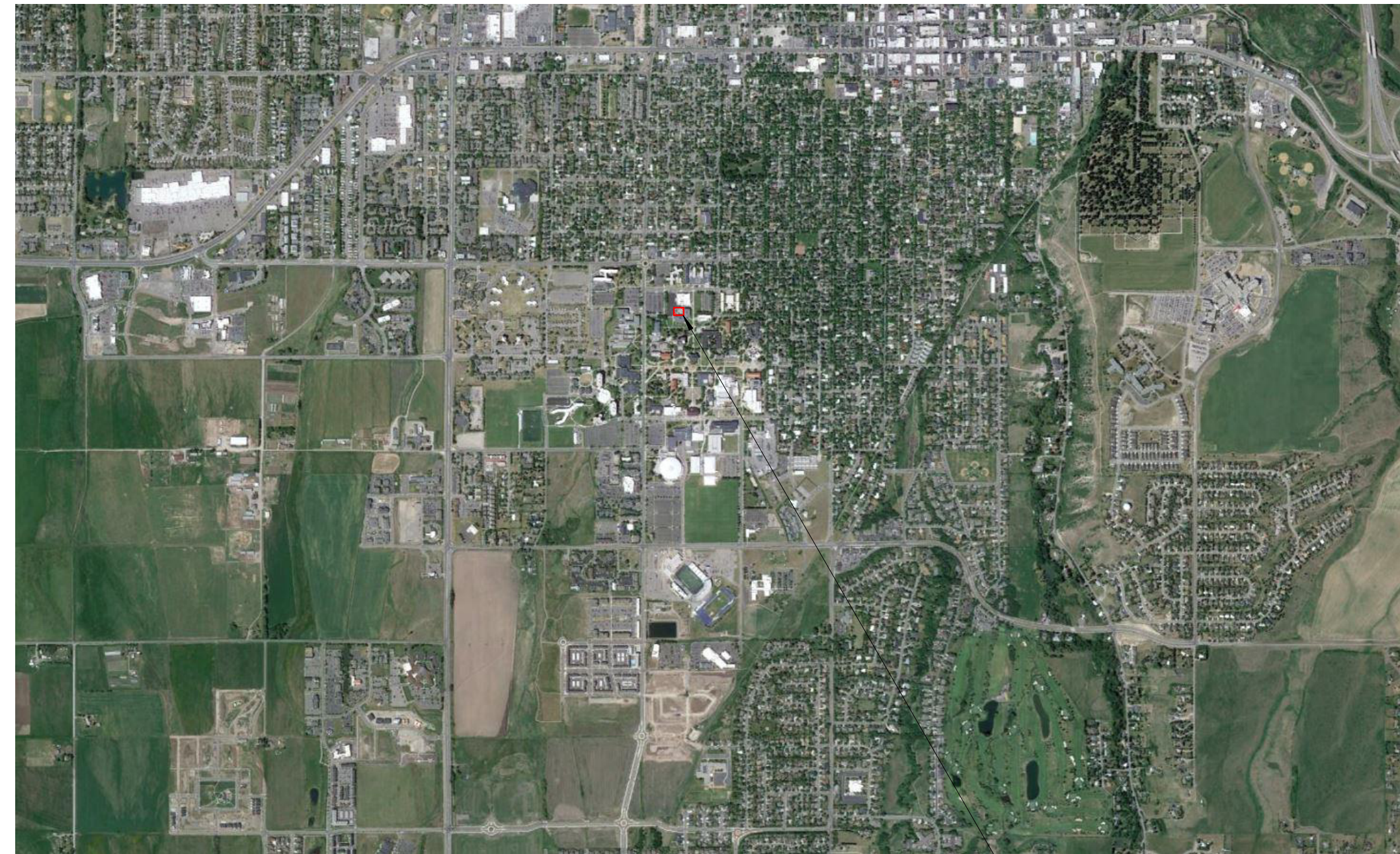


ECOLOGY STORAGE CONTAINER

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 ASSEMBLIES
A08	LEWIS HALL 4th FLOOR - NEW CONSTRUCTION SECTIONS AND DETAILS
A09	DOOR SCHEDULE, TYPES & DETAILS
A10	
A11	

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
BLCK'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	SPECS.	SPECIFICATIONS
E.P.S.	ELEVATION	STOR.	STORAGE
ELEV.		T.B.	TACK BOARD
F.D.	FLOOR DRAIN	T.O.	TOP OF
F.F.	FIRE EXTINGUISHER	T.P.	TOILET PAPER
F.F.	FINISH FLOOR	TYP.	TYPICAL
F.S.	FLOOR SINK	V.B.	VAPOR BARRIER
FLR.	FLOORING	V.C.T.	VINYL COMPOSITION
FDN.	FOUNDATION		
F.O.	FACE OF		
G.B.	GYPNUM WALLBOARD		
GWB	GYPNUM WALLBOARD		
GYP. BD.	GYPNUM WALLBOARD		
TILE	HANDICAPPED	VER.	VERIFY
HC.	HOLLOW METAL	W/	WITH
H.M.		W/O	WITHOUT
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.

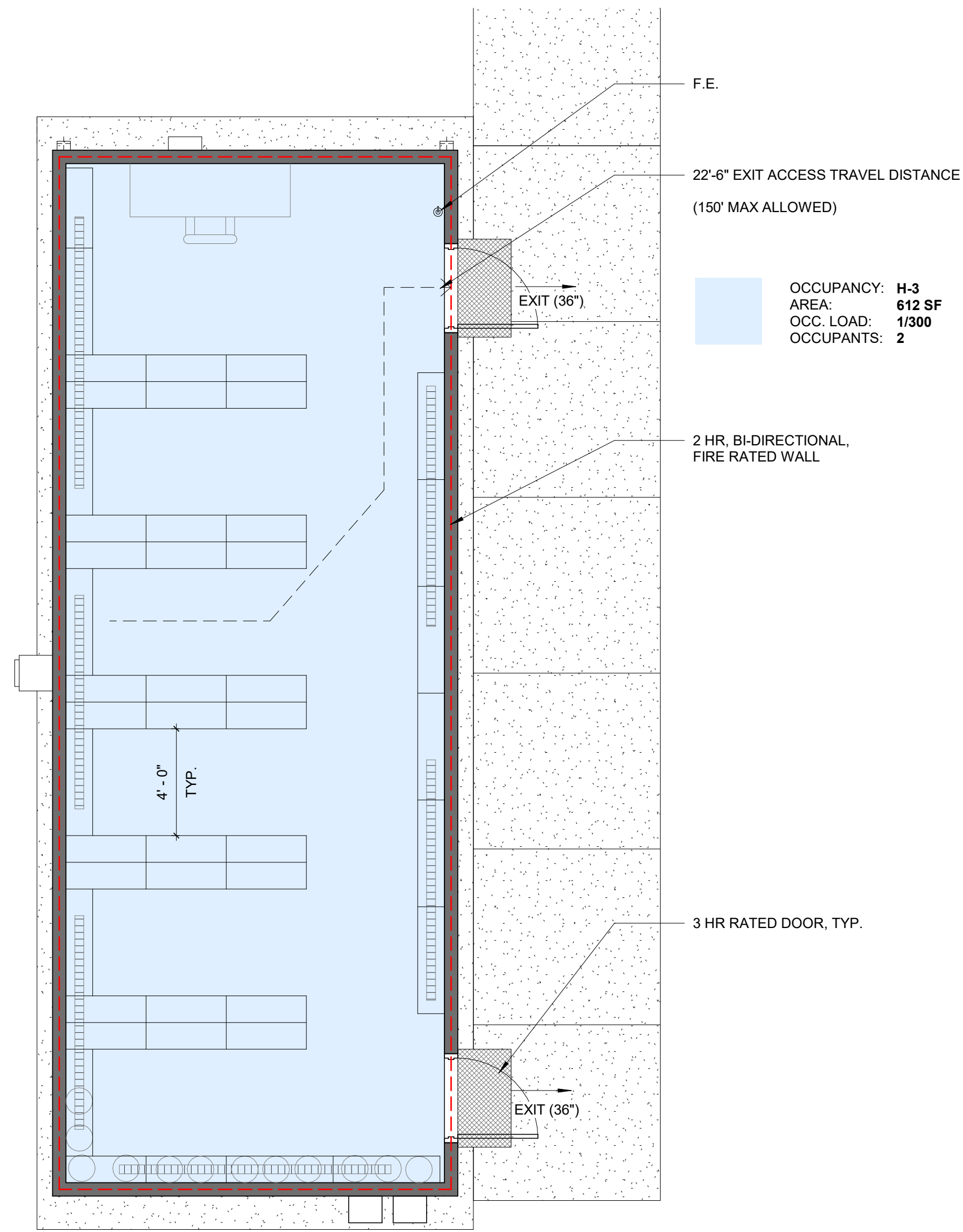
CONSULTANTS:

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.

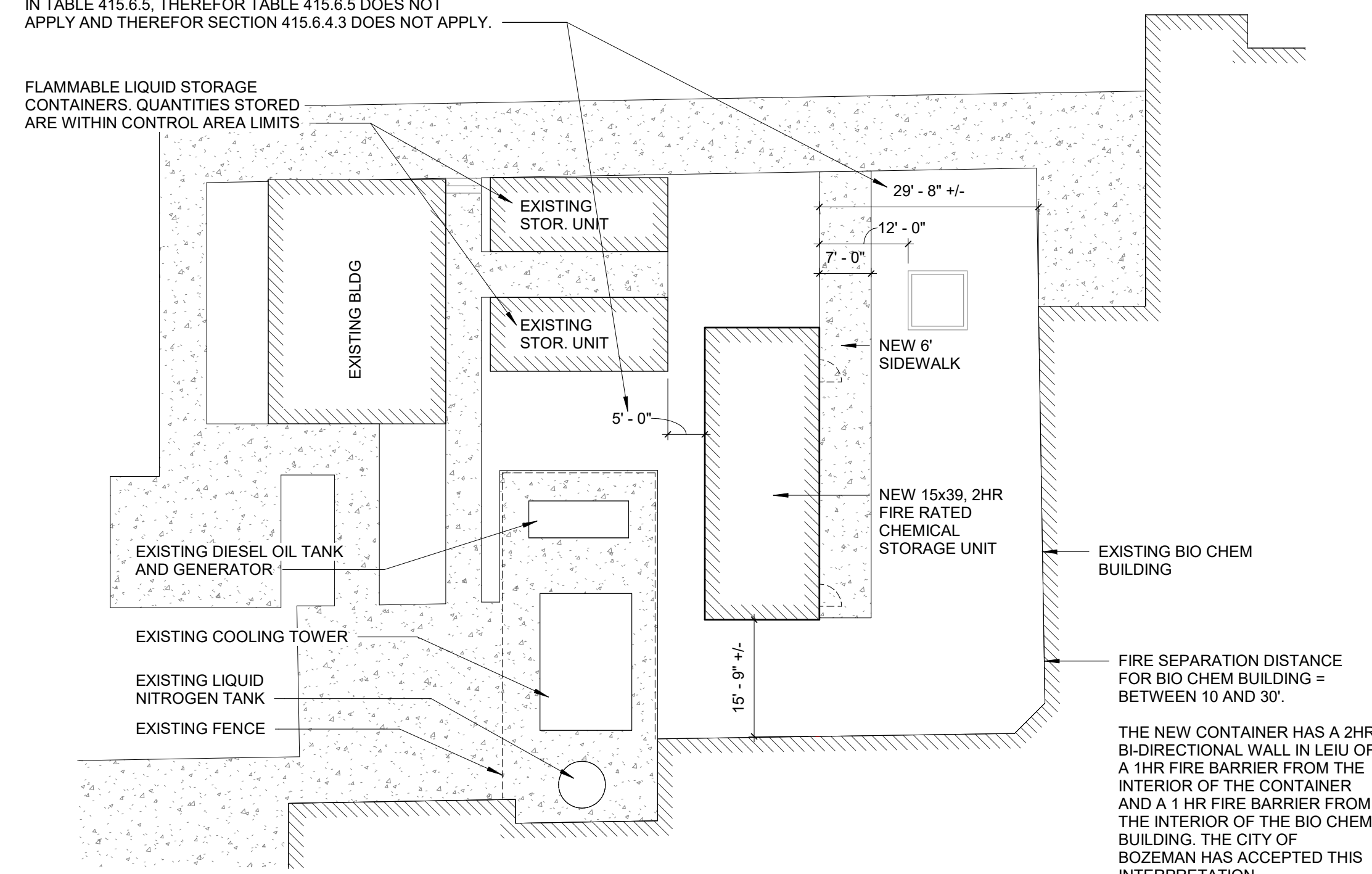
2 CODE REVIEW - FIRST FLOOR CONTAINER

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

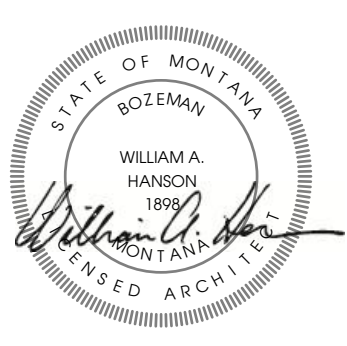
A01 1/16" = 1'-0"

CODE CHECK

CODES:	INTERNATIONAL BUILDING CODE (2021)
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	

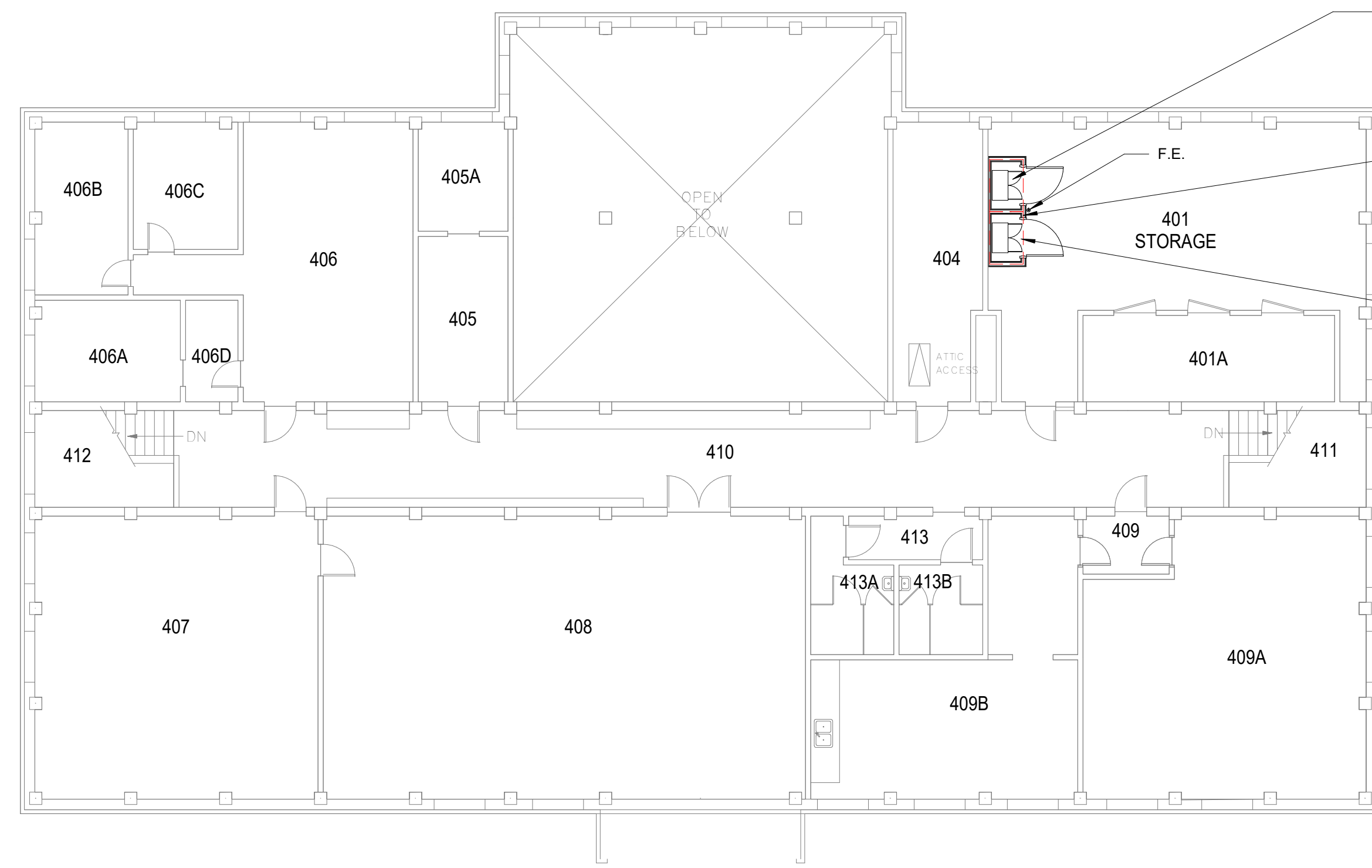
PERMITS	CODE SOURCE:	REQUIREMENTS:
	LOCAL JURISDICTION	LOCAL JURISDICTION
OCCUPANCY	IBC CH. 3	H-3
OCCUPANCY SEPARATION	IBC SECT. 508.3	NON-SEPERATED
CONSTRUCTION TYPE	IBC CH. 6	TYPE II-B
FIRE RESISTANCE	IBC TABLE 705.5	2HR
ALLOWABLE FLOOR AREA	IBC TABLE 506.2	14,000 SF
AREA INCREASE (FRONTAGE)	IBC SECT. 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



1	3/7/24	BP
ISSUE	DATE	COMMENTS
		DESCRIP.

PPA# 19-0171
06/28/23
BID/PERMIT SET



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
A02 **CODE REVIEW - LEWIS HALL, 4th FLOOR**
 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
 OCCUPANCY IBC CH. 3
 CONSTRUCTION TYPE IBC CH. 6

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

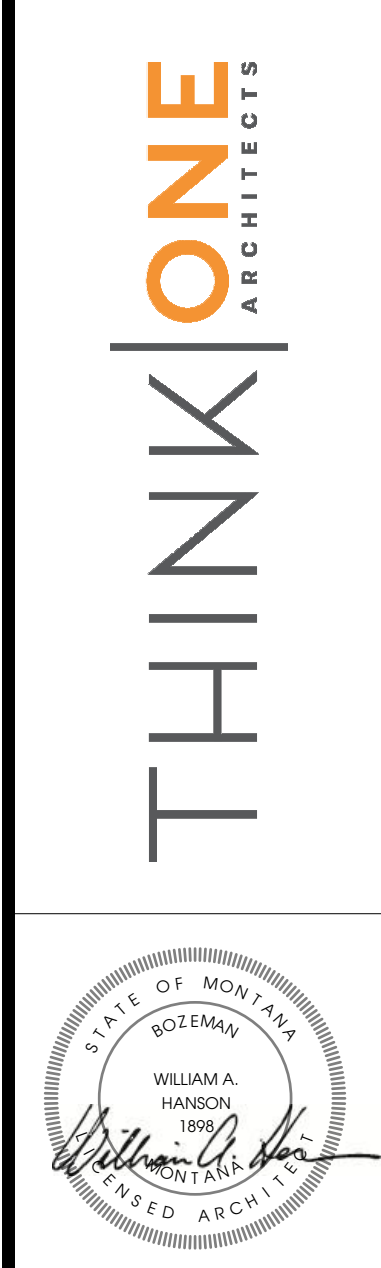
TABLE 307.1-1
 MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF FLAMMABLE LIQUIDS, SOLIDS, GASES OR PHYSICAL HAZARDOUS MATERIALS

MATERIAL CLASS	CLASSIFICATION	MAXIMUM ALLOWABLE QUANTITY (GALLONS)	SOLIDS		GASES		LIQUIDS		PHYSICAL HAZARDOUS MATERIALS	
			Permitted	Not Permitted	Permitted	Not Permitted	Permitted	Not Permitted	Permitted	Not Permitted
Chemicals (Group 1)	1	1000	NA	NA	NA	NA	NA	NA	NA	NA
	2	1000	NA	NA	NA	NA	NA	NA	NA	NA
Chemicals (Group 2)	1	1000	NA	NA	NA	NA	NA	NA	NA	NA
	2	1000	NA	NA	NA	NA	NA	NA	NA	NA
Explosives	1	1000	NA	NA	NA	NA	NA	NA	NA	NA
	2	1000	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
 DESIGN AND NUMBER OF CONTROL AREAS

STORY	PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	NUMBER OF CONTROL AREAS PER FLOOR	
		PERMITTED	REQUIRED
Above grade plane	100%	1	2
	75%	2	3
	50%	3	4
Below grade plane	100%	1	1
	75%	2	2
	50%	3	3



ISSUE	DATE	DESCRIP.
1	A02	CODE REVIEW - LEWIS HALL, 4th FLOOR

MONTANA STATE UNIVERSITY
ECOLOGY STORAGE CONTAINER
 MONTANA STATE UNIVERSITY CAMPUS
CODE REVIEW

PPA# 19-0171
 06/28/23
 BID/PERMIT SET

A02

STRUCTURAL - GENERAL NOTES

GENERAL REQUIREMENTS

GOVERNING CODE: The design and construction of this project is governed by the "International Building Code (IBC)", 2021 Edition, hereafter referred to as the IBC, as adopted and modified by the City of Bozeman, MT understood to be the Authority Having Jurisdiction (AHJ).

REFERENCE STANDARDS: Refer to Chapter 35 of 2021 IBC. Where other Standards are noted in the drawings, use the latest edition of the standard unless a specific date is indicated. Reference to a specific section in a code does not relieve the contractor from compliance with the entire standard.

DEFINITIONS: The following definitions cover the meanings of certain terms used in these notes:

- "Architect/Engineer" – The Architect of Record and the Structural Engineer of Record.
- "Structural Engineer of Record" (SER) – The structural engineer who is licensed to stamp & sign the structural documents for the project. The SER is responsible for the design of the Primary Structural System.
- "Submit for review" – Submit to the Architect/SER for review prior to fabrication or construction.
- "Per Plan" – Indicates references to the structural plans, elevations and structural general notes.
- "Bidder-designed" – Components of the structure that require the general contractor, subcontractor, or supplier who is responsible for the design, fabrication and installation of specialty-engineered elements identified in the Contract Documents to retain the services of an SSE. Submittals of "Bidder-designed" elements shall be stamped and signed by the SSE.

SPECIFICATIONS: Refer to the project specifications issued as part of the contract documents for information supplemental to these drawings.

OTHER DRAWINGS: Refer to the architectural, mechanical, electrical, civil and plumbing drawings for additional information including but not limited to dimensions, elevations, slopes, mechanical unit locations, and other non-structural items.

STRUCTURAL DETAILS: The structural drawings are intended to show the general character and extent of the project and are not intended to show all details of the work. Use entire detail sheets and specific details referenced in the plans as "typical" wherever they apply. Similarly, use details on entire sheets with "typical" in the name wherever they apply.

COORDINATION: The Contractor is responsible for coordinating details and accuracy of the work; for confirming and correlating all quantities and dimensions; for selecting fabrication processes; for techniques of assembly; and for performing work in a safe and secure manner.

MEANS, METHODS and SAFETY REQUIREMENTS: The contractor is responsible for the means and methods of construction and all job-related safety standards such as OSHA and DOSH (Department of Occupational Safety and Health). The contractor is responsible for means and methods of construction related to the intermediate structural conditions (i.e., movement of the structure due to moisture and thermal effects; construction sequence; temporary bracing, etc.).

DISCREPANCIES: In case of discrepancies between the General Notes, Specifications, Plans/Details or Reference Standards, the Architect/Engineer shall determine which shall govern. Discrepancies shall be brought to the attention of the Architect/Engineer before proceeding with the work. Should any discrepancy be brought to the attention of the Architect/Engineer, the Contractor will be deemed to have included in the price the most expensive way of completing the work, unless prior to the submission of the price, the Contractor asks for a decision from the Architect as to which shall govern. Accordingly, any conflict in or between the Contract Documents shall not be a basis for adjustment in the Contract Price.

ADJACENT UTILITIES: The contractor shall determine the location of all adjacent underground utilities prior to earthwork, foundations, shoring, and excavation. Any utility information shown on the drawings and details is approximate and not necessarily complete.

DESIGN CRITERIA AND LOADS

OCCUPANCY:	Risk Category of Building per 2021 IBC Table 1604.5 =	III
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WIND DESIGN:	MAIN WIND FORCE RESISTING SYSTEM	
Ultimate Design Wind Speed, V_{ULT} (MPH)		114
Exposure Category		C
Internal Pressure Coefficient	C_{pi} =	+/- 0.18
Topographic Factor	K_{zt} =	1.0

SEISMIC	Seismic Design Category:	SDC =	D
	Site Classification per IBC 1613.3.2 & ASCE 7-16, Ch. 20		D
	Seismic Importance Factor per ASCE 7-16 Table 1.5-2	I_e =	1.25
	Spectral Response Acceleration (Short Period)	S_s =	0.679 g
	Spectral Response Acceleration (1-Second Period)	S_1 =	0.214 g

SNOW LOAD:	Ground Snow Load, (PSF)	p_g =	46
	Snow Drift Loading required by Authority Having Jurisdiction?		Yes
	Snow Load Importance Factor	I_s =	1.0
	Snow Exposure Factor	C_e =	B

DEFERRED SUBMITTALS

BIDDER-DESIGNED ELEMENTS

Submit "Bidder-Designed" deferred submittals to the Architect and SER for review. The deferred submittals shall also be submitted to the city for approval, if required by the city.

Design of prefabricated, "bidder designed", manufactured, pre-engineered, or other fabricated products shall comply with the following requirements:

- Design considers tributary dead, live, wind and earthquake loads in combinations required by IBC.
- Design within the Deflection Limits referenced in the IBC.
- Design shall conform to the specifications and reference standards of the governing code.
- Submittal shall include:
 - Calculations prepared, stamped and signed by the SSE demonstrating code conformance.
 - Engineered component design drawings are prepared, stamped and signed by the SSE.
 - Product data, technical information and manufacturer's written requirements and Agency approvals as applicable.
 - SSE may submit to the Architect/Engineer, a request to utilize relevant alternate design criteria of similar nature and generally equivalency which is recognized by the Code and acceptable to the Authority Having Jurisdiction. Submit adequate documentation of design.

GENERAL CONTRACTOR'S PRIOR REVIEW: Once the contractor has completed their review of the SSE component drawings, the SER will review the submittal for general conformance with the design of the building and will stamp the submittal accordingly. Review of the Specialty Structural Engineer's (SSE) shop drawings (component design drawings) is for compliance with design criteria and compatibility with the design of the primary structure and does not relieve the SSE of responsibility for that design. All necessary bracing, ties, anchorage, proprietary products shall be furnished and installed per manufacturer's instructions or the SSE's design drawings and calculations. These elements include but are not limited to:

- Pre-Manufactured Building and its Anchorage to the foundation
- Handrails, Guardrails, and their Anchorages

INSPECTIONS, QUALITY ASSURANCE VERIFICATIONS AND TEST REQUIREMENTS

INSPECTIONS: Foundations, footings, under slab systems and framing are subject to inspection by the Building Official in accordance with IBC 110.3. Contractor shall coordinate all required inspections with the Building Official.

SPECIAL INSPECTIONS, VERIFICATIONS and TESTS: Per the Exceptions under Section 1705.3 in the 2021 IBC, Special Inspections are not required for the concrete portion of this project. Contractor is referred to IBC Sections 1705 for other architectural and MEP building systems that may be subject to additional inspections.

STRUCTURAL OBSERVATION: per IBC Section 1704.6, Structural Observation for this project is not required.

SOILS AND FOUNDATION

REFERENCE STANDARDS: Conform to IBC Chapter 18 "Soils and Foundations."

CONTRACTOR'S RESPONSIBILITIES: Contractor shall be responsible to review the Geotechnical Report and shall follow the recommendations contained therein, but not limited to, subgrade preparations, pile installation procedures, ground water management and steep slope Best Management Practices.

GEOTECHNICAL SUBGRADE INSPECTION: Assumed values shall be field verified by the Building Official or the Geotechnical Engineer prior to placing concrete.

DESIGN SOIL VALUES:

Allowable Foundation Bearing Pressure..... 2000 PSF – ASSUMED

FOUNDATIONS and FOOTINGS: Foundations shall bear on either on competent native soil or compacted structural fill.

SLABS-ON-GRADE: All slabs-on-grade shall bear on compacted structural fill or competent native soil. All moisture sensitive slabs-on-grade or those subject to receive moisture sensitive coatings/covering shall be provided with an appropriate capillary break and vapor barrier/retardant over the subgrade prepared and installed as noted in the geotechnical report, barrier manufacturer's written recommendations and coordinated with the finishes specified by the Architect.

CAST-IN-PLACE CONCRETE

REFERENCE STANDARDS: Conform to:

- ACI 301-20 "Specifications for Structural Concrete"
- IBC Chapter 19 "Concrete"
- ACI 318-19 "Building Code Requirements for Structural Concrete"
- ACI 117-10 "Specifications for Tolerances for Concrete Construction and Materials"
- CRSI MSP-09, 28th Edition, "Manual of Standard Practice"
- ACI SP-66(04) "ACI Detailing Manual"

FIELD REFERENCE: The contractor shall keep a copy of ACI Field Reference manual, SP-15, "Standard Specifications for Structural Concrete (ACI 301) with Selected ACI and ASTM References."

CONCRETE MIXTURES: Conform to ACI 301 Section 4 "Concrete Mixtures" and IBC Section 1904.1.

MATERIALS: Conform to ACI 301 Section 4.2.1 "Materials" for requirements for cementitious materials, aggregates, mixing water and admixtures.

Reinforcing Bars.....ASTM A615, Grade 60, deformed bars.
Smooth Welded Wire Fabric.....ASTM A1064
Bar Supports.....CRSI MSP-09, Chapter 3 "Bar Supports."
Tie Wire.....16 gage or heavier, black annealed.

SUBMITTALS:

- Provide all submittals required by ACI 301 Section 4.1.2. Submit mix designs for each mix in the table below. Substantiating strength results from past tests shall not be older than 24 months per ACI 318 Section 26.4.3.1 (b).
- Conform to ACI 301 Section 3.1.2 "Submittals." Submit placing drawings showing fabrication dimensions and placement locations of reinforcement and reinforcement supports.

TABLE OF MIX DESIGN REQUIREMENTS

Member Type/Location	Strength f_c (psi)	Test Age (days)	Nominal Maximum Aggregate	Exposure Class	Max W/C Ratio	Air Content	Notes (1 to 9 Typical UNO)
Mat Foundations, Exterior Slabs on Grade	4500	28	1"	F3, W1	.45	6%	-

Table of Mix Design Requirements Notes:

- W/C Ratio: Water-cementitious material ratios shall be based on the total weight of cementitious materials. Maximum ratios are controlled by strength noted in the Table of Mix Design Requirements and durability requirements given in ACI 318 Section 19.3. W/C ratios may be exceeded with approval of SER as long as potential shrinkage impacts are accounted for.
- Cementitious materials shall conform to the relevant ASTM standards listed in ACI 318 Section 26.4.1.1.(a).
- Air Content: Conform to ACI 318 Section 19.3.3.1. Minimum standards for exposure class are noted in the table. If freezing and thawing class is not noted, air content given is that required by the SER. Tolerance is $\pm 1\%$. Air content shall be measured at point of placement.
- Aggregates shall conform to ASTM C33.
- Slump: Conform to ACI 301 Section 4.2.2.1. Slump shall be determined at point of placement.
- Chloride Content: Conform to ACI 318 Table 19.3.2.1.
- Non-chloride accelerator: Non-chloride accelerating admixture may be used in concrete placed at ambient temperatures below 50°F at the contractor's option.
- ACI 318, Section 19.3.1.1 exposure classes shall be assumed to be F3, S0, W1, and C1 unless different exposure classes are listed in the Table of Mix Design Requirements that modify these base requirements.
- Structural design is based on strength of 2500 psi and therefore does not require special inspection. The 4500 psi compressive strength is specified for serviceability.

MEASURING, MIXING, AND DELIVERY: Conform to ACI 301 Section 4.3.

HANDLING, PLACING, CONSTRUCTING AND CURING: Conform to ACI 301 Section 5. In addition, hot weather concreting shall conform to ACI 305R-20 and cold weather concreting shall conform to ACI 306R-16.

CONSTRUCTION JOINTS: Conform to ACI 301 Sections 2.2.2.5 and 5.3.2.6. Construction joints shall be located and detailed as on the construction drawings. Submit alternate locations per ACI 301 Section 5.1.2.3(a) for review and approval by the SER two weeks minimum prior to forming. Use of an acceptable adhesive, surface retardant, Portland cement grout or roughening the surface is not required unless specifically noted on the drawings.

EMBEDDED ITEMS: Position and secure in place expansion joint material, anchors and other structural and non-structural embedded items before placing concrete. Contractor shall refer to mechanical, electrical, plumbing and architectural drawings and coordinate other embedded items.

GROUT: Use 7000 psi non-shrink grout under steel base plates

STRENGTH TESTING AND ACCEPTANCE:

Testing: Obtain samples and conduct tests in accordance with ACI 301 Section 1.7.3.3. Additional samples may be required to obtain concrete strengths at alternate intervals than shown below and should be standard cured per ACI Section 26.5.3.2.

- Cure 4 cylinders for 28-day test age. Test 1 cylinder at 7 days, test 2 cylinders at 28 days, and hold 1 cylinder in reserve for use as the Engineer directs. After 56 days, unless notified by the Engineer to the contrary, the reserve cylinder may be discarded without being tested for specimens meeting 28-day strength requirements.
- The number of cylinders indicated above reference 6 by 12 in cylinders. If 4 by 8 in cylinders are to be used, additional cylinders must be cured for testing of 3 cylinders at test age per the table of mix design requirements.

Acceptance: Strength is satisfactory when:

- The averages of all sets of 3 consecutive tests equal or exceed the specified strength.
- No individual test falls below the specified strength by more than 500 psi.

A "test" for acceptance is the average strength of two 6 by 12 in. cylinders or three 4 by 8 in. cylinders tested at the specified test age.

FABRICATION: Conform to ACI 301, Section 3.2.2. "Fabrication", and ACI SP-66 "ACI Detailing Manual."

CONCRETE PLACEMENT TOLERANCE: Conform to ACI 117-10 for placement tolerance.

CONCRETE COVER: Conform to the following cover requirements unless noted otherwise in the drawings.
Concrete cast against earth.....3"
Concrete exposed to earth or weather.....2"

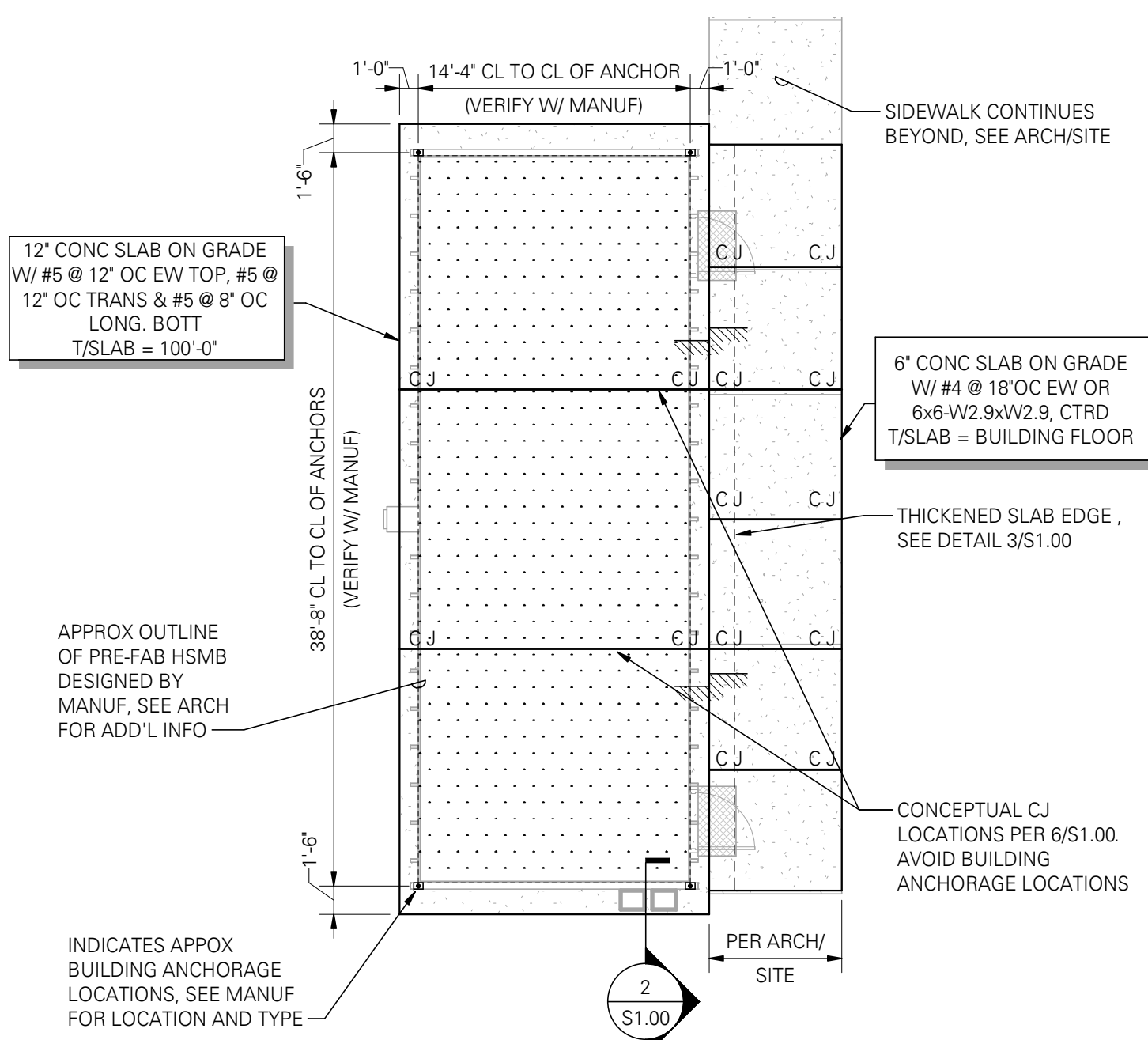
SPLICES: Conform to ACI 301, Section 3.3.2.7, "Splices." Refer to "Typical Lap Splice and Development Length Schedule" for typical reinforcement splices.

FIELD BENDING: Conform to ACI 301 Section 3.3.2.8, "Field Bending or Straightening." Bar sizes #3 through #5 may be field bent cold the first time. Subsequent bends and other bar sizes require preheating. Do not twist bars. Bars shall not be bent past 45 degrees.

FOUNDATION PLAN NOTES:

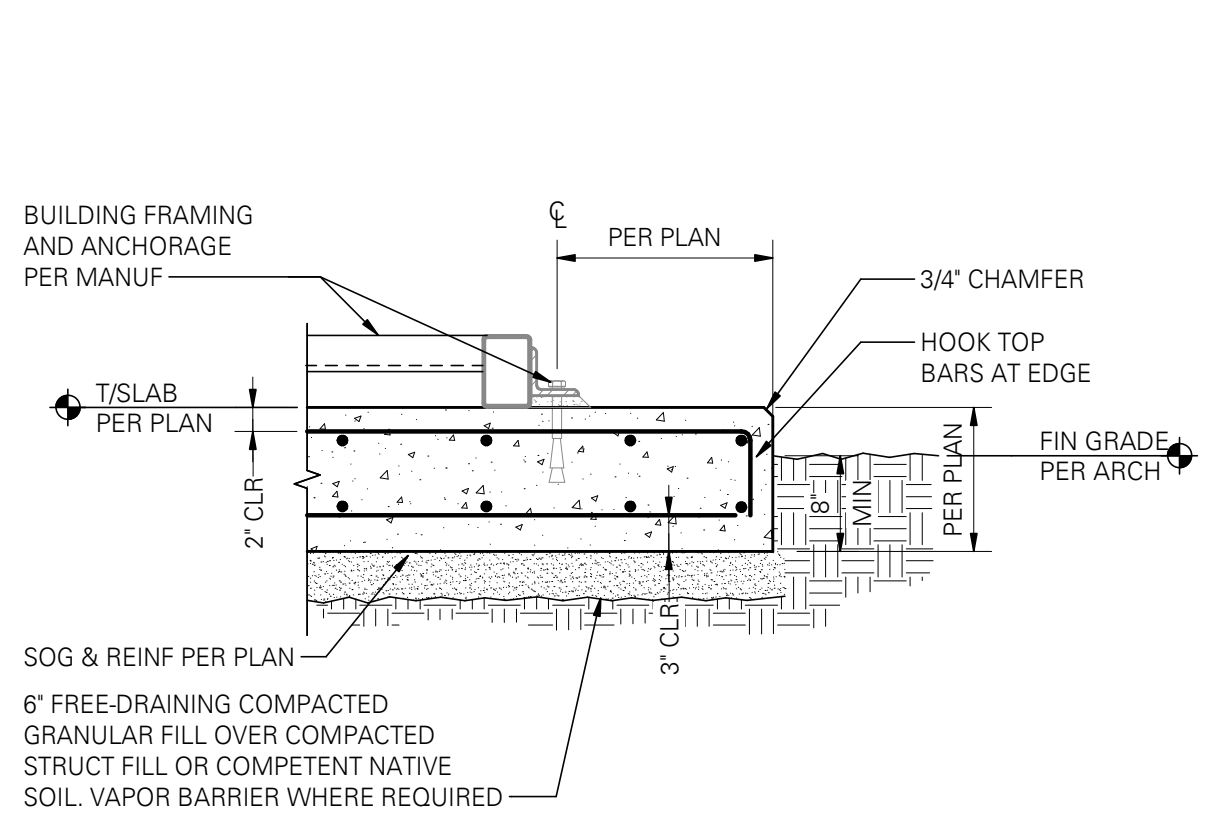
- STRUCTURAL GENERAL NOTES, DESIGN CRITERIA, ABBREVIATIONS AND LEGEND PER S1.00.
- SLAB DIMENSIONS FROM BASIS OF DESIGN DOCUMENTS. VERIFY ALL DIMENSIONS AND ELEVATIONS WITH ARCHITECTURAL, CIVIL, AND FINAL BUILDING DRAWINGS.
- CONTRACTOR SHALL LOCATE AND VERIFY THE FOLLOWING WITH OTHERS PRIOR TO POURING CONCRETE: ALL DRAINS, SLOPES, EMBEDS, AND BLOCK-OUTS PER MANUFACTURER DRAWINGS AND ARCHITECTURAL DRAWINGS.
- TOP OF SLAB (T/SLAB) ELEVATION ASSUMED 100'-0". FOR ACTUAL T/SLAB ELEVATION REFER TO CIVIL AND ARCHITECTURAL DRAWINGS. PROVIDE FREE-DRAINING GRANULAR FILL.
- ALL SLABS TO BEAR ON COMPETENT NATIVE SOIL AND/OR STRUCTURAL FILL.
- CJ INDICATES CONTROL JOINT PER PLAN. IF THE SLAB IS PLACED IN MULTIPLE POURS OR PLACEMENT IS INTERRUPTED, SEE THE CONSTRUCTION JOINT DETAIL.
- TYPICAL DETAILS PER:

5/S1.00	TYPICAL LAP SPLICE SCHEDULE
6/S1.00	TYPICAL SLAB CONSTRUCTION AND CONTROL JOINTS



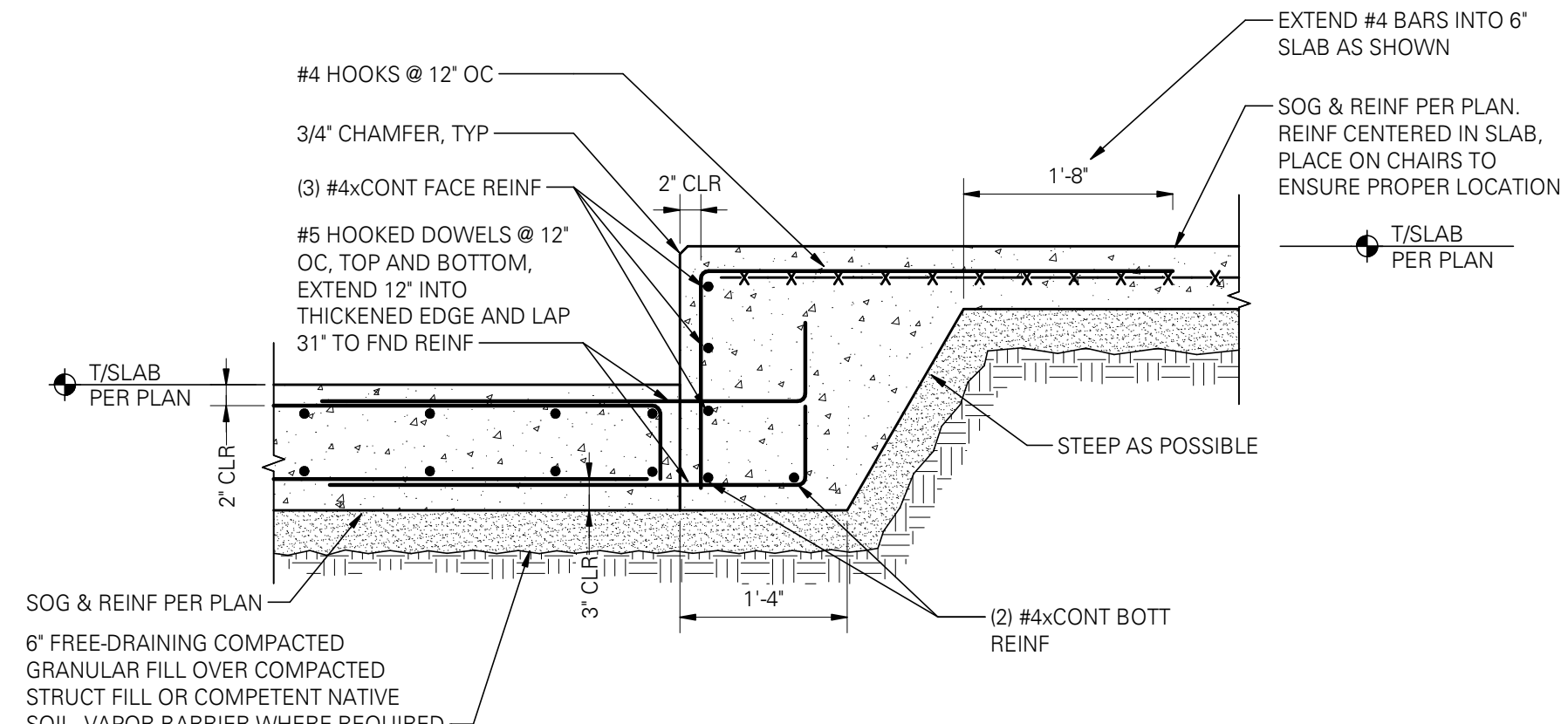
1 STORAGE BUILDING FOUNDATION PLAN

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



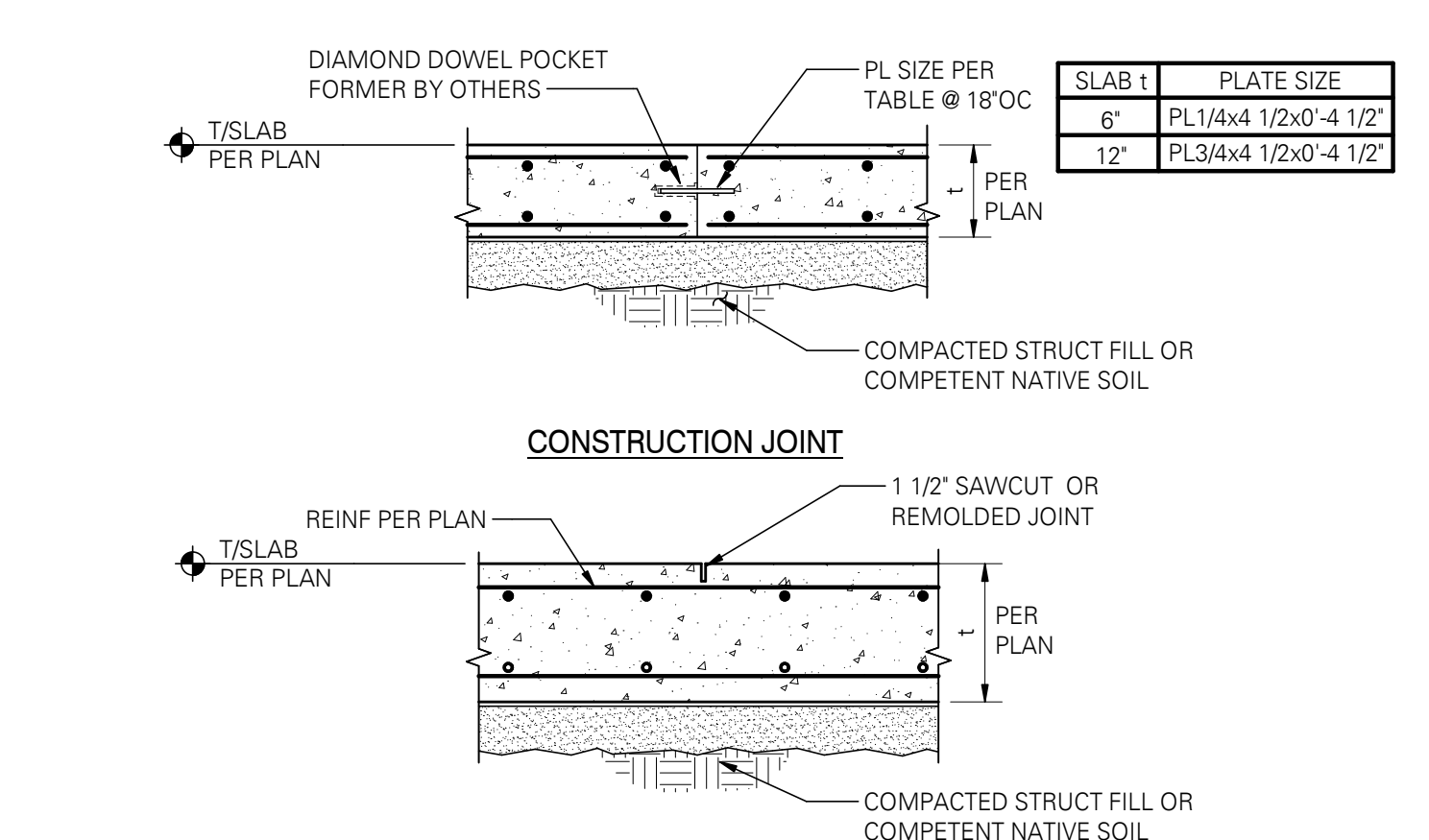
2 FOUNDATION SLAB AT STORAGE BUILDING

SCALE: 3/4" = 1'-0" (03203)



3 TYPICAL THICKENED SLAB EDGE AT SIDEWALK

SCALE: 3/4" = 1'-0" (03203)



- NOTES:**
- USE "EARLY ENTRY DRY-CUT SAW" AS SOON AS POSSIBLE WITHOUT CAUSING RAVELING OF CONCRETE EDGES. SAWCUT ALONG SHORT DIRECTION OF POUR FIRST.
 - FILL JOINTS WITH EXTERIOR-RATED JOINT FILLER
 - CONSTRUCTION/CONTROL JOINT TO ENCLOSE APPROXIMATE SQUARE AREAS 225 SQUARE FEET MAXIMUM, WITH MAXIMUM PANEL ASPECT RATIO OF 1.3 TO 1.0.
 - CONTRACTOR TO SUBMIT CONSTRUCTION/CONTROL JOINT PLAN TO ARCHITECT AND ENGINEER OF RECORD FOR REVIEW/APPROVAL.

6 TYP SLAB ON GRADE CONSTR AND CONTROL JOINTS

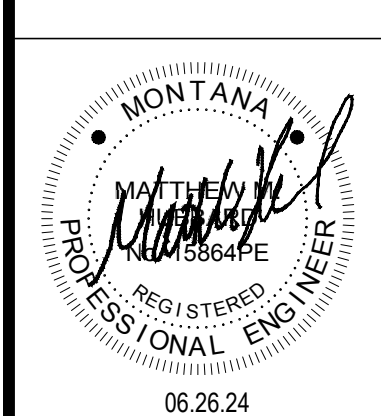
SCALE: 3/4" = 1'-0" (03201A)

5 LAP AND DEVELOPMENT LENGTH SCHEDULE

SCALE: 3/4" = 1'-0" (01403B)

BAR SIZE	STRAIGHT BARS		HOOKED BARS
	Ld	Splice	
#3	15	19	8
#4	19	25	10
#5	24	31	12
#6	29	37	15

- NOTES:**
- ALL TABULATED VALUES ARE IN INCHES.
 - L_d = DEVELOPMENT LENGTH, L_{dh} = HOOKED DEVELOPMENT LENGTH
 - VALUES FOR UNCOATED REINFORCING AND NORMAL WEIGHT CONCRETE WITH CLEAR SPACING > 2x BAR DIA., CLEAR COVER > BAR DIA.



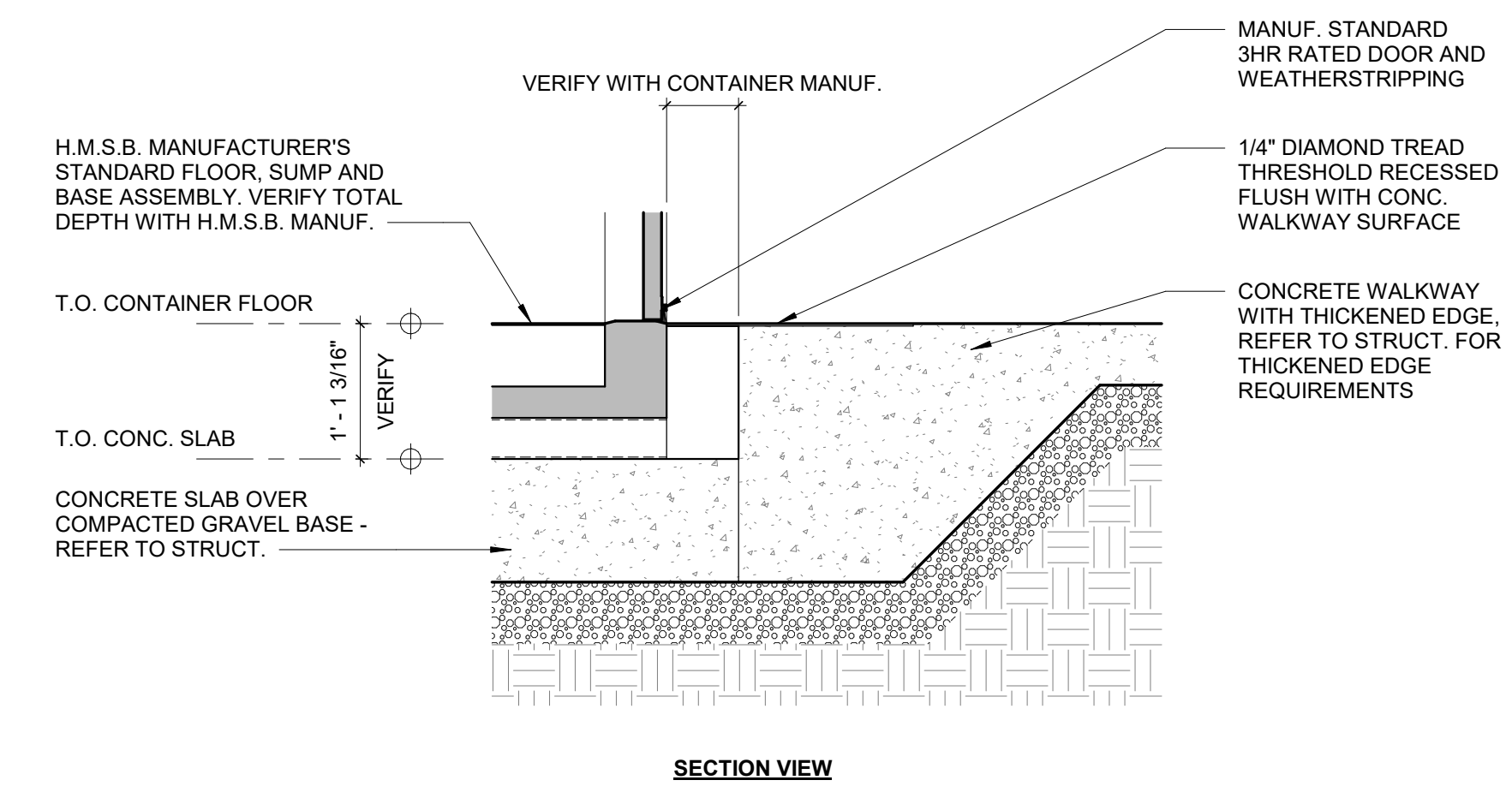
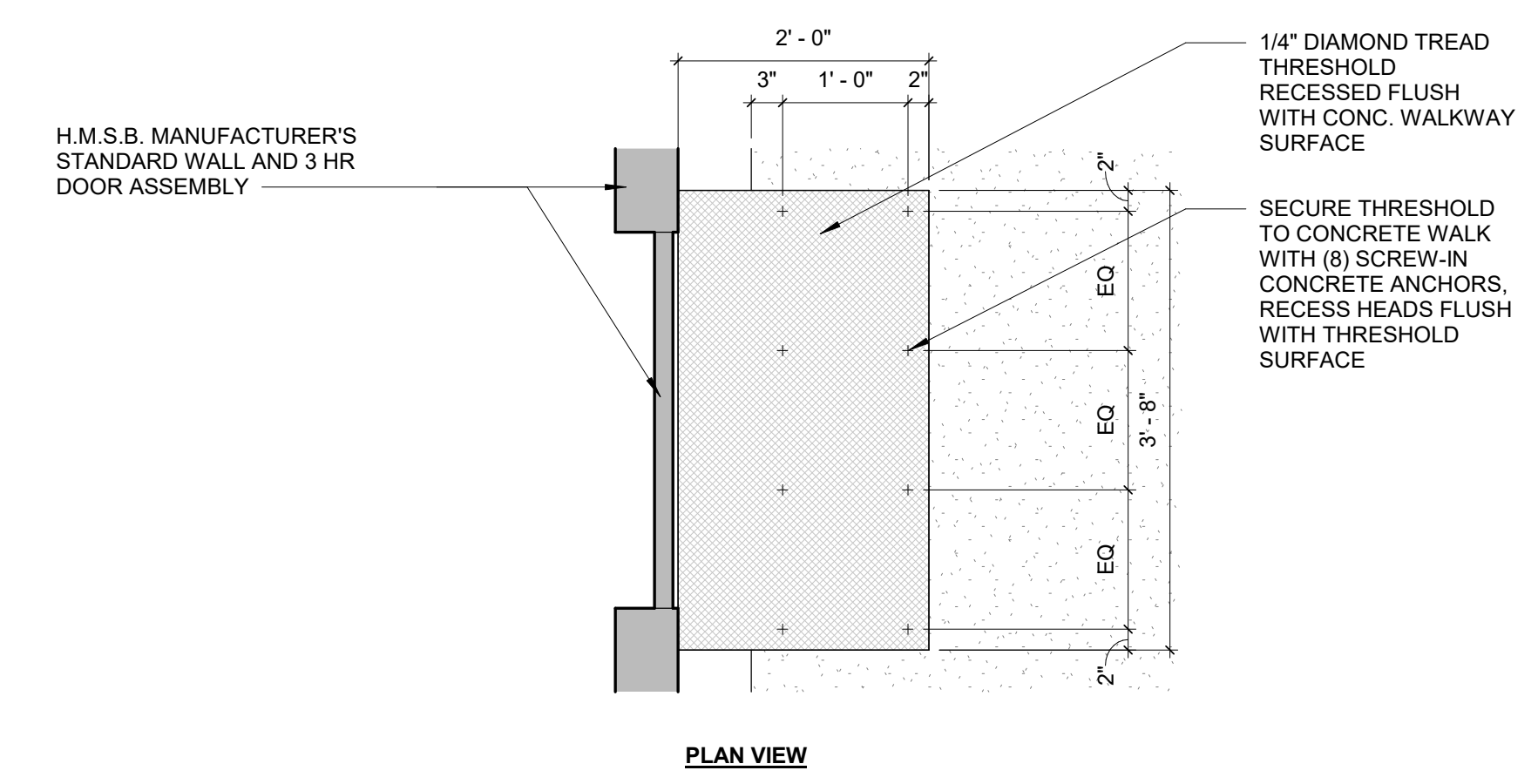
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STRUCT - FOUNDATION PLAN AND DETAILS

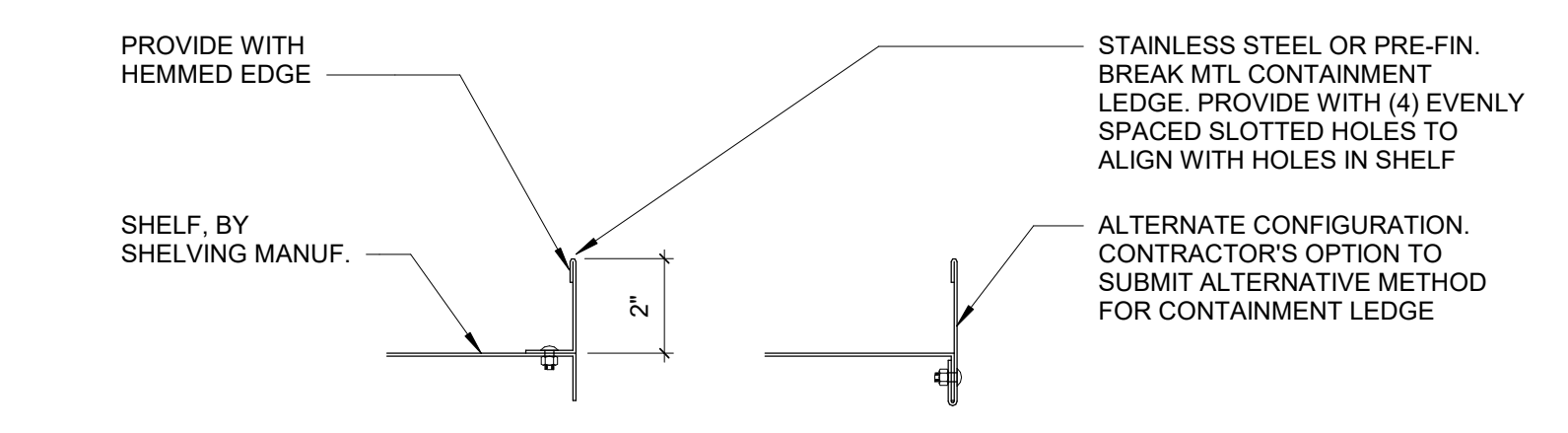
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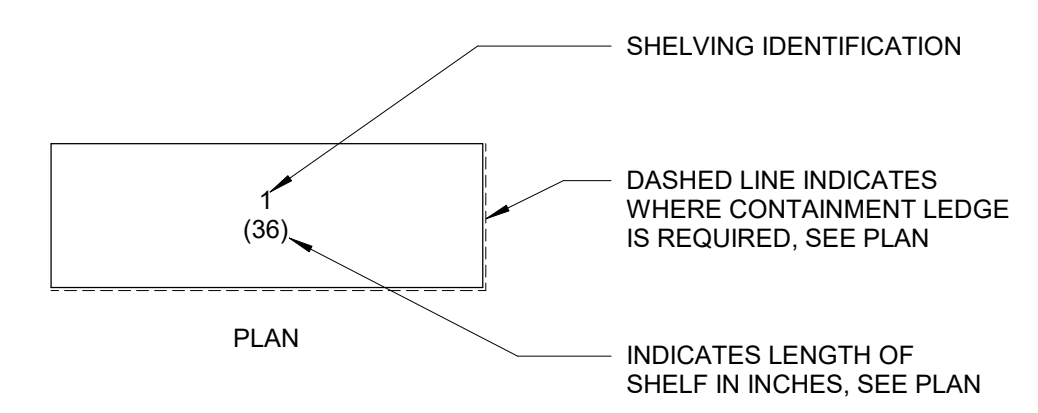
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ISSUE	DATE	COMMENTS
		DESCRIP.



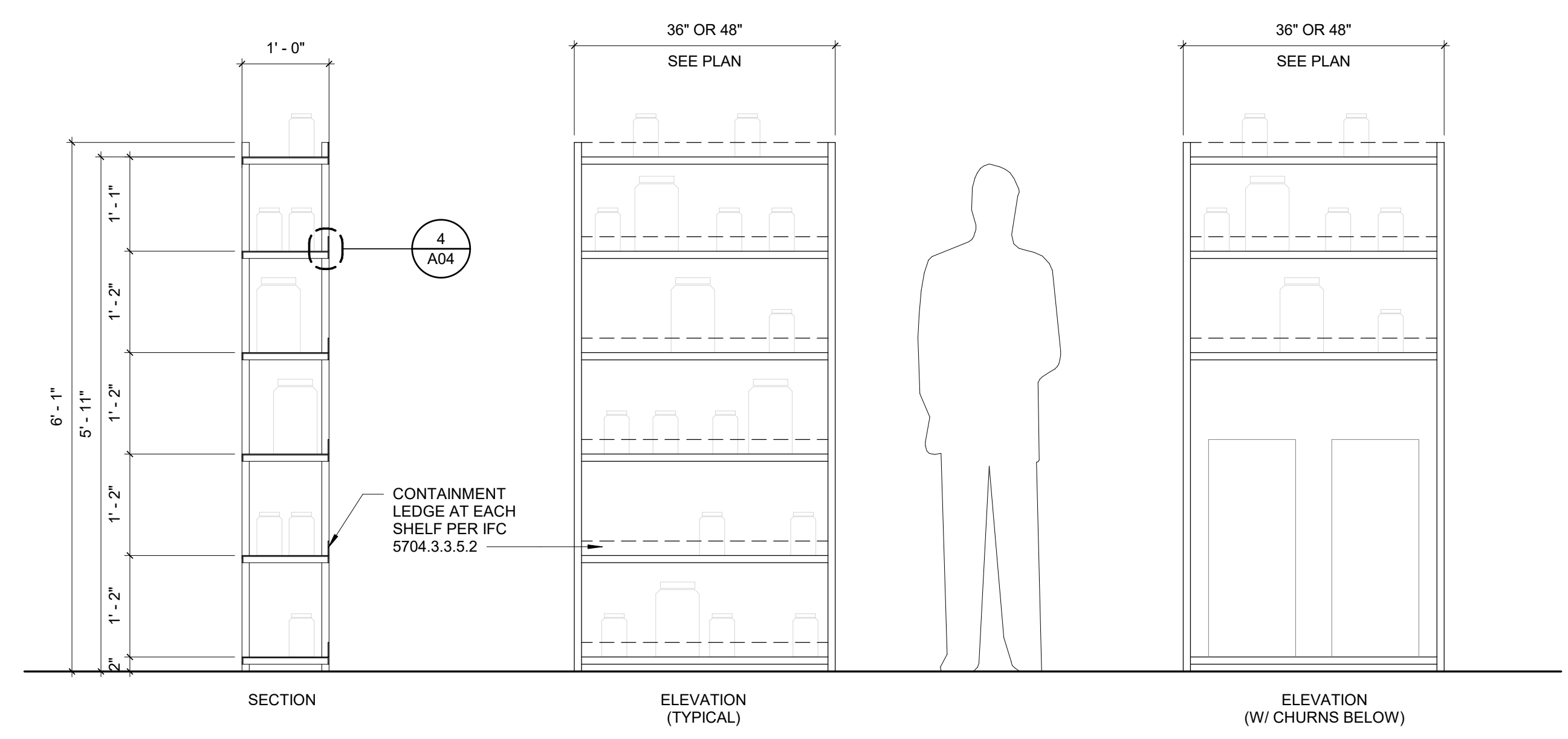
3 CONTAINER DOOR THRESHOLD DETAIL
A04 3/4" = 1'-0"



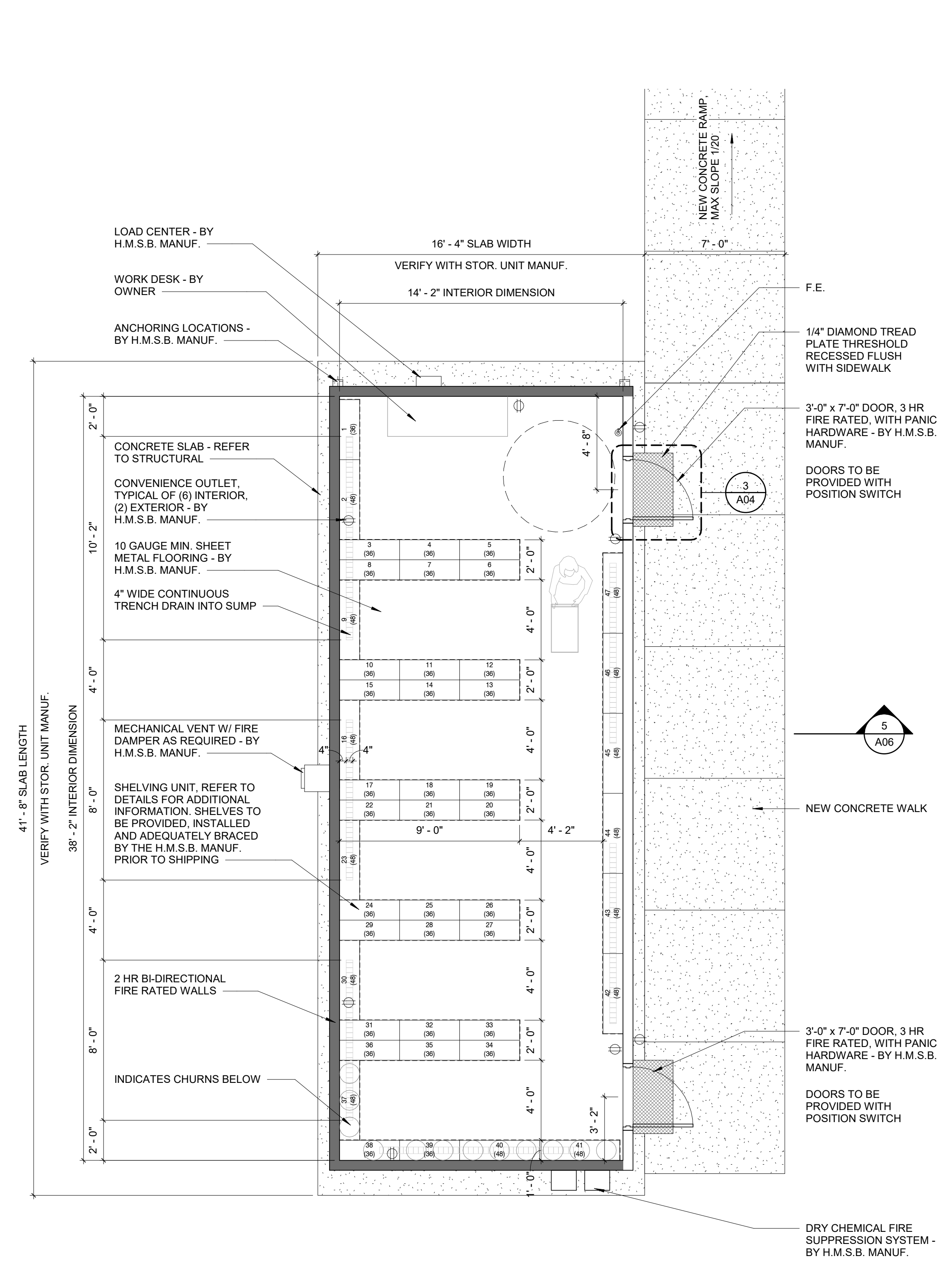
4 CONTAINMENT LEDGE DETAIL
A04 3" = 1'-0"



NOTE: SHELVING SYSTEM INTENDED TO BE 'GLOBAL INDUSTRIAL, 6 SHELF, 18 GAUGE OPEN STEEL SHELVING' OR SIMILAR (REFER TO SPEC, GC TO COORDINATE PURCHASING, INSTALLATION AND BRACING REQUIREMENTS OF SHELVING UNITS WITH H.M.S.B SUPPLIER.

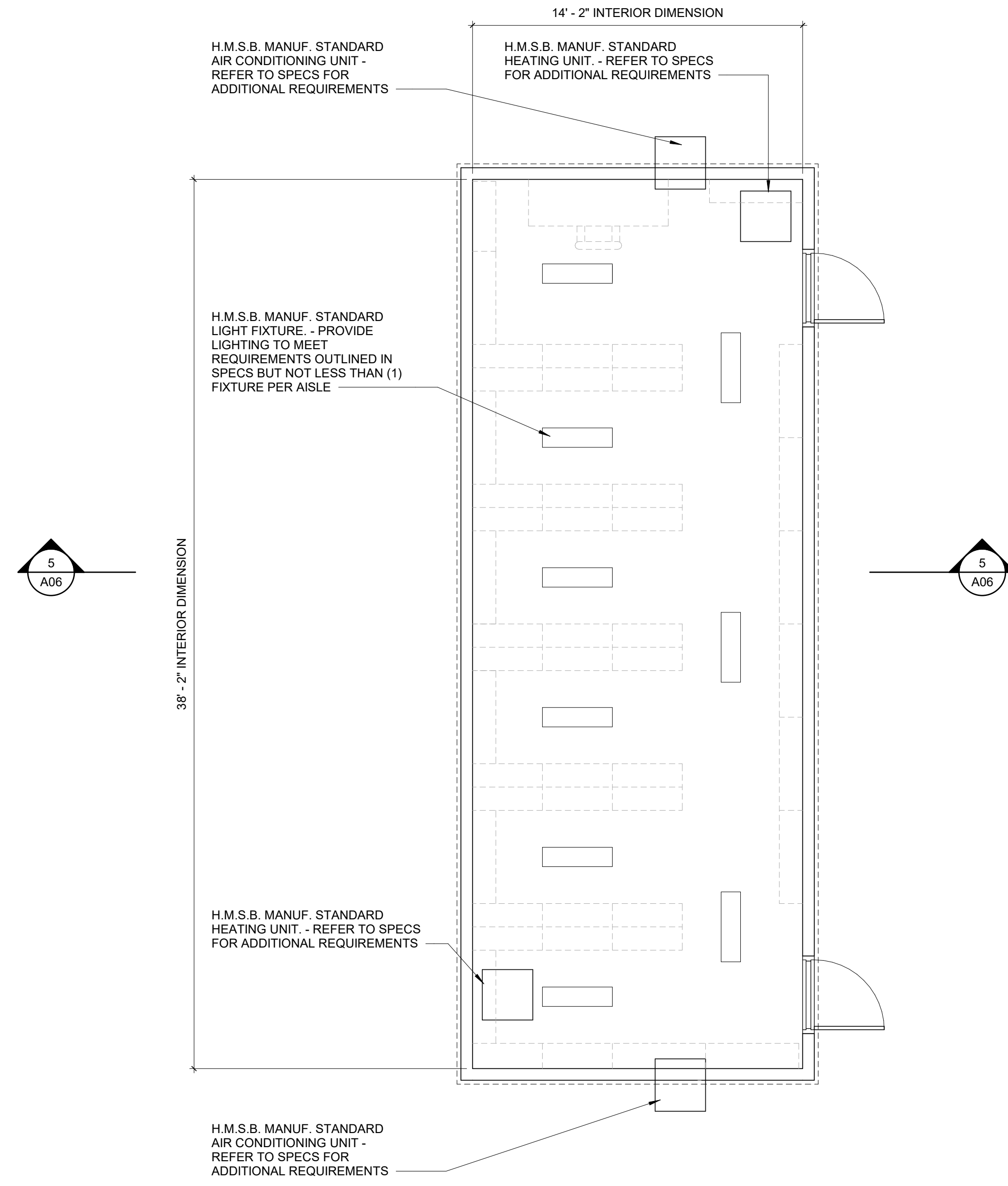


2 METAL STORAGE SHELVING UNITS
A04 3/4" = 1'-0"

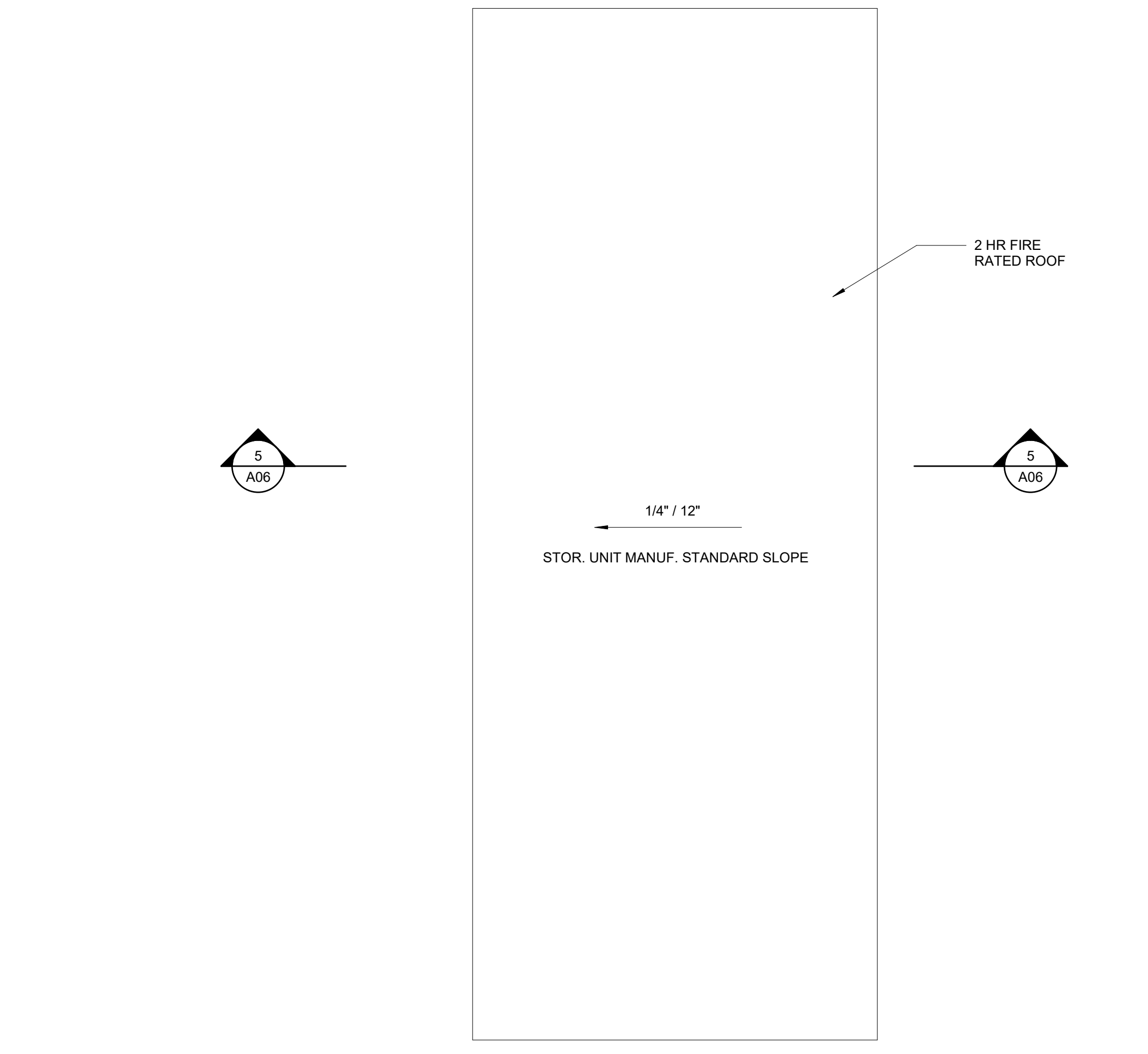


1 FIRST FLOOR PLAN
A04 1/4" = 1'-0"



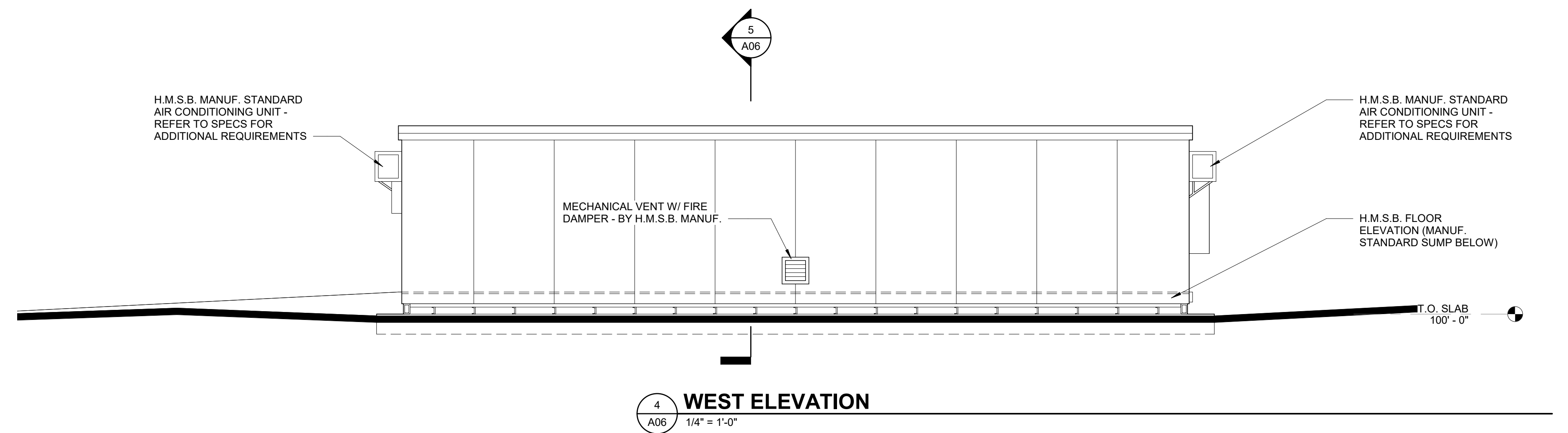
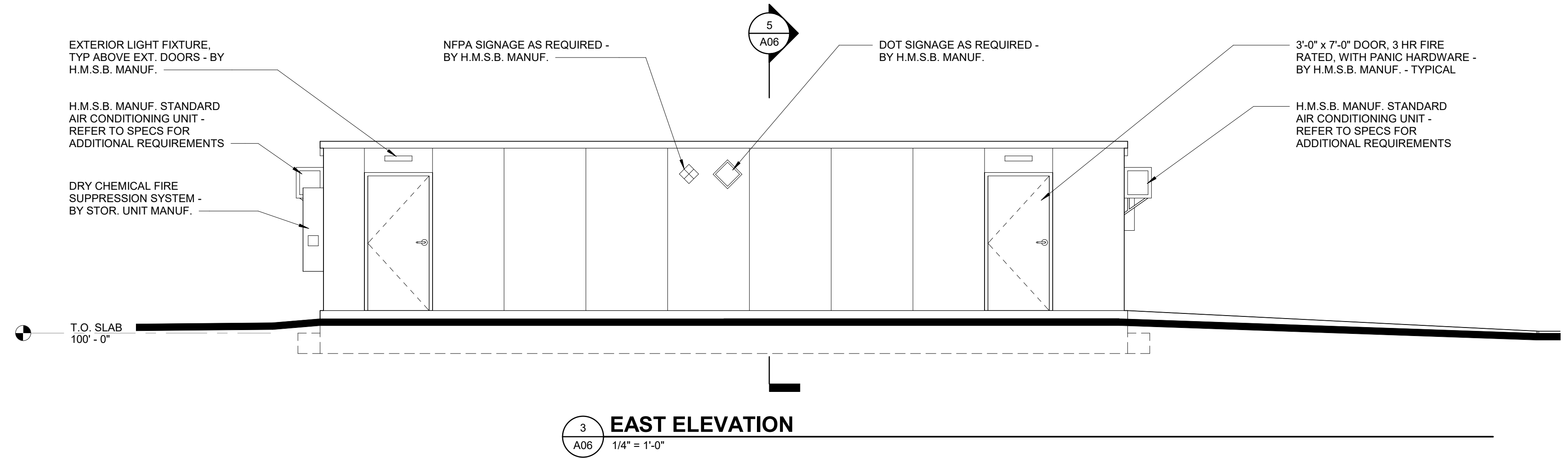
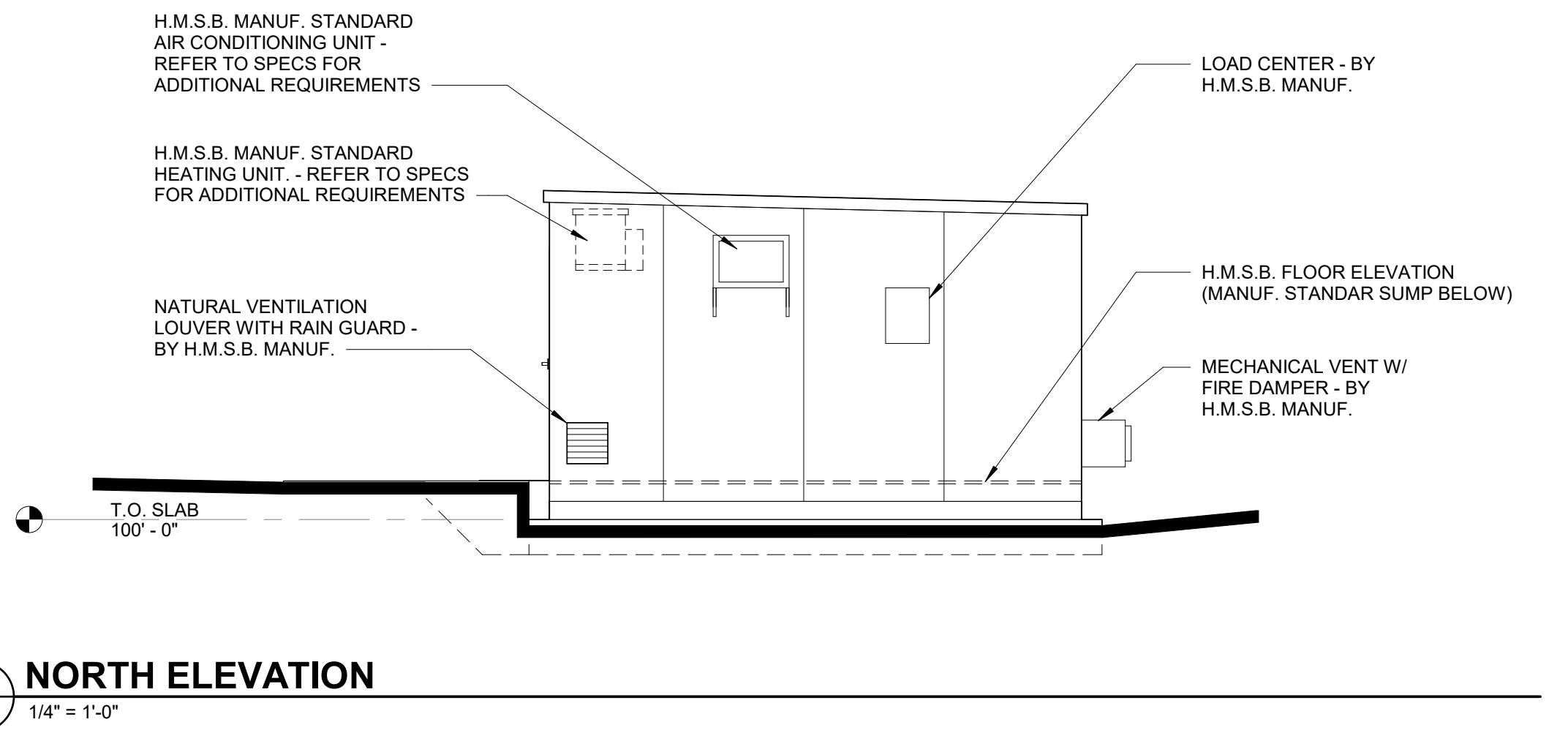
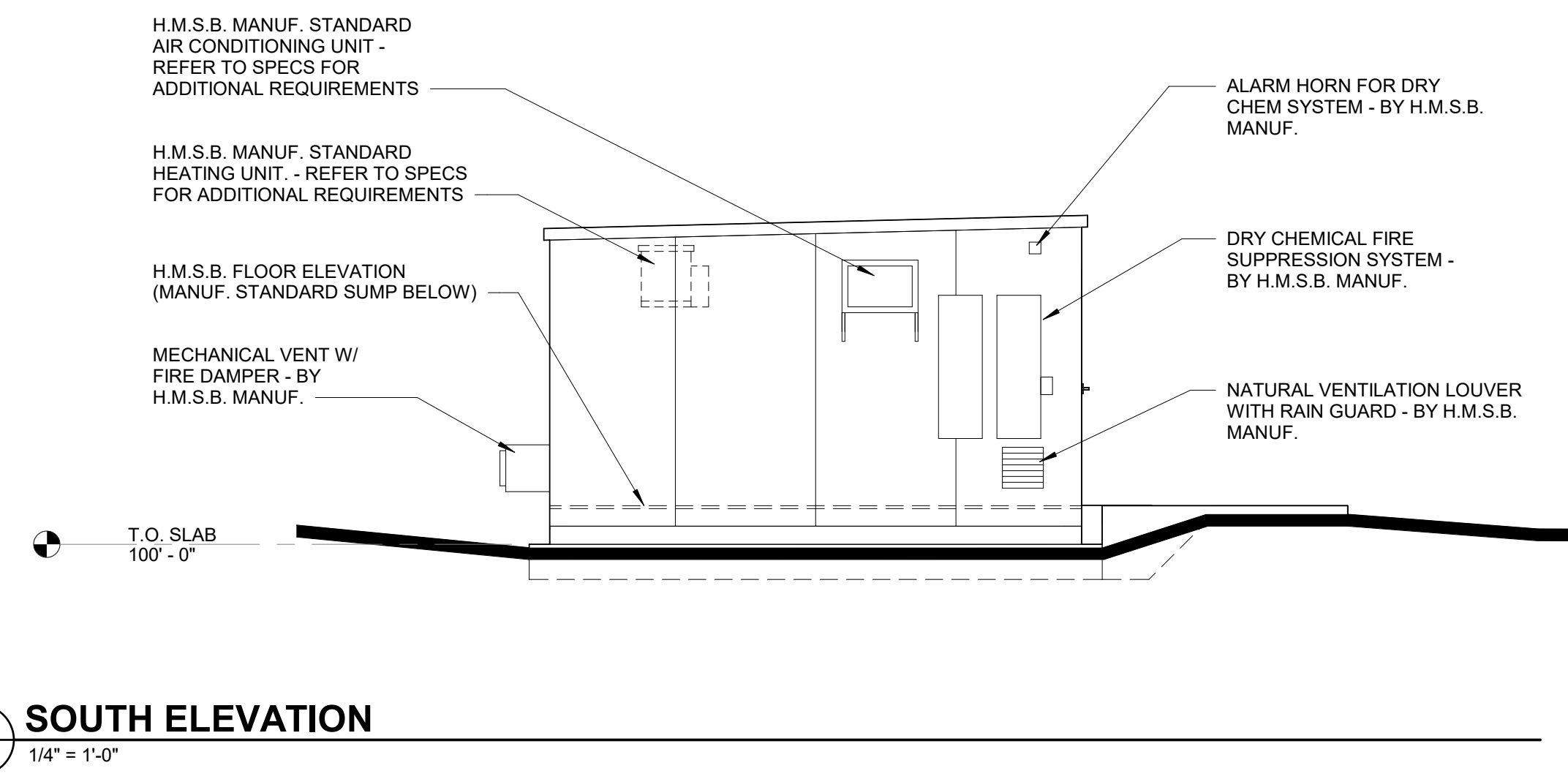
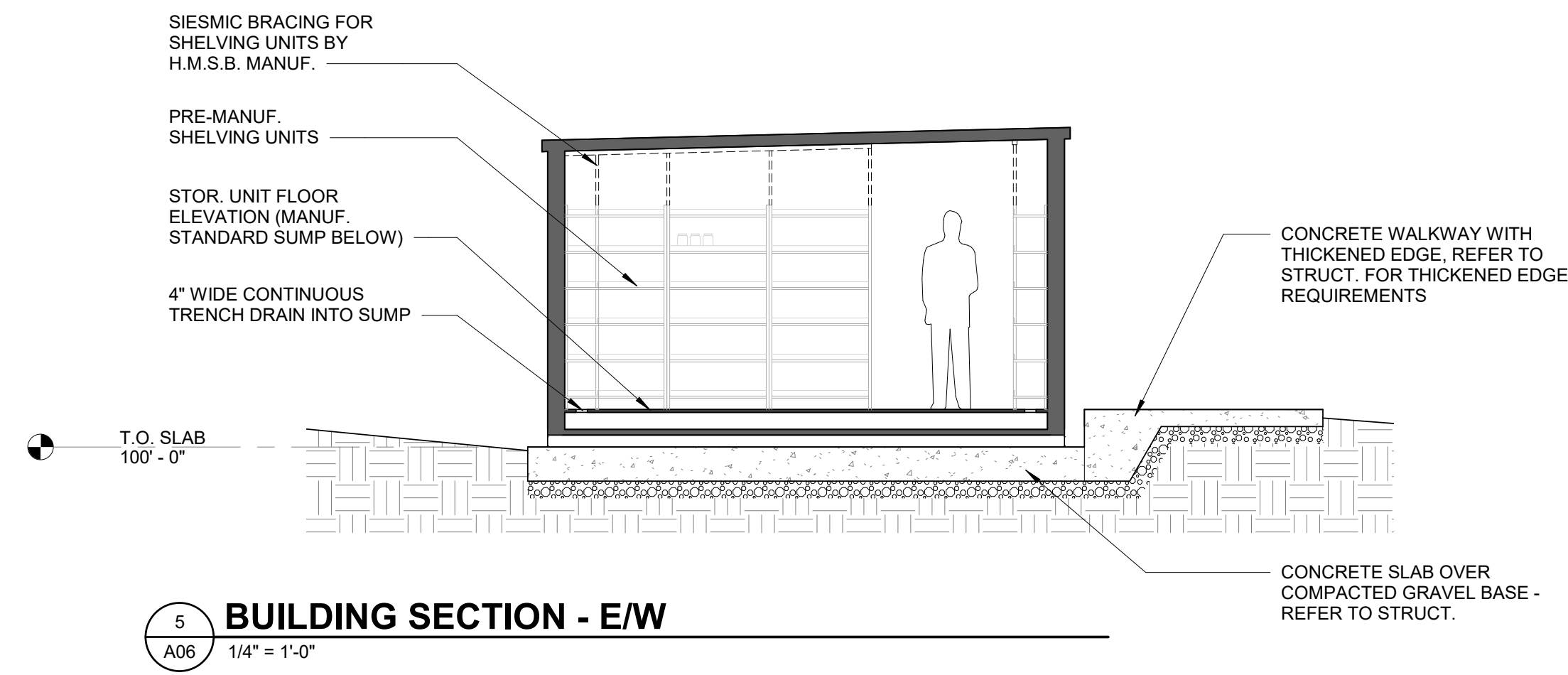


1 RCP - FIRST FLOOR
1/4" = 1'-0" NORTH

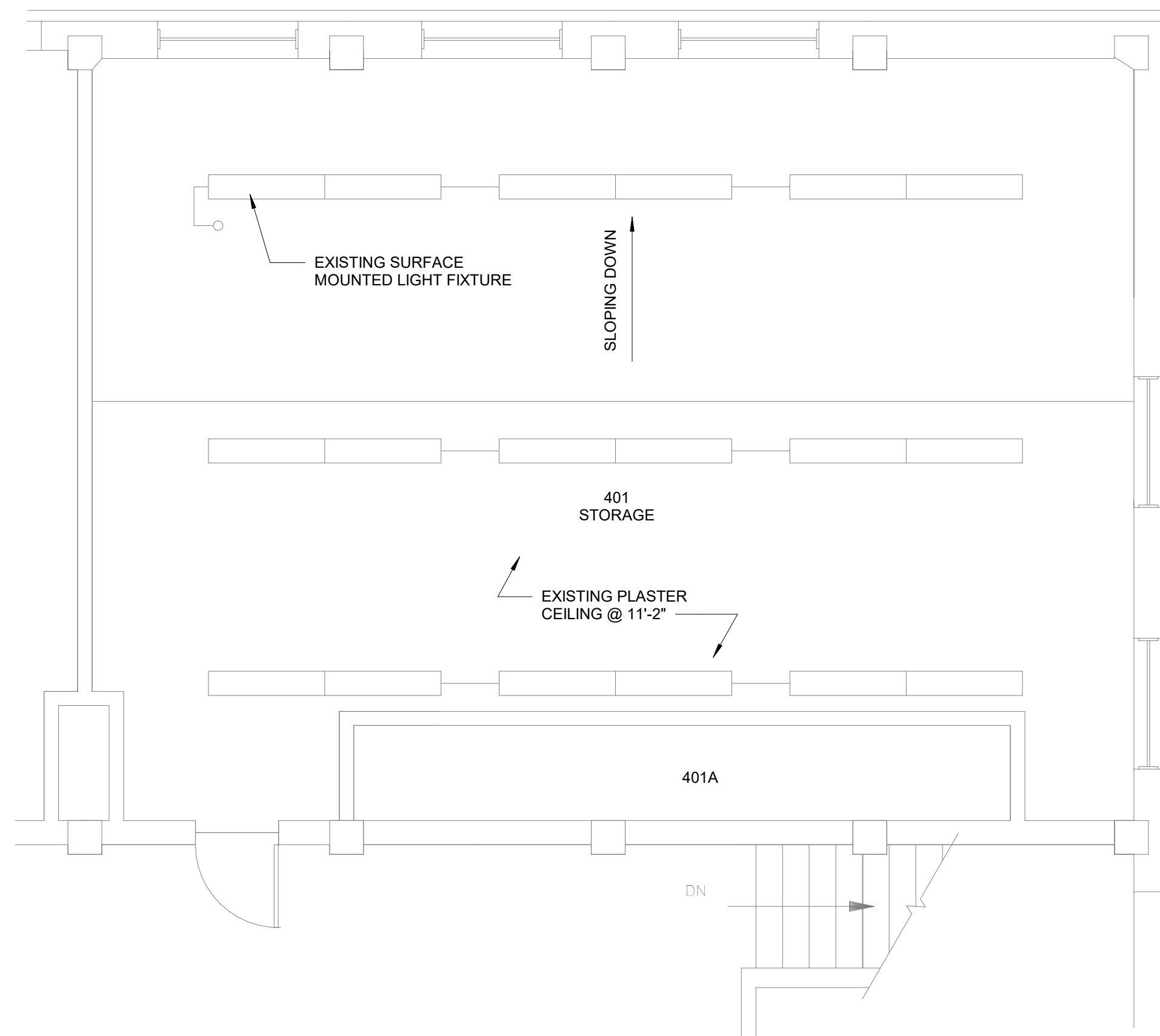


2 ROOF PLAN
1/4" = 1'-0" NORTH

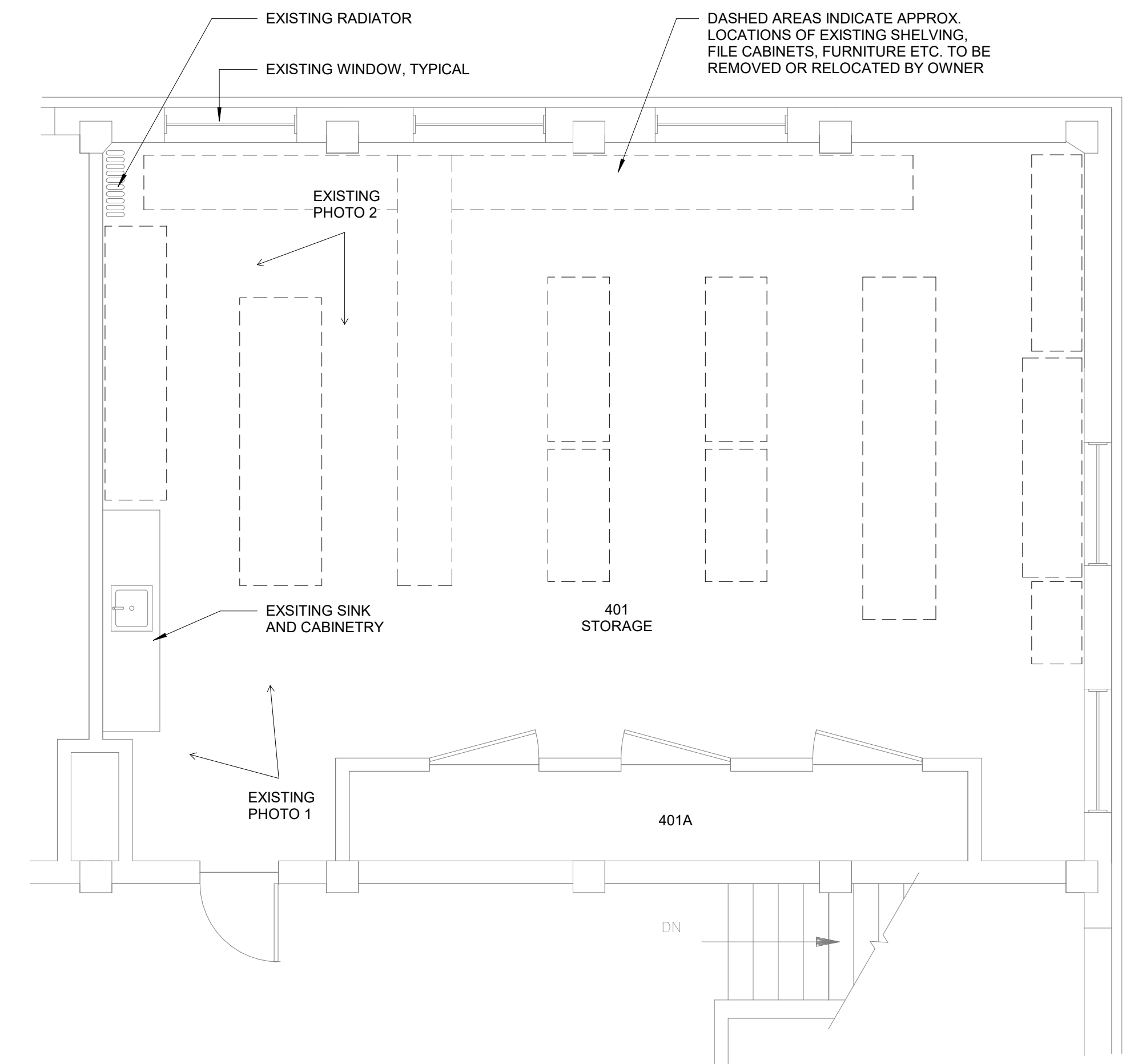
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ISSUE	DATE	DESCRIP.



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

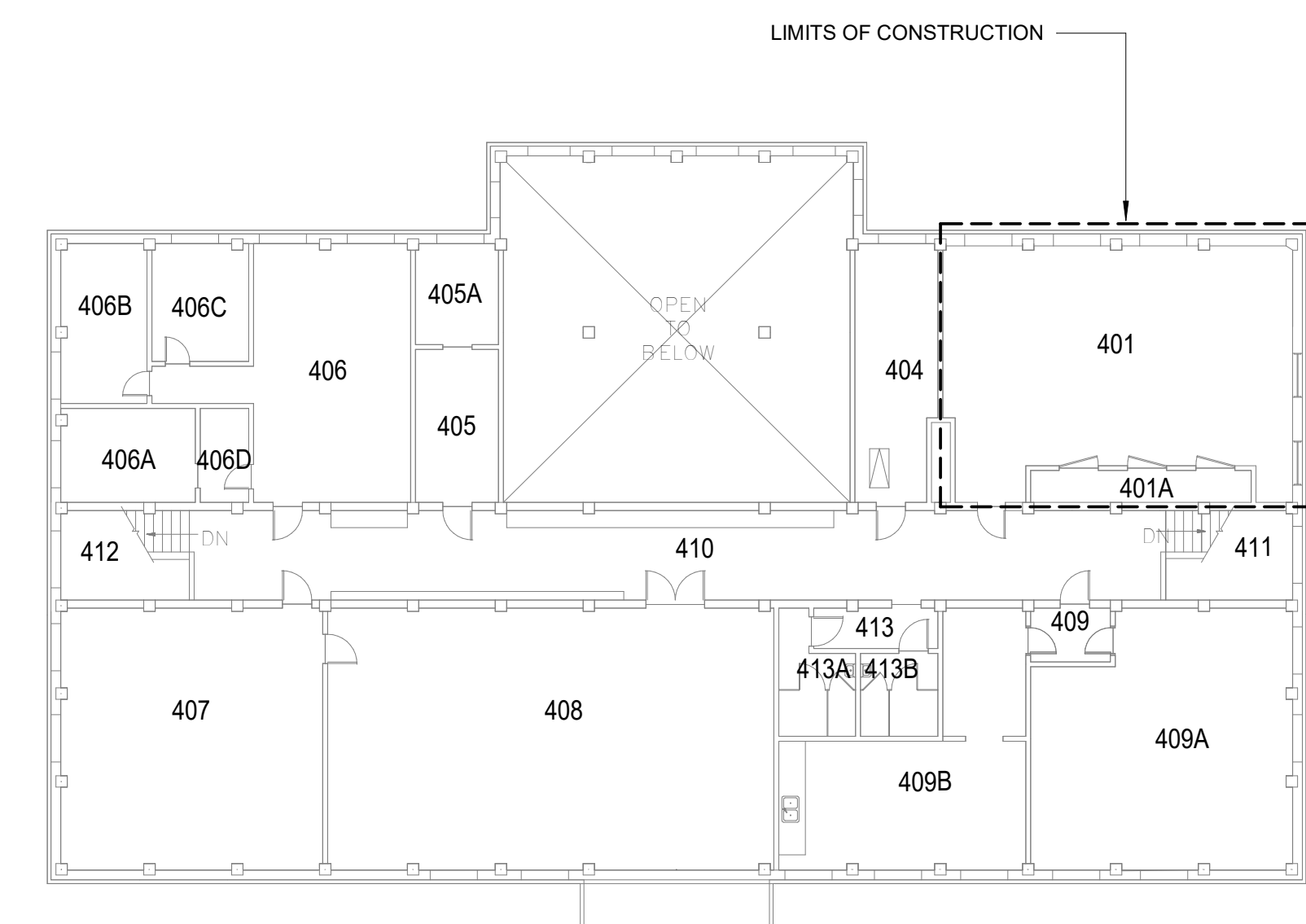


EXISTING PHOTO 1



EXISTING PHOTO 2

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



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

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LEWIS HALL-4TH FLOOR-EXISTING

PPA# 19-0171
 06/28/23
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A07

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

6/27/2024 8:54:34 AM

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 gauge 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		

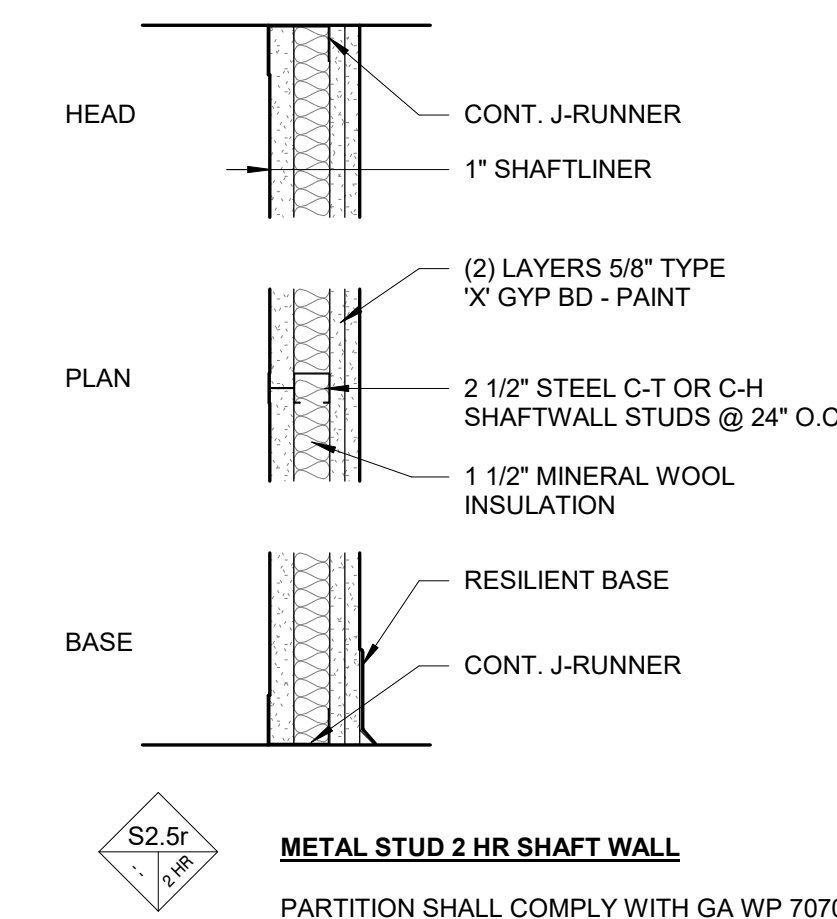
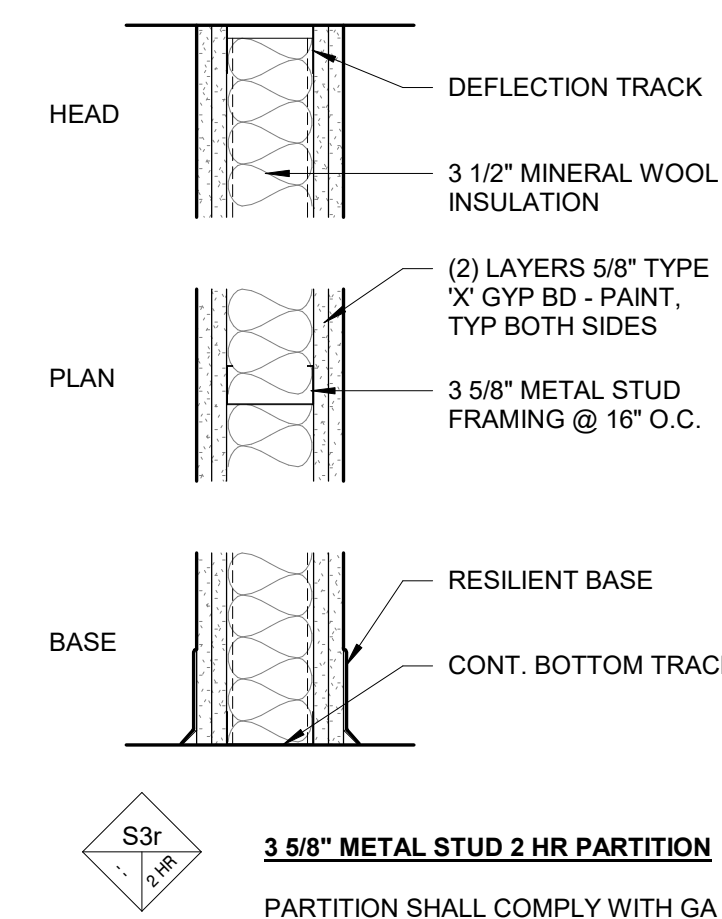
GA FILE NO. WP 1522	GENERIC	2 HOUR FIRE	55 to 59 STC SOUND
GYPSUM WALLBOARD, STEEL STUDS			
<p>Base layer 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side of 3 5/8" steel studs 24" o.c. with 1" Type S drywall screws 24" o.c. Face layer 5/8" type X gypsum 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"		Refer to Section IV	
Limiting Height: 12 psf		See WP 1548	
Approx. Weight: 12 psf		(WHI-495-0236, 1-30-80)	
Fire Test: UL Design L556		NRCC 818-NV, 2-3-81	
Sound Test: NRCC 818-NV, 2-3-81			

LEGEND - WALL TYPE TAG

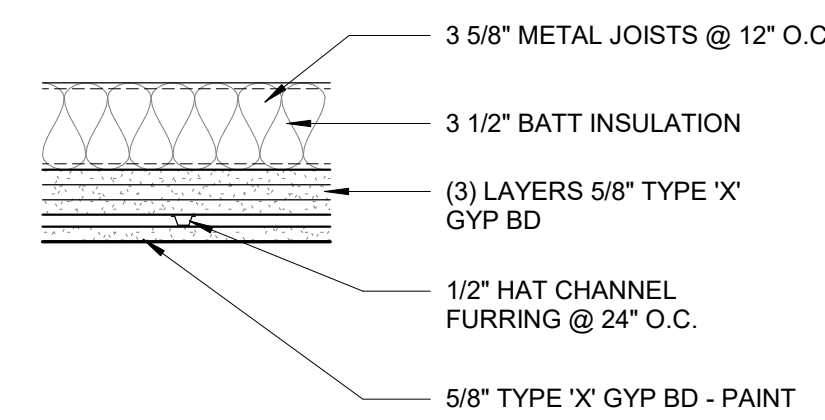
PARTITION ASSEMBLY TYPE:	NOMINAL FRAMING SIZE	VARIATION	FIRE RATING:
W = WOOD FRAMING S = METAL FRAMING M = MASONRY WALL C = CONCRETE B = OTHER	S6	-- STANDARD f - FURRING i - IMPACT RESISTANT a - STC RATED s - SHEAR r - FIRE RATED	S = SMOKE BARRIER 30 MIN = 30 MIN FIRE RATING 45 MIN = 45 MIN FIRE RATING 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

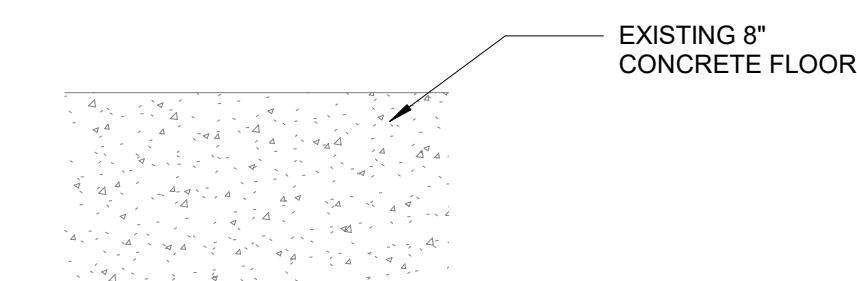


1 WALL TYPES AND ASSEMBLIES
1 1/2" = 1'-0"



CA 1 CEILING ASSEMBLY 1: (4) LAYERS GYP BOARD OVER METAL JOISTS
CEILING ASSEMBLY TO COMPLY WITH GA FC 4750

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



FA 1 FLOOR ASSEMBLY 1: EXISTING 8" CONCRETE FLOOR
EXISTING FLOOR MEETS 2 HR FIRE RATING PER CALCULATED REQUIREMENTS SET FORTH IN IBC TABLE 722.2.2.1

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

THINK ONE ARCHITECTS

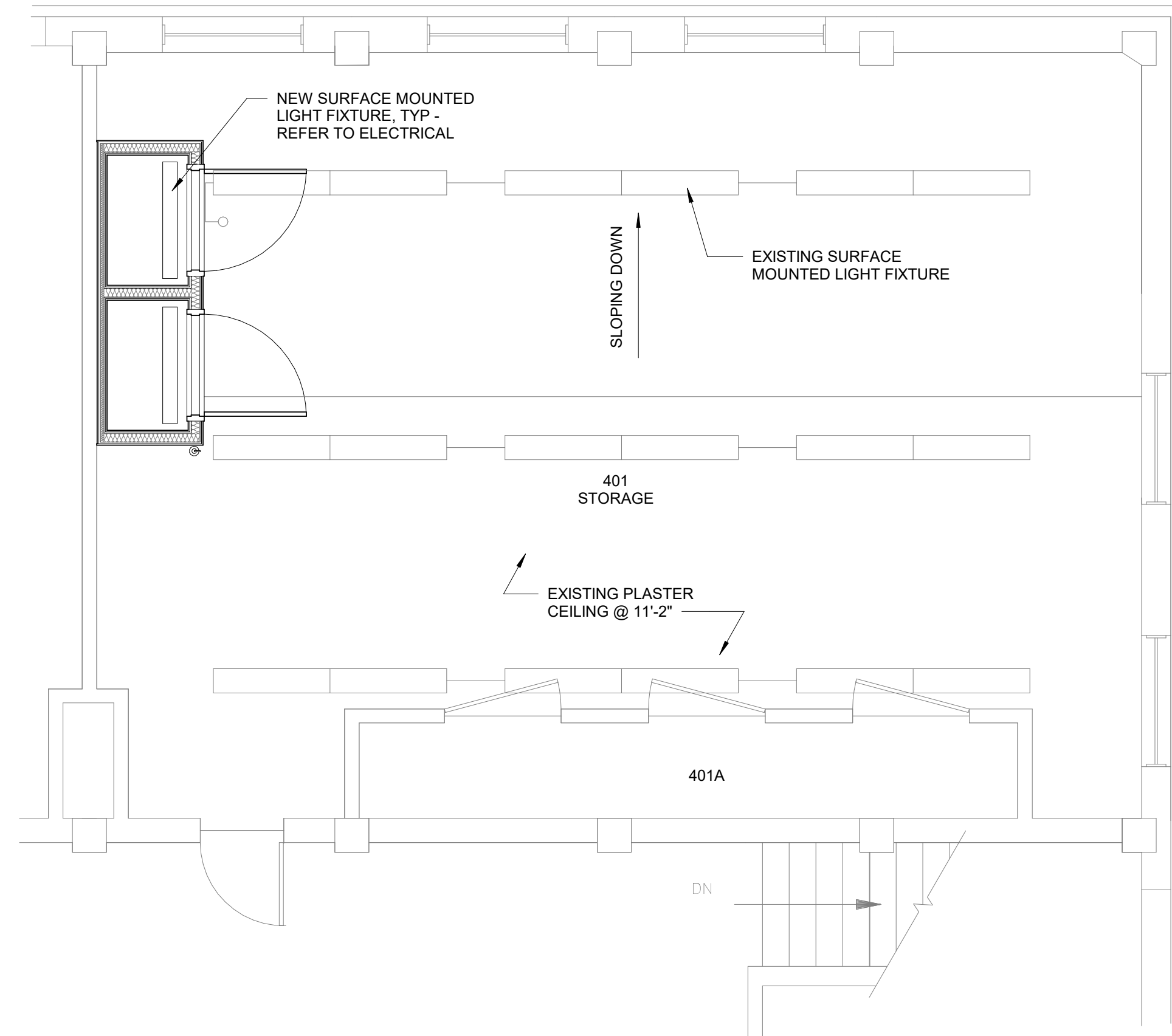


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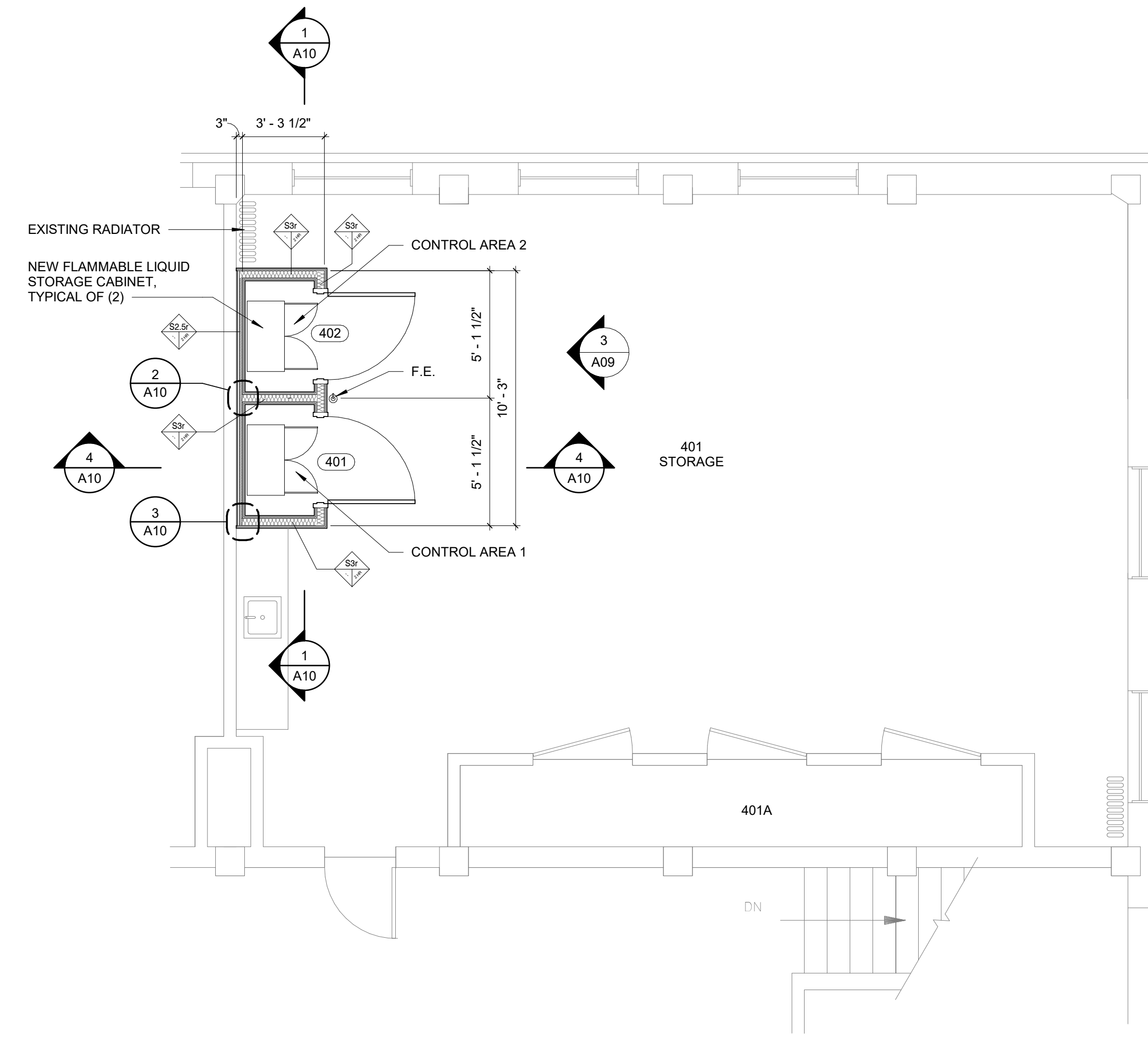
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ASSEMBLIES

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06/28/23
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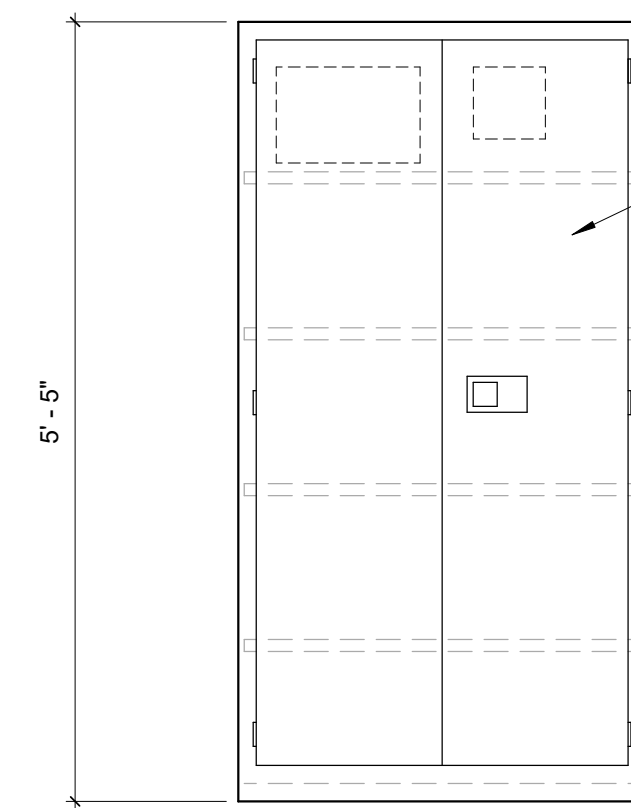
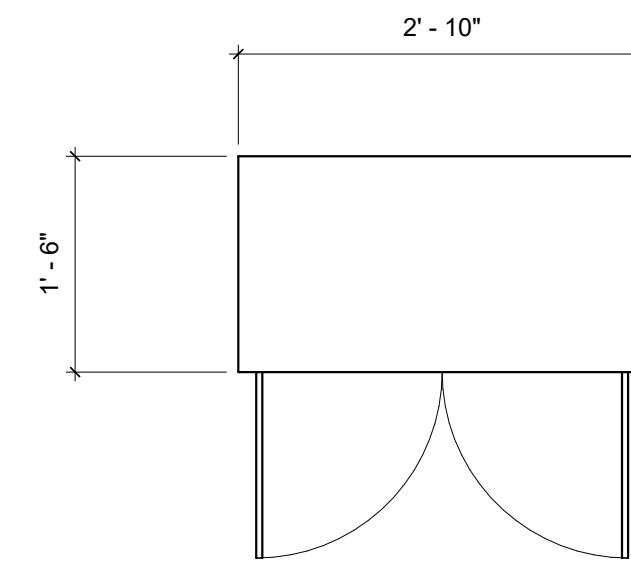
A08



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

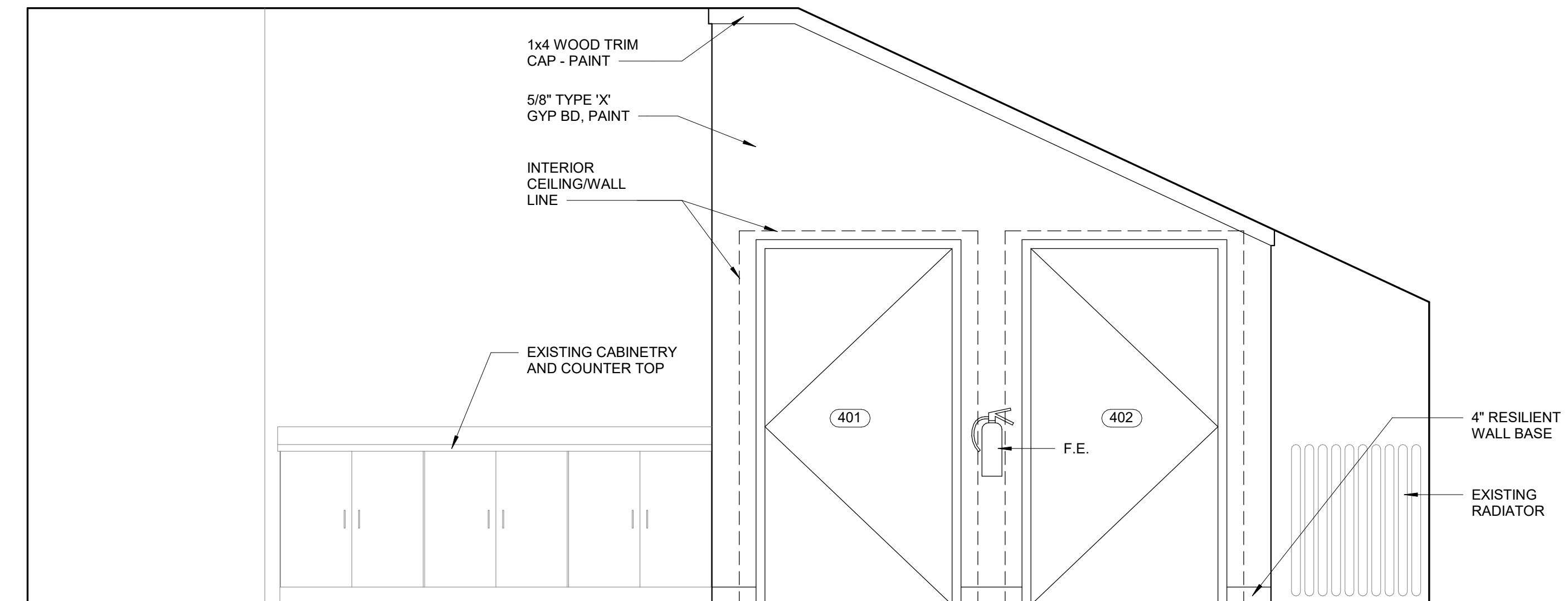


1
A09
LEWIS HALL 4th FLOOR - ENLARGED - NEW CONST.
1/4" = 1'-0"



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

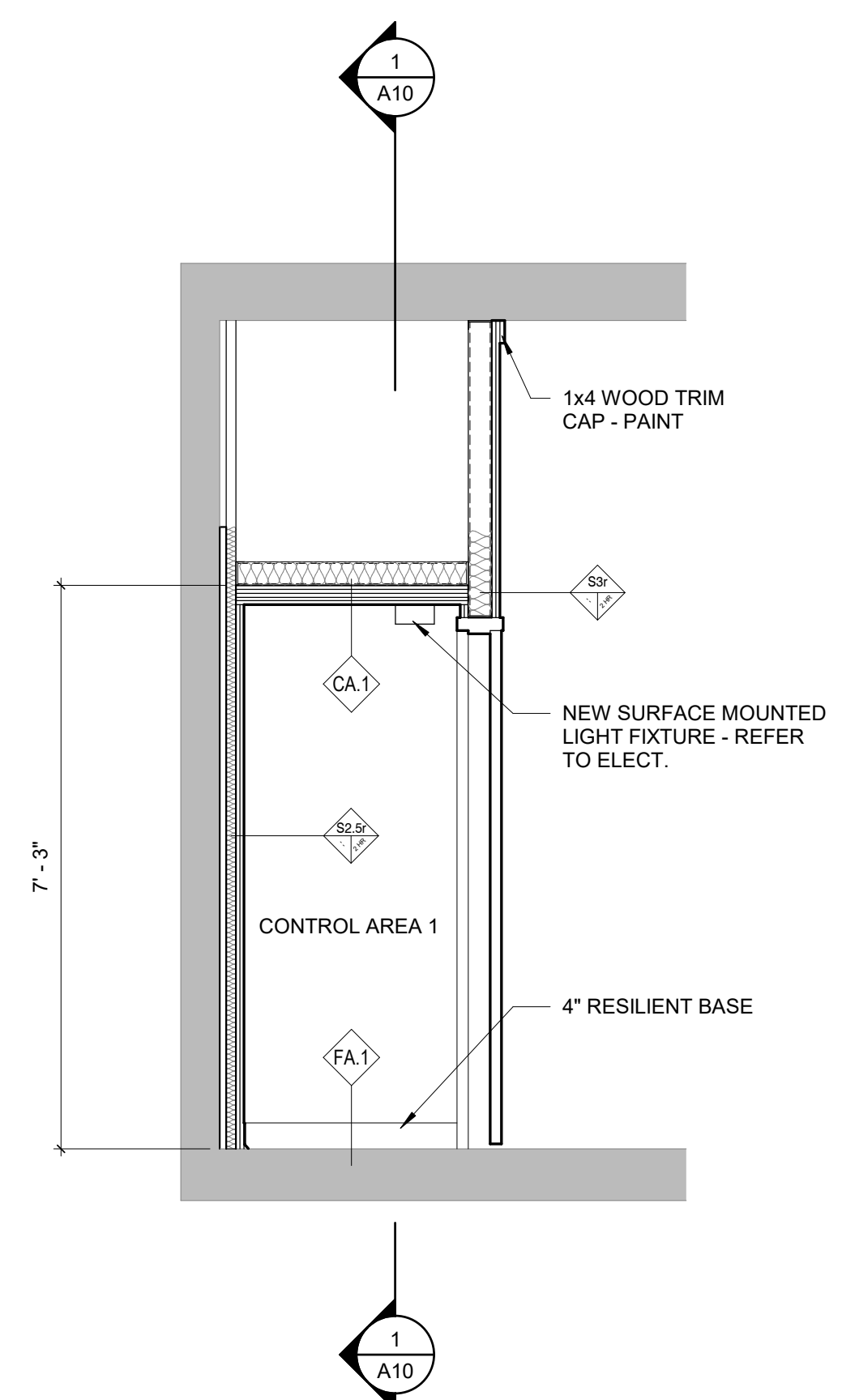
4
A09
FLAMMABLE LIQUID STORAGE CABINET
3/4" = 1'-0"



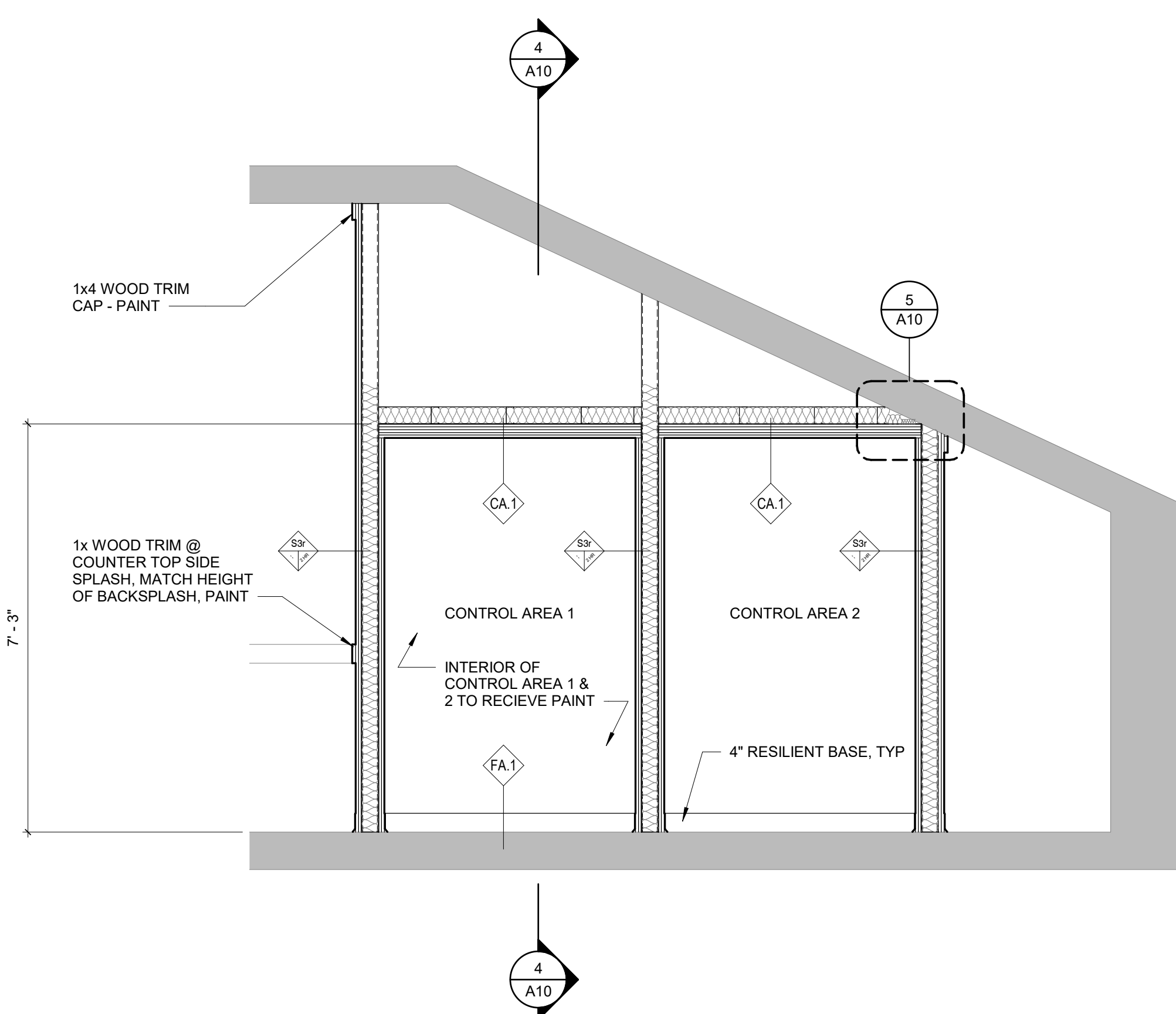
2
A09
CONTROL AREA ELEVATION
1/2" = 1'-0"

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

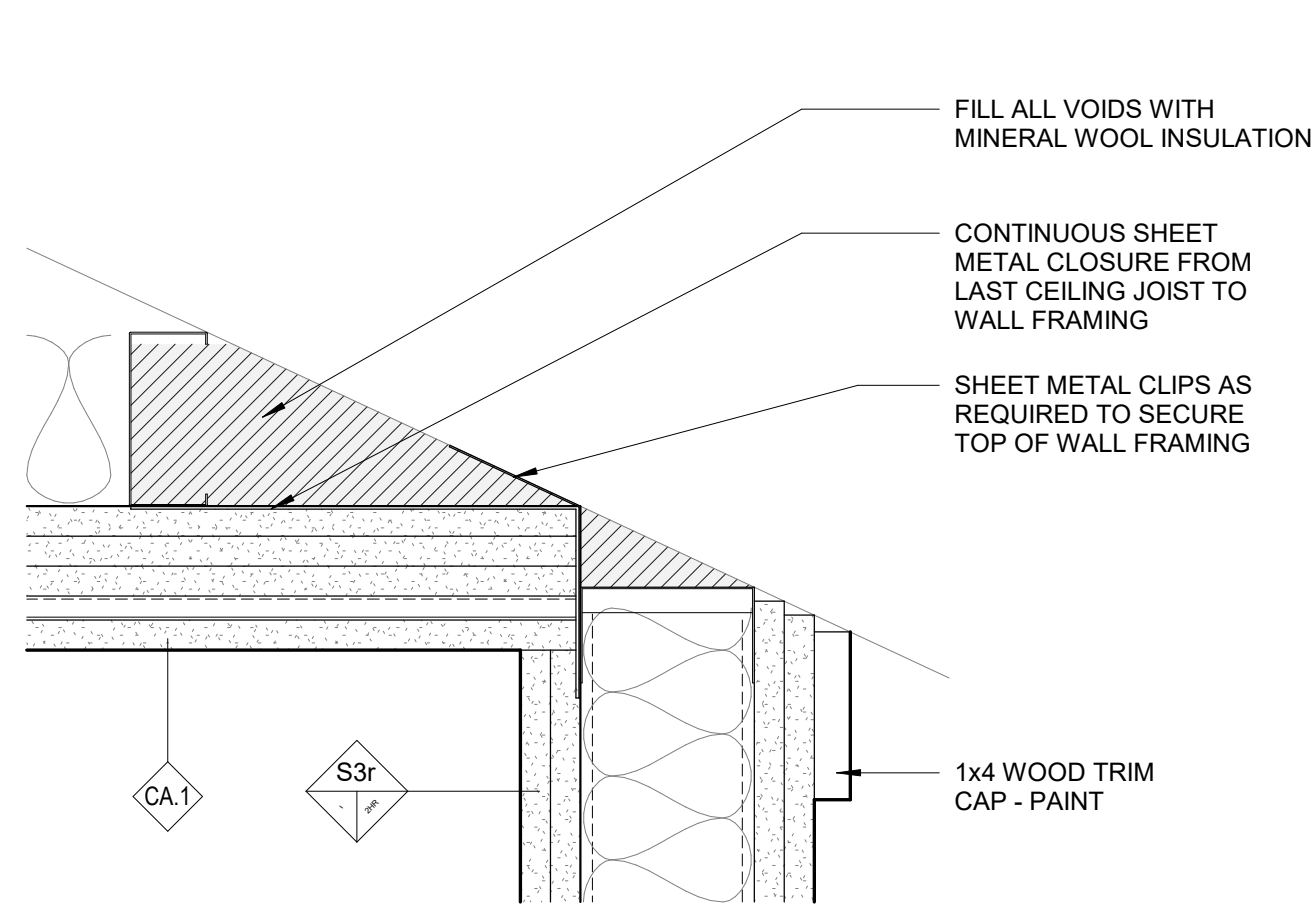
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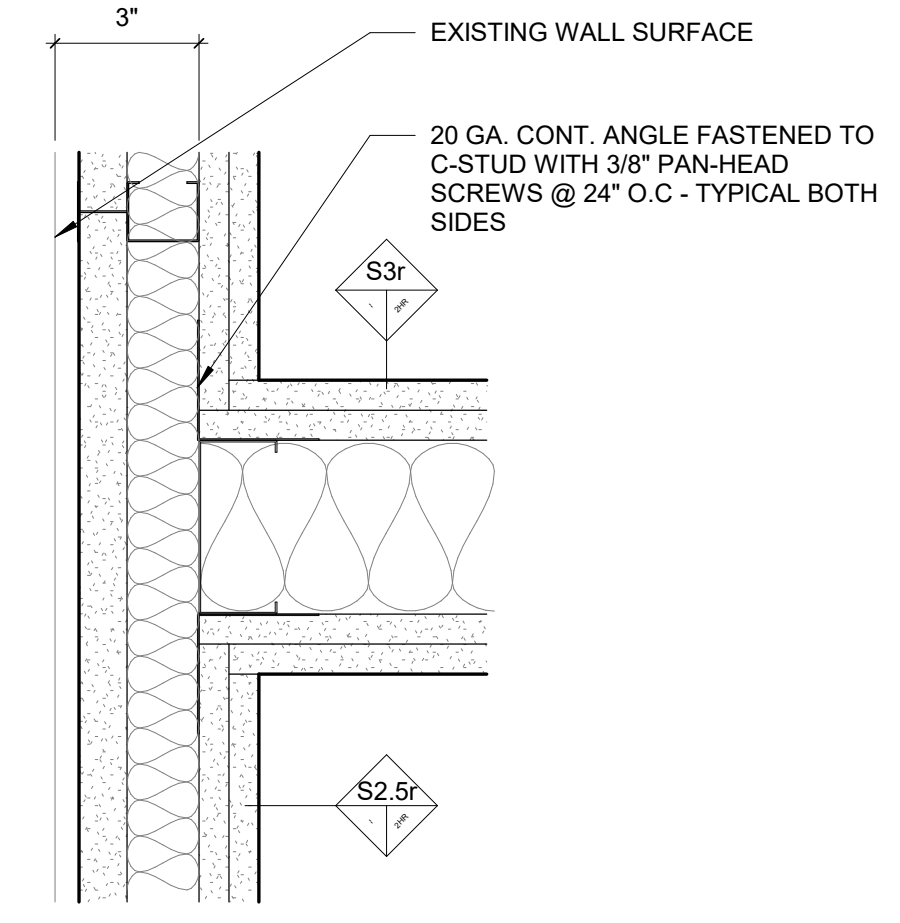
4 CONTROL AREA SECTION 2
A10 1/2" = 1'-0"



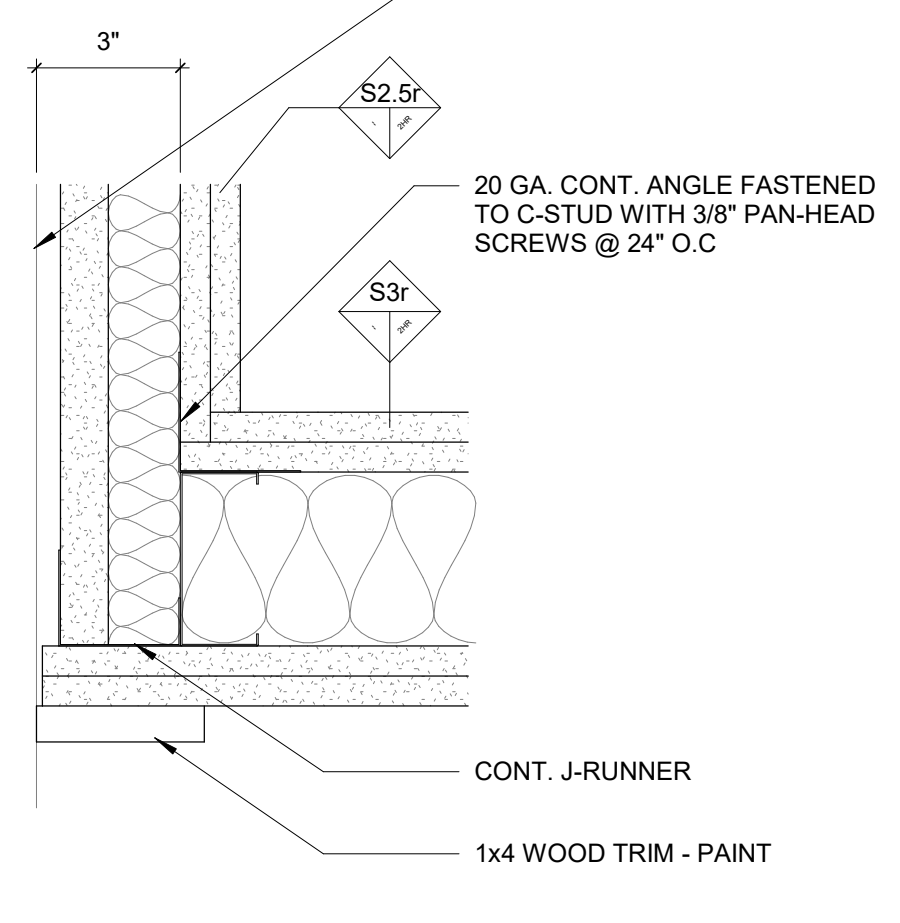
1 CONTROL AREA SECTION 1
A10 1/2" = 1'-0"



5 DETAIL 1
A10 3" = 1'-0"



2 PLAN DETAIL 2
A10 3" = 1'-0"



3 PLAN DETAIL 1
A10 3" = 1'-0"

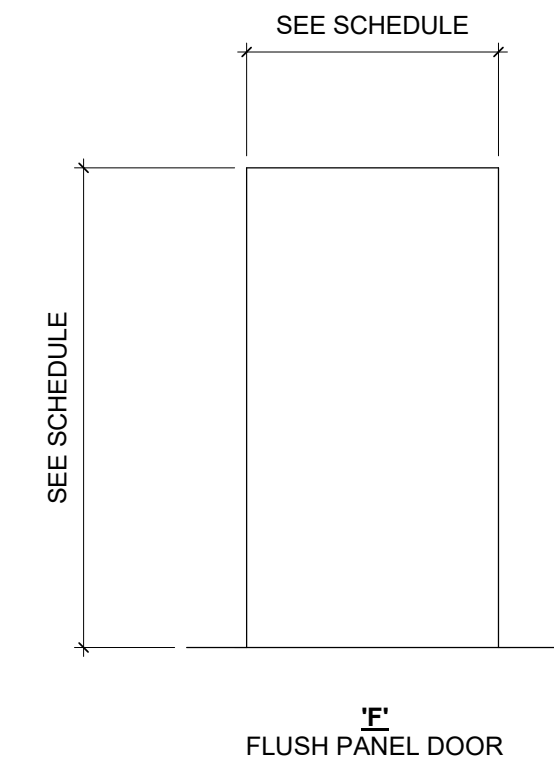
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SECTIONS AND DETAILS

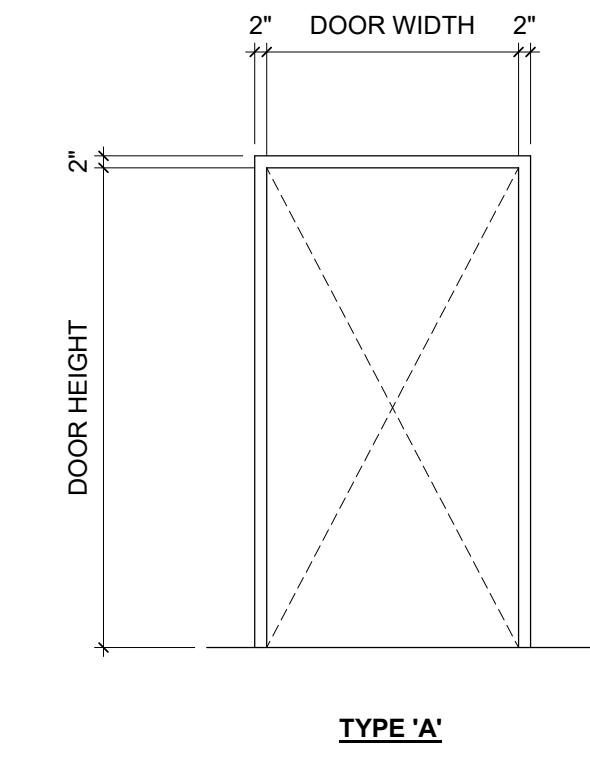
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A10

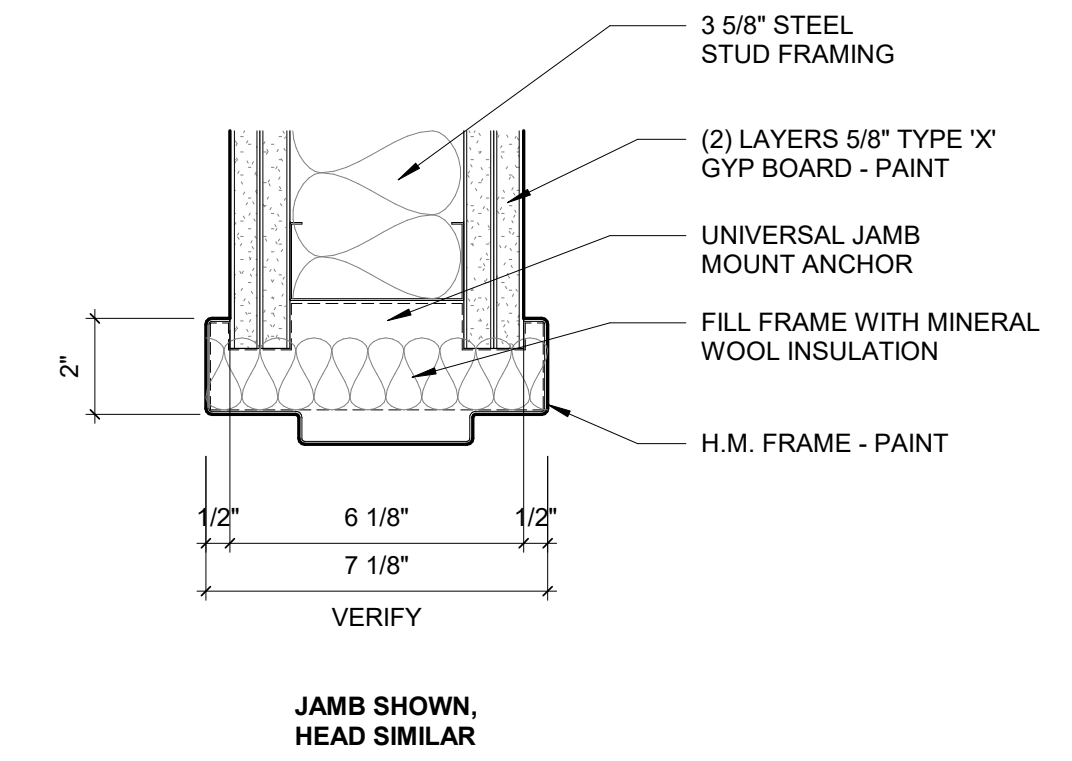
DOOR & FRAME SCHEDULE														
NO.	DOOR					FRAME			HEAD DETAIL	JAMB DETAIL	THRESHOLD DETAIL	FIRE RATING	HARDWARE	COMMENTS
	DOOR TYPE	WIDTH	HEIGHT	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH						
401	F	3'-6"	6'-8"	HM	PAINT	A	HM	PAINT	1/A11	1/A11	-	2 HR	01	
402	F	3'-6"	6'-8"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



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



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



DOOR DETAILS
3" = 1'-0"

THINK ONE ARCHITECTS



ISSUE	DATE	DESCRIP.
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MONTANA STATE UNIVERSITY
 ECOLOGY STORAGE CONTAINER
 MONTANA STATE UNIVERSITY CAMPUS
 DOOR SCHEDULE, TYPES & DETAILS

PPA# 19-0171
 06/28/23
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A11

TEMPERATURE CONTROL NOTES

1. 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.
2. 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.
3. 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.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE A 1" CONDUIT PATHWAY FROM THE UNIT CONTROLS ENCLOSURE TO THE CHEMISTRY AND BIOSCIENCE BUILDING AS IDENTIFIED ON THE PLANS.
5. STORAGE UNIT IS UTILIZED FOR THE STORAGE OF FLAMMABLE LIQUIDS. ALL DEVICES AND EQUIPMENT LOCATED WITHIN THE UNIT SHALL BE INTRINSICLY SAFE.
6. SEQUENCE OF OPERATION:
 - A. GENERAL NOTES:
 - a. 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.
 - b. 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.
 - c. 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.
 - d. ALL POINTS THAT MOVE SHALL BE TRENDED WITH A HYPERLINK FROM THE GRAPHICS.
 - e. 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).
 - f. 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.
 - B. TEMPERATURE MONITORING:
 - a. MONITOR THE TEMPERATURE WITHIN THE UNIT.
 - b. ALARMS:
 1. ALARM TO THE BMS UNDER THE FOLLOWING CONDITIONS:
 - A. IF THE UNIT TEMPERATURE FALLS BELOW 55°F (ADJ.) FOR 5 MINUTES.
 - B. IF THE UNIT TEMPERATURE RISES ABOVE 70°F (ADJ.) FOR 5 MINUTES.
 2. TRENDED ON ALL POINTS SHALL BE PROVIDED AT LEAST EVERY 15 MINUTES OR UPON CHANGE OF STATE.
 - c. UNIT HEATER MONITORING:
 - a. MONITOR THE STATUS OF EACH UNIT HEATER AND PROVIDE RUN TIME.
 - b. TRENDED ON ALL POINTS SHALL BE PROVIDED AT LEAST EVERY 15 MINUTES OR UPON CHANGE OF STATE.
 - d. PACKAGED AIR CONDITIONER MONITORING:
 - a. MONITOR THE STATUS OF EACH AIR CONDITIONER AND PROVIDE RUN TIME.
 - b. TRENDED ON ALL POINTS SHALL BE PROVIDED AT LEAST EVERY 15 MINUTES OR UPON CHANGE OF STATE.
 - e. EXHAUST FAN MONITORING
 - a. MONITOR THE STATUS OF THE EXHAUST FAN AND PROVIDE RUN TIME.
 - b. ALARMS:
 1. ALARM TO THE BMS UNDER THE FOLLOWING CONDITIONS:
 - A. IF THE EXHAUST FAN STATUS IS "ON" FOR LONGER THAN 60 MINUTES AND THE OUTDOOR AIR TEMPERATURE IS BELOW 30°F (ADJ.).
 2. TRENDED 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 Mains Rating: 2000 A
 Mounting: Surface Enclosure: Type 1 Buss Rating: 2000 A
 Wires: 4

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	

Legend:

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
Ⓢ	DUPLX 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
Ⓢ	DUPLX RECEPTACLE IN FLOOR BOX
Ⓢ	DOUBLE DUPLEX RECEPTACLE IN FLOOR BOX
Ⓢ	SIMPLE RECEPTACLE
Ⓢ	DUPLX 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
Ⓢ	SIMPLE 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

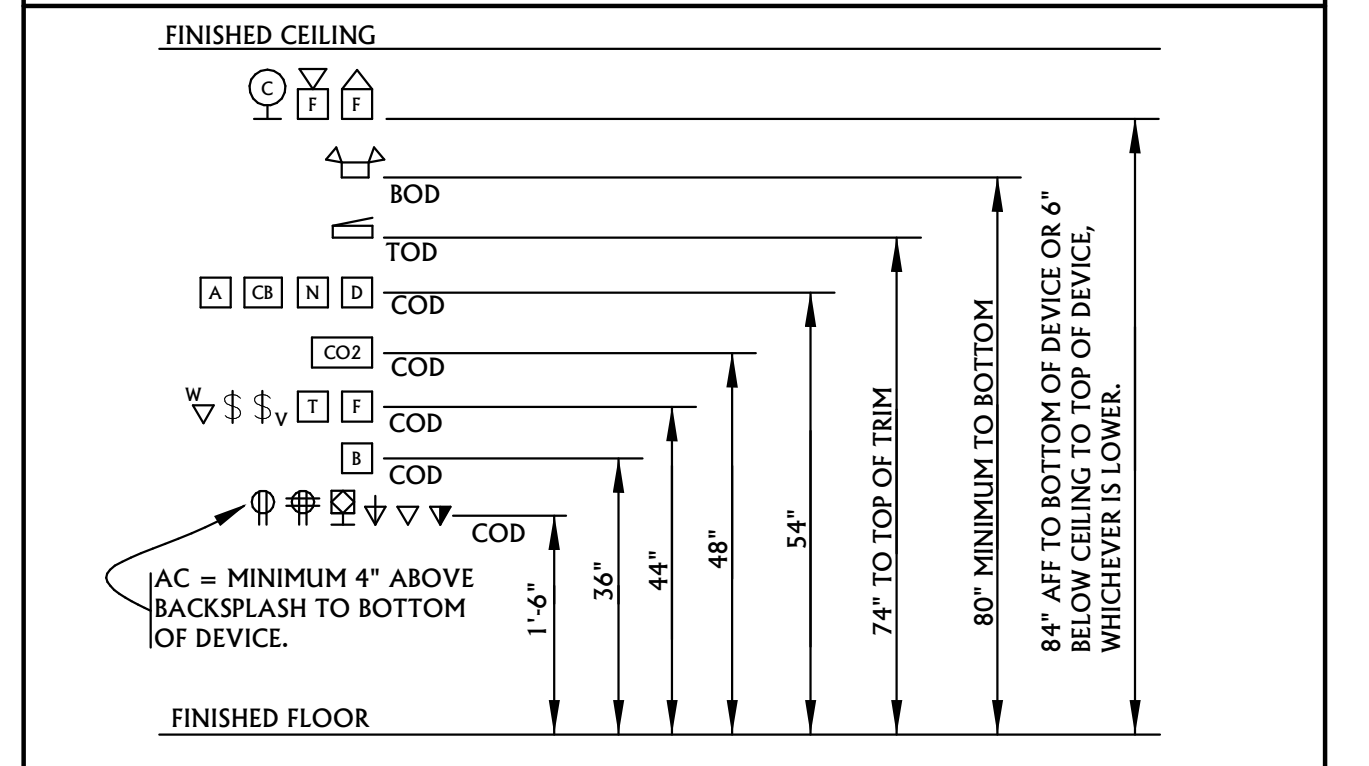
MISCELLANEOUS LEGEND

W/	WITH ABOVE COUNTER	AFF	ABOVE FINISHED FLOOR
AC	ELECTRICAL CONTRACTOR	AFG	ABOVE FINISHED GRADE
EC	EXISTING	WM	WIRE MOLD
(R)	RELOCATED	GC	GENERAL CONTRACTOR
(N)	NEW DEVICE	GND	GROUND
C	CONDUIT	UG	UNDER GROUND
BFG	BELOW FINISHED GRADE	BOD	BOTTOM OF DEVICE
UC	UNDER COUNTER	TOD	TOP OF DEVICE
WP	WEATHER PROOF	COD	CENTER OF DEVICE
MC	MECHANICAL CONTRACTOR	BOF	BOTTOM OF FIXTURE
Ⓢ	REFER TO ELECTRICAL NOTES	PC	PLUMBING CONTRACTOR
Ⓢ	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

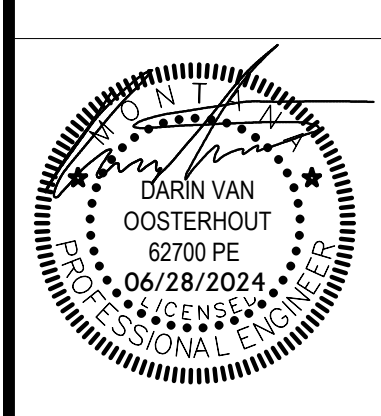
A	AMP(S)	LTS	LIGHTS
ACCU	AIR CONDITIONING CONDENSING UNIT	LW	LIGHT WHITE
ACU	AIR CONDITIONING UNIT	MC	MECHANICAL CONTRACTOR
ADJ	ADJUSTABLE	MCA	MINIMUM CIRCUIT BREAKER
ADMIN	ADMINISTRATION	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISH FLOOR	MDP	MAIN DISTRIBUTION PANEL
AHU	AIR HANDLING UNIT	MECH	MECHANICAL
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
BRK	BREAKER	MP	PROTECTION
BTU/HR	BRITISH THERMAL UNIT/HOUR	MTD	MAIN PANEL MOUNTED
C	CONDUIT	NIC	NOT IN CONTRACT
CB	CIRCUIT BREAKER	NO	NUMBER
CCT	CIRCUIT	OC	OVERCURRENT PROTECTION
CCTV	CLOSED CIRCUIT TELEVISION	OFF	OFFICE
CUH	CABINET UNIT HEATER	OH	OVERHEAD
CFM	CUBIC FEET PER MINUTE	P	PHASE
CFM	COMMUNICATION	PNL	PANEL
COM	COMMISSARY	PREP	PREPARATION
COMP	COMPRESSOR	PROD	PRODUCE
COND	CONDENSER	P/1	PROVIDE & INSTALL
CONTR	CONTRACTOR	RA	REMOTE ANNUNCIATOR
CU	COPPER	RAF	RETURN AIR FAN
CTV	CABLE TELEVISION	RECP	RECEPTACLE
CW	COOL WHITE	REF	REFRIGERATOR
CWP	COLD WATER PUMP	REFR	REFRIGERANT
DIA	DIAMETER	REQD	REQUIRED
DISC	DISCONNECT	RM	ROOM
DPS	DOOR POWER SUPPLY	RMS	RESTROOM(S)
DWG	DRAWING	RR	RESTROOMS
EC	ELECTRICAL CONTRACTOR	RS	RAPID START
EF	EXHAUST FAN	SDP	SUB DISTRIBUTION PANEL
ELEC	ELECTRIC	SER	SERVICE
END	ESTIMATED MAXIMUM DEMAND	SF	SUPPLY FAN
EMER	EMERGENCY	SHT	SHEET
ENGR	ENGINEER	SN	SOLID NEUTRAL
ETC	ETCETERA	SP	SWITCH, PILOT
EW/C	ELECTRIC WATER COOLER	SPTS	SPECIFICATIONS
EXT	EXTERIOR	SPST	SWITCH, SINGLE POLE-SINGLE THROW
FA	FIRE ALARM	STD	STANDARD
FAC	FACILITY	STL	STEEL
FACP	FIRE ALARM CONTROL PANEL	STOR	STORAGE
FIX	FIXTURE	SW	SWITCH
FLA	FULL LOAD AMPS	TBD	TELEPHONE BACK BOARD
FT	FOOT	TV	TELEVISION
GC	GENERAL CONTRACTOR	TYP	TYPICAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	UG	UNDERGROUND
GF	GROUND FAULT INTERRUPTER	UGE	UNDERGROUND ELECTRICAL
HP	HORSEPOWER	UGT	UNDERGROUND TELEPHONE
HPS	HIGH PRESSURE SODIUM	UH	UNIT HEATER
HT	HIGH INTENSITY DISCHARGE	V	VOLT(S)
HTR	HEATERS	VA	VOLT AMPERES
HWH	HOT WATER	VEST	VESTIBULE
HWP	HOT WATER HEATER	W	WIRE
HZ	HERTZ	W	WATT(S)
INC	INCORPORATED	W/	WITH
J-BOX	JUNCTION BOX	WM	WATT MISER
KHZ	KILOHERTZ	XFMR	TRANSFORMER
KIT	KITCHEN		
KVA	KILIVOLT 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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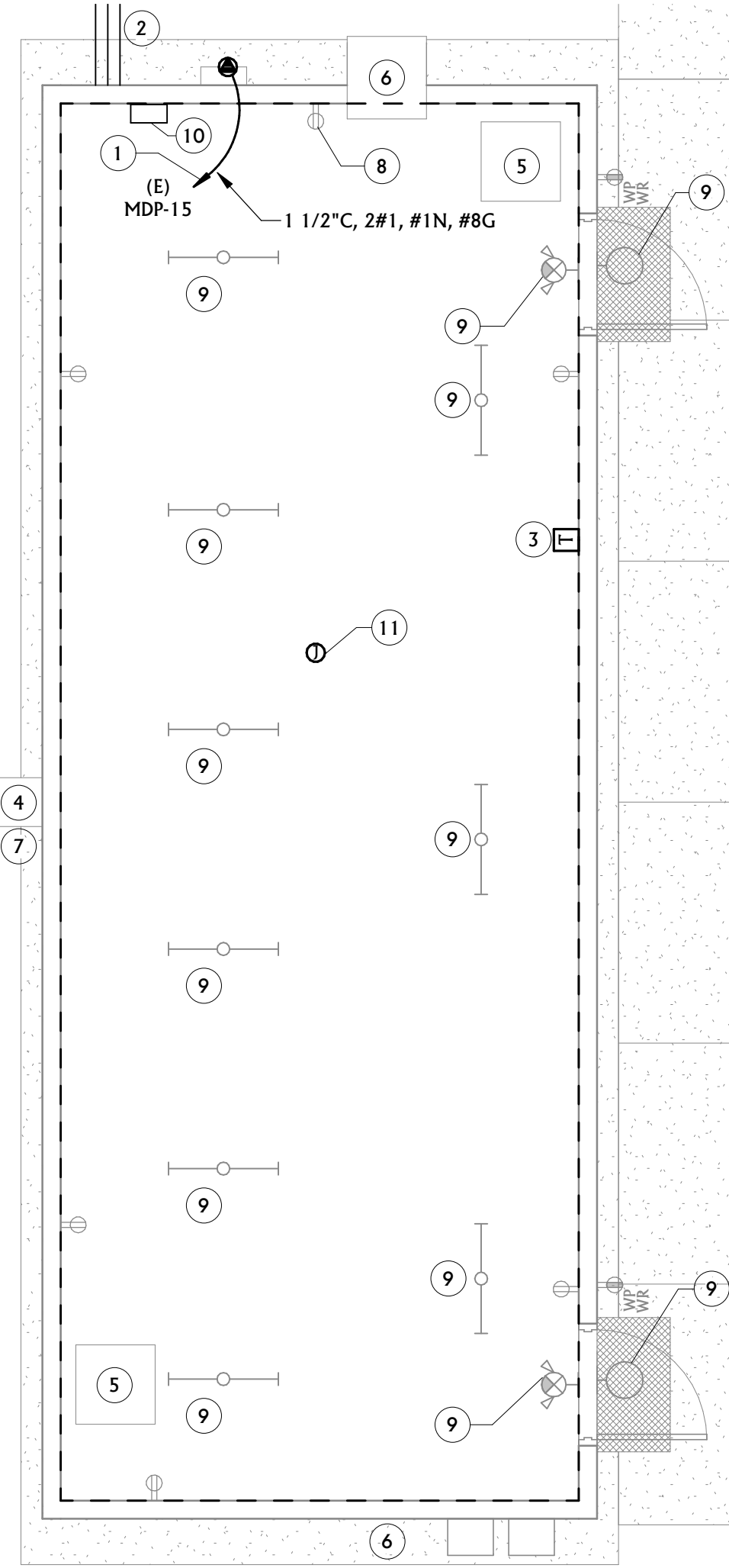
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ECOLGY STORAGE CONTAINER
 MONTANA STATE UNIVERSITY CAMPUS
ELECTRICAL COVER SHEET

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E0.0

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.



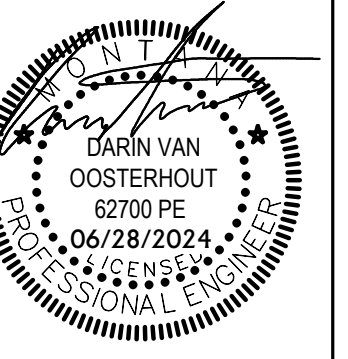
1 **POWER AND SPECIAL SYSTEMS PLAN**
E2.1 1/4" = 1'-0"

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 IIT 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 IIT. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MSU IIT. |



ACE, INC.
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 12 N. BROADWAY
 SECOND FLOOR
 BELGRADE, MT 59714
 406-386-3320
 ACE JOB 23BZ5804

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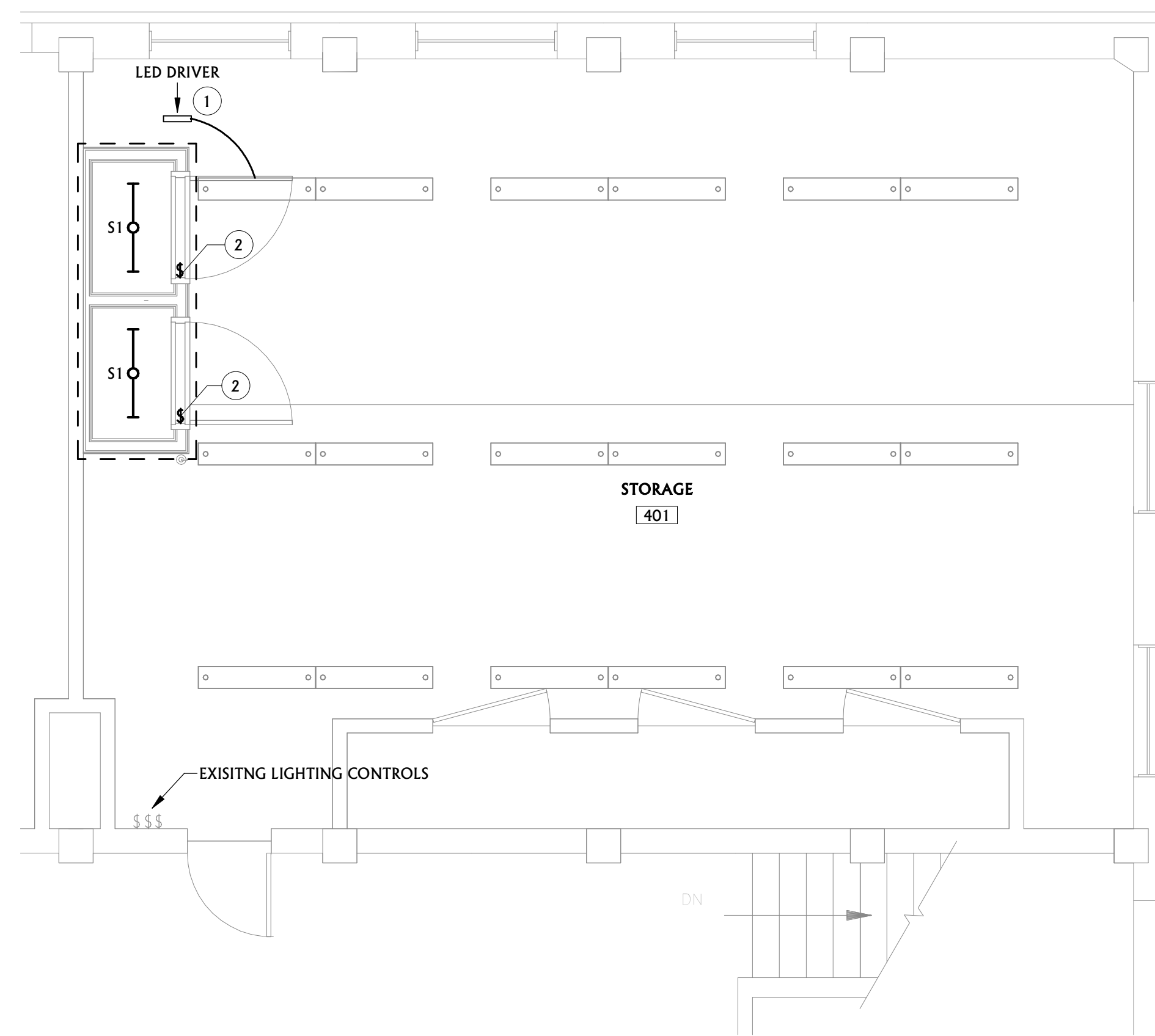
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HAZARDOUS LOCATION NOTES

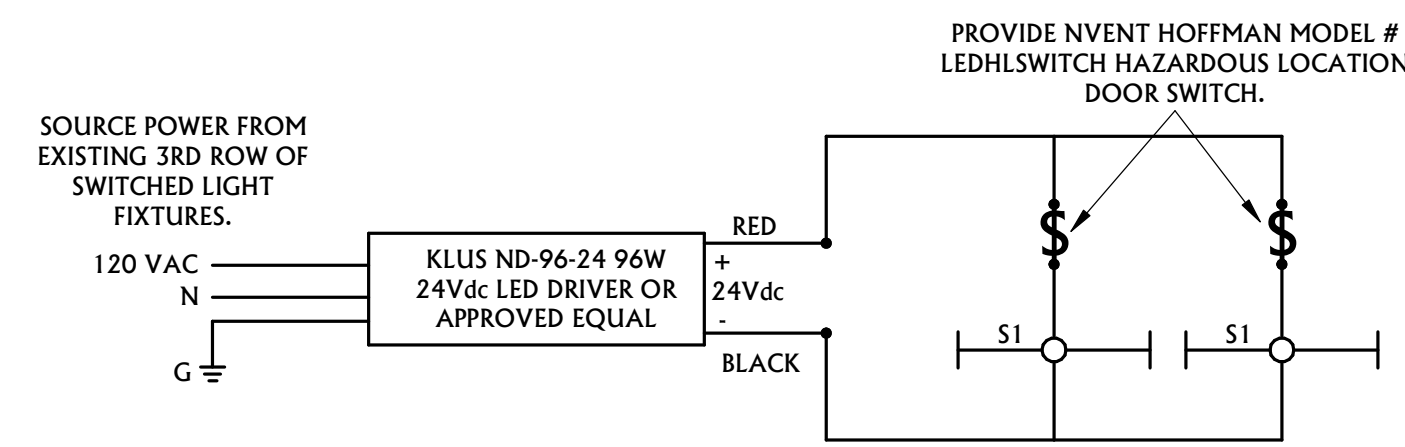
- AREAS THAT ARE CLASSIFIED AS CLASS I DIV. II ARE INDICATED BY THE DASHED BOX ON THE PLANS.
- REFER TO NEC ARTICLE 501 FOR CODE REQUIREMENTS.
- FOR CONDUIT AND CABLE SEALING REQUIREMENTS REFER TO COMMENTARY TABLE 501.1.
- REFER TO NEC 501.15 FOR REQUIREMENTS OF SEALS WITHIN A CLASS I, DIV II AREA.
- 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
E2.2 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.