--			1	--	SPACE	24
25 SPACE	--	1	--	0			3	30	SPD	26
27 SPACE	--	1	--	0			--	--		28
29 SPACE	--	1	--	0			--	--		30

**TOTAL LOAD:** 26702 VA      29862 VA      20172 VA  
 (IF APPLICABLE): 0 VA      0 VA      0 A

**ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):**  
**TOTAL AMPS:** 231 A      257 A      168 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
HVAC -	10110 VA	100.00%	10110 VA	
POWER -	13300 VA	100.00%	13300 VA	<b>TOTAL CONNECTED LOAD:</b> 76757 VA
RECEPTACLE -	35760 VA	63.98%	22880 VA	<b>TOTAL ESTIMATED DEMAND:</b> 63877 VA
TECHNOLOGY -	1440 VA	100.00%	1440 VA	<b>TOTAL CONNECTED LOAD (A):</b> 213 A
KITCHEN -	16147 VA	100.00%	16147 VA	<b>TOTAL ESTIMATED DEMAND...</b> 177 A

**NOTES:**  
 PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
 AIC RATING IS CALCULATED VALUE. PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

### PANELBOARD " ER1B" LOAD SCHEDULE

PANEL: ER1B      MOUNTING: SURFACE      VOLTAGE: 208/120V, 3PH, 4W  
 LOCATION: CHAIR STORAGE 161 / FIRST FLOOR      AMPS: 225 A MLO      FED FROM: ER1A  
 ADDED ACCESSORIES: DOUBLE TUB, SPD      FEED-THRU LUGS...      A.I.C. VALUE: 5839 A  
 (PROVIDE 25% HIGHER A.I.C. RATING)

CIRCUIT DESCRIPTION	TRIP (A)	POLES	A (VA)	B (VA)	C (VA)	POLES	TRIP (A)	CIRCUIT DESCRIPTION			
1 TECHNOLOGY - CONFERENCE 102	20	1	360	540			1	20	RECEPTACLE - CONFERENCE 102	2	
3 CONFERENCE 102	20	1		420	600		1	20	RECEPTACLE - CONFERENCE 102	4	
5 RECEPTACLE - Room 100V, 100	20	1		900	360		1	20	RECEPTACLE - RECEPTION 100	6	
7 RECEPTION 100	20	1	780	180			1	20	RECEPTACLE - COPIER	8	
9 COPY 103	20	1		540	360		1	20	PRINCIPAL 104	10	
11 RECEPTACLE - PRINCIPAL 104	20	1			720	780	1	20	WELLNESS 106	12	
13 RECEPTACLE - FRIDGE	20	1	180	420			1	20	TEACHER LOUNGE 105	14	
15 RECEPTACLE - TEACHER LOUNGE 105	20	1		720	540		1	20	RECEPTACLE - TEACHER LOUNGE 105	16	
17 RECEPTACLE - FRIDGE	20	1			180	780	1	20	Room 107, 100	18	
19 HVAC - CUH-5	20	1	430	3120			2	40	RECEPTACLE - DRYER	20	
21 OFFICE 108	20	1		720	3120		--	--		22	
23 RECEPTACLE - Room 107T, 100T	20	1			360	1500	1	20	POWER - FLUSH VALVES 100T,107T	24	
25 RECEPTACLE - FAMILY RESOURCE 111	20	1	600	360			1	20	TECHNOLOGY - OFFICE 108	26	
27 POWER - ADA DOOR OPERATORS	20	1		1000	1000		1	20	POWER - HEART 110	28	
29 POWER - ADA DOOR OPERATORS	20	1			1000	960	1	20	KITCHEN - 101	30	
31 KITCHEN - 101C	--	2	1560	600			--	--	KITCHEN - 101E	32	
33	--	--	--	1560	960		--	--	KITCHEN - 101	34	
35 KITCHEN - 101A	20	1		600	1801	3	20	KITCHEN - 101D	36		
37 POWER - FLUSH VALVE 169T	20	1	100	1801			--	--		38	
39 RECEPTACLE - COPY 103	20	1		420	1801		--	--		40	
41 KITCHEN - 405	20	1			900	1201	3	20	KITCHEN - 101B	42	
43 HVAC - ACCU-E172	20	2	1560	1201			--	--		44	
45	--	--	--	1560	1201		--	--		46	
47 HVAC - SS-E172	20	1			250	1200	1	20	POWER - MM105-2	48	
49 POWER - MM105-1	20	1	1200	1200			1	20	POWER - DW105	50	
51 POWER - WASHER	20	1		1200	500		1	20	POWER - BATTERY CHARGER	52	
53 POWER - BATTERY HEATER	20	1		500	720	1	20	RECEPTACLE - ROOF	54		
55 POWER - BLOCK HEATER	20	1	500	0			1	20	SPARE	56	
57 SPARE	20	1		0	0		1	20	SPARE	58	
59 SPARE	20	1			0	0	1	20	SPARE	60	
61 SPARE	20	1	0	0			1	20	SPARE	62	
63 SPARE	20	1			0	0	1	20	SPARE	64	
65 SPARE	20	1				0	0	1	20	SPARE	66
67 SPARE	20	1	0	0			1	20	SPARE	68	
69 SPARE	20	1		0	0		1	20	SPARE	70	
71 SPARE	20	1			0	0	1	20	SPARE	72	
73 SPACE	--	1	--	--			1	--	SPACE	74	
75 SPACE	--	1	--	--			1	--	SPACE	76	
77 SPACE	--	1	--	--			--	--	SPACE	78	
79 SPACE	--	1	--	0			3	30	SPD	80	
81 SPACE	--	1	--	0			--	--		82	
83 SPACE	--	1	--	0			--	--		84	

**TOTAL LOAD:** 16692 VA      18222 VA      14712 VA  
 (IF APPLICABLE): 0 VA      0 VA      0 A

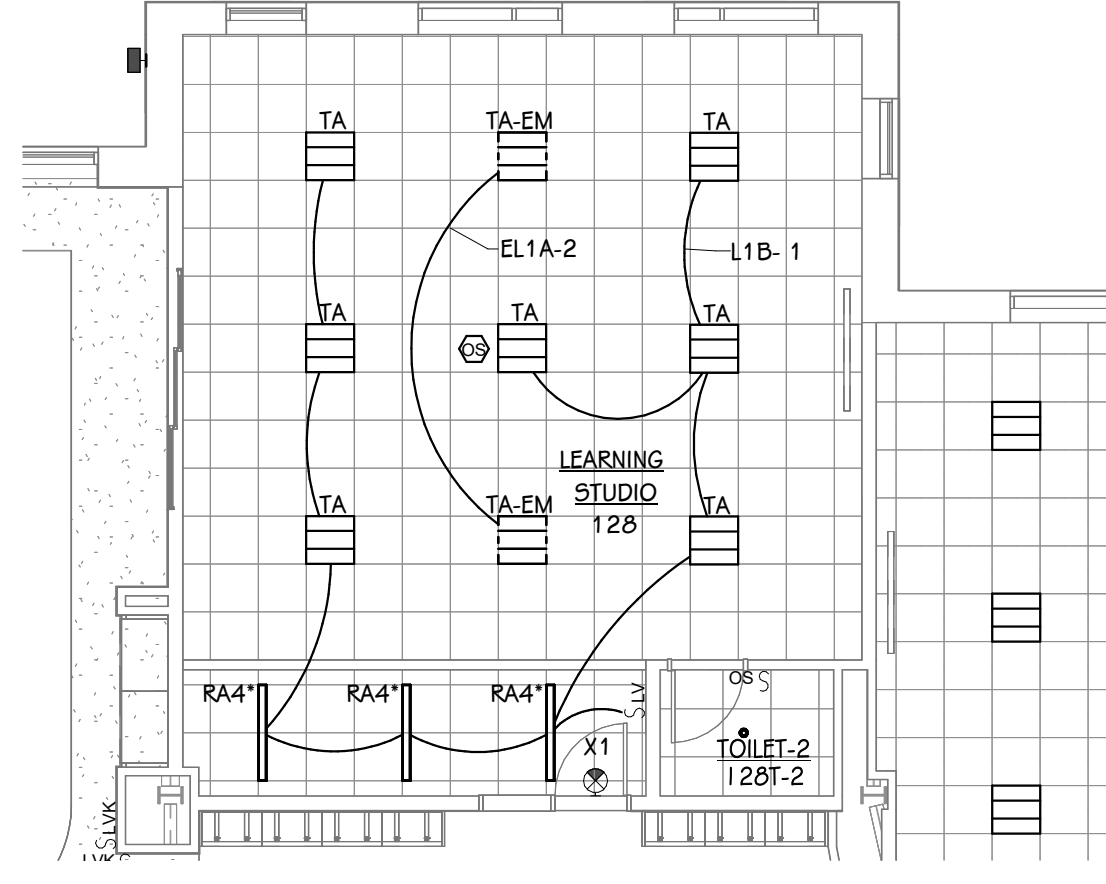
**ADDITIONAL FEED THRU LUGS LOAD (IF APPLICABLE):**  
**TOTAL AMPS:** 142 A      154 A      123 A

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS
HVAC -	3620 VA	100.00%	3620 VA	
POWER -	10960 VA	100.00%	10960 VA	<b>TOTAL CONNECTED LOAD:</b> 49627 VA
RECEPTACLE -	17520 VA	78.54%	13760 VA	<b>TOTAL ESTIMATED DEMAND:</b> 45867 VA
TECHNOLOGY -	1440 VA	100.00%	1440 VA	<b>TOTAL CONNECTED LOAD (A):</b> 138 A
KITCHEN -	16147 VA	100.00%	16147 VA	<b>TOTAL ESTIMATED DEMAND...</b> 127 A

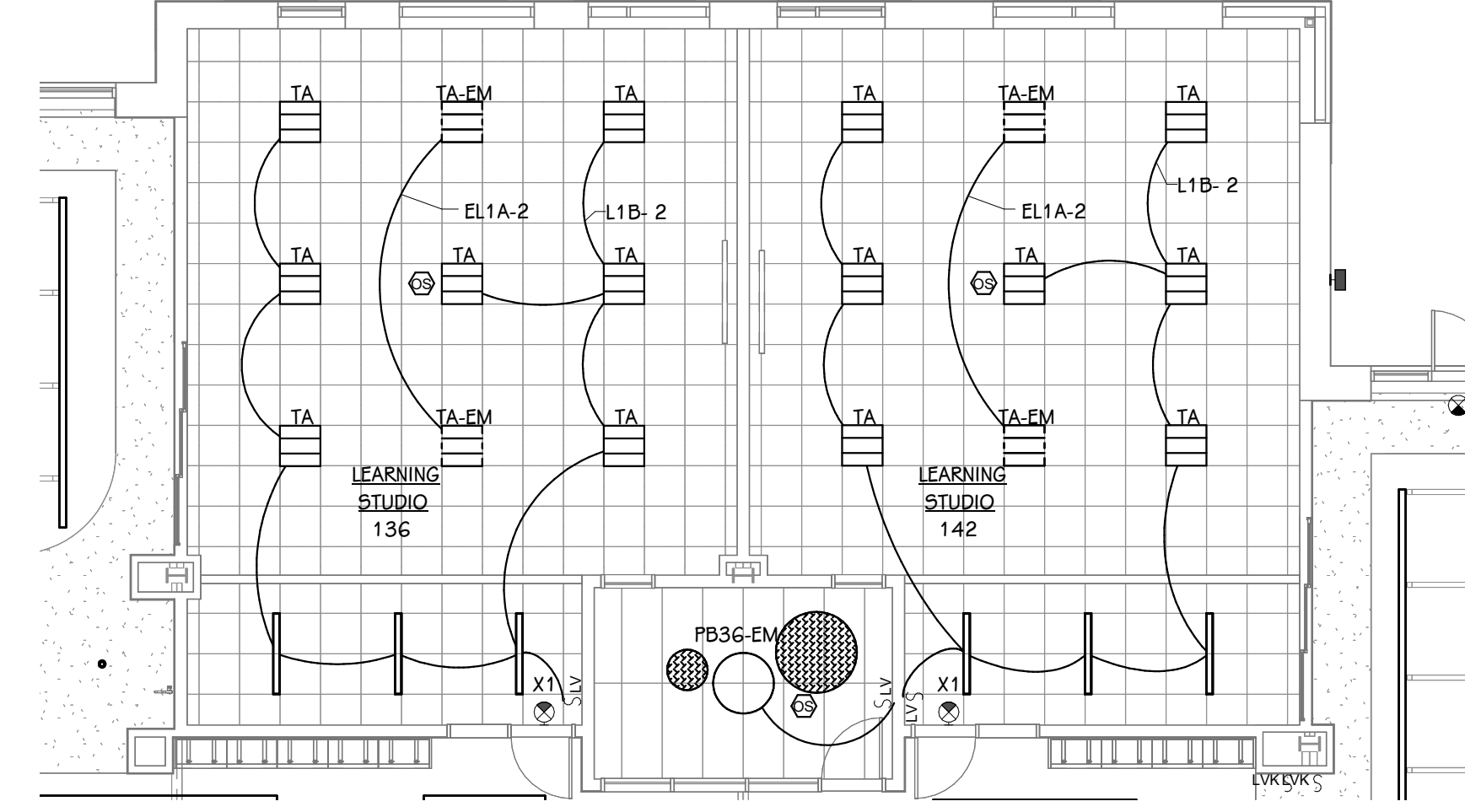
**NOTES:**  
 PROVIDE SPD BREAKER PER ONELINE SCHEDULE. RECEPTACLE DEMAND FACTOR = FIRST 10kVA X 100% + 50% OF REMAINDER  
 AIC RATING IS CALCULATED VALUE. PROVIDE IC RATING AT LEAST 25% HIGHER AS PER SPECIFICATIONS.

### PANELBOARD " ER1C" LOAD SCHEDULE

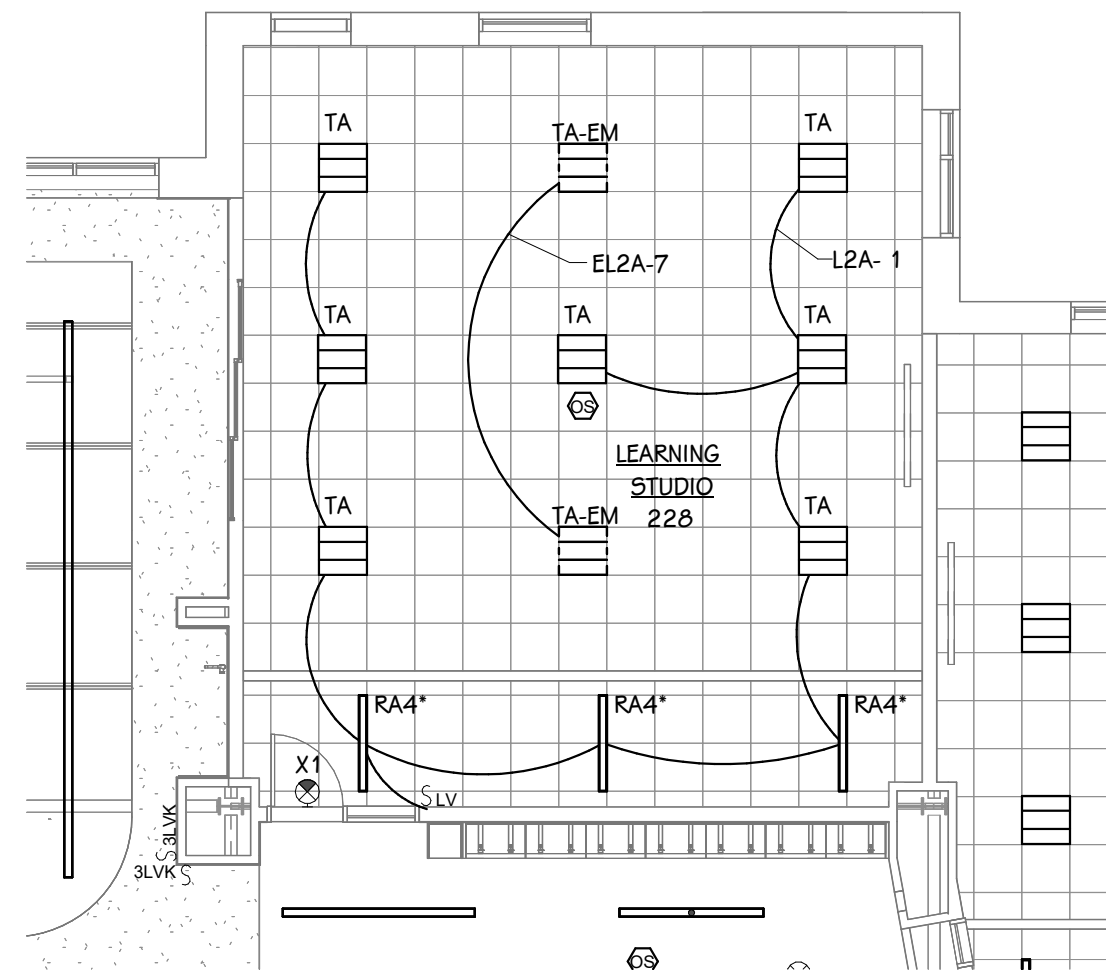
PANEL: ER1C      MOUNTING: SURFACE      VOLTAGE: 208/120V, 3PH, 4W  
 LOCATION: ELEC E117 / FIRST FLOOR      AMPS: 100 A MB      FED FROM: TX-ER1C  
 ADDED ACCESSORIES: SPD      FEED-THRU LUGS...      A.I.C. VALUE: 1183 A



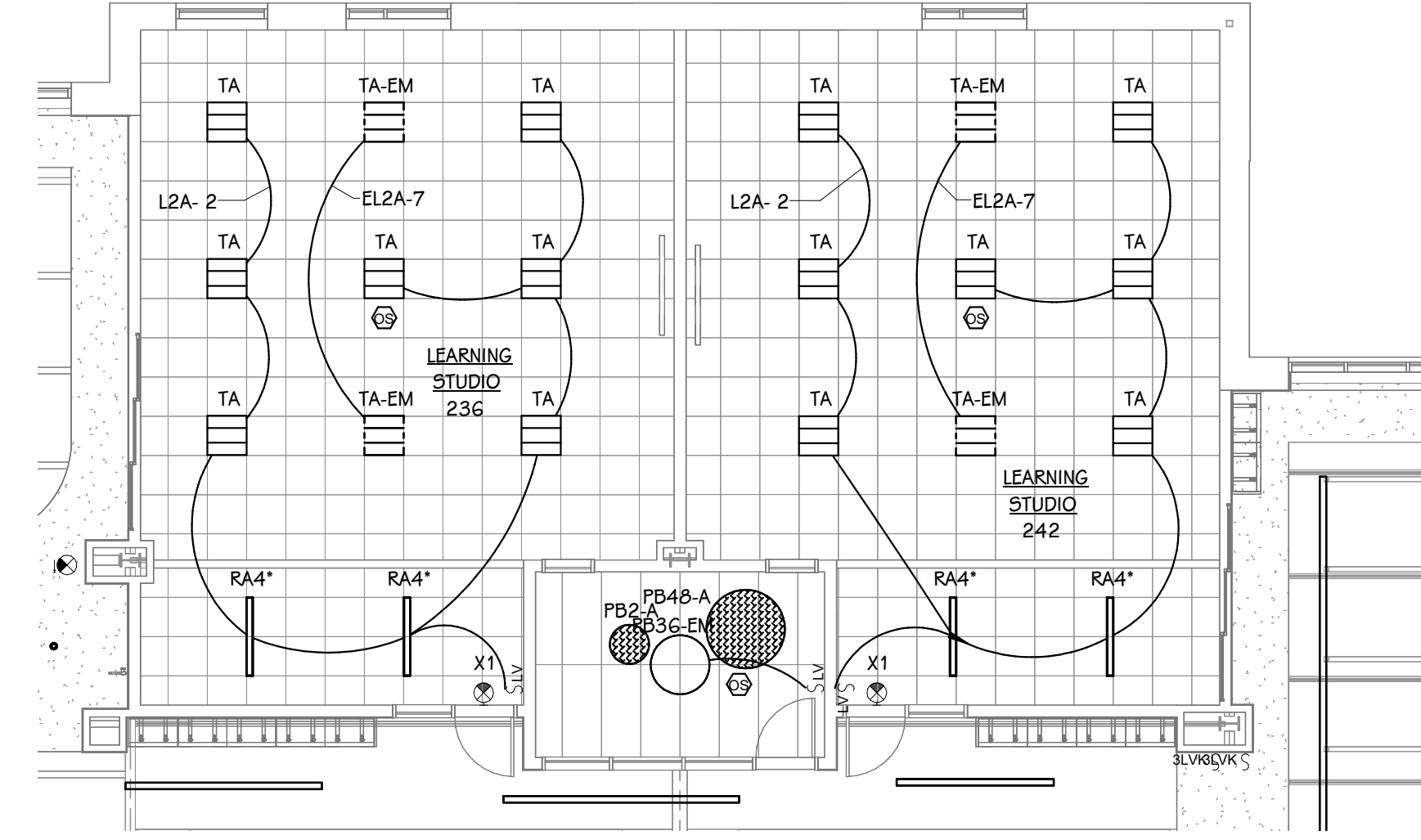
1  
E 801  
1/8" = 1'-0"



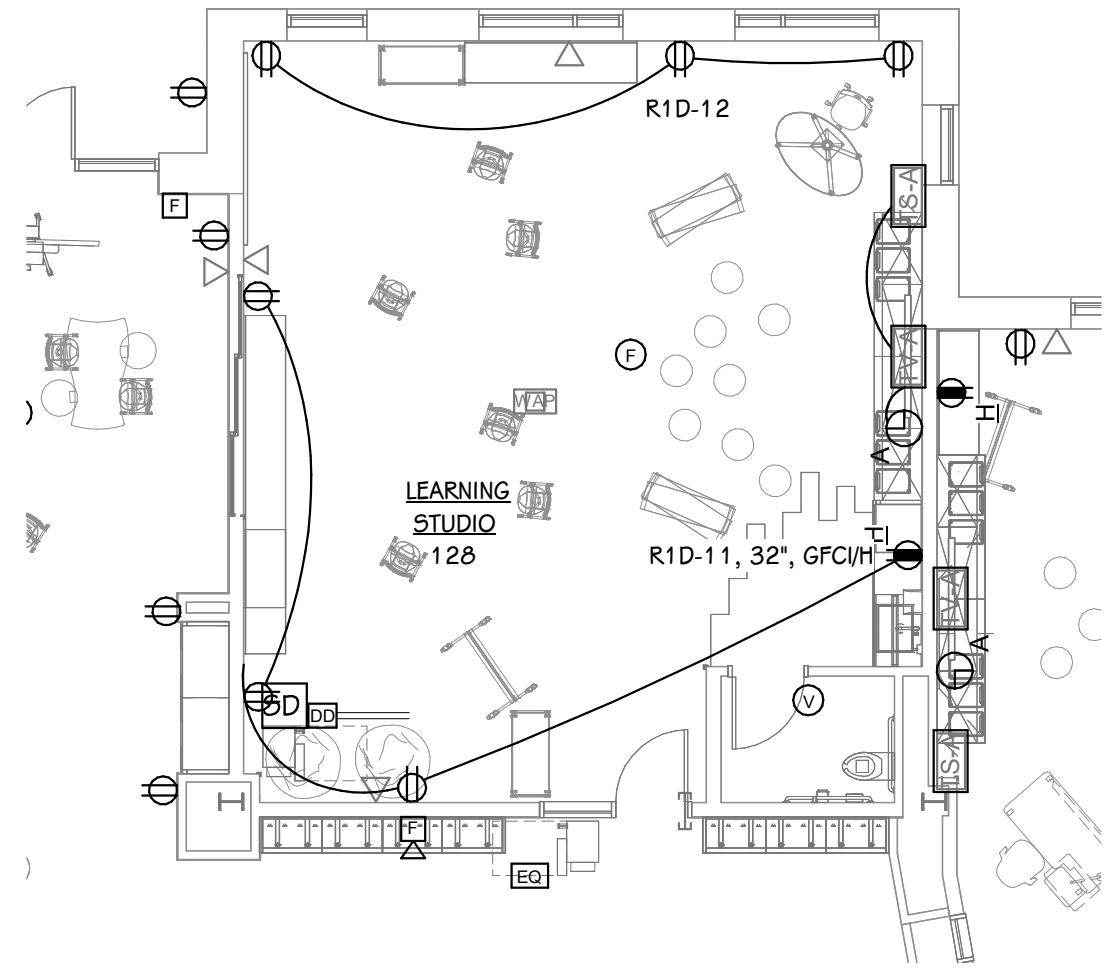
3  
E 801  
1/8" = 1'-0"



4  
E 801  
1/8" = 1'-0"

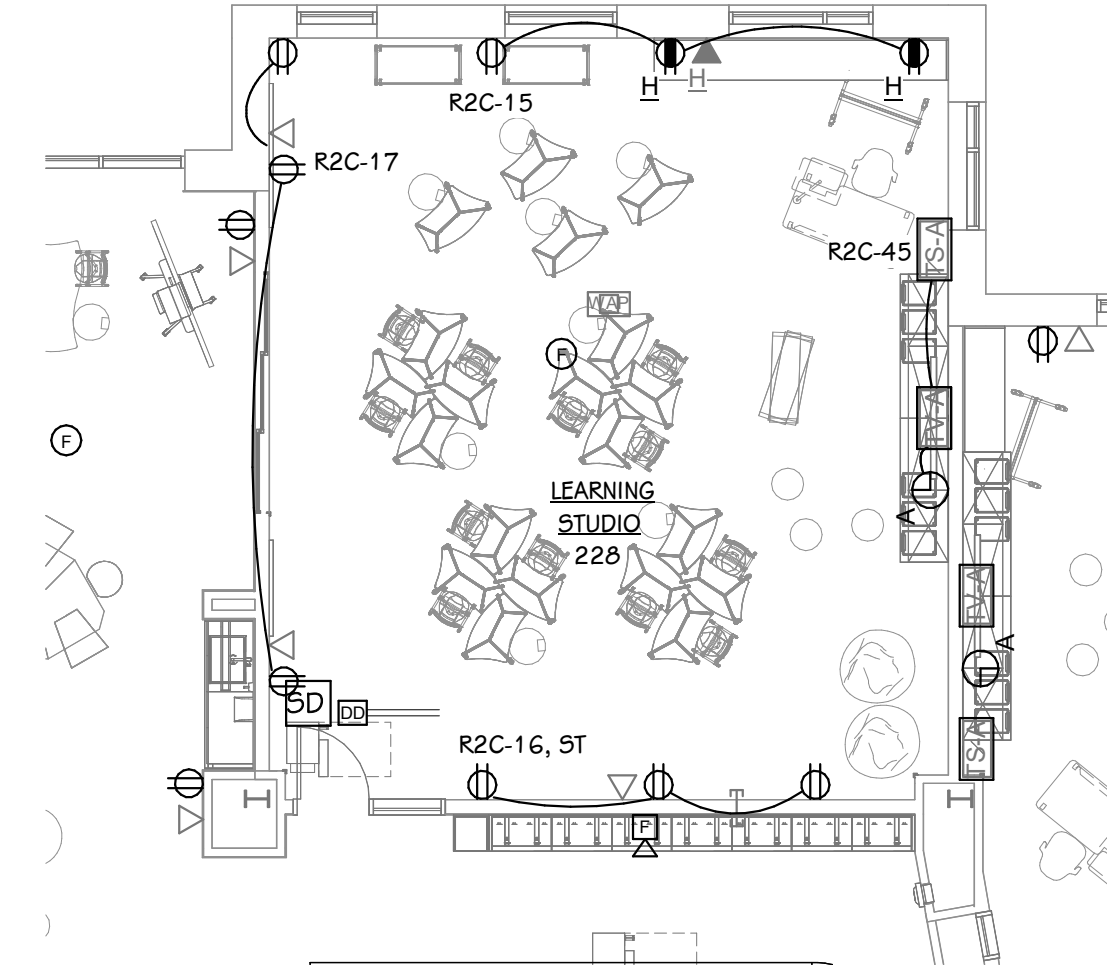


6  
E 801  
1/8" = 1'-0"



7  
E 801  
1/8" = 1'-0"

NOTE: ADJUST OUTLETS FROM BASE BID TO ALTERNATE FOR FURNITURE AND PARTITION WALL ADJUSTMENT.



10  
E 801  
1/8" = 1'-0"

NOTE: ADJUST OUTLETS FROM BASE BID TO ALTERNATE FOR FURNITURE AND PARTITION WALL ADJUSTMENT.

STRUCTURED CABLING	MOUNTING HEIGHTS	ACCESS CONTROL NOTES	GENERAL TECHNOLOGY NOTES
DATAVOICE OUTLET - 4 SQ BOX, 5G COVER, 1" CONDUIT STUB DATAVOICE OUTLET - 4 SQ BOX, 5G COVER, SURFACE #MM500 DATAVOICE OUTLET - 4 SQ BOX, 5G COVER, 1" CONDUIT STUB 4" ABOVE BACKSLASH SECURITY CONTROLS PATHWAY - 4 SQ BOX, 5G COVER WITH BRUSH PLATE, 1" CONDUIT STUB WIRELESS ACCESS POINT (REFER TO DETAILS) GROUNDING BUS BAR WITH DEDICATED GROUND, (REFER TO DETAILS) CABLE TRAY, (12"x4" UNLESS NOTED OTHERWISE) CLOCK (REFER TO DETAILS) MASTER CLOCK PANEL PAGING SYSTEM HEAD END NETWORK COMMUNICATION RACK - FLOOR STANDING 3' CLEAR ON BOTH SIDES 48"x34" FIRE-RATED PLYWOOD, AC FINISH, MOUNT VERTICALLY CONDUIT SLEEVE IN ACCESSIBLE CEILING (2" CONDUIT UNLESS NOTED OTHERWISE, ONLY SHOWN ON PLANS INDICATING SPECIFIC CONDITIONS, REFER TO GENERAL NOTES FOR SLEEVES THAT ARE REQUIRED INTO ALL SPACES)	16" 16" 16" 16" VARIES 12" 12"	1 ALL INSTALLATION AND PROGRAMMING SHALL BE COMPLETED BY OR OVERSEEN BY A MANUFACTURER CERTIFIED INSTALLER. 2 PRIOR TO CONNECTING ANY DEVICE TO THE NETWORK, DEFAULT USERNAME AND PASSWORDS SHALL BE CHANGED TO OWNER'S STANDARDS. 3 CABLES SHALL BE NEATLY MANAGED AND LABELED WITHIN ACCESS CONTROL PANELS. ZIP TIES ARE NOT ACCEPTABLE METHODS OF CABLE MANAGEMENT. CABLES SHALL BE NEATLY MANAGED AND LABELED WITHIN ACCESS CONTROL PANELS. ZIP TIES ARE NOT ACCEPTABLE METHODS OF CABLE MANAGEMENT. 4 EACH ACCESS CONTROL CABLE SHALL BE LABELED WITH THEIR FUNCTION AT THE ACCESS CONTROL PANEL. REFER TO ACCESS CONTROL LABELING DETAILS FOR REQUIREMENTS. 5 UNLESS NOTED OTHERWISE, POWER SUPPLIES SHALL BE HARD WIRED AND NOT CORD AND PLUG. COORDINATE WITH ELECTRICAL CONTRACTOR TO CONNECT TO AN EMERGENCY OR GENERATOR-FED CIRCUIT. 6 COORDINATE WITH OWNER TO PROGRAM DOORS AND DEVICES ACCORDING TO OWNERS NAMING CONVENTIONS. 7 REFER TO ACCESS CONTROL SCHEDULE FOR PROGRAMMING REQUIREMENTS OF EACH DOOR. 8 ANY SPARE CONDUCTORS/CABLES SHALL BE SPOOLED ABOVE ACCESSIBLE CEILING NEAR DOOR AND LABELED WITH THE DOOR NUMBER AND PANEL NUMBER, AS WELL AS "SPARE".	1 TECHNOLOGY CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR NEW WORK OR WHERE DEVICES ARE REMOVED AND NOT REPLACED. 2 TECHNOLOGY CONTRACTOR SHALL COORDINATE WITH G SERIES SHEETS DEVICE COORDINATION DETAIL. DEVICES ARE TO ALIGN VERTICALLY AND HORIZONTALLY AND FOLLOW THE RULES OF THIS DETAIL CONSISTENTLY. A PRE-INSTALL DEVICE COORDINATION MEETING FOR DEVICE FINISHES AND LAYOUT MAY BE REQUIRED IN THE SPECIFICATION FOR THIS PROJECT. 3 REFER TO TECHNOLOGY, ELECTRICAL AND ARCHITECTURAL DETAILS AND ELEVATIONS FOR SYMBOL INFORMATION AND ELEVATION DETAIL. 4 DEVICES AND EQUIPMENT SHOWN DASHED OR WITH AN "X" ARE TO BE REMOVED. FIXTURES, DEVICES AND EQUIPMENT SHOWN LIGHTLY OR WITH AN "E" ARE EXISTING TO REMAIN UNDISTURBED. 5 DEVICES SHOWN WITH AN "R" ARE EXISTING TO BE REPLACED WITH NEW DEVICE AND COVERPLATE. 6 TEMPORARILY SUPPORT EXISTING CEILING DEVICES TO REMAIN IN EXISTING CEILINGS TO BE REPLACED. REINSTALL DEVICES INTO NEW CEILING. 7 CONTRACTOR SHALL BE RESPONSIBLE FOR PROJECT PHASING. TEMPORARY WIRING TO KEEP SYSTEMS RUNNING SHALL BE PROVIDED AS REQUIRED WHILE BUILDING IS OCCUPIED BETWEEN PHASES OF CONSTRUCTION.
<b>AUDIO/VISUAL</b> TV WALL RECESSED *FSR* BACKBOX, (REFER TO DETAILS) PROJECTOR, (REFER TO DETAILS) AV WALL STATION BOXES, USE FSR MUDRING MUD-2G-** FOR 2-GANG OPENINGS (REFER TO DETAILS) TECHNOLOGY OR TEACHERS STATION BOXES, USE FSR MUDRING MUD-2G-** FOR 2-GANG OPENINGS(REFER TO DETAILS) MICROPHONE JACK CEILING BOX, (REFER TO DETAILS) BLUETOOTH DEVICE - DEEP 4 SQ BOX, 1-G OPENING, (REFER TO DETAILS) WIRELESS MICROPHONE ANTENNA, (REFER TO DETAILS) PROJECTOR SCREEN, (REFER TO DETAILS) LOCAL AUDIO SPEAKER CEILING - MOUNTED, (REFER TO DETAILS) LOCAL AUDIO SPEAKER WALL - MOUNTED, (REFER TO DETAILS) PAGING SPEAKER CEILING - MOUNTED, (REFER TO DETAILS) PAGING SPEAKER WALL - MOUNTED, (REFER TO DETAILS) VOLUME CONTROL AV INPUT, (REFER TO DETAILS) CONTROL PANEL, (REFER TO DETAILS)	16" 16" 16" 40" 40" 40"	<b>AUDIO SYSTEM NOTES</b> 1 AUDIO SYSTEM SHALL BE FREE OF NOISE, RATTLE, HUM, BUZZ, OR ANY OTHER AUDIO DISTORTIONS 2 SECURE CABLES UTILIZING VELCRO STRAPS. WIRE "ZIP TIES" SHALL NOT BE USED 3 ROUTE ALL CABLES IN A MANNER THAT WILL ENSURE SIGNAL INTEGRITY AND WILL NOT INTRODUCE CROSSSTALK 4 PROVIDE A SERVICE LOOP FOR RACKS AND EQUIPMENT SUITABLE TO EASILY PLUG AND UNPLUG EQUIPMENT FOR TROUBLESHOOTING OR REPLACEMENT 5 NEATLY DRESS ALL CABLING INSTALLED INSIDE AND OUTSIDE OF RACKS IN A SUITABLE HARNESS TO KEEP CABLES CLEAN, NEAT, AND TIDY 6 COMMISSION AUDIO SYSTEM USING AUDIO MEASUREMENT MICROPHONE AND SOFTWARE (SMAART OR EASERA) 7 ADJUST EQ AND CROSSOVER SETTINGS IN AMPLIFIER AND/OR DSP TO PROVIDE FLAT FREQUENCY RESPONSE, FULL RANGE AUDIO WITH PROTECTIVE LIMITING 8 USE SPEECH, HIGH QUALITY REFERENCE AUDIO, AND SINE WAVE SWEEPS TO TEST THE SYSTEM - CORRECT ANY ABNORMALITIES 9 VERIFY PROPER FUNCTION OF ALL INSTALLED EQUIPMENT (NEW AND EXISTING) 10 TURN OVER EXISTING UNUSED EQUIPMENT TO OWNER - NEATLY ORGANIZED 11 COORDINATE WITH OWNER FOR LABELING OF EQUIPMENT AND AUDIO CONSOLE CHANNELS AND BUSES AS WELL AS CONSOLE CONFIGURATION 12 REMOTE MOUNT ALL ANTENNAS AS REQUIRED FOR MAXIMUM PERFORMANCE 13 CONFIGURE DELAYS ON ANY SPEAKERS THAT ARE STAGGERED IN A LISTENING PLANE TO TIME-ALIGN AUDIO 14 CONNECT COMPONENTS TO POWER SEQUENCER IN SUCH A WAY AS TO MITIGATE POPPING AND SYSTEM DAMAGE DURING SYSTEM POWER UP AND POWER DOWN	<b>STRUCTURED CABLING NOTES</b> 1 BICSI TECHNICIAN (TECH) CERTIFICATION IS REQUIRED FOR THE LEAD INSTALLER THAT WILL BE ONSITE AT ALL TIMES. 2 EACH INSTALLER IS REQUIRED TO BE CERTIFIED BY THE MANUFACTURER OF THE PRODUCTS THAT ARE INSTALLED (I.E. PANDUIT, BELDEN, HUBBELL, COMMSCOPE, ETC.). 3 VALID BICSI TECH AND MANUFACTURER INSTALLER CERTIFICATES SHALL BE INCLUDED IN SUBMITTAL PACKAGE. 4 ALL CERTIFICATION TEST RESULTS OF THE STRUCTURED CABLING SYSTEM SHALL BE SUBMITTED TO TOWERPINKSTER AS PART OF THE CLOSEOUT PACKAGE. 5 STRUCTURED CABLING INTEGRATOR SHALL PROVIDE A MANUFACTURER'S 25 YEAR WARRANTY AT PROJECT COMPLETION. 6 ALL CABLES SHALL HAVE A MINIMUM OF 5FT SERVICE LOOP AT OUTLET LOCATION OR AS NOTED ON DRAWINGS. 7 ALL COPPER DATA CABLES SHALL HAVE A MINIMUM OF 15FT SERVICE LOOP IN THE TELECOMMUNICATIONS ROOM. ALL FIBER DATA CABLES SHALL HAVE A MINIMUM OF 25FT SERVICE LOOP IN THE TELECOMMUNICATIONS ROOM. 8 DATA CABLES SHALL NOT BE BUNDLED IN GROUPS OF MORE THAN 24 WITHIN A TELECOMMUNICATIONS ROOM. 9 STRUCTURED CABLING INTEGRATOR SHALL PROVIDE THE MINIMUM REQUIRED QUANTITY OF PATCH PANELS NEEDED FOR ALL DATA CABLES PLUS HAVE CAPACITY FOR A MINIMUM OF 20 FUTURE DATA CABLES. 10 ALL DATA FACEPLATES SHALL MATCH THE COLOR, STYLE AND MATERIAL (I.E. STAINLESS STEEL, PLASTIC, ETC.) OF THE ELECTRICAL DEVICE FACEPLATE WITHIN EACH SPACE. 11 ALL HORIZONTAL CABLES (CATEGORY CABLE, COAX, FIBER, ETC.) SHALL BE CERTIFIED BY USING A MINIMUM OF A LEVEL III CERTIFICATION TESTER THAT IS WITHIN MANUFACTURER'S CALIBRATION PERIOD. 12 ALL BACKBONE FIBER STRANDS SHALL BE CERTIFIED BY USING A MINIMUM OF A LEVEL III CERTIFICATION TESTER THAT IS WITHIN MANUFACTURER'S CALIBRATION PERIOD. 13 ALL CATEGORY CABLES LANDING ON PATCH PANELS SHALL BE DIVIDED INTO THREE SEPARATE GROUPS. EACH GROUP GETTING ITS OWN PATCH PANEL(S). THE GROUPS SHALL BE (1) GENERAL PURPOSE DATA DROPS, (2) AV DATA DROPS, AND (3) WIRELESS ACCESS POINTS, CAMERAS, HVAC, & OTHER SPECIALTY DROPS. 14 ALL STRUCTURED CABLES TERMINATING IN INACCESSIBLE CEILINGS (DRYWALL, TECTUM, DECORATIVE, ETC.) SHALL GET A SINGLE-GANG ROUGH-IN WITH CONDUIT TO ACCESSIBLE CEILING.
<b>SECURITY SYMBOLS</b> SECURITY CAMERA - WALL SECURITY CAMERA - CEILING SECURITY CABLING PATHWAY, 4 SQ, 5G BRUSH PLATE, 1" CONDUIT STUB ACCESS CONTROL PANEL (REFER TO DETAILS) RELEASE BUTTON INTERCOM MASTER STATION LOCKDOWN BUTTON DURESS ALARM PUSH BUTTON - UNDER DESK CARD READER - 4 SQ BOX, 5G COVER, 3/4" CONDUIT STUB CARD READER, MULLION MOUNT, 3/4" CONDUIT STUB LOCKDOWN STROBE (REFER TO DETAILS) KEY PAD - 4 SQ BOX, 5G COVER, 3/4" CONDUIT STUB INTERCOM - 4 SQ BOX, 5G COVER, 3/4" CONDUIT STUB ACCESS CONTROL DETAIL INDICATOR. REFER TO ACCESS CONTROL DETAILS AND SCHEDULE	16" 40" 40" 40"	<b>VIDEO SYSTEM NOTES</b> 1 INSTALLED VIDEO SYSTEMS SHALL NOT HAVE NOISE, FLICKER, UNEVEN BRIGHTNESS, OR ANY OTHER VISUAL ANOMOLIES OR DEFICIENCIES 2 EDID SHALL BE MANAGED AND MAINTAINED TO ENSURE PROPER DISPLAY IDENTIFICATION BY SOURCES 3 HDCP SHALL BE MAINTAINED FROM ALL SOURCES TO ALL SINKS 4 COORDINATE ALL NETWORK NEEDS WITH OWNER INCLUDING IP ADDRESSING, PROTOCOLS REQUIRED FOR EQUIPMENT OPERATION, AND BANDWIDTH IMPLICATIONS 5 FILL PROJECTION AREA WITHOUT THE USE OF QUICK CORNER, KEYSTONE, OR OTHER DIGITAL IMAGE MANIPULATION.	<b>SECURITY CAMERA NOTES</b> 1 CAMERAS ARE SHOWN FOR REFERENCE ONLY. DEVICES ARE PROVIDED AND INSTALLED BY OWNER. 2 CABLING FOR CAMERAS SHALL BE COILED ABOVE ACCESSIBLE CEILING IN CAMERA LOCATIONS SHOWN, UNLESS NOTED OTHERWISE. CABLING FOR EXTERIOR CAMERAS SHALL BE COILED ABOVE NEAREST INTERIOR ACCESSIBLE CEILING. 3 CAMERAS INSTALLED IN INACCESSIBLE CEILINGS SHALL GET A SINGLE-GANG ROUGH-IN WITH A BLANK FACEPLATE, AND A CONDUIT TO ACCESSIBLE CEILING.
<b>NOTES:</b> MOUNT DEVICES AT HEIGHTS INDICATED UNLESS INDICATED OTHERWISE ON PLANS. HEIGHTS ARE TO BOTTOM OF DEVICE.		<b>PAGING AND CLOCK NOTES</b> 1 FOR CLOCKS REQUIRING A MANUFACTURER-SPECIFIC IN-WALL ROUGH-IN BOX, THE CLOCK CONTRACTOR SHALL PROVIDE THE ROUGH-IN BOX TO ELECTRICIAN FOR WALL INSTALLATION. THE CLOCK CONTRACTOR AND ELECTRICIAN SHALL COORDINATE AHEAD OF SCHEDULED WALL INSTALLATIONS. COORDINATE WITH CONSTRUCTION MANAGER. 2 PAGING AND CLOCK CONTROLLERS SHALL BE PROPERLY CONFIGURED FOR TIME SYNCHRONIZATION WITH OWNERS NETWORK TIME PROTOCOL (NTP) SOURCE. COORDINATE NTP ADDRESS WITH OWNER. 3 PAGING SPEAKER CABLING SHALL BE SIZED APPROPRIATELY FOR CABLE LENGTH AND POWER LOAD OF A GIVEN CIRCUIT. 4 FOR WIRELESS CLOCK SYSTEMS THAT REQUIRE FCC LICENSURE, THE CLOCK INTEGRATOR SHALL COORDINATE ANY REQUIRED LICENSE APPLICATION FORMS THAT ARE REQUIRED TO BE COMPLETED BY THE OWNER. 5 THE CLOCK INTEGRATOR SHALL BE RESPONSIBLE FOR REVIEW OF THE PROJECT ARCHITECTURAL ELEVATIONS AND ADHERE TO CLOCK PLACEMENT/ALIGNMENT GUIDELINES. ANY PLACEMENT CLARIFICATION REQUESTS SHALL BE MADE BY RF. 6 FOR INTEGRATION OF NEW PAGING HEADEND HARDWARE TO PRE-EXISTING PAGING CIRCUITS, THE PAGING INTEGRATOR SHALL PERFORM A PRE-INSTALLATION SPEAKER TEST OF ALL EXISTING SPEAKERS. ANY FAULTY EXISTING SPEAKERS SHALL BE NOTED AND COMMUNICATED TO THE CM/ARCHITECT PRIOR TO THE INSTALLATION OF NEW EQUIPMENT. 7 THE PAGING SYSTEM INTEGRATOR SHALL PROVIDE INTERCONNECTION CABLING TO THE PRIMARY FIRE ALARM PANEL TO ALLOW THE FIRE ALARM SYSTEM TO OVERRIDE PAGING. CONNECTION AT THE FIRE PANEL SHALL BE BY THE FIRE ALARM INTEGRATOR. COORDINATE WITH OTHER TRADES. 8 THE PAGING SYSTEM RISER DETAIL IS INTENDED TO BE DIAGRAMMATICAL FOR THE PURPOSE OF UNDERSTANDING THE BASIC SYSTEM ARCHITECTURE. THE PAGING INTEGRATOR SHALL PROVIDE ALL COMPONENTS, CABLES AND ADAPTERS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM, REGARDLESS IF SHOWN ON THE DIAGRAM.	

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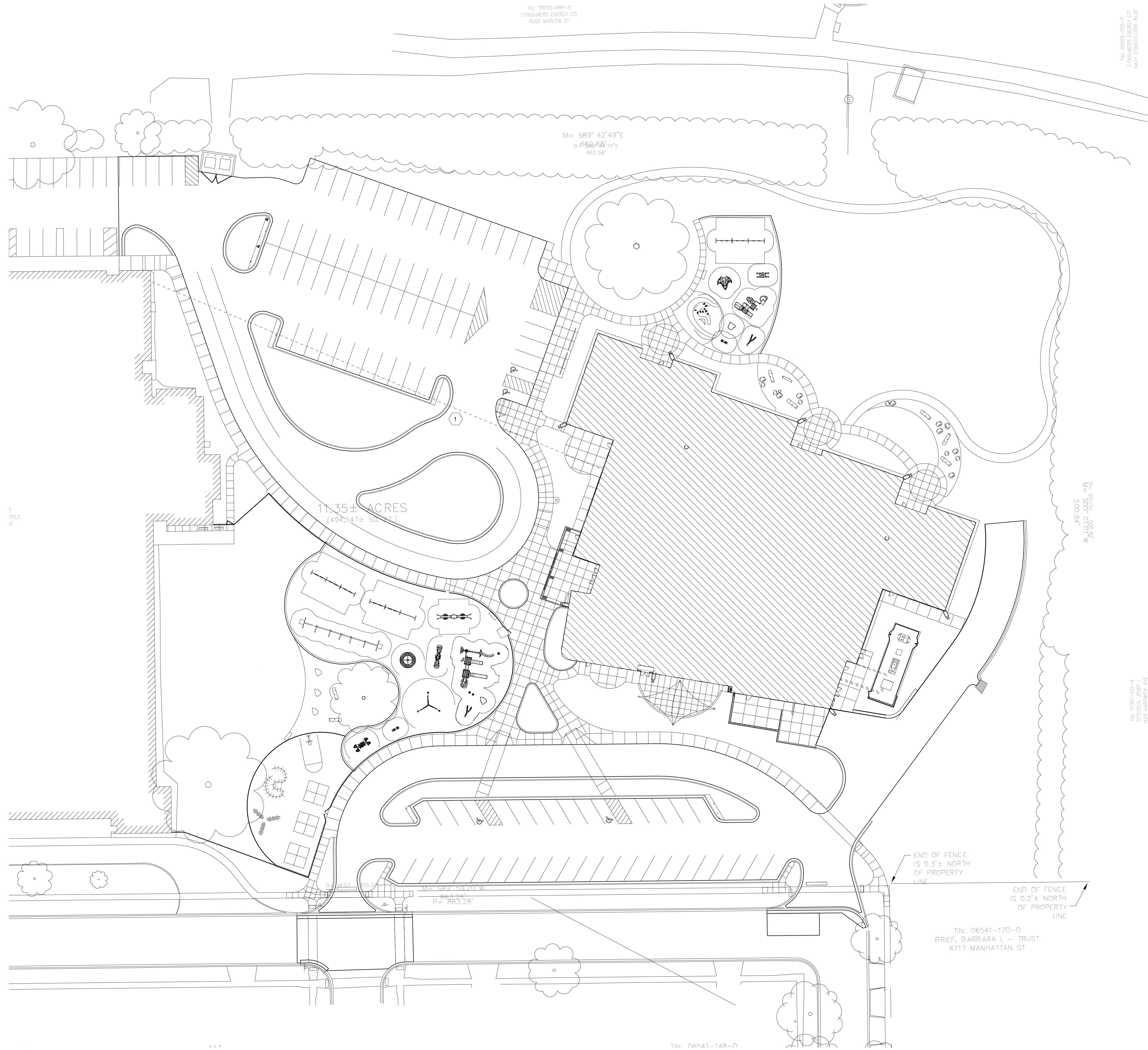
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

SHEET TITLE  
TECHNOLOGY SYMBOLS AND GENERAL  
NOTES

Portage, Michigan

SHEET NUMBER  
T 001  
DATE  
JUNE 30, 2023  
21-237.20



**TECHNOLOGY SITE KEYED NOTES**

1. INSTALL NEW 2" CONDUIT FROM NORTHEAST CORNER OF EXISTING BUILDING TO NEW BUILDING. ROUTE CONDUIT DIRECTLY INTO TELECOMMUNICATIONS ROOM D159. PULL NEW 12-STRAND 5M FIBER FROM TELECOMMUNICATIONS ROOM OF EXISTING BUILDING TO NEW BUILDING, AND TERMINATE ALL 12 STRANDS.

**TECHNOLOGY SITE PLAN**  
1" = 30'-0"

SHEET TITLE  
**TECHNOLOGY SITE PLAN**

SHEET NUMBER  
**TS 101**  
21-237.20

DATE  
**JUNE 30, 2023**

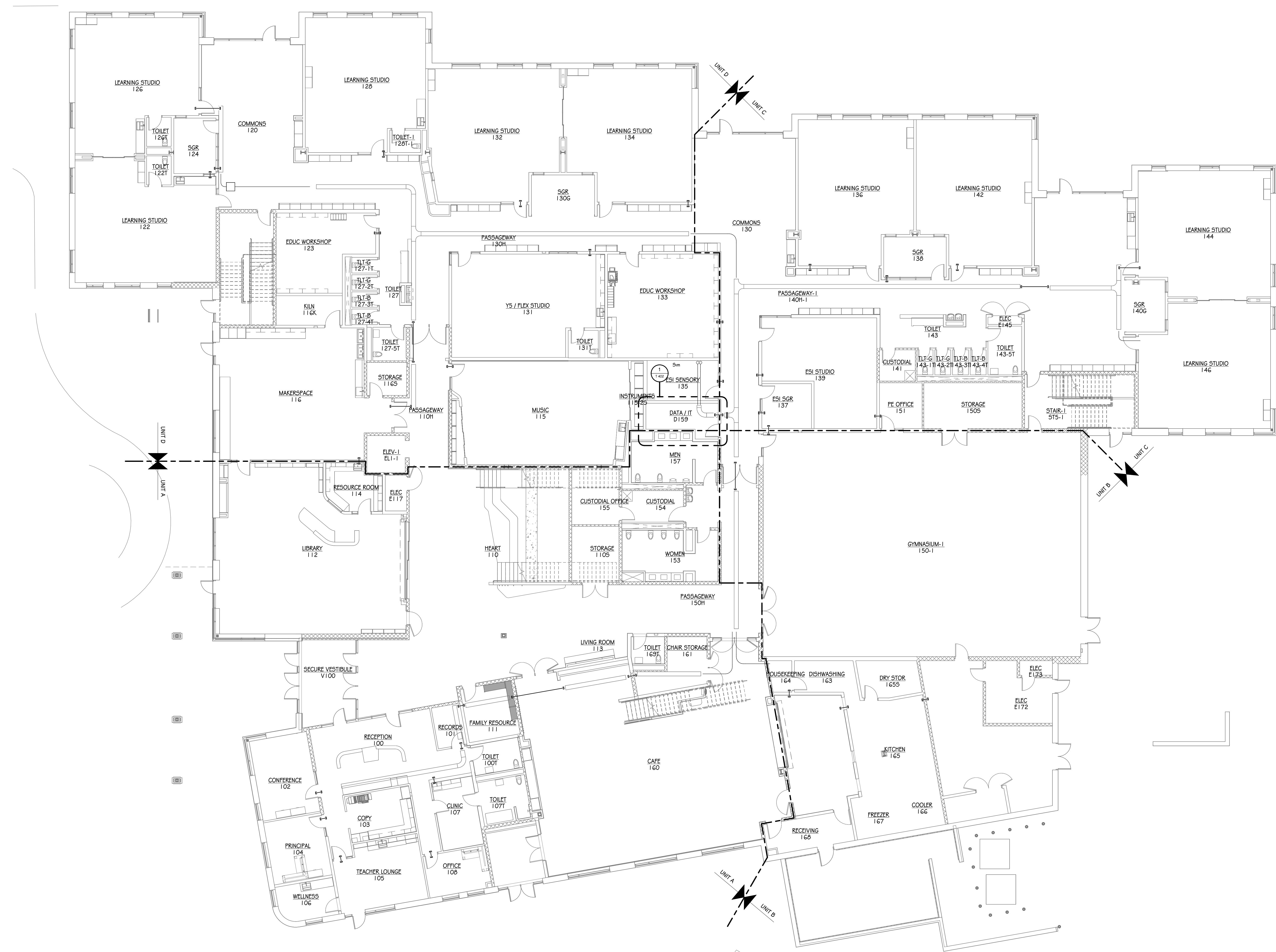
OWNER  
**PORTAGE PUBLIC SCHOOLS**

Portage, Michigan

PROJECT TITLE  
**HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION**

ISSUED FOR DATE

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**FIRST FLOOR TECHNOLOGY OVERALL PLAN**  
 3/32" = 1'-0"

- TECHNOLOGY KEYED NOTES**
- 1 PROVIDE ROUGH-IN AND CABLING ONLY FOR INTERCOM LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
  - 2 HIGH DATA DROP LOCATION FOR TIMECLOCK.
  - 3 DATA DROP LOCATION FOR FACP. COORDINATE FINAL LOCATION WITH FIRE PROTECTION CONTRACTOR.
  - 4 PROVIDE ROUGH-IN AND CABLING ONLY FOR DISPLAY LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
  - 5 HIGH DATA DROP LOCATION FOR WALL MOUNT PHONE. PROVIDE SPECIALTY WALL-MOUNT FACEPLATE IN LIEU OF STANDARD FACEPLATE.
  - 6 COIL DATA DROP FOR FUTURE TEMPERATURE MONITOR IN CEILING OF COOLER/FREEZER.
  - 7 DATA DROP(S) FOR MECH/ELEC SYSTEMS. COORDINATE FINAL LOCATION(S) WITH MECH/ELEC CONTRACTORS.
  - 8 DATA DROP FOR ELEVATOR CALLBOX. COORDINATE FINAL LOCATION WITH ELEVATOR CONTRACTOR.
  - 9 DATA DROP LOCATION FOR ACP. COORDINATE FINAL LOCATION WITH THE ACCESS CONTROL CONTRACTOR.
  - 10 DATA DROP LOCATION FOR CAFETERIA POINT-OF-SALE DEVICE. COORDINATE WITH THE ELECTRICAL CONTRACTOR AND KITCHEN EQUIPMENT CONTRACTOR.
  - 11 STACK LOWER ROUGH-INS TO FIT BETWEEN WINDOW AND CASEWORK. MAINTAIN INDIVIDUAL CONDUITS TO EACH.
  - 12 INSTALL LOWER ROUGH-INS AT "TS-A" SYMBOL UNDER WINDOW. INSTALL UPPER ROUGH-IN AT KEYNOTE LOCATION NORTH OF THE WINDOW FOR CONTROL PANEL.
  - 13 INSTALL FLUSH INTO SOFFIT OF CANOPY

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION

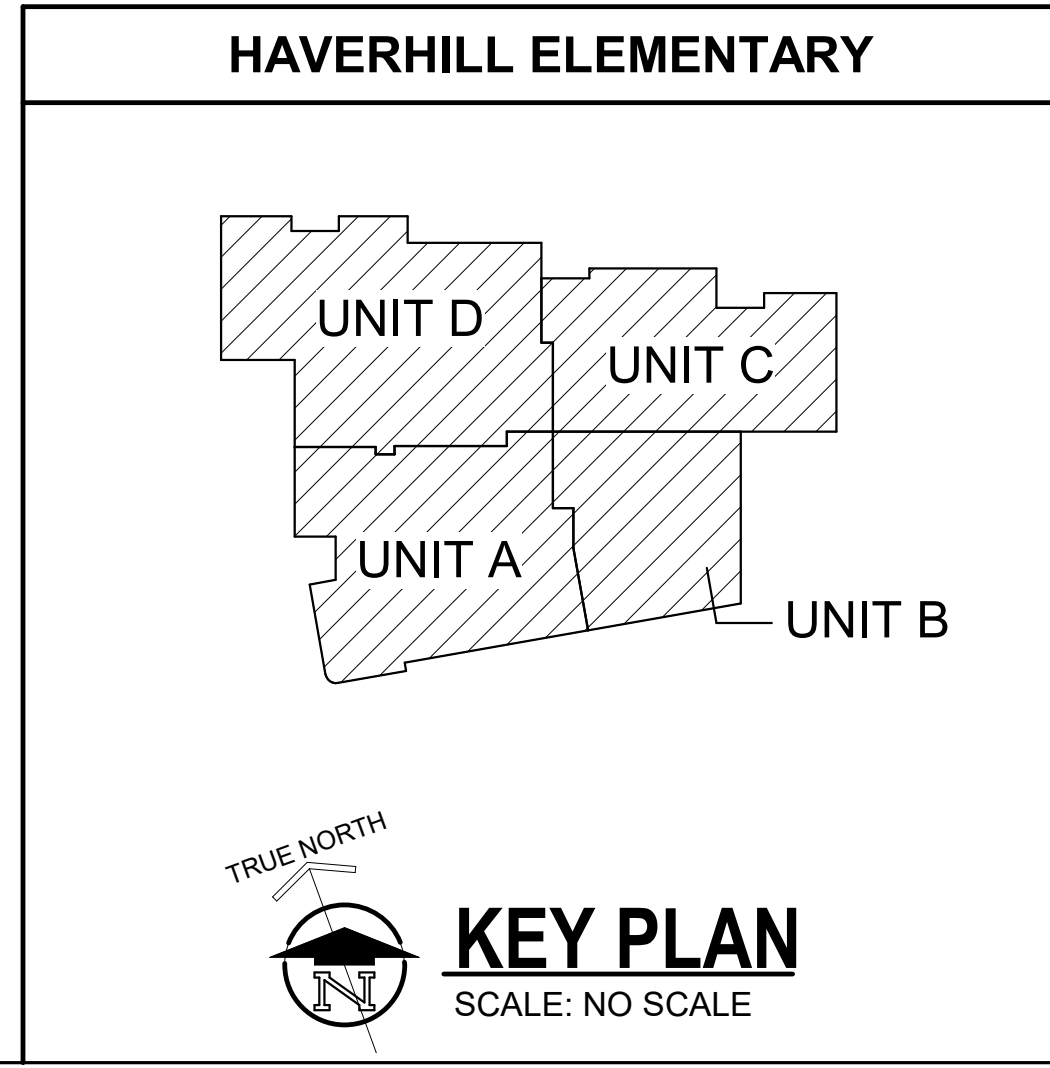
OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan

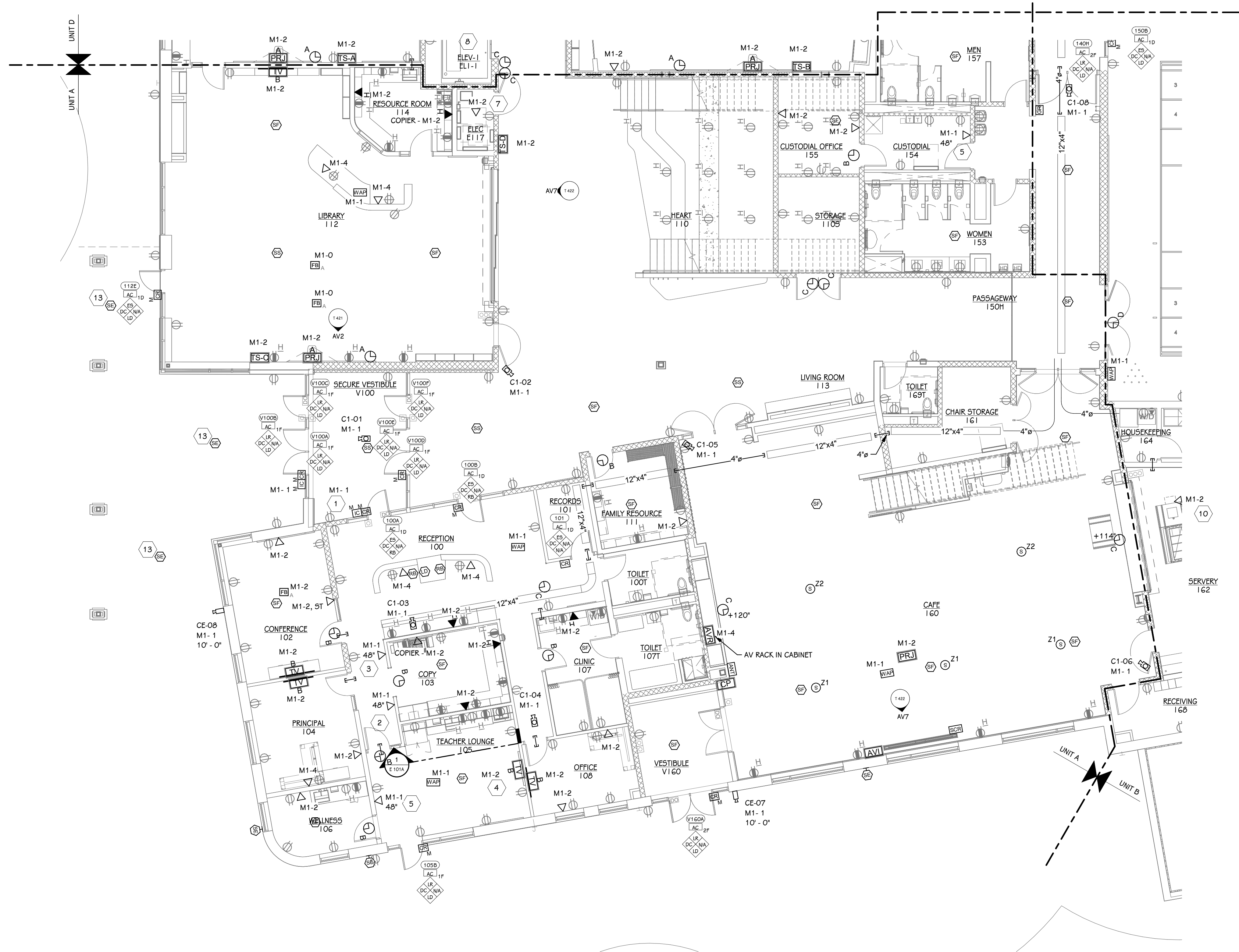
SHEET TITLE  
 FIRST FLOOR TECHNOLOGY PLAN

DATE  
 JUNE 30, 2023

SHEET NUMBER  
**T 101**  
 21-237.20







FIRST FLOOR TECHNOLOGY PLAN - UNIT A  
1/8" = 1'-0"

- TECHNOLOGY KEYED NOTES**
- 1 PROVIDE ROUGH-IN AND CABLING ONLY FOR INTERCOM LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
  - 2 HIGH DATA DROP LOCATION FOR TIMECLOCK.
  - 3 DATA DROP LOCATION FOR FACP. COORDINATE FINAL LOCATION WITH FIRE PROTECTION CONTRACTOR.
  - 4 PROVIDE ROUGH-IN AND CABLING ONLY FOR DISPLAY LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
  - 5 HIGH DATA DROP LOCATION FOR WALL MOUNT PHONE. PROVIDE SPECIALTY WALL-MOUNT FACEPLATE IN LIEU OF STANDARD FACEPLATE.
  - 6 COIL DATA DROP FOR FUTURE TEMPERATURE MONITOR IN CEILING OF COOLER/FREEZER.
  - 7 DATA DROP(S) FOR MECH/ELEC SYSTEMS. COORDINATE FINAL LOCATION(S) WITH MECH/ELEC CONTRACTORS.
  - 8 DATA DROP FOR ELEVATOR CALLBOX. COORDINATE FINAL LOCATION WITH ELEVATOR CONTRACTOR.
  - 9 DATA DROP LOCATION FOR ACP. COORDINATE FINAL LOCATION WITH THE ACCESS CONTROL CONTRACTOR.
  - 10 DATA DROP LOCATION FOR CAFETERIA POINT-OF-SALE DEVICE. COORDINATE WITH THE ELECTRICAL CONTRACTOR AND KITCHEN EQUIPMENT CONTRACTOR.
  - 11 STACK LOWER ROUGH-INS TO FIT BETWEEN WINDOW AND CASEWORK. MAINTAIN INDIVIDUAL CONDUITS TO EACH.
  - 12 INSTALL LOWER ROUGH-INS AT 'TS-A' SYMBOL UNDER WINDOW. INSTALL UPPER ROUGH-IN AT KEYNOTE LOCATION NORTH OF THE WINDOW FOR CONTROL PANEL.
  - 13 INSTALL FLUSH INTO SOFFIT OF CANOPY

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

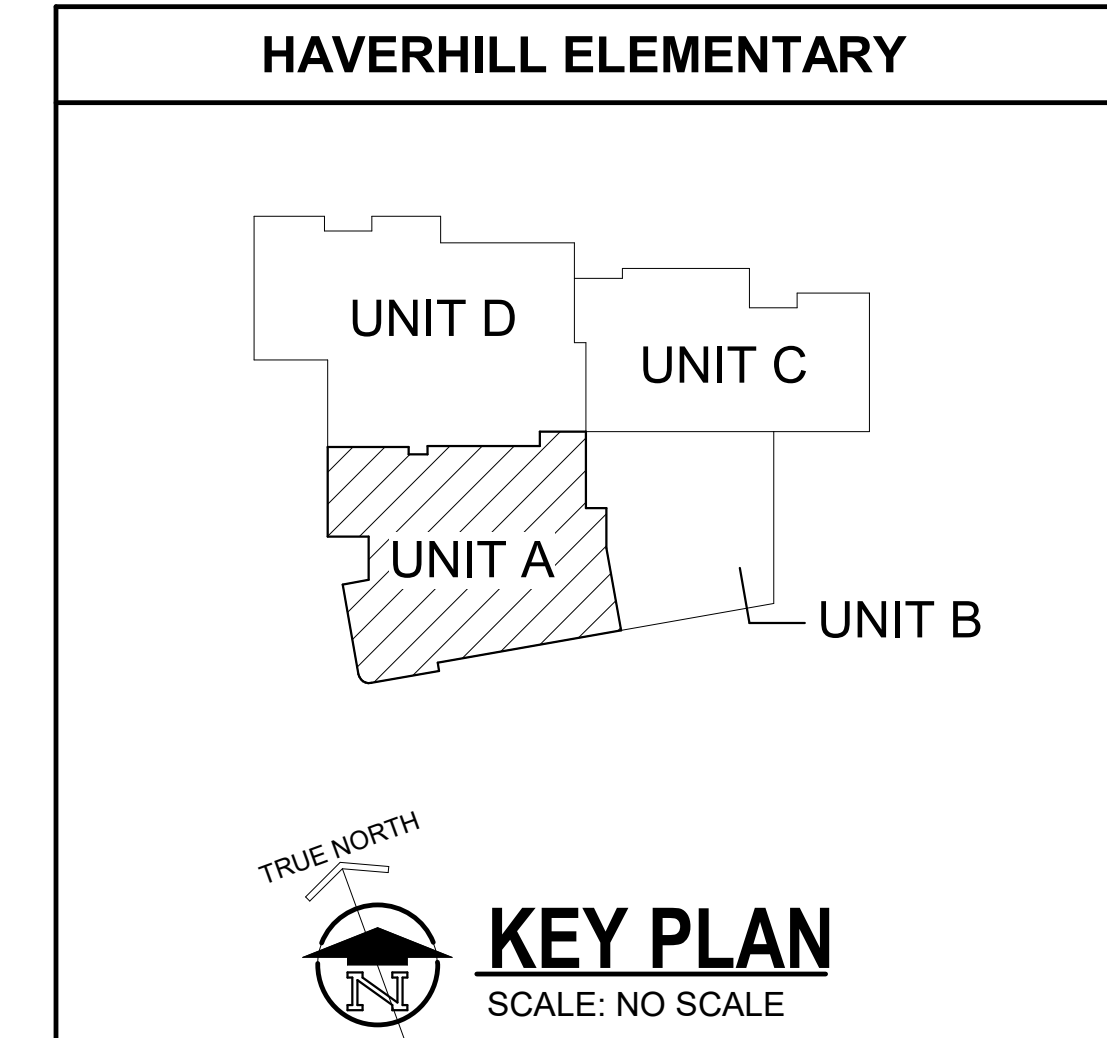
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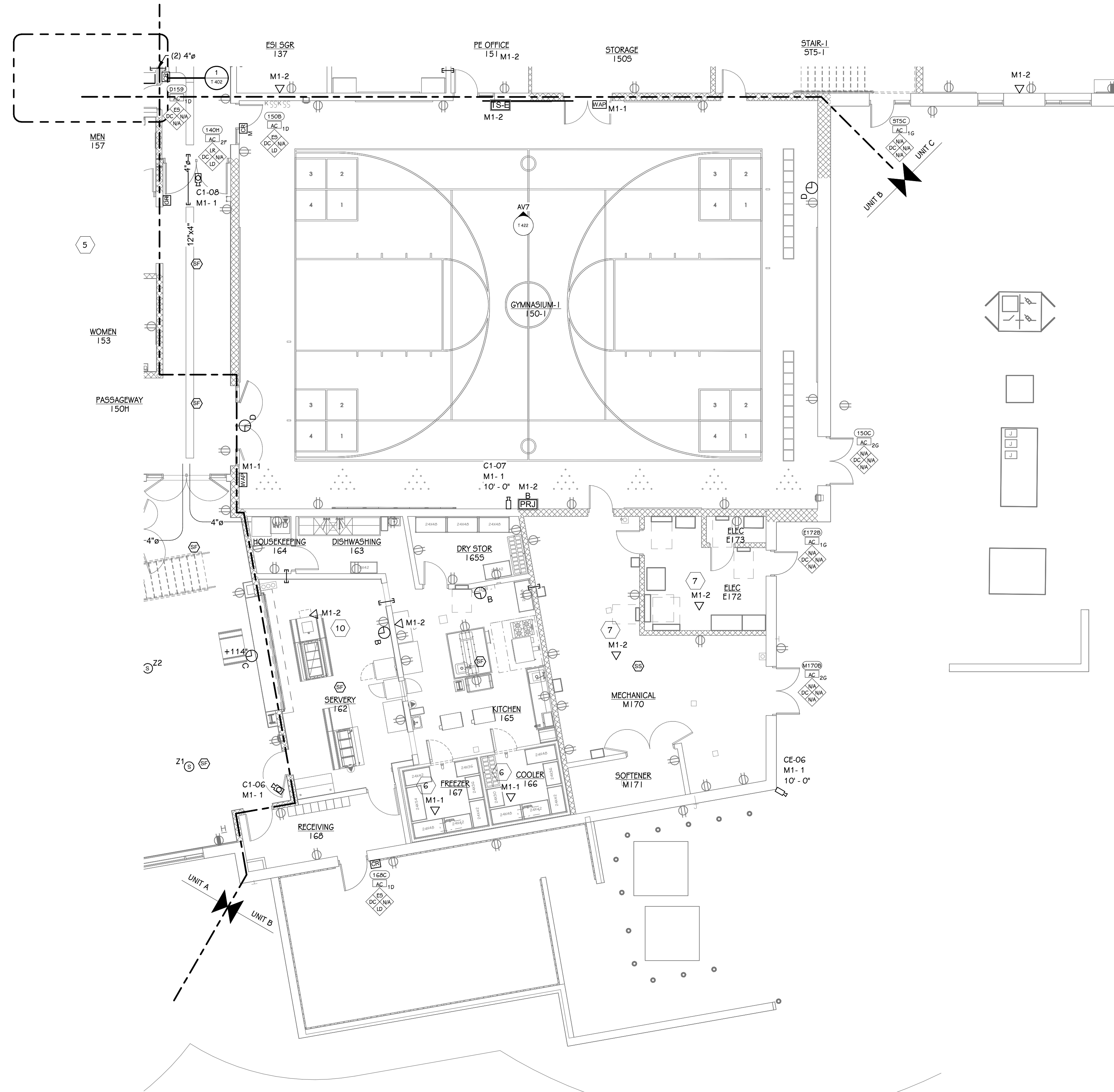
Portage, Michigan

SHEET TITLE  
FIRST FLOOR TECHNOLOGY PLAN -  
UNIT A

DATE  
JUNE 30, 2023

SHEET NUMBER  
**T 101A**  
21-237.20





FIRST FLOOR TECHNOLOGY PLAN - UNIT B  
1/8" = 1'-0"

- TECHNOLOGY KEYED NOTES**
- 1 PROVIDE ROUGH-IN AND CABLING ONLY FOR INTERCOM LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
  - 2 HIGH DATA DROP LOCATION FOR TIMECLOCK.
  - 3 DATA DROP LOCATION FOR FACP. COORDINATE FINAL LOCATION WITH FIRE PROTECTION CONTRACTOR.
  - 4 PROVIDE ROUGH-IN AND CABLING ONLY FOR DISPLAY LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
  - 5 HIGH DATA DROP LOCATION FOR WALL MOUNT PHONE. PROVIDE SPECIALTY WALL-MOUNT FACEPLATE IN LIEU OF STANDARD FACEPLATE.
  - 6 COIL DATA DROP FOR FUTURE TEMPERATURE MONITOR IN CEILING OF COOLER/FREEZER.
  - 7 DATA DROP(S) FOR MECH/ELEC SYSTEMS. COORDINATE FINAL LOCATION(S) WITH MECH/ELEC CONTRACTORS.
  - 8 DATA DROP FOR ELEVATOR CALLBOX. COORDINATE FINAL LOCATION WITH ELEVATOR CONTRACTOR.
  - 9 DATA DROP LOCATION FOR ACP. COORDINATE FINAL LOCATION WITH THE ACCESS CONTROL CONTRACTOR.
  - 10 DATA DROP LOCATION FOR CAFETERIA POINT-OF-SALE DEVICE. COORDINATE WITH THE ELECTRICAL CONTRACTOR AND KITCHEN EQUIPMENT CONTRACTOR.
  - 11 STACK LOWER ROUGH-INS TO FIT BETWEEN WINDOW AND CASEWORK. MAINTAIN INDIVIDUAL CONDUITS TO EACH.
  - 12 INSTALL LOWER ROUGH-INS AT 'TS-A' SYMBOL UNDER WINDOW. INSTALL UPPER ROUGH-IN AT KEYNOTE LOCATION NORTH OF THE WINDOW FOR CONTROL PANEL.
  - 13 INSTALL FLUSH INTO SOFFIT OF CANOPY

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

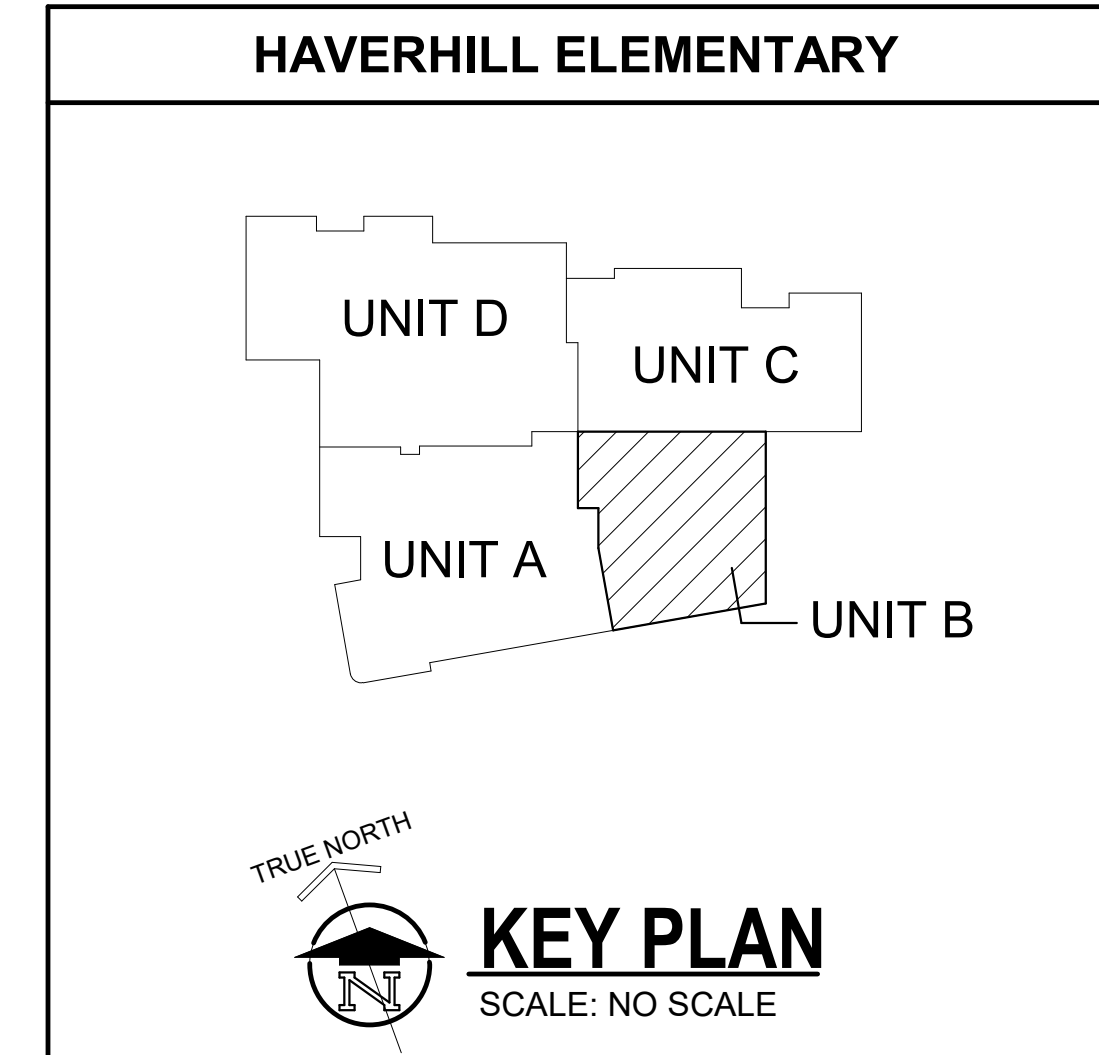
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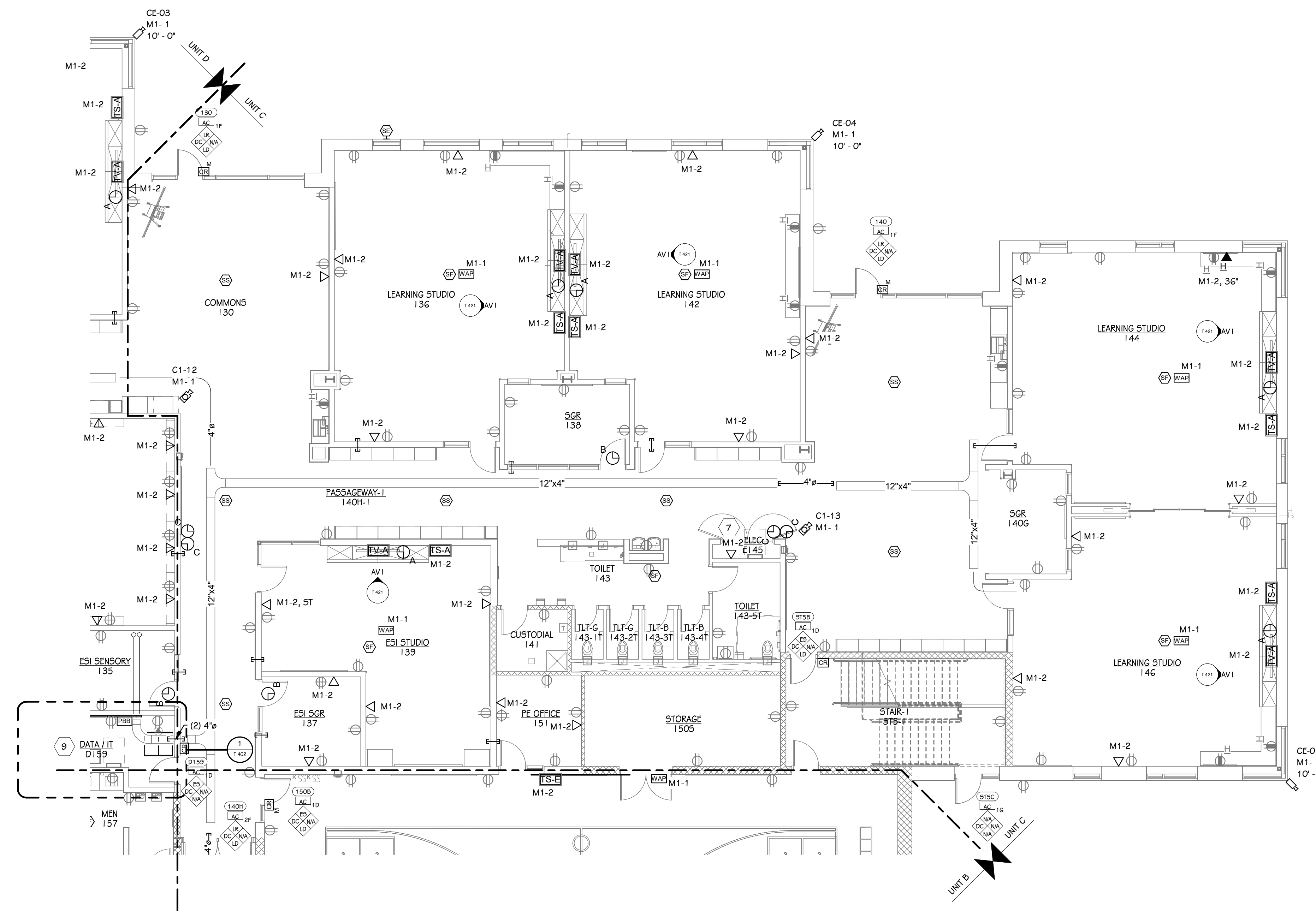
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FIRST FLOOR TECHNOLOGY PLAN -  
UNIT B

DATE  
JUNE 30, 2023

SHEET NUMBER  
**T 101B**  
21-237.20



TECHNOLOGY KEYED NOTES	
1	PROVIDE ROUGH-IN AND CABLING ONLY FOR INTERCOM LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
2	HIGH DATA DROP LOCATION FOR TIMECLOCK.
3	DATA DROP LOCATION FOR FACP. COORDINATE FINAL LOCATION WITH FIRE PROTECTION CONTRACTOR.
4	PROVIDE ROUGH-IN AND CABLING ONLY FOR DISPLAY LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
5	HIGH DATA DROP LOCATION FOR WALL MOUNT PHONE. PROVIDE SPECIALTY WALL-MOUNT FACEPLATE IN LIEU OF STANDARD FACEPLATE.
6	COIL DATA DROP FOR FUTURE TEMPERATURE MONITOR IN CEILING OF COOLER/FREEZER.
7	DATA DROP(S) FOR MECH/ELEC SYSTEMS. COORDINATE FINAL LOCATION(S) WITH MECH/ELEC CONTRACTORS.
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9	DATA DROP LOCATION FOR ACP. COORDINATE FINAL LOCATION WITH THE ACCESS CONTROL CONTRACTOR.
10	DATA DROP LOCATION FOR CAFETERIA POINT-OF-SALE DEVICE. COORDINATE WITH THE ELECTRICAL CONTRACTOR AND KITCHEN EQUIPMENT CONTRACTOR.
11	STACK LOWER ROUGH-INS TO FIT BETWEEN WINDOW AND CASEWORK. MAINTAIN INDIVIDUAL CONDUITS TO EACH.
12	INSTALL LOWER ROUGH-INS AT 'TS-A' SYMBOL UNDER WINDOW. INSTALL UPPER ROUGH-IN AT KEYNOTE LOCATION NORTH OF THE WINDOW FOR CONTROL PANEL.
13	INSTALL FLUSH INTO SOFFIT OF CANOPY



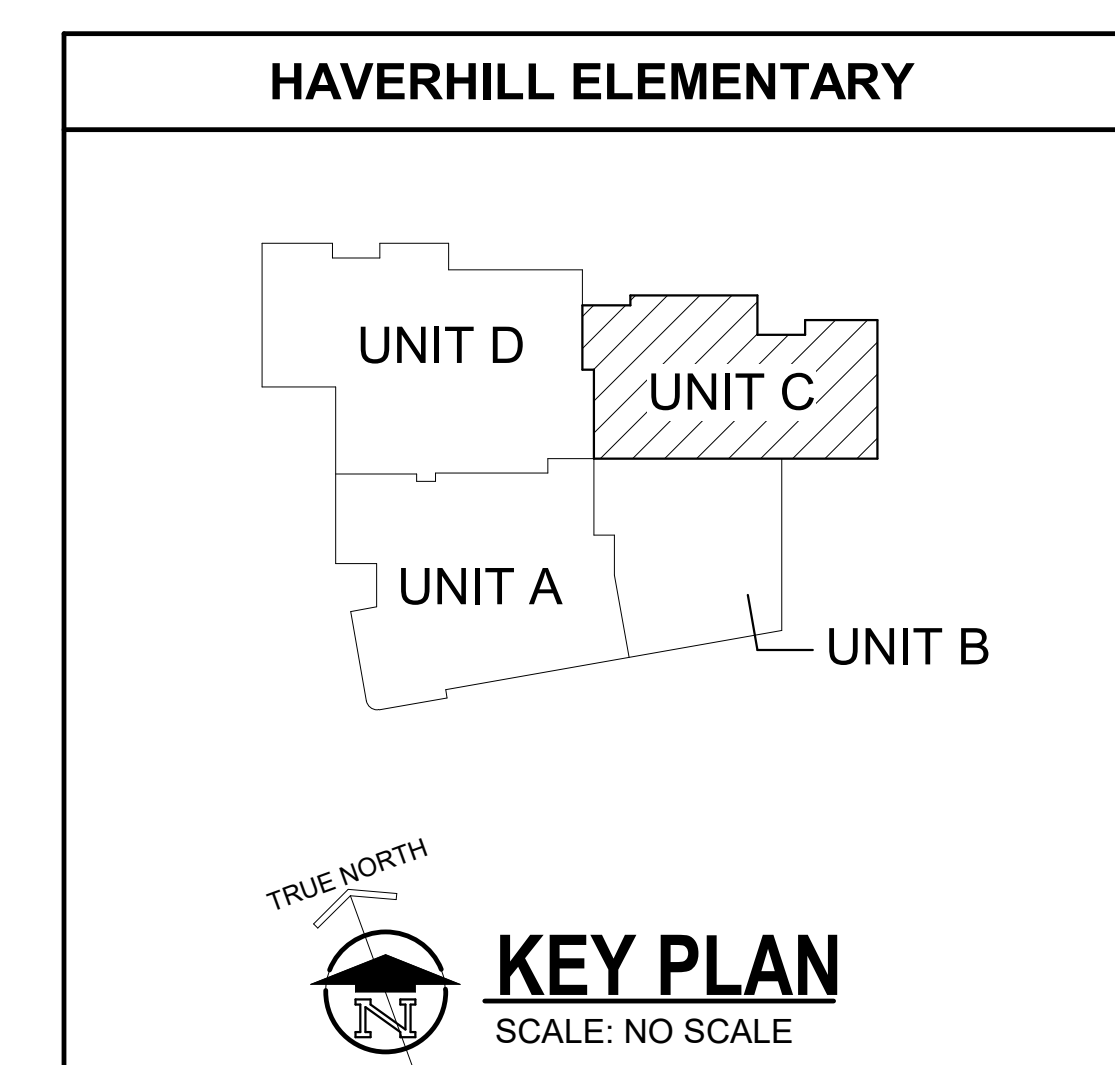
**FIRST FLOOR TECHNOLOGY PLAN - UNIT C**  
1/8" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
**HAVERRILL ELEMENTARY SCHOOL**  
**BID PACKAGE 6: CONSTRUCTION**

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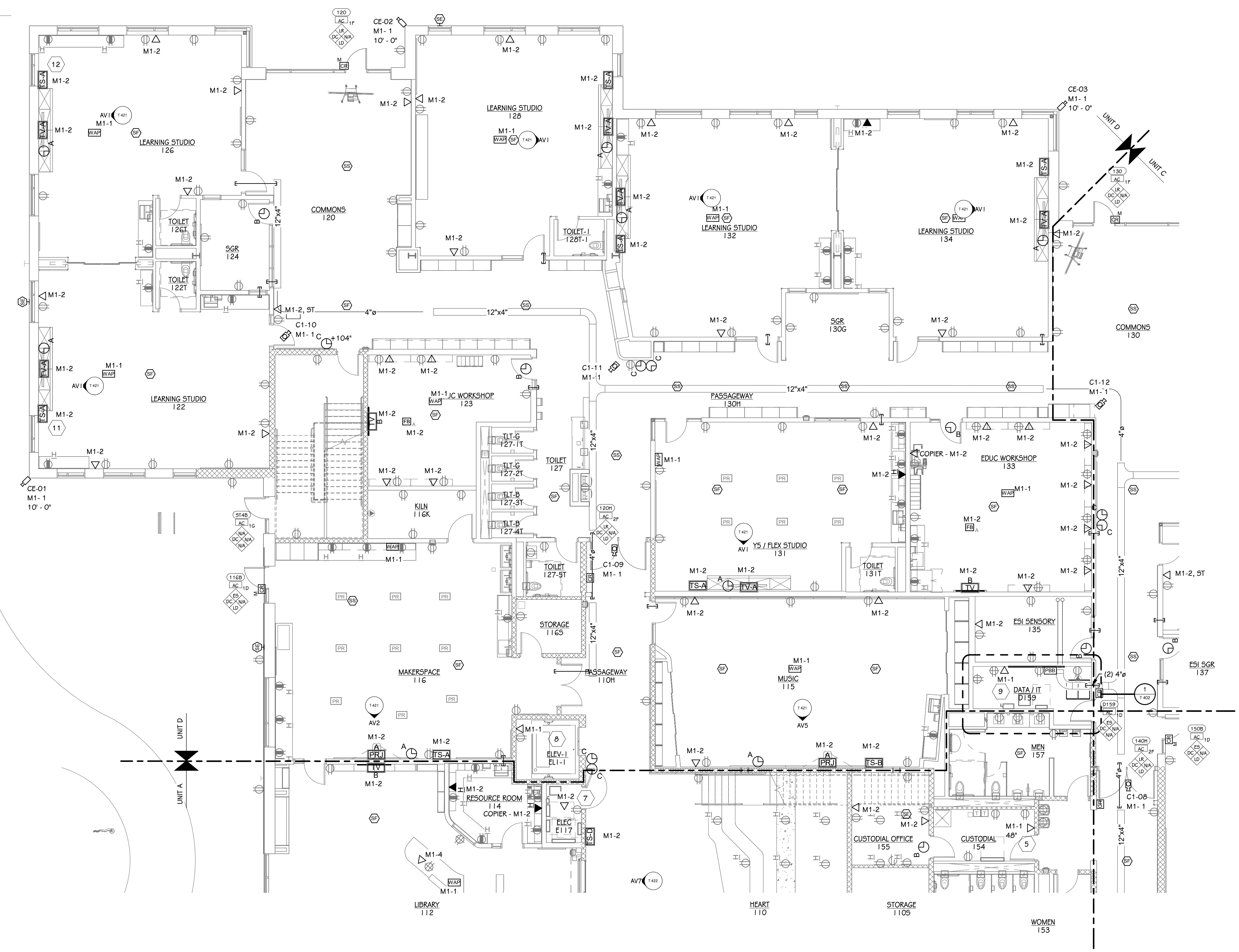


SHEET TITLE  
**FIRST FLOOR TECHNOLOGY PLAN - UNIT C**

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**T 101C**  
 21-237.20

TECHNOLOGY KEYED NOTES	
1	PROVIDE ROUGH-IN AND CABLING ONLY FOR INTERCOM LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
2	HIGH DATA DROP LOCATION FOR TIMECLOCK.
3	DATA DROP LOCATION FOR FACP. COORDINATE FINAL LOCATION WITH FIRE PROTECTION CONTRACTOR.
4	PROVIDE ROUGH-IN AND CABLING ONLY FOR DISPLAY LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
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12	INSTALL LOWER ROUGH-INS AT 'TS-A' SYMBOL UNDER WINDOW. INSTALL UPPER ROUGH-IN AT KEYNOTE LOCATION NORTH OF THE WINDOW FOR CONTROL PANEL.
13	INSTALL FLUSH INTO SOFFIT OF CANOPY



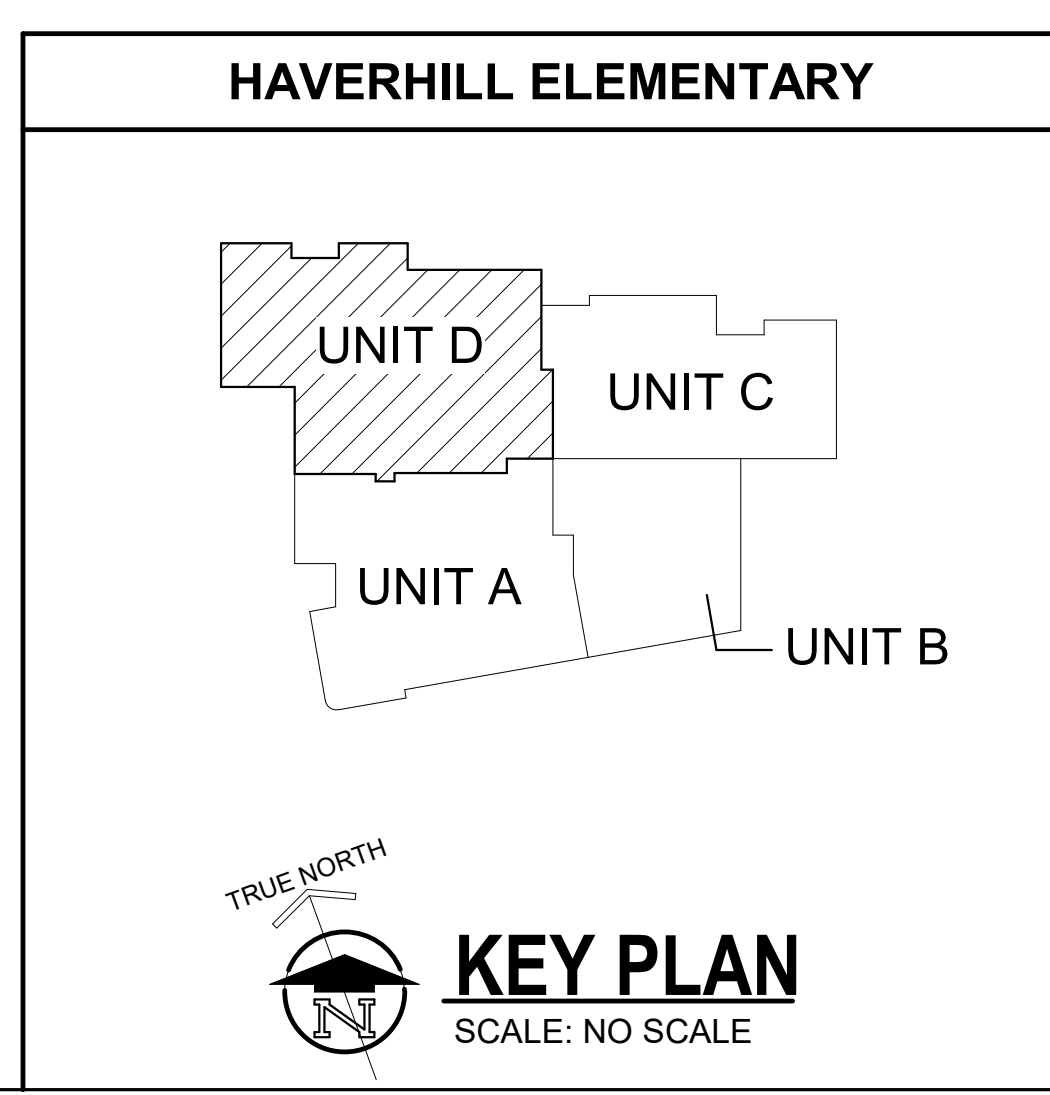
**FIRST FLOOR TECHNOLOGY PLAN - UNIT D**  
1/8" = 1'-0"

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

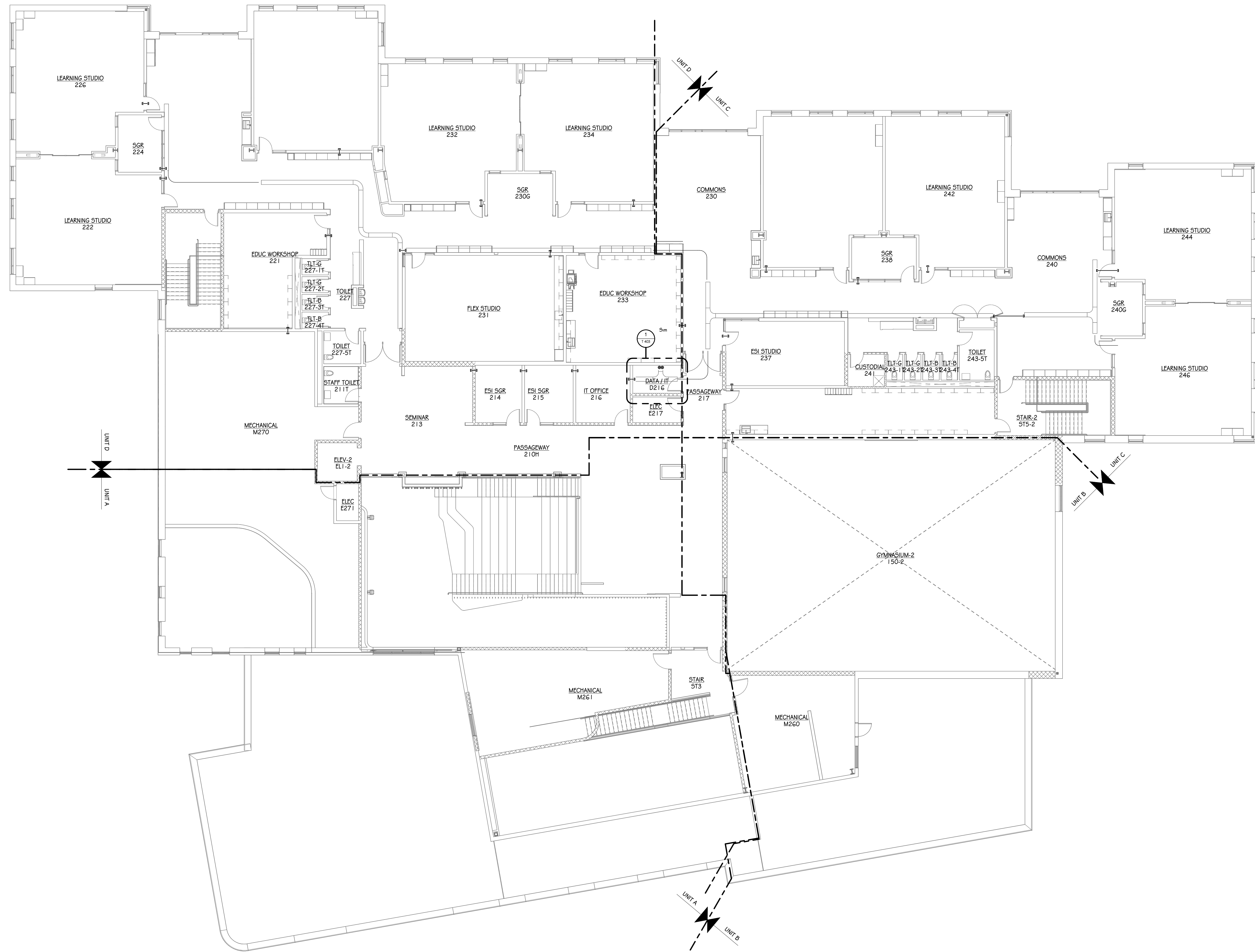
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan



SHEET TITLE  
FIRST FLOOR TECHNOLOGY PLAN -  
UNIT D

DATE  
JUNE 30, 2023  
SHEET NUMBER  
**T 101D**  
21-237.20



**SECOND FLOOR TECHNOLOGY OVERALL PLAN**  
3/32" = 1'-0"

- TECHNOLOGY KEYED NOTES**
- 1 PROVIDE ROUGH-IN AND CABLING ONLY FOR INTERCOM LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
  - 2 HIGH DATA DROP LOCATION FOR TIMECLOCK.
  - 3 DATA DROP LOCATION FOR FACP. COORDINATE FINAL LOCATION WITH FIRE PROTECTION CONTRACTOR.
  - 4 PROVIDE ROUGH-IN AND CABLING ONLY FOR DISPLAY LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
  - 5 HIGH DATA DROP LOCATION FOR WALL MOUNT PHONE. PROVIDE SPECIALTY WALL-MOUNT FACEPLATE IN LIEU OF STANDARD FACEPLATE.
  - 6 COIL DATA DROP FOR FUTURE TEMPERATURE MONITOR IN CEILING OF COOLER/FREEZER.
  - 7 DATA DROP(S) FOR MECH/ELEC SYSTEMS. COORDINATE FINAL LOCATION(S) WITH MECH/ELEC CONTRACTORS.
  - 8 DATA DROP FOR ELEVATOR CALLBOX. COORDINATE FINAL LOCATION WITH ELEVATOR CONTRACTOR.
  - 9 DATA DROP LOCATION FOR ACP. COORDINATE FINAL LOCATION WITH THE ACCESS CONTROL CONTRACTOR.
  - 10 DATA DROP LOCATION FOR CAFETERIA POINT-OF-SALE DEVICE. COORDINATE WITH THE ELECTRICAL CONTRACTOR AND KITCHEN EQUIPMENT CONTRACTOR.
  - 11 STACK LOWER ROUGH-INS TO FIT BETWEEN WINDOW AND CASEWORK. MAINTAIN INDIVIDUAL CONDUITS TO EACH.
  - 12 INSTALL LOWER ROUGH-INS AT "TS-A" SYMBOL UNDER WINDOW. INSTALL UPPER ROUGH-IN AT KEYNOTE LOCATION NORTH OF THE WINDOW FOR CONTROL PANEL.
  - 13 INSTALL FLUSH INTO SOFFIT OF CANOPY

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

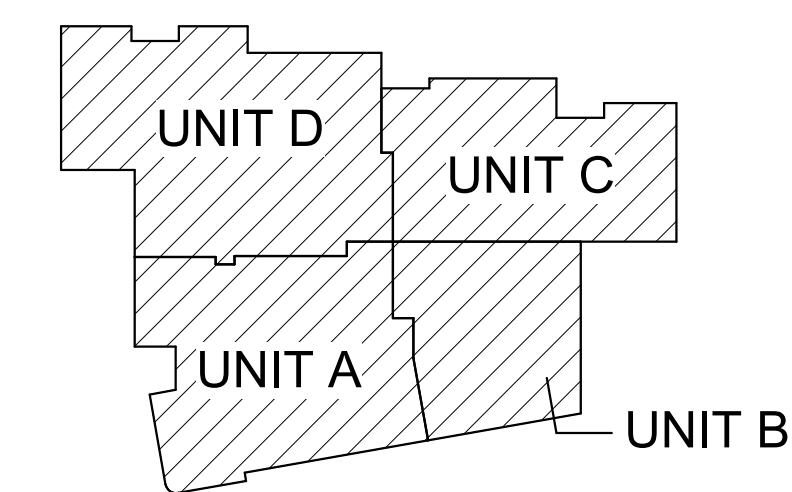
Portage, Michigan

SHEET TITLE  
SECOND FLOOR TECHNOLOGY PLAN

DATE  
JUNE 30, 2023

SHEET NUMBER  
**T 102**  
21-237.20

**HAVERHILL ELEMENTARY**

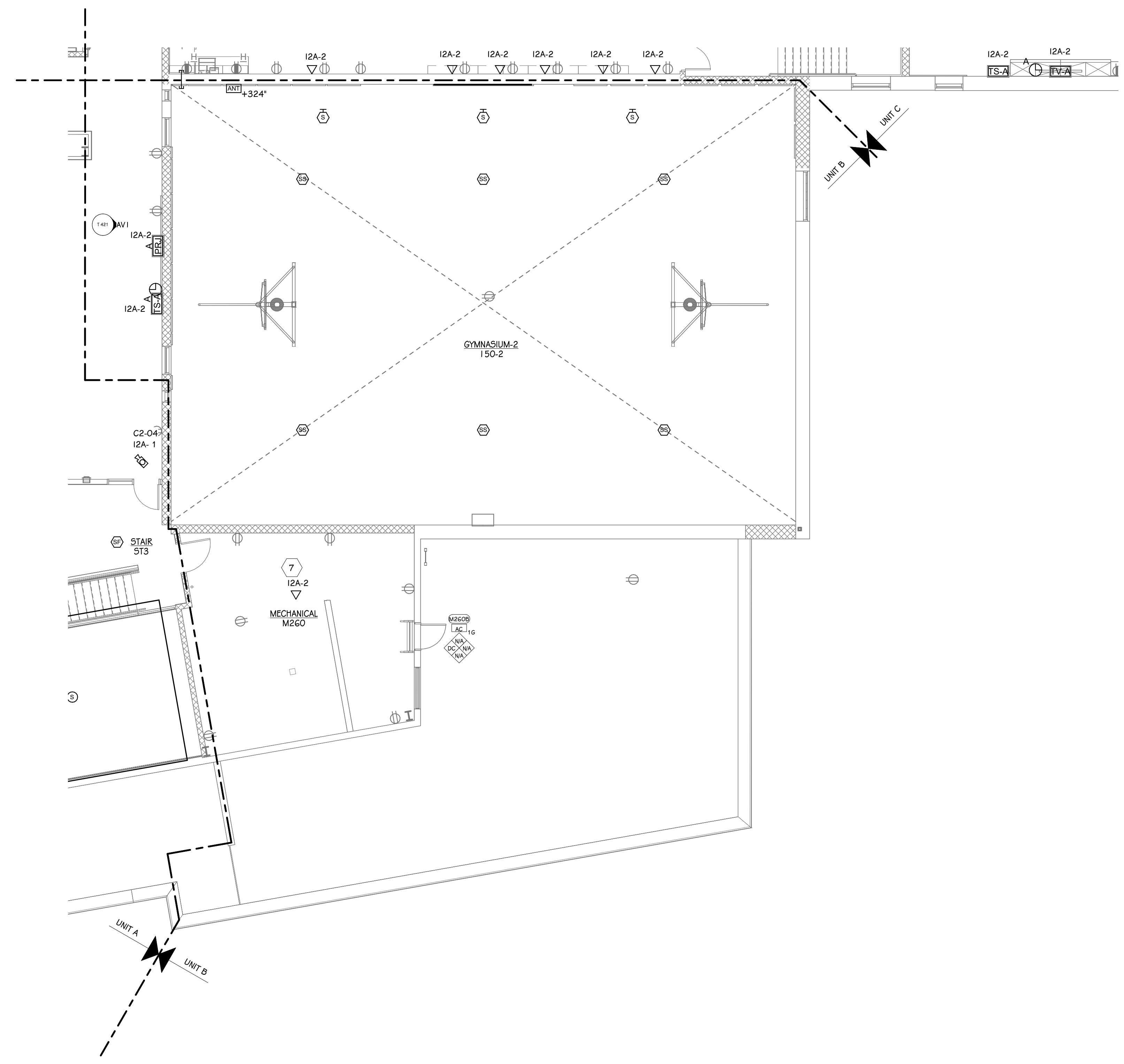


TRUE NORTH  
**KEY PLAN**  
SCALE: NO SCALE



**TECHNOLOGY KEYED NOTES**

- 1 PROVIDE ROUGH-IN AND CABLING ONLY FOR INTERCOM LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
- 2 HIGH DATA DROP LOCATION FOR TIMECLOCK.
- 3 DATA DROP LOCATION FOR FACP. COORDINATE FINAL LOCATION WITH FIRE PROTECTION CONTRACTOR.
- 4 PROVIDE ROUGH-IN AND CABLING ONLY FOR DISPLAY LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
- 5 HIGH DATA DROP LOCATION FOR WALL MOUNT PHONE. PROVIDE SPECIALTY WALL-MOUNT FACEPLATE IN LIEU OF STANDARD FACEPLATE.
- 6 COIL DATA DROP FOR FUTURE TEMPERATURE MONITOR IN CEILING OF COOLER/FREEZER.
- 7 DATA DROP(S) FOR MECH/ELEC SYSTEMS. COORDINATE FINAL LOCATION(S) WITH MECH/ELEC CONTRACTORS.
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- 13 INSTALL FLUSH INTO SOFFIT OF CANOPY



**SECOND FLOOR TECHNOLOGY PLAN - UNIT B**  
 1/8" = 1'-0"

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
**Haverhill Elementary School  
 Bid Package 6: Construction**

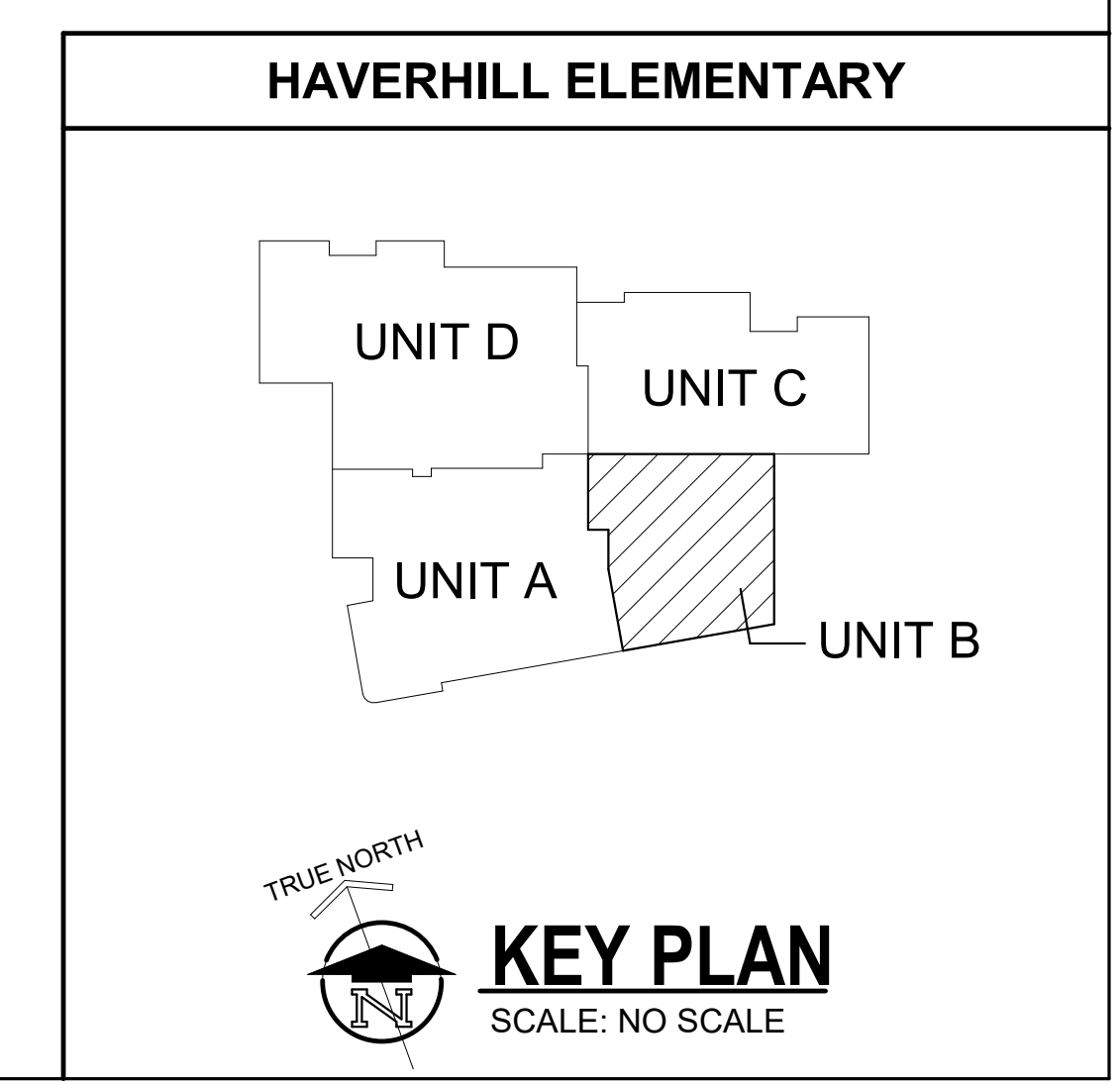
OWNER  
**Portage Public Schools**  
 Portage, Michigan

SHEET TITLE  
**SECOND FLOOR TECHNOLOGY PLAN -  
 UNIT B**

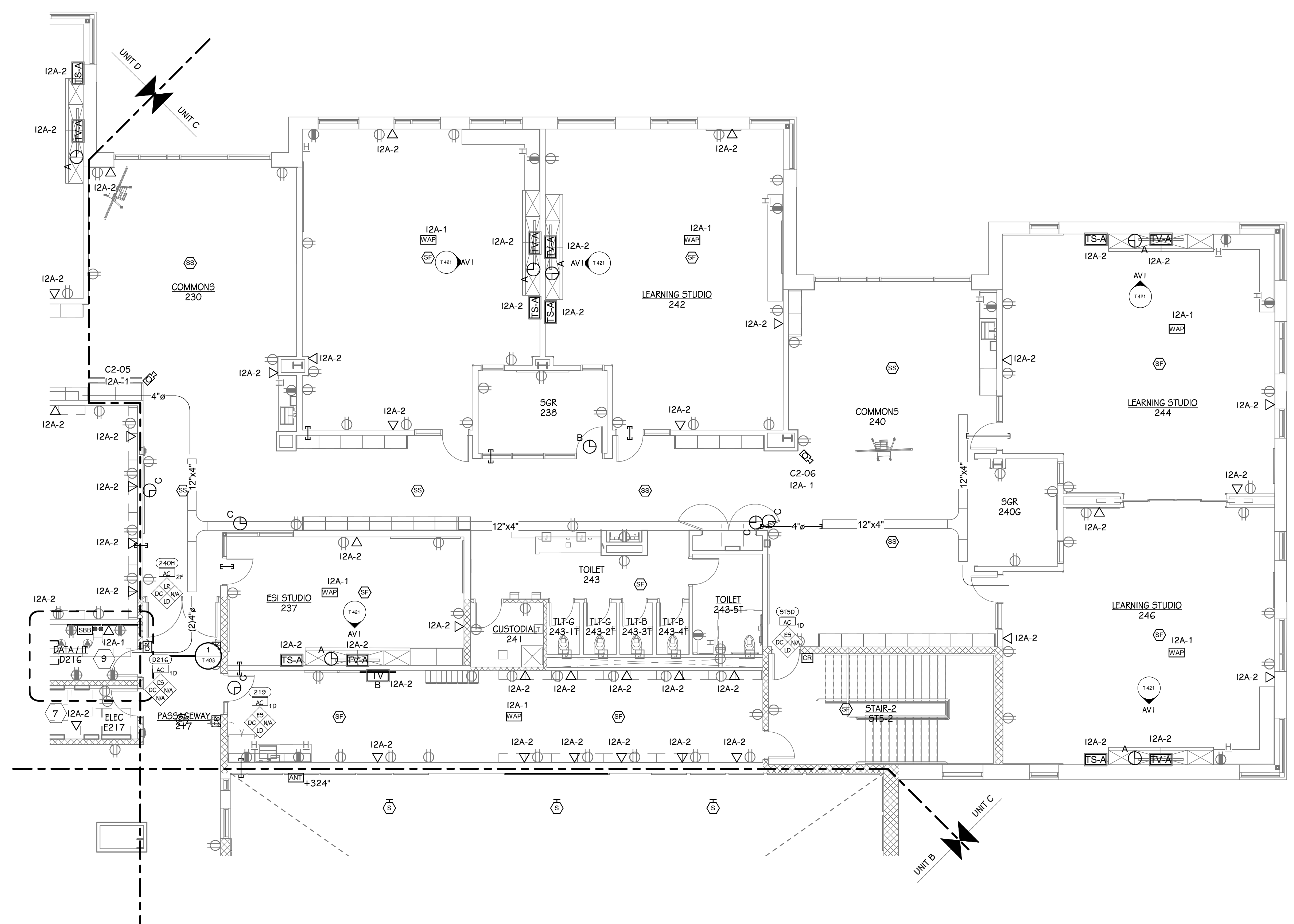
Portage, Michigan

DATE  
**JUNE 30, 2023**

SHEET NUMBER  
**T 102B**  
 21-237.20



TECHNOLOGY KEYED NOTES	
1	PROVIDE ROUGH-IN AND CABLING ONLY FOR INTERCOM LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
2	HIGH DATA DROP LOCATION FOR TIMECLOCK.
3	DATA DROP LOCATION FOR FACP. COORDINATE FINAL LOCATION WITH FIRE PROTECTION CONTRACTOR.
4	PROVIDE ROUGH-IN AND CABLING ONLY FOR DISPLAY LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
5	HIGH DATA DROP LOCATION FOR WALL MOUNT PHONE. PROVIDE SPECIALTY WALL-MOUNT FACEPLATE IN LIEU OF STANDARD FACEPLATE.
6	COIL DATA DROP FOR FUTURE TEMPERATURE MONITOR IN CEILING OF COOLER/FREEZER.
7	DATA DROP(S) FOR MECH/ELEC SYSTEMS. COORDINATE FINAL LOCATION(S) WITH MECH/ELEC CONTRACTORS.
8	DATA DROP FOR ELEVATOR CALLBOX. COORDINATE FINAL LOCATION WITH ELEVATOR CONTRACTOR.
9	DATA DROP LOCATION FOR ACP. COORDINATE FINAL LOCATION WITH THE ACCESS CONTROL CONTRACTOR.
10	DATA DROP LOCATION FOR CAFETERIA POINT-OF-SALE DEVICE. COORDINATE WITH THE ELECTRICAL CONTRACTOR AND KITCHEN EQUIPMENT CONTRACTOR.
11	STACK LOWER ROUGH-INS TO FIT BETWEEN WINDOW AND CASEWORK. MAINTAIN INDIVIDUAL CONDUITS TO EACH.
12	INSTALL LOWER ROUGH-INS AT "TS-A" SYMBOL UNDER WINDOW. INSTALL UPPER ROUGH-IN AT KEYNOTE LOCATION NORTH OF THE WINDOW FOR CONTROL PANEL.
13	INSTALL FLUSH INTO SOFFIT OF CANOPY



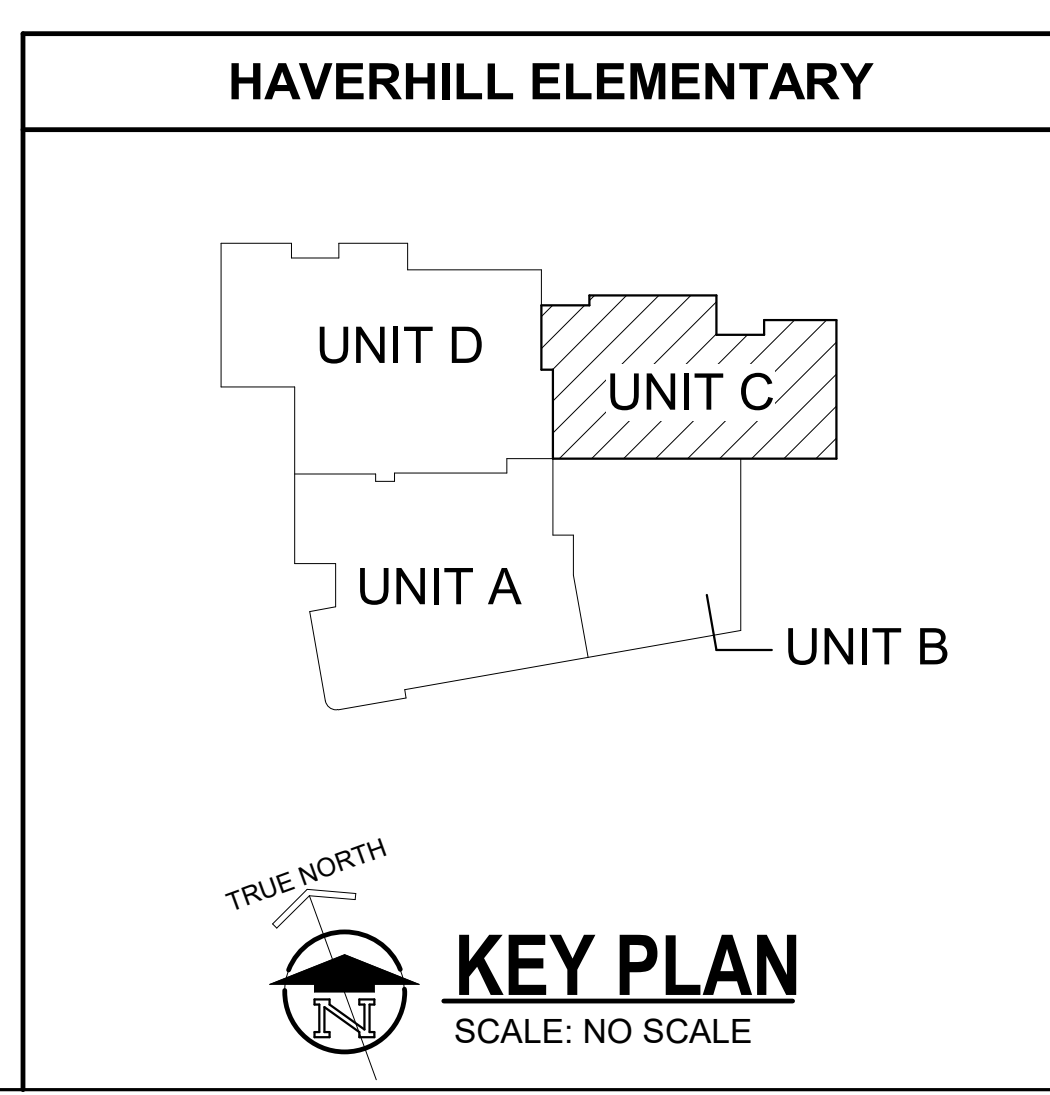
 SECOND FLOOR TECHNOLOGY PLAN - UNIT C  
 1/8" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
 HAVERHILL ELEMENTARY SCHOOL  
 BID PACKAGE 6: CONSTRUCTION

OWNER  
 PORTAGE PUBLIC SCHOOLS

Portage, Michigan



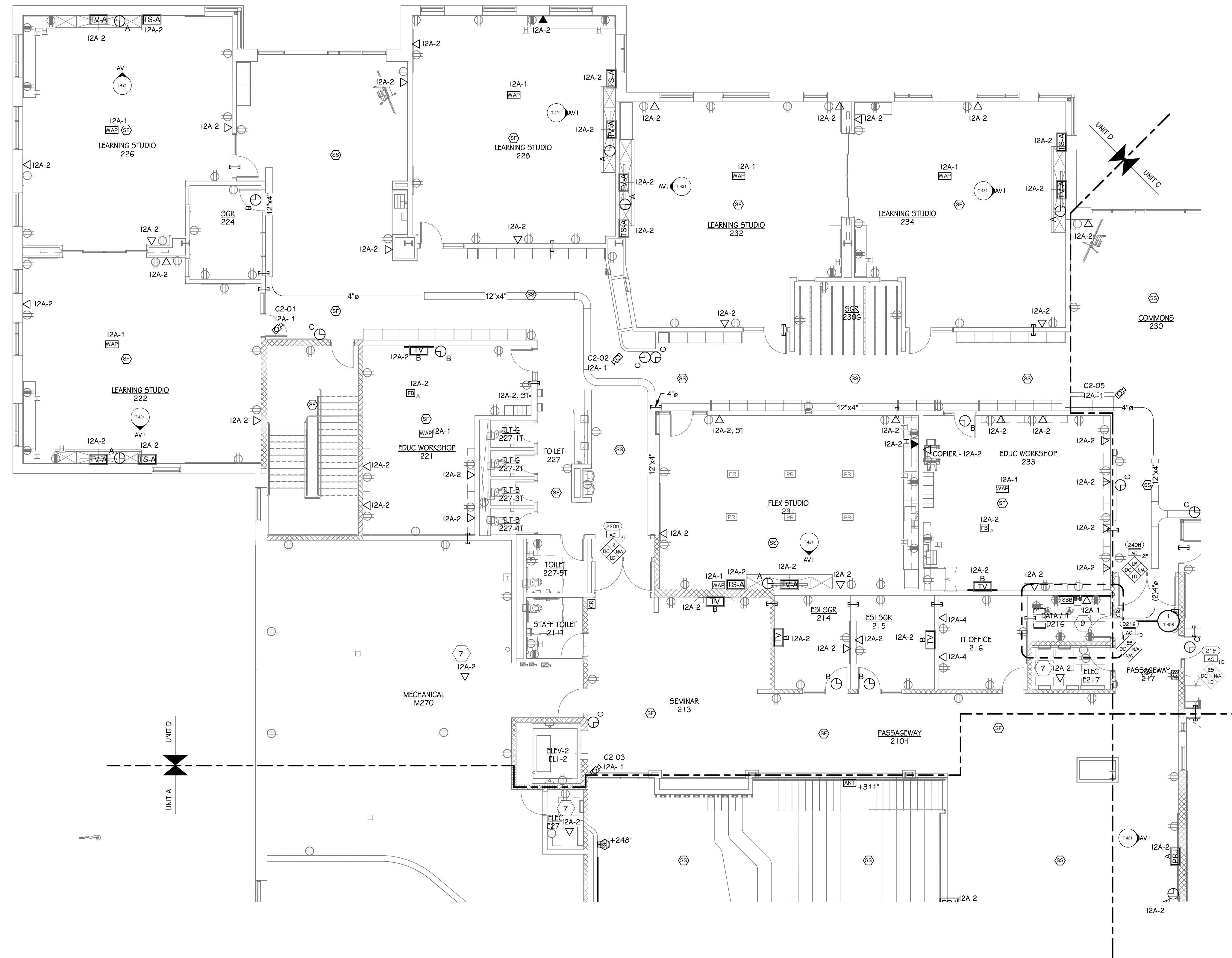
SHEET TITLE  
 SECOND FLOOR TECHNOLOGY PLAN -  
 UNIT C

SHEET NUMBER  
**T 102C**  
 21-237.20

DATE  
 JUNE 30, 2023



- TECHNOLOGY KEYED NOTES**
- 1 PROVIDE ROUGH-IN AND CABLING ONLY FOR INTERCOM LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
  - 2 HIGH DATA DROP LOCATION FOR TIMECLOCK.
  - 3 DATA DROP LOCATION FOR FACP. COORDINATE FINAL LOCATION WITH FIRE PROTECTION CONTRACTOR.
  - 4 PROVIDE ROUGH-IN AND CABLING ONLY FOR DISPLAY LOCATION. NO DEVICES INSTALLED AT THIS LOCATION.
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  - 11 STACK LOWER ROUGH-INS TO FIT BETWEEN WINDOW AND CASEWORK. MAINTAIN INDIVIDUAL CONDUITS TO EACH.
  - 12 INSTALL LOWER ROUGH-IN AT 'TS-A' SYMBOL UNDER WINDOW. INSTALL UPPER ROUGH-IN AT KEYNOTE LOCATION NORTH OF THE WINDOW FOR CONTROL PANEL.
  - 13 INSTALL FLUSH INTO SOFFIT OF CANOPY



**SECOND FLOOR TECHNOLOGY PLAN - UNIT D**  
1/8" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

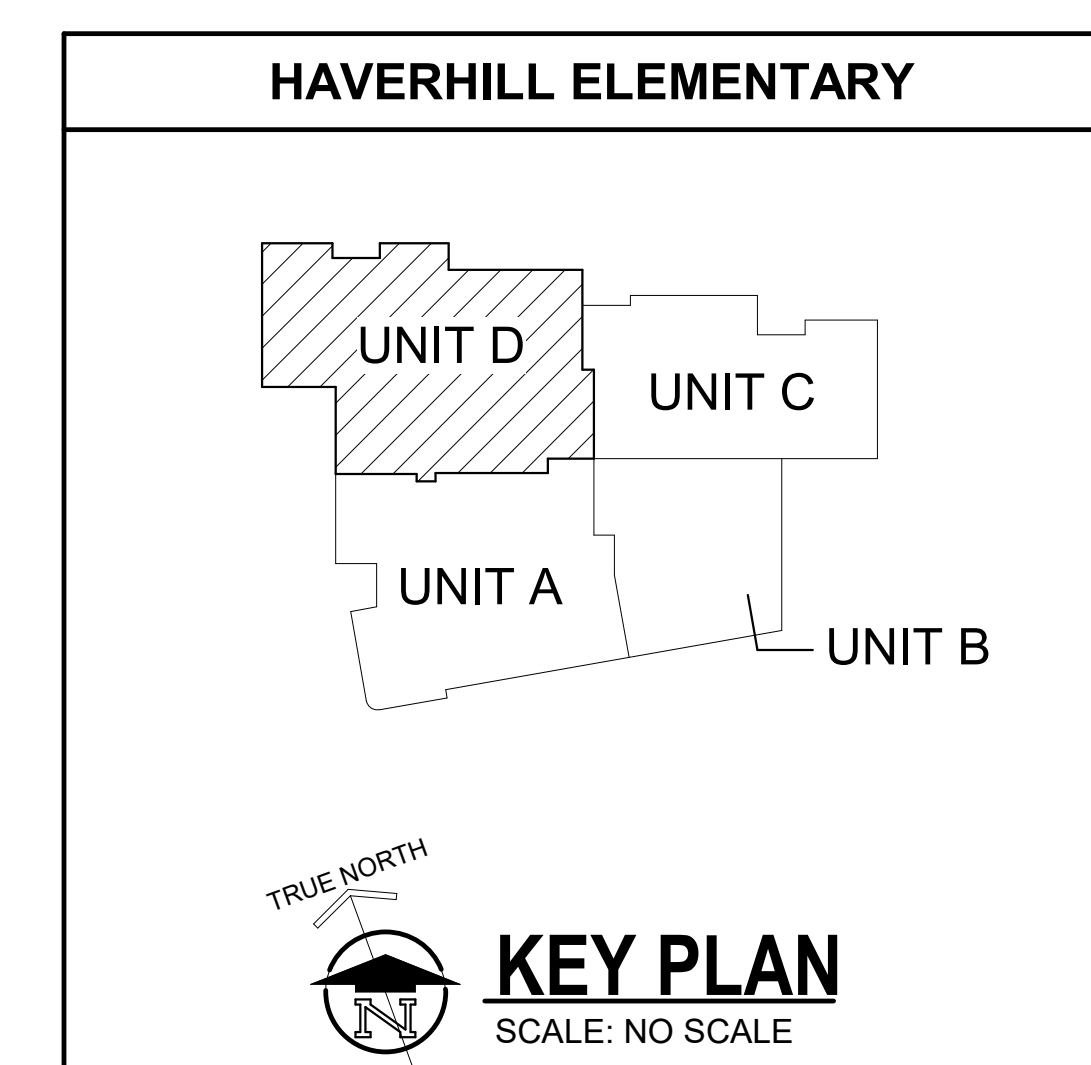
OWNER  
PORTAGE PUBLIC SCHOOLS

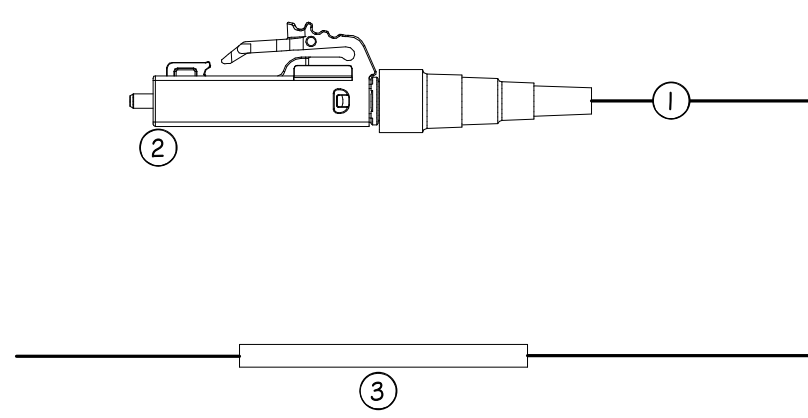
Portage, Michigan

SHEET TITLE  
SECOND FLOOR TECHNOLOGY PLAN -  
UNIT D

DATE  
JUNE 30, 2023

SHEET NUMBER  
**T 102D**  
21-237.20

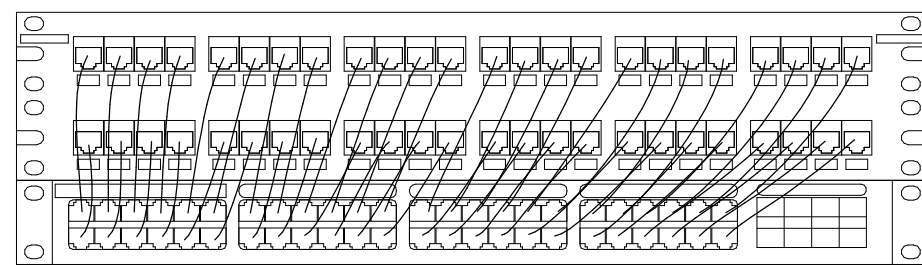




- ① ALL STRANDS SHALL BE TERMINATED WITH FUSION SPLICE-ON FIBER OPTIC CONNECTORS.
- ② 9C FIBER CONNECTOR - CORNING FL2-SCU-2-3MM-5M-25
- ③ HEAT SHRINK SLEEVES FOR ALL FUSION SPLICES SHALL BE MINIMUM 60MM IN LENGTH & CONTAIN A STEEL STRENGTH MEMBER.

**FIBER TERMINATION & SPLICING DETAIL**

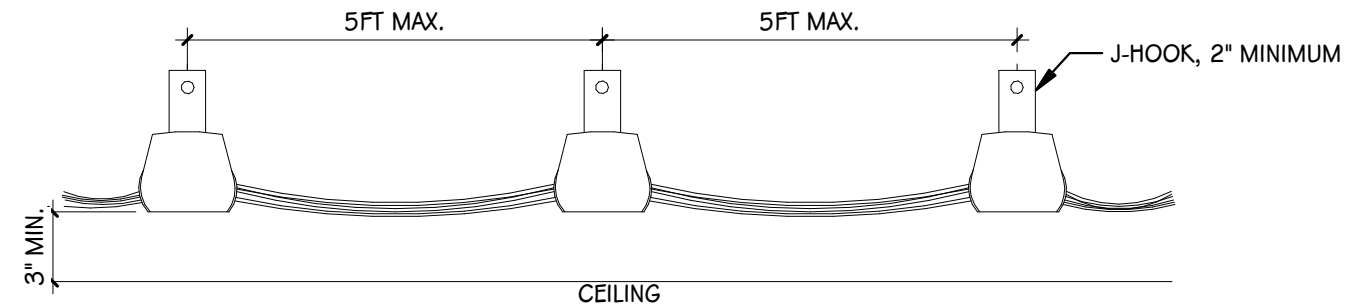
SCALE: NONE



PATCH PANEL SHALL BE NUMBERED IN THE SAME PATTERN AS THE SWITCH. SWITCH PORT NUMBER SHALL CONNECT TO SAME PORT NUMBER ON PATCH PANEL.

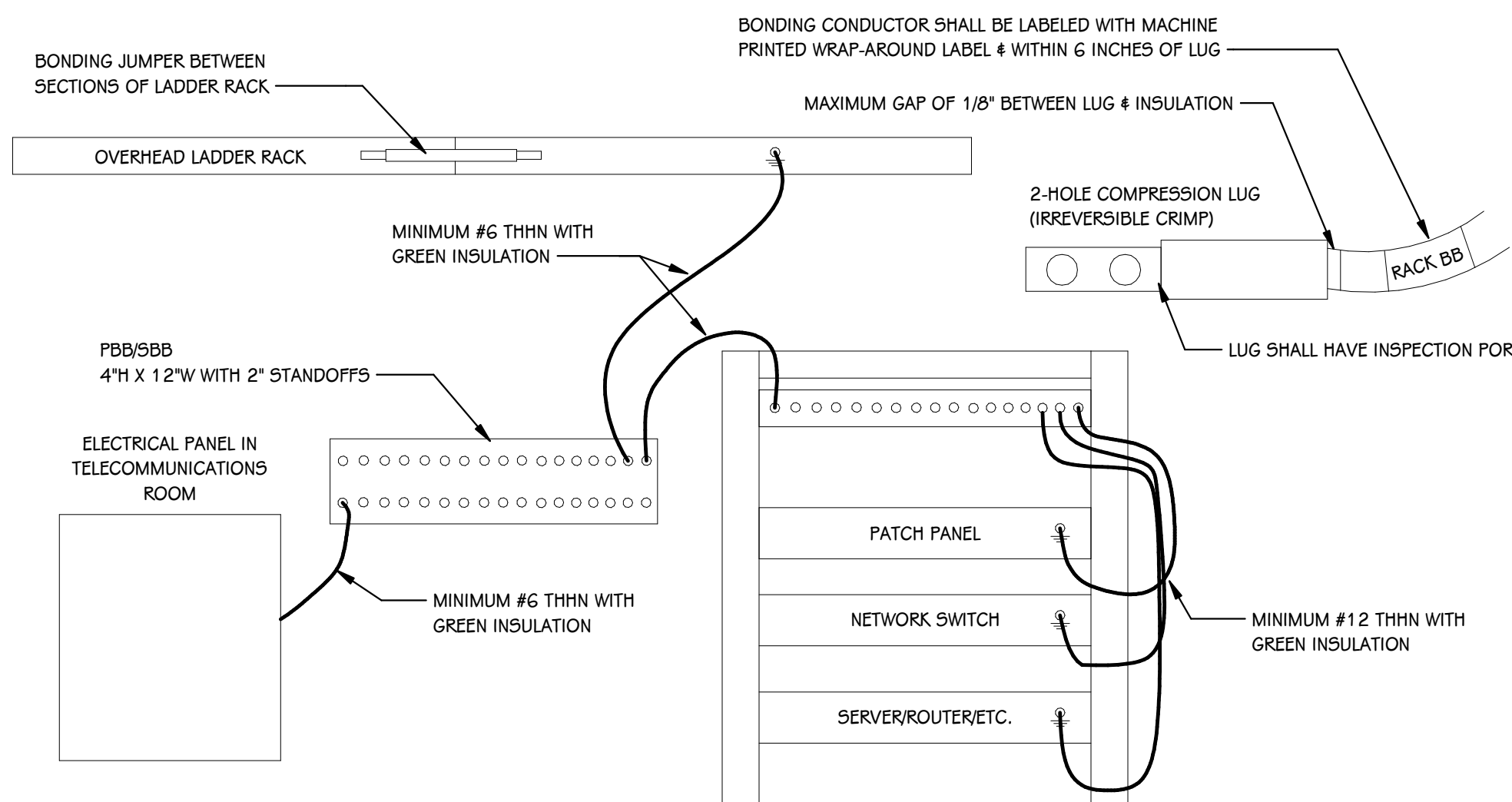
**SWITCH - PATCH PANEL CROSS CONNECT SAMPLE**

SCALE: NONE



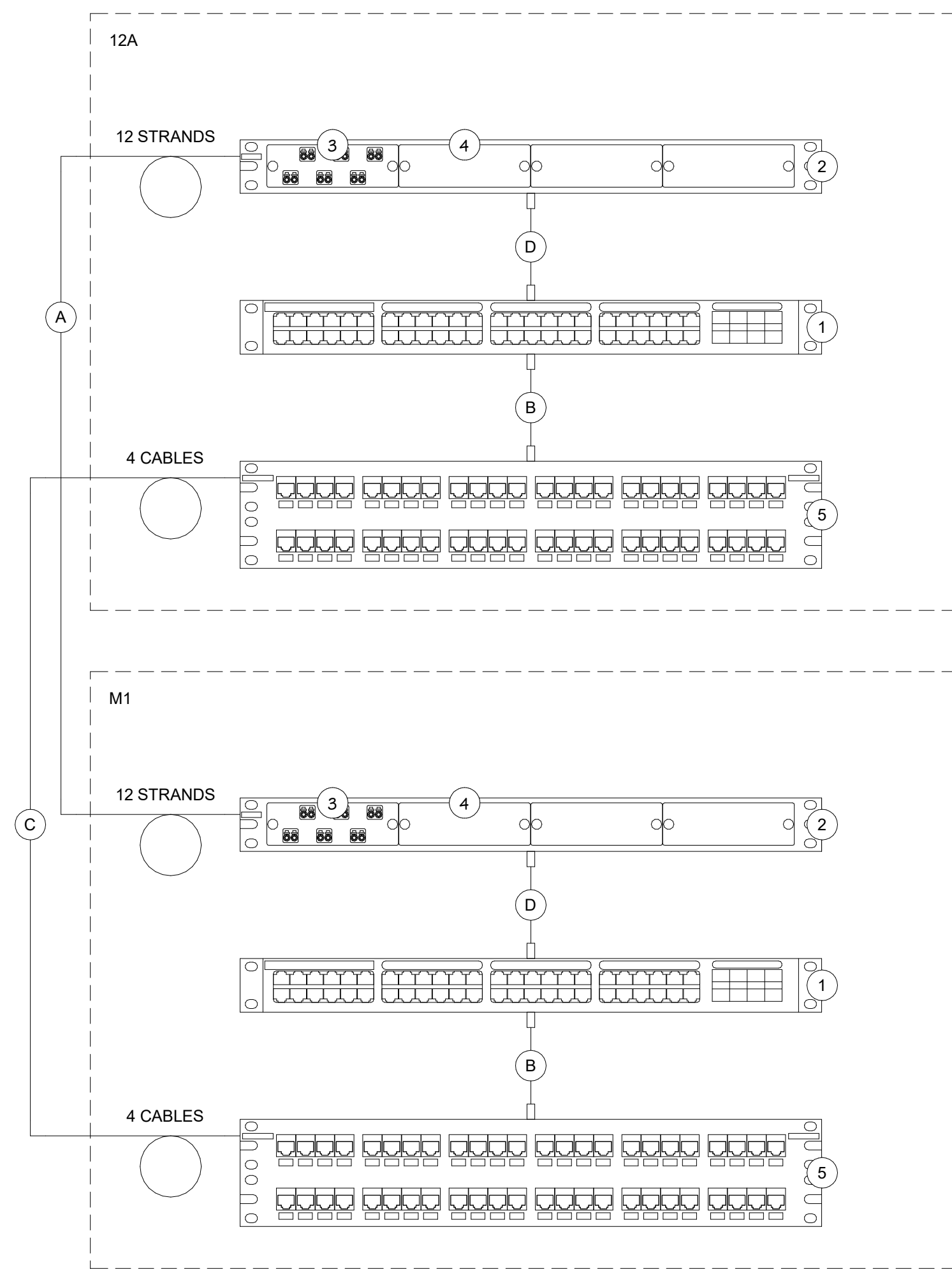
**CABLE SUPPORT DETAIL**

SCALE: NONE



**TELECOMMUNICATION ROOM BONDING DETAIL**

SCALE: NONE



**BACKBONE DETAIL**

SCALE: NONE

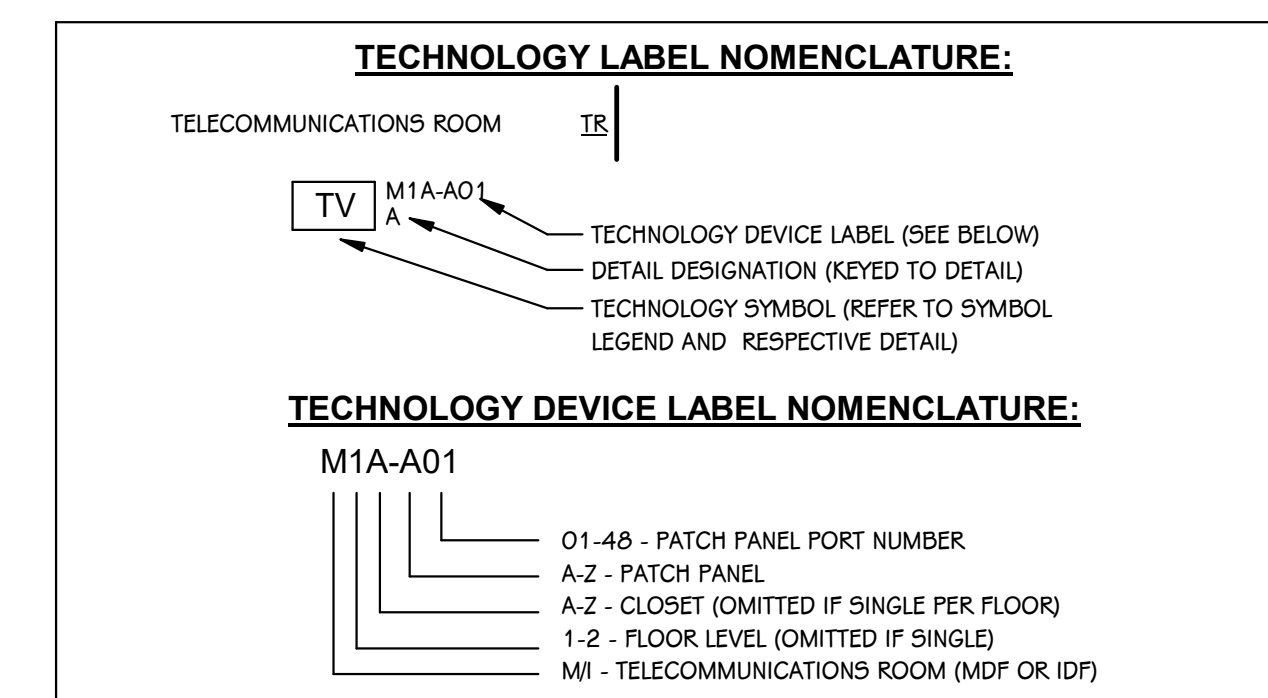
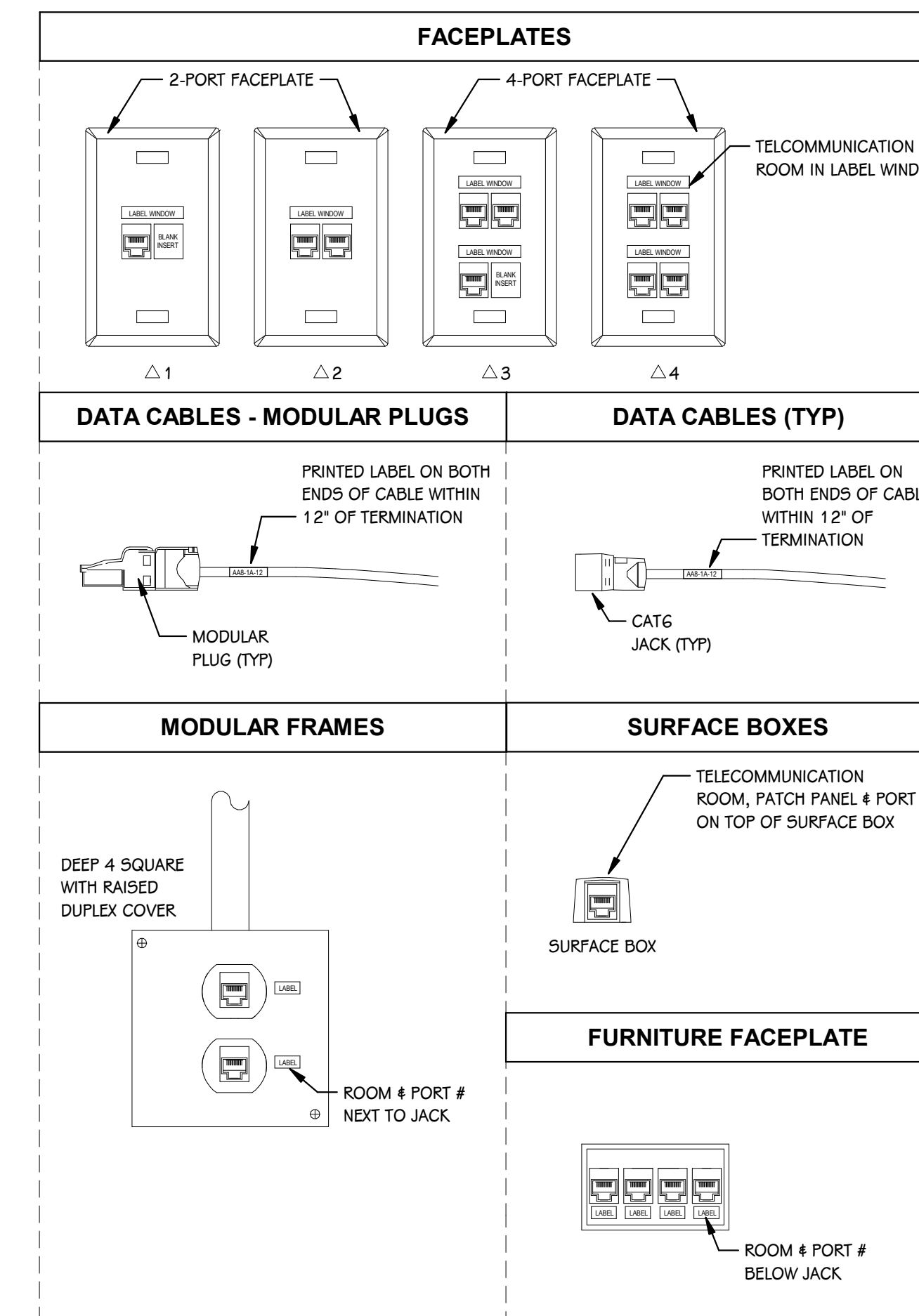
BACKBONE EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
1	NETWORK SWITCH	PROVIDED BY OWNER	PROVIDED BY OWNER	
2	FIBER ENCLOSURE	CORNING	CCH-01U	
3	FIBER ADAPTER	CORNING	CCH-CP12-D9	
4	FIBER BLANK	CORNING	CCH-BLNK	
5	PATCH PANEL	REFER TO RACK SCHEDULE	REFER TO RACK SCHEDULE	
A	FIBER OPTIC CABLE	CORNING	012ESP-T4101DA3	
B	PATCH CORD	REFER TO SCHEDULE	REFER TO SCHEDULE	
C	CATEGORY CABLE	REFER TO SCHEDULE	REFER TO SCHEDULE	INCLUDE MINIMUM 15FT SERVICE LOOP
D	FIBER PATCH CORD	PROVIDED BY OWNER	PROVIDED BY OWNER	

PATCH CORD SCHEDULE										
COLOR	PURPOSE	QUANTITY						MANUFACTURER	PART #	
		8 IN	1 FT	3 FT	5 FT	7 FT	10 FT			14 FT
RED	DATA BACKBONE	5	0	0	0	0	0	PANDUIT	UTP28SP**RD	
ORANGE	CLOCKS AND PAGING	0	0	0	0	0	0	PANDUIT	UTP28SP**OR	
YELLOW	ACCESS POINTS	40	0	40	0	0	0	PANDUIT	UTP28X**YL	
GREEN	PHONE BACKBONE	0	0	0	0	0	0	PANDUIT	UTP28SP**GR	
BLUE	GENERAL DATA	421	0	0	0	0	0	PANDUIT	UTP28SP**BU	
BLUE	GENERAL DATA	0	0	0	93	168	135	25	PANDUIT	UTP6SP**BU
VIOLET	SECURITY CAMERAS	30	0	0	0	0	30	0	PANDUIT	UTP28SP**VL
BLACK	A/V	100	0	50	50	0	0	0	PANDUIT	UTP28SP**BL
PINK	HVAC	21	0	21	0	0	0	0	PANDUIT	UTP28SP**PK

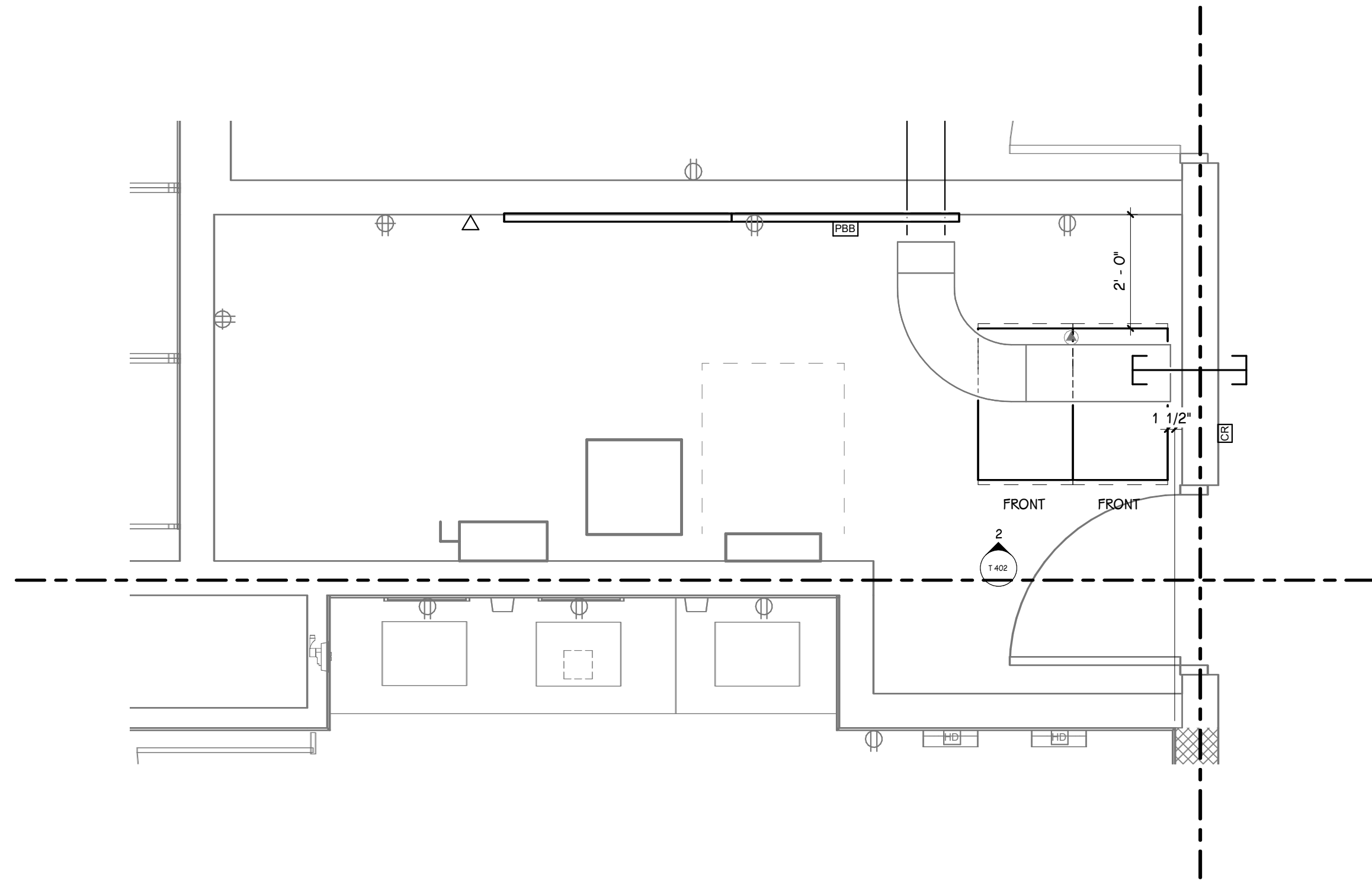
DATA CABLE SCHEDULE					
COLOR	RATING	TYPE	PURPOSE	MANUFACTURER	PART #
RED	PLENUM	CAT6	DATA BACKBONE	GENERAL CABLE	7131804
ORANGE	PLENUM	CAT6	CLOCKS AND PAGING	GENERAL CABLE	7131805
YELLOW	PLENUM	CAT6A	ACCESS POINTS	GENERAL CABLE	7141802
GREEN	PLENUM	CAT6	POTS BACKBONE	GENERAL CABLE	7131806
BLUE	PLENUM	CAT6	GENERAL DATA	GENERAL CABLE	7131800
VIOLET	PLENUM	CAT6	SECURITY CAMERAS	GENERAL CABLE	7131809
BLACK	PLENUM	CAT6	A/V	GENERAL CABLE	7131807
PINK	PLENUM	CAT6	HVAC	GENERAL CABLE	7131808

DATA JACK SCHEDULE				
COLOR	PURPOSE	MANUFACTURER	PART #	
RED	DATA BACKBONE	PANDUIT	CJ688TGRD	
ORANGE	CLOCKS AND PAGING	PANDUIT	CJ688TGOR	
YELLOW	ACCESS POINTS	PANDUIT	CJ6X88TGYL	
GREEN	POTS BACKBONE	PANDUIT	CJ688TGGR	
BLUE	GENERAL DATA	PANDUIT	CJ688TGBU	
VIOLET	SECURITY CAMERAS	PANDUIT	CJ688TGVL	
BLACK	A/V	PANDUIT	CJ688TGBL	

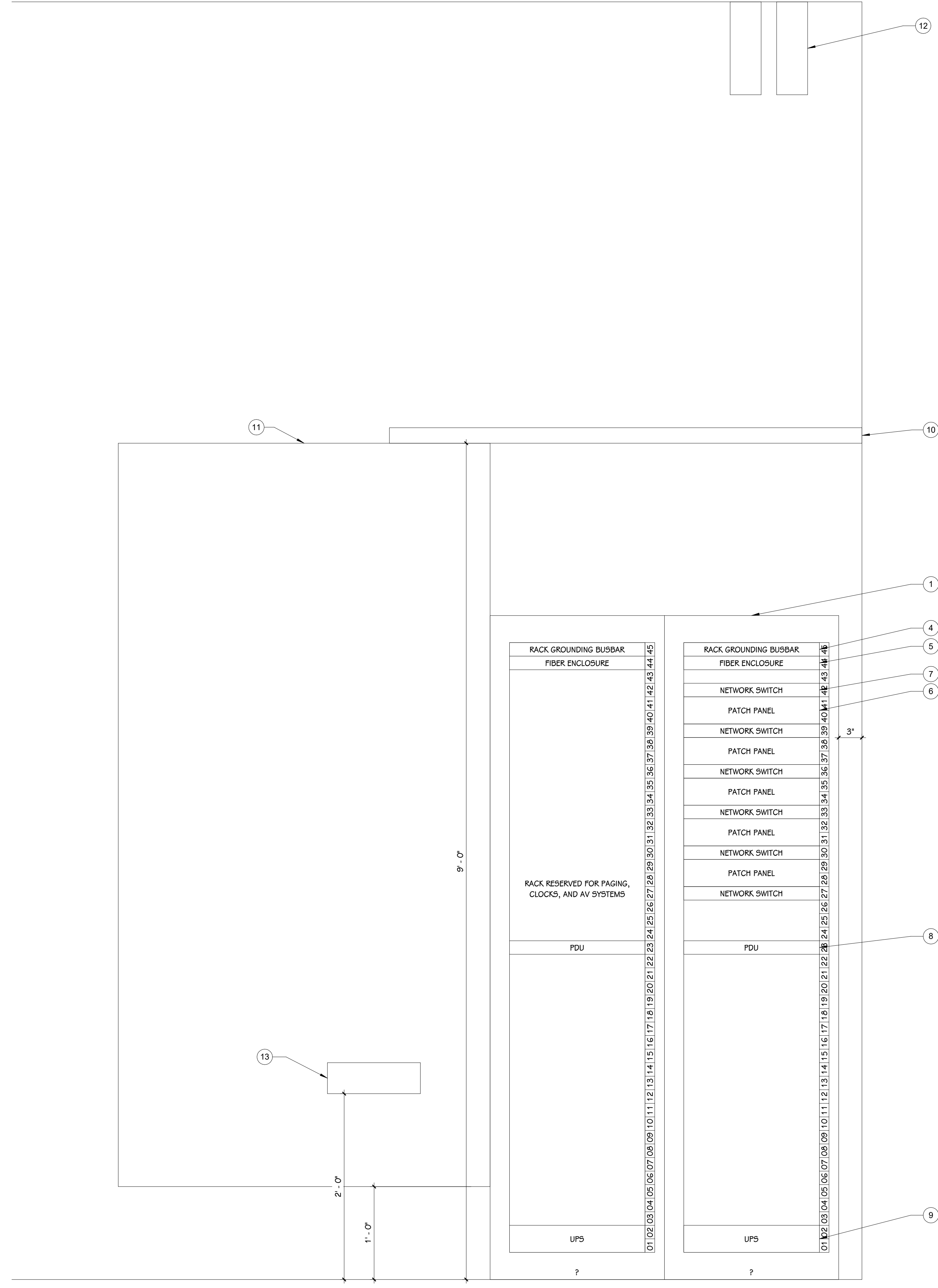
FACEPLATE & SURFACE BOX SCHEDULE			
COLOR	TYPE	MANUFACTURER	PART #
MATCH ELEC	1-PORT FACEPLATE, SINGLE-GANG	PANDUIT	CFPL1**Y
MATCH ELEC	2-PORT FACEPLATE, SINGLE-GANG	PANDUIT	CFPL2**Y
MATCH ELEC	3-PORT FACEPLATE, SINGLE-GANG	PANDUIT	CFPL3**Y
MATCH ELEC	4-PORT FACEPLATE, SINGLE-GANG	PANDUIT	CFPL4**Y
MATCH ELEC	6-PORT FACEPLATE, SINGLE-GANG	PANDUIT	CFPL6**Y
MATCH ELEC	1-PORT SURFACE BOX	PANDUIT	CBX11W-A
MATCH ELEC	2-PORT SURFACE BOX	PANDUIT	CBX21W-A
MATCH FURNITURE	4-PORT FURNITURE PLATE	PANDUIT	VARIES



M1 EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
1	4-POST RACK	ORTRONICS	19-84-SSDA2132	
4	RACK GROUNDING BUSBAR	CHATSWORTH	10610-019	
5	FIBER ENCLOSURE	REFER TO BACKBONE SCHEDULE	REFER TO BACKBONE SCHEDULE	
6	PATCH PANEL	PANDUIT	CP48BLY	
7	NETWORK SWITCH	OWNER PROVIDED	N/A	
8	PDU	TRIPPLITE	PDU1220	
9	UPS	VERTIV	GXT5-2000LVRT2UXLN	
10	12"W LADDER RACK	HOFFMAN	LSS12BLK	
11	PLYWOOD	N/A	N/A	
12	4" CONDUIT SLEEVE	N/A	N/A	
13	GROUNDING BUSBAR	PANDUIT	GB4B0612TPI-1	

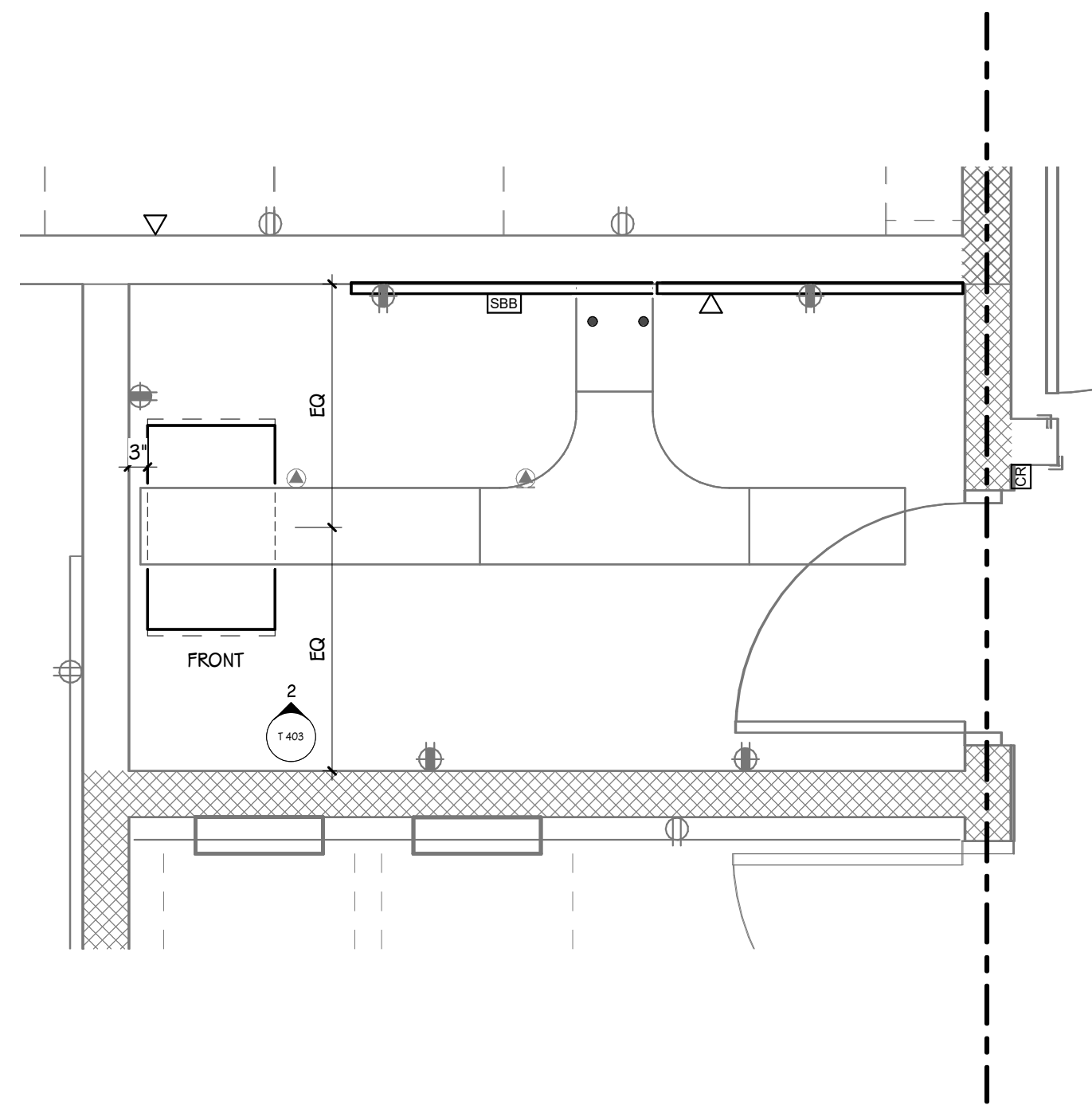


1  
T 402  
M1 ROOM 165 PLAN  
1/2" = 1'-0"

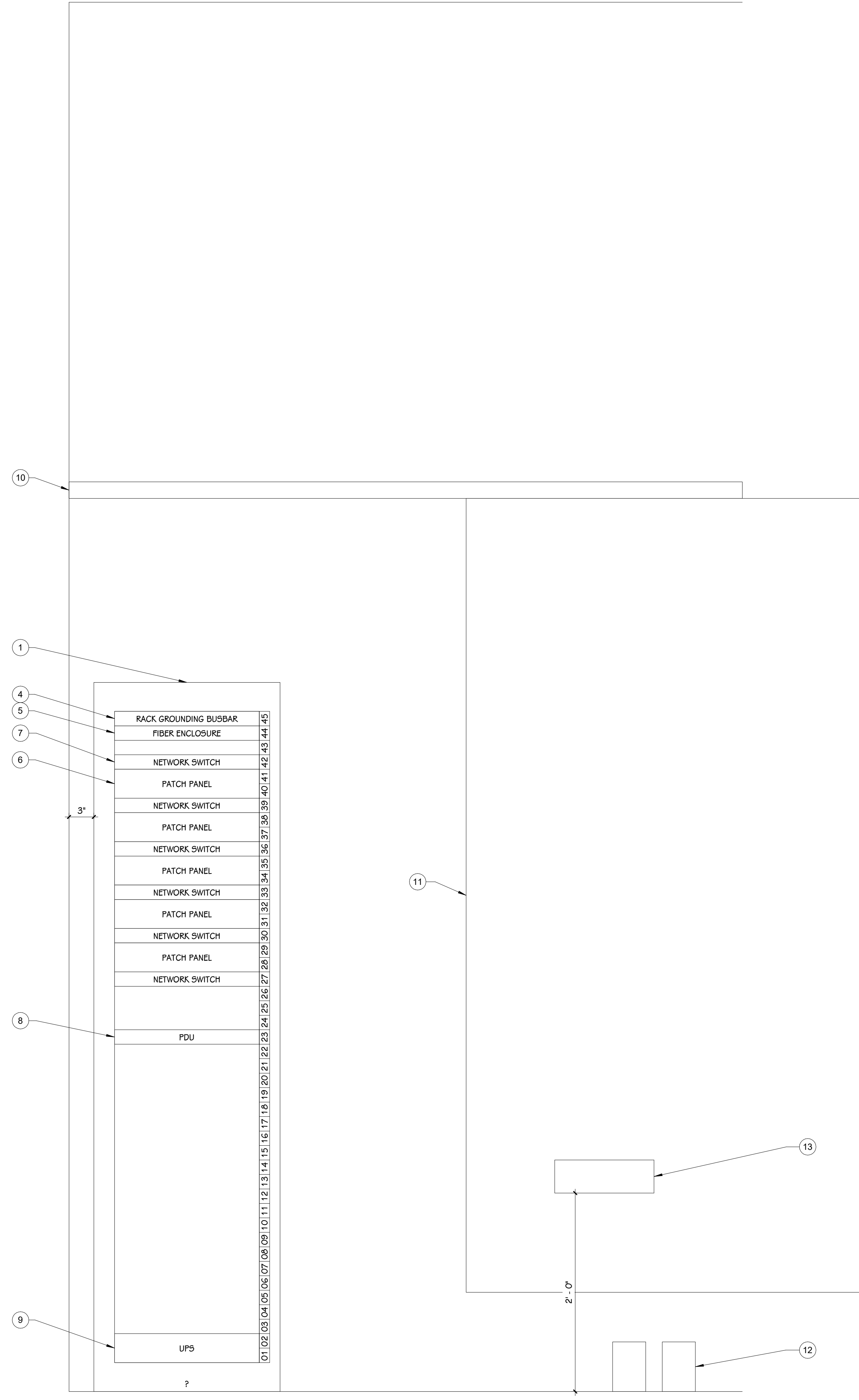


2  
T 402  
M1 ROOM 165 ELEVATION  
1/2" = 1'-0"

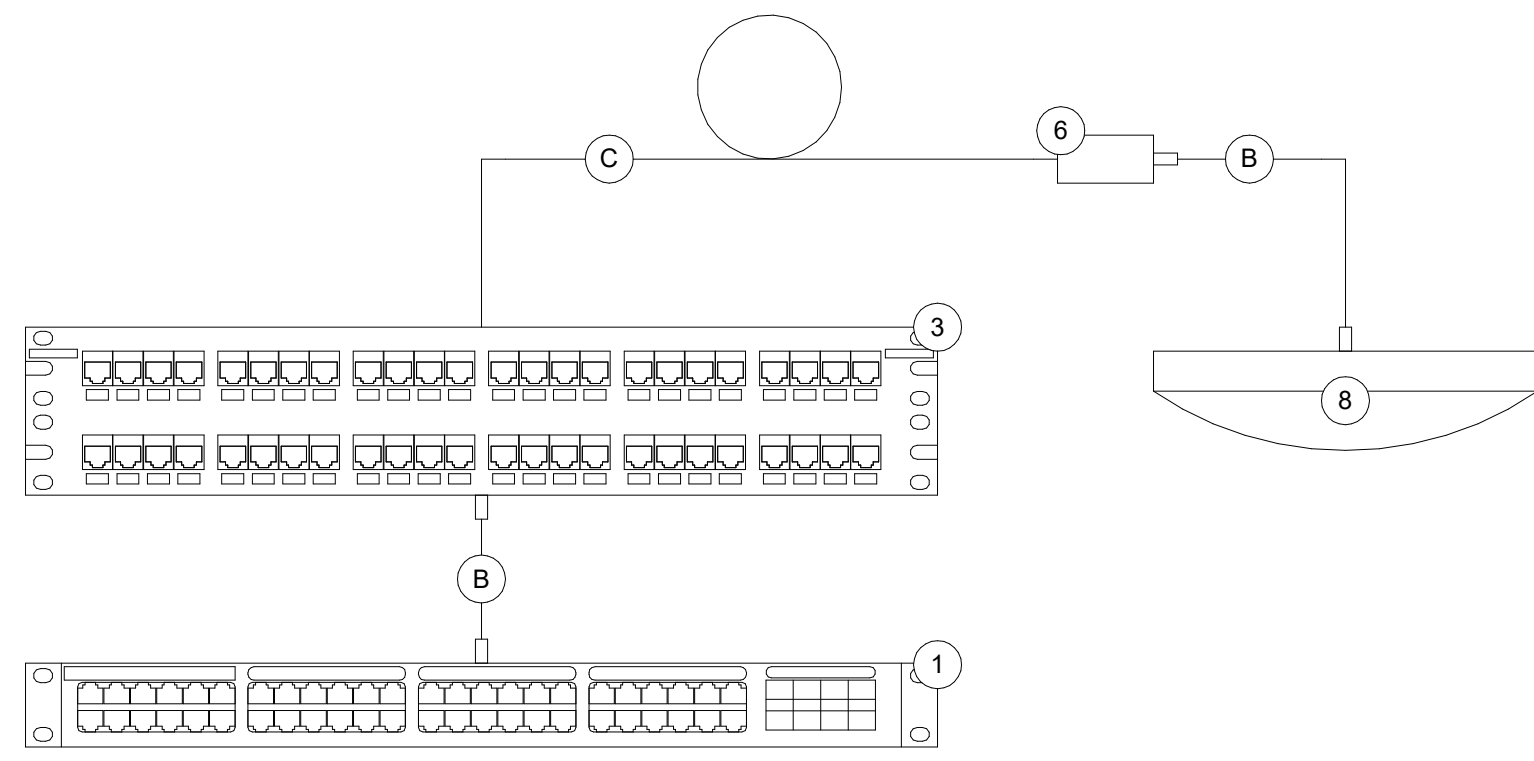
I2A EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
1	4-POST RACK	ORTRONICS	19-84-SSDA2132	
4	RACK GROUNDING BUSBAR	CHATSWORTH	10610-019	
5	FIBER ENCLOSURE	REFER TO BACKBONE SCHEDULE	REFER TO BACKBONE SCHEDULE	
6	PATCH PANEL	PANDUIT	CP48BLY	
7	NETWORK SWITCH	OWNER PROVIDED	N/A	
8	PDU	TRIPPLITE	PDU1220	
9	UPS	VERTIV	GXT5-2000LVRT2UXLN	
10	12"W LADDER RACK	HOFFMAN	LSS12BLK	
11	PLYWOOD	N/A	N/A	
12	4" CONDUIT SLEEVE	N/A	N/A	
13	GROUNDING BUSBAR	PANDUIT	GB4B0612PI-1	



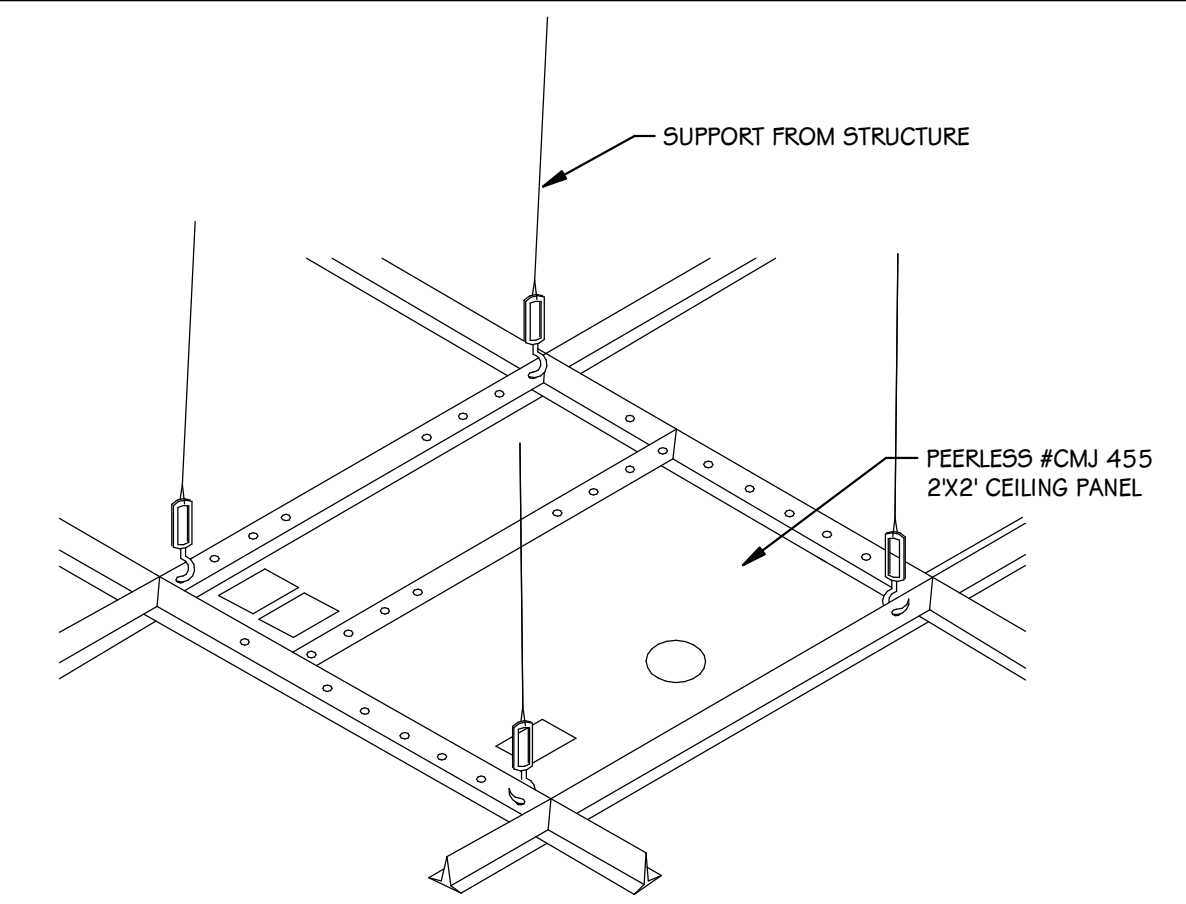
1 I2A ROOM 216 PLAN  
T 403 1/2" = 1'-0"



2 I2A ROOM 216 ELEVATION  
T 403 1 1/2" = 1'-0"

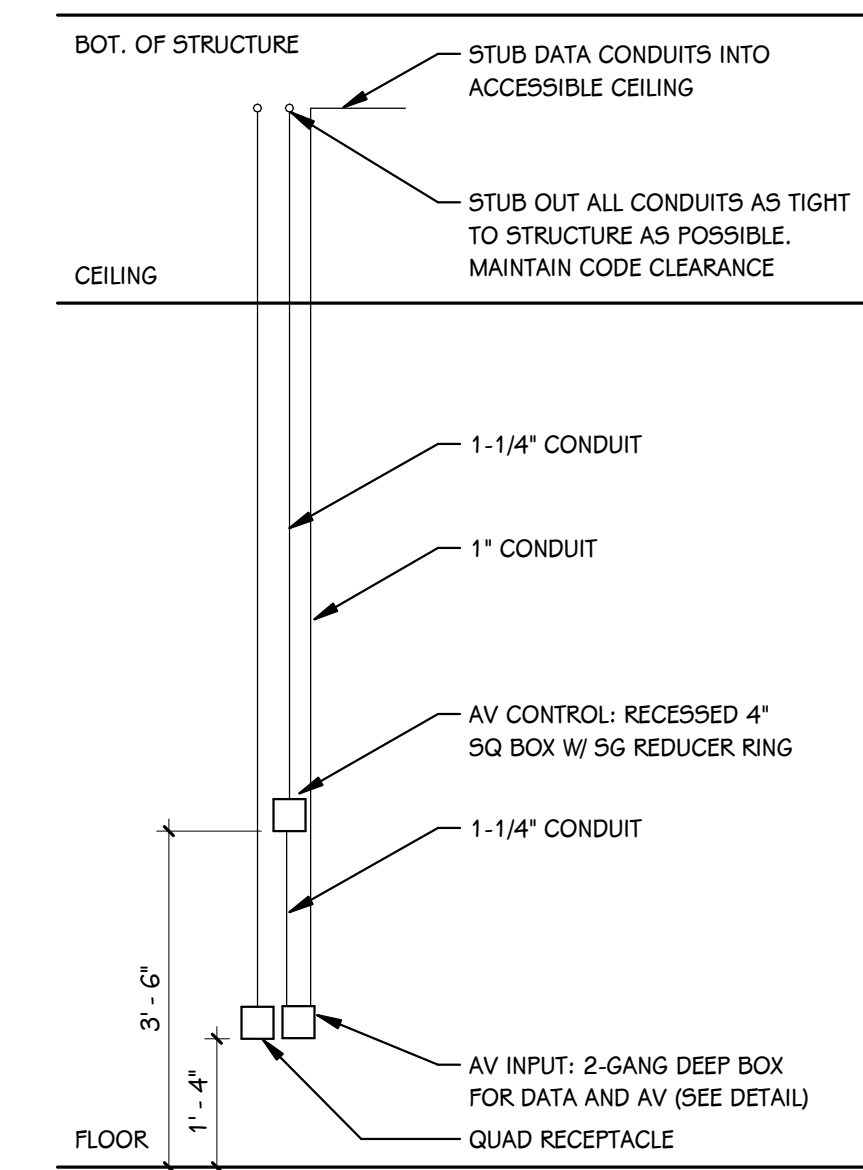


WAP1 EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
1	NETWORK SWITCH	PROVIDED BY OWNER	PROVIDED BY OWNER	
3	PATCH PANEL	REFER TO RACK ELEVATION	REFER TO RACK SCHEDULE	
6	SURFACE MOUNT BOX	PANDUIT	CBX1**A	
8	WIRELESS ACCESS POINT	PROVIDED BY OWNER	PROVIDED BY OWNER	CONTRACTOR SHALL PROVIDE WALL BRACKET (CHATSWORTH OBERON 1011-00-EH) FOR ALL LOCATIONS WHERE DEVICE IS WALL MOUNTED.
B	PATCH CORD	REFER TO SCHEDULE	REFER TO SCHEDULE	
C	CATEGORY CABLE	REFER TO SCHEDULE	REFER TO SCHEDULE	INCLUDE MINIMUM 15FT SERVICE LOOP

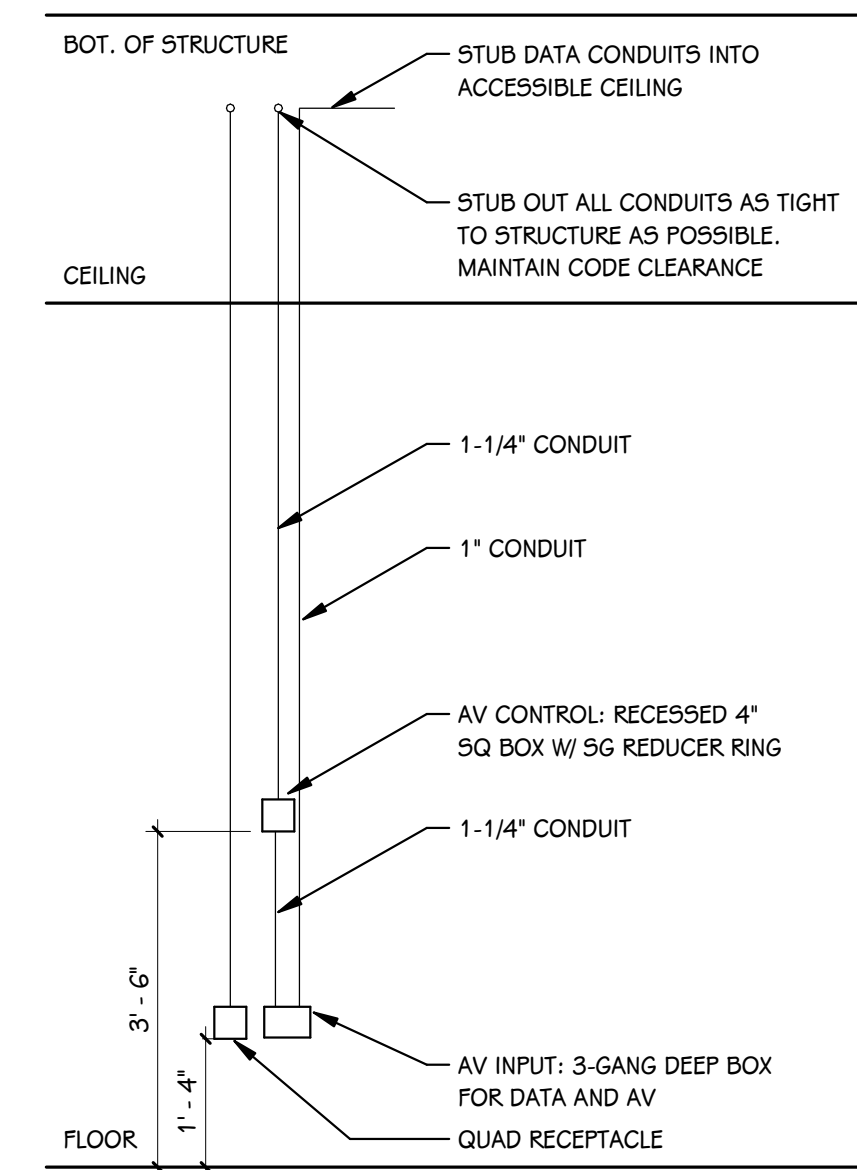


**PROJECTOR MOUNTING DETAIL**  
SCALE: NONE

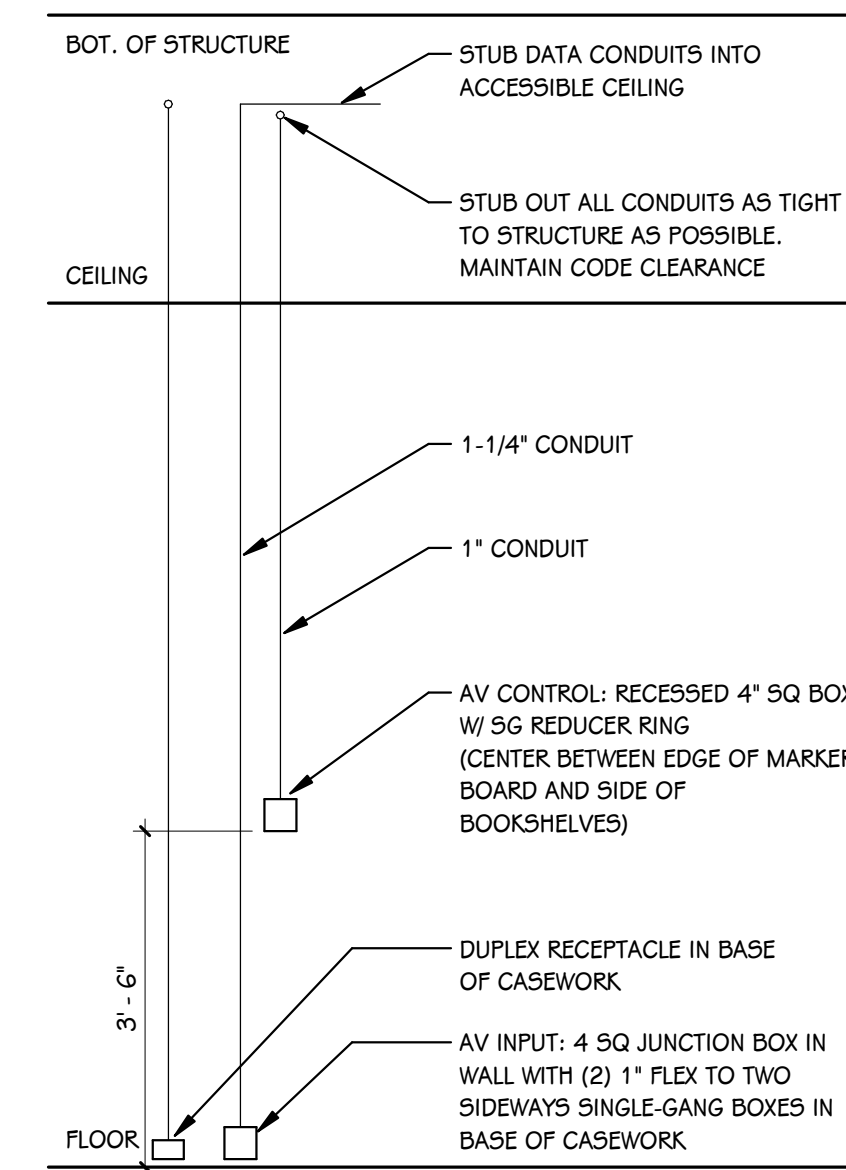
**INTERIOR WIRELESS ACCESS POINT CABLING DETAIL**  
SCALE: NONE



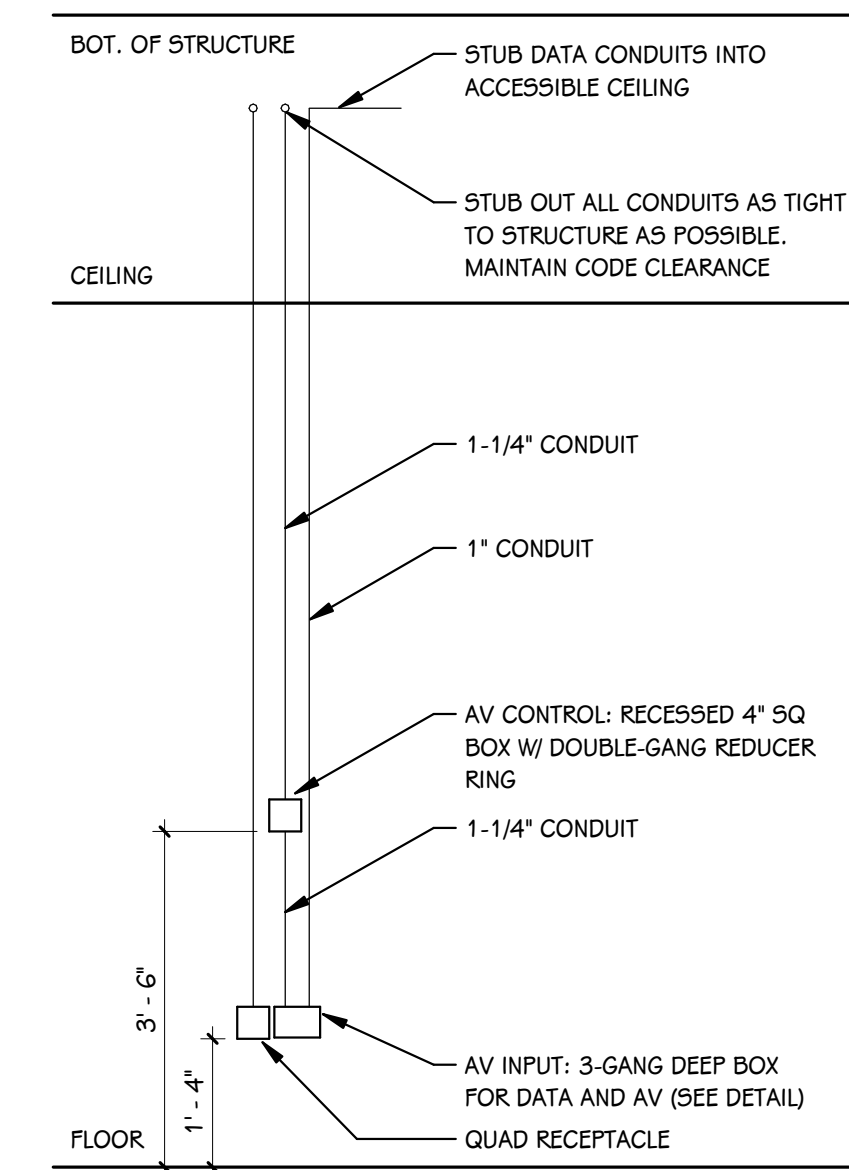
**TS-A TEACHER STATION DETAIL**  
SCALE: NONE



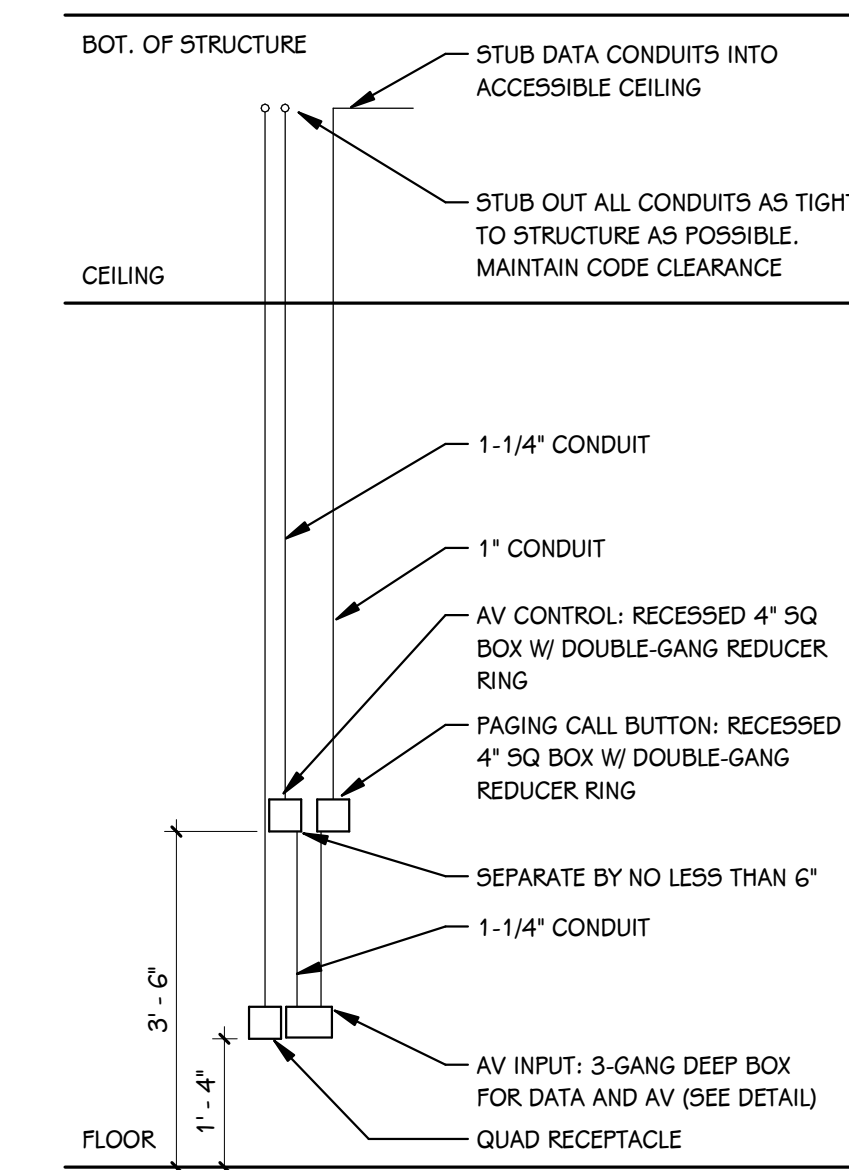
**TS-B TEACHER STATION DETAIL**  
SCALE: NONE



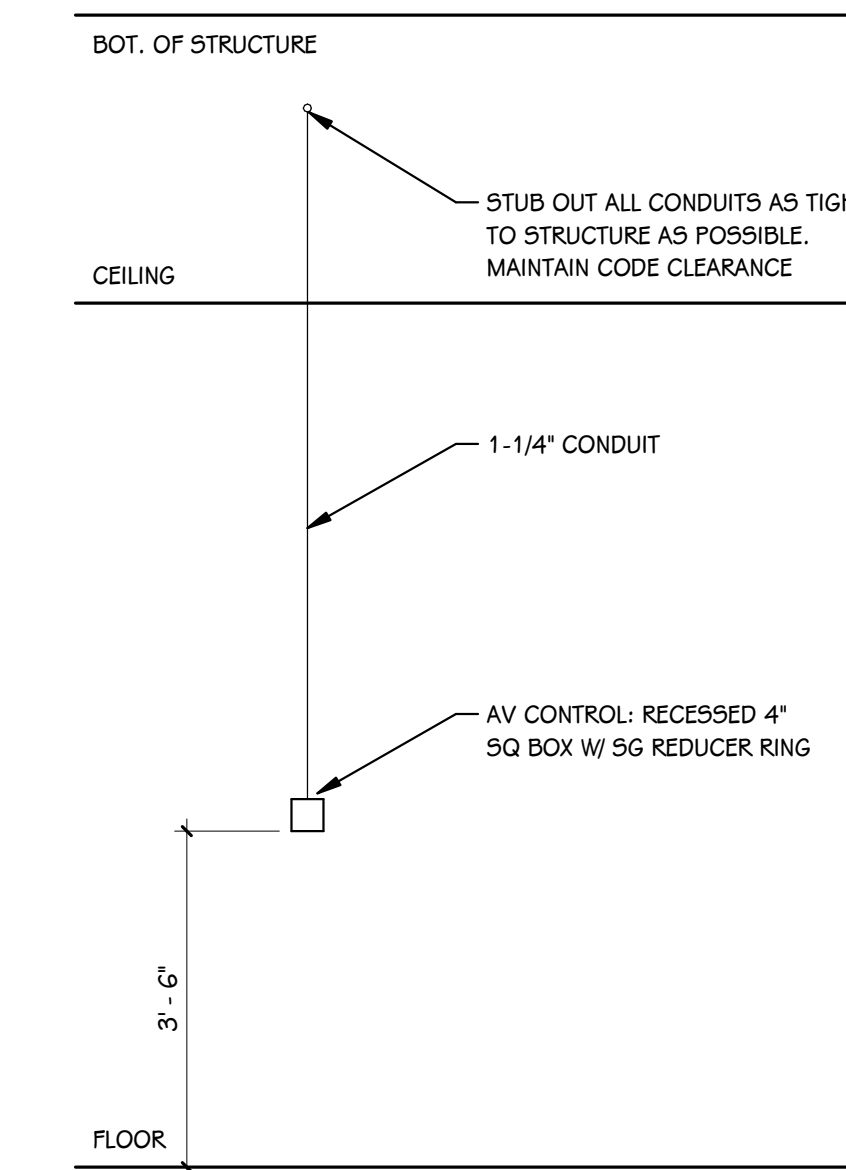
**TS-C TEACHER STATION DETAIL**  
SCALE: NONE



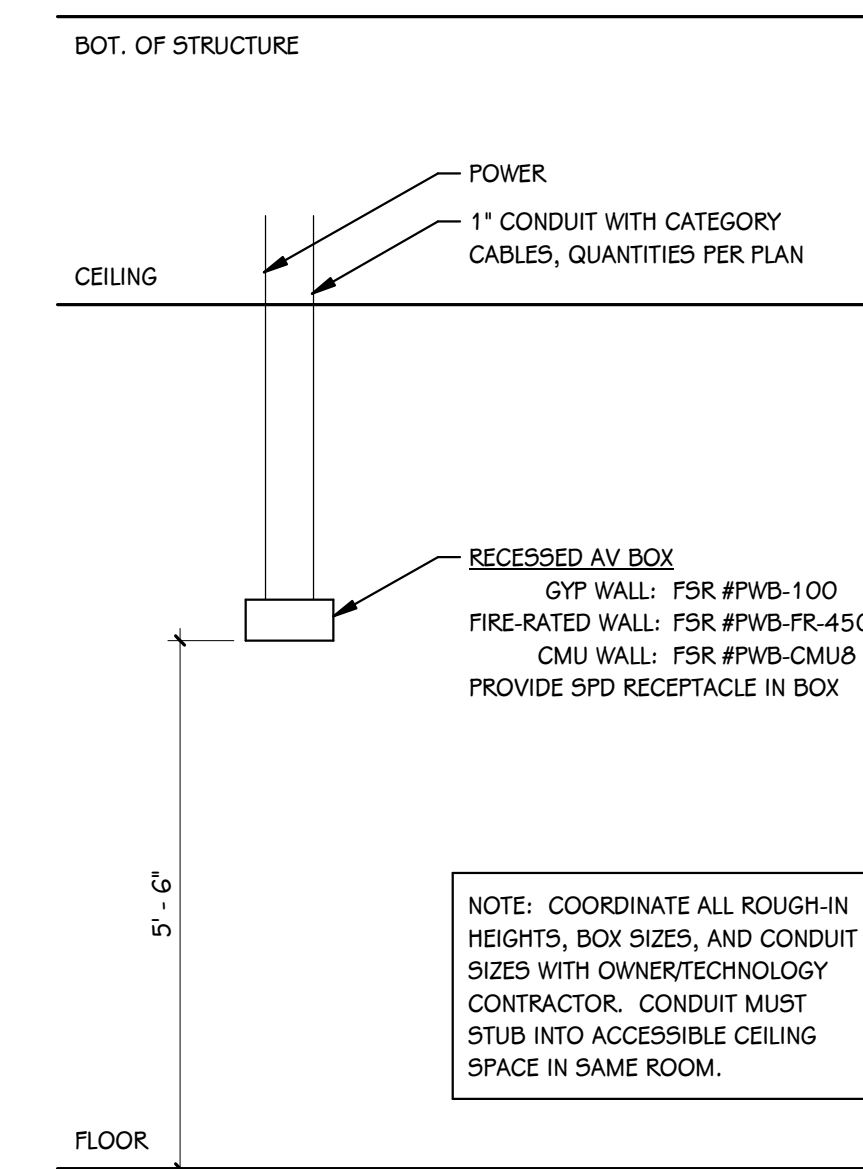
**TS-D TEACHER STATION DETAIL**  
SCALE: NONE



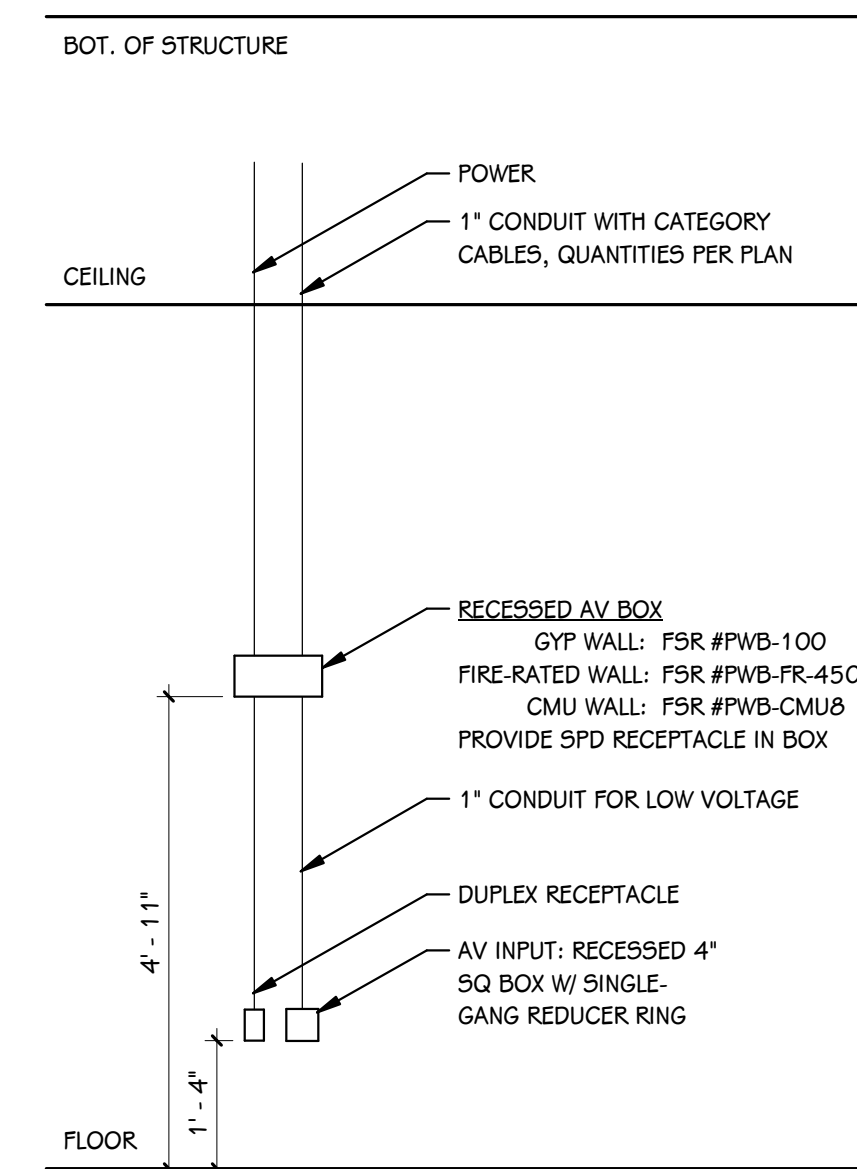
**TS-E TEACHER STATION DETAIL**  
SCALE: NONE



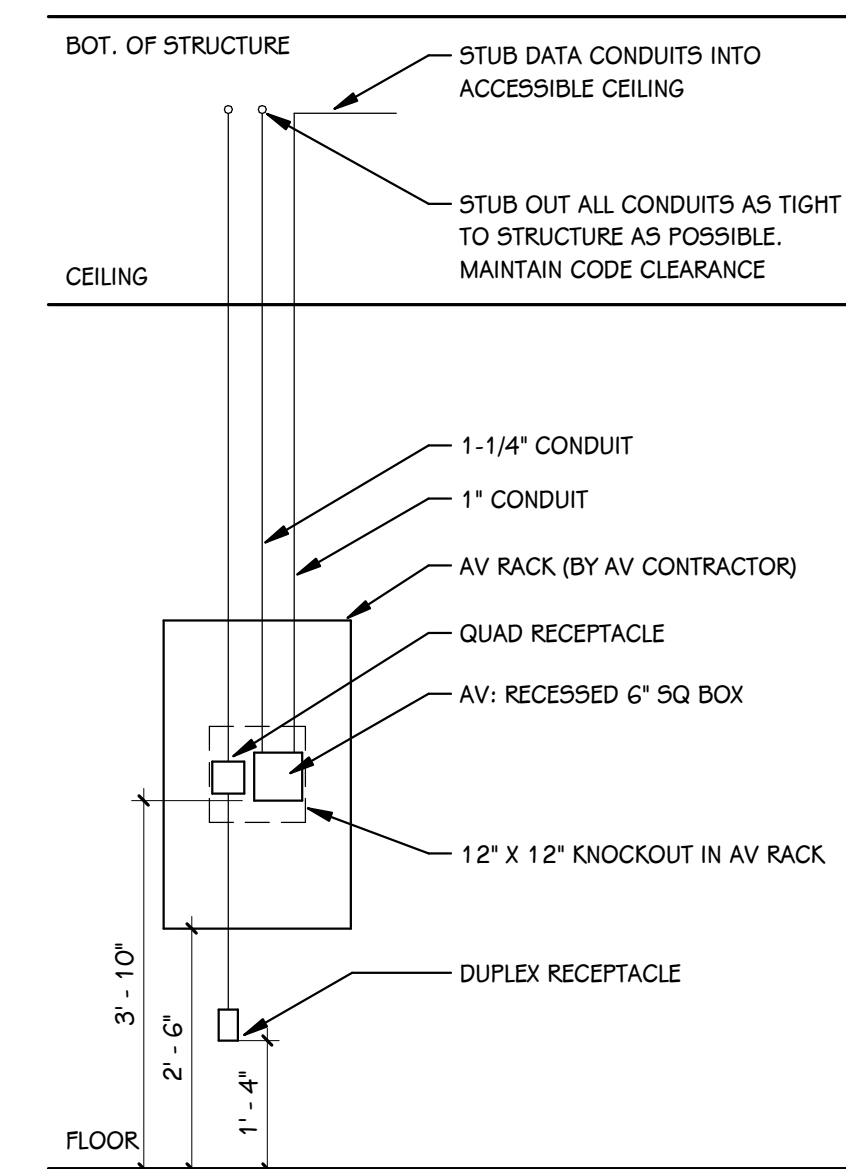
**CP CONTROL PANEL DETAIL**  
SCALE: NONE



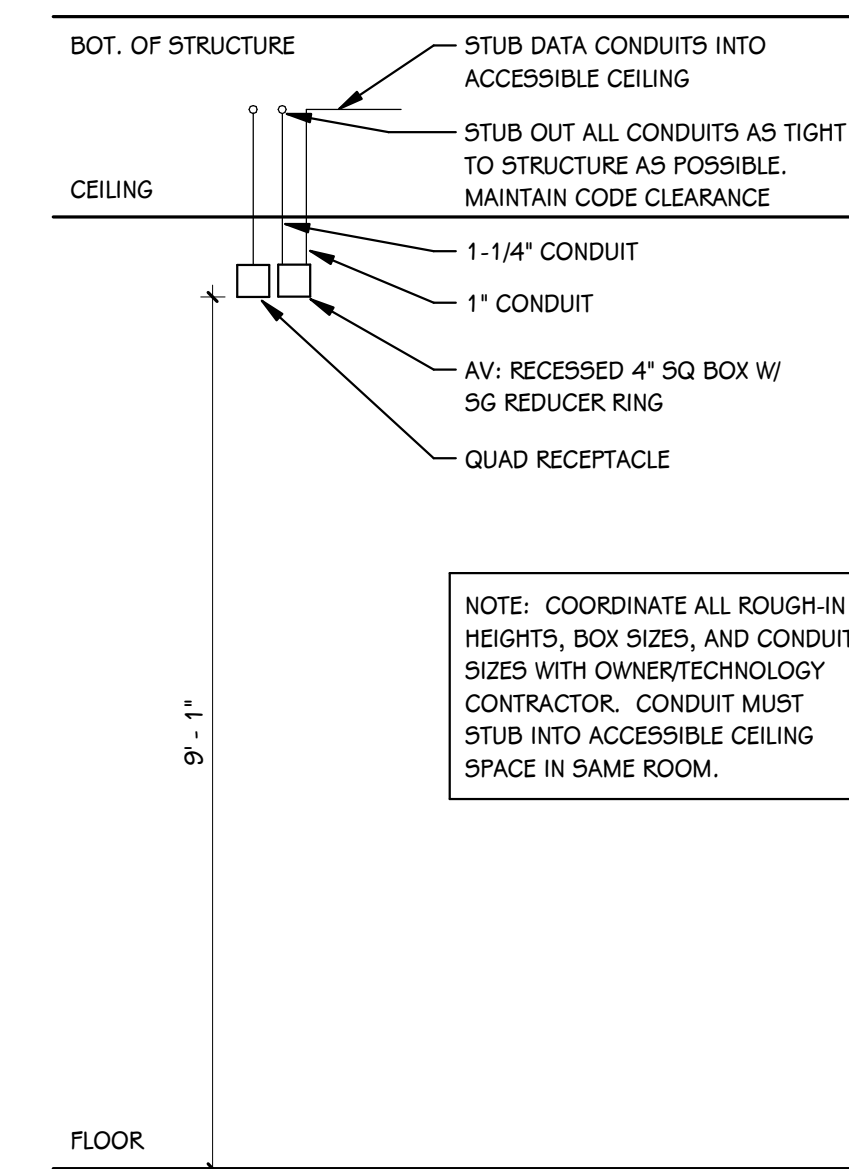
**TV-A TELEVISION DETAIL**  
SCALE: NONE



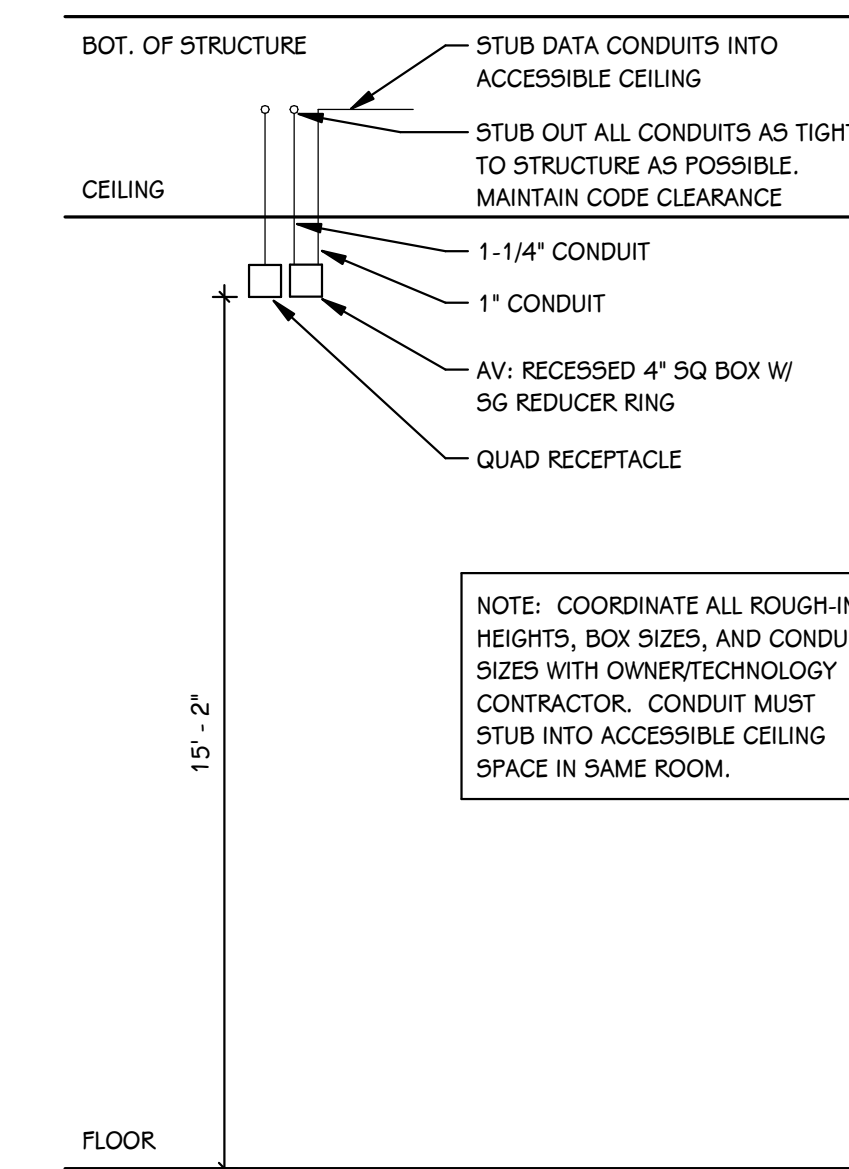
**TV-B TELEVISION DETAIL**  
SCALE: NONE



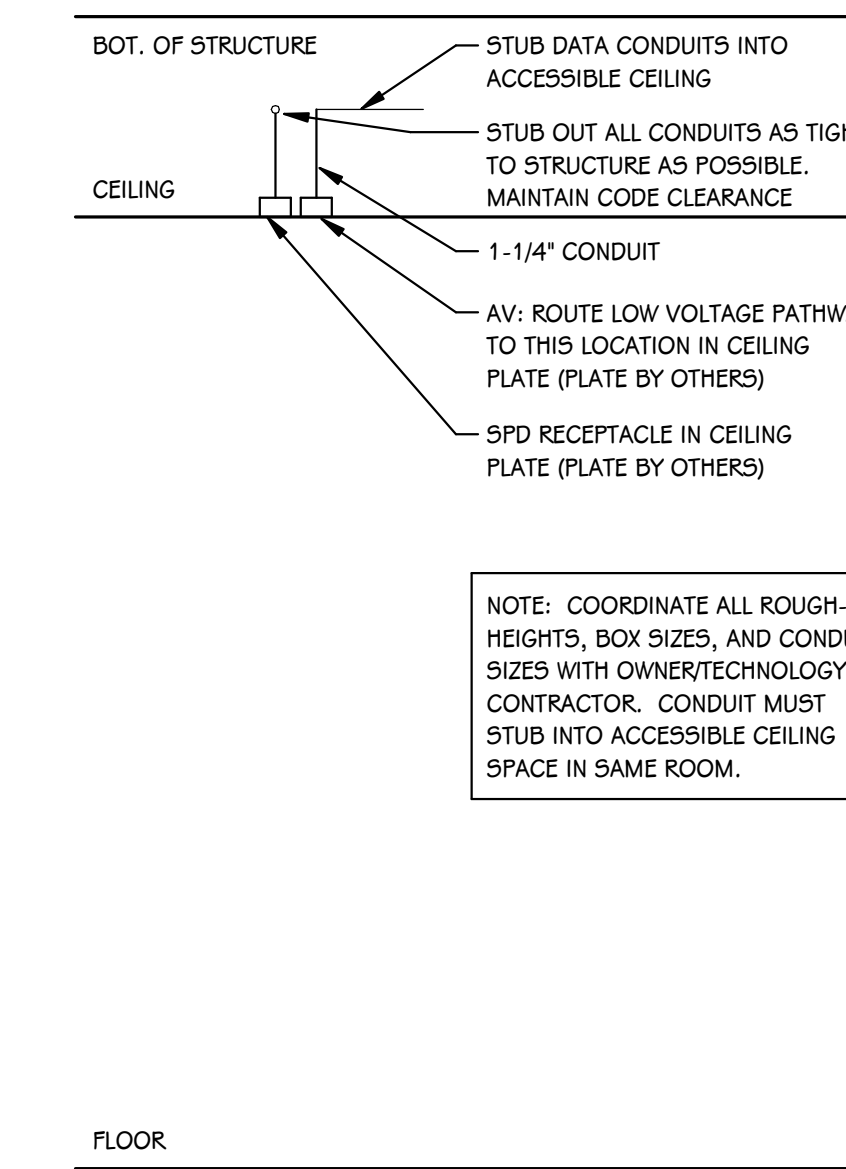
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SCALE: NONE



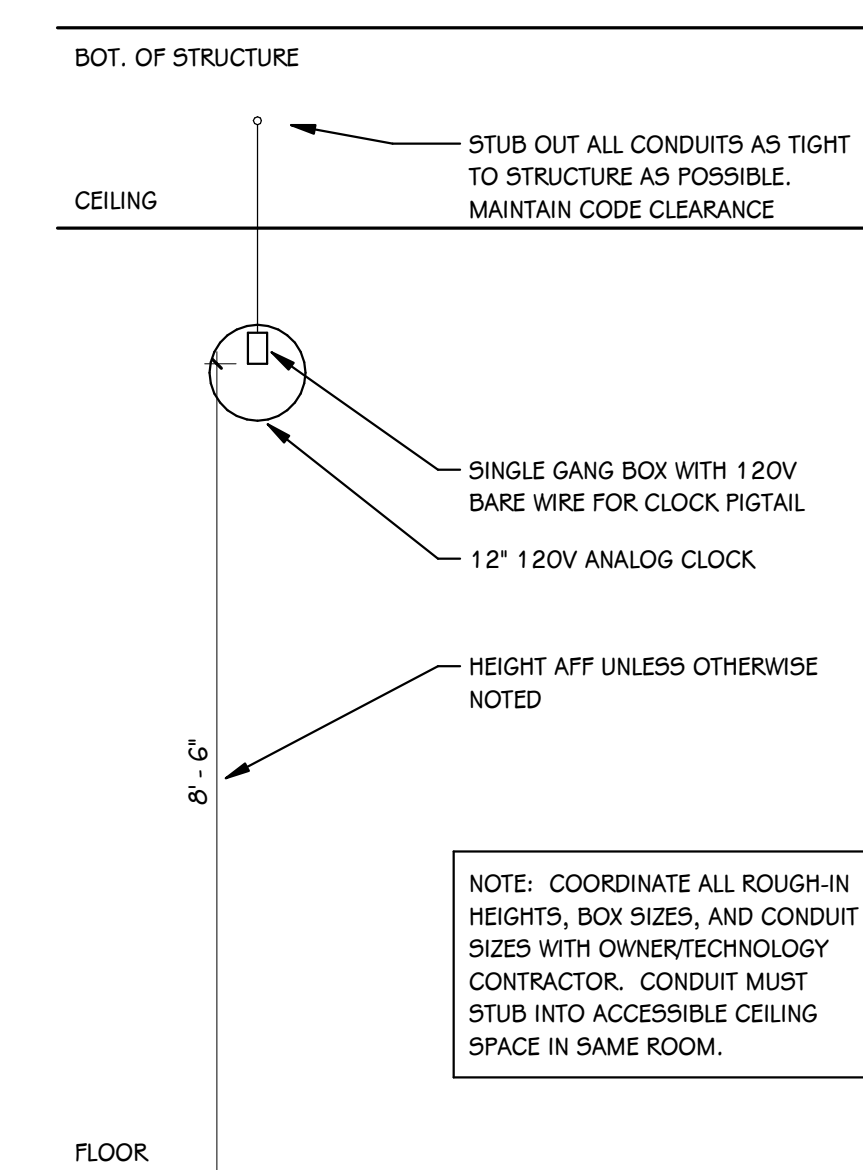
**PRJ-A UST PROJECTOR DETAIL**  
SCALE: NONE



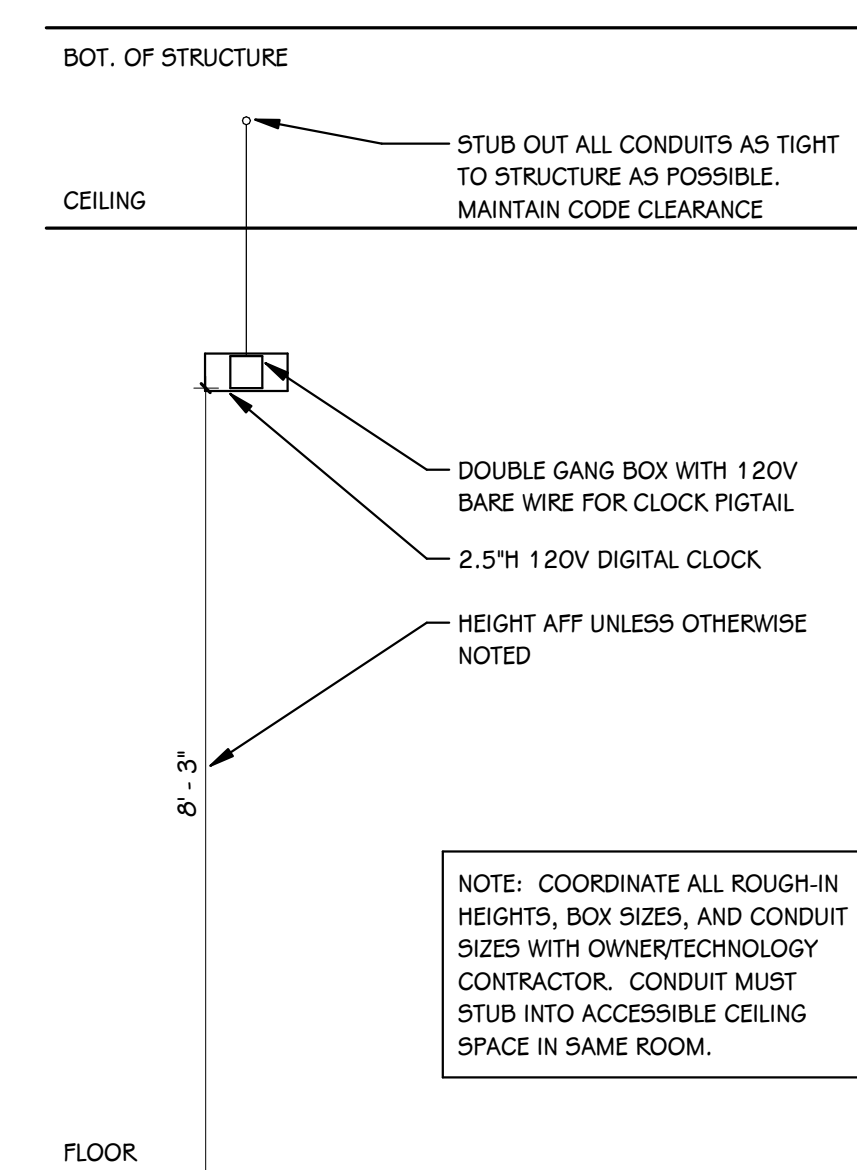
**PRJ-B GYM WALL PROJECTOR DETAIL**  
SCALE: NONE



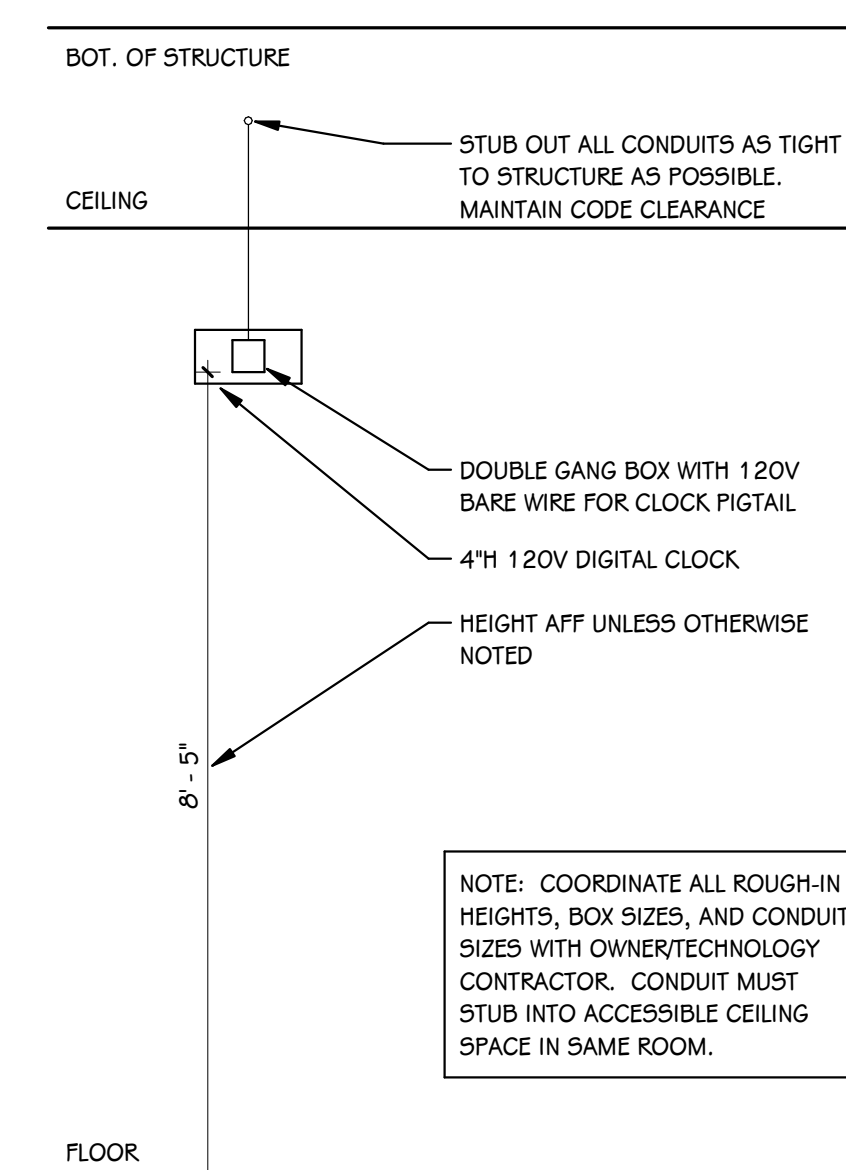
**PRJ CEILING PROJECTOR DETAIL**  
SCALE: NONE



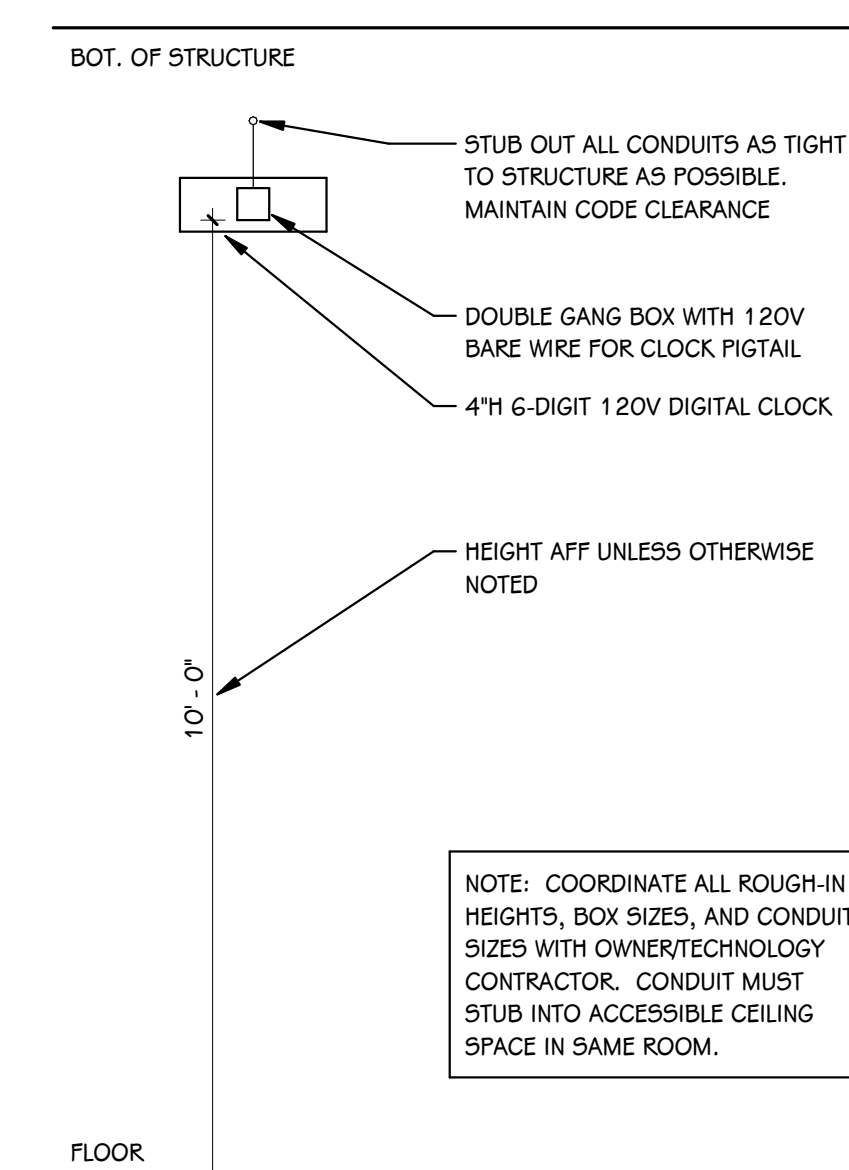
**CLOCK-A ANALOG 12\"/>**



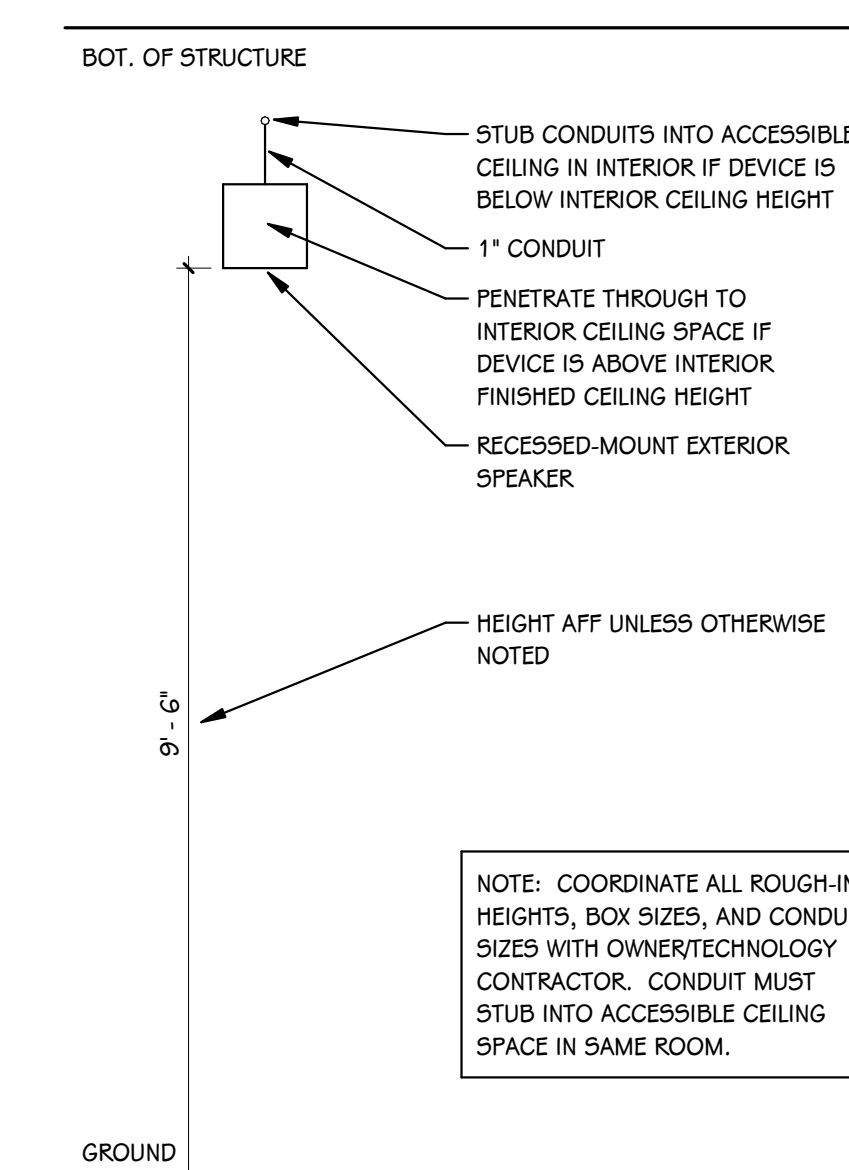
**CLOCK-B 2.5\"/>**



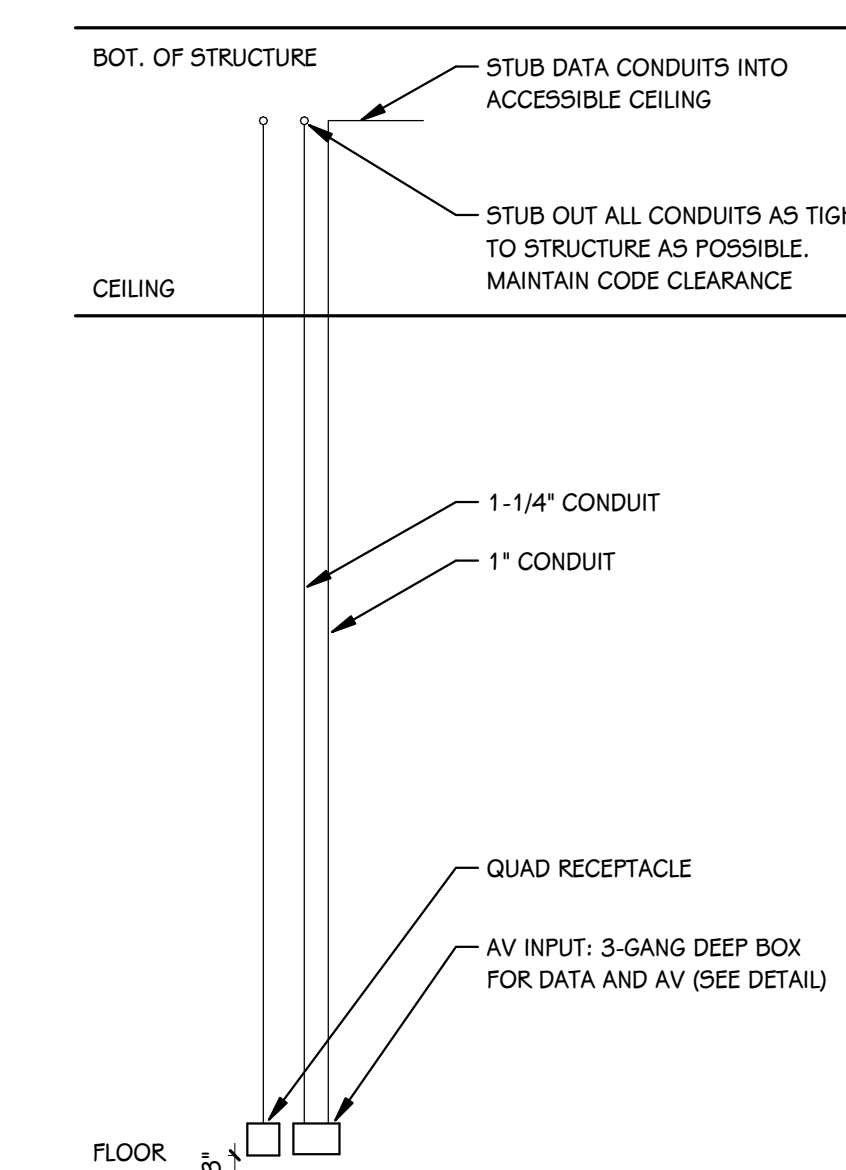
**CLOCK-C 4\"/>**



**CLOCK-D 4\"/>**



**SE EXTERIOR SPEAKER DETAIL**  
SCALE: NONE



**AVI AV INPUT DETAIL**  
SCALE: NONE

ISSUED FOR DATE

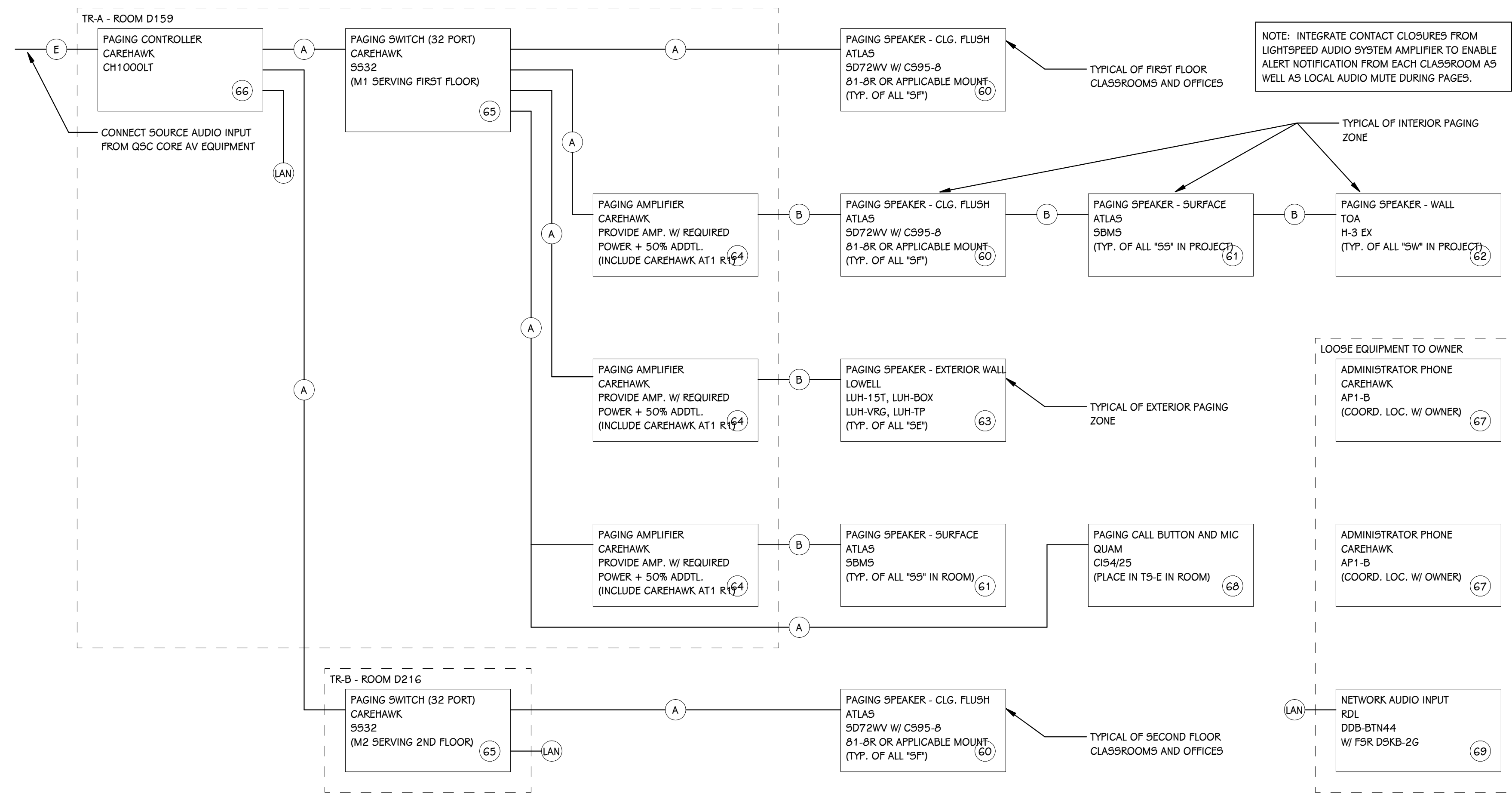
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

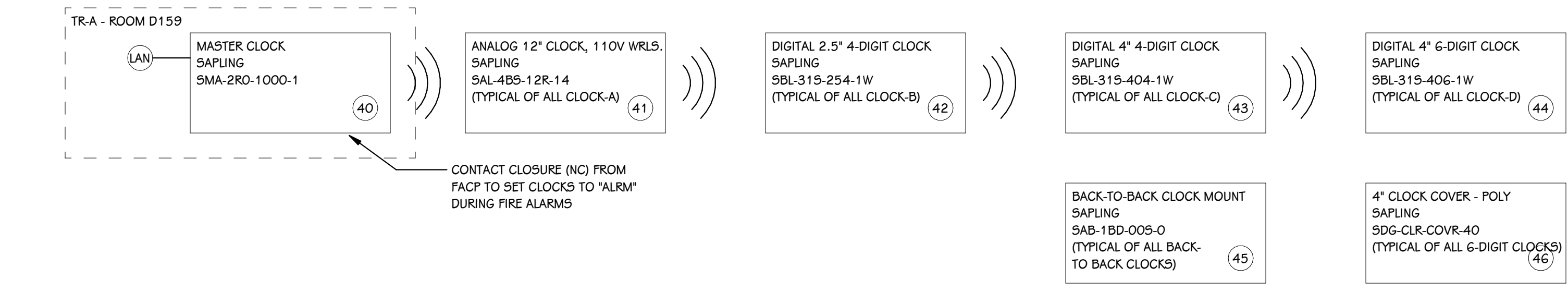
SHEET TITLE  
TECHNOLOGY DETAILS

Portage, Michigan

DATE  
JUNE 30, 2023  
SHEET NUMBER  
T 404  
21-237.20



**PAGING & BELL RISER DIAGRAM - TYPICAL**  
SCALE: NONE



**CLOCK RISER DIAGRAM - TYPICAL**  
SCALE: NONE

PAGING EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
60	PAGING SPEAKER - CLG. FLUSH	ATLAS	SD72WV W/ CS95-8 81-8R OR APPLICABLE MOUNT	
61	PAGING SPEAKER - SURFACE	ATLAS	SBMS	
62	PAGING SPEAKER - WALL	TOA	H-3 EX	
63	PAGING SPEAKER - EXTERIOR WALL	LOWELL	LUH-15T, LUH-BOX LUH-VRG, LUH-TP	
64	PAGING AMPLIFIER	CAREHAWK	PROVIDE AMP. W/ REQUIRED POWER + 50% ADDTL.	
65	PAGING SWITCH (32 PORT)	CAREHAWK	SS32	
66	PAGING CONTROLLER	CAREHAWK	CH1000LT	
67	ADMINISTRATOR PHONE	CAREHAWK	AP1-B	
68	PAGING CALL BUTTON AND MIC	QUAM	CIS4/25	
69	NETWORK AUDIO INPUT	RDL	DDB-BTN44	
A	CAT6 NETWORK CABLE			REFER TO DATA CABLE SCHEDULE
B	SPEAKER CABLE	BELDEN	6500UE TO 6200UE	SELECT GAUGE AS NEEDED TO KEEP SYSTEM LOSS BELOW 2 DECIBELS
E	LINE AUDIO / CONTROL CABLE	BELDEN	9451P	CONNECTORS AS REQUIRED FOR APPLICATION. NEUTRIK NP2 3 X-BAG FOR TS/TRS
LAN	CONNECTION TO LAN			REFER TO DATA CABLE SCHEDULE

PAGING ZONE SCHEDULE		
SS#	ZONE NAME	AREA SERVED
M1-1	LIBRARY 112	SINGLE ROOM
M1-2	MUSIC 115	SINGLE ROOM
M1-3	ART 116	SINGLE ROOM
M1-4	LS 122	SINGLE ROOM
M1-5	EDU WORKSHOP 123	SINGLE ROOM
M1-6	LS 126	SINGLE ROOM
M1-7	LS 128	SINGLE ROOM
M1-8	Y5/FLEX STUDIO 131	SINGLE ROOM
M1-9	LS 132	SINGLE ROOM
M1-10	EDU WORKSHOP 133	SINGLE ROOM
M1-11	LS 134	SINGLE ROOM
M1-12	LS 136	SINGLE ROOM
M1-13	ESI STUDIO 139	SINGLE ROOM
M1-14	LS 142	SINGLE ROOM
M1-15	LS 144	SINGLE ROOM
M1-16	LS 146	SINGLE ROOM
M1-17		
M1-18		
M1-19		
M1-20		
M1-21		
M1-22		
M1-23		
M1-24		
M1-25		
M1-26		
M1-27		
M1-28		
M1-29	GYMNASIUM 150	SINGLE ROOM W/ CALL BUTTON
M1-30	CAFE 160	SINGLE ROOM
M1-31	EXTERIOR	ALL EXTERIOR SPEAKERS
M1-32	INTERIOR	ALL INTERIOR SPACES NOT OTHERWISE LISTED

PAGING ZONE SCHEDULE		
SS#	ZONE NAME	AREA SERVED
M2-1	ESI WORKSHOP 219	SINGLE ROOM
M2-2	EDU WORKSHOP 221	SINGLE ROOM
M2-3	LS 222	SINGLE ROOM
M2-4	LS 226	SINGLE ROOM
M2-5	LS 228	SINGLE ROOM
M2-6	FLEX STUDIO 231	SINGLE ROOM
M2-7	LS 232	SINGLE ROOM
M2-8	EDU WORKSHOP 233	SINGLE ROOM
M2-9	LS 234	SINGLE ROOM
M2-10	LS 236	SINGLE ROOM
M2-11	ESI STUDIO 237	SINGLE ROOM
M2-12	LS 242	SINGLE ROOM
M2-13	LS 244	SINGLE ROOM
M2-14	LS 246	SINGLE ROOM
M2-15		
M2-16		
M2-17		
M2-18		
M2-19		
M2-20		
M2-21		
M2-22		
M2-23		
M2-24		
M2-25		
M2-26		
M2-27		
M2-28		
M2-29		
M2-30		
M2-31		
M2-32		

CLOCK EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
40	MASTER CLOCK	SAPLING	SMA-2R0-1000-1	
41	ANALOG 12" CLOCK, 110V WRLS.	SAPLING	SAL-4BS-12R-14	CLOCK "A" - MOUNT AT 8" 6" AFF UNLESS OTHERWISE NOTED
42	DIGITAL 2.5" 4-DIGIT CLOCK	SAPLING	SBL-31S-254-1W	CLOCK "B" - MOUNT AT 8" 3" AFF UNLESS OTHERWISE NOTED
43	DIGITAL 4" 4-DIGIT CLOCK	SAPLING	SBL-31S-404-1W	CLOCK "C" - MOUNT AT 8" 3" AFF UNLESS OTHERWISE NOTED
44	DIGITAL 4" 6-DIGIT CLOCK	SAPLING	SBL-31S-406-1W	CLOCK "D" - MOUNT AT 10" 0" AFF UNLESS OTHERWISE NOTED
45	BACK-TO-BACK CLOCK MOUNT	SAPLING	SAB-1BD-00S-0	
46	4" CLOCK COVER - POLY	SAPLING	SDG-CLR-COVR-40	
LAN	CONNECTION TO LAN			REFER TO DATA CABLE SCHEDULE

ISSUED FOR \_\_\_\_\_ DATE \_\_\_\_\_

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

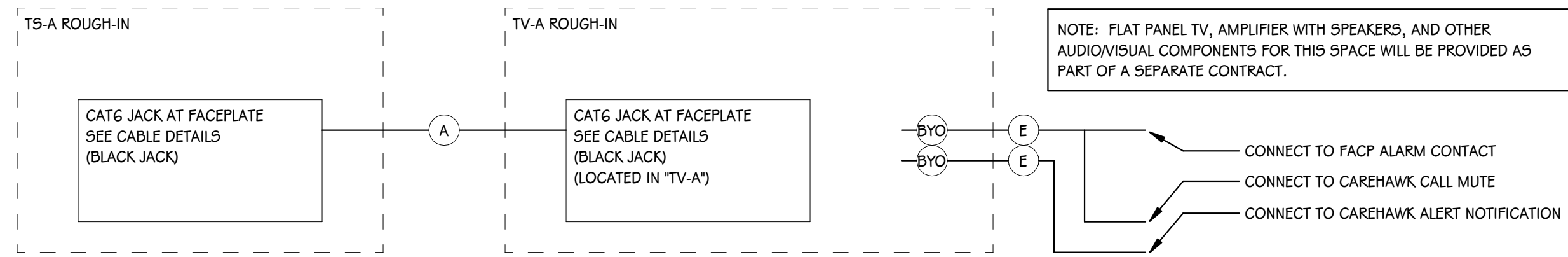
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
CLOCK, BELL, PAGING DETAILS

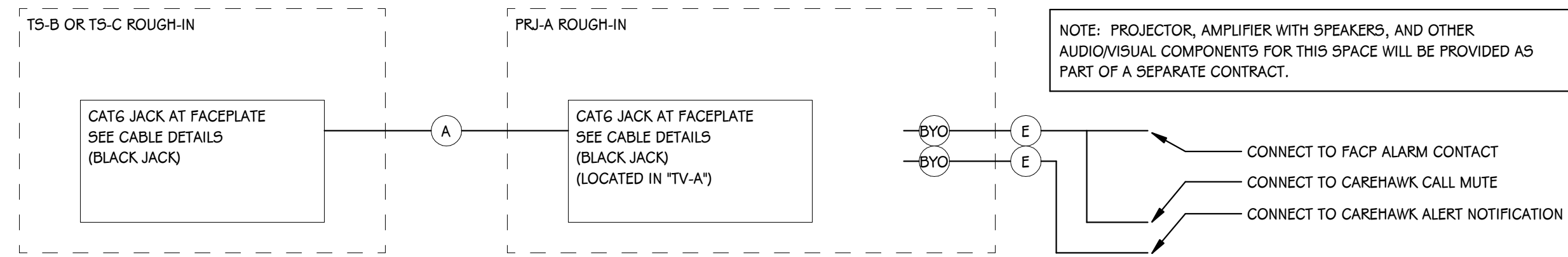
DATE  
JUNE 30, 2023

SHEET NUMBER  
T 405  
21-237.20



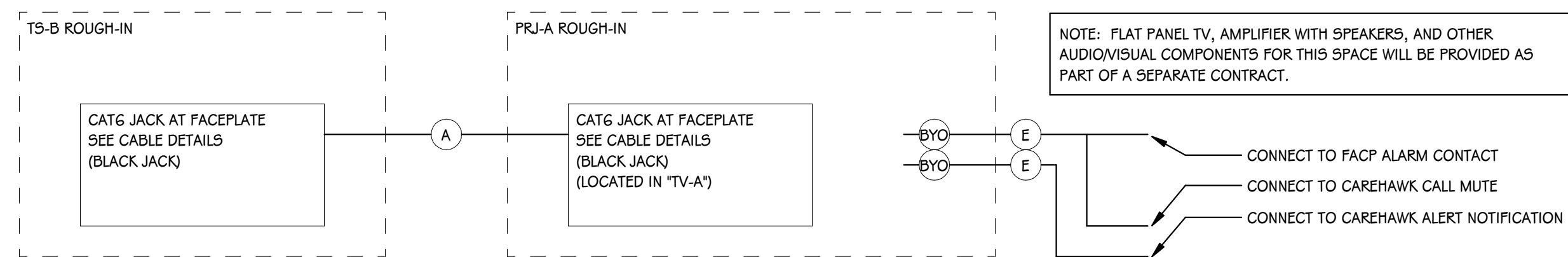
**AV1 RISER DIAGRAM - CLASSROOM AV**  
SCALE: NONE

AV1 EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
A	CAT6 NETWORK CABLE			REFER TO DATA CABLE SCHEDULE
BYO	WIRE OR CABLE BY OTHERS			
E	LINE AUDIO / CONTROL CABLE	BELDEN	9451P	CONNECTORS AS REQUIRED FOR APPLICATION. NEUTRIK NP[2/3]X-BAG FOR TS/TRS



**AV2 RISER DIAGRAM - CLASSROOM AV WITH PROJECTOR**  
SCALE: NONE

AV2 EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
A	CAT6 NETWORK CABLE			REFER TO DATA CABLE SCHEDULE
BYO	WIRE OR CABLE BY OTHERS			
E	LINE AUDIO / CONTROL CABLE	BELDEN	9451P	CONNECTORS AS REQUIRED FOR APPLICATION. NEUTRIK NP[2/3]X-BAG FOR TS/TRS



**AV5 RISER DIAGRAM - MUSIC ROOM AV**  
SCALE: NONE

AV5 EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
A	CAT6 NETWORK CABLE			REFER TO DATA CABLE SCHEDULE
BYO	WIRE OR CABLE BY OTHERS			
E	LINE AUDIO / CONTROL CABLE	BELDEN	9451P	CONNECTORS AS REQUIRED FOR APPLICATION. NEUTRIK NP[2/3]X-BAG FOR TS/TRS

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

SHEET TITLE  
AV DETAILS

DATE  
JUNE 30, 2023

SHEET NUMBER  
T 421  
21-237.20

AV7 EQUIPMENT SCHEDULE				
KEY #	DESCRIPTION	MANUFACTURER	PART #	COMMENTS
1	AV CONTROL PROCESSOR	QSC Q-SYS	CORE 610	
2	AV NETWORK SWITCH	QSC Q-SYS	NS26-300+	
3	NETWORK AMPLIFIER	QSC Q-SYS	CX-Q 2K4	
4	QUAD WIRELESS MIC RECEIVER	SHURE	ULXD4QGV=-H50	
5	RECHARGEABLE MIC BATTERY	SHURE	SB900B	
6	DUAL MIC CHARGING STATION	SHURE	SBC200-US	
7	WIRELESS MIC ANTENNA	RF VENUE	D-ARC	
8	TOUCH SCREEN CONTROLLER	QSC Q-SYS	TSC-70-G3	
9	AV WALLPLATE ENCODER	VISIONARY SOLUTIONS	DUETE-WP-BT	
10	AV DECODER	VISIONARY SOLUTIONS	D4200	
11	CAFE PROJECTOR	EPSON	L520U	OWNER-PROVIDED
13	GYM PROJECTOR	EPSON	EB-PU1008W	OWNER-PROVIDED
14	GYM PROJECTOR LENS	EPSON	ELPLM10	OWNER-PROVIDED
17	GYM SPEAKER	COMMUNITY	R.35 COAX	
18	CEILING SPEAKER	QSC Q-SYS	AD-C6T	
19	PENDANT SPEAKER	QSC Q-SYS	AD-P6T	
20	HEART WALL SPEAKER	QSC Q-SYS	AD-S10T	
21	HANDHELD MIC TRANSMITTER	SHURE	ULXD2/B87A	
22	BODYPACK MIC TRANSMITTER	SHURE	ULXD1	
23	HEADSET MICROPHONE	PYLE PRO	PMHMS20	
24	RACK DRAWER	MIDDLE ATLANTIC	UD4	
25	CABINET EQUIPMENT RACK	MIDDLE ATLANTIC	CFR-12-18	
27	GYM PROJECTOR MOUNT	CHIEF	RPM1AUW	
28	GYM PROJECTOR WALL MOUNT	CHIEF	WMA2S	
29	GYM PROJECTOR WALL MOUNT	CHIEF	CMS0203W	
30	GYM PROJECTOR CAGE	CHIEF	PG3AW	
31	CAFE PROJECTOR MOUNT	CHIEF	KITAF003W	
33	POWER CONDITIONER	FURMAN	PL-8C	
34	GYM SUBWOOFER	COMMUNITY	IS6-115	
35	HEART PROJECTOR	EPSON	EB-PU2113W	OWNER-PROVIDED
36	HEART PROJECTOR LENS	EPSON	ELPLM11	OWNER-PROVIDED
37	NETWORK AMPLIFIER	QSC Q-SYS	CX-Q 4K8	
38	GPIO EXPANDER	QSC	QIO-GP8X8	
39	SURFACE-MOUNT ENCODER	VISIONARY SOLUTIONS	E4200 W/ DANTE/AES67	
40	AUDIO I/O EXPANDER	QSC	QIO-ML2X2	
A	CAT6 NETWORK CABLE			REFER TO DATA CABLE SCHEDULE
B	SPEAKER CABLE	BELDEN	6300UE	
C	ANTENNA CABLE	BELDEN	89913	
D	HDMI CABLE	KRAMER	C-HM/HM/PICO/[XX]-[#]	LENGTH AS REQUIRED FOR INSTALLATION.

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

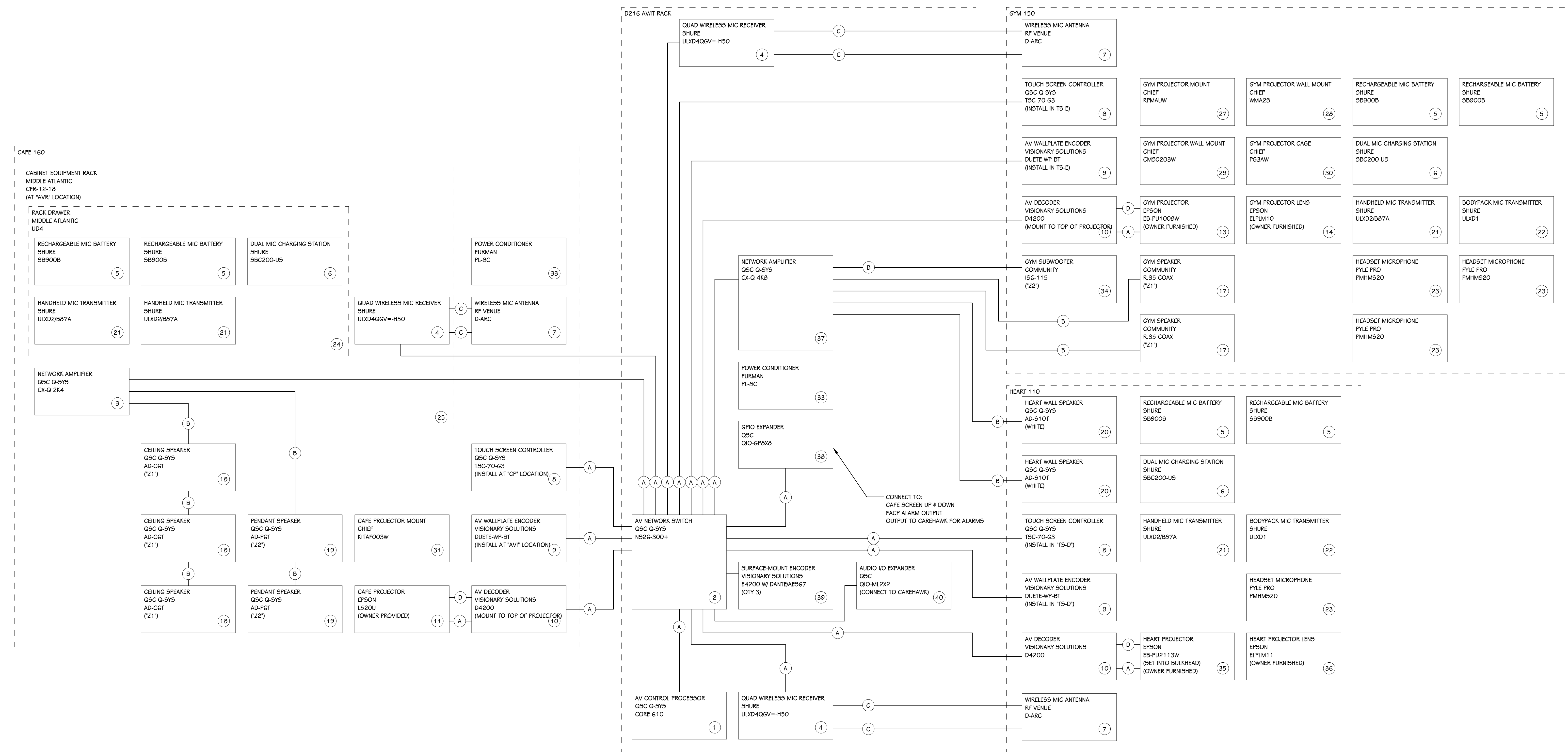
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

DATE  
JUNE 30, 2023

SHEET TITLE  
AV DETAILS

SHEET NUMBER  
T 422  
21-237.20

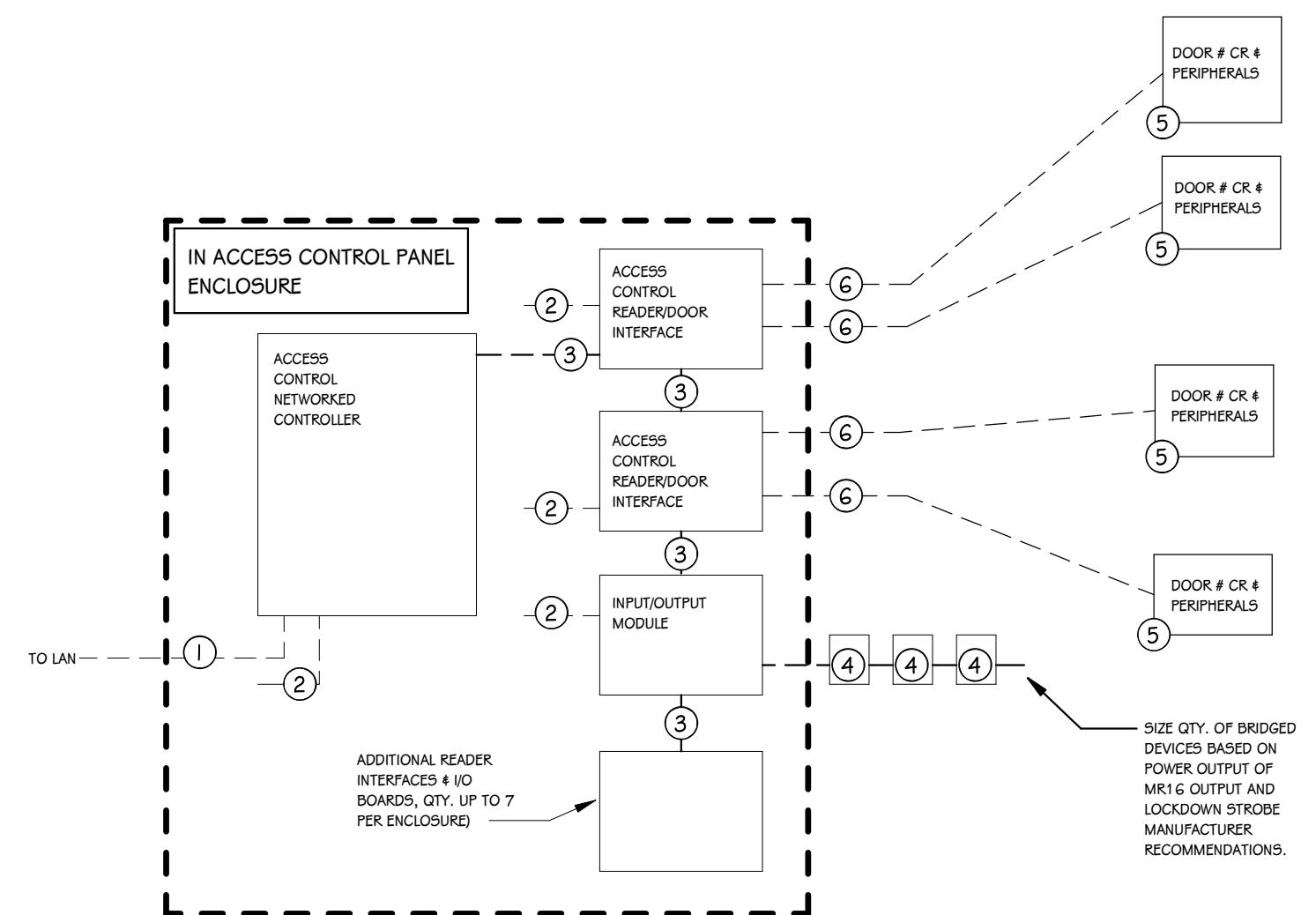


AV7 RISER DIAGRAM - LARGE SPACE AV  
SCALE: NONE



# ACCESS CONTROL SCHEDULE

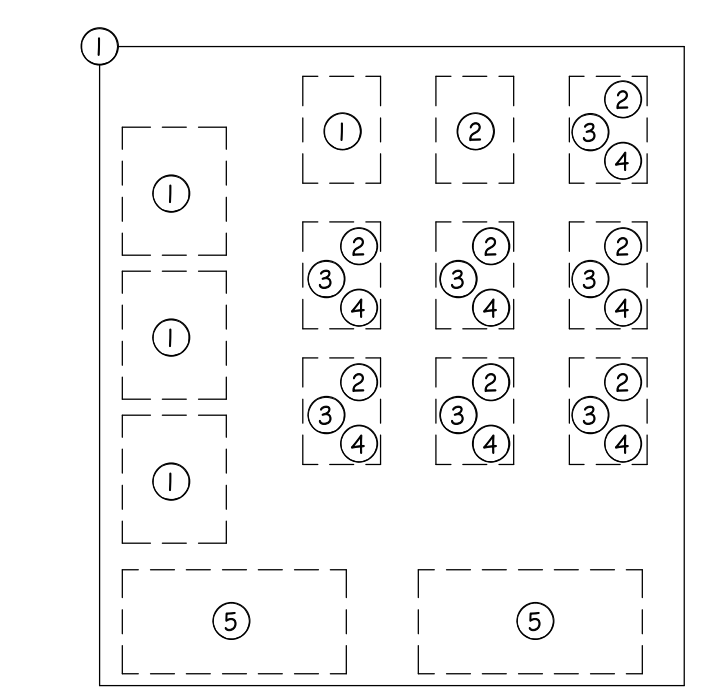
NUMBER	ACCESS CONTROLS	LOCKING HARDWARE TYPE	SECURITY INFO				DOOR DETAIL #	PROGRAMMING NOTES
DOOR	CARD READER		DOOR CONTACT	OTHER	REX			
100A	Yes	ES	DC	RB	N/A	1D		
100A	Yes	ES	DC	RB	N/A	1D		
100B	Yes	ES	DC	RB	N/A	1D		
100B	Yes	ES	DC	RB	N/A	1D		
101	Yes	ES	DC	N/A	N/A	1D		
101	Yes	ES	DC	N/A	N/A	1D		
105B	Yes	LR	DC	LD	N/A	1F		
105B	Yes	LR	DC	LD	N/A	1F		
112E	Yes	ES	DC	LD	N/A	1D		
112E	Yes	ES	DC	LD	N/A	1D		
116B	Yes	ES	DC	LD	N/A	1D		
116B	Yes	ES	DC	LD	N/A	1D		
120	Yes	LR	DC	LD	N/A	1F		
120	Yes	LR	DC	LD	N/A	1F		
120H	Yes	LR	DC	LD	N/A	2F		
120H	Yes	LR	DC	LD	N/A	2F		
130	Yes	LR	DC	LD	N/A	1F		
140	Yes	LR	DC	LD	N/A	1F		
140	Yes	LR	DC	LD	N/A	1F		
140H	Yes	LR	DC	LD	N/A	2F		
140H	Yes	LR	DC	LD	N/A	2F		
150B	Yes	ES	DC	LD	N/A	1D		
150B	Yes	ES	DC	LD	N/A	1D		
150C	No	N/A	DC	N/A	N/A	2S		
150C	No	N/A	DC	N/A	N/A	2G		
168C	Yes	ES	DC	LD	N/A	1D		
168C	Yes	ES	DC	LD	N/A	1D		
219	Yes	ES	DC	LD	N/A	1D		
219	Yes	ES	DC	LD	N/A	1D		
220H	Yes	LR	DC	LD	N/A	2F		
220H	Yes	LR	DC	LD	N/A	2F		
240H	Yes	LR	DC	LD	N/A	2F		
240H	Yes	LR	DC	LD	N/A	2F		
D159	Yes	ES	DC	N/A	N/A	1D		
D159	Yes	ES	DC	N/A	N/A	1D		
D216	Yes	ES	DC	N/A	N/A	1D		
D216	Yes	ES	DC	N/A	N/A	1D		
E172B	No	N/A	DC	N/A	N/A	1G		
E172B	No	N/A	DC	N/A	N/A	1G		
M170B	No	N/A	DC	N/A	N/A	2G		
M170B	No	N/A	DC	N/A	N/A	2G		
M260B	No	N/A	DC	N/A	N/A	1G		
M260B	No	N/A	DC	N/A	N/A	1G		
S74B	No	N/A	DC	N/A	N/A	1G		
S74B	No	N/A	DC	N/A	N/A	1G		
S75B	Yes	ES	DC	LD	N/A	1D		
S75B	Yes	ES	DC	LD	N/A	1D		
S75C	No	N/A	DC	N/A	N/A	1G		
S75C	No	N/A	DC	N/A	N/A	1G		
S75D	Yes	ES	DC	LD	N/A	1D		
S75D	Yes	ES	DC	LD	N/A	1D		
V100A	No	LR	DC	LD	N/A	1F		
V100A	No	LR	DC	LD	N/A	1F		
V100B	No	LR	DC	LD	N/A	1F		
V100B	No	LR	DC	LD	N/A	1F		
V100C	No	LR	DC	LD	N/A	1F		
V100C	No	LR	DC	LD	N/A	1F		
V100D	No	LR	DC	LD	N/A	1F		
V100D	No	LR	DC	LD	N/A	1F		
V100E	No	LR	DC	LD	N/A	1F		
V100E	No	LR	DC	LD	N/A	1F		
V100F	No	LR	DC	LD	N/A	1F		
V100F	No	LR	DC	LD	N/A	1F		
V160A	Yes	LR	DC	LD	N/A	2F		
V160A	Yes	LR	DC	LD	N/A	2F		



DEVICE	MANUFACTURER/PART #	NOTES
1 CATEGORY CABLE	REFER TO SCHEDULE	PROVIDED BY STRUCTURED CABLING CONTRACTOR.
2 18AWG/2C	SEE SECURITY DEVICE AND CABLING CHART	12-24 VDC CONNECTION TO POWER DIST. MODULE/POWER SUPPLY
3 RS-485	BELDEN 82841	PROVIDE RS-485 LOOP TO CONNECT CONTROLLER TO MAX. NUMBER OF SUPPORTED DOWNSTREAM DEVICES.
4 LOCKDOWN DEVICE	SEE SECURITY DEVICE AND CABLING CHART FOR PART #	EXACT LAYOUT AND QTY. OF EACH DEVICE PER MODULE SHALL BE SIZED, CONFIGURED, AND SUPPLIED TO SUPPORT # OF DEVICES ON PLANS.
5 CR, RX, DC, LD, RB, 4 OTHER CONTROL INTERFACES		
6 MULTICONDUCTOR CABLE		

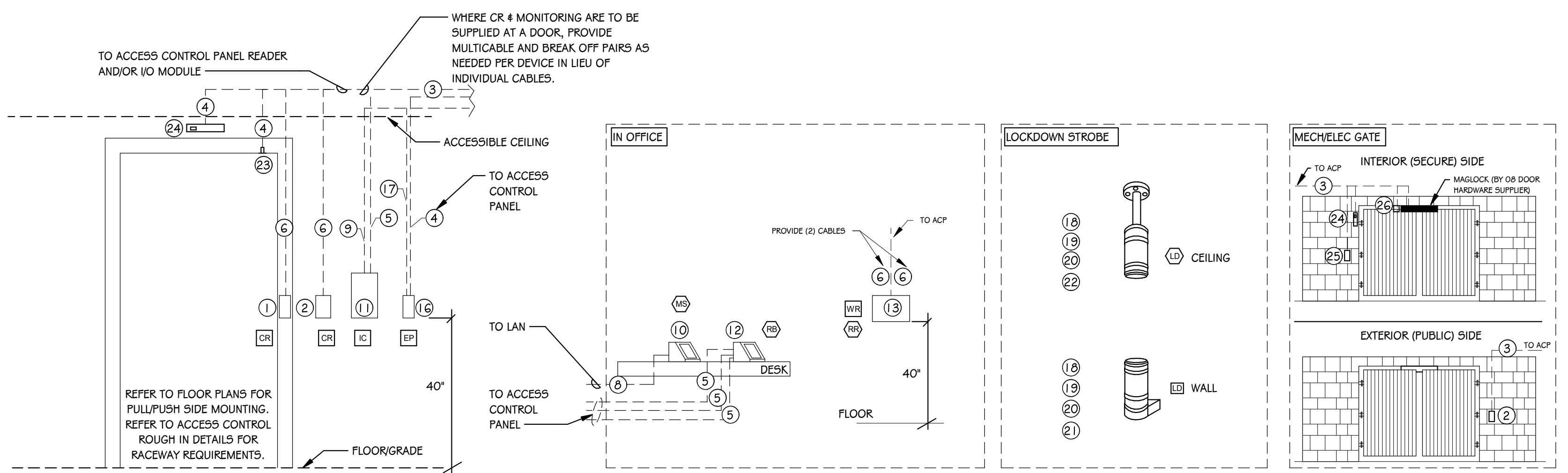
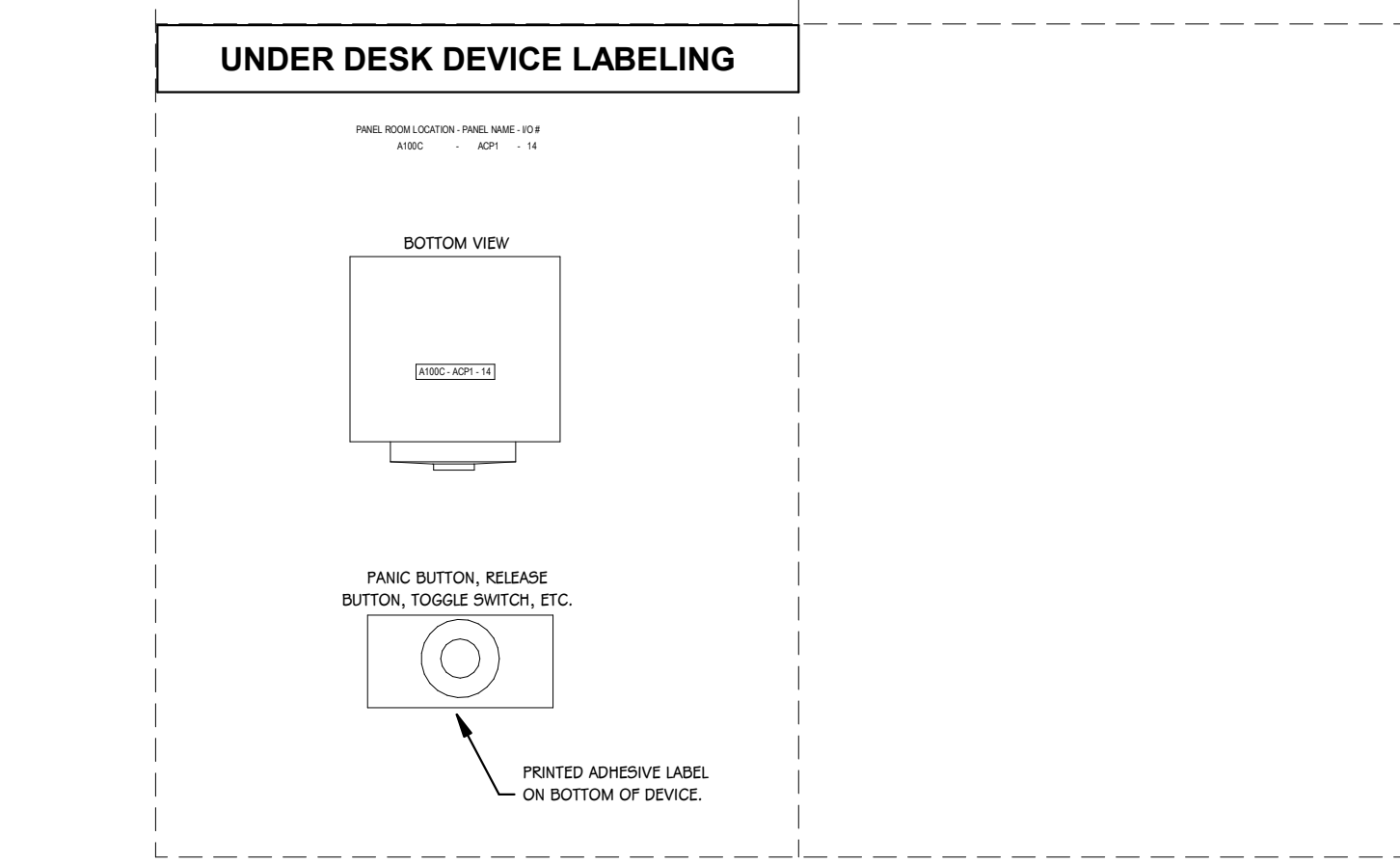
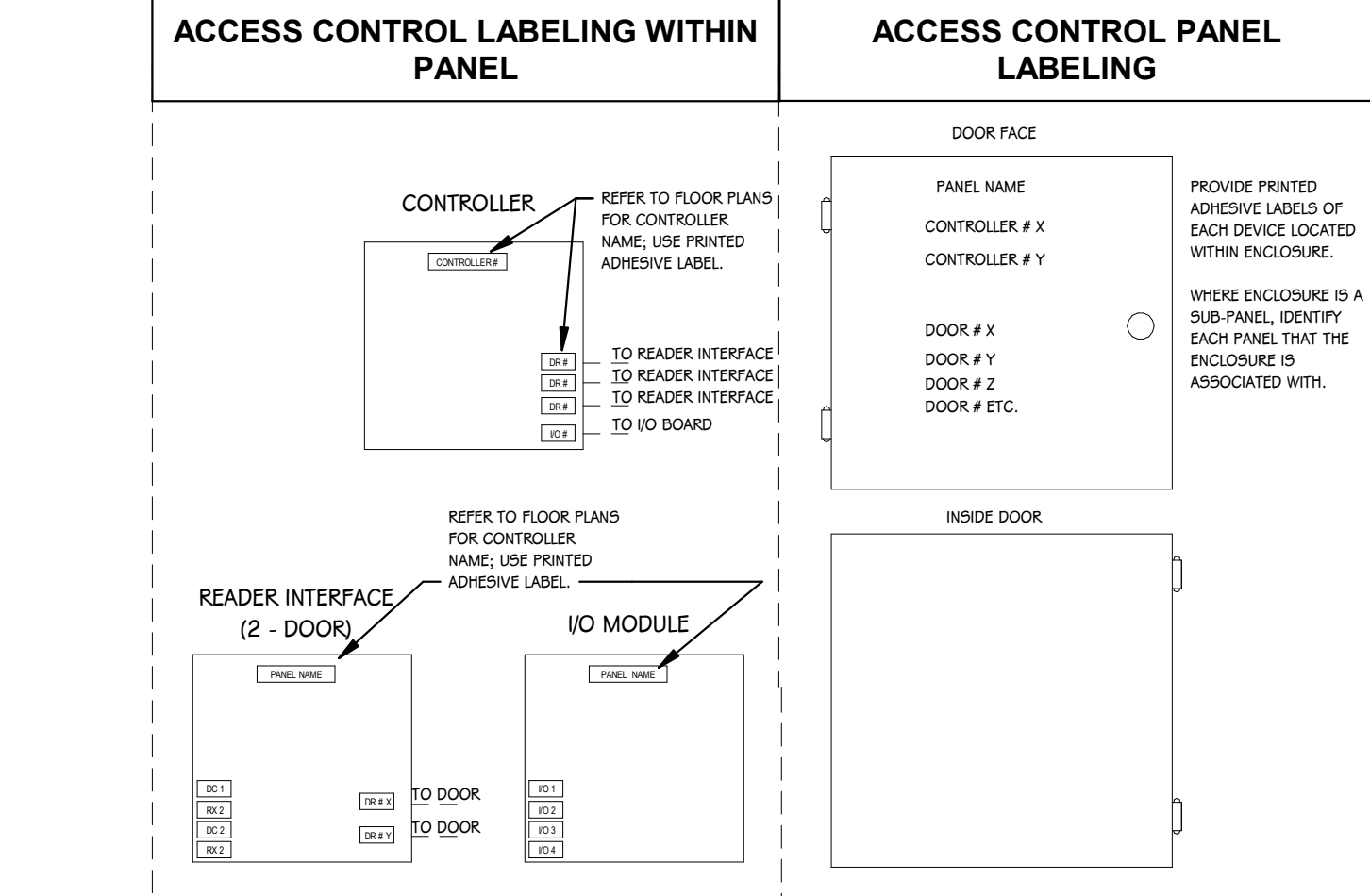
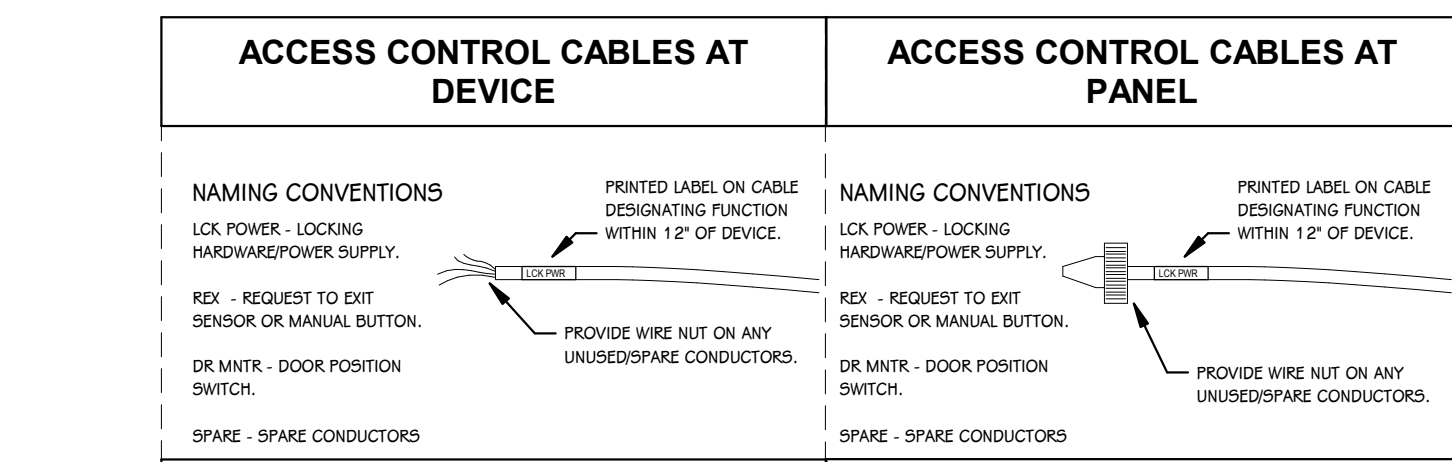
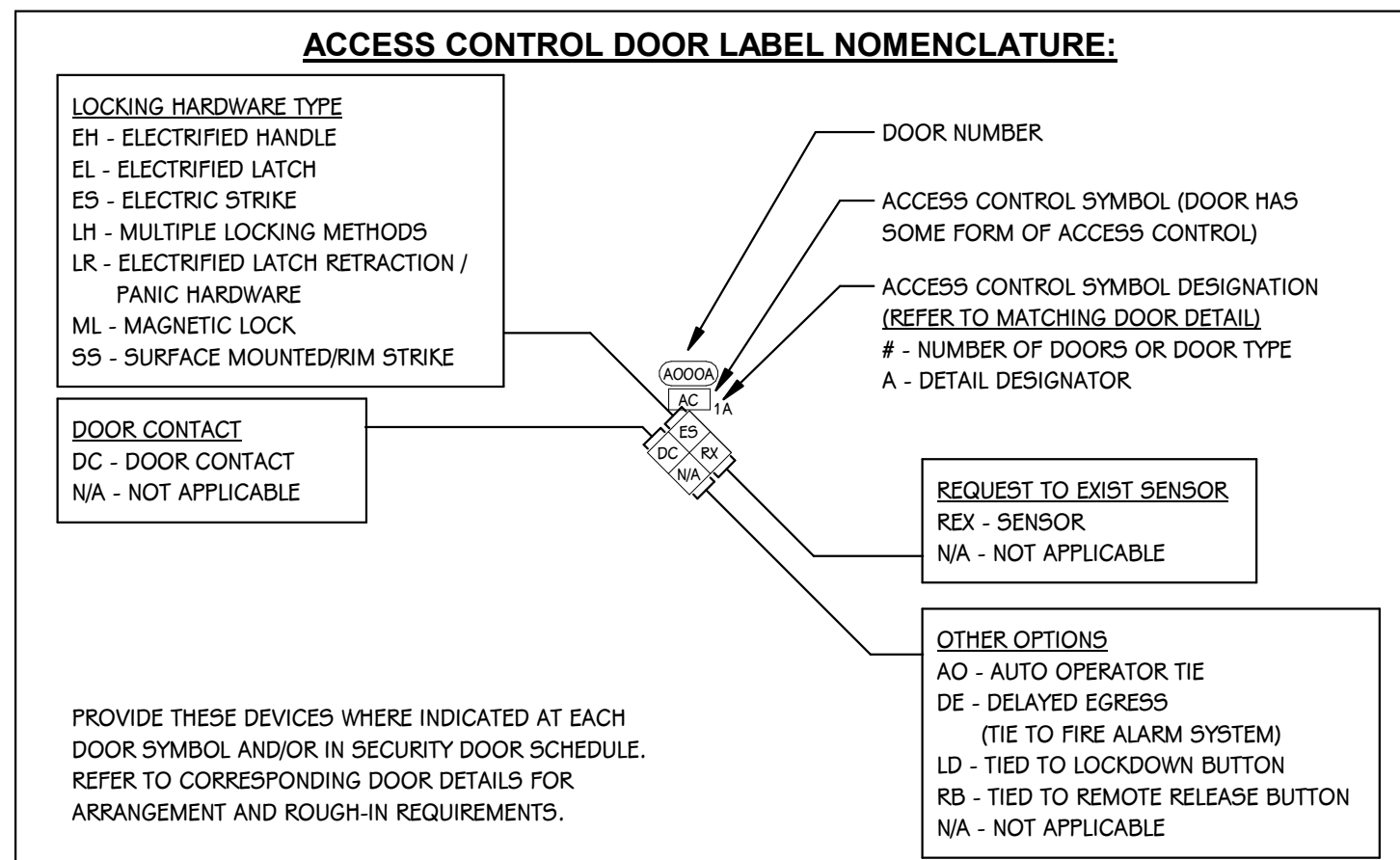
COORDINATE FAIL-SAFE VS. FAIL-SECURE LOCK CONNECTIONS IN COMPLIANCE WITH FIRE CODE AND COORDINATED WITH PROGRAMMING NOTES ON ACCESS CONTROL SCHEDULE.

REFER TO DRAWINGS FOR LOCATIONS



DEVICE	MANUFACTURER/PART #	NOTES
1 ACCESS CONTROL ENCLOSURE, POWER SUPPLIES, POWER DISTRIBUTION MODULES, LOCK POWER	LENEL/S2 S2-NN-E2R-WM	
2 ACCESS CONTROL 2-DOOR READER INTERFACE	S2-ACM	
3 ACCESS CONTROL INPUT MODULE	S2-INP	EXACT LAYOUT AND QTY. OF EACH MODULE PER ENCLOSURE SHALL BE CONFIGURED AND SUPPLIED TO SUPPORT # OF DEVICES ON PLANS.
4 ACCESS CONTROL OUTPUT MODULE	S2-OUT	
5 ENCLOSURE BATTERY	MFG. RECOMMENDED, SEALED LEAD ACID OR GEL TYPE.	SIZE BATTERY TO PROVIDE UNINTERRUPTED POWER TO CONTROLS AND LOCKS FOR MIN. 6 HOURS AT FULL CAPACITY.

COORDINATE POWER CONNECTIONS WITH ELECTRICAL CONTRACTOR; CONNECTIONS SHALL BE HARDWIRED TO POWER SUPPLIES.

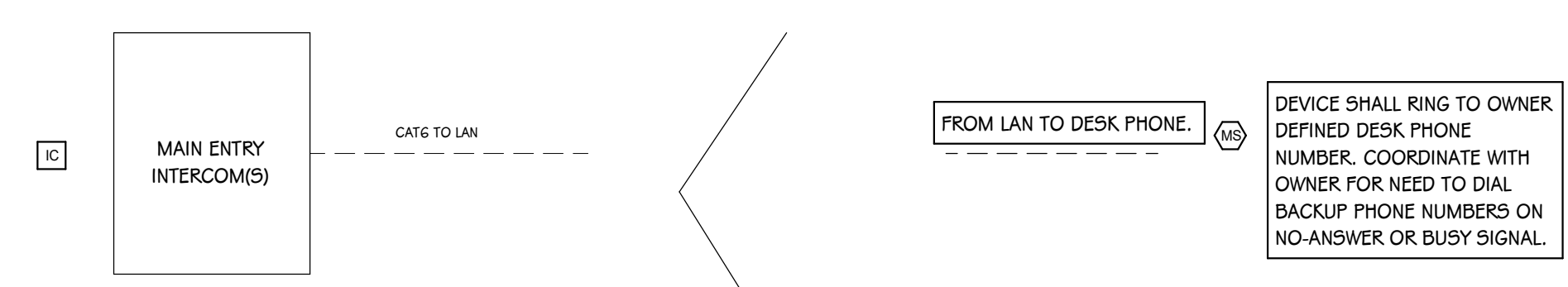


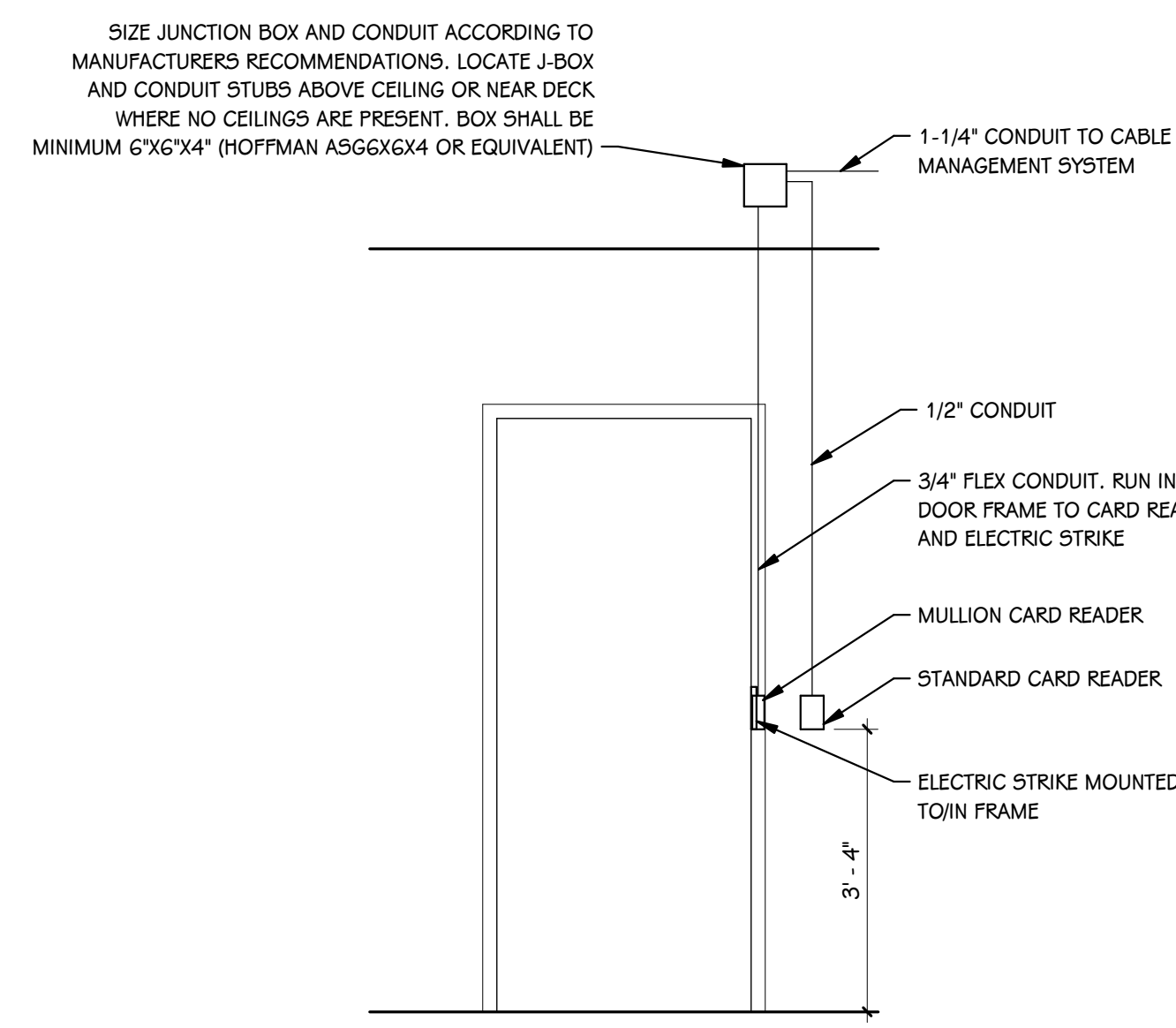
DEVICE	MANUFACTURER/PART #	NOTES
1 CARD READER - MULLION	HID MINIPROX 5365	USE WHEN CR SYMBOL IS SHOWN ON MULLION, FRAME, OR OTHER NARROW-WIDTH MOUNTING APPLICATION.
2 CARD READER - STANDARD	HID PROXPRO 5355	N/A
3 CABLE - MULTICABLE	BELDEN 656AFJ ACCESS CONTROL	USE WHEN DOOR REQUIRES CR AND ANY OTHER DEVICE. OTHERWISE, SEE BELOW CABLES.
4 CABLE - 1/2 AWG/CONDUCTOR	BELDEN 6300FC	UPSIZED CABLE AS REQUIRED TO ELIMINATE SIGNAL LOSS.
5 CABLE - 1/4 AWG/CONDUCTOR	BELDEN 6341FE	UPSIZED CABLE AS REQUIRED TO ELIMINATE SIGNAL LOSS.
6 CABLE - 1/8 AWG/CONDUCTOR	BELDEN 6304FE	UPSIZED CABLE AS REQUIRED TO ELIMINATE SIGNAL LOSS.
7 CABLE - INTERCOM MASTER STATION DOOR RELEASE	N/A	DOOR RELEASE IS CONFIGURED SEPARATELY (SEE NO. 5, 13, & 14).
8 CABLE - INTERCOM MASTER STATION	CATEGORY CABLE	REFER TO COMMUNICATION CABLE 4 COMPONENT LEGEND
9 CABLE - INTERCOM DOOR STATION	CATEGORY CABLE	REFER TO COMMUNICATION CABLE 4 COMPONENT LEGEND
10 DEVICE - INTERCOM MASTER STATION	OWNER'S DESK PHONE	COORDINATE WITH OWNER TO PROGRAM PHONES FOR INTERCOM DIALING AND DOOR RELEASE THROUGH ACP
11 DEVICE - INTERCOM DOOR STATION	AXIS A8105-E	MOUNT ON MULLION
12 DEVICE - DESK MOUNT CONTROLS BOX 4 SWITCHES	SCHLAGE 8204-MMM-M5	COORDINATE FINAL LOCATION WITH OWNER AT TIME OF INSTALL. PROVIDE ADHESIVE LABEL OF EACH DOOR TIED TO SPECIFIC RELEASE. SECURE TO SIT/STAND DESK, AND PROVIDE ENOUGH CABLE TO ACCOMMODATE MAXIMUM HEIGHT OF DESK.
13 DEVICE - REMOTE RELEASE TRANSMITTER 4 BUTTONS	N/A	N/A
14 DEVICE - RELEASE BUTTON MOUNTED UNDER DESK	N/A	N/A
15 DEVICE - UNUSED	N/A	N/A
16 DEVICE - WALL MOUNTED EMERGENCY PHONE	N/A	N/A
17 CABLE - WALL MOUNTED EMERGENCY PHONE	N/A	N/A
18 DEVICE - LOCKDOWN STROBE ELEMENT	N/A	N/A
19 DEVICE - LOCKDOWN STROBE POWER	N/A	N/A
20 CABLE - LOCKDOWN STROBE	N/A	N/A
21 DEVICE - LOCKDOWN WALL BRACKET	N/A	N/A
22 DEVICE - LOCKDOWN CEILING MOUNT	N/A	N/A
23 DEVICE - DOOR CONTACT	SCHLAGE 679-05HM	N/A
24 DEVICE - REQUEST TO EXIT SENSOR	SCHLAGE SCAN II WHT	MOUNT VERTICALLY AT MECHELEC GATE; HORIZONTALLY IN ALL OTHERS.
25 DEVICE - WALL MOUNTED REQUEST TO EXIT SENSOR	STI 582377PX-EN	CONNECT RX DIRECTLY TO POWER SUPPLY TO COMPLY WITH EGRESS CODE REQUIREMENTS. DEVICE SHALL MOMENTARILY INTERRUPT POWER AND RELEASE MAGLOCKS FOR CODE REQUIRED MINIMUM TIME.
26 DEVICE - GATE DOOR POSITION SWITCH	SCHLAGE 7766	N/A

GENERAL NOTES APPLY TO ALL LV CABLE\*

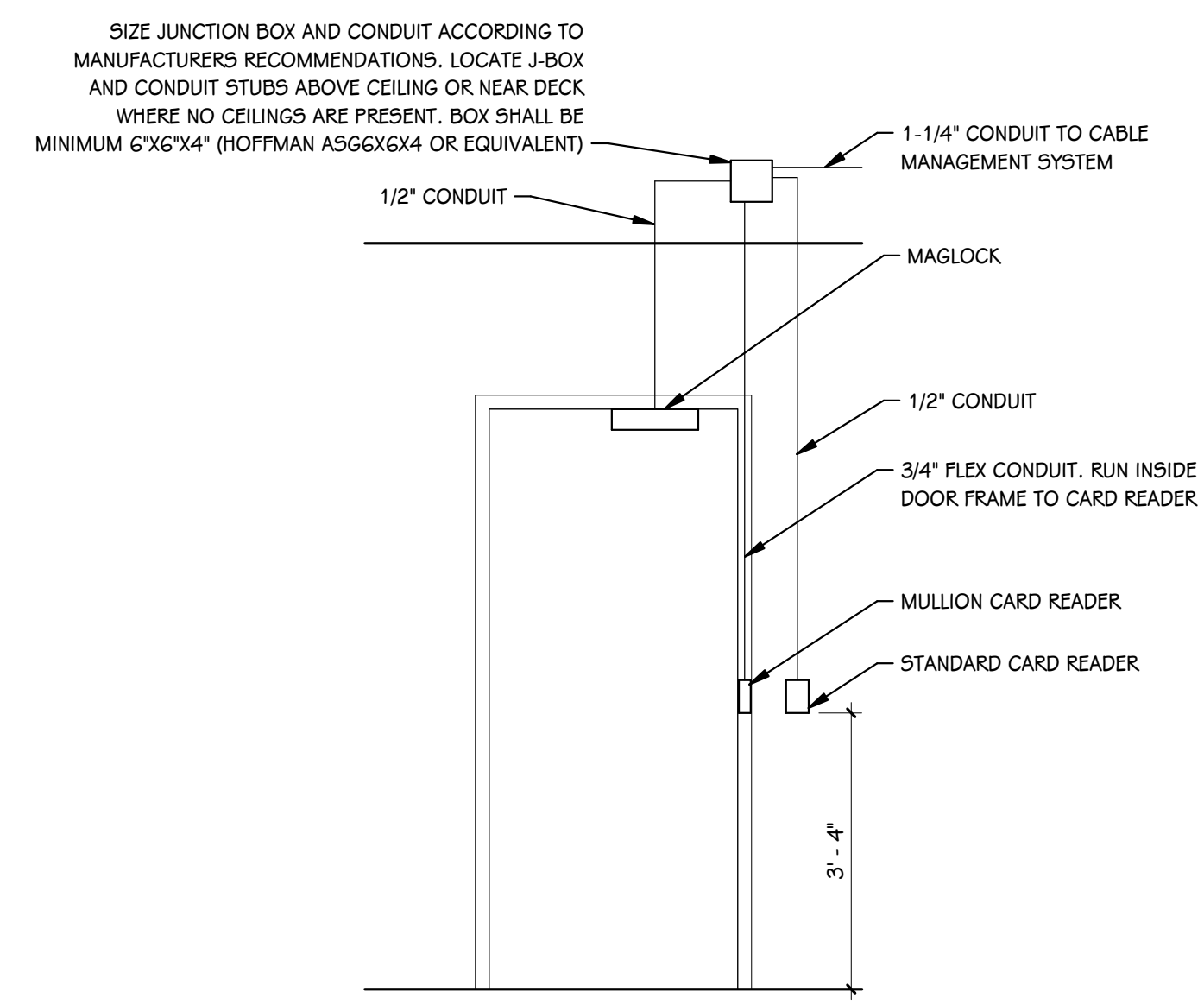
- ALL CABLE SHALL BE PLENUM RATED IN PLENUM SPACE.
- CABLES UTILIZING WIEGAND COMMS SHALL NOT EXCEED 500FT TO ACCESS CONTROL PANEL.
- CABLES UTILIZING OSDP SHALL NOT EXCEED 2000FT.
- CABLE SIZING SHALL BE VERIFIED PRIOR TO INSTALLATION AND UPSIZED AS NECESSARY TO ELIMINATE SIGNAL LOSS.
- CABLES SHALL BE RUN IN CONTINUOUS OR NON-CONTINUOUS CABLE MANAGEMENT SYSTEMS. FREE-RUN CABLING IS NOT ACCEPTABLE ANYWHERE. ZIP TIES, ELECTRICAL TAPE, OR OTHER SIMILAR ADHESIVES ARE NOT ACCEPTABLE.
- WHERE IN EXPOSED AREAS (E.G. UNDER DESK, ALONG COUNTERTOP), CABLES SHALL BE RUN IN MESH CABLE SLEEVE (TECHSPEC F6N2-00-25-BLACK, CUT TO SIZE).
- ALL DEVICES THAT CONTROL DOOR HARDWARE SHALL BE CABLED TO INTERFACE THROUGH THE ACCESS CONTROL PLATFORM AND NEVER BE DIRECTLY CONNECTED TO THE LOCK POWER.

\*SEE COPPER CABLE DETAIL AND SPECIFICATIONS FOR REQUIREMENTS AND CONDITIONS.

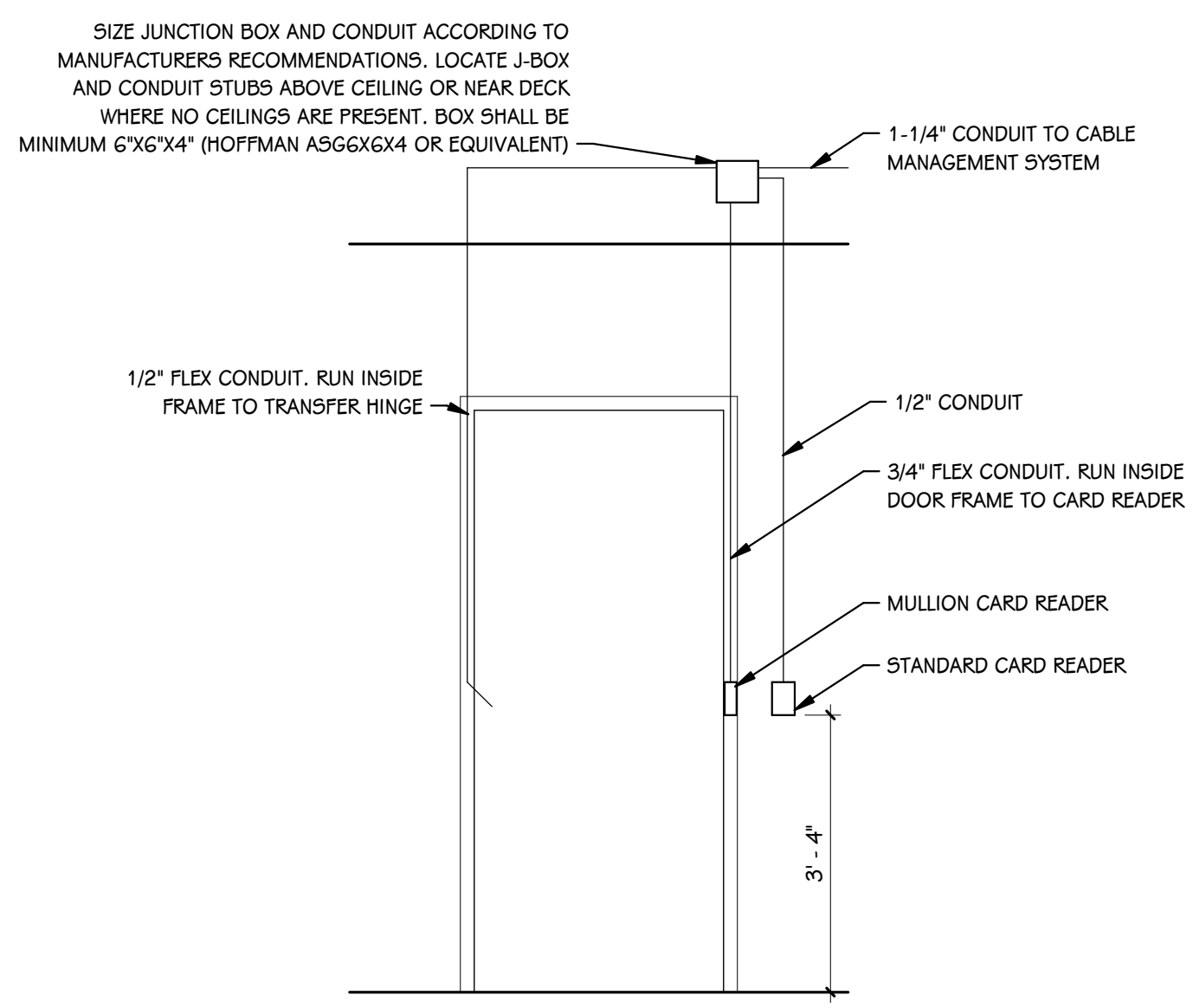




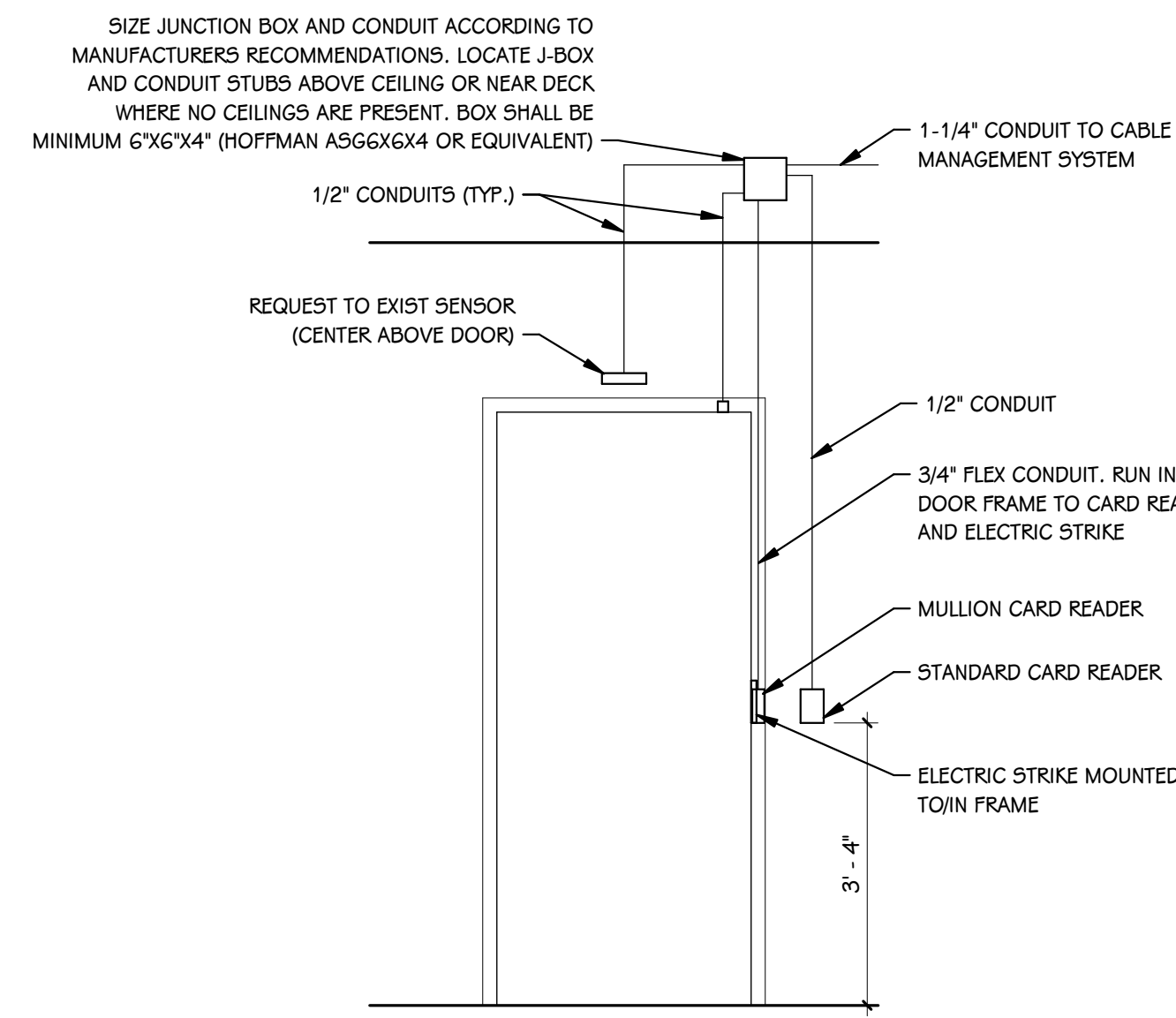
1A  
T 442  
AC SINGLE DOOR WITH STRIKE  
1/2" = 1'-0"



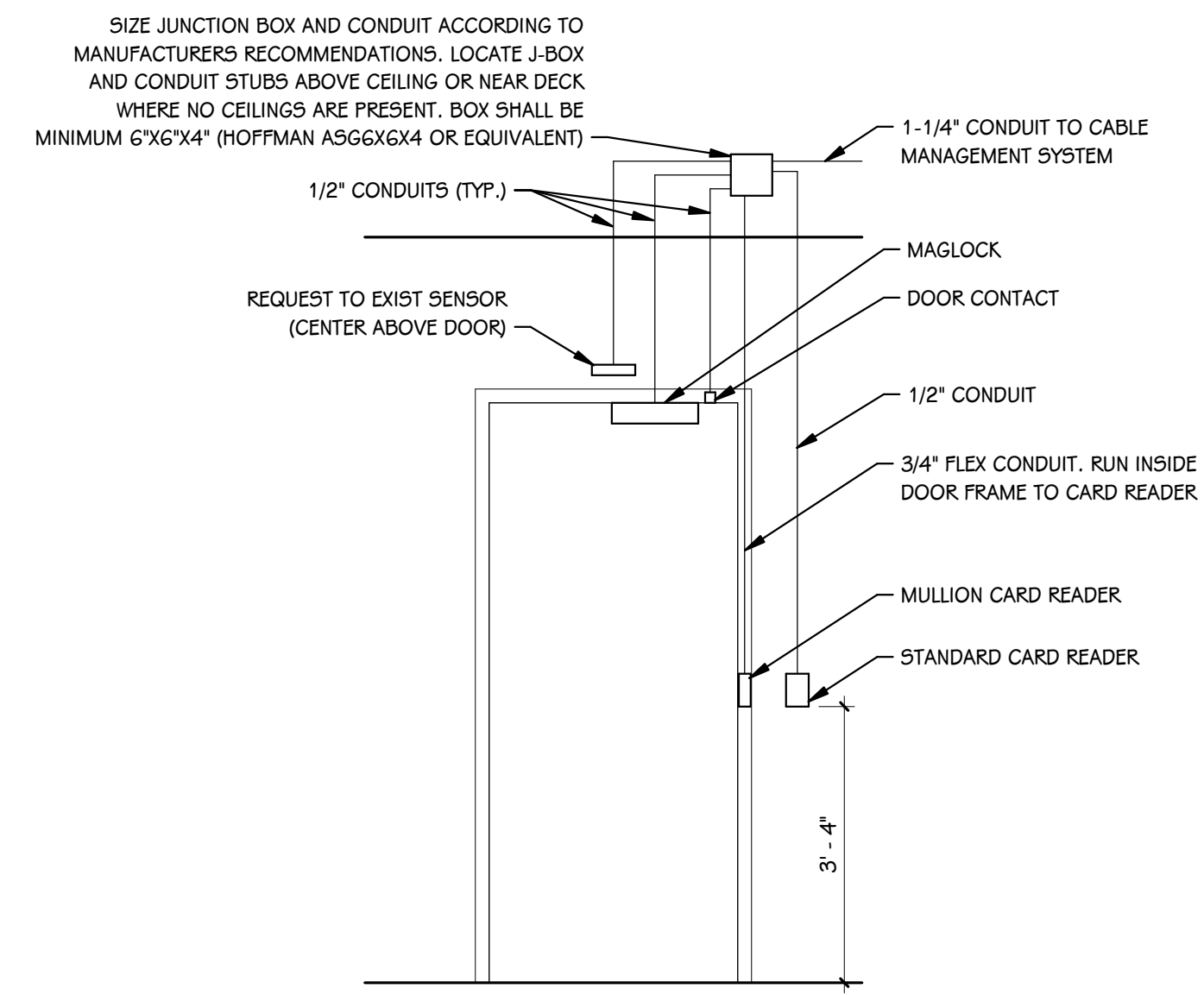
1B  
T 442  
AC SINGLE DOOR WITH MAGLOCK  
1/2" = 1'-0"



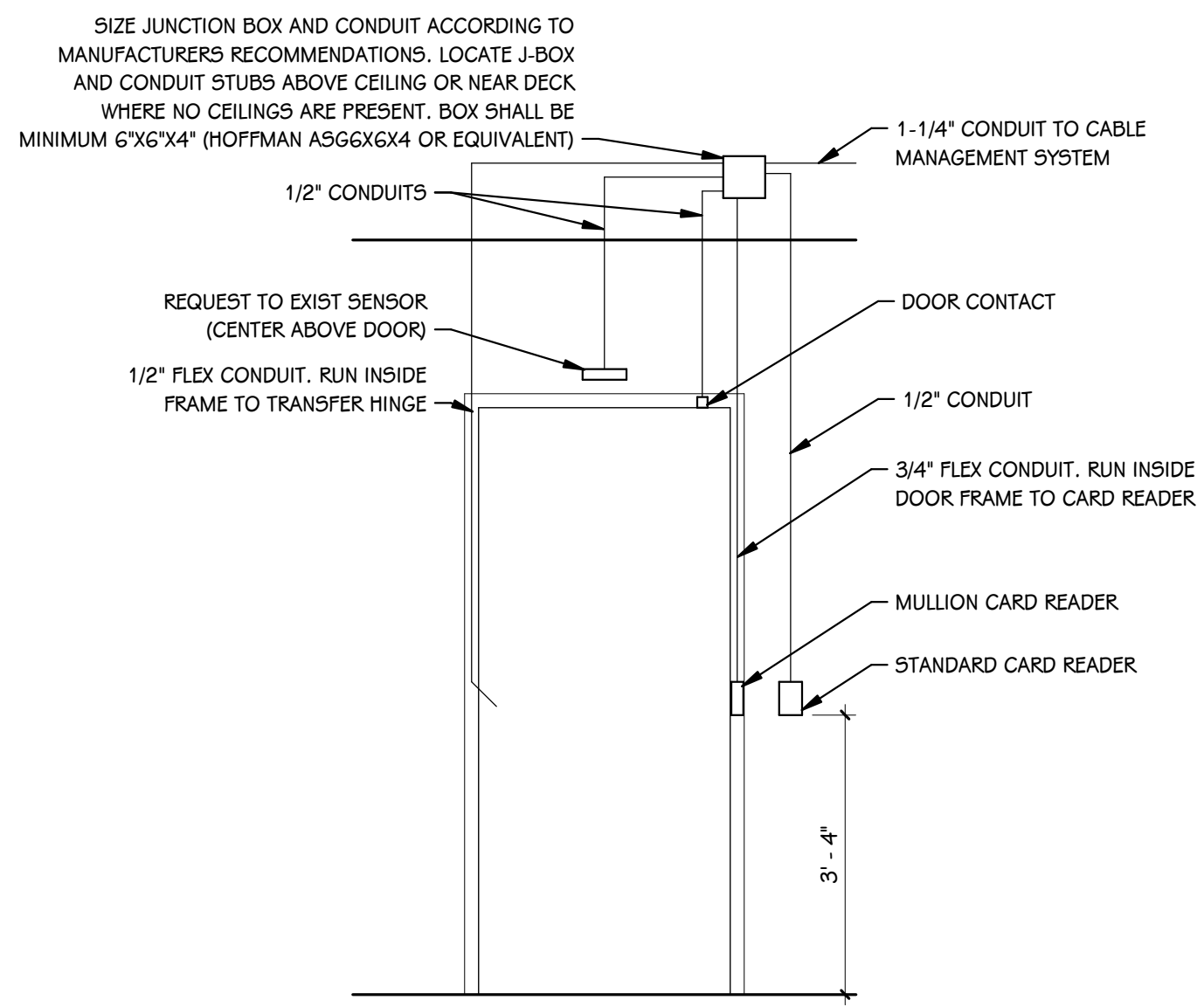
1C  
T 442  
AC SINGLE DOOR WITH LATCH  
1/2" = 1'-0"



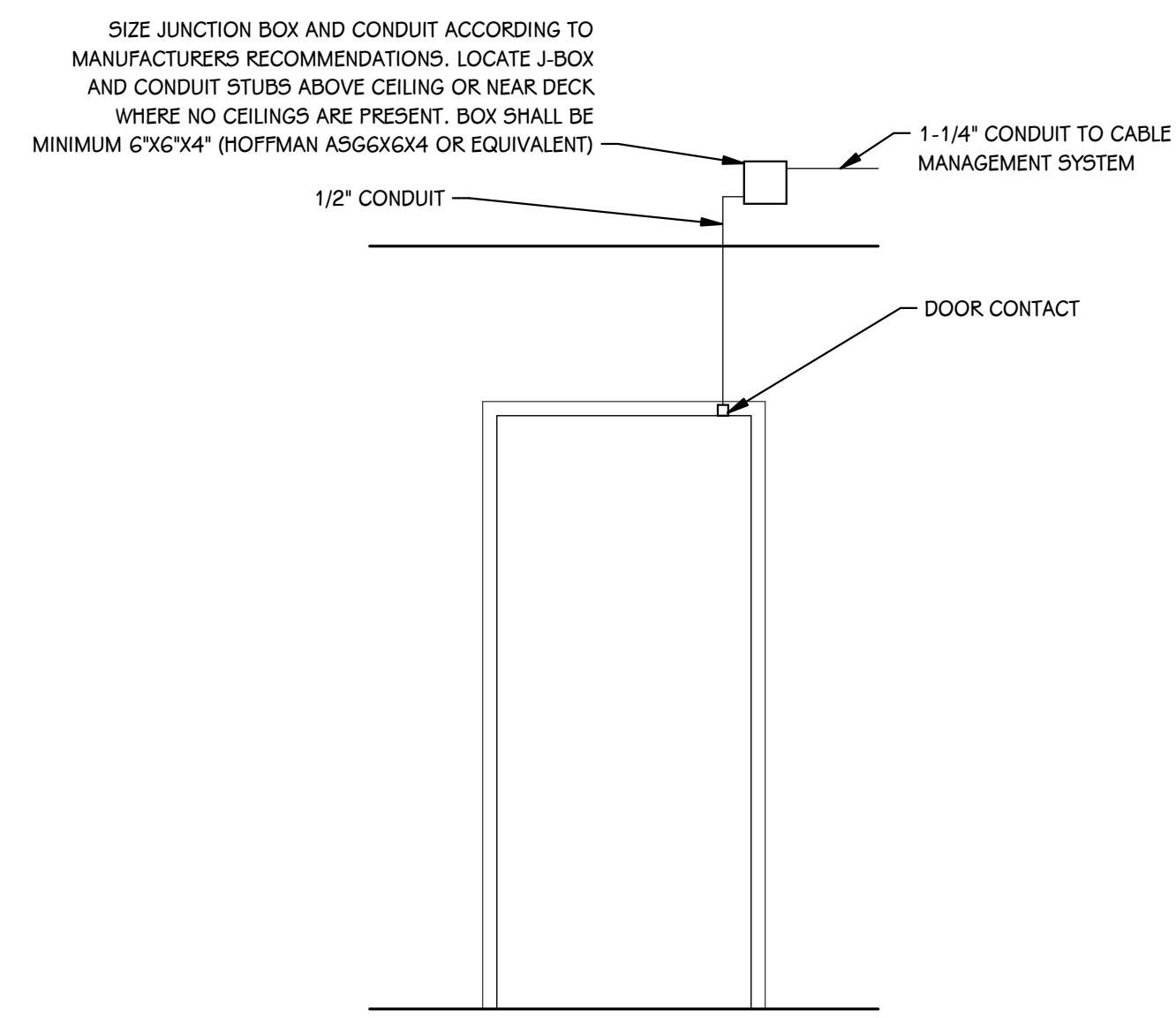
1D  
T 442  
AC SINGLE DOOR WITH STRIKE AND SENSORS  
1/2" = 1'-0"



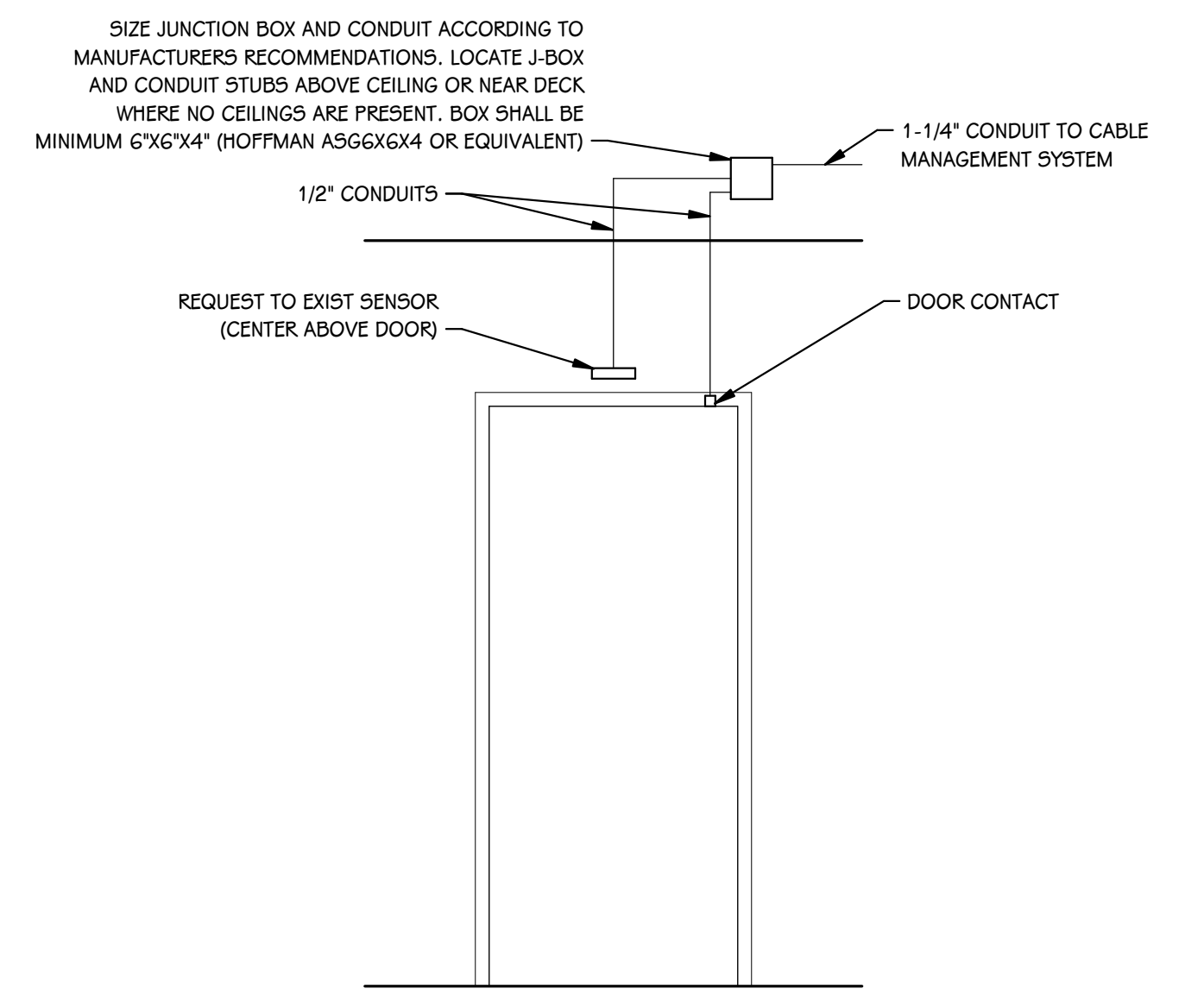
1E  
T 442  
AC SINGLE DOOR WITH MAGLOCK AND SENSORS  
1/2" = 1'-0"



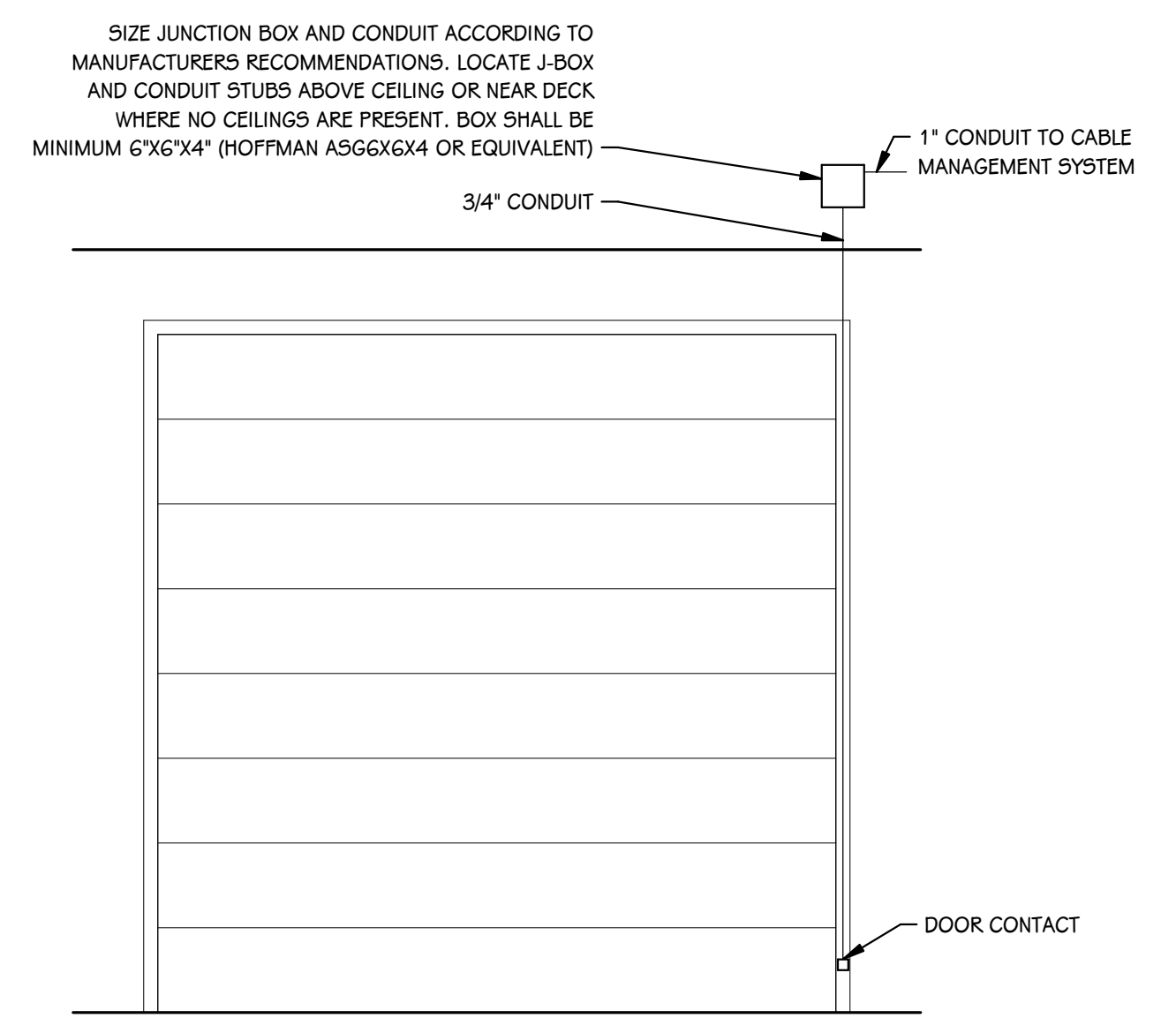
1F  
T 442  
AC SINGLE DOOR WITH LATCH AND SENSORS  
1/2" = 1'-0"



1G  
T 442  
AC SINGLE DOOR WITH CONTACT  
1/2" = 1'-0"



1H  
T 442  
AC SINGLE DOOR WITH SENSORS  
1/2" = 1'-0"



1I  
T 442  
AC OVERHEAD DOOR WITH CONTACT  
1/2" = 1'-0"

ISSUED FOR DATE

PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION

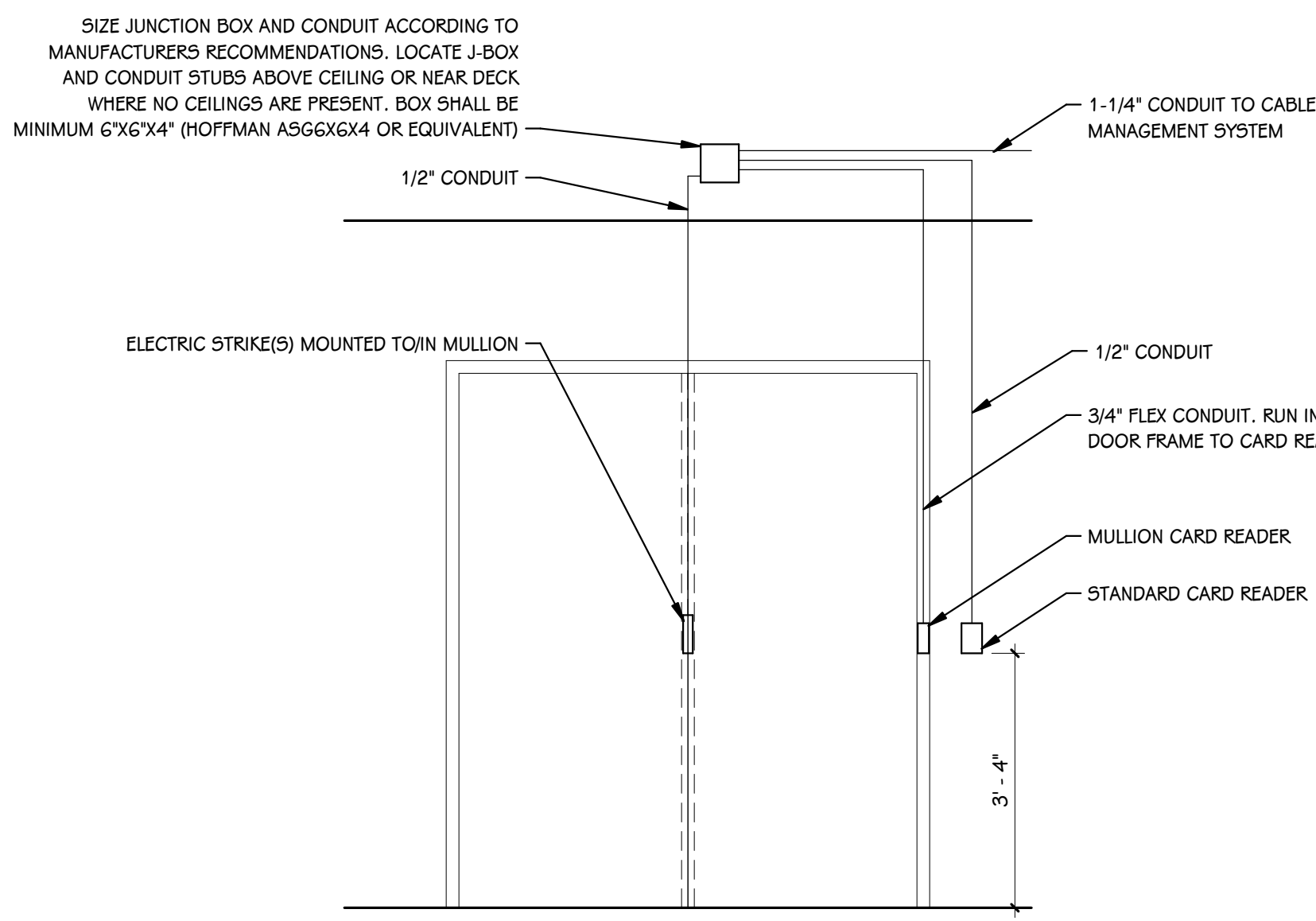
OWNER  
PORTAGE PUBLIC SCHOOLS

Portage, Michigan

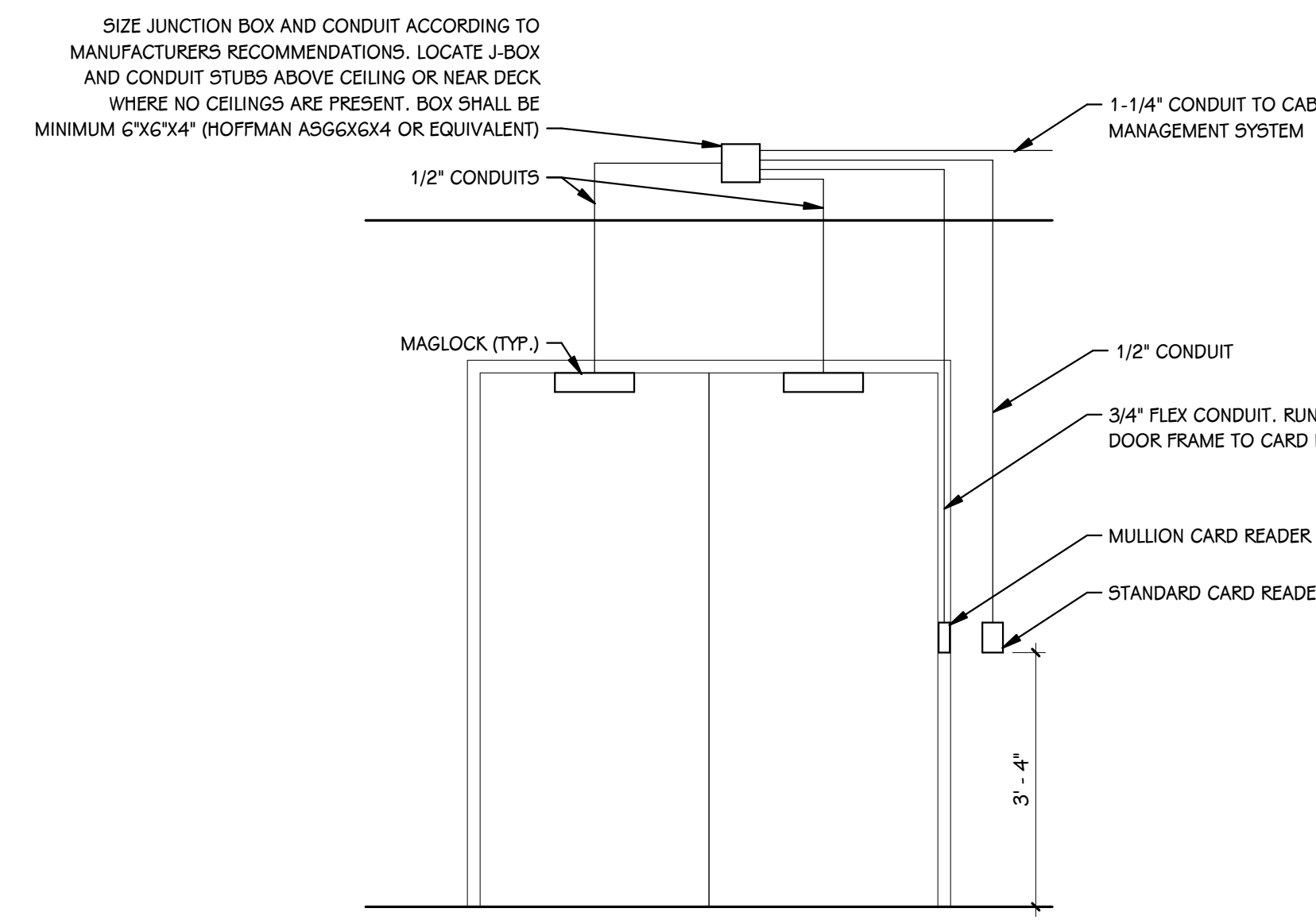
SHEET TITLE  
SECURITY DETAILS

DATE  
JUNE 30, 2023

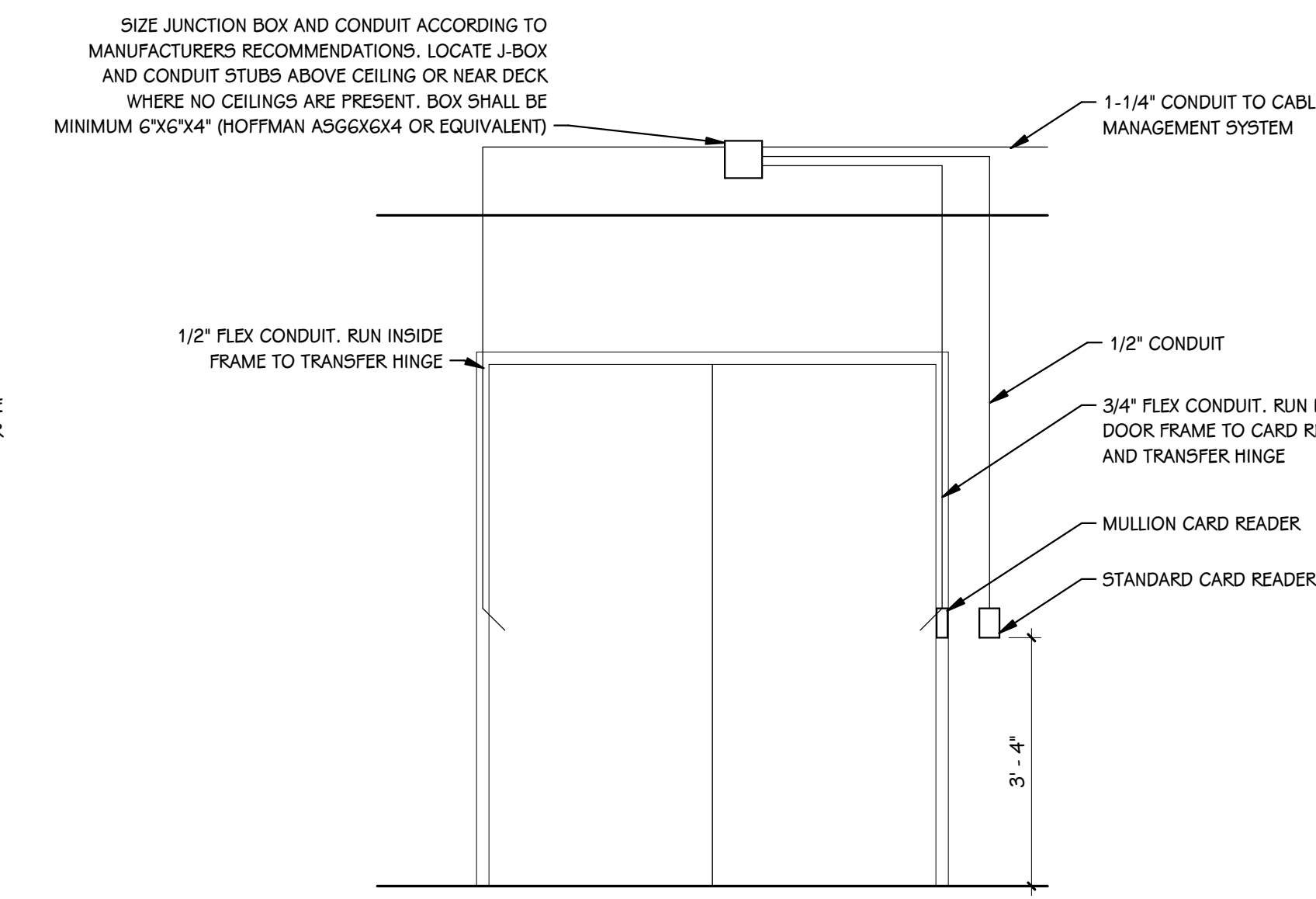
SHEET NUMBER  
T 442  
21-237.20



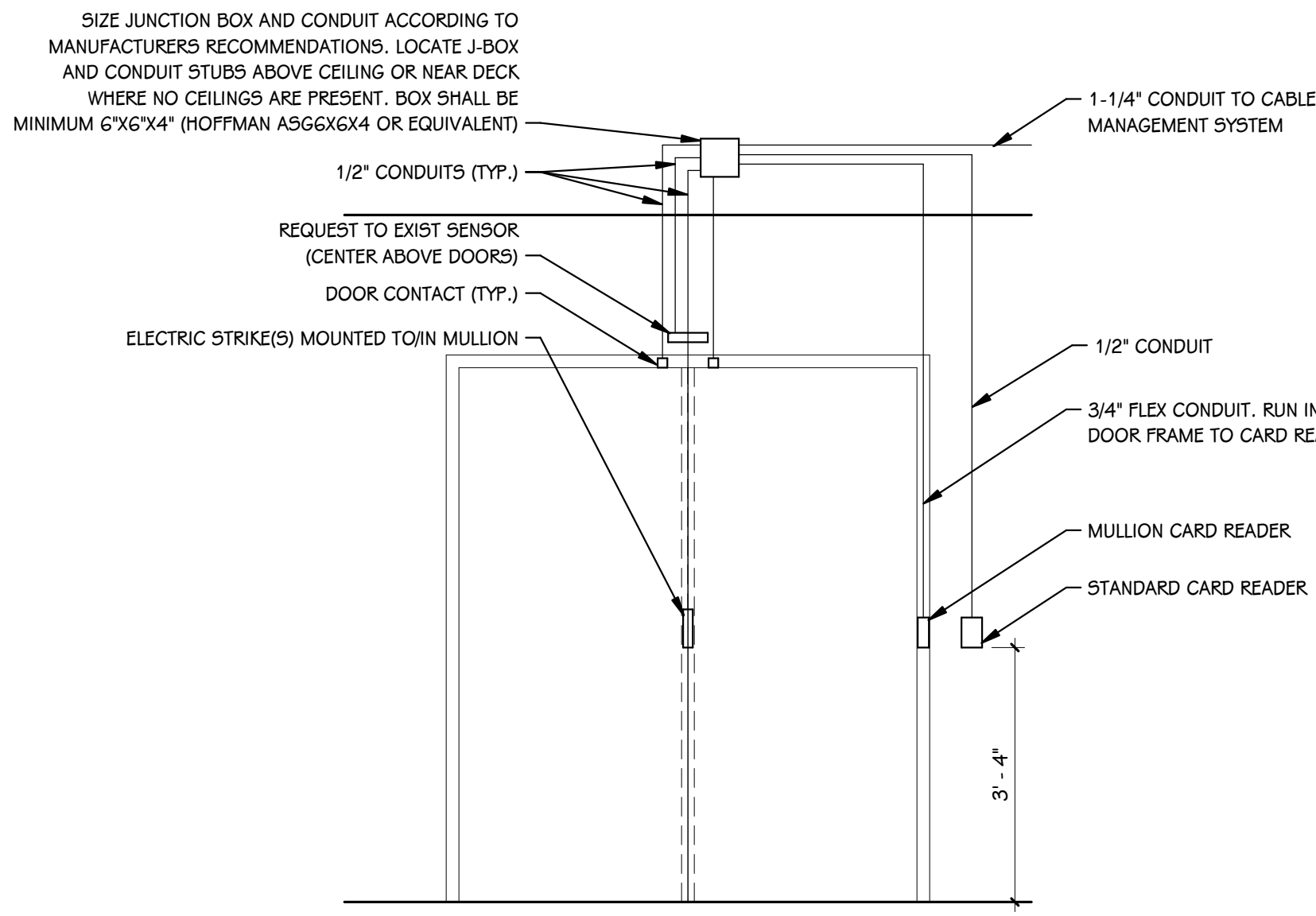
**2A AC DOUBLE DOOR WITH MULLION STRIKES**  
1/2" = 1'-0"



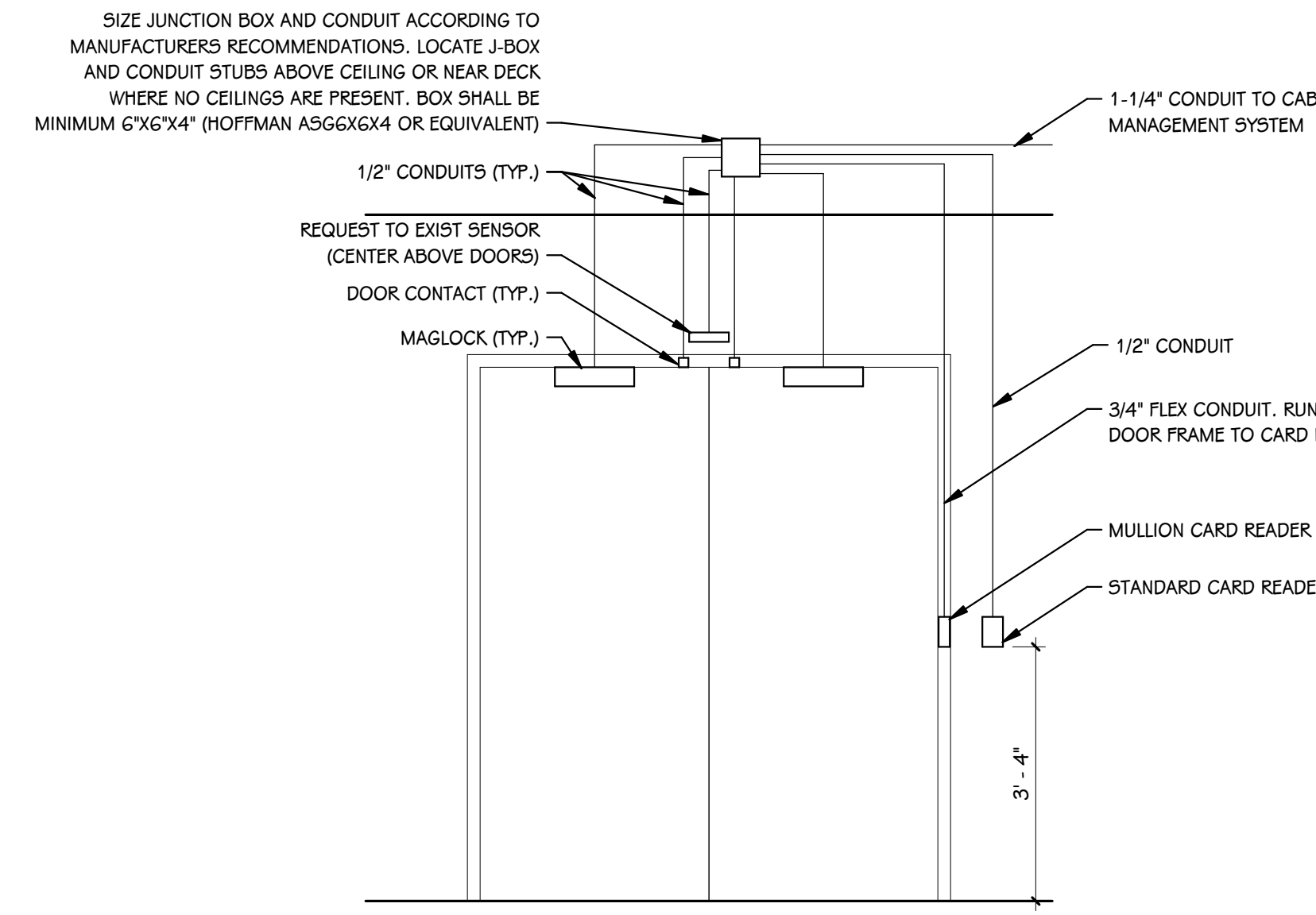
**2B AC DOUBLE DOOR WITH MAGLOCK**  
1/2" = 1'-0"



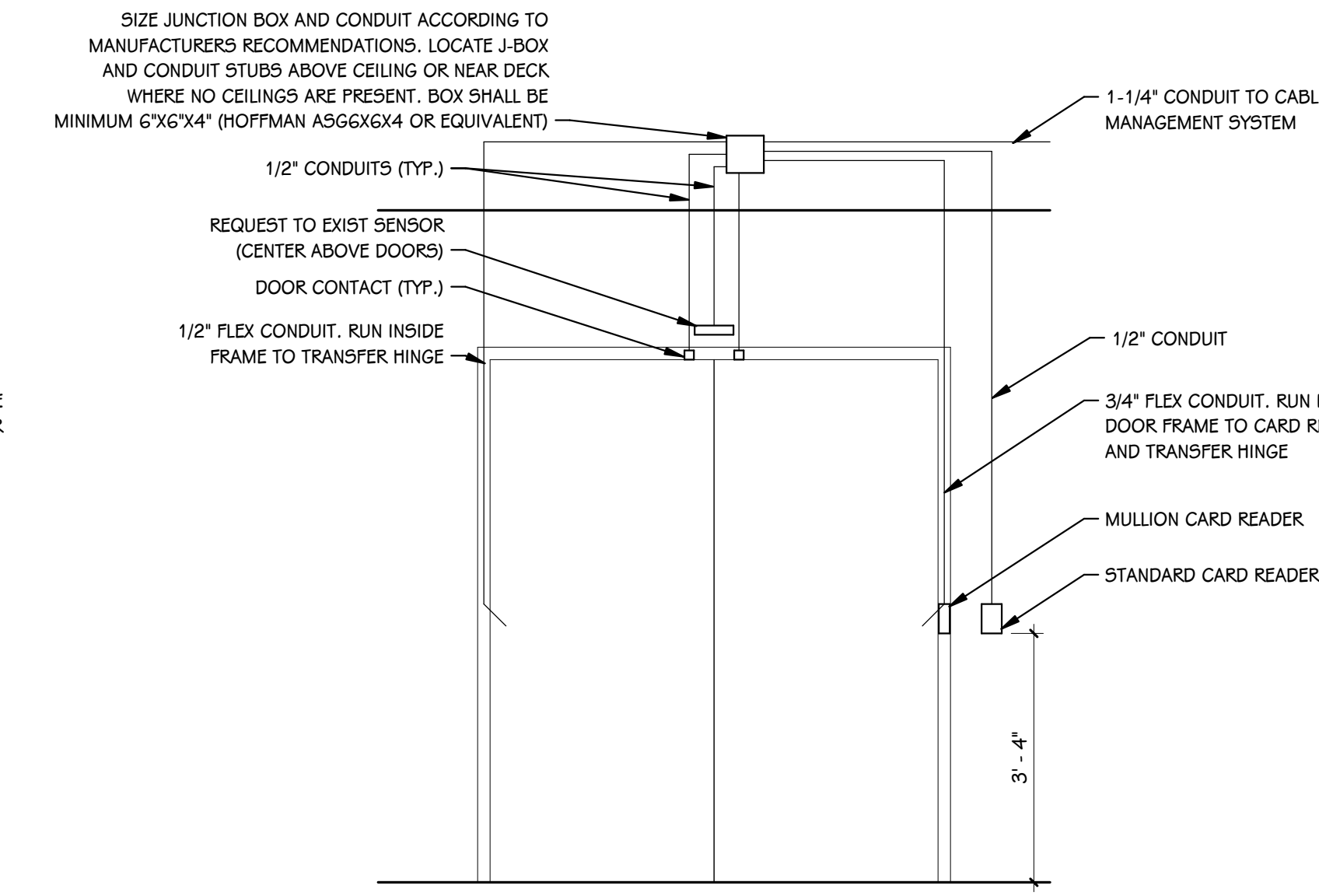
**2C AC DOUBLE DOOR WITH LATCHES**  
1/2" = 1'-0"



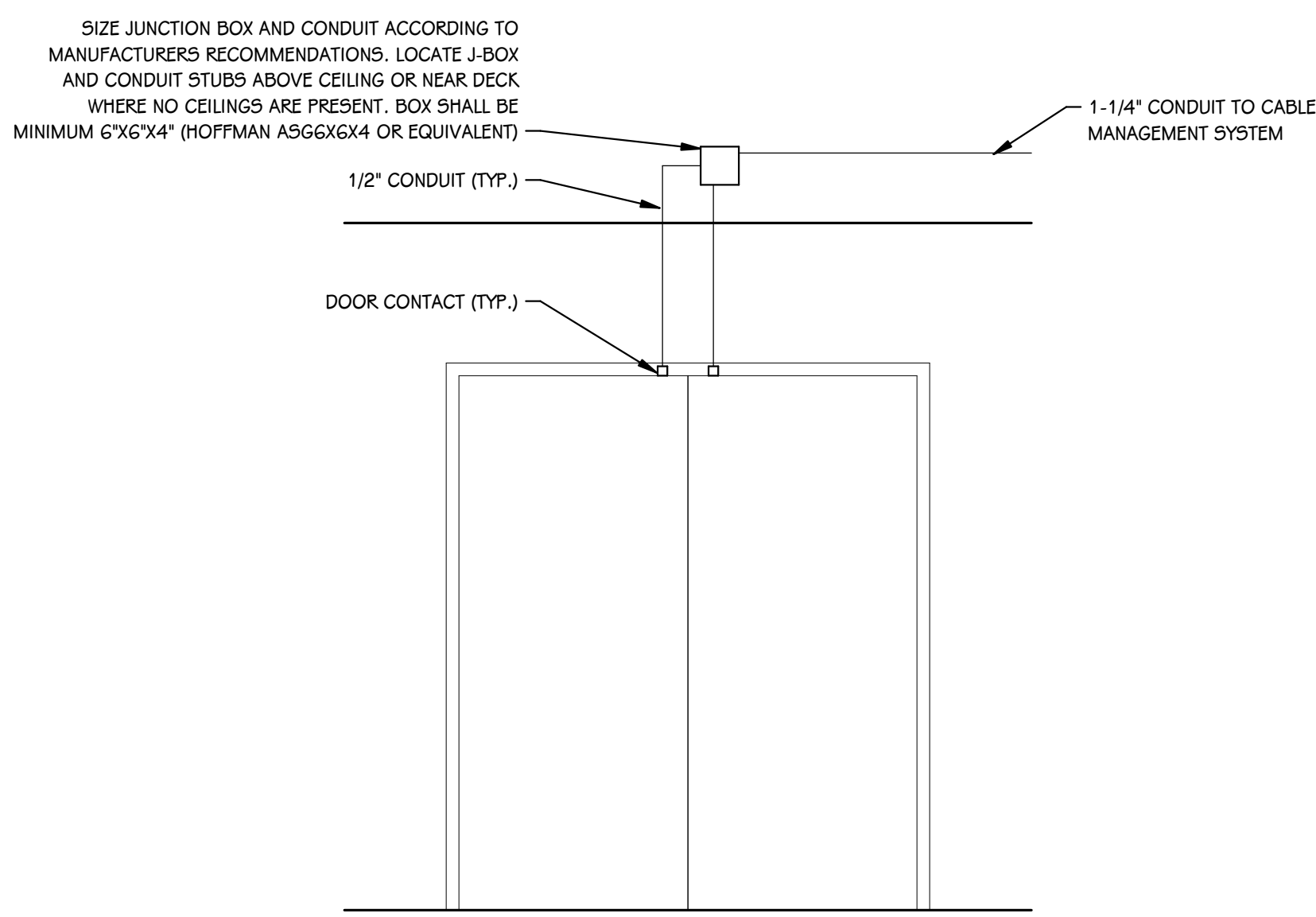
**2D AC DOUBLE DOOR WITH MULLION STRIKES AND SENSORS**  
1/2" = 1'-0"



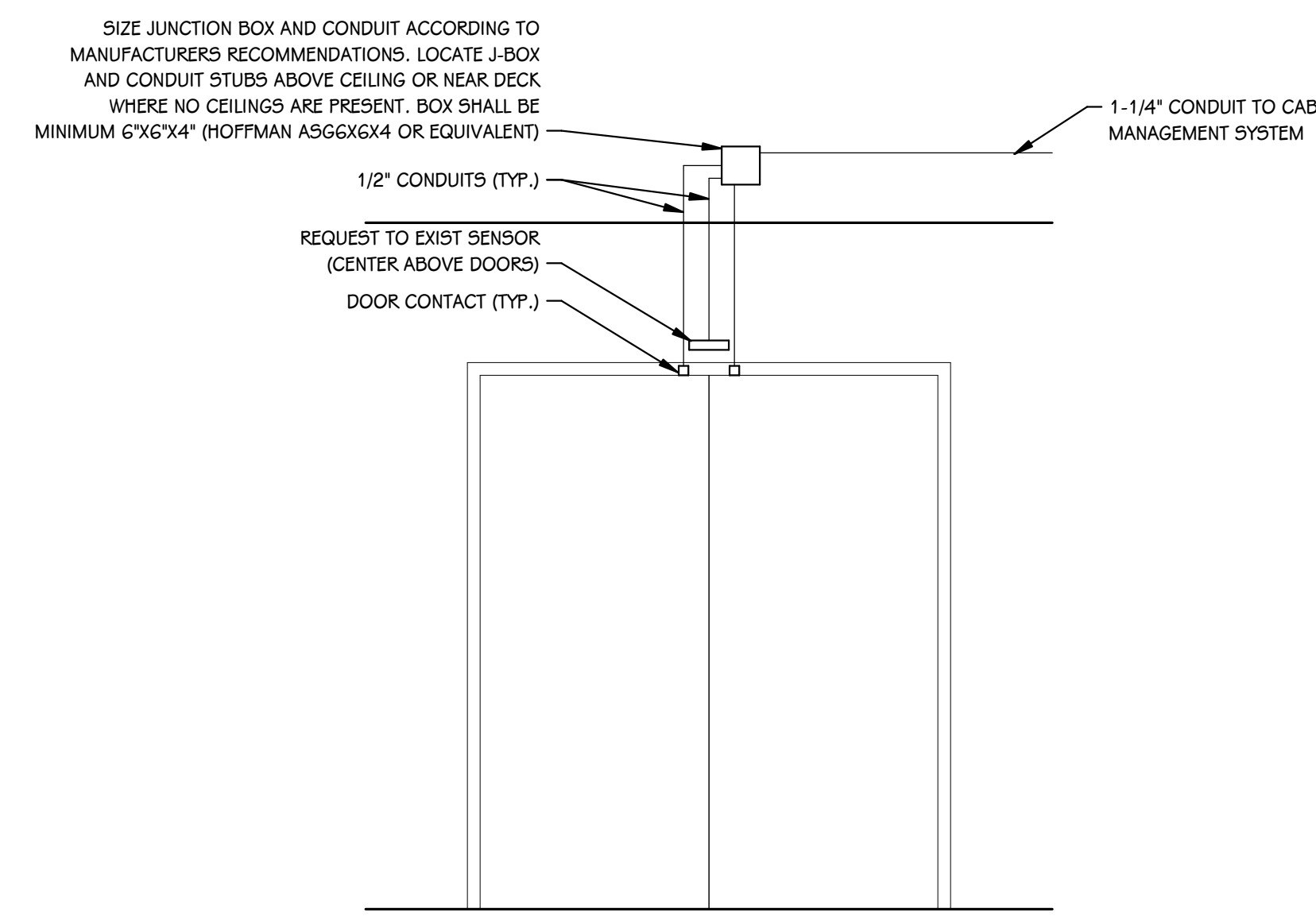
**2E AC DOUBLE DOOR WITH MAGLOCK AND SENSORS**  
1/2" = 1'-0"



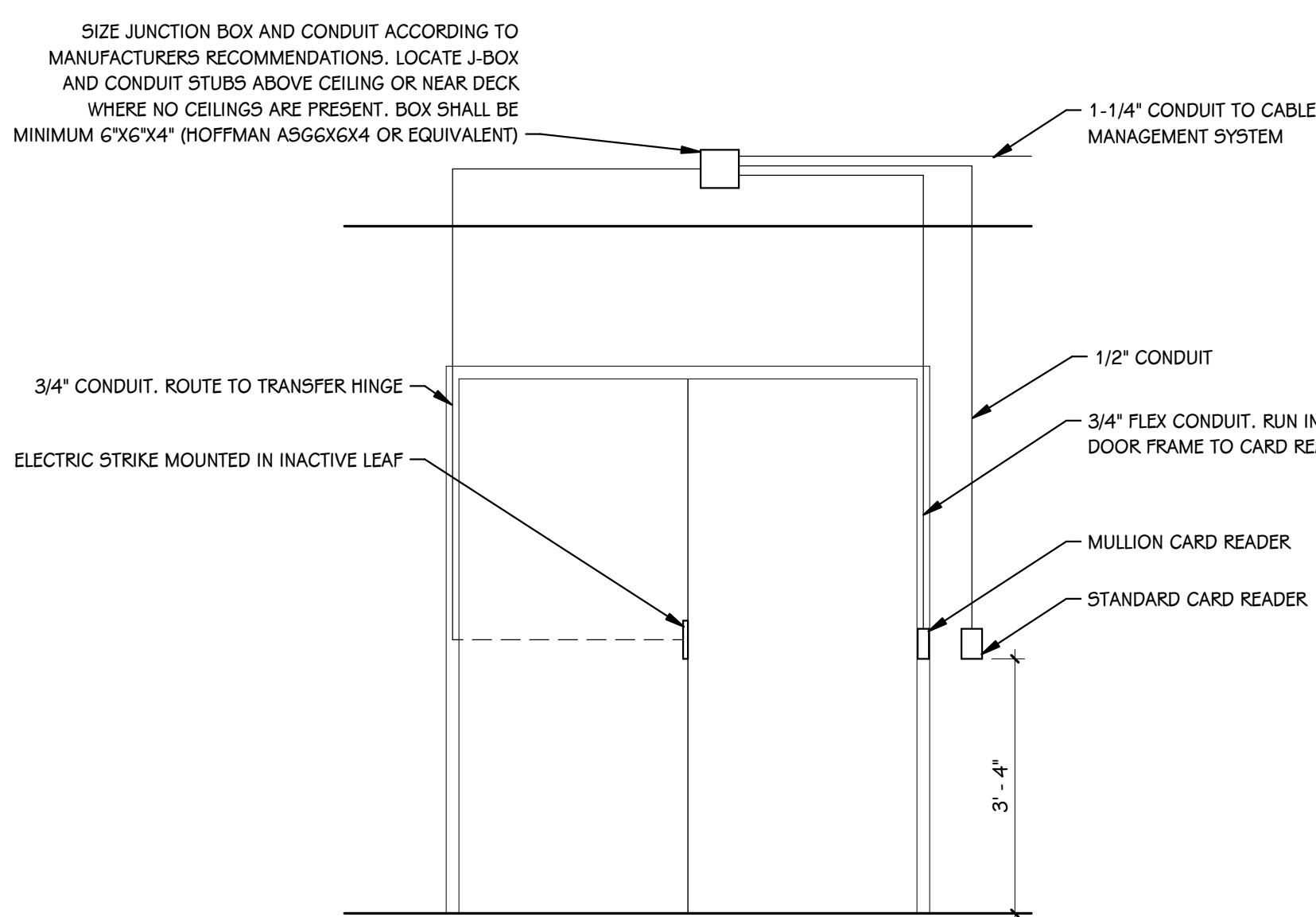
**2F AC DOUBLE DOOR WITH LATCHES AND SENSORS**  
1/2" = 1'-0"



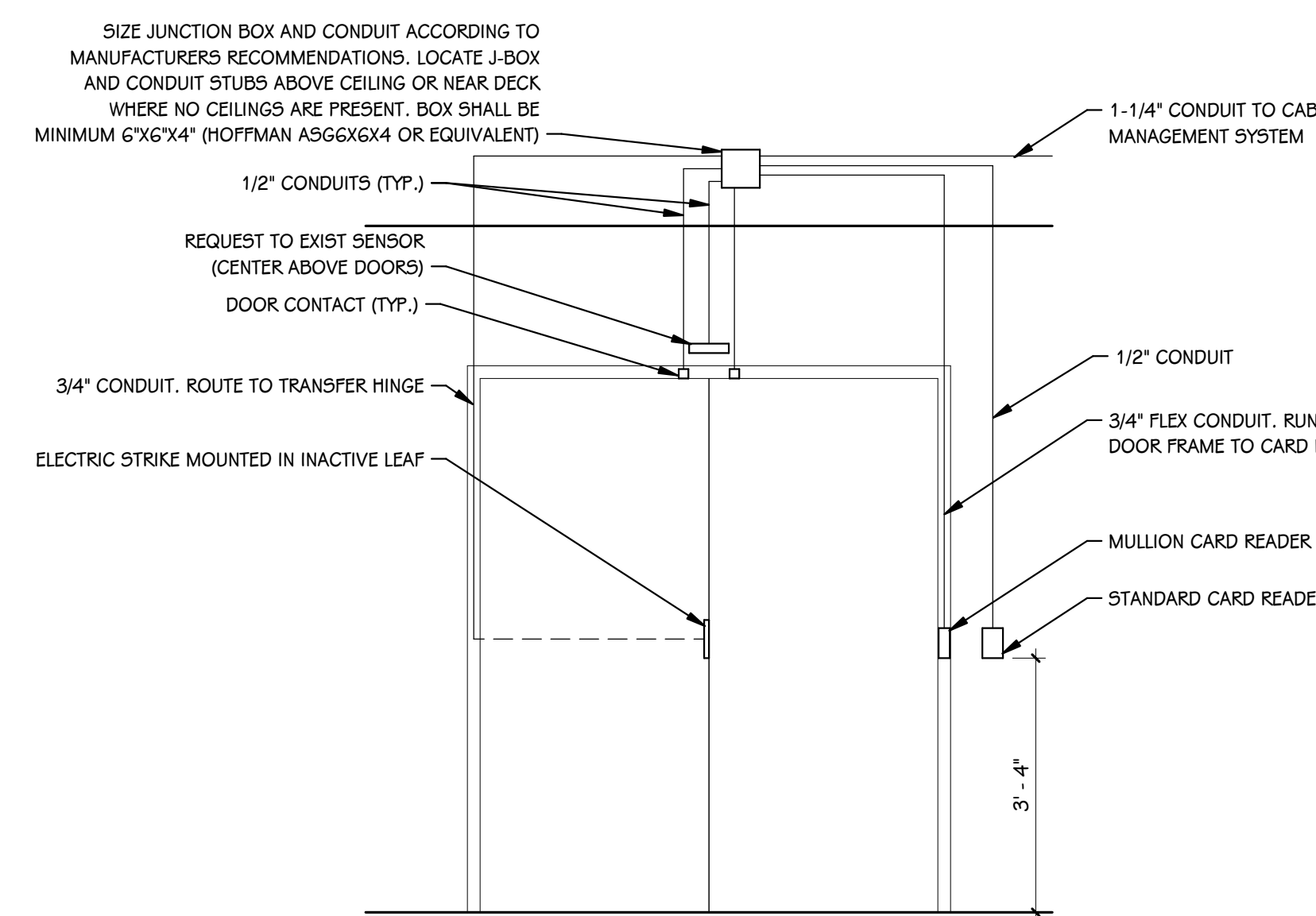
**2G AC DOUBLE DOOR WITH CONTACTS**  
1/2" = 1'-0"



**2H AC DOUBLE DOOR WITH SENSORS**  
1/2" = 1'-0"



**2J AC DOUBLE DOOR WITH STRIKES**  
1/2" = 1'-0"



**2K AC DOUBLE DOOR WITH STRIKES AND SENSORS**  
1/2" = 1'-0"

ISSUED FOR DATE

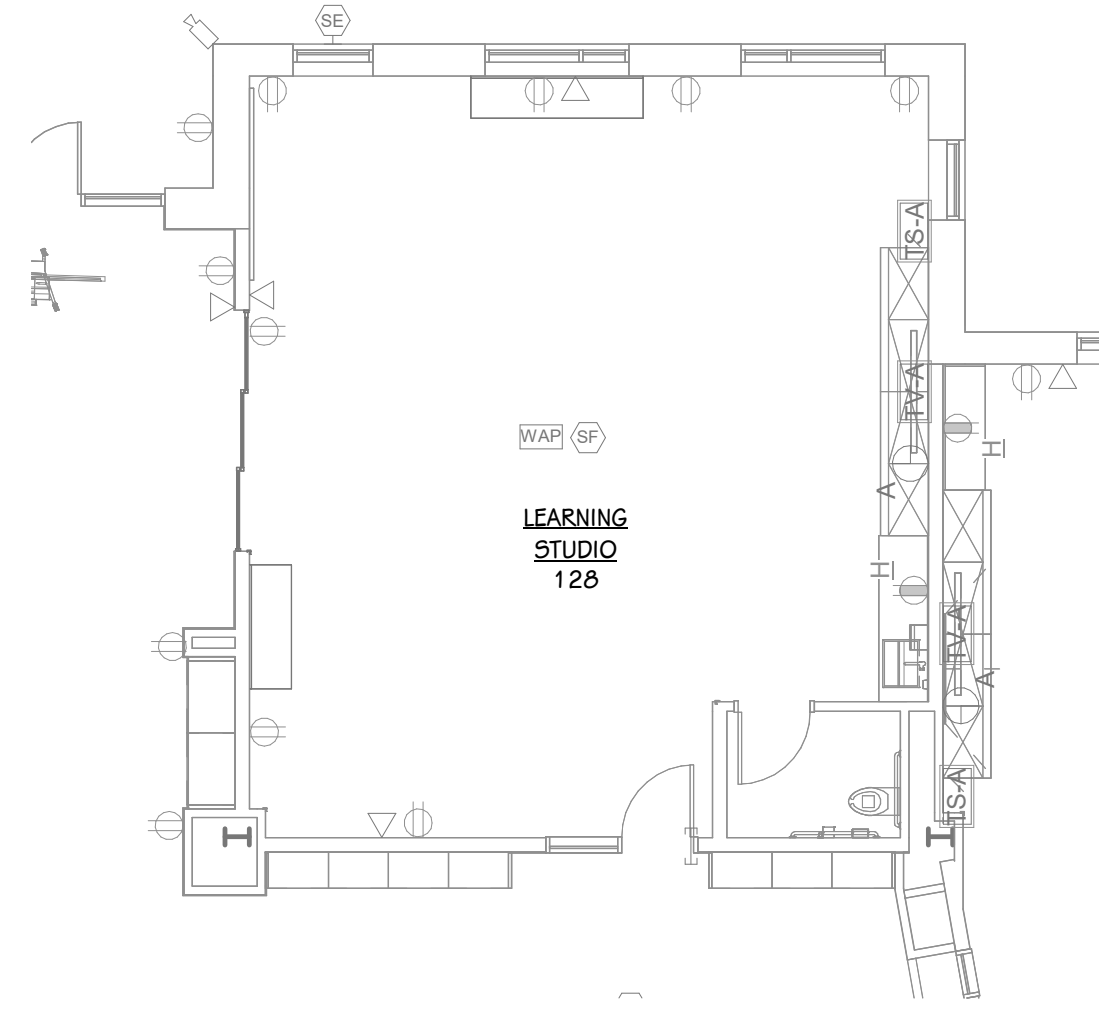
PROJECT TITLE  
HAVERHILL ELEMENTARY SCHOOL  
BID PACKAGE 6: CONSTRUCTION


OWNER  
PORTAGE PUBLIC SCHOOLS

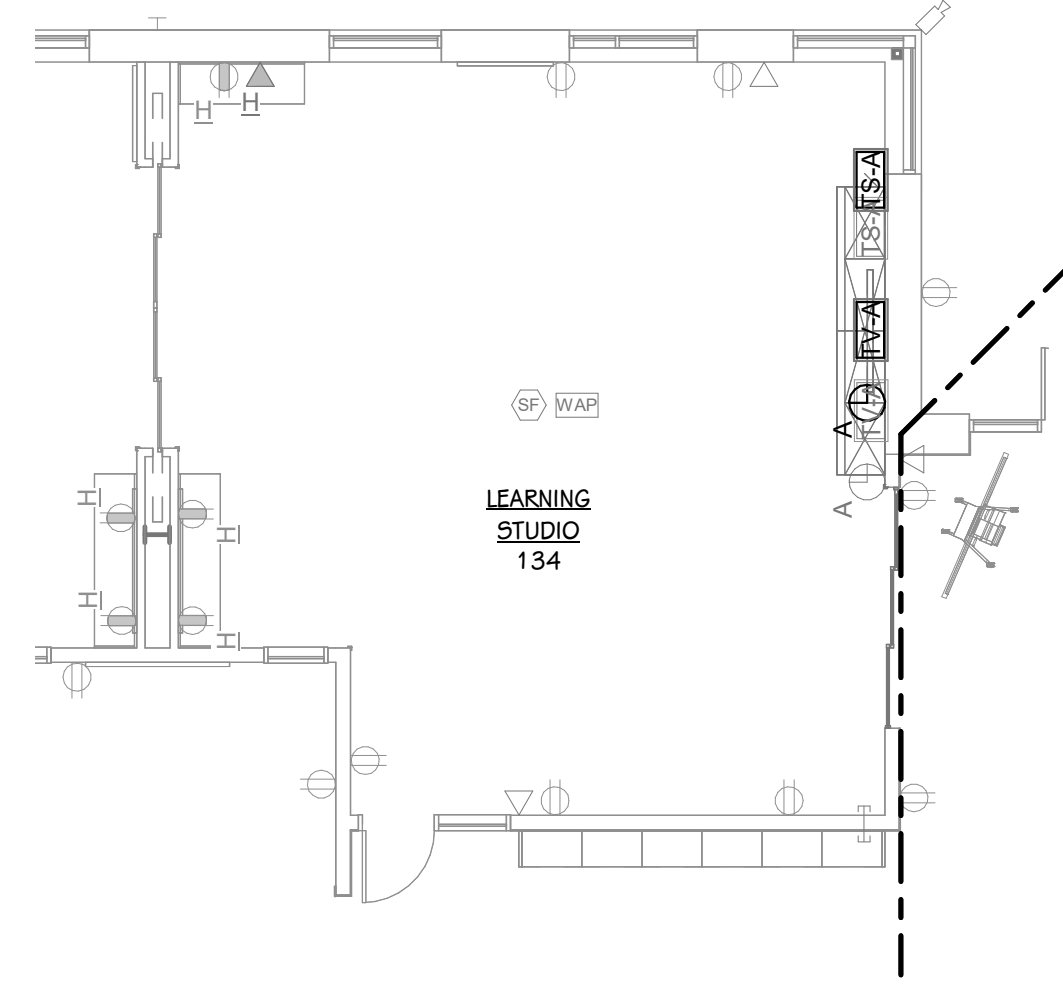
Portage, Michigan

SHEET TITLE  
SECURITY DETAILS

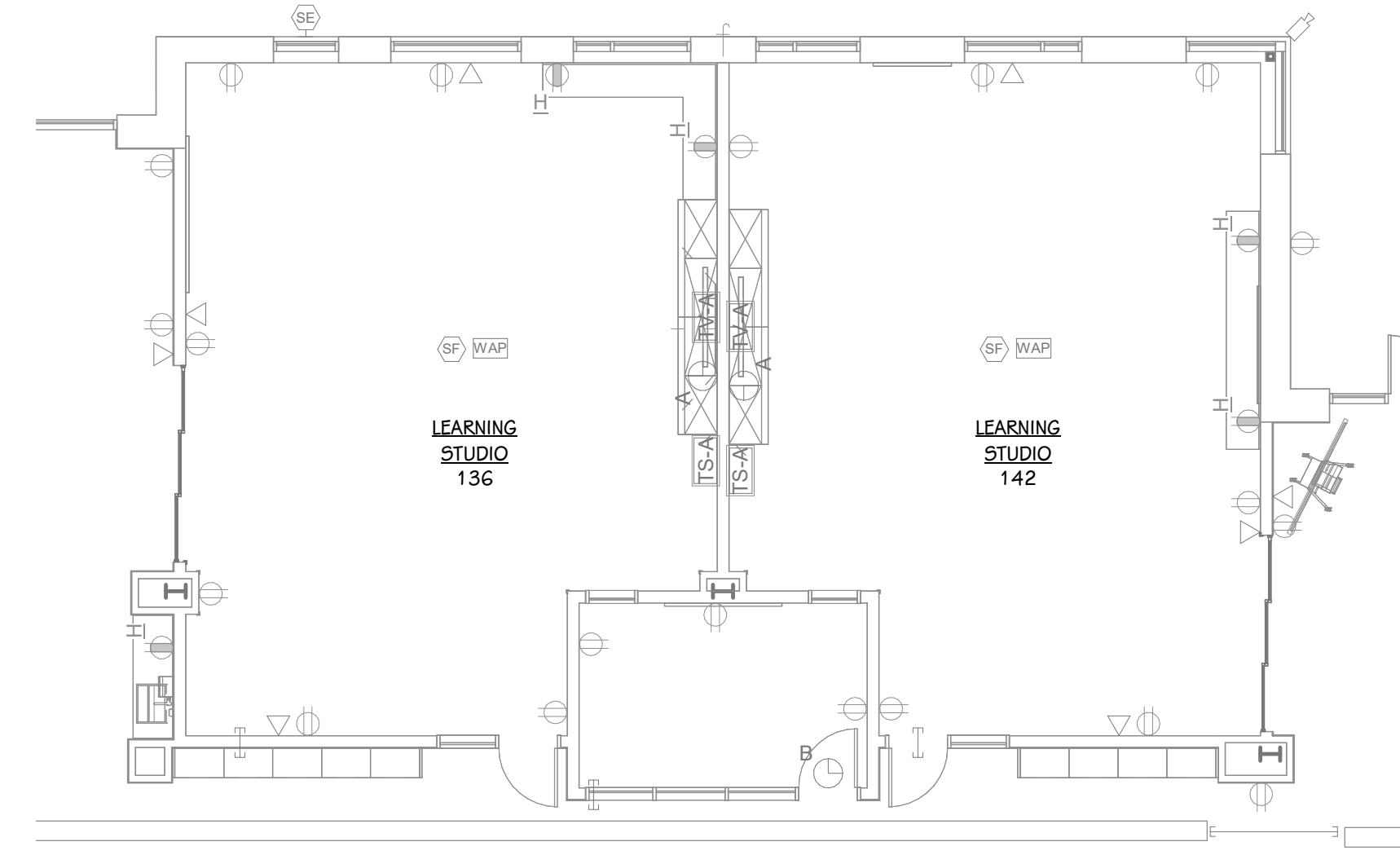
SHEET NUMBER  
**T 443**  
DATE  
JUNE 30, 2023  
21-237.20



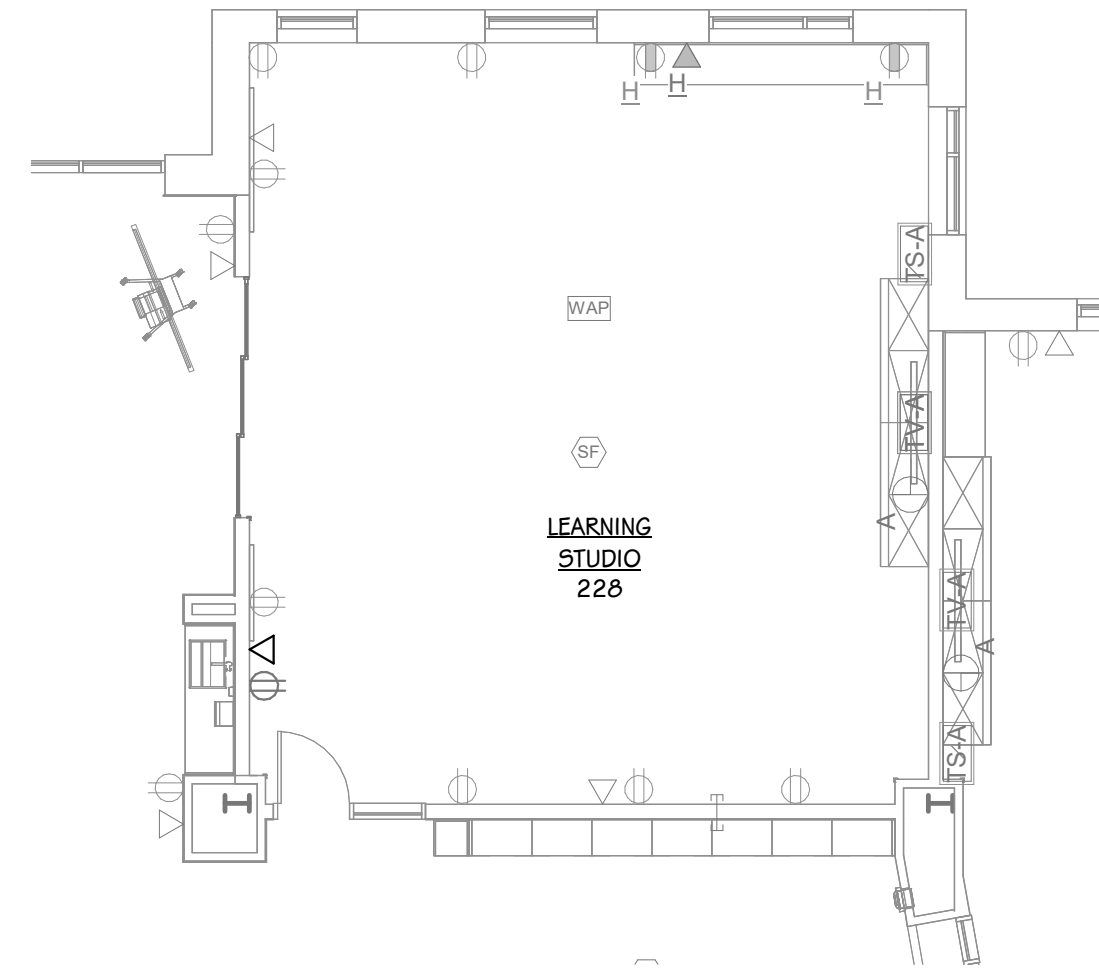
 **LEARNING STUDIO 128 - ALT. NO. 4**  
1/8" = 1'-0"




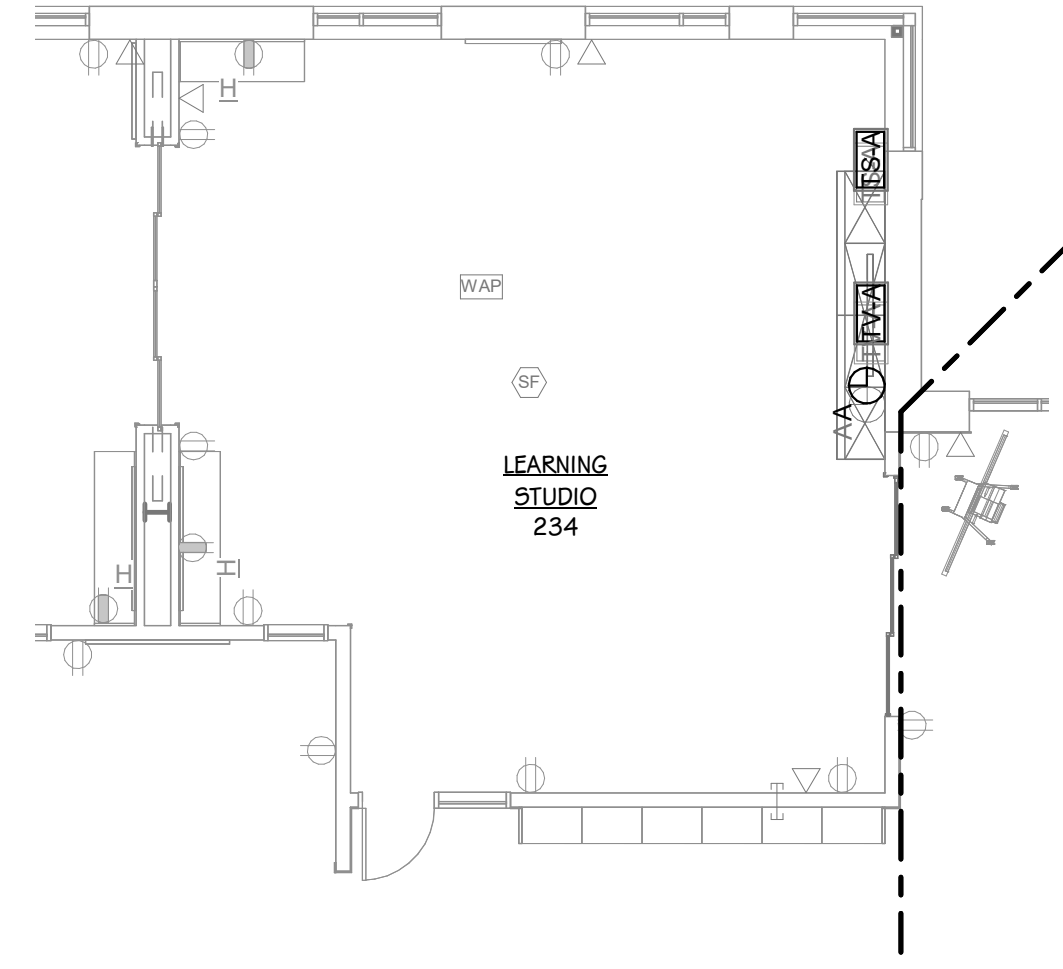
 **LEARNING STUDIO 134 - ALT. NO. 5**  
1/8" = 1'-0"



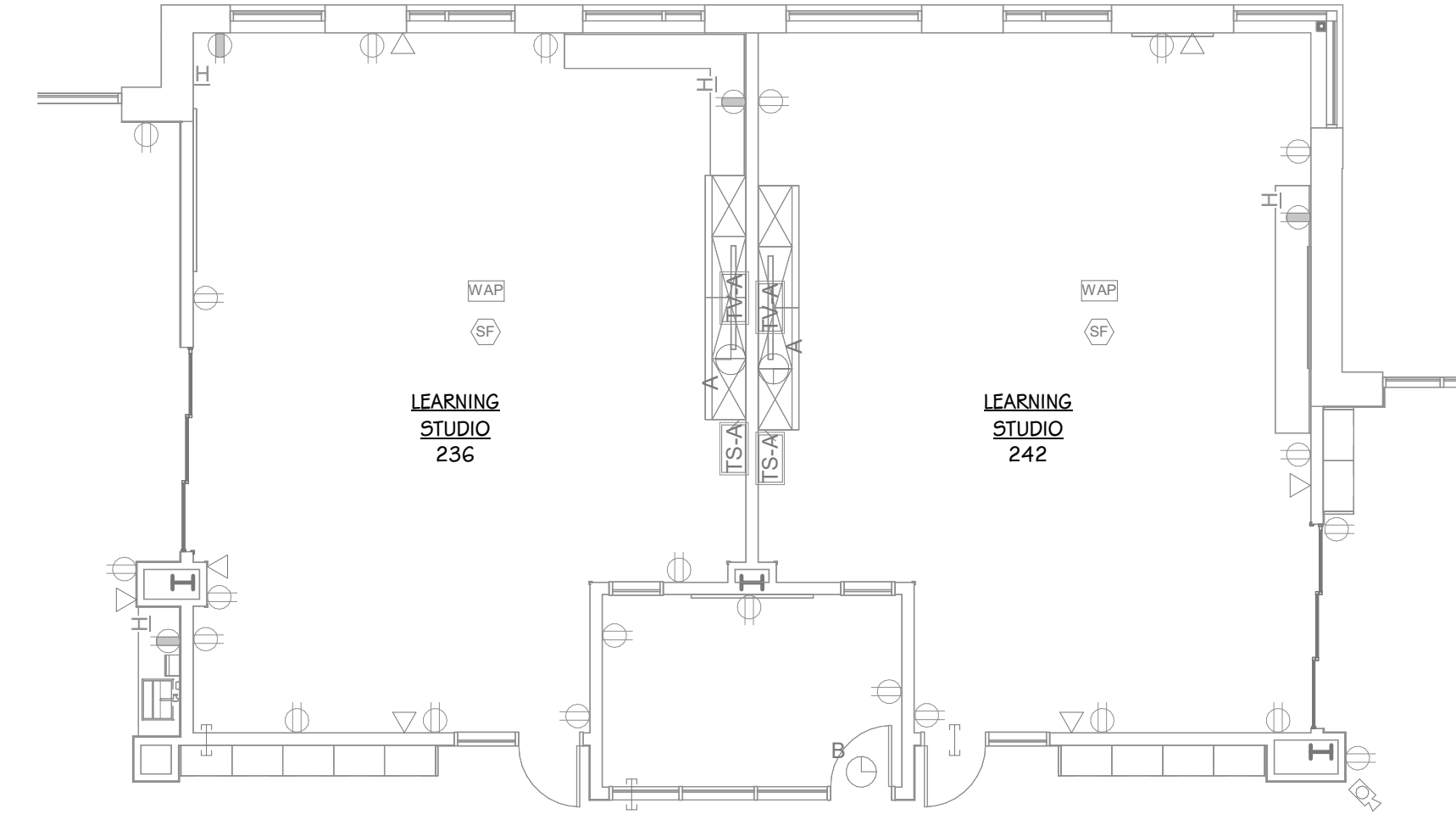
 **LEARNING STUDIO 136 AND 142 - ALT. NO. 4**  
1/8" = 1'-0"



 **LEARNING STUDIO 228 - ALT. NO. 4**  
1/8" = 1'-0"



 **LEARNING STUDIO 234 - ALT. NO. 5**  
1/8" = 1'-0"



 **LEARNING STUDIO 236 AND 242 - ALT. NO. 4**  
1/8" = 1'-0"