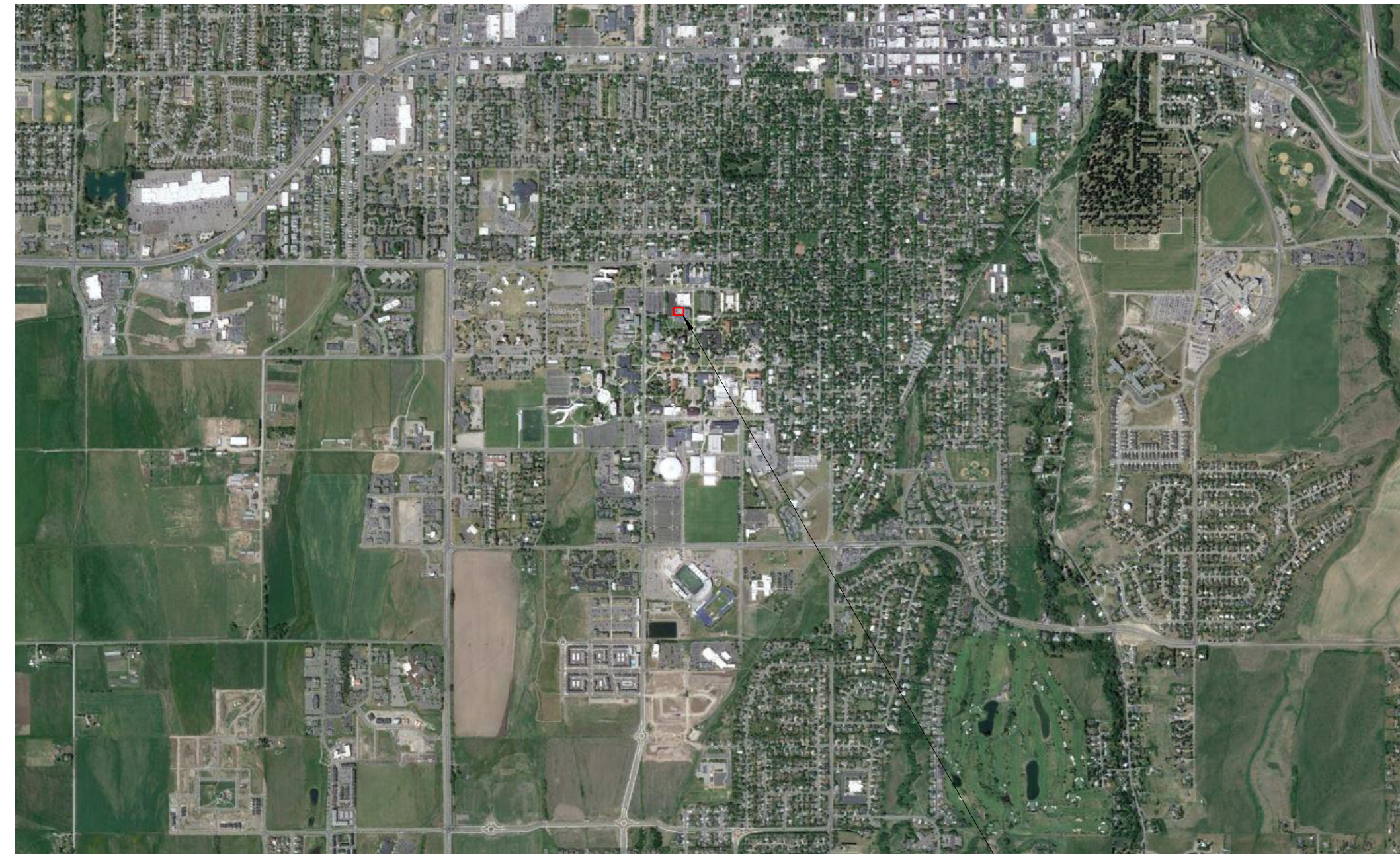


ECOLOGY STORAGE CONTAINER

MONTANA STATE UNIVERSITY CAMPUS



PROJECT LOCATION



LEWIS HALL

STORAGE CONTAINER LOCATION

SCHEDULE OF DRAWINGS:

GENERAL

NO.	DRAWING SHEET
A00	COVER SHEET
A01	CODE REVIEW
A02	CODE REVIEW

SITE DEVELOPMENT

NO.	DRAWING SHEET
A03	SITE PLAN

STRUCTURAL

NO.	DRAWING SHEET
S1.0	STRUCT - FOUNDATION PLAN AND DETAILS

ARCHITECTURAL

NO.	DRAWING SHEET
A04	FIRST FLOOR PLAN
A05	RCP & ROOF PLAN
A06	EXTERIOR ELEVATIONS
A07	LEWIS HALL 4th FLOOR - EXISTING
A08	ASSEMBLIES
A09	LEWIS HALL 4th FLOOR - NEW CONSTRUCTION
A10	SECTIONS AND DETAILS
A11	DOOR SCHEDULE, TYPES & DETAILS

ELECTRICAL

NO.	DRAWING SHEET
E0.0	ELECTRICAL COVER SHEET
E2.1	ELECTRICAL PLANS
E2.2	ELECTRICAL LEWIS HALL PLANS

GENERAL NOTES

ALL WORK INCLUDED IN THIS CONTRACT, SHALL COMPLY WITH THE LATEST EDITION OF INTERNATIONAL BUILDING CODE, INTERNATIONAL PLUMBING CODE, INTERNATIONAL MECHANICAL CODE, ICC ELECTRICAL CODE, AND ALL OTHER LAWS, CODES, OF LOCAL, COUNTY, STATE, AND LOCAL JURISDICTION INVOLVED.

THE GENERAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO STARTING THE WORK. THE CONTRACTOR SHALL VERIFY GRADES, SITE CONDITIONS, AND COMPARE THAT WITH THE DIMENSIONS SHOWN ON THE DRAWINGS. WHERE CONFLICT EXISTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT UPON RECOGNITION OF ANY DISCREPANCY.

THE CONTRACTOR SHALL CAREFULLY STUDY ALL PLANS AND DRAWINGS, AND SHALL REPORT IMMEDIATELY TO THE ARCHITECT ANY ERRORS, INCONSISTENCIES OR OMISSIONS THEY MAY DISCOVER. THE CONTRACTOR SHALL NOT WORK WITHOUT DRAWINGS. THE CONTRACTOR SHALL CONSULT THE ARCHITECT OR SUBMIT SHOP DRAWINGS AND/OR LITERATURE TO THE ARCHITECT FOR APPROVAL PRIOR TO STARTING THE WORK.

THE GENERAL CONTRACTOR SHALL GIVE ALL NOTICES AND SHALL COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF PUBLIC AUTHORITY BEARING ON THE PERFORMANCE OF THE WORK. IF THE CONTRACTOR OBSERVES THAT ANY OF THE CONTRACT DOCUMENTS ARE AT VARIANCE THEREWITH IN ANY RESPECT THEY SHALL PROMPTLY NOTIFY THE ARCHITECT OF ANY CHANGES REQUIRING ADJUSTMENT WITH APPROPRIATE MODIFICATION.

ONLY APPROVED 'CONSTRUCTION SET' MARKED DRAWINGS INCORPORATING ALL ADDENDUM AND DIMENSION CLARIFICATIONS SHALL BE USED DURING THE EXECUTION OF THE WORK.

THE CONTRACTOR SHALL USE WRITTEN DIMENSIONS ONLY, OR AS DIRECTED BY ARCHITECT. THE CONTRACTOR SHALL NOT SCALE DRAWINGS.

CROSS REFERENCES SHOWN ON DRAWINGS DO NOT NECESSARILY INDICATE ALL LIKE CONDITIONS AND DO NOT LIMIT APPLICATION OF ANY DRAWING OR DETAIL. THEY MAY APPLY TO OTHER, SAME, OR SIMILAR CONDITIONS NOT REFERENCED.

INTERIOR WALL DIMENSIONS (FOR NEW WALLS ONLY) ARE TO FACE OF STUD FRAMING UNLESS OTHERWISE NOTED.

SECTION AND INTERIOR ELEVATION DIMENSIONS ARE TO THE TOP OF CONCRETE OR METAL DECKING UNLESS OTHERWISE NOTED.

CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION AND COORDINATION OF SUBCONTRACTORS WORK TO SECURE COMPLIANCE OF DRAWINGS AND SPECIFICATIONS, THE ACCURATE LOCATION OF STRUCTURE MEMBERS, AND OPENINGS FOR MECHANICAL, ELECTRICAL, STAIRS, ELEVATORS, AND MISCELLANEOUS EQUIPMENT.

CONTRACTOR SHALL VERIFY SIZES AND LOCATIONS OF ALL OPENINGS FOR MECHANICAL AND ELECTRICAL EQUIPMENT WITH RESPECTIVE SUB-CONTRACTORS, AS WELL AS SHOP DRAWINGS REVIEWED BY THE ARCHITECT.

CONTRACTOR SHALL VERIFY ALL ROUGH-IN DIMENSIONS FOR EQUIPMENT AND PROVIDE ALL BUCK-OUT BLOCKING AND BACKING REQUIRED BY THIS CONTRACT AND OTHERS.

WHERE PIPING, CONDUIT, AND/OR DUCTS PASS THROUGH FIRE RATED WALLS, PACK AROUND OPENINGS WITH SAFFIN OR SPRAY INSULATION. PROVIDE FIRE DAMPERS WHERE NECESSARY.

ABBREVIATIONS

ALUM.	ALUMINUM	MECH.	MECHANICAL
ANN.	ANNUNCIATOR	MFG.	MANUFACTURER
		M.R.	MOISTURE RESISTANT
		MTL.	METAL
BD.	BOARD	N.I.C.	NOT IN CONTRACT
BLOCK'G.	BLOCKING	O.C.	ON CENTER
		O.S.B.	ORIENTED STRAND
CAB.	CABINET	O.F.C.I.	OWNER FURNISHED CONTRACTOR
CER.	CERAMIC	O.F.O.I.	OWNER FURNISHED OWNER INSTALLED
CLR.	CLEARANCE		
BOARD	COMPOSITE	P.	PAINT
COMP.	CONCRETE	P. LAM.	PLASTIC LAMINATE
CONC.		P.T.	PAPER TOWEL
INSTALLED		PRE-FIN.	PRE-FINISHED
CONF.	CONFERENCE	PVC.	POLYVINYLCHLORIDE
CORR.	CORRIDOR	R.	RADIUS
C.M.U.	CONCRETE MASONRY UNIT	REC.	RECESSED
C.T.	CERAMIC TILE	REST.	RESTROOM
CUST.	CUSTOM	REQ'D.	REQUIRED
D.F.	DRINKING FOUNTAIN	S.	STAIN
DISP.	DISPENSER	S.C.	SOLID CORE
D.M.	DRYMARK BOARD	S.F.	SQUARE FEET
DR.	DRAWER	S.V.	SHEET VINYL
E.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM	SIM.	SIMILAR
	EXTRUDED POLYSTYRENE ELEVATION	SPECS.	SPECIFICATIONS
E.P.S.		STOR.	STORAGE
ELEV.		T.B.	TACK BOARD
		T.O.	TOP OF
F.D.	FLOOR DRAIN	T.P.	TOILET PAPER
F.E.	FIRE EXTINGUISHER	TYP.	TYPICAL
F.F.	FINISH FLOOR	V.B.	VAPOR BARRIER
F.S.	FLOOR SINK	V.C.T.	VINYL COMPOSITION
FLR.	FLOORING		
FDN.	FOUNDATION		
F.O.	FACE OF		
G.B.	GYPNUM WALLBOARD		
GWB	GYPNUM WALLBOARD		
GYP. BD.	GYPNUM WALLBOARD		
TILE	HANDICAPPED		
HC.	HOLLOW METAL		
H.M.			
INSUL.	INSULATION		
JAN.	JANITOR		

NOTES AND SYMBOLS

	DETAIL REFERENCE		DOOR NUMBER
	SECTION CUT		WINDOW TYPE
	INTERIOR ELEVATION		NOTE REFERENCE
	ROOM NUMBER		WALL TYPE

MATERIALS LEGEND

	EARTH		STEEL
	COMPACTED GRAVEL		FINISH WOOD
	CONCRETE		BATT INSUL.
	BRICK		RIGID INSUL.
	C.M.U.		GYP. BD.

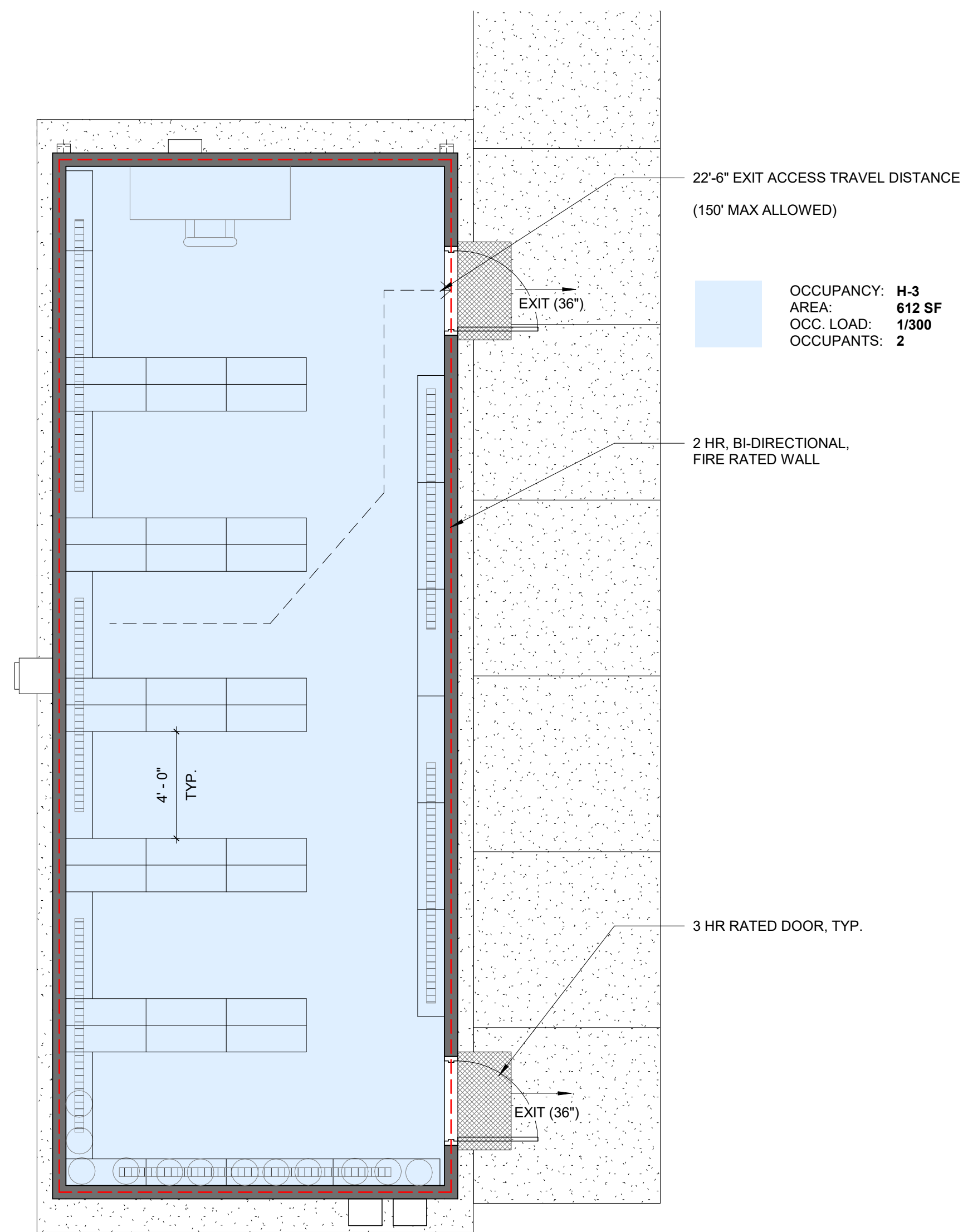
CONSULTANTS:

ARCHITECTURAL
THINKONE ARCHITECTS
101 E. MAIN, SUITE A
BOZEMAN, MONTANA 59715

STRUCTURAL
DCI ENGINEERS
1060 S FLOWER AVE, SUITE 202
BOZEMAN, MONTANA 59718

MECHANICAL
ASSOCIATED CONSTRUCTION ENGINEERING
12 N BROADWAY
BELGRADE, MONTANA 59714

ELECTRICAL
ASSOCIATED CONSTRUCTION ENGINEERING
12 N BROADWAY
BELGRADE, MONTANA 59714



ECOLOGY FISH COLLECTION SUMMARY

THE MSU ECOLOGY FISH COLLECTION CONSISTS OF PRESERVED FISH STORED IN MASON JARS FILLED WITH ISOPROPYL ALCOHOL. THE COLLECTION CURRENTLY CONSISTS OF 7269 JARS EQUATING TO A TOTAL VOLUME OF 1328 GALLONS. THE JARS ARE OF VARYING SIZES AND FILLED TO VARYING LEVELS. A PERCENTAGE OF THE JAR VOLUME IS ALSO OCCUPIED BY THE SPECIMEN ITSELF. FOR THESE REASONS THE TOTAL VOLUME OF ISOPROPYL ALCOHOL IS LESS THAN 1328 GALLONS. BY OUR ESTIMATIONS THE TOTAL VOLUME OF ISOPROPYL ALCOHOL IS BETWEEN 800 AND 900 GALLONS. IMAGE 1-3 DEPICT TYPICAL JARS FOUND IN THE COLLECTION.



ISOPROPYL ALCOHOL PHYSICAL AND CHEMICAL PROPERTIES

- Melting point : -90°C (-130°F)
- Boiling point : 83°C (181.4°F)
- Critical temperature : Not available.
- Flash point : Closed cup: 11.7°C (53.1°F)
- Evaporation rate : 1.7 (butyl acetate = 1)
- Flammability (solid, gas) : Not available.
- Lower and upper explosive (flammable) limits : Lower: 2%
Upper: 12%
- Vapor pressure : 4.4 kPa (33 mm Hg) [room temperature]
- Vapor density : 2.1 (Air = 1)
- Specific Volume (ft³/lb) : 1.2739
- Gas Density (lb/ft³) : Not available
- Relative density : 0.79
- Solubility : Not available.
- Solubility in water : Not available.
- Partition coefficient: n-octanol/water : 0.05
- Auto-ignition temperature : 456°C (852.8°F)
- Decomposition temperature : Not available.
- Viscosity : Not available.
- Flow time (ISO 2431) : Not available.
- Molecular weight : 60.11 g/mole

EXCERPT FROM IBC CHAPTER 3: OCCUPANCY CLASSIFICATION AND USE

- [F] 307.5 High-hazard Group H-3. Buildings and structures containing materials that readily support combustion or that pose a physical hazard shall be classified as Group H-3. Such materials shall include, but not be limited to, the following:
- Class I, II or IIIA flammable or combustible liquids that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103.4 kPa) or less
 - Combustible fibers, other than densely packed baled cotton, where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3
 - Consumer fireworks, 1.4G (Class C, Common)
 - Cryogenic fluids, oxidizing
 - Flammable solids
 - Organic peroxides, Class II and III
 - Oxidizers, Class 2
 - Oxidizers, Class 3, that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103 kPa) or less
 - Oxidizing gases
 - Unstable (reactive) materials, Class 2
 - Water-reactive materials, Class 2

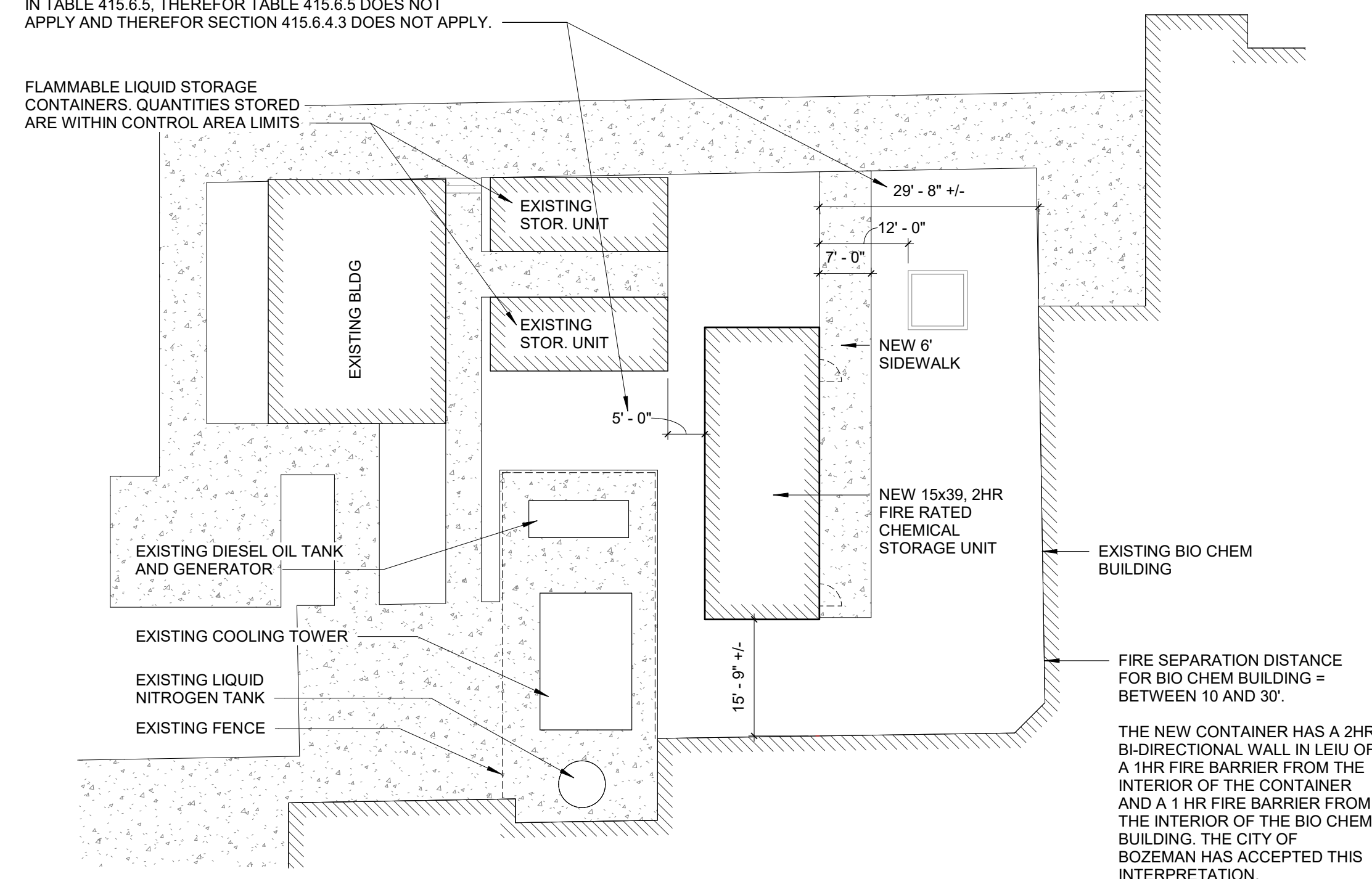
EXCERPT FROM IBC CHAPTER 2: DEFINITIONS

- [F] FLAMMABLE LIQUID. A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:
- Class IA. Liquids having a flash point below 73°F (23°C) and a boiling point below 100°F (38°C).
 - Class IB. Liquids having a flash point below 73°F (23°C) and a boiling point at or above 100°F (38°C).
 - Class IC. Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C). The category of flammable liquids does not include compressed gases or cryogenic fluids, or liquids that do not have a fire point when tested in accordance with ASTM D92.

2 CODE REVIEW - FIRST FLOOR CONTAINER
A01 1/4" = 1'-0"

5'-0" MIN. FIRE SEPERATION DISTANCE PER IBC TABLE 705.5.
SECTION 415.6.4.3 DOES NOT APPLY. ISOPROPYL ALCOHOL DOES NOT FALL INTO ANY OF THE MATERIAL CATEGORIES IN TABLE 415.6.5. THEREFOR TABLE 415.6.5 DOES NOT APPLY AND THEREFOR SECTION 415.6.4.3 DOES NOT APPLY.

FLAMMABLE LIQUID STORAGE CONTAINERS. QUANTITIES STORED ARE WITHIN CONTROL AREA LIMITS

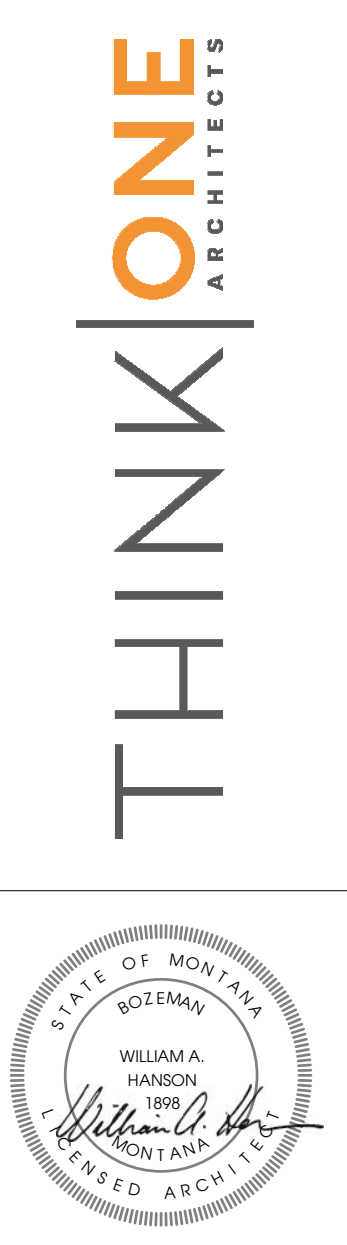


1 CODE REVIEW - SITE PLAN
A01 1/16" = 1'-0"

CODE CHECK

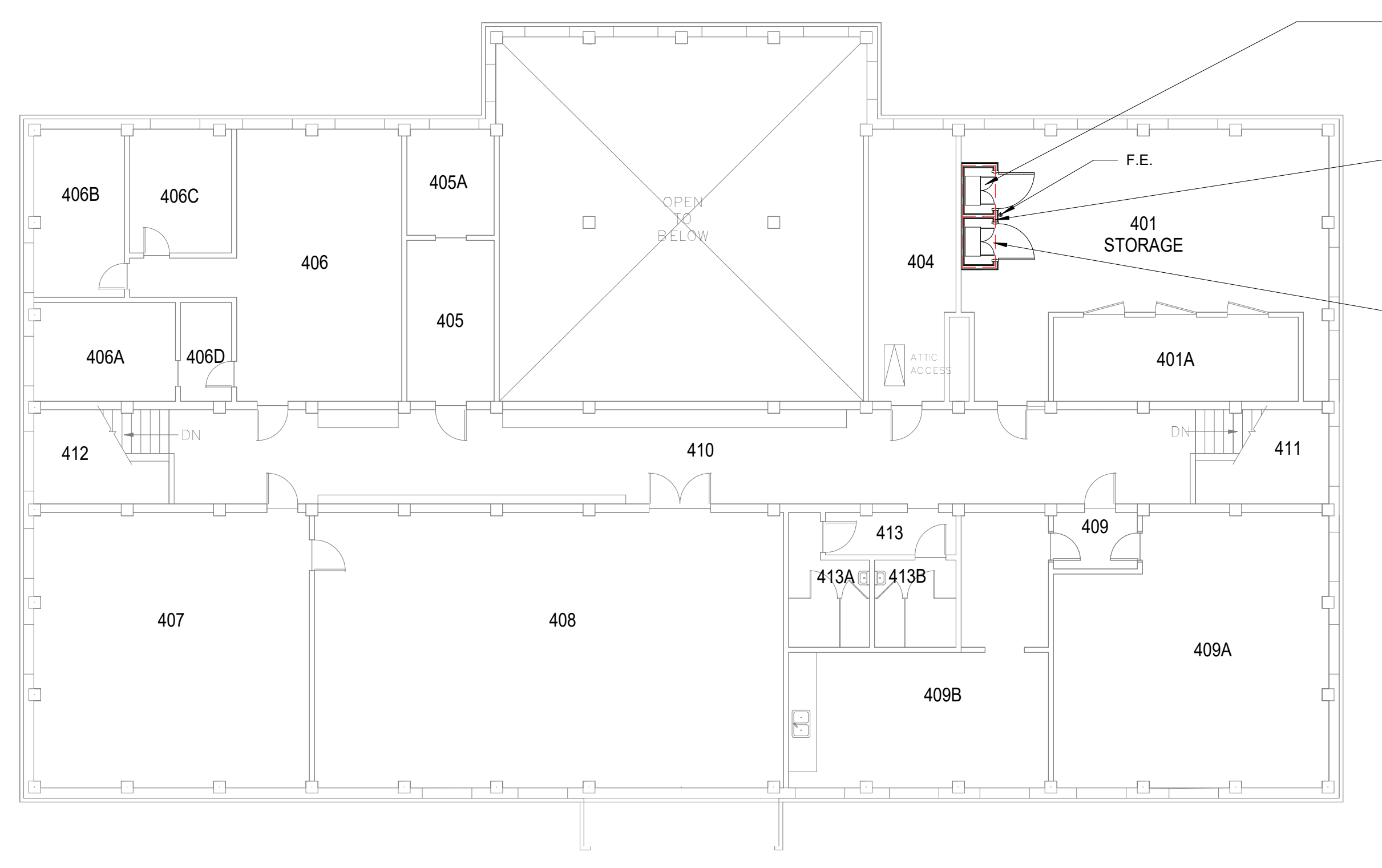
CODES:	INTERNATIONAL BUILDING CODE (2021)	REQUIREMENTS:
BUILDING	INTERNATIONAL FIRE CODE (2012)	
FIRE	ANSI 117.1 (2017)	
ACCESSIBILITY	INTERNATIONAL MECHANICAL CODE (2021)	
MECHANICAL	UNIFORM PLUMBING CODE (2021)	
PLUMBING	NATIONAL ELECTRICAL CODE (2020)	
ELECTRICAL		
PERMITS	LOCAL JURISDICTION	LOCAL JURISDICTION
OCCUPANCY	IBC CH. 3	H-3
OCCUPANCY SEPARATION	IBC SECT. 508.3	NON-SEPERATED
CONSTRUCTION TYPE	IBC CH. 6	TYPE II-B
FIRE RESISTANCE	IBC TABLE 705.5	2HR
ALLOWABLE FLOOR AREA	IBC TABLE 506.2	14,000 SF
AREA INCREASE (FRONTAGE)	IBC SECT. 506.3	NOT USED
TOTAL ALLOWABLE AREA	IBC SECT. 506.1	14,000 SF
ACTUAL AREA		612 SF
ALLOWABLE STORIES	IBC TABLE 504.4	2
ACTUAL STORIES		1
SPILL CONTROL AND SECONDARY CONTAINMENT	IFC SECT. 5004.2	NOT REQUIRED. LESS THAN 1000 GALLONS WILL BE STORED IN STORAGE CONTAINER. ALL VESSELS ARE LESS THAN 55 GALLONS.
EXITING:		
MAX. FLOOR AREA ALLOWANCES PER OCC.	IBC TABLE 1004.5	1:300 GROSS - ACCESSORY STORAGE / MECH ROOM
EXIT CALCULATION BASED ON OCCUPANT LOAD	IBC SECT. 1006.2.1	AS INDICATED ON CODE PLANS
EXIT ACCESS TRAVEL DISTANCE	IBC TABLE 1017.2	1 EXIT REQUIRED PER TABLE 1006.2.1 2 EXITS PROVIDED
MINIMUM EGRESS WIDTH	IBC TABLE 1005.3	150 FT W/ SPRINKLER SYSTEM OTHER EGRESS COMPONENTS - 2 OCC (0.2) = 4"

NOTE: BUILDING WILL BE PROVIDED WITH A DRY CHEMICAL FIRE SUPPRESSION SYSTEM



ISSUE	DATE	DESCRIP.
MONTANA STATE UNIVERSITY ECOLOGY STORAGE CONTAINER MONTANA STATE UNIVERSITY CAMPUS CODE REVIEW		
PPA# 19-0171 12/06/23 BID/PERMIT SET		
A01		

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CONTROL AREA 2 WITH FLAMMABLE LIQUID STORAGE CABINET
MAX ALLOWABLE QUANTITY OF FLAMMABLE LIQUID = 30 GALLONS

RED DASHED LINE INDICATES 2 HR FIRE BARRIER

CONTROL AREA 1 WITH FLAMMABLE LIQUID STORAGE CABINET
MAX ALLOWABLE QUANTITY OF FLAMMABLE LIQUID = 30 GALLONS

4TH FLOOR LEWIS HALL CODE ASSESSMENT

IBC TABLE 307.1 DICTATES THE MAX ALLOWABLE QUANTITY PER CONTROL AREA IS 240 GALLONS IF STORED IN AN APPROVED CABINET.

IBC TABLE 414.2.2 FURTHER DICTATES THAT ONLY 12.5% OF THE MAX ALLOWABLE QUANTITY IS ALLOWED IN CONTROL AREAS ON THE 4th FLOOR. IT ALSO STATES 2 CONTROL AREAS ARE ALLOWED PER FLOOR AND NEED TO BE SEPERATED BY 2 HR FIRE BARRIERS.

240 GALLONS (12.5%) = 30 GALLONS PER CONTROL AREA ON THE 4th FLOOR.

1 CODE REVIEW - LEWIS HALL, 4th FLOOR
A02 3/32" = 1'-0"

CODE CHECK (LEWIS HALL)

CODES:
BUILDING INTERNATIONAL BUILDING CODE (2021)
FIRE INTERNATIONAL FIRE CODE (2012)
ACCESSIBILITY ANSII 117.1 (2017)
MECHANICAL INTERNATIONAL MECHANICAL CODE (2021)
PLUMBING UNIFORM PLUMBING CODE (2021)
ELECTRICAL NATIONAL ELECTRICAL CODE (2020)

PERMITS LOCAL JURISDICTION LOCAL JURISDICTION
OCCUPANCY IBC CH. 3 B
CONSTRUCTION TYPE IBC CH. 6 UNKNOWN

CONTROL AREA (FOR USE IN LEWIS HALL) IBC TABLE 307.1 IBC TABLE 414.2.2

REQUIREMENTS:
LOCAL JURISDICTION
B UNKNOWN
30 GALLONS MAX PER CONTROL AREA
2 CONTROL AREAS PER FLOOR ARE PERMITTED
120(2) = 240
TABLE 307.1 ALLOWS DOUBLING OF MAX QUANTITY IF STORED IN APPROVED CABINET.
240 (12.5%) = 30 GALLONS. DESIRED STORAGE AREA IS ON THE 4th FLOOR. TABLE 414.2.2 ALLOWS 12.5% OF THE MAX ALLOWABLE QUANTITY
*SECOND CONTROL AREA IS PERMITTED PER TABLE 414.2.2

EXCERPT FROM IBC CHAPTER 3: OCCUPANCY CLASSIFICATION AND USE

OCCUPANCY CLASSIFICATION AND USE

TABLE 307.1(a) — MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF FLAMMABLE LIQUIDS AND FLAMMABLE SOLIDS IN PHYSICAL HAZARDOUS MATERIALS

MATERIAL CLASS	CLASS	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA
Flammable liquid	1	NA	NA	NA	NA	NA	NA	NA	NA
	2	NA	NA	NA	NA	NA	NA	NA	NA
Flammable solid	1	NA	NA	NA	NA	NA	NA	NA	NA
	2	NA	NA	NA	NA	NA	NA	NA	NA

EXCERPT FROM IBC CHAPTER 4: SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE

TABLE 414.2.2 — DESIRED AND MAXIMUM QUANTITY PER CONTROL AREA

STORY	DESIRED QUANTITY PER CONTROL AREA (GALLONS)	MAXIMUM QUANTITY PER CONTROL AREA (GALLONS)	PERCENTAGE OF DESIRED QUANTITY PERMITTED
4th floor	30	240	12.5%

ISSUE	DATE	DESCRIP.
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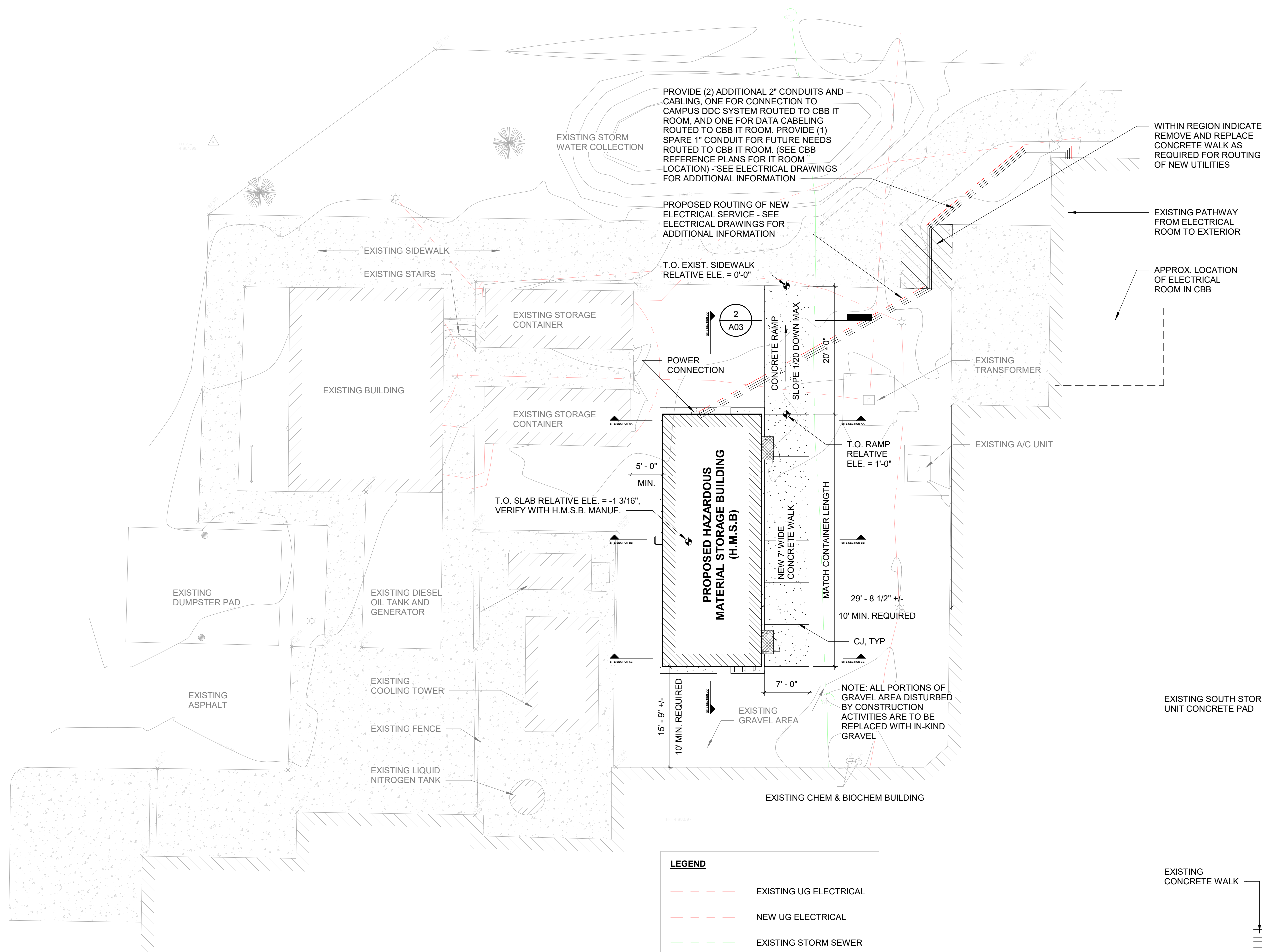
**MONTANA STATE UNIVERSITY
ECOLOGICAL STORAGE CONTAINER**

MONTANA STATE UNIVERSITY CAMPUS

CODE REVIEW

PPA# 19-0171
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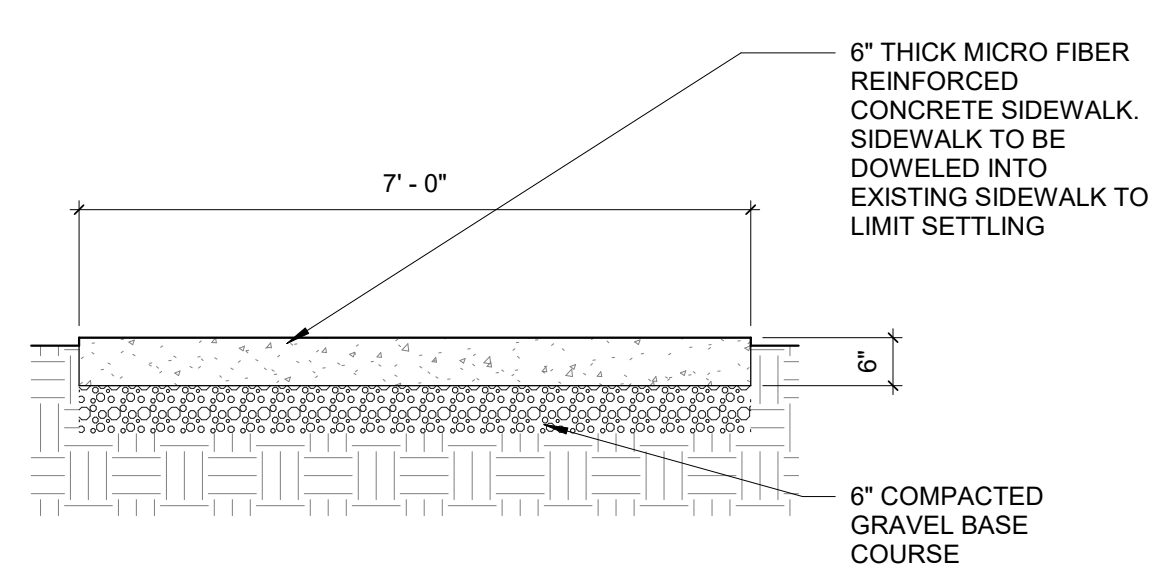
A02



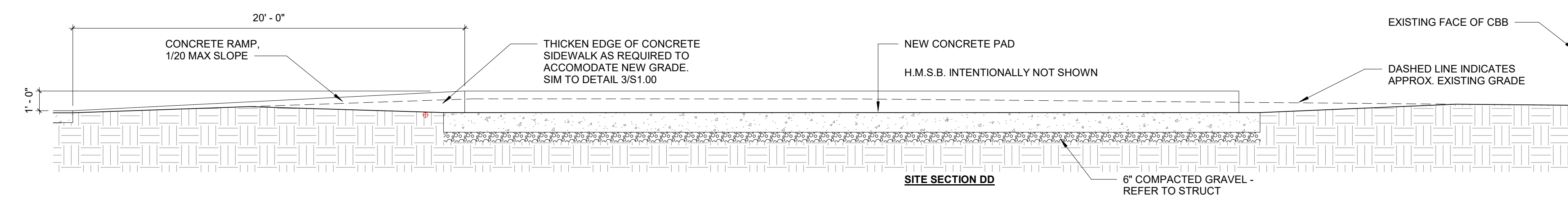
LEGEND

- EXISTING UG ELECTRICAL
- NEW UG ELECTRICAL
- EXISTING STORM SEWER

1 SITE PLAN
 A03 1" = 10'-0"
 NORTH



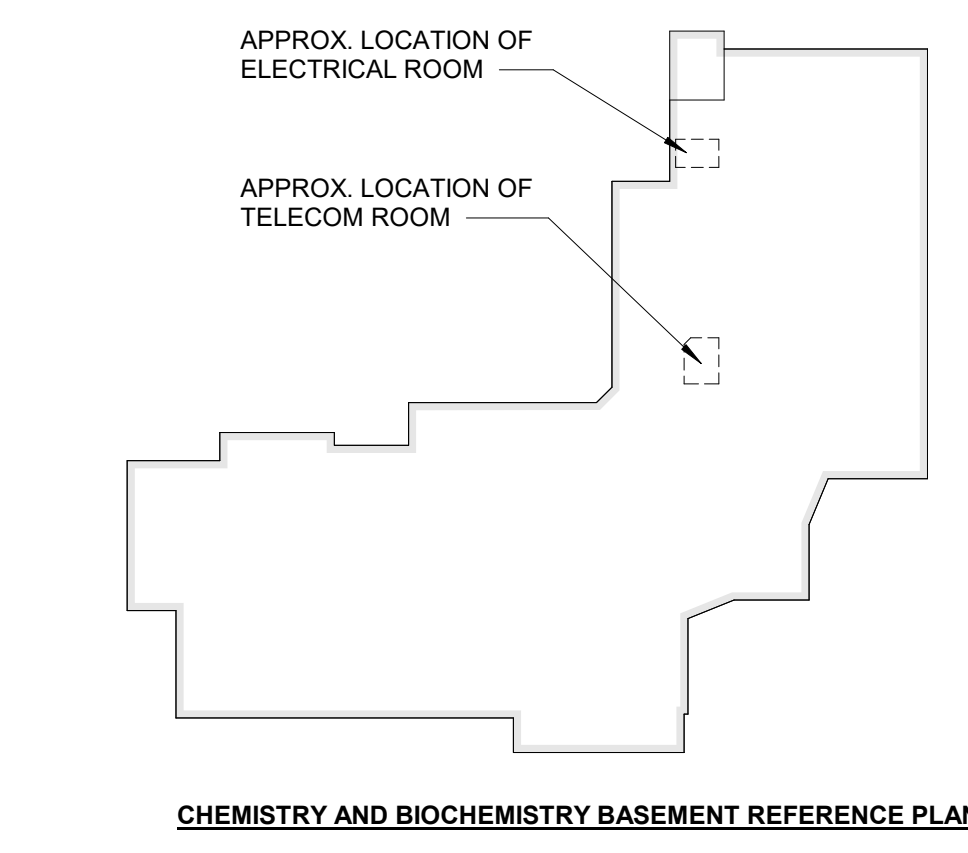
2 CONCRETE SIDEWALK DETAIL
 A03 1/2" = 1'-0"



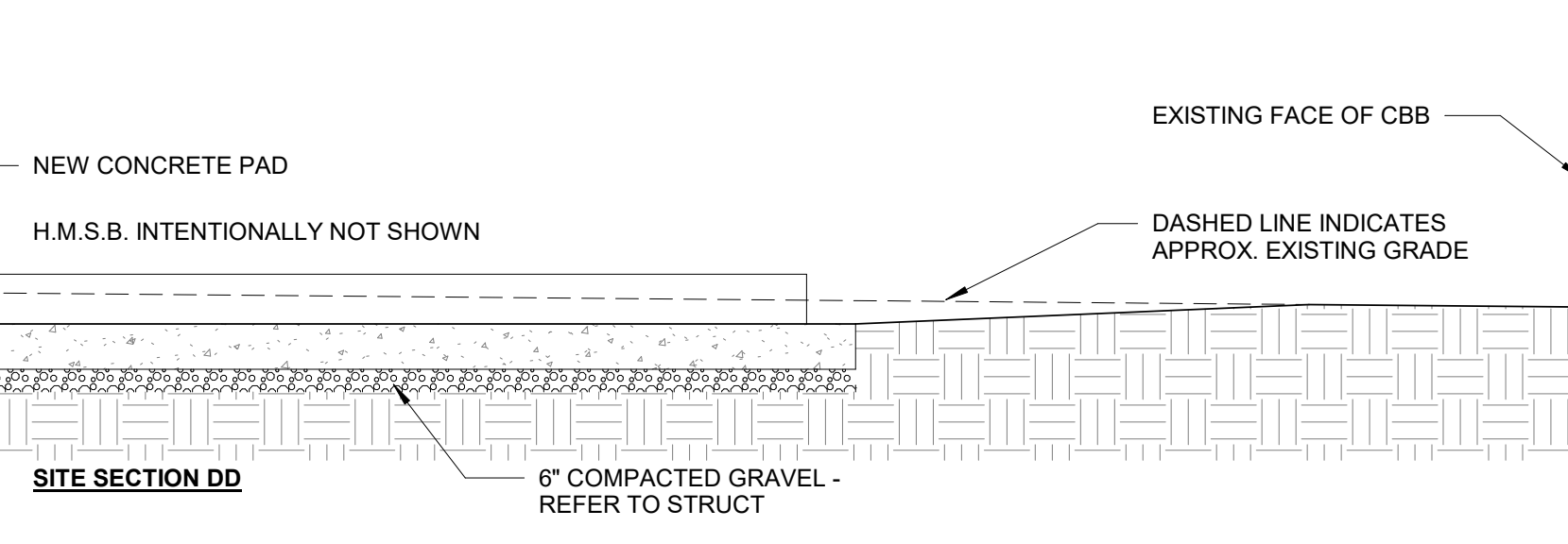
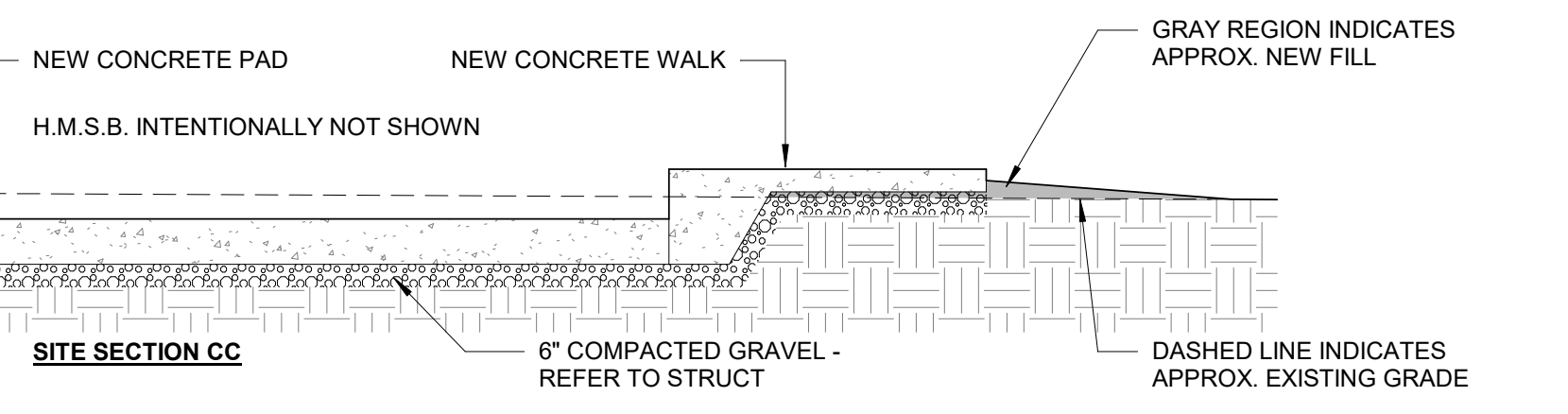
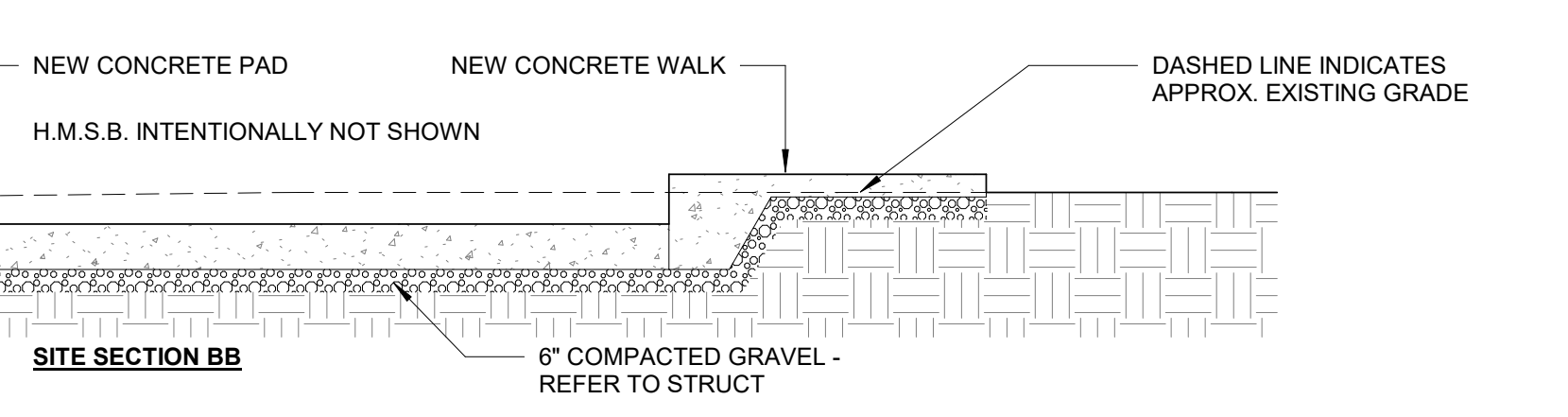
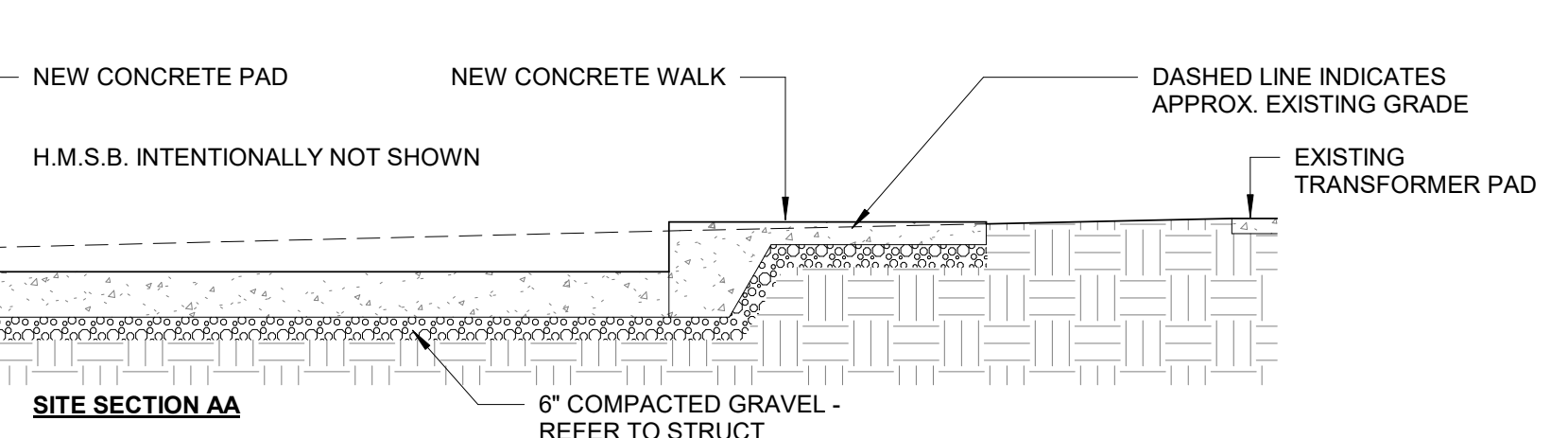
4 SITE / GRADE SECTIONS
 A03 1/4" = 1'-0"

GENERAL NOTES FOR SHEET A03

- CONTRACTOR SHALL RESTORE ALL AREAS EFFECTED BY CONSTRUCTION OPERATIONS TO ORIGINAL CONDITIONS. THIS SHALL INCLUDE BUT IS NOT LIMITED TO SIDEWALKS, ADJACENT BUILDINGS AND GRAVEL LANDSCAPE.
- THE LOCATION, DEPTH, AND SIZE OF THE EXISTING UTILITIES SHOWN ON THESE PLANS IS APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE EXISTENCE, LOCATION, DEPTH AND SIZE OF THE UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING FACILITIES DUE TO THE FAILURE TO LOCATE OR PROPERLY PROVIDE PROTECTION WHEN LOCATION IS KNOWN.



3 CHEM & BIOCHEM BUILDING REFERENCE PLANS
 A03 1" = 50'-0"
 NORTH



THINK ONE ARCHITECTS

MONTANA STATE UNIVERSITY ECOLOGY STORAGE CONTAINER
 MONTANA STATE UNIVERSITY CAMPUS
SITE PLAN

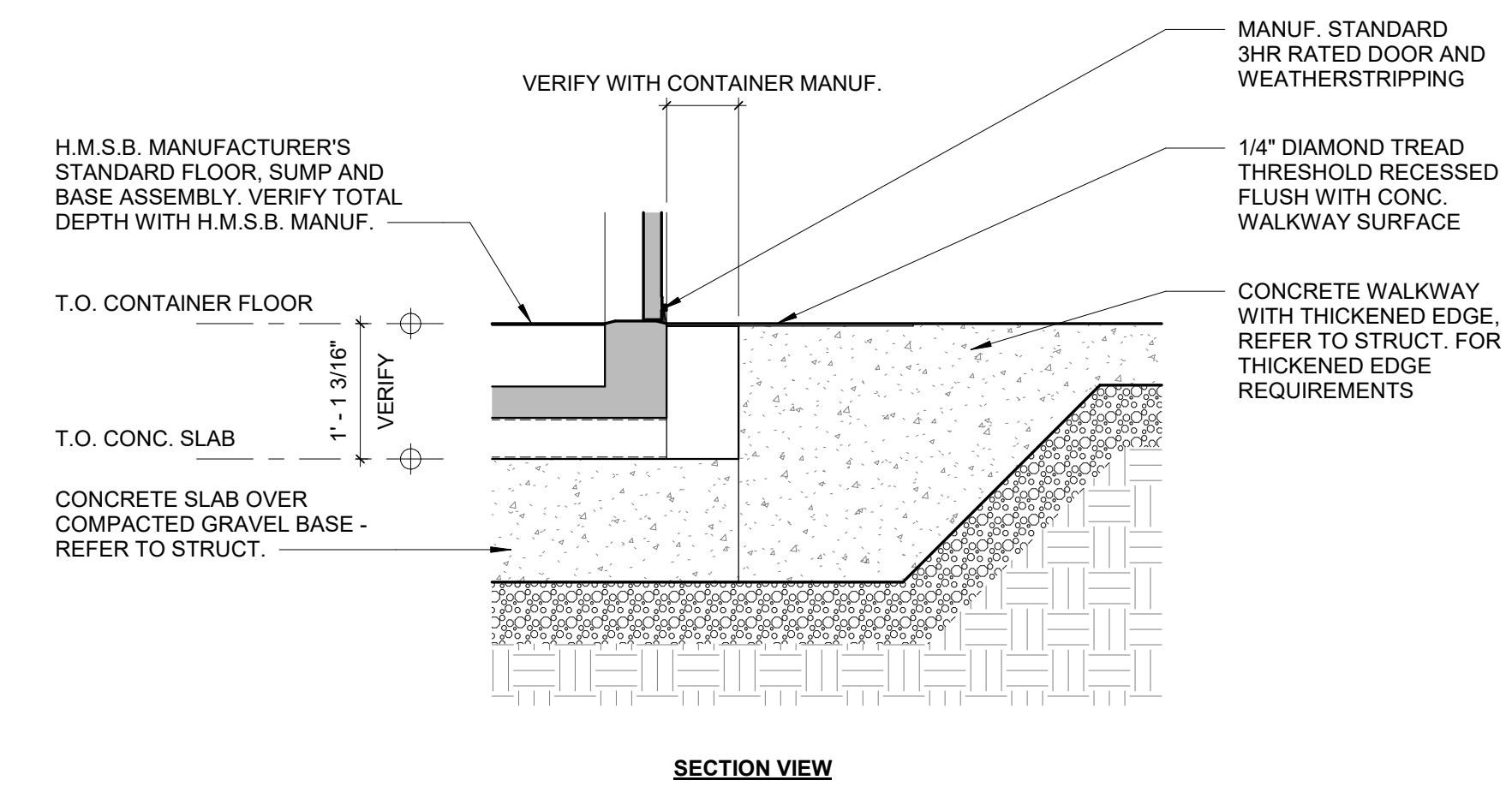
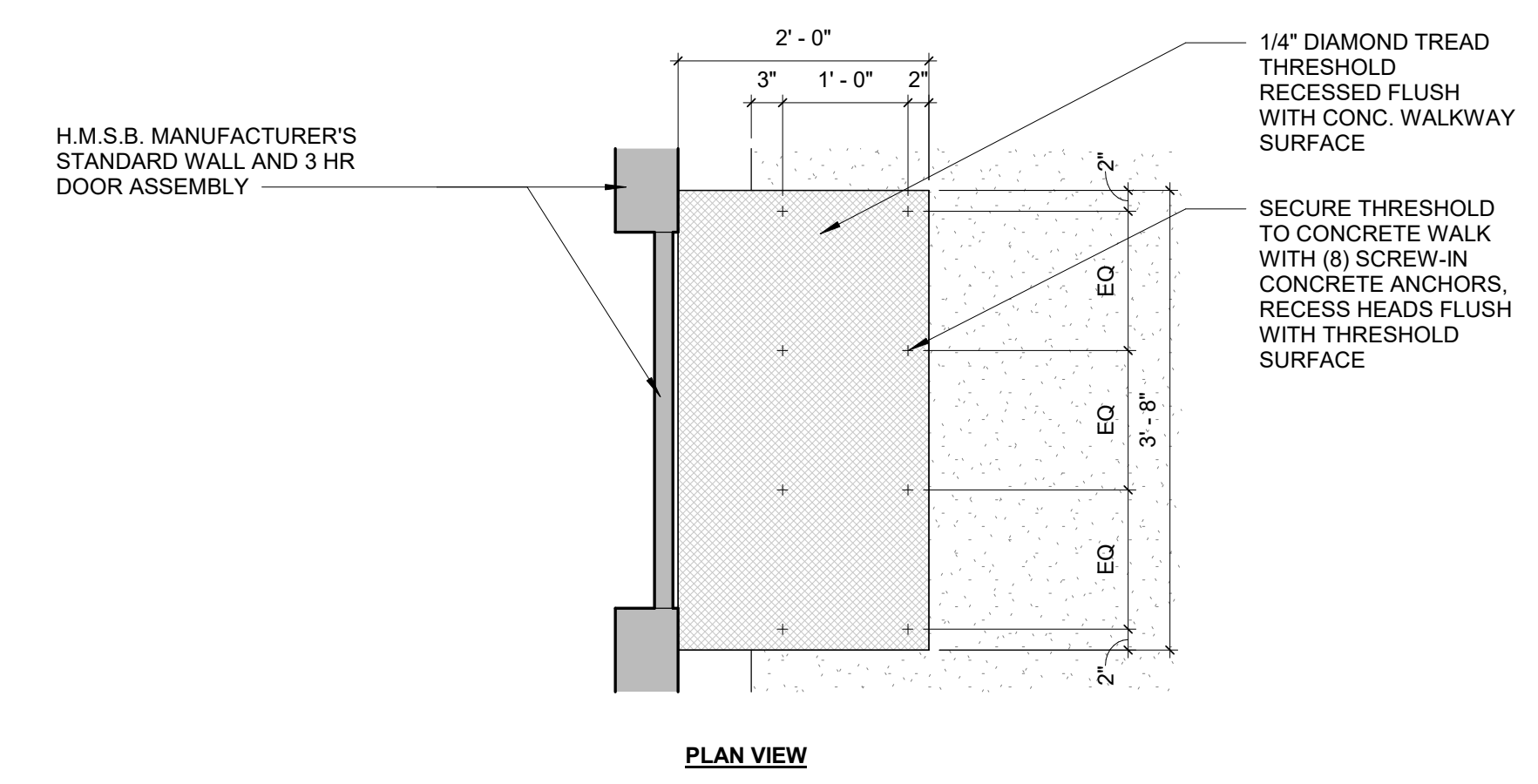
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PPA# 19-0171
 12/06/23
 BID/PERMIT SET

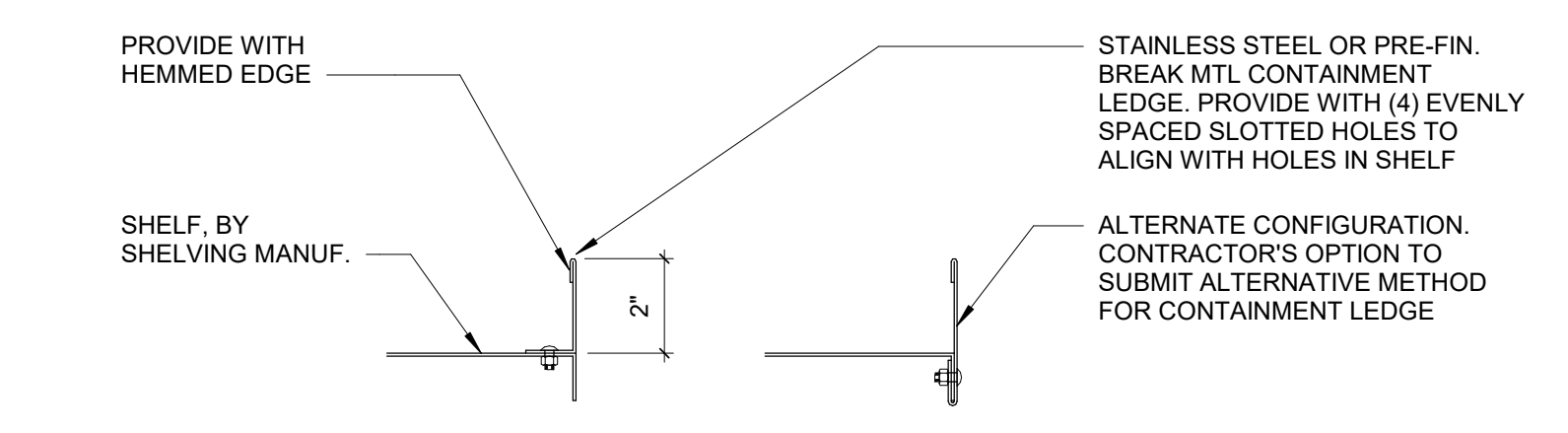
A03

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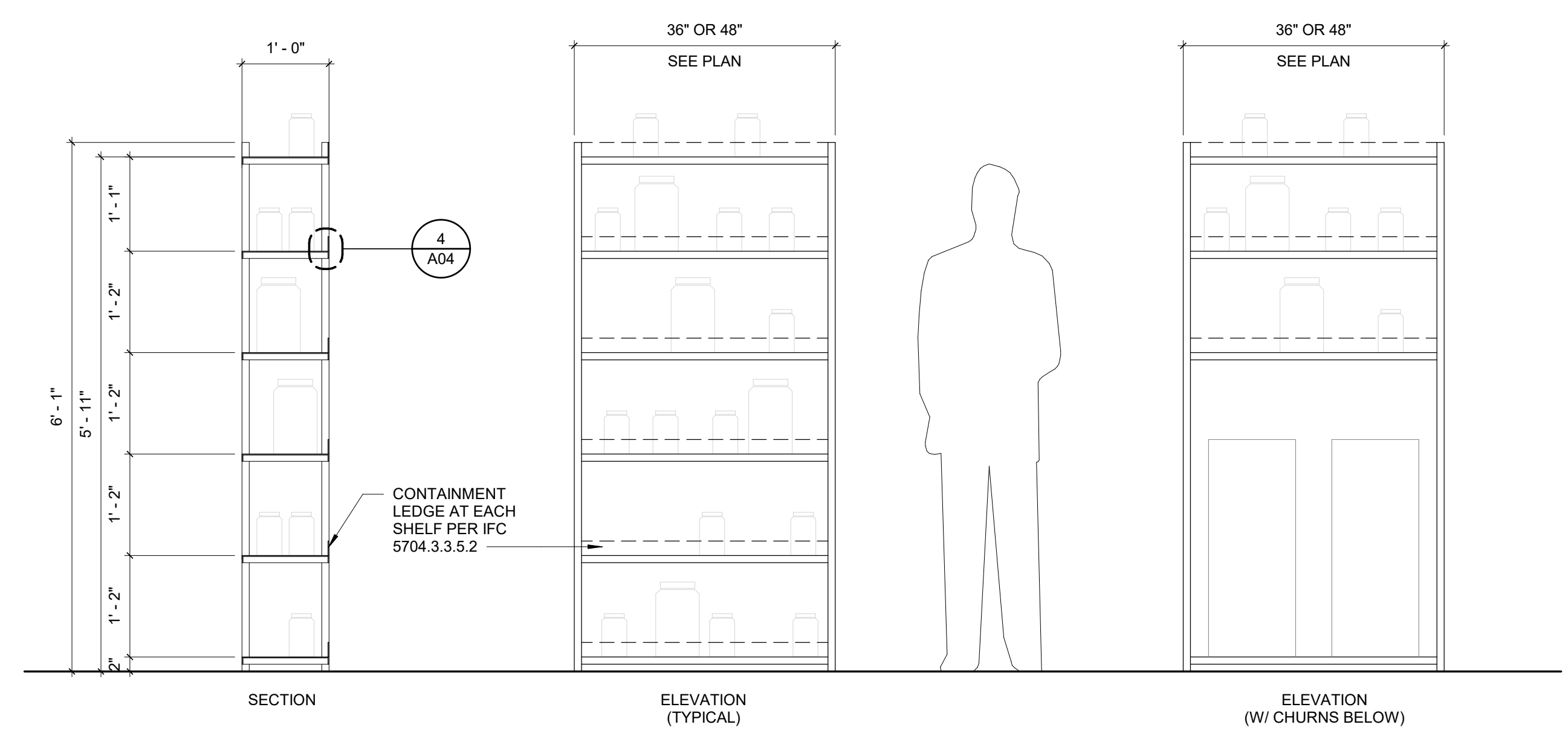
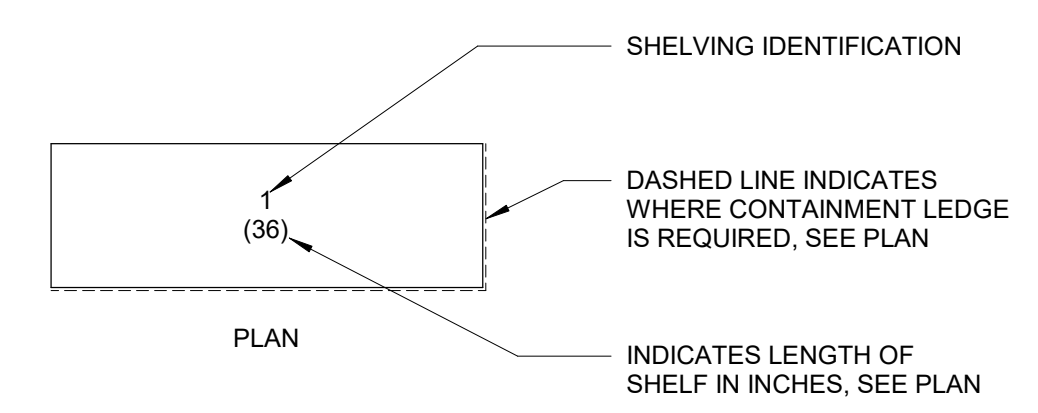
ISSUE	DATE	DESCRIP.



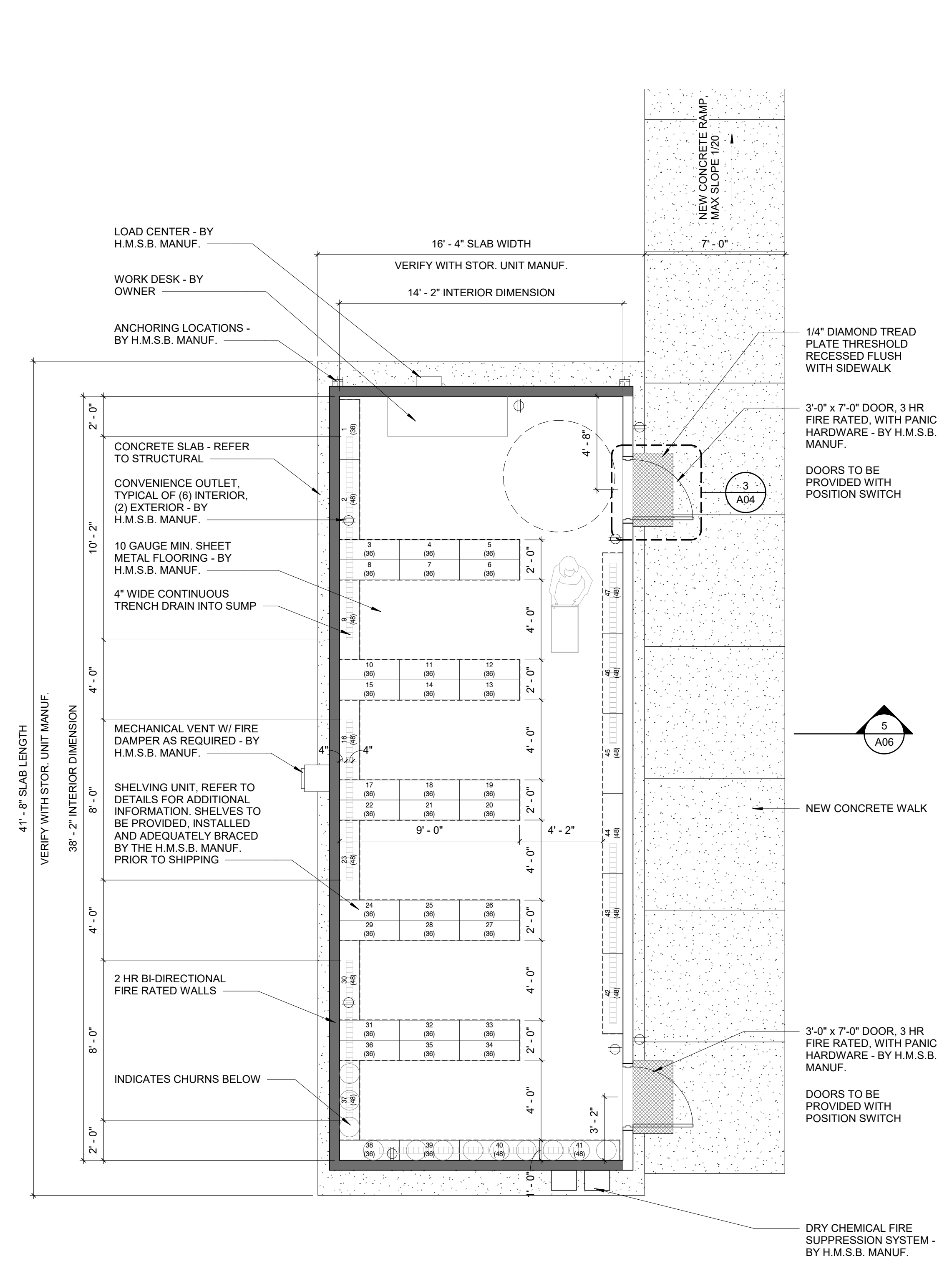
3 CONTAINER DOOR THRESHOLD DETAIL
 A04 3/4" = 1'-0"



4 CONTAINMENT LEDGE DETAIL
 A04 3" = 1'-0"

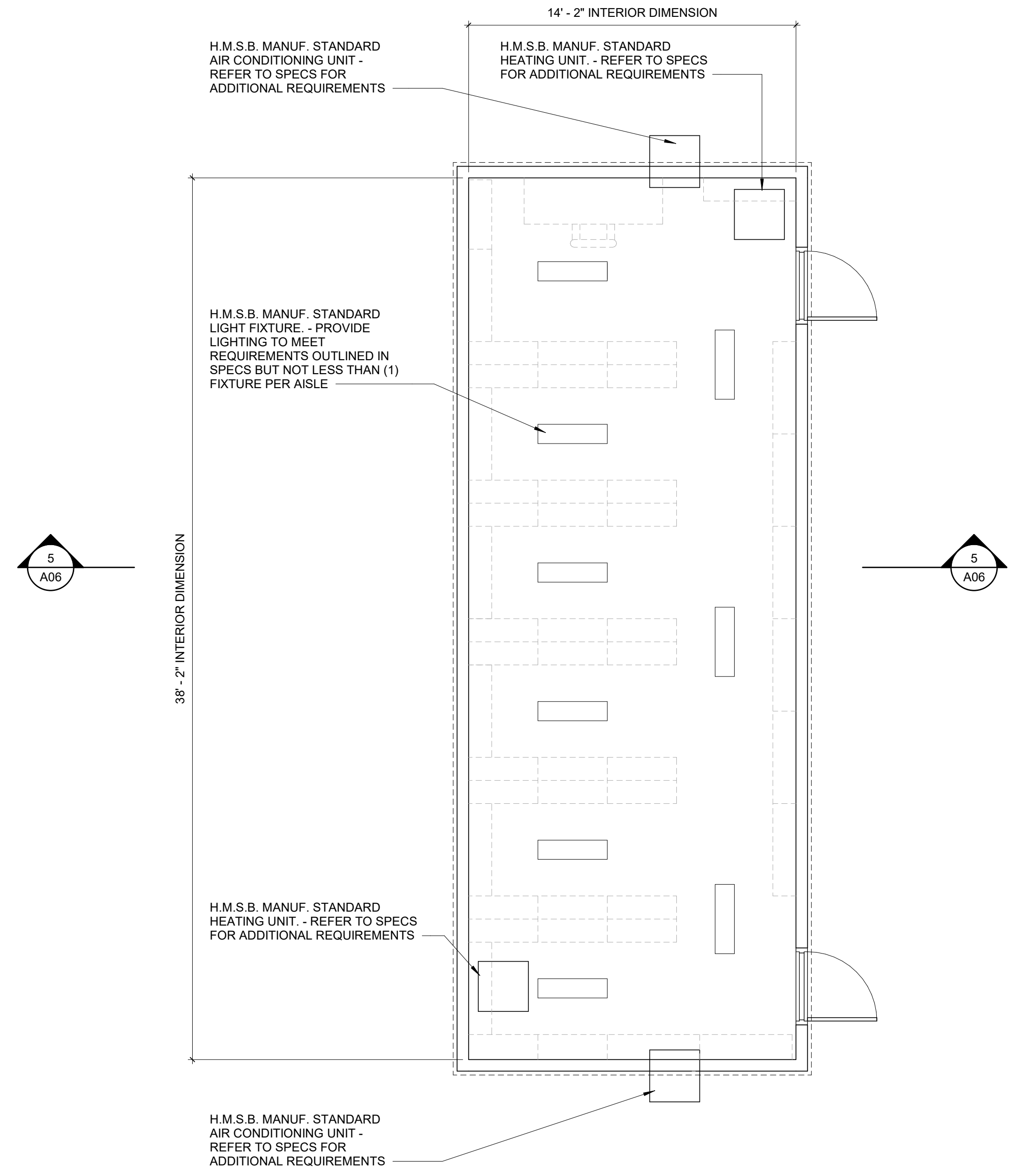


2 METAL STORAGE SHELVING UNITS
 A04 3/4" = 1'-0"

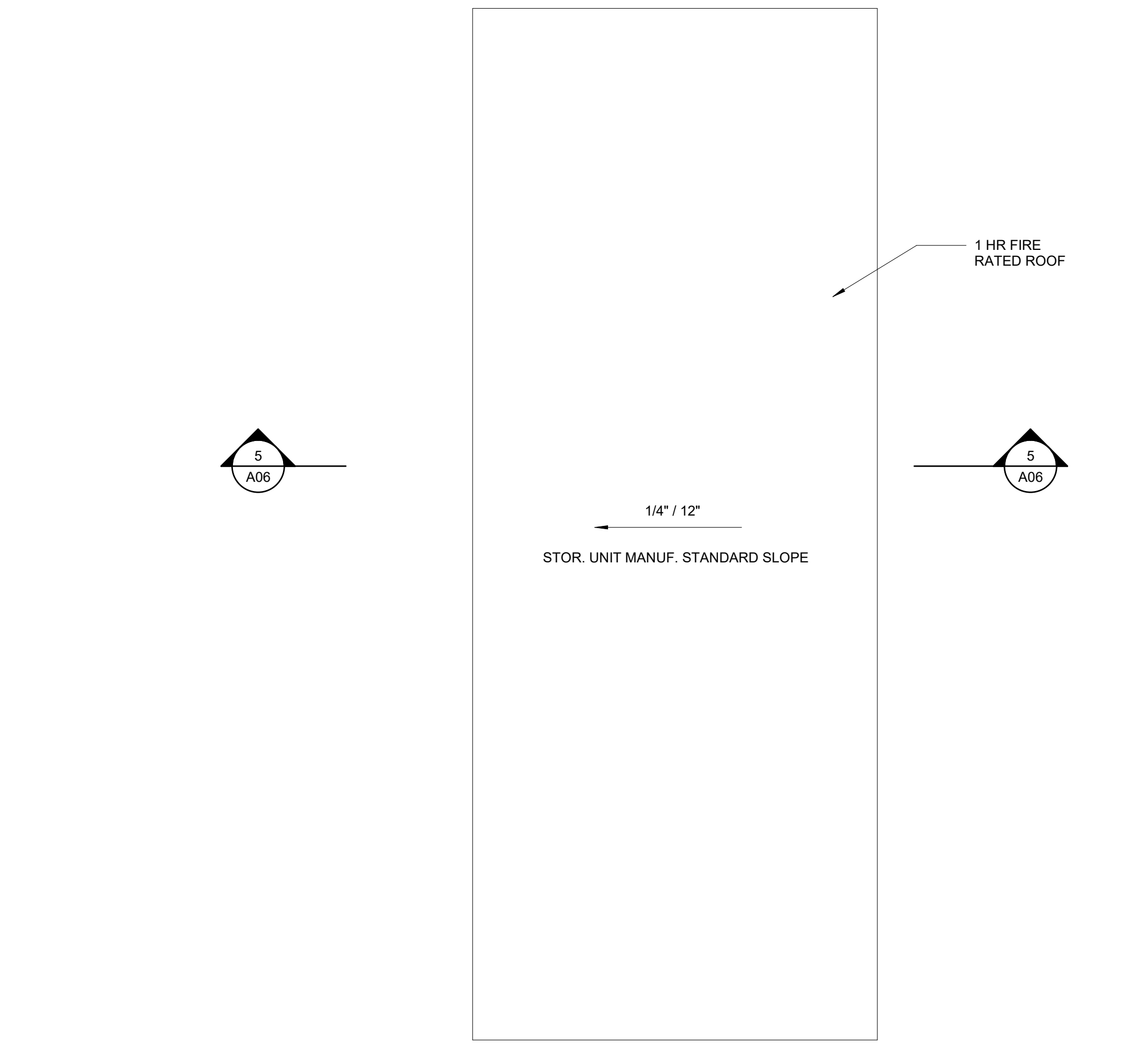


1 FIRST FLOOR PLAN
 A04 1/4" = 1'-0"



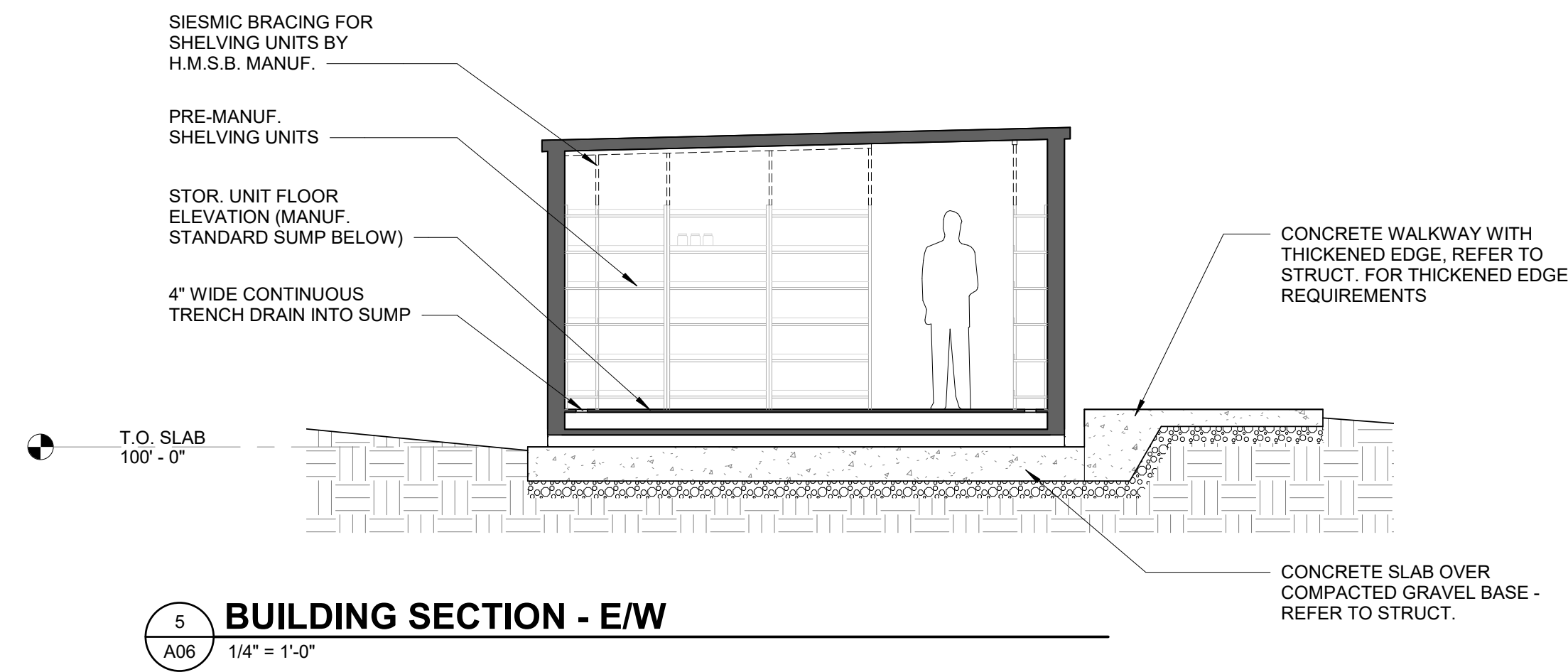


1 RCP - FIRST FLOOR
1/4" = 1'-0" NORTH

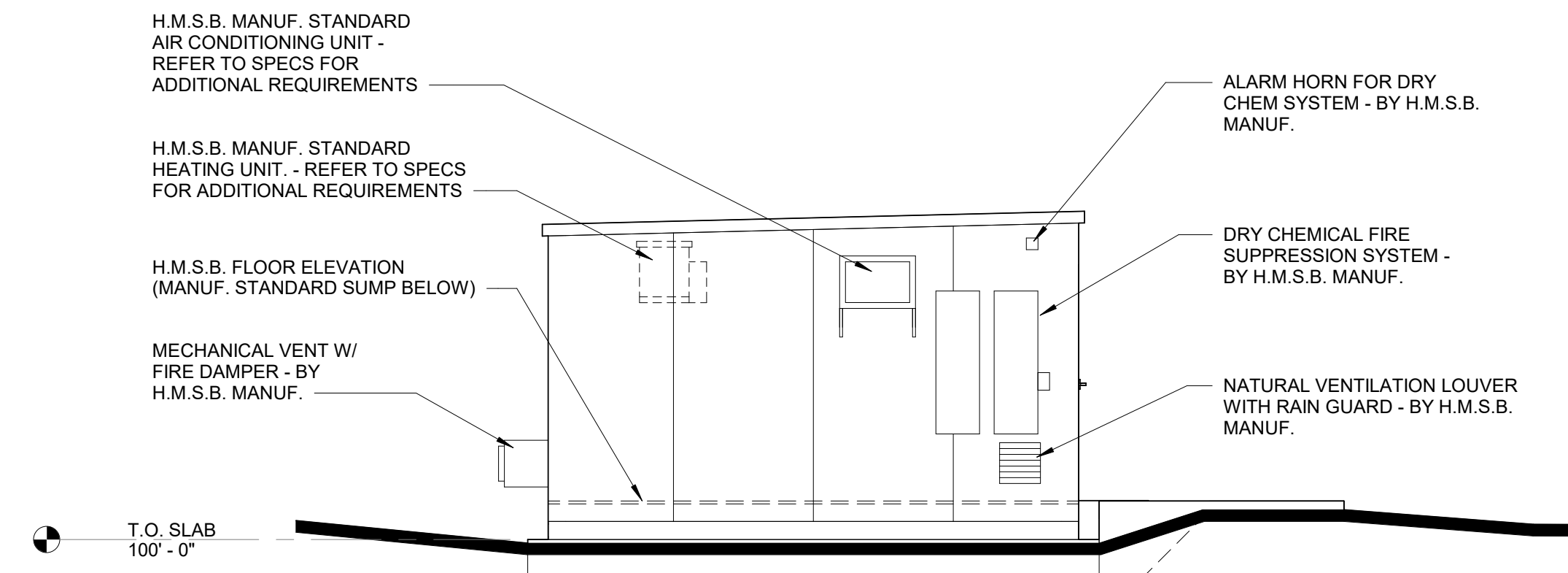


2 ROOF PLAN
1/4" = 1'-0" NORTH

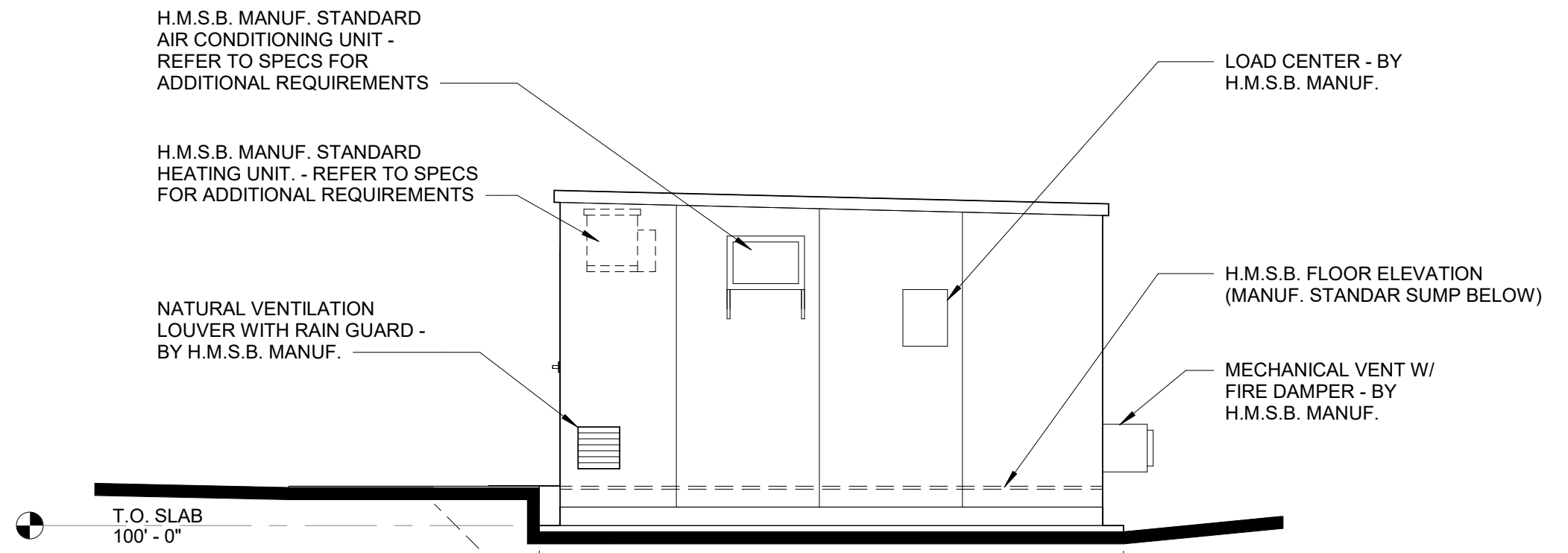
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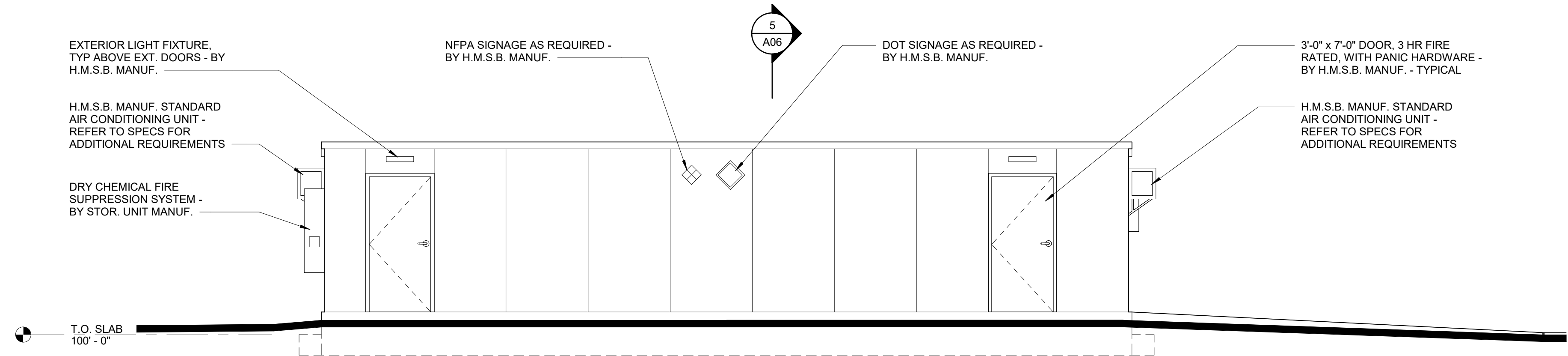
5 BUILDING SECTION - E/W
A06 1/4" = 1'-0"



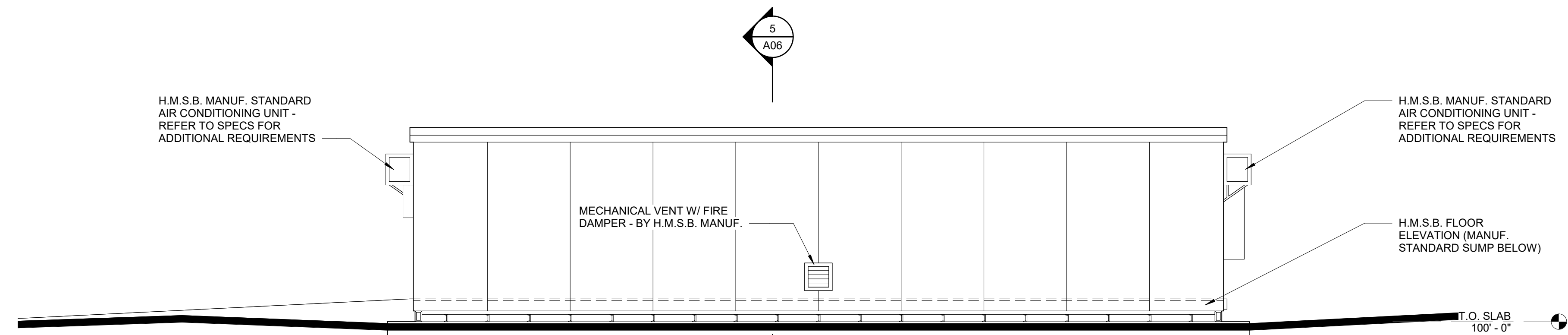
1 SOUTH ELEVATION
A06 1/4" = 1'-0"



2 NORTH ELEVATION
A06 1/4" = 1'-0"

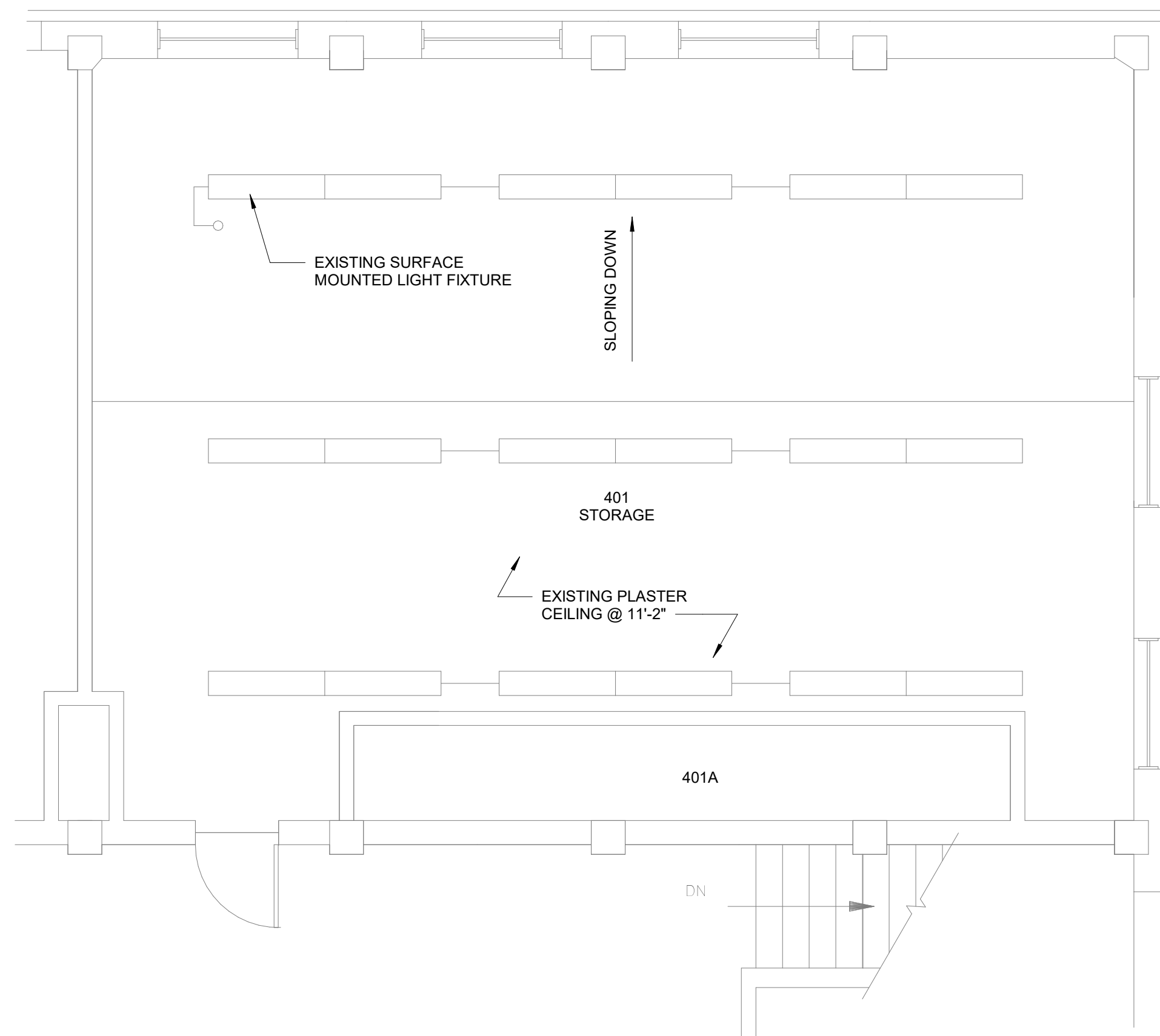


3 EAST ELEVATION
A06 1/4" = 1'-0"

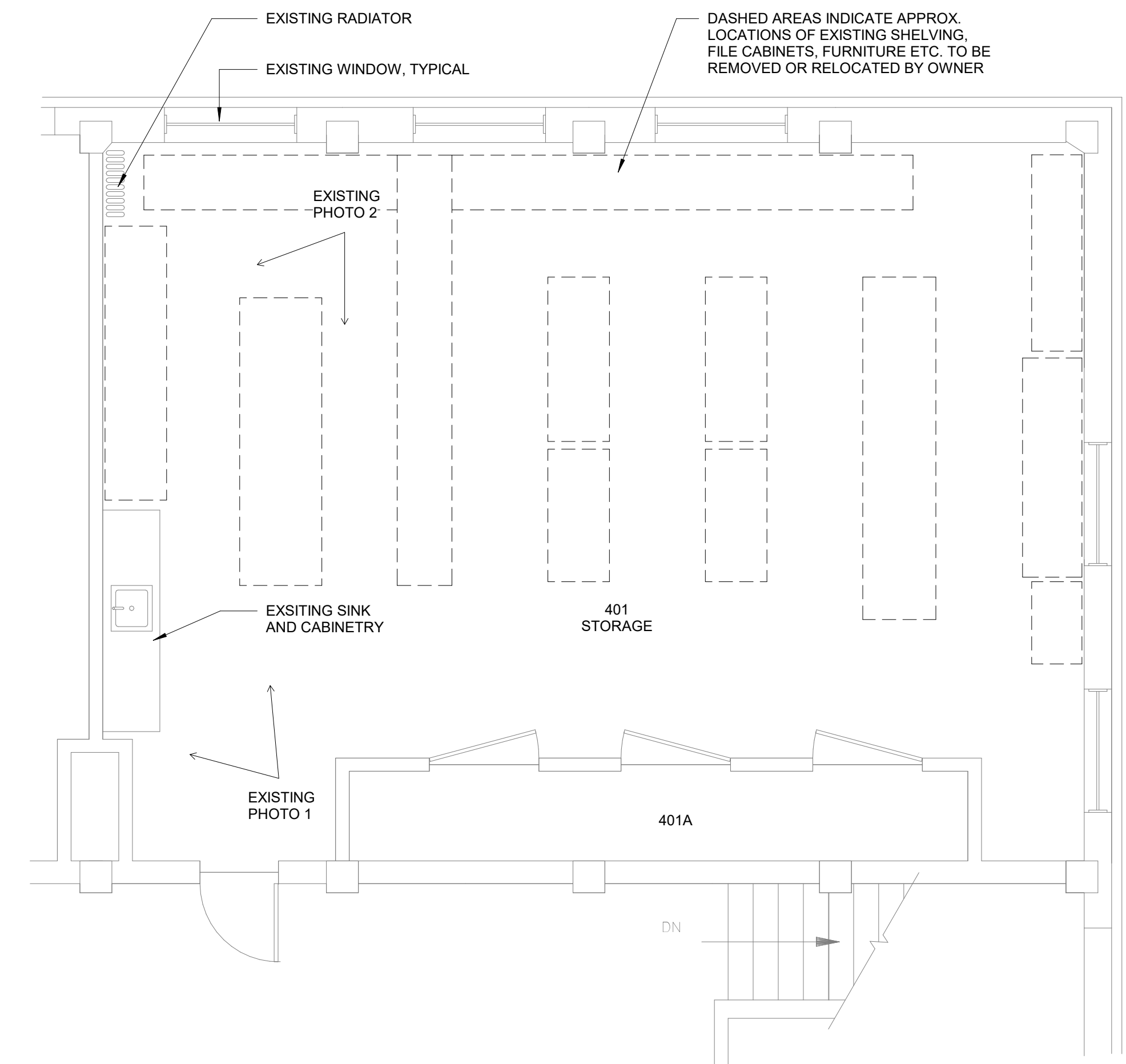


4 WEST ELEVATION
A06 1/4" = 1'-0"

ISSUE	DATE	DESCRIP.



3
A07
LEWIS HALL 4th FLOOR - ENLARGED - EXISTING RCP
1/4" = 1'-0" NORTH



1
A07
LEWIS HALL 4th FLOOR - ENLARGED - EXISTING
1/4" = 1'-0" NORTH

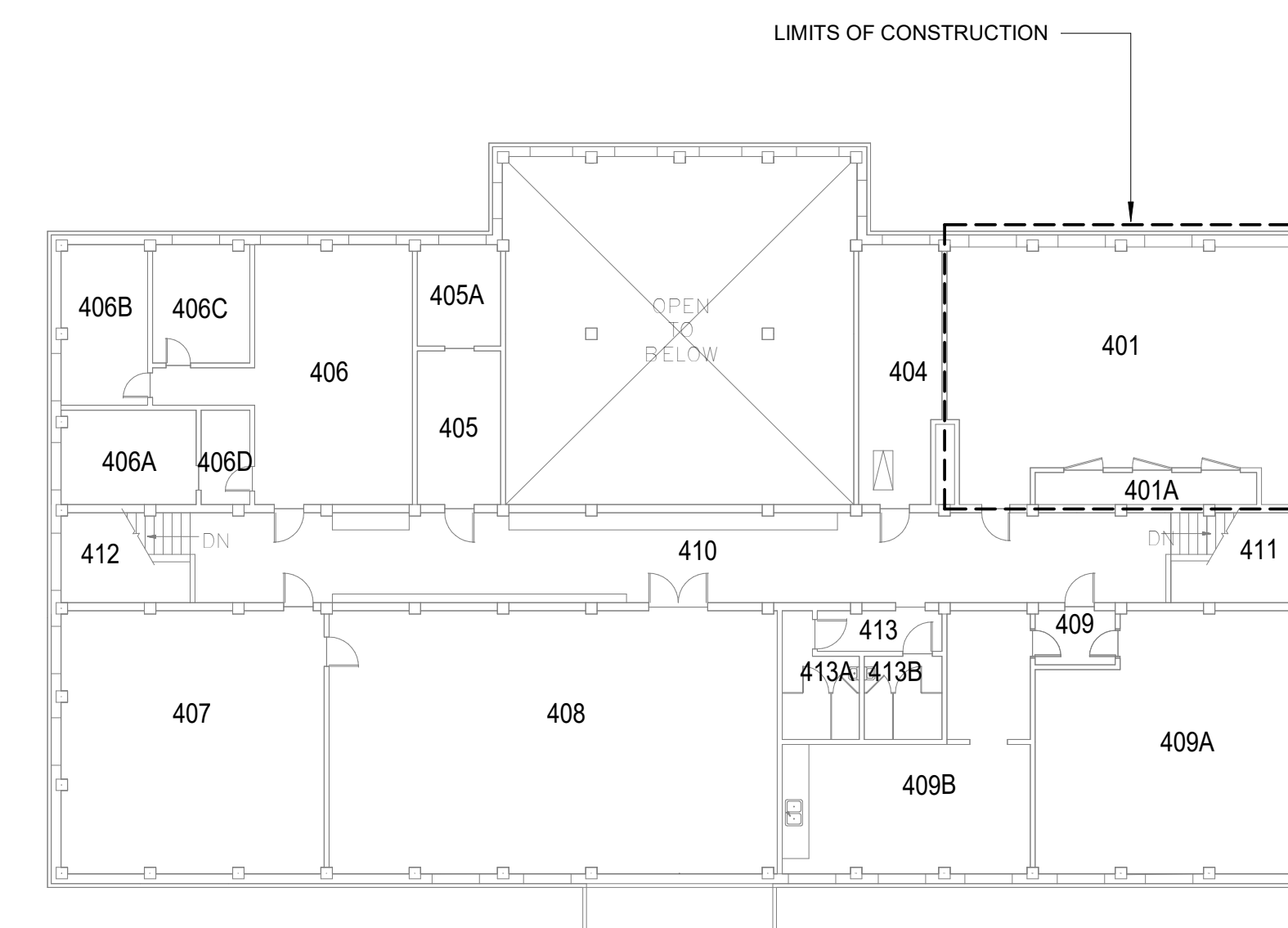


EXISTING PHOTO 1



EXISTING PHOTO 2

4
A07
EXISTING PHOTOS
1/4" = 1'-0"



2
A07
LEWIS HALL 4th FLOOR - OVERALL - EXISTING
1/16" = 1'-0" NORTH


ISSUE	DATE	DESCRIP.

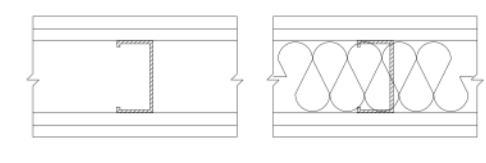
MONTANA STATE UNIVERSITY
 ECOLOGY STORAGE CONTAINER
 MONTANA STATE UNIVERSITY CAMPUS
 LEWIS HALL-4TH FLOOR-EXISTING

PPA# 19-0171
 12/06/23
 BID/PERMIT SET

A07



GA FILE NO. FC 4750	GENERIC	2 HOUR FIRE
WOOD FLOOR, STEEL CHANNEL JOISTS, GYPSUM WALLBOARD, RIGID FURRING CHANNELS		
<p>Base layer 5/8" type X gypsum wallboard applied at right angles to channel shaped, minimum 8" deep, 18 gage galvanized steel joists 24" o.c. with 1 1/8" Type S-12 drywall screws 12" o.c. Second layer 5/8" type X gypsum wallboard applied at right angles to joists with 1 5/8" Type S-12 drywall screws 12" o.c. Second layer joints offset 24" from base layer joints. Third layer 5/8" type X gypsum wallboard applied at right angles to joists with 2 3/8" Type S-12 drywall screws 12" o.c. Third layer joints offset 12" from second layer joints. Hat-shaped rigid furring channels 24" o.c. applied at right angles to joists over third layer with two 2 3/8" long Type S-12 drywall screws at each joint. Face layer 5/8" type X gypsum wallboard applied at right angles to furring channels with 1 1/8" Type S drywall screws 12" o.c. Joists supporting 3/4" T & G edge plywood floor applied at right angles to joists with #10x1 5/8" screws 12".</p>		
		
		Approx. Ceiling Weight: 12 psf Fire Test: UL R4024, 02NK04478, 2-20-03, UL Design L556

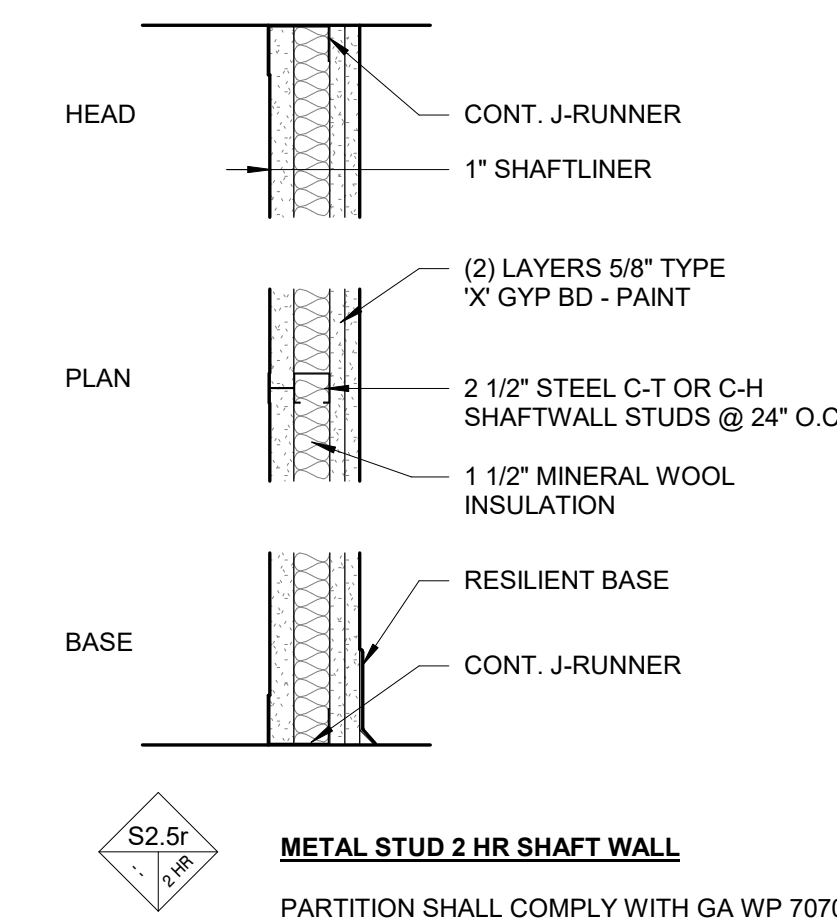
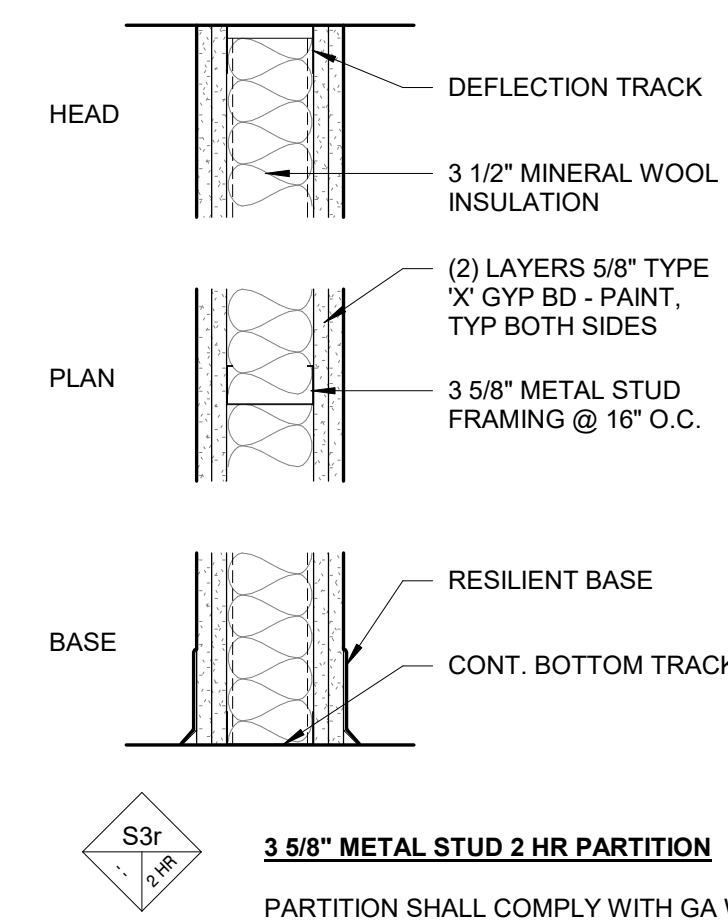
GA FILE NO. WP 1522	GENERIC	2 HOUR FIRE	55 to 59 STC SOUND
GYPSUM WALLBOARD, STEEL STUDS			
<p>Base layer 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side of 3 5/8" steel studs 24" o.c. with 1" Type S drywall screws 24" o.c. Face layer 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side with 1 5/8" Type S drywall screws 12" o.c.</p>			
<p>Joints staggered 24" each layer and side. Sound tested with 3 1/2" glass fiber friction fit in stud space. (NLB)</p>			
			
		Thickness: 5 1/8" Limiting Height: Refer to Section IV Approx. Weight: 12 psf Fire Test: See WP 1548 (WHI-495-0236, 1-30-80) Sound Test: NRCC 818-NV, 2-3-81	

LEGEND - WALL TYPE TAG

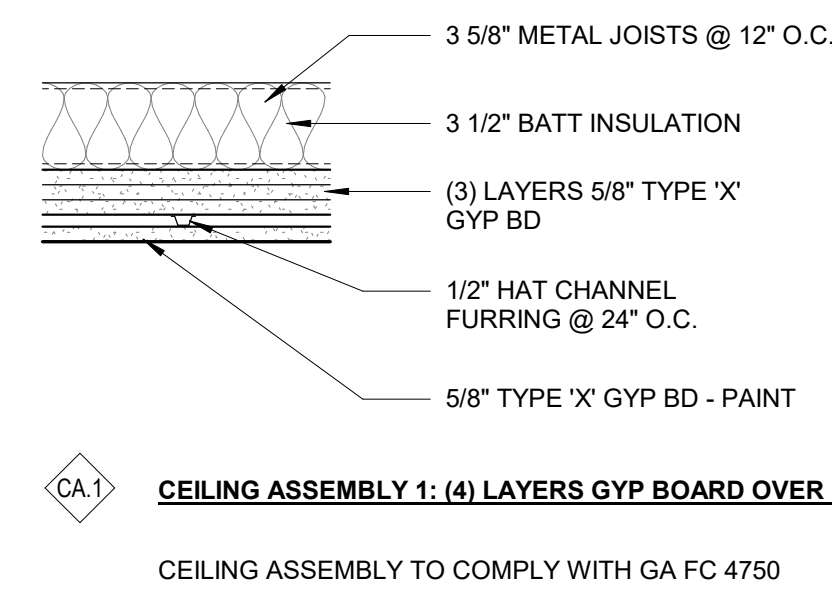
PARTITION ASSEMBLY TYPE:	NOMINAL FRAMING SIZE	VARIATION	FIRE RATING:
W = WOOD FRAMING S = METAL FRAMING M = MASONRY WALL C = CONCRETE B = OTHER	S6	-- STANDARD f - FURRING i - IMPACT RESISTANT a - STC RATED s - SHEAR r - FIRE RATED	S = SMOKE BARRIER 30 MIN = 30 MIN FIRE RATING 45 MIN = 45 MIN FIRE RATING 1 HR = 1 HOUR FIRE RATING 2 HR = 2 HOUR RATING 3 HR = 3 HOUR RATING
STC RATING: 30-34 35-39 40-44 45-49 50-54 55-60			

GENERAL NOTES

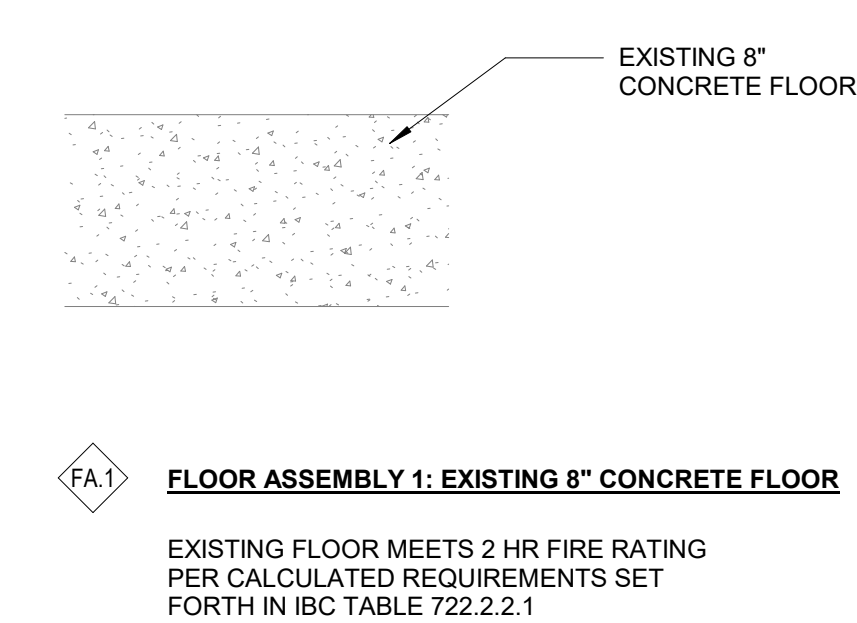
- REFER TO SPECIFICATIONS FOR LOCATIONS OF MOLD, MOISTURE RESISTANT AND CEMENTITIOUS BACKER UNITS.
- REFER TO SPECIFICATIONS FOR GYPSUM BOARD FINISH LEVELS AND LOCATIONS WHERE SPECIFIED LEVELS ARE REQUIRED.
- FOR FIRE-RESISTANCE RATED ASSEMBLIES PROVIDE MATERIALS AND CONSTRUCTION IDENTICAL TO THOSE IN THE INDICATED TESTED ASSEMBLY OR PROVIDE LATERNATE/EQUAL TEST FOR REVIEW
- FOR FIRE-RESISTANCE RATED ASSEMBLIES REFER TO TYPICAL PARTITION DETAILS FOR TOP OF WALL CONDITIONS.
- REFER TO STRUCTURAL FOR 6s = STRUCTURAL STEEL STUD PARTITIONS



1 WALL TYPES AND ASSEMBLIES
1 1/2" = 1'-0"



2 CEILING TYPES AND ASSEMBLIES
1 1/2" = 1'-0"



3 EXISTING FLOOR TYPES AND ASSEMBLIES
1 1/2" = 1'-0"



THINK ONE ARCHITECTS

ISSUE	DATE	DESCRIP.

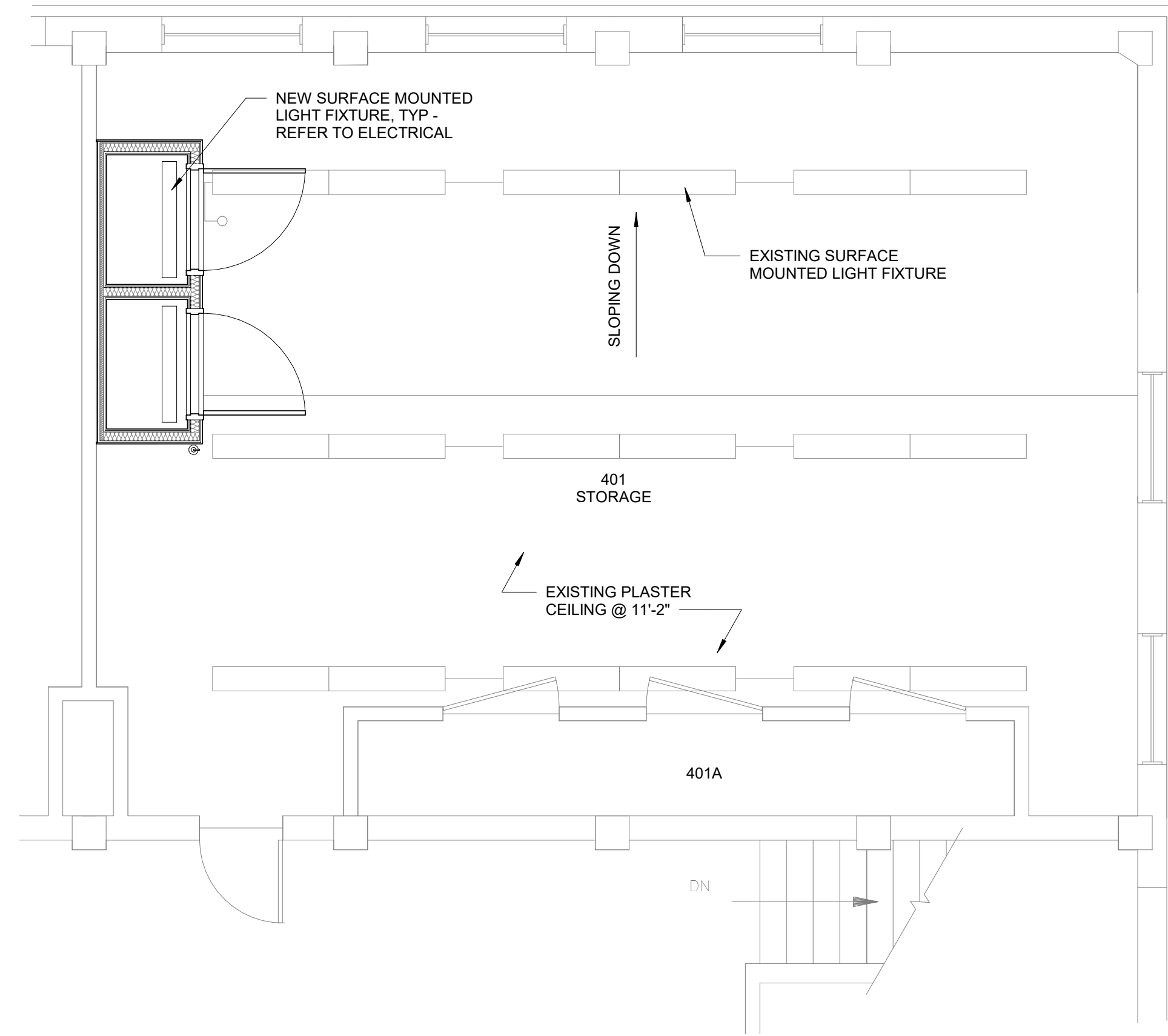
MONTANA STATE UNIVERSITY
ECOLOGY STORAGE CONTAINER
MONTANA STATE UNIVERSITY CAMPUS
ASSEMBLIES

PPA# 19-0171
12/06/23
BID/PERMIT SET

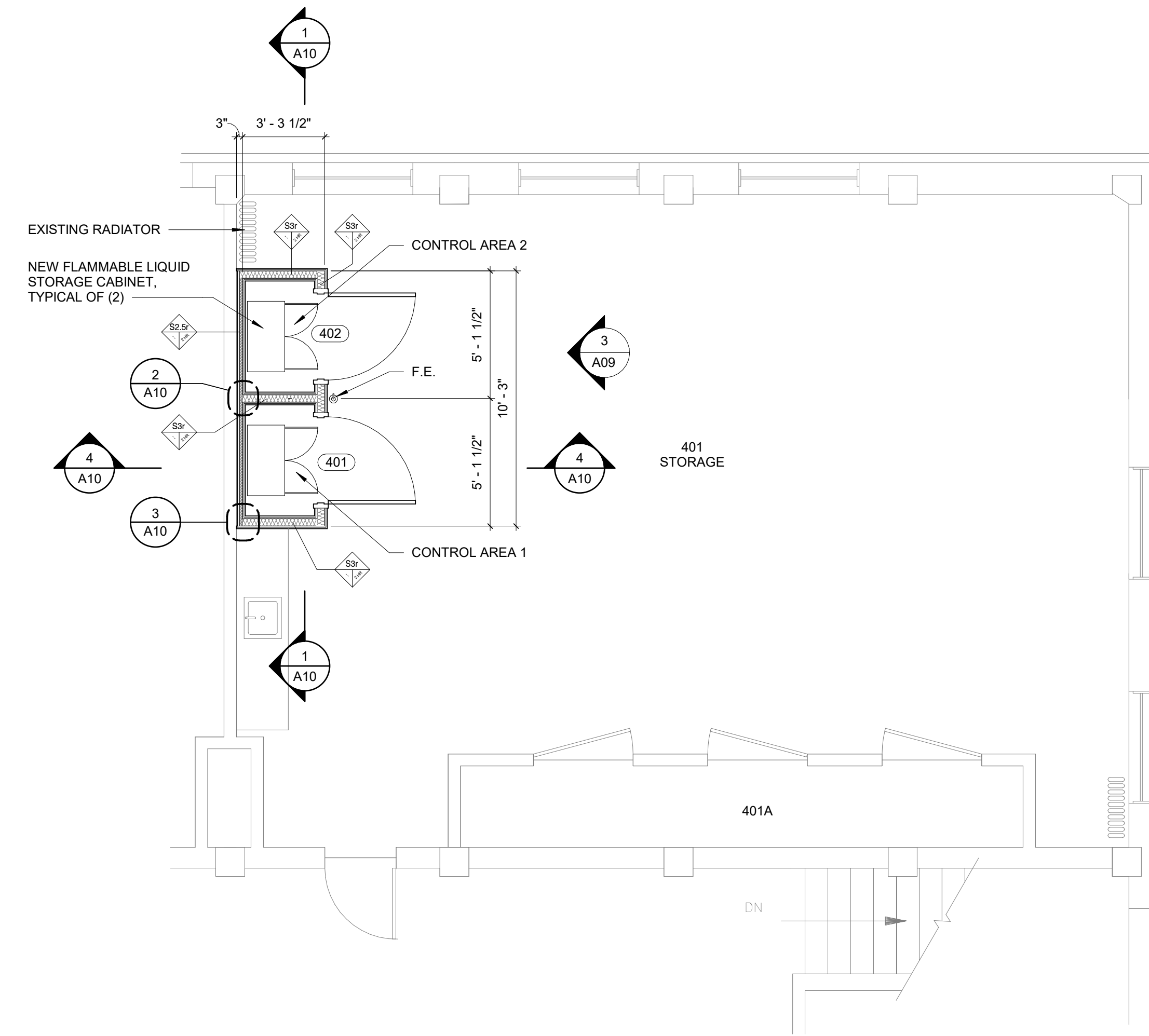
A08

ALL WORK SHOWN ON THIS SHEET IS ADDITIVE ALTERNATE NO.1

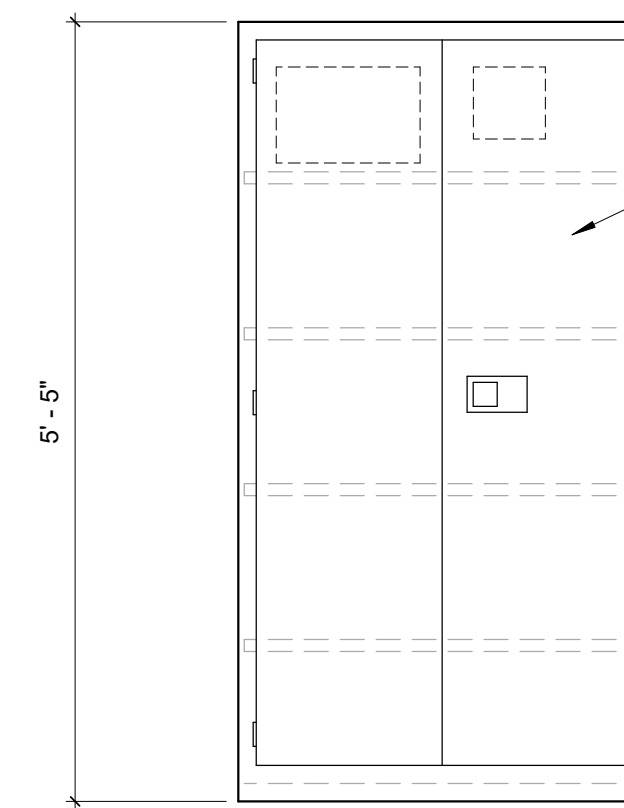
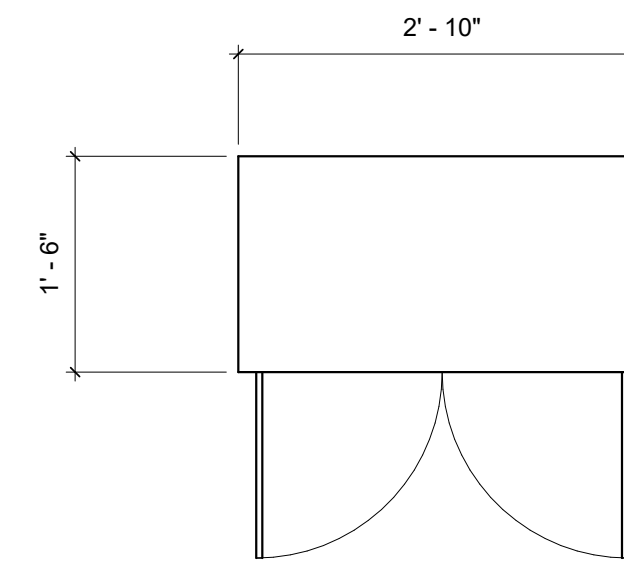
12/06/2023 9:18:55 AM



3
A09
LEWIS HALL 4th FLOOR - ENLARGED RCP - NEW CONST.
1/4" = 1'-0"

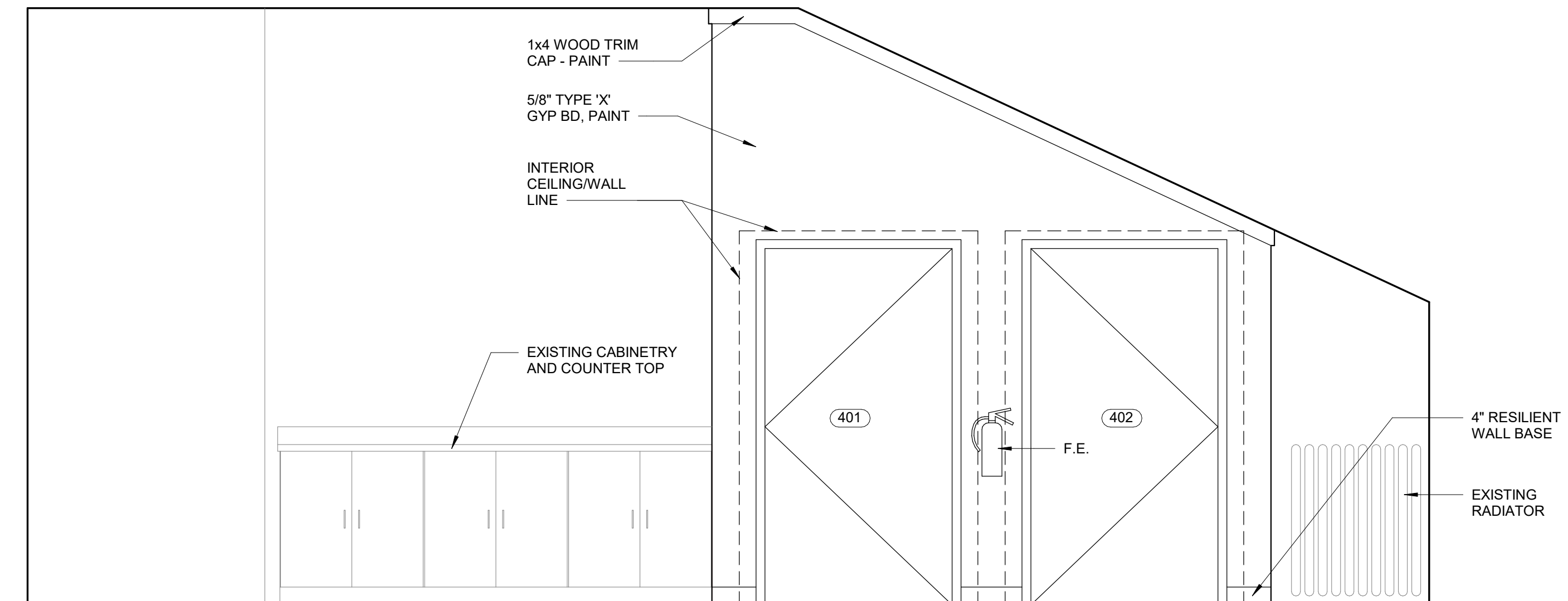


1
A09
LEWIS HALL 4th FLOOR - ENLARGED - NEW CONST.
1/4" = 1'-0"



FLAMMABLE LIQUID STORAGE CABINET
BASIS-OF-DESIGN:
GLOBAL INDUSTRIAL; FLAMMABLE CABINET. MODEL# WB237780
SELF CLOSE DOUBLE DOOR
CAPACITY: 44 GALLONS
SIZE 34"W x 18"D x 65"H
PROVIDE WITH (4) TOTAL SHELVES

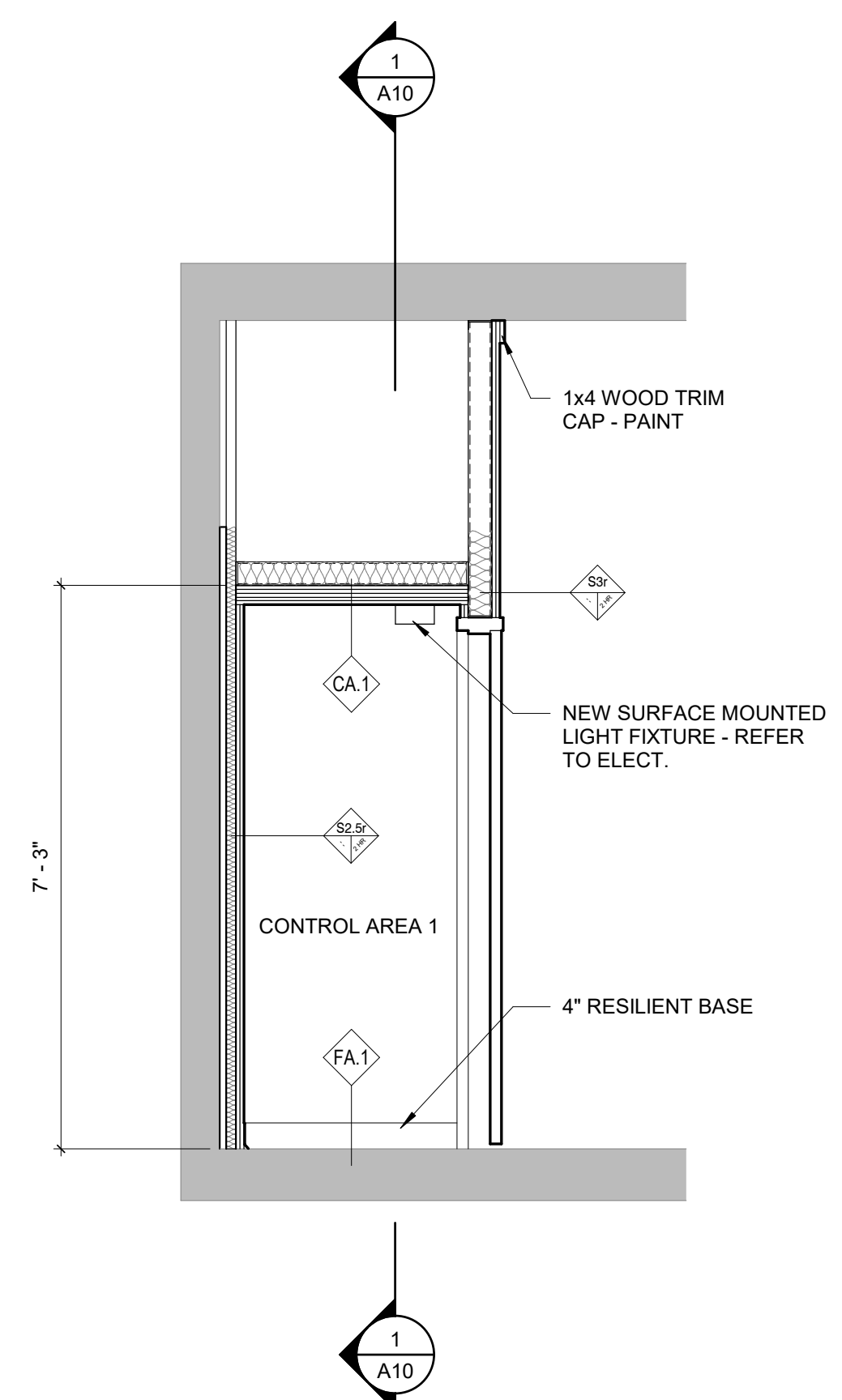
4
A09
FLAMMABLE LIQUID STORAGE CABINET
3/4" = 1'-0"



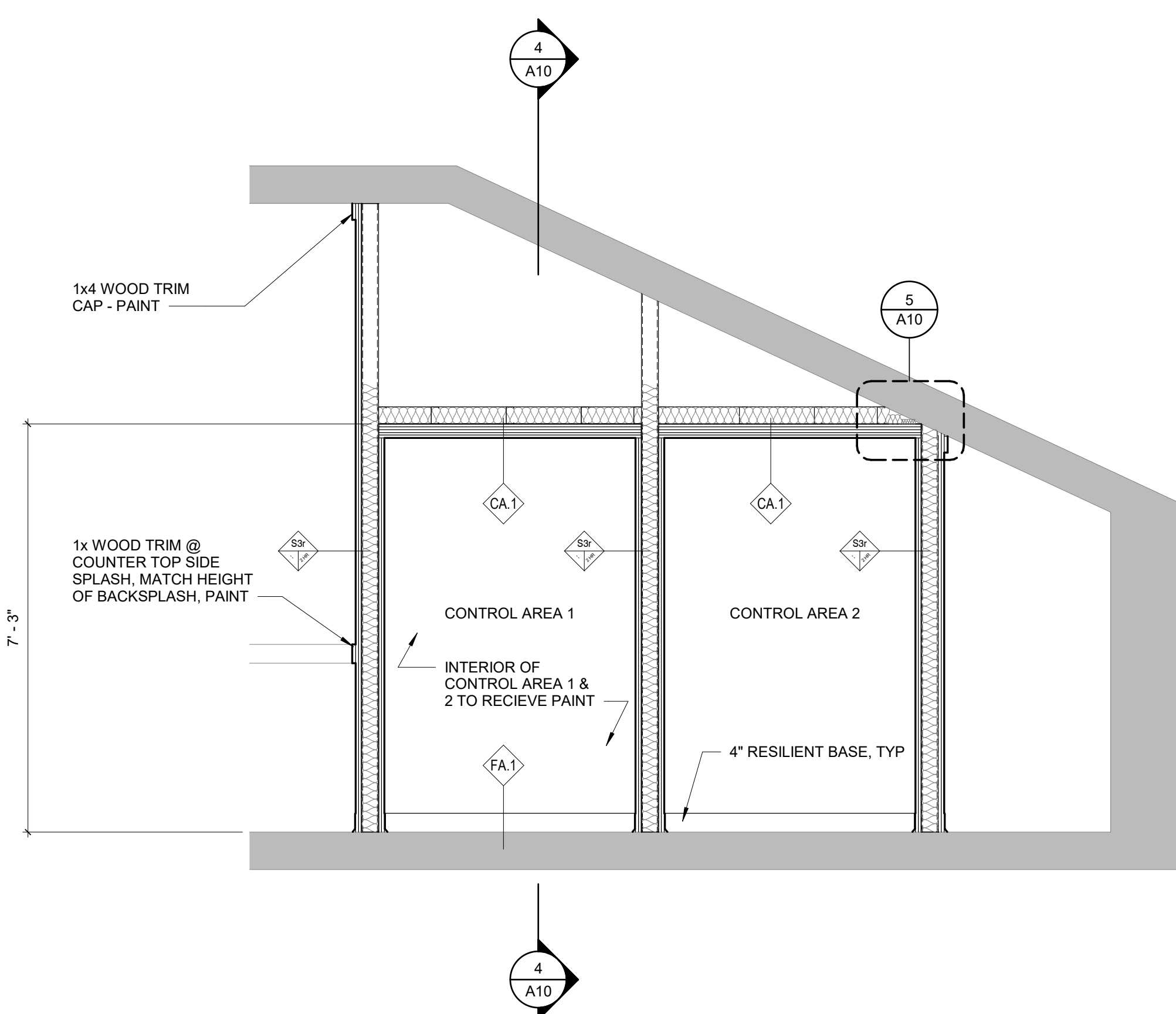
2
A09
CONTORL AREA ELEVATION
1/2" = 1'-0"

ALL WORK SHOWN ON THIS SHEET IS ADDITIVE ALTERNATE NO.1

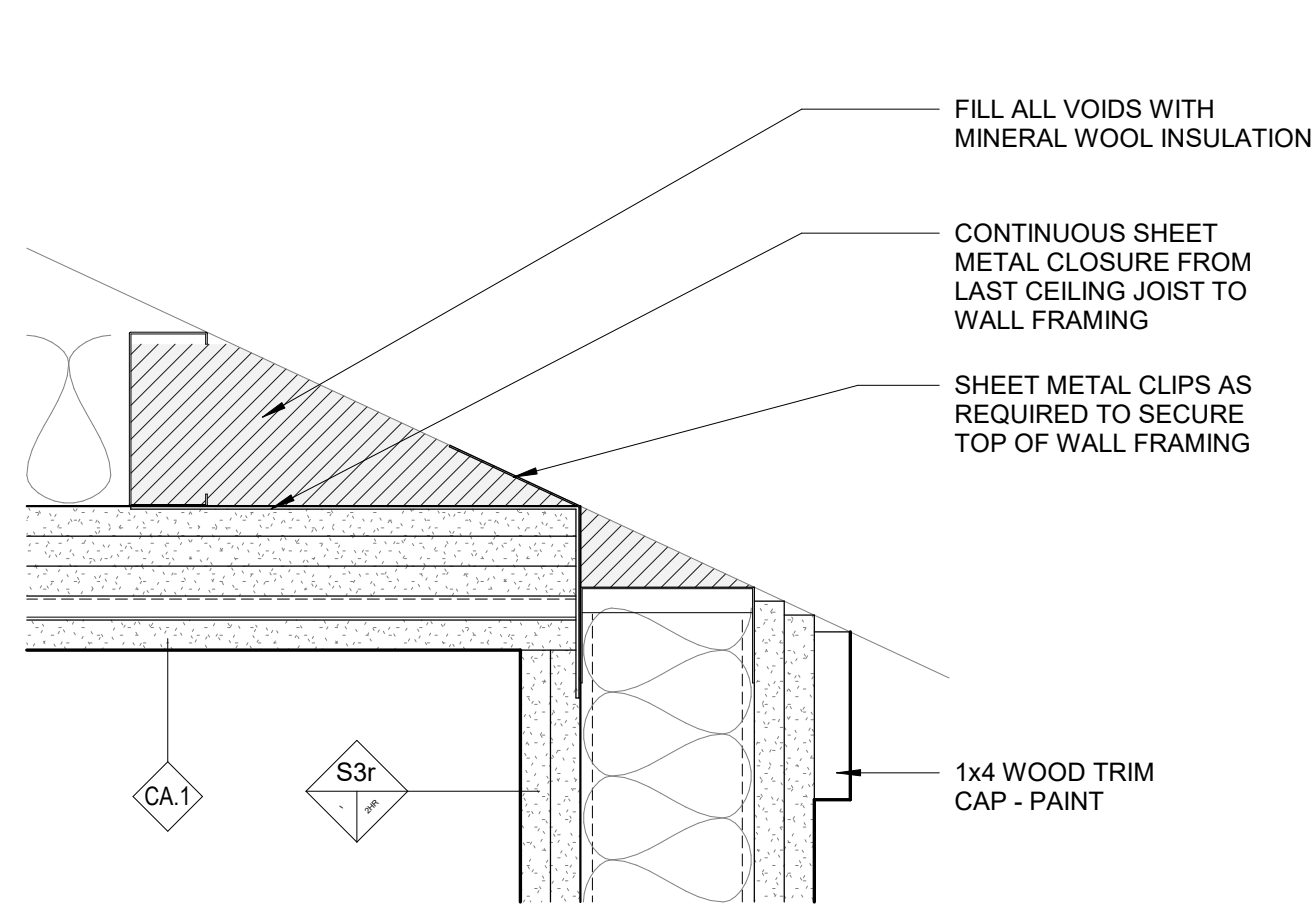
ISSUE	DATE	DESCRIP.
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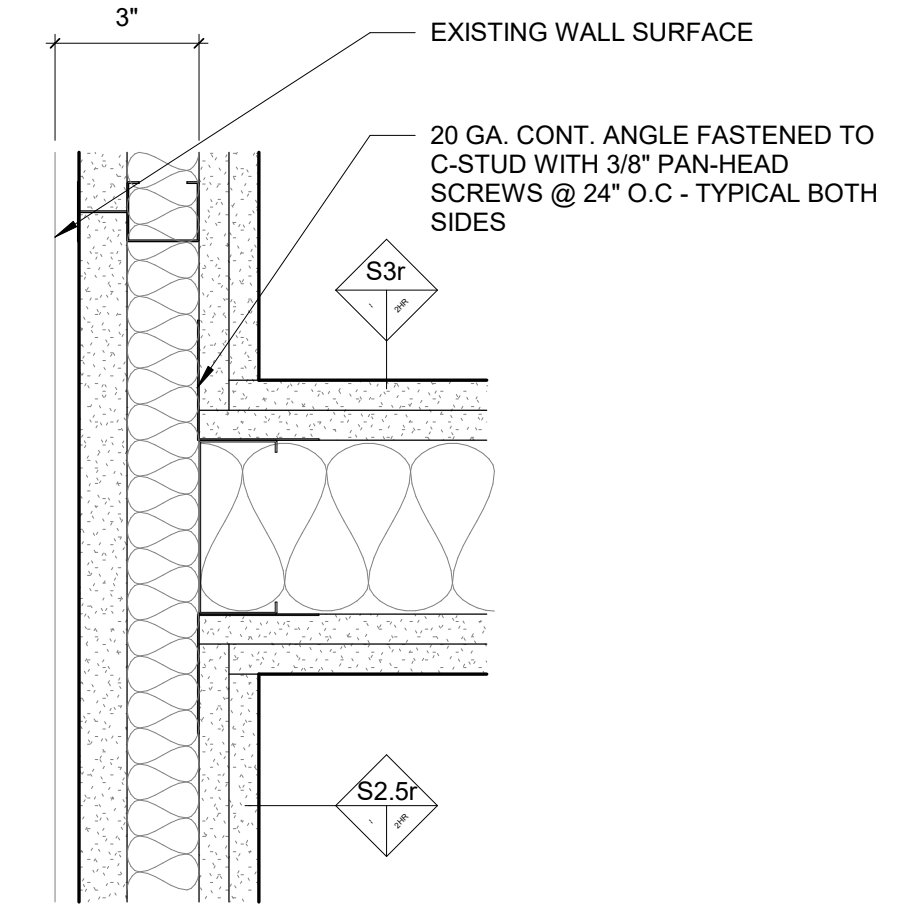
4 CONTROL AREA SECTION 2
1/2" = 1'-0"



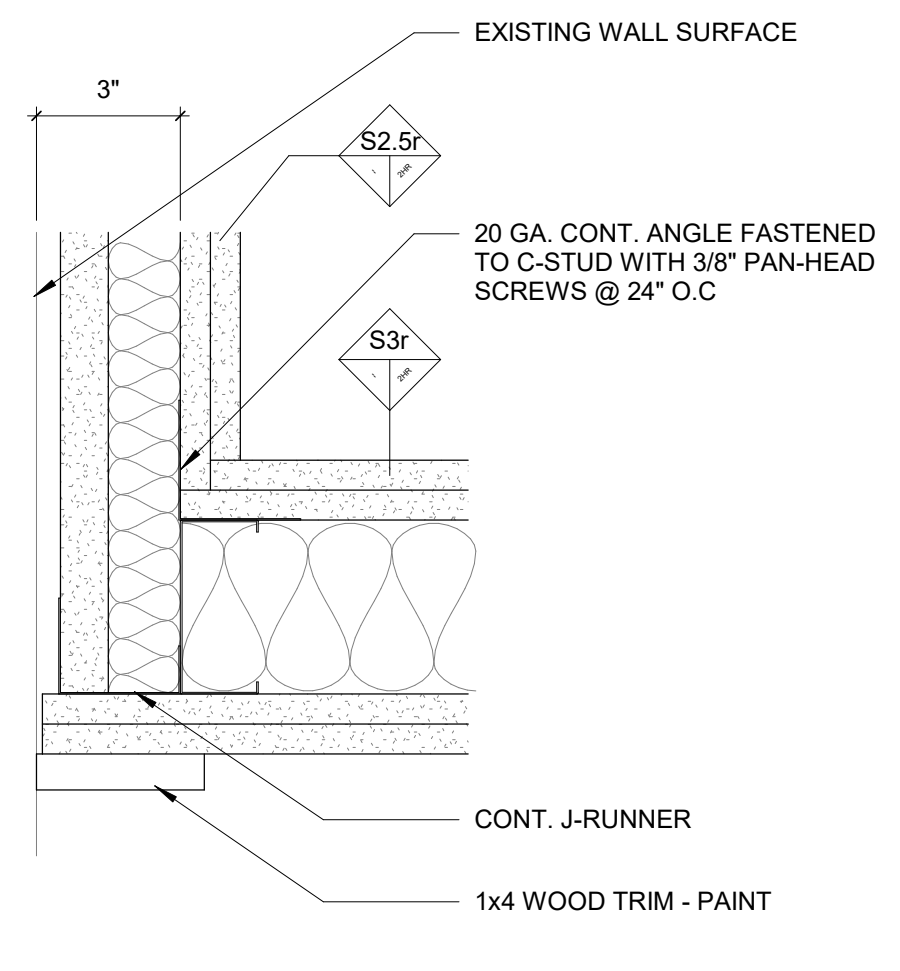
1 CONTROL AREA SECTION 1
1/2" = 1'-0"



5 DETAIL 1
3" = 1'-0"



2 PLAN DETAIL 2
3" = 1'-0"



3 PLAN DETAIL 1
3" = 1'-0"

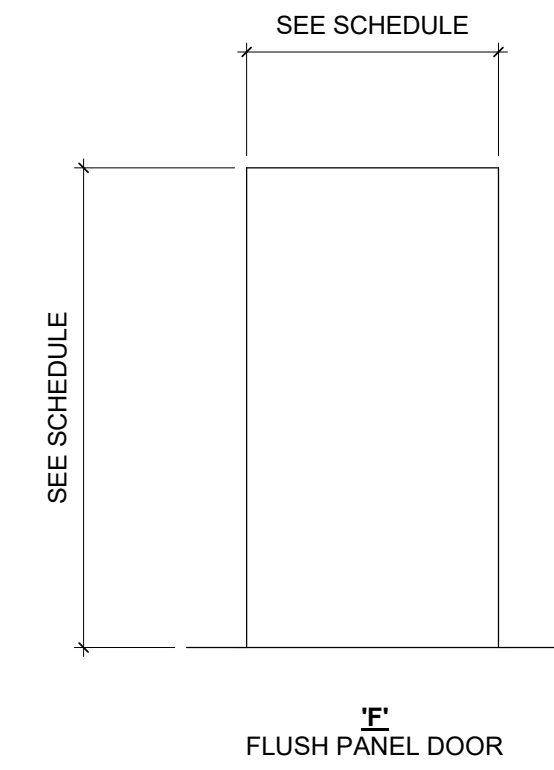
ISSUE	DATE	DESCRIP.

**MONTANA STATE UNIVERSITY
ECOLOGYS STORAGE CONTAINER**
MONTANA STATE UNIVERSITY CAMPUS
SECTIONS AND DETAILS

PPA# 19-0171
12/06/23
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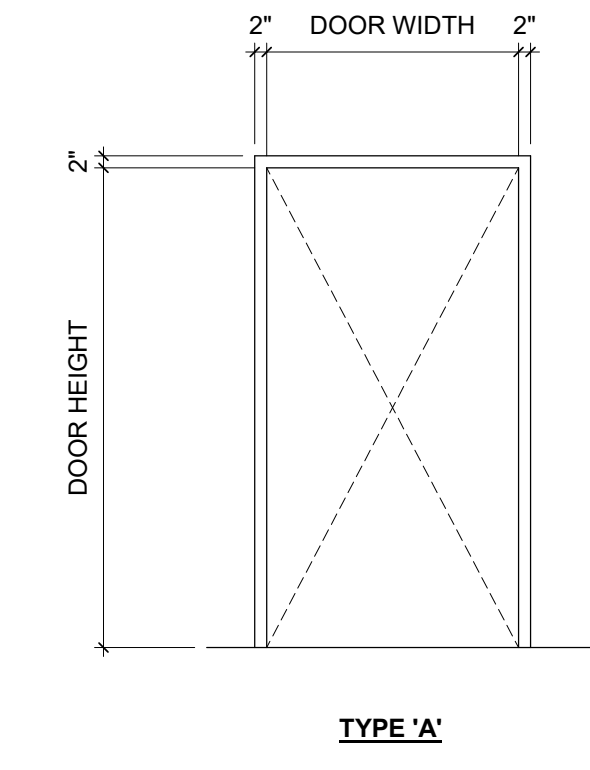
A10

DOOR & FRAME SCHEDULE														
NO.	DOOR					FRAME			HEAD DETAIL	JAMB DETAIL	THRESHOLD DETAIL	FIRE RATING	HARDWARE	COMMENTS
	DOOR TYPE	WIDTH	HEIGHT	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH						
401	F	3'-6"	6'-8"	HM	PAINT	A	HM	PAINT	1/A11	1/A11	-	2 HR	01	
402	F	3'-6"	6'-8"	HM	PAINT	A	HM	PAINT	1/A11	1/A11	-	2 HR	01	



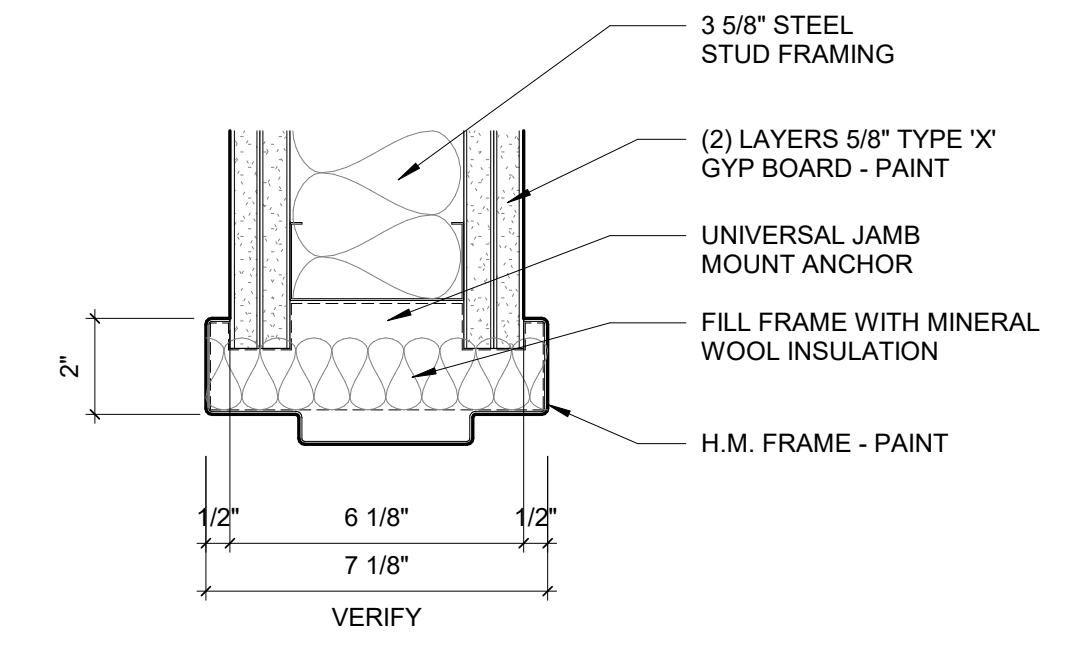
E
FLUSH PANEL DOOR

DOOR TYPE
3/8" = 1'-0"



TYPE 'A'

FRAME TYPE
3/8" = 1'-0"



JAMB SHOWN,
HEAD SIMILAR

1
A11 **DOOR DETAILS**
3" = 1'-0"



ISSUE	DATE	DESCRIP.

**MONTANA STATE UNIVERSITY
ECOLGY STORAGE CONTAINER**
MONTANA STATE UNIVERSITY CAMPUS
DOOR SCHEDULE, TYPES & DETAILS

PPA# 19-0171
12/06/23
BID/PERMIT SET

A11

TEMPERATURE CONTROL NOTES

- CONTROLS SUPPLIED UNDER THIS PROJECT SHALL BE CONNECTED TO THE EXISTING DDC CONTROLS SYSTEM PROVIDED IN THE ADJACENT CHEMISTRY AND BIOSCIENCE BUILDING. EXISTING TEMPERATURE CONTROLS CONTRACTOR SERVICING THE BUILDING IS ELECTRO CONTROLS. CONTACT CHAD SCHOENWALL AT 406-721-3084 FOR COORDINATION.
- CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES INCLUDING, BUT NOT LIMITED TO, WIRING, DEVICES, AND CONTROLLERS TO SUPPORT MONITORING OF THE UNIT TEMPERATURE AND FACTORY INSTALLED HVAC EQUIPMENT AS IDENTIFIED BELOW.
- CONTROL CONTRACTOR SHALL FURNISH A CONTROLS ENCLOSURE FOR MOUNTING BY THE ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR CONTROL EQUIPMENT ROUGH-IN AND ELECTRICAL CONDUIT ROUGH-IN FROM CONTROL EQUIPMENT TO THE CONTROLS ENCLOSURE. COORDINATE WITH THE ELECTRICAL CONTRACTOR.
- ELECTRICAL CONTRACTOR SHALL PROVIDE A 1" CONDUIT PATHWAY FROM THE UNIT CONTROLS ENCLOSURE TO THE CHEMISTRY AND BIOSCIENCE BUILDING AS IDENTIFIED ON THE PLANS.
- STORAGE UNIT IS UTILIZED FOR THE STORAGE OF FLAMMABLE LIQUIDS. ALL DEVICES AND EQUIPMENT LOCATED WITHIN THE UNIT SHALL BE INTRINSICLY SAFE.
- SEQUENCE OF OPERATION:
 - GENERAL NOTES:
 - ALL MAJOR SET POINTS AND PARAMETERS SHALL BE DISPLAYED AND ADJUSTABLE BY THE OPERATOR FROM THE GRAPHICS. MINOR SET POINTS AND PARAMETERS CAN RESIDE IN THE POINTS FOLDER OR NOT INTEGRATED. ULTIMATE AUTHORITY WILL BE MONTANA STATE UNIVERSITY STAFF. ANY POINTS REQUESTED, SHALL BE PROVIDED AT THE GRAPHIC LEVEL TO MEET THEIR REQUESTS.
 - ALL OUTPUTS, VARIABLE SET POINTS, AND SYSTEM MODES SHALL BE OVERRIDE COMMANDABLE FROM THE GRAPHICS. ULTIMATE AUTHORITY WILL BE MONTANA STATE UNIVERSITY STAFF. ANY POINTS REQUESTED, SHALL BE PROVIDED AT THE GRAPHIC LEVEL TO MEET THEIR REQUESTS.
 - ALL OVERRIDES SHALL BE PROMINENTLY DISPLAYED WITH A PURPLE BACKGROUND TO ALERT THE OPERATOR OF AN OVERRIDE. AN OVERRIDE REPORT SHALL LIST ALL OVERRIDDEN POINTS. REPORT SHALL BE EXPORTABLE TO PDF OR CVS FORMAT.
 - ALL POINTS THAT MOVE SHALL BE TRENDED WITH A HYPERLINK FROM THE GRAPHICS.
 - ALL BINARY POINTS SHALL RETAIN RUNTIME AND CYCLES. RUNTIMES SHALL BE DISPLAYED ON GRAPHICS. CYCLE TIMES SHALL BE DISPLAYED ON GRAPHICS WHEN APPLICABLE (UPON REQUEST BY MONTANA STATE UNIVERSITY).
 - ALARMS SHALL BE ENUNCIATED AT THE OPERATOR WORKSTATION, AND AS REQUIRED BY MSU FACILITIES. PROVIDE A TEMPORARY REMOTE CONNECTION FOR INITIAL ALARM DISTRIBUTION AS REQUIRED. ALARM DISTRIBUTION SHALL INITIALLY INCLUDE GENERAL CONTRACTOR AND A REPRESENTATIVE FROM TC CONTRACTOR. OWNER SHALL HAVE THE ABILITY TO ADD/REMOVE PARTIES FROM THE DISTRIBUTION OF ALARMS AS APPROPRIATE. GENERAL CONTRACTOR AND TC CONTRACTOR SHOULD CONTINUE TO RECEIVE CRITICAL ALARMS THROUGH THE WARRANTY PERIOD. RESPONSE TO ALARMS SHALL BE COORDINATED THROUGH BUILDING OWNER, GC, AND TC ALONG WITH ANY OTHER RELEVANT SUBCONTRACTORS.
 - TEMPERATURE MONITORING:
 - MONITOR THE TEMPERATURE WITHIN THE UNIT.
 - ALARMS:
 - ALARM TO THE BMS UNDER THE FOLLOWING CONDITIONS:
 - IF THE UNIT TEMPERATURE FALLS BELOW 55°F (ADJ.) FOR 5 MINUTES.
 - IF THE UNIT TEMPERATURE RISES ABOVE 80°F (ADJ.) FOR 5 MINUTES.
 - TRENDING ON ALL POINTS SHALL BE PROVIDED AT LEAST EVERY 15 MINUTES OR UPON CHANGE OF STATE.
 - UNIT HEATER MONITORING:
 - MONITOR THE STATUS OF EACH UNIT HEATER AND PROVIDE RUN TIME.
 - TRENDING ON ALL POINTS SHALL BE PROVIDED AT LEAST EVERY 15 MINUTES OR UPON CHANGE OF STATE.
 - PACKAGED AIR CONDITIONER MONITORING:
 - MONITOR THE STATUS OF EACH AIR CONDITIONER AND PROVIDE RUN TIME.
 - TRENDING ON ALL POINTS SHALL BE PROVIDED AT LEAST EVERY 15 MINUTES OR UPON CHANGE OF STATE.
 - EXHAUST FAN MONITORING:
 - MONITOR THE STATUS OF THE EXHAUST FAN AND PROVIDE RUN TIME.
 - ALARMS:
 - ALARM TO THE BMS UNDER THE FOLLOWING CONDITIONS:
 - IF THE EXHAUST FAN STATUS IS "ON" FOR LONGER THAN 60 MINUTES AND THE OUTDOOR AIR TEMPERATURE IS BELOW 30°F (ADJ.).
 - TRENDING ON ALL POINTS SHALL BE PROVIDED AT LEAST EVERY 15 MINUTES OR UPON CHANGE OF STATE.

Switchboard: (E) MDP

Location: Volts: 208/120 Wye A.I.C. Rating: 65,000
Supply From: Phases: 3 Mains Type: MCB
Mounting: Surface Mains Rating: 2000 A
Enclosure: Type 1 Buss Rating 2000 A

Notes:
EXISTING SWITCHBOARD IS A GE SPECTRA SERIES TYPE SWITCHBOARD.

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	Load	Remarks
1	(E) CHEM STORAGE S	3	250 A	80 A	0 VA	
2	(E) CHEM STORAGE N	3	250 A	80 A	0 VA	
3	(E) LPOG	3	400 A	400 A	0 VA	
4	(E) SPARE	3	400 A	400 A	0 VA	
5	(E) PROVISION	3	400 A	400 A	0 VA	
6	(E) LD2N	3	400 A	600 A	0 VA	
7	(E) PROVISION	3	400 A	400 A	0 VA	
8	(E) PROVISION	3	400 A	400 A	0 VA	
9	(E) PROVISION	3	400 A	400 A	0 VA	
10	(E) PROVISION	3	400 A	400 A	0 VA	
11	(E) PROVISION	3	400 A	400 A	0 VA	
12	(E) PROVISION	3	400 A	400 A	0 VA	
13	(E) PROVISION	3	400 A	400 A	0 VA	
14	(E) PROVISION	3	400 A	400 A	0 VA	
15	(N) CHEM STORAGE	2	250 A	100 A	16640 VA	
16	(E) PROVISION	3	250 A	250 A	0 VA	
					Total Conn. Load:	16640 VA
					Total Amps:	46 A

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	16640 VA	100.00%	16640 VA	Total Conn. Load: 16640 VA Total Est. Demand: 16640 VA Total Conn.: 46 A Total Est. Demand: 46 A

Notes:

ELECTRICAL LEGEND

POWER DEVICES

Ⓐ	SINGLE POLE SWITCH, SUBSCRIPT INDICATES TYPE: 2 2-POLE 3 3-WAY 4 4-WAY D DIMMER K KEYED LV LOW VOLTAGE MC MOMENTARY CONTACT OS OCCUPANCY SENSOR P PILOT LIGHT T TIMER - 1 HOUR TIMER, MOTOR RATED FOR EXHAUST FANS
Ⓜ	DUPLEX RECEPTACLE SUBSCRIPT INDICATES TYPE: AC ABOVE COUNTER GFCI GROUND FAULT CIRCUIT INTERRUPTER IG ISOLATED GROUND TR TAMPER RESISTANT U USB WP WEATHERPROOF WR WEATHER-RESISTANT FILLED CENTER INDICATES GFCI DEVICE
Ⓜ	DOUBLE DUPLEX RECEPTACLE, SUBSCRIPT ABOVE INDICATE TYPE
Ⓜ	DUPLEX RECEPTACLE IN FLOOR BOX
Ⓜ	DOUBLE DUPLEX RECEPTACLE IN FLOOR BOX
Ⓜ	SIMPLEX RECEPTACLE
Ⓜ	DUPLEX RECEPTACLE, CEILING MOUNTED. DEVICE AND COVER SHALL MATCH CEILING FINISH
Ⓜ	SWITCHED DUPLEX RECEPTACLE, BOX INDICATES DEVICE LOCATED IN FLOOR BOX
Ⓜ	208V SINGLE PHASE RECEPTACLE, CONFIGURATION NOTED ON PLANS
Ⓜ	208V THREE PHASE RECEPTACLE, CONFIGURATION NOTED ON PLANS
Ⓜ	SIMPLEX RECEPTACLE IN FLOOR BOX
Ⓜ	MUSHROOM HEAD PUSH BUTTION
Ⓜ	PHOTO CELL
Ⓜ	WALL MOUNTED CLOCK HANGER/ POWER RECEPTACLE
Ⓜ	CORNER WALL MOUNTED OCCUPANCY SENSOR
Ⓜ	CEILING MOUNTED OCCUPANCY SENSOR, STYLE 1
Ⓜ	CEILING MOUNTED OCCUPANCY SENSOR, STYLE 2
Ⓜ	CEILING MOUNTED OCCUPANCY SENSOR, STYLE 3
Ⓜ	OCCUPANCY SENSOR POWER PACK, BOX INDICATES WALL MOUNTING
Ⓜ	SPECIAL PURPOSE CONNECTION, BRACKET INDICATES WALL MOUNTING, BOX INDICATES FLOOR MOUNTING
Ⓜ	JUNCTION BOX, BRACKET INDICATES WALL MOUNTING, BOX INDICATES FLOOR MOUNTING
Ⓜ	MOTOR CONNECTION
Ⓜ	RELAY
Ⓜ	NON-FUSED DISCONNECT SWITCH
Ⓜ	FUSED DISCONNECT SWITCH
Ⓜ	COMBINATION STARTER/DISCONNECT SWITCH
Ⓜ	CONTACTOR
Ⓜ	MANUAL MOTOR STARTER
Ⓜ	AQUASTAT BY PLUMBING CONTRACTOR, WIRED BY EC.
Ⓜ	VARIABLE FREQUENCY DRIVE
Ⓜ	CO2 DETECTOR BY MC, ROUGH-IN BY EC
Ⓜ	THERMOSTAT BY MC, ROUGH-IN BY EC
Ⓜ	PAD MOUNTED UTILITY TRANSFORMER
Ⓜ	ELECTRICAL PANEL - SEE PANEL SCHEDULES FOR MOUNTING CONFIGURATION

LIGHTING DEVICES

Ⓜ	SURFACE MOUNTED OR CHAIN HUNG STRIP FIXTURE
Ⓜ	DIRECT / INDIRECT LIGHTING PENDANT MOUNTED FIXTURE

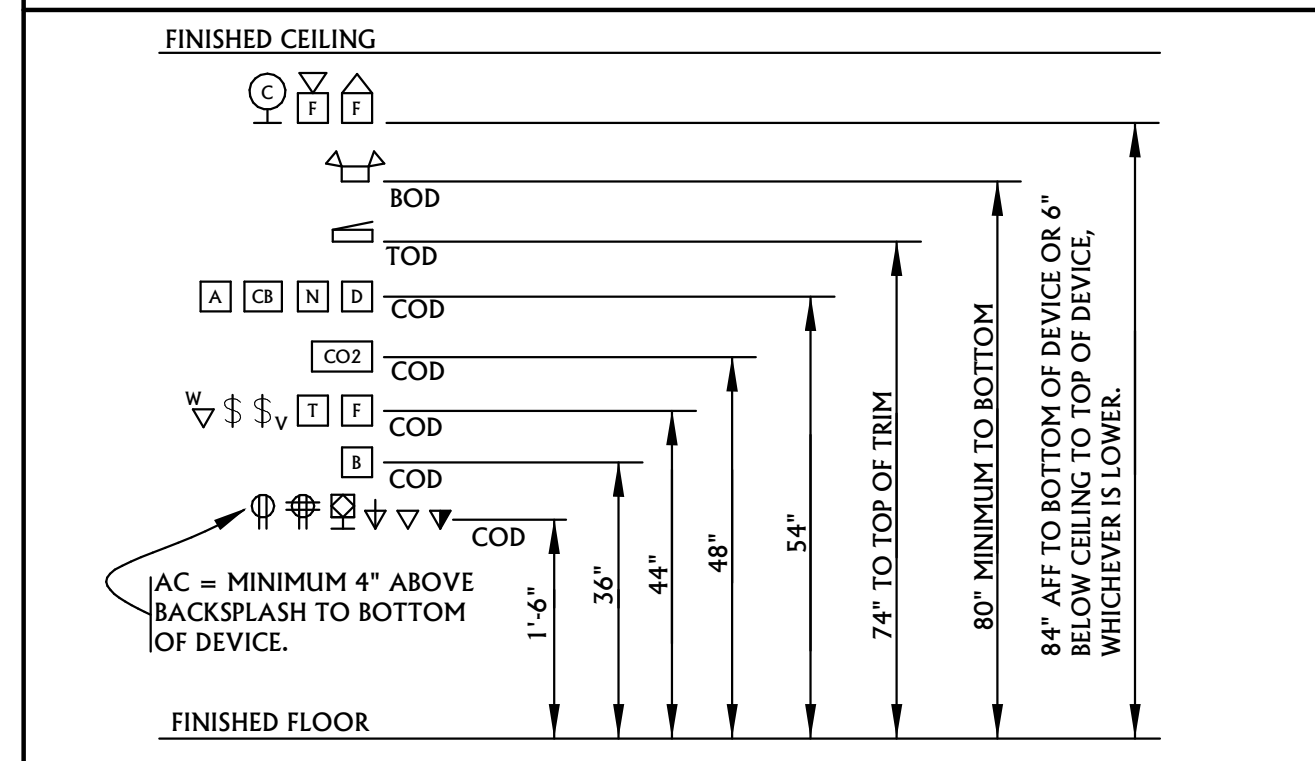
MISCELLANEOUS LEGEND

W/	WITH	AFF	ABOVE FINISHED FLOOR
AC	ABOVE COUNTER	AFG	ABOVE FINISHED GRADE
EC	ELECTRICAL CONTRACTOR	WM	WIRE MOLD
(E)	EXISTING	GC	GENERAL CONTRACTOR
(R)	RELOCATED	GND	GROUND
(N)	NEW DEVICE	UG	UNDER GROUND
C	CONDUIT	BOD	BOTTOM OF DEVICE
BFG	BELOW FINISHED GRADE	TOD	TOP OF DEVICE
UC	UNDER COUNTER	COD	CENTER OF DEVICE
WP	WEATHER PROOF	BOF	BOTTOM OF FIXTURE
MC	MECHANICAL CONTRACTOR	PC	PLUMBING CONTRACTOR
1	REFER TO ELECTRICAL NOTES		
Ⓜ	HOMERUN TO ELECTRICAL PANEL		
Ⓜ	NUMBER OF HASH MARKS INDICATES NUMBER OF CURRENT CARRYING CONDUCTORS. NO MARKS INDICATES TWO. GROUNDING CONDUCTOR NOT SHOWN BUT SHALL BE INCLUDED IN ALL CONDUITS.		
Ⓜ	NORMAL CIRCUIT CONCEALED IN WALL OR EXPOSED		
Ⓜ	UNDERGROUND OR BURIED CIRCUIT		

ELECTRICAL ABBREVIATIONS

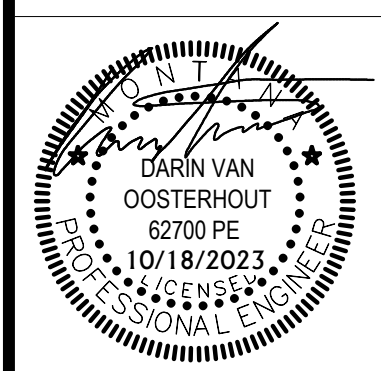
A	AMP(S)	LTS	LIGHTS LIGHT WHITE
ACCU	AIR CONDITIONING CONDENSING UNIT	LW	
ACU	AIR CONDITIONING UNIT	MC	MECHANICAL CONTRACTOR
ADJ	ADJUSTABLE	MCA	MINIMUM CIRCUIT AMPS
ADMIN	ADMINISTRATION	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISH FLOOR	MDP	MAIN DISTRIBUTION PANEL
AHU	AIR HANDLING UNIT	MECH	MECHANICAL
AL	ALUMINUM	MFA	MINIMUM FEEDER AMPACITY
AMP	AMPERE(S)	MFG	MANUFACTURER
APPL	APPLIANCE	MIN	MINIMUM
APPROX	APPROXIMATE	MLO	MAIN LUGS ONLY
ATS	AUTOMATIC TRANSFER SWITCH	MOC	MOMENTARY CONTACT
BLDG	BUILDING	MOC	MAXIMUM OVERCURRENT PROTECTION
BRK	BREAKER	MP	MAIN PANEL MOUNTED
BTU/HR	BRITISH THERMAL UNIT/HOUR	MTD	
C	CONDUIT	NIC	NOT IN CONTRACT NUMBER
CB	CIRCUIT BREAKER	NO	
CCT	CIRCUIT	OC	OVERCURRENT PROTECTION OFFICE OVERHEAD
CCTV	CLOSED CIRCUIT TELEVISION	OFF	
CUH	CABINET UNIT HEATER	P	PHASE
CFM	CUBIC FEET PER MINUTE	PNL	PANEL PREPARATION
CFM	COMMUNICATION	PROD	PRODUCE & INSTALL
COM	COMMISSARY	RA	REMOTE ANNUNCIATOR
COMP	COMPRESSOR	RAF	RETURN AIR FAN
COND	CONDENSER	RECP	RECEPTACLE
CONTR	CONTRACTOR	REF	REFRIGERATOR
CU	COPPER	REFR	REFRIGERANT
CTV	CABLE TELEVISION	REQD	REQUIRED
CW	COOL WHITE	RM	ROOM
CWP	COLD WATER PUMP	RMS	RESTROOM(S)
DIA	DIAMETER	RS	RAPID START
DISC	DISCONNECT	SDP	SUB DISTRIBUTION PANEL
DPS	DOOR POWER SUPPLY	SER	SERVICE SHEET
DWG	DRAWING	SF	SUPPLY FAN
EC	ELECTRICAL CONTRACTOR	SHT	SHEET
EF	EXHAUST FAN	SN	SOLID NEUTRAL SWITCH, PILOT
ELEC	ELECTRIC	SP	SPECIFICATIONS
END	ESTIMATED MAXIMUM DEMAND	SPST	SWITCH, SINGLE POLE-SINGLE THROW
EMER	EMERGENCY	STD	STANDARD
ENGR	ENGINEER	STL	STEEL
ETC	ETCETERA	STOR	STORAGE
EW/C	ELECTRIC WATER COOLER	SW	SWITCH
EXT	EXTERIOR	TBD	TELEPHONE BACK BOARD
FA	FIRE ALARM	TV	TELEVISION
FAC	FACILITY	TYP	TYPICAL
FACP	FIRE ALARM CONTROL PANEL	UG	UNDERGROUND
FIX	FIXTURE	UGE	UNDERGROUND ELECTRICAL
FLA	FULL LOAD AMPS	UGT	UNDERGROUND TELEPHONE
FT	FOOT	UH	UNIT HEATER
GC	GENERAL CONTRACTOR	V	VOLT(S)
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	VA	VOLT AMPERES
GF	GROUND FAULT INTERRUPTER	VEST	VESTIBULE
HP	HORSEPOWER	W	WIRE
HPS	HIGH PRESSURE SODIUM	W	WATT(S)
HID	HIGH INTENSITY DISCHARGE	W/	WITH
HT	HEIGHT	WM	WATT MISER
HTRS	HEATERS	XFMR	TRANSFORMER
HWH	HOT WATER		
HWP	HOT WATER HEATER		
HWP	HOT WATER PUMP		
HZ	HERTZ		
INC	INCORPORATED		
J-BOX	JUNCTION BOX		
KHZ	KILOHERTZ		
KIT	KITCHEN		
KVA	KILOVOLT AMPERE(S)		
KW	KILOWATT(S)		

INTERIOR MOUNTING HEIGHTS



ELECTRICAL SHEET LIST

E0.0	ELECTRICAL COVER SHEET
E2.1	ELECTRICAL PLANS
E2.2	ELECTRICAL LEWIS HALL PLANS

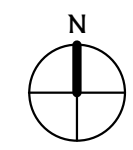
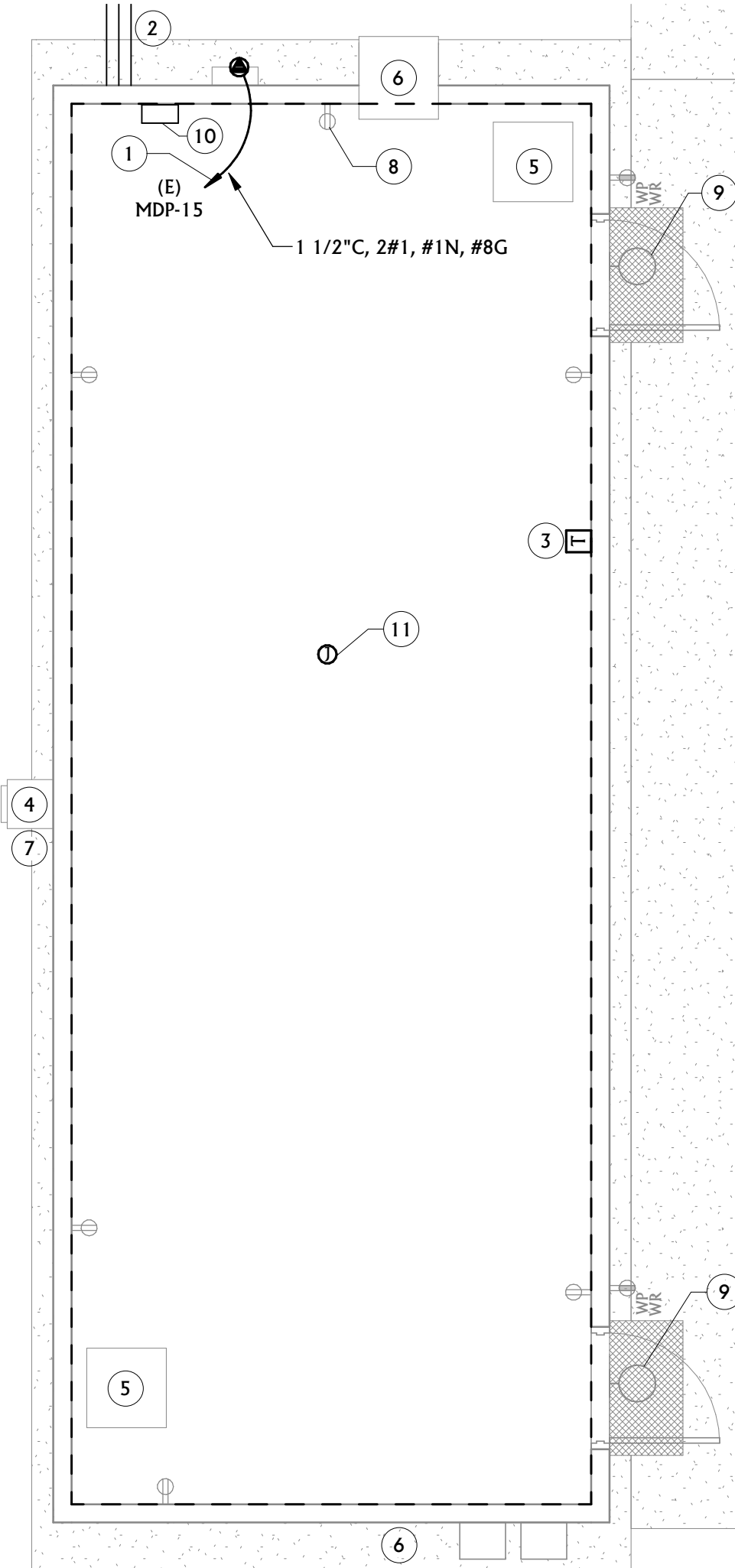


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ACE JOB 23BZ5804

ISSUE	DATE	DESCRIP.
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HAZARDOUS LOCATION NOTES

1. AREAS THAT ARE CLASSIFIED AS CLASS I DIV. II ARE INDICATED BY THE DASHED BOX ON THE PLANS.
2. REFER TO NEC ARTICLE 501 FOR CODE REQUIREMENTS.
3. FOR CONDUIT AND CABLE SEALING REQUIREMENTS REFER TO COMMENTARY TABLE 501.1.
4. REFER TO NEC 501.15 FOR REQUIREMENTS OF SEALS WITHIN A CLASS I, DIV II AREA.
5. REFER TO NEC 510.20 FOR CONDUCTOR INSULATION REQUIREMENTS. COORDINATE CHEMICAL CHARACTERISTICS/PROPERTIES WITH OWNER. REFER TO UL GUIDE INFORMATION FOR ELECTRICAL EQUIPMENT.
6. THE ELECTRICAL SYSTEM WITHIN A CLASS I DIV. II AREA SHALL BE GROUNDED AS SPECIFIED IN NEC ARTICLE 250.
7. SURGE ARRESTERS AND SURGE-PROTECTIVE DEVICES SHALL BE NON-ARCING, SEALED TYPE AND BE OF TYPE DESIGNED FOR SPECIFIC DUTY.
8. REFER TO NEC ARTICLE 501.115(B) FOR REQUIREMENTS OF SWITCHES IN CLASS I DIV. II.
9. REFER TO NEC ARTICLE 501.130(B) FOR REQUIREMENTS OF LUMINARIES WITHIN A CLASS I DIV. II AREA.
10. REFER TO NEC ARTICLE 501.35(B) FOR REQUIREMENTS OF UTILIZATION EQUIPMENT WITHIN A CLASS I DIV. II AREA.
11. REFER TO NEC ARTICLE 501.145 FOR REQUIREMENTS OF RECEPTACLES WITHIN A CLASS I DIV. II AREA.



1
E2.1

POWER AND SPECIAL SYSTEMS PLAN

1/4" = 1'-0"

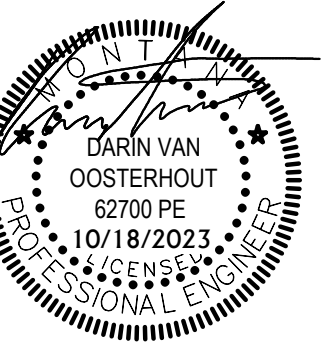
ELECTRICAL POWER GENERAL NOTES

- | | |
|---|---|
| A | REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION ON DEVICE LOCATIONS, DIMENSIONS, ETC. CAREFULLY EXAMINE ARCHITECTURAL FLOOR PLANS, CEILING PLANS, ELEVATIONS, ETC. FOR INFORMATION THAT AFFECTS ELECTRICAL WORK. NOTIFY ARCHITECT/ENGINEER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ARCHITECTURAL AND ELECTRICAL PLANS. |
| B | FIRE SEAL ALL PENETRATIONS IN FIRE RATED WALLS. COORDINATE WITH ARCHITECTURAL FOR LOCATIONS. |

ELECTRICAL KEYNOTES

- | | |
|----|---|
| 1 | PROVIDE NEW 250AF 100AT CIRCUIT BREAKER IN EXISTING MAIN DISTRIBUTION PANEL. SEE PANEL SCHEDULE FOR PANEL TYPE. SEE ARCHITECTURAL PLANS FOR ELECTRICAL ROOM LOCATION. |
| 2 | PROVIDE (1) 1" C FOR FUTURE NEEDS, (1) 2" C FOR TELECOM CABLING, AND (1) 1" C FOR DDC CONTROL CABLING. ROUTE TO TELECOM ROOM AND FIRE ALARM CONTROL PANEL. SEE ARCHITECTURAL PLANS FOR TELECOM AND FACP LOCATIONS. |
| 3 | PROVIDE SPACE TEMPERATURE SENSOR AT APPROXIMATE LOCATION. COORDINATE EXACT LOCATION WITH STORAGE LAYOUT AND ARCHITECT PRIOR TO ROUGH-IN. |
| 4 | FACTORY PROVIDED EXHAUST FAN AT APPROXIMATE LOCATION. PROVIDE MONITORING AS REQUIRED PER THE TEMPERATURE CONTROLS SEQUENCE. |
| 5 | FACTORY PROVIDED UNIT HEATER AT APPROXIMATE LOCATION. PROVIDE MONITORING AS REQUIRED PER THE TEMPERATURE CONTROLS SEQUENCE. |
| 6 | FACTORY PROVIDED A/C UNIT AT APPROXIMATE LOCATION. PROVIDE MONITORING AS REQUIRED PER THE TEMPERATURE CONTROLS SEQUENCE. |
| 7 | EXHAUST FAN WITH FIRE DAMPER AT APPROXIMATE LOCATION IS FACTORY-PROVIDED AND FIELD INSTALLED. PROVIDE CONNECTION TO ELECTRICAL AS REQUIRED. |
| 8 | RECEPTACLE PROVIDED AND INSTALLED BY STORAGE UNIT MANUFACTURER SHOWN FOR REFERENCE ONLY. TYPICAL OF ALL RECEPTACLES SHOWN ON POWER AND SPECIAL SYSTEMS PLAN. |
| 9 | LIGHT FIXTURE PROVIDED AND INSTALLED BY STORAGE UNIT MANUFACTURER SHOWN FOR REFERENCE ONLY. |
| 10 | PROVIDE 12"x12"x6" WIRE PULL BOX FOR TELECOM CABLING. COORDINATE LOCATION AND REQUIREMENTS WITH MSU UIT REPRESENTATIVE. |
| 11 | PROVIDE CEILING MOUNTED J-BOX FOR WIRELESS ACCESS POINT IN APPROXIMATE LOCATION. PROVIDE (1) 1" C FROM TELECOM PULLBOX ON NORTH WALL TO JUNCTION BOX. WIRING FOR WIRELESS ACCESS POINT BY MSU UIT. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MSU UIT. |

THINK|ONE
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ECOLOGY STORAGE CONTAINER
MONTANA STATE UNIVERSITY CAMPUS
ELECTRICAL PLANS

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BID/PERMIT SET

E2.1

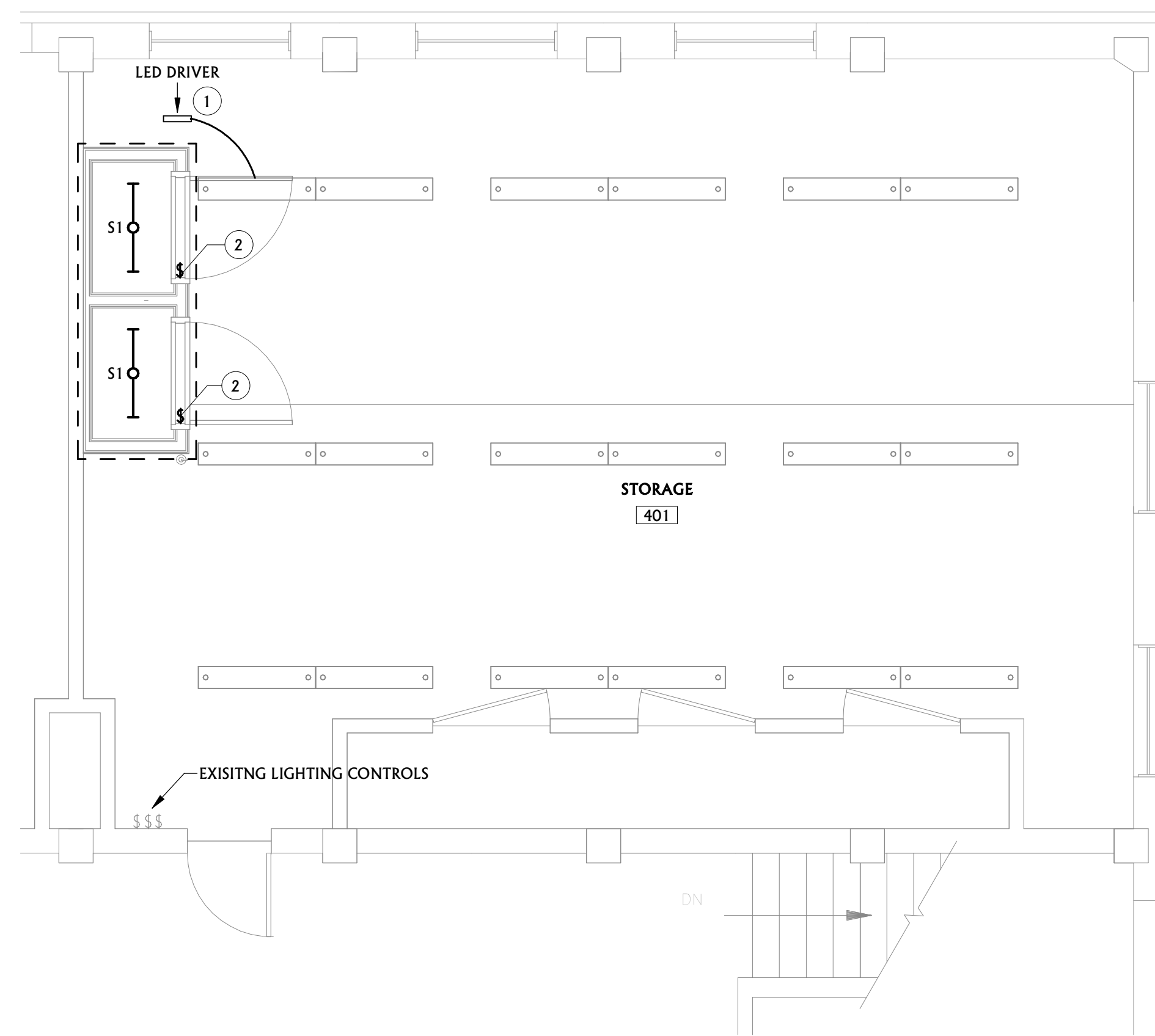
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HAZARDOUS LOCATION NOTES

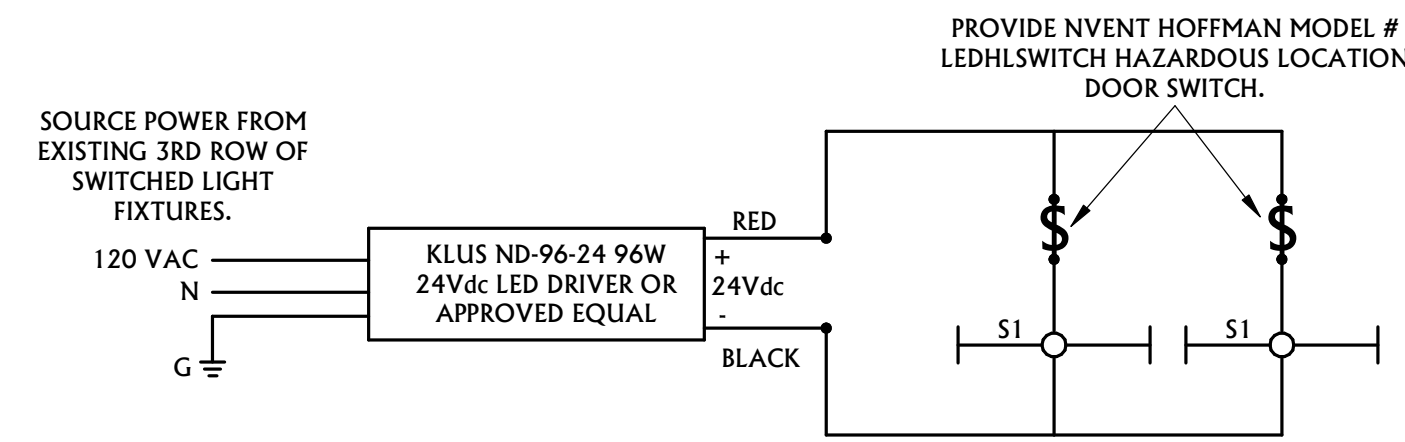
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- REFER TO NEC 510.20 FOR CONDUCTOR INSULATION REQUIREMENTS. COORDINATE CHEMICAL CHARACTERISTICS/PROPERTIES WITH OWNER. REFER TO UL GUIDE INFORMATION FOR ELECTRICAL EQUIPMENT.
- THE ELECTRICAL SYSTEM WITHIN A CLASS I DIV. II AREA SHALL BE GROUNDED AS SPECIFIED IN NEC ARTICLE 250.
- SURGE ARRESTERS AND SURGE-PROTECTIVE DEVICES SHALL BE NON-ARCING, SEALED TYPE AND BE OF TYPE DESIGNED FOR SPECIFIC DUTY.
- REFER TO NEC ARTICLE 501.15(B) FOR REQUIREMENTS OF SWITCHES IN CLASS I DIV. II.
- REFER TO NEC ARTICLE 501.130(B) FOR REQUIREMENTS OF LUMINARIES WITHIN A CLASS I DIV. II AREA.
- REFER TO NEC ARTICLE 501.35(B) FOR REQUIREMENTS OF UTILIZATION EQUIPMENT WITHIN A CLASS I DIV. II AREA.
- REFER TO NEC ARTICLE 501.145 FOR REQUIREMENTS OF RECEPTACLES WITHIN A CLASS I DIV. II AREA.

LUMINAIRE SCHEDULE

CALLOUT	MANUFACTURER	MODEL	MOUNTING	LAMP	ELECTRICAL DATA	DESCRIPTION
S1	NVENT HOFFMAN	LEDHL24V36	SURFACE	LED	24 V/1-32 VA	3' 1750 LUMEN 5000K HAZARDOUS LOCATION LED STRIP LIGHT.



1 LEWIS HALL LIGHTING PLAN
1/4" = 1'-0"



2 HAZARDOUS LED LIGHTING WIRING DETAIL
NOT TO SCALE

ELECTRICAL LIGHTING GENERAL NOTES

- REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION ON DEVICE LOCATIONS, DIMENSIONS, ETC. CAREFULLY EXAMINE ARCHITECTURAL FLOOR PLANS, CEILING PLANS, ELEVATIONS, ETC. FOR INFORMATION THAT AFFECTS ELECTRICAL WORK. NOTIFY ARCHITECT/ENGINEER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ARCHITECTURAL AND ELECTRICAL PLANS.
- ALL DARK ITEMS ARE NEW, UNLESS NOTED OTHERWISE. ALL SHADED ITEMS ARE EXISTING TO REMAIN.
- MODIFY AND REUSE EXISTING CIRCUITS WHERE POSSIBLE. CIRCUITING SHALL BE AS SHOWN BUT CIRCUIT NUMBERS MAY BE CHANGED TO MAKE USE OF EXISTING AVAILABLE CIRCUITS. PROVIDE NEW BREAKERS AND WIRING AS NEED TO ACCOMMODATE NEW CIRCUITING.
- CONNECT ALL LIGHTING FIXTURES TO EXISTING LIGHTING CIRCUITS UNLESS NOTED OTHERWISE. VERIFY EXISTING LOAD PRIOR TO CONNECTING ADDITIONAL LIGHTING FIXTURES.
- VERIFY VOLTAGE OF EXISTING LIGHTING CIRCUITS PRIOR TO SUBMITTALS. COORDINATE ANY MODIFICATIONS TO LIGHTING CIRCUITS OR FIXTURES WITH ENGINEER.
- FIRE SEAL ALL PENETRATIONS IN FIRE RATED WALLS. COORDINATE WITH ARCHITECTURAL FOR LOCATIONS.

ELECTRICAL KEYNOTES

- PROVIDE KLLUS ND-96-24V 96W 24VDC LED DRIVER OR APPROVED EQUAL. CONNECT AC INPUT TO 3RD ROW OF SWITCHED LIGHT FIXTURES. PROVIDE WIRING AND CONNECT DC OUTPUT TO HAZARDOUS LOCATION DOOR SWITCH. DC WIRING NOT SHOWN. SEE ELECTRICAL DETAIL E2.2/2 FOR ADDITIONAL INFORMATION. INSTALL DRIVER IN ACCESSIBLE CEILING SPACE.
- PROVIDE NVENT HOFFMAN MODEL # LEDHLSWITCH HAZARDOUS LOCATION DOOR SWITCH. SEE ELECTRICAL DETAIL E2.2/2 FOR ADDITIONAL INFORMATION.

ADD. ALTERNATE NOTES

- ALL WORK SHOWN ON SHEET E2.2 - ELECTRICAL LEWIS HALL PLANS SHALL BE PERFORMED UNDER ADDITIVE ALTERNATE #1.