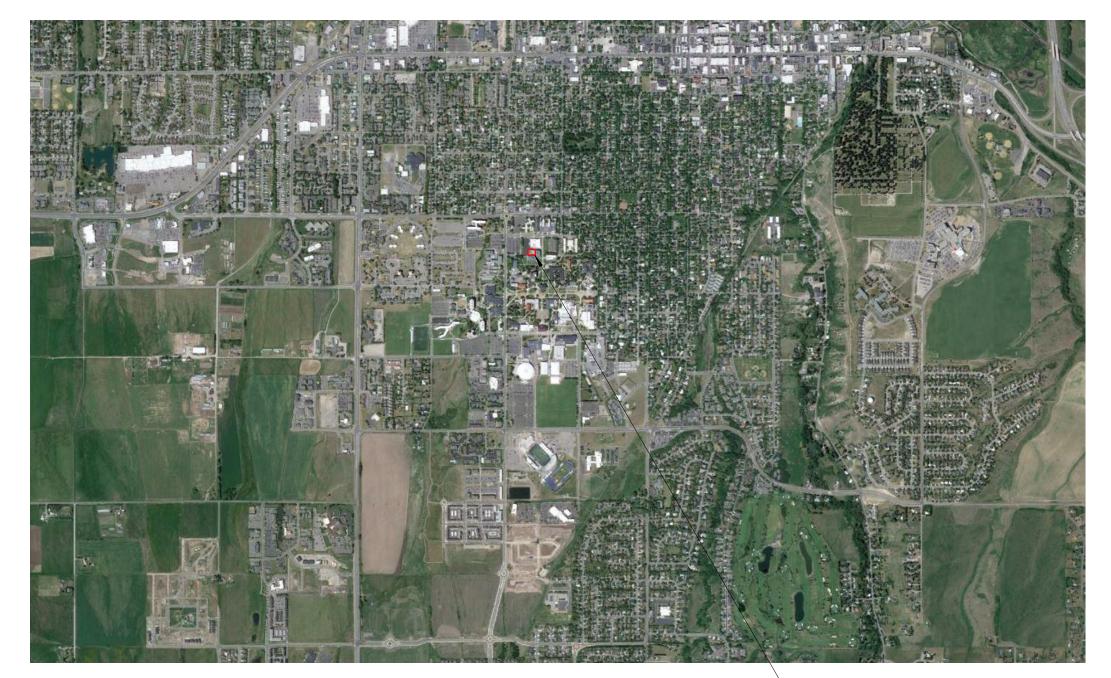
ECOLOGY STORAGE CONTAINER

MONTANA STATE UNIVERSITY CAMPUS





PROJECT LOCATION

- LEWIS HALL

DOOR NUMBER

WALL TYPE

STORAGE CONTAINER LOCATION

CONSULTANTS:

<u>ARCHITECTURAL</u>

101 E. MAIN, SUITE A

STRUCTURAL

DCI ENGINEERS

12 N BROADWAY

12 N BROADWAY

THINKONE ARCHITECTS

BOZEMAN, MONTANA 59715

1060 S FLOWER AVE, SUITE 202

MECHANICAL
ASSOCIATED CONSTRUCTION ENGINEERING

ASSOCIATED CONSTRUCTION ENGINEERING

BOZEMAN, MONTANA 59718

BELGRADE, MONTANA 59714

BELGRADE, MONTANA 59714

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 DISCREPENCY.

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 APPOVAL 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 PROMTLY 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 NECCESARILY 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 SAFING OR SPRAY INSULATION. PROVIDE FIRE DAMPERS WHERE

ABBREVIATIONS

ALUM. ANN. BD.	ALUMINUM ANNUNCIATOR BOARD	MECH. MFG. M.R. MTL.	MECHANICAL MANUFACTURER MOISTURE RESISTANT METAL
BLCK'G.	BLOCKING	N.I.C.	NOT IN CONTRACT
CAB. CER. CLR.	CABINET CERAMIC CLEARANCE	O.C. O.S.B.	ON CENTER ORIENTED STRAND
BOARD COMP. CONC. INSTALLED	COMPOSITE CONCRETE	O.F.C.I.	OWNER FURNISHED CONTRACTOR
CONF. CORR. C.M.U.	CONFERENCE CORRIDOR CONCRETE MASONRY UNIT	O.F.O.I.	OWNER FURNISHED OWNER INSTALLED
C.T. CUST.	CERAMIC TILE CUSTOM	P. P. LAM. P.T.	PAINT PLASTIC LAMINATE PAPER TOWEL
D.F. DISP. D.M.	DRINKING FOUNTAIN DISPENSER DRYMARK BOARD	PRE-FIN. PVC.	PRE-FINISHED POLYVINYLCHLORIDE
DR.	DRAWER	R. REC.	RADIUS RECESSED
E.I.F.S.	EXTERIOR INSULATION FINISH SYSTEM	REST. REQ'D	
E.P.S. ELEV.	EXTRUDED POLYSTYRENE ELEVATION	S.	STAIN
F.D. F.E. F.F. F.S. FLR.	FLOOR DRAIN FIRE EXTINGUISHER FINISH FLOOR FLOOR SINK FLOORING	S.C. S.F. S.V. SIM. SPECS. STOR.	SOLID CORE SQUARE FEET SHEET VINYL SIMILAR SPECIFICATIONS STORAGE
FDN. F.O.	FOUNDATION FACE OF	T.B. T.O.	TACK BOARD TOP OF
G.B. GWB GYP. BD.	GYPSUM WALLBOARD GYPSUM WALLBOARD GYPSUM WALLBOARD	T.P. TYP. V.B. V.C.T.	TOILET PAPER TYPICAL VAPOR BARRIER VINYL COMPOSITION
TILE HC. H.M.	HANDICAPPED HOLLOW METAL	VER.	VERIFY
INSUL.	INSULATION	W/ W/O	WITH WITHOUT

NOTES AND SYMBOLS

DETAIL REFERENCE

A1.0		_	
A3.0	SECTION CUT	A	WINDOW TYPE
1 A4.0	INTERIOR ELEVATION	\diamondsuit	NOTE REFERENC

MATERIALS LEGEND

ROOM NUMBER

ROOM

100

MAIERI	ALS LEGE	ND	
	EARTH		STEEL
720 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	COMPACTED GRAVEL		FINISH WOOD
	CONCRETE		BATT INSUL.
	BRICK		RIGID INSUL.
	C.M.U.		GYP. BD.

SCHEDULE OF DRAWINGS:

GENERAL

A00 A01 A02	COVER SHEET CODE REVIEW CODE REIVEW	
AUZ	CODE REIVEW	
SITE DE	VELOPMENT	
NO.	DRAWING SHEET	
A03	SITE PLAN	

S1.0 STRUCT - FOUNDATION PLAN AND DETAILS

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

LLLCTRICA	7 L
NO.	DRAWING SHEET
E0.0	ELECTRICAL COVER SHEET
E2.1	ELECTRICAL PLANS
F2 2	ELECTRICAL LEWIS HALL PLANS

STORAGE CONTAINE

ANA STATE UNIVERSITY CAMPUS

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

COVER SHEET

CODE REVIEW - FIRST FLOOR CONTAINER

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 29' - 8" +/-EXISTING STOR. UNIT 12' - 0" EXISTING STOR. UNIT NEW 6' SIDEWALK NEW 15x39, 2HR FIRE RATED CHEMICAL STORAGE UNIT EXISTING DIESEL OIL TANK EXISTING BIO CHEM AND GENERATOR 4 BUILDING EXISTING COOLING TOWER FIRE SEPARATION DISTANCE EXISTING LIQUID FOR BIO CHEM BUILDING = BETWEEN 10 AND 30'. NITROGEN TANK EXISTING FENCE THE NEW CONTAINER HAS A 2HR BI-DIRECTIONAL WALL IN LEIU OF A 1HR FIRE BARRIER FROM THE INTERIOR OF THE CONTAINER AND A 1 HR FIRE BARRIER FROM THE INTERIOR OF THE BIO CHEM BUILDING. THE CITY OF **BOZEMAN HAS ACCEPTED THIS** INTERPRETATION.

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 TOAL 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.







IMAGE 1 IMAGE 2

Gas Density (lb/ft 3)

Relative density

Solubility in water

Molecular weight

ISOPROPYL ALCOHOL PHYSICAL AND CHEMICAL PROPERTIES

: -90°C (-130°F)

Not available

Not available.

Not available.

60.11 g/mole

0.79

	.		,
_	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 (ft ³ /lb)	:	1.2739

Partition coefficient: n-0.05 octanol/water **Auto-ignition temperature** 456°C (852.8°F) **Decomposition temperature** Not available. Not available. Flow time (ISO 2431) Not available.

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

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.

CODE CHECK

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

22201110112	.22011 (10) (2 00)	
	CODE SOURCE:	REQUIREMENTS:
PERMITS	LOCAL JURISDICTION	LOCAL JURISDICTION
OCCUPANCY OCCUPANCY SEPARATION CONSTRUCTION TYPE FIRE RESISTANCE	IBC CH. 3 IBC SECT. 508.3 IBC CH. 6 IBC TABLE 705.5	H-3 NON-SEPERATED TYPE II-B 2HR
ALLOWABLE FLOOR AREA	IBC TABLE 506.2	14,000 SF
AREA INCREASE (FRONTAGE)	IBC SECT. 506.3	NOT USED
TOTAL ALLOWABLE AREA ACTUAL AREA	IBC SECT. 506.1	14,000 SF 612 SF
ALLOWABLE STORIES ACTUAL STORIES	IBC TABLE 504.4	2 1

NOT REQUIRED. LESS THAN 1000 GALLONS WILL BE STORED IN STORAGE CONTAINER. ALL VESSELS ARE LESS THAN 55 GALLONS.

OTHER EGRESS COMPONENTS - 2 OCC (0.2) = .4"

SPILL CONTROL AND

SECONDARY CONTAINMENT

MINIMUM EGRESS WIDTH

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
		1 EXIT REQUIRED PER TABLE 1006.2.1 2 EXITS PROVIDED
EXIT ACCESS TRAVEL DISTANCE	IBC TABLE 1017.2	150 FT W/ SPRINKLER SYSTEM

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

IBC TABLE 1005.3

IFC SECT. 5004.2

ISSUE DATE DESCRIP.

C I S

WILLIAM A.

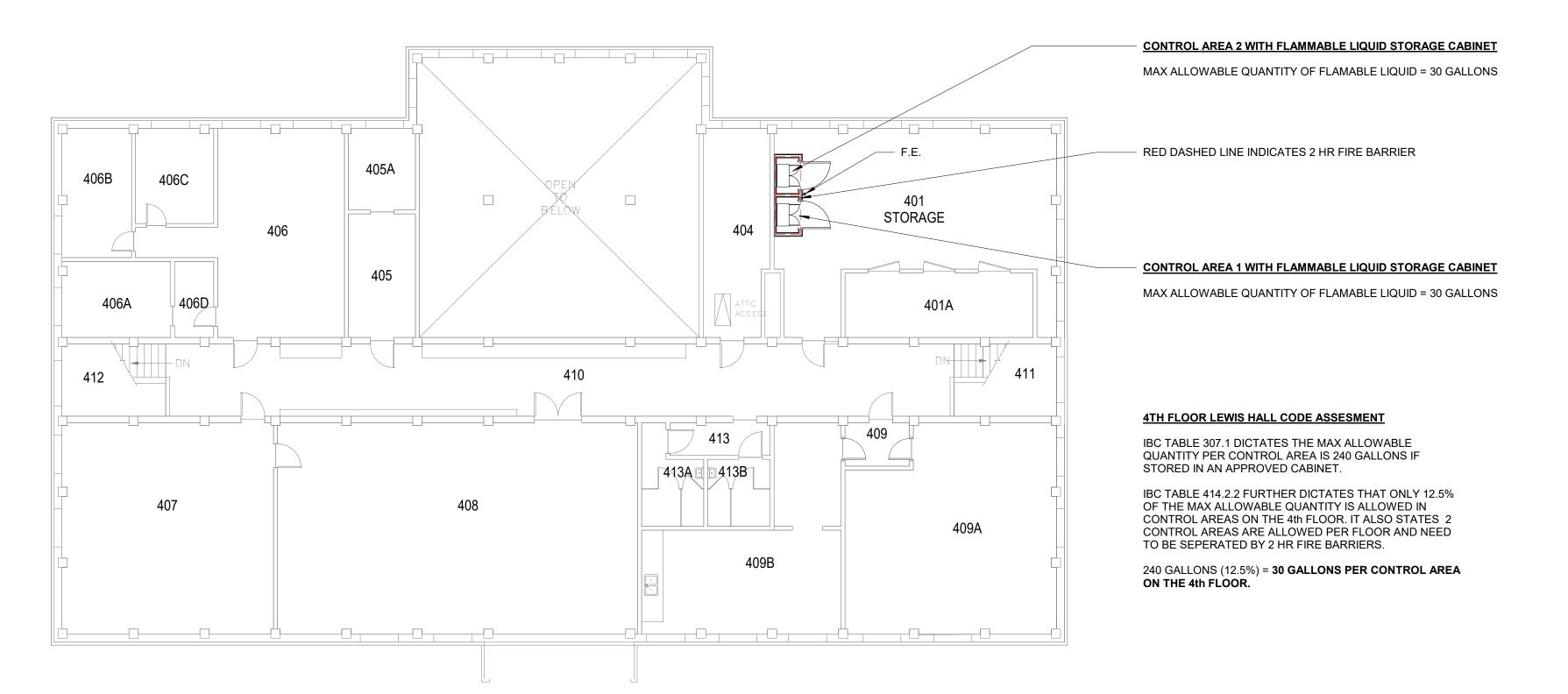
STATE STORA

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

C





CODE REVIEW - LEWIS HALL, 4th FLOOR

CODE CHECK (LEWIS HALL)

CODES: BUILDING INTERNATIONAL BUILDING CODE (2021) INTERNATIONAL FIRE CODE (2012) FIRE **ACCESSIBILITY** ANSI 117.1 (2017)

INTERNATIONAL MECHANICAL CODE (2021) MECHANICAL **PLUMBING** UNIFORM PLUMBING CODE (2021) NATIONAL ELECTRICAL CODE (2020) ELECTRICAL

CODE SOURCE:

LOCAL JURISDICTION LOCAL JURISDICTION

IBC TABLE 414.2.2

OCCUPANCY IBC CH. 3 CONSTRUCTION TYPE IBC CH. 6 UNKNOWN

CONTROL AREA

PERMITS

IBC TABLE 307.1 (FOR USE IN LEWIS HALL)

REQUIREMENTS:

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

DOUBLING OF MAX QUANTITY IF STORED

*SECOND CONTROL AREA IS PERMITTED PER TABLE 414.2.2

QUANTITY

EXCERPT FROM IBC CHAPTER 3: OCCUPANCY CLASSIFICATION AND USE

		GROUP WHEN		STORAGE			LOSED SYS		USE-OPEN	
MATERIAL	CLASS	THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liqu gallo (poun
Combustible dust	NA	H-2	See Note q	NA	NA	See Note q	NA	NA	See Note q	NA
Combustible fiber ^q	Loose Baled ^o	H-3	(100)	NA	NA	(100) (1,000)	NA	NA	(20) (200)	NA
	II	H-2 or H-3		120 ^{d, c}			120 ^d			309
Combustible liquid.i	IIIA	H-2 or H-3	NA	330 ^{d, e}	NA	NA	330 ^d	NA	NA	80
nquiu	IIIB	NA		13,200°, f			13,200 ^f			3,30
Cryogenic flammable	NA	H-2	NA	45 ^d	NA	NA	45 ^d	NA	NA	10
Cryogenic inert	NA	NA	NA	NA	NL	NA	NA	NL	NA	NA
Cryogenic oxidizing	NA	H-3	NA	45 ^d	NA	NA	45 ^d	NA	NA	10
	Division 1.1	H-1	1°, g	(1)e, g		0.25 ^g	(0.25) ^g		0.25s	(0.25
	Division 1.2	H-1	1°.8	(1)e, g		0.258	(0.25) ^g		0.258	(0.25
	Division 1.3 H-1 or H-2 5 ^{e, g} (5) ^{e, g} 1 ^g	18	(1) ^g		18	(1)				
Explosives	Division 1.4	H-3	50 ^{e, 8}	(50) ^{e, g}	NA	50 ⁸	(50) ⁸	NA	NA	NA
	Division 1.4G	H-3	125 ^{e, 1}	NA		NA	NA		NA	NA
	Division 1.5	H-1	1 ^{e, g}	(1)e, g		0.258	(0.25)8		0.258	(0.25
	Division 1.6	H-1	1 ^{c, g}	NA		NA	NA		NA	NA
Flammable	Gaseous	H-2	NA	NA	1,000 ^{d,e}	NA	NA	1,000 ^{d,c}	NA	NA
gas	Liquefied			(150) ^{d,e}	NA	14/4	(150) ^{de}	NA	LACK.	
Flammable liquid ^c	IA IB and IC	H-2 or H-3	NA	30 ^{d, c}	NA	NA	30 ^d 120 ^d	NA	NA	10 ^d
Flammable liquid, combination (IA, IB, IC)	NA	H-2 or H-3	NA	120 ^{d, e, h}	NA	NA	120 ^{d, h}	NA	NA	30 ^{d.}
Flammable solid	NA	H-3	125 ^{d, e}	NA	NA	125 ^d	NA	NA	25 ^d	NA
Inert gas	Gaseous	NA	NA	NA	NL	NA	NA	NL	NA	NA
mert gas	Liquefied	NA	NA	NA	NL	NA	NA	NL	NA	NA
	UD	H-1	1°.8	(1)e, g		0.258	$(0.25)^8$		0.258	(0.25
	I	H-2	5 ^{d, e}	(5) ^{d, e}		1 ^d	(1) ^d		1 ^d	(1) ^d
Organic	II	H-3	50 ^{d, e}	(50) ^{d, c}	NA	·50 ^d	(50) ^d	NA	10 ^d	(10)
peroxide	III	H-3	125 ^{d, c}	(125) ^{d, e}		125 ^d	(125) ^d	13/3	25 ^d	(25)
	IV	NA	NL	NL		NL	NL		NL	NL
	V	NA	NL	NL		NL	NL		NL	NL

OCCUPANCY CLASSIFICATION AND USE

		GROUP WHEN	STORAGE ^b			US MATERIALS POSING A PHYSIC USE-CLOSED SYSTEMS ^b			USE-OPEN SYSTE	
MATERIAL	CLASS	THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liq gall (pou
	4	H-1	1 ^g	(1)c, g		0.258	$(0.25)^8$		0.258	(0.2
0 11	3 ^k	H-2 or H-3	10 ^{d, e}	(10) ^{d, e}	NA	2 ^d	(2) ^d	NA	2 ^d	(2
Oxidizer	2	H-3	250 ^{d, e}	(250)d, e	NA.	250 ^d	(250) ^d		50 ^d	(50
	1	NA	4,000°, f	(4,000)°, ſ		4,000 ^f	(4,000) ^f		1,000°	(1,0
Oxidizing	Gaseous	H-3	NA	NA	1,500 ^{d,e}	NA	NA	1,500 ^{d,c}	NA :	N
gas	Liquefied	H-3	NA	(150) ^{d, e}	NA	NA.	(150)d,e	NA		.197
Pyrophoric	NA	H-2	4c. g	(4)c. g	50°. s	18	(1)g	10 ^{e, g}	0	0
	4	H-1	1°, g	(1)c, g	10 ^{c, g}	0.258	(0.25)8	2 ^{c, g}	0.25g	(0.2
Unstable	3	H-1 or H-2	5 ^{d, c}	(5)d, c	50 ^{d, c}	1 ^d	(1) ^d	10 ^{d, e}	1 ^d	(1
(reactive)	2	H-3	50 ^{d, c}	(50)d, e	750 ^{d, e}	50 ^d	(50) ^d	750 ^{d, c}	10 ^d	(10
	1	NA	NL	NL	NL	NL	NL	NL	NL	N
	3	H-2	5 ^{d, c}	(5)d, e		5 ^d	(5) ^d		1 ^d	(1
Water	2	H-3	50 ^{d, e}	(50) ^{d, e}	NA	50 ^d	(50) ^d	NA	10 ^d	(10
reactive	1	NA	NL	NL		NL	NL		NL	N

For St. 1 cubic foot = 0.028 m², 1 pound = 0.454 kg, 1 gallon = 3.785 L.

N. = Not Limitely, N. = Not Applicable; U. D = Inclusatified Detonable.

a. For use of Control areas, see Section 414 2.

b. The aggregate quantity in use and storage shall not exceed the quantity specified for storage.

c. The quantities of alcoholic beverages in retail and wholesale sales occupancies shall not be limited provided the liquids are packaged in individual containers not exceeding 1.3 gallons. In retail and wholesale sales occupancies, the quantities of medicines, foodstarfs or consumer products, and committees are not exceeding 1.3 gallons. In retail and wholesale sales occupancies, the quantities of medicines, foodstarfs or consumer products, and committees are packaged in individual containers not exceeding 1.3 gallons.

Maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an automatic sprinkler shall be increased 100 percent in buildings equipped storage cabinets, day boxes, gas cabinets, gas rooms or exhausted on endosures or in instel safety cans in accordance with Section 903.3.1.1. Where Note a slos applies, the increase for both notes shall be applied accumulatively.

f. Quantities in a first part of the storage of the storage cabinets, day boxes, gas cabinets, gas rooms or exhausted notes shall be applied accumulatively.

f. Quantities shall not be limited in a building equipped throughout with an automatic sprinkler system in accordance with Section 90.3.1.1.

g. Allowed only in buildings equipped throughout with an automatic sprinkler system in accordance with Section 90.3.1.1.

h. Containing not more than the maximum allowable quantity per control area of Class IA, IB or IC flammable liquids.

The maximum allowable quantity shall not percentage of complying with Section 60.3.2 of the international Fire Code.

A maximum allowable quantity allar of apply to furth of storage area of control of storage are approved.

Not weight of the protochnic composition of the firewox

2021 INTERNATIONAL BUILDING CODE®

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

30 GALLONS MAX PER CONTROL AREA .
(2) CONTROL AREAS PER FLOOR ARE PERMITTED
120(2) = 240 TABLE 307.1 ALLOWS

STORY		PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA®	NUMBER OF CONTROL AREAS PER STORY	FIRE-RESISTANCE RATI	
	Higher than 9	5	1	2	
	7-9	5	2	2	
	6	12.5	2	2	
Above grade plane	5	12.5	2	2	
Above grade plane	4	12.5	2	2	
	3	+ 50		11	
	2	75	3	1	
	1	100	4	1	
	1	75	3	1	
Below grade plane	2	50	2	1	
	Lower than 2	Not Allowed	Not Allowed	Not Allowed	

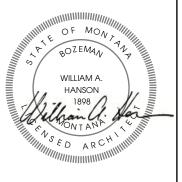
ISSUE DATE DESCRIP.

STATE UNIVERSITY STORAGE CONTAINER

MONTANA 8 MONTANA S

> PPA# 19-0171 BID/PERMIT SET | ₹

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ISSUE DATE DESCRIP

8

TE UNIVERSITY
RAGE CONTAINER

SOLOGY STORAGE
TANA STATE UNIVERSITY CAMPUS

PPA# 19-0171 12/06/23

A03

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S

FOUNDATION PLAN NOTES:

- SIDEWALK CONTINUES

BEYOND, SEE ARCH/SITE

6" CONC SLAB ON GRADE

W/ #4 @ 18"OC EW OR

6x6-W2.9xW2.9, CTRD

T/SLAB = BUILDING FLOOR

THICKENED SLAB EDGE,

SEE DETAIL 3/S1.00

CONCEPTUAL CJ

AVOID BUILDING

PER ARCH/

LOCATIONS PER 6/S1.00.

ANCHORAGE LOCATIONS

1. 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
- CJ INDICATES CONTROL JOINT PER PLAN. IF THE SLAB IS PLACED IN MULTIPLE POURS OR PLACEMENT IS INTERRUPTED, SEE THE CONSTRUCTION JOINT DETAIL.
- 7. TYPICAL DETAILS PER:
 - 5/S1.00 TYPICAL LAP SPLICE SCHEDULE 6/S1.00 TYPICAL SLAB CONSTRUCTION AND CONTROL JOINTS

STORAGE BUILDING FOUNDATION PLAN

12" CONC SLAB ON GRADE

W/ #5 @ 12" OC EW TOP, #5 @

12" OC TRANS & #5 @ 8" OC

LONG. BOTT

T/SLAB = 100'-0"

APPROX OUTLINE

OF PRE-FAB HSMB

MANUF, SEE ARCH

INDICATES APPOX

BUILDING ANCHORAGE

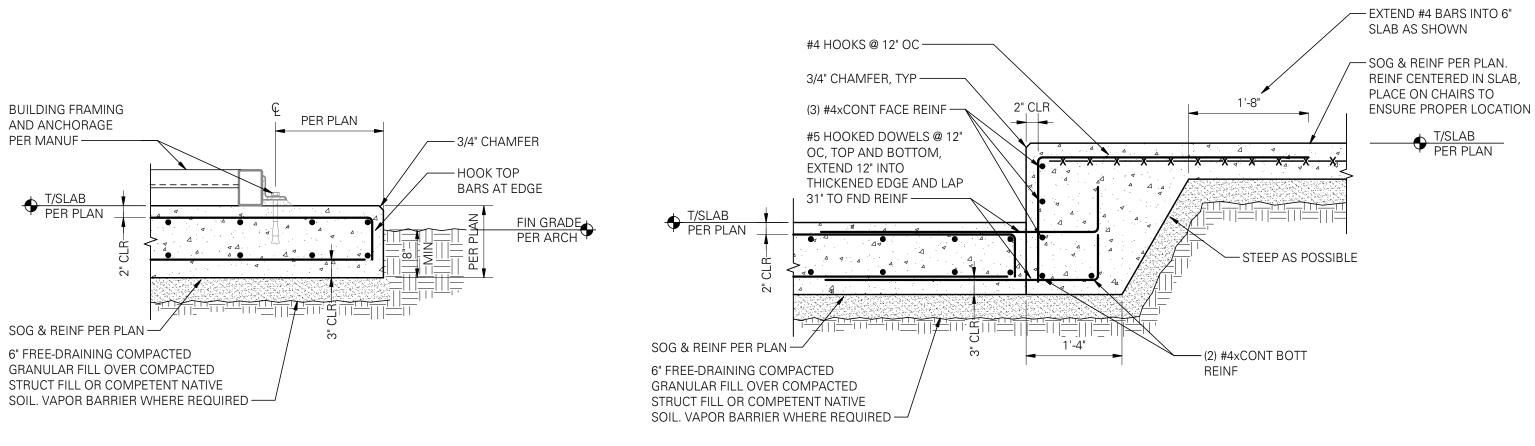
LOCATIONS, SEE MANUF

FOR LOCATION AND TYPE —

FOR ADD'L INFO -

DESIGNED BY

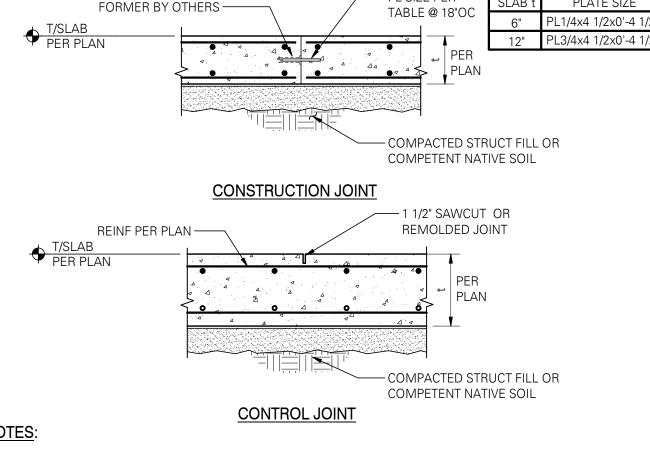
1'-0" 14'-4" CL TO CL OF ANCHOR 1 1'-0" (VERIFY W/ MANUF)



FOUNDATION SLAB AT STORAGE BUILDING

DIAMOND DOWEL POCKET





- USE "EARLY ENTRY DRY-CUT SAW" AS SOON AS POSSIBLE WITHOUT CAUSING RAVELING OF CONCRETE EDGES. SAWCUT ALONG SHORT DIRECTION OF POUR FIRST.
- 3. 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/ FILL JOINTS WITH EXTERIOR-RATED JOINT CONTROL JOINT PLAN TO ARCHITECT AND ENGINEER OF RECORD FOR REVIEW/ APPROVAL

RADE 60 REINFORCING, f'c >= 4000 psi HOOKE BAR FRAIGHT BARS SIZE Splice Ldh #3 19 #4 25 10 12 31 37

- ALL TABULATED VALUES ARE IN INCHES. Ld = DEVELOPMENT LENGTH, Ldh = HOOKED
- DEVELOPMENT LENGTH VALUES FOR UNCOATED REINFORCING AND NORMAL WEIGHT CONCRETE WITH CLEAR SPACING > 2x BAR DIA., CLEAR COVER > BAR DIA.

INSPECTIONS, QUALITY ASSURANCE VERIFICATIONS AND TEST REQUIREMENTS

NSPECTIONS: 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 note required for the concrete portion of this project. Contractor is referred to IBC

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, MTunderstood 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

<u>DEFINITIONS</u>: The following definitions cover the meanings of certain terms used in these notes:

- (1) "Architect/Engineer" The Architect of Record and the Structural Engineer of Record.
- (2) "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 Sys-
- (3) "Submit for review" Submit to the Architect/SER for review prior to fabrication or construction. (4) "Per Plan" – Indicates references to the structural plans, elevations and structural general notes.
- (5) "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 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 found in the Contract Documents, 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

MAIN WIND FORCE RESISTING SYS	TEM		
Ultimate Design Wind Speed, V _{ULT} (MP	114		
Exposure Category		С	
Internal Pressure Coefficient	Cpi =	+/- 0.	.18
Topographic Factor	Kzt =	1.0	
Seismic Design Category:	SE)C =	D
Site Classification per IBC 1613.3.2 & A		D	
	Exposure Category Internal Pressure Coefficient Topographic Factor Seismic Design Category:	Internal Pressure Coefficient Topographic Factor Seismic Design Category: Site Classification per IBC 1613.3.2 & ASCE 7-16, Ch. 20	Exposure Category Internal Pressure Coefficient Topographic Factor Seismic Design Category: Site Classification per IBC 1613.3.2 & ASCE 7-16, Ch. 20

OCCUPANCY: Risk Category of Building per 2021 IBC Table 1604.5 =

SNOW LOAD:	Ground Snow Load, (PSF)	$p_g =$	46
	Snow Drift Loading required by Authority Having Jurisdiction?		Yes
	Snow Load Importance Factor	_s =	1.0
	Snow Exposure Factor	C _e =	В

Spectral Response Acceleration (Short Period)

Spectral Response Acceleration (1-Second Period)

DEFERRED SUBMITTALS

ply with the following requirements:

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 com-

- Design considers tributary dead, live, wind and earthquake loads in combinations required by IBC. (2) Design within the Deflection Limits referenced in the IBC.
- (3) Design shall conform to the specifications and reference standards of the governing code.
- (4) Submittal shall include: a. Calculations prepared, stamped and signed by the SSE demonstrating code conformance. b. Engineered component design drawings are prepared, stamped and signed by the SSE.
 - c. Product data, technical information and manufacturer's written requirements and Agency approvals as applicable.
 - d. 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:

(1) Pre-Manufactured Building and its Anchorage to the foundation (2) Handrails, Guardrails, and their Anchorages

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 specified therein including, 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.

Allowable Foundation Bearing Pressure. 2000 PSF – ASSUMED

FOUNDATIONS and FOOTINGS: Foundations shall bear on either on competent native soil or compacted struc-

LABS-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:

(1) ACI 301-20 "Specifications for Structural Concrete"

- (2) IBC Chapter 19 "Concrete" (3) ACI 318-19 "Building Code Requirements for Structural Concrete"
- (4) ACI 117-10 "Specifications for Tolerances for Concrete Construction and Materials"
- (5) CRSI MSP-09, 28th Edition, "Manual of Standard Practice."
- (6) 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.

..ASTM A615, Grade 60, deformed bars. Reinforcing Bars.. Smooth Welded Wire Fabric. ..ASTM A1064 ..CRSI MSP-09, Chapter 3 "Bar Supports." Bar Supports.

Ш

 $S_s = 0.679 g$

 $S_1 = 0.214 g$

Tie Wire..

(1) 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

.16 gage or heavier, black annealed.

(2) 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 Con- tent	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:

- (1) 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.
- (2) Cementitious materials shall conform to the relevant ASTM standards listed in ACI 318 Section 26.4.1.1.1(a).
- (3) 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 ±1-1/2%. Air content shall be measured at point of placement.
- (4) Aggregates shall conform to ASTM C33.
- (5) Slump: Conform to ACI 301 Section 4.2.2.1. Slump shall be determined at point of placement.
- (6) Chloride Content: Conform to ACI 318 Table 19.3.2.1.
- (7) Non- chloride accelerator: Non-chloride accelerating admixture may be used in concrete placed at ambient temperatures below 50°F at the contractor's option.
- (8) 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.
- (9) 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 nonstructural 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.

- (1) Cure 4 cylinders for 28-day test age. Test 1 cylinder at 7 days, test 2 cylinders at 28 days, and hold 1 cvlinder 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
- (2) 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

Acceptance. Strength is satisfactory when:

- (1) The averages of all sets of 3 consecutive tests equal or exceed the specified strength.
- (2) 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.

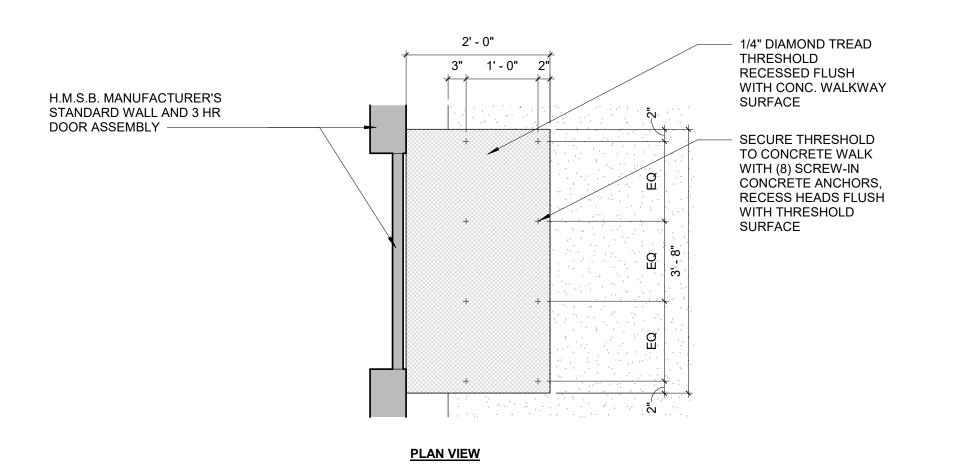
Concrete exposed to earth or weather... SPLICES: Conform to ACI 301, Section 3.3.2.7, "Splices". Refer to "Typical Lap Splice and Development Length Schedule" for typical reinforcement splices.

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.







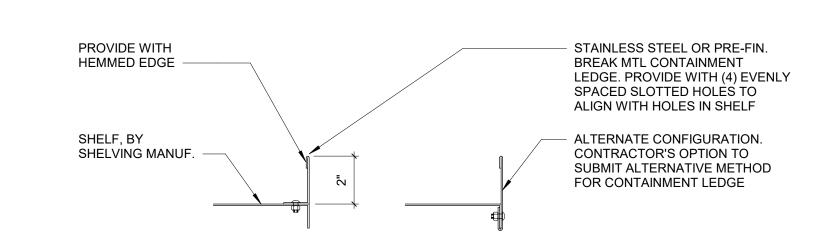


MANUF. STANDARD 3HR RATED DOOR AND

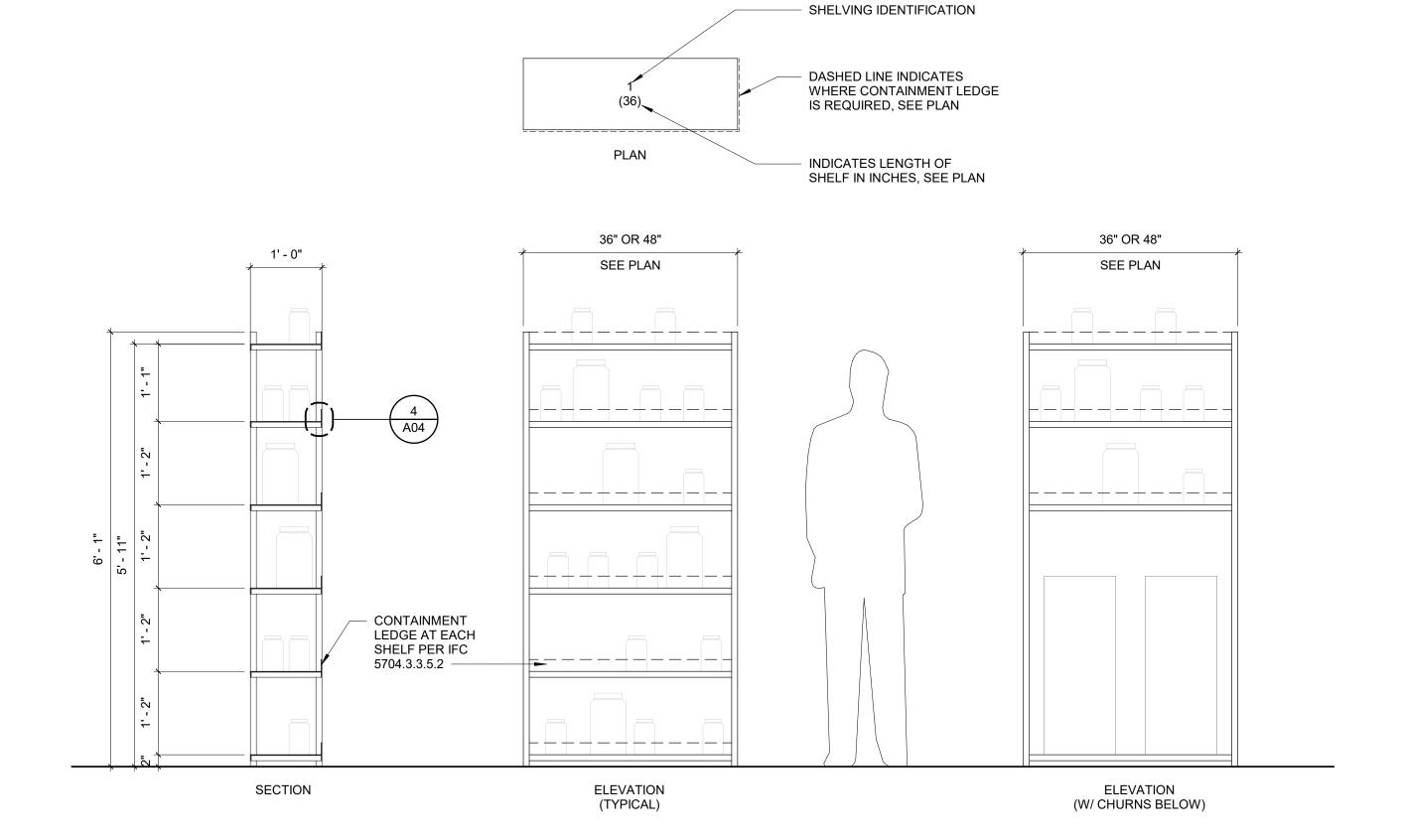
WEATHERSTRIPPING VERIFY WITH CONTAINER MANUF. H.M.S.B. MANUFACTURER'S STANDARD FLOOR, SUMP AND 1/4" DIAMOND TREAD THRESHOLD RECESSED BASE ASSEMBLY. VERIFY TOTAL FLUSH WITH CONC. DEPTH WITH H.M.S.B. MANUF. WALKWAY SURFACE CONCRETE WALKWAY T.O. CONTAINER FLOOR WITH THICKENED EDGE, REFER TO STRUCT. FOR THICKENED EDGE REQUIREMENTS T.O. CONC. SLAB CONCRETE SLAB OVER COMPACTED GRAVEL BASE -REFER TO STRUCT.

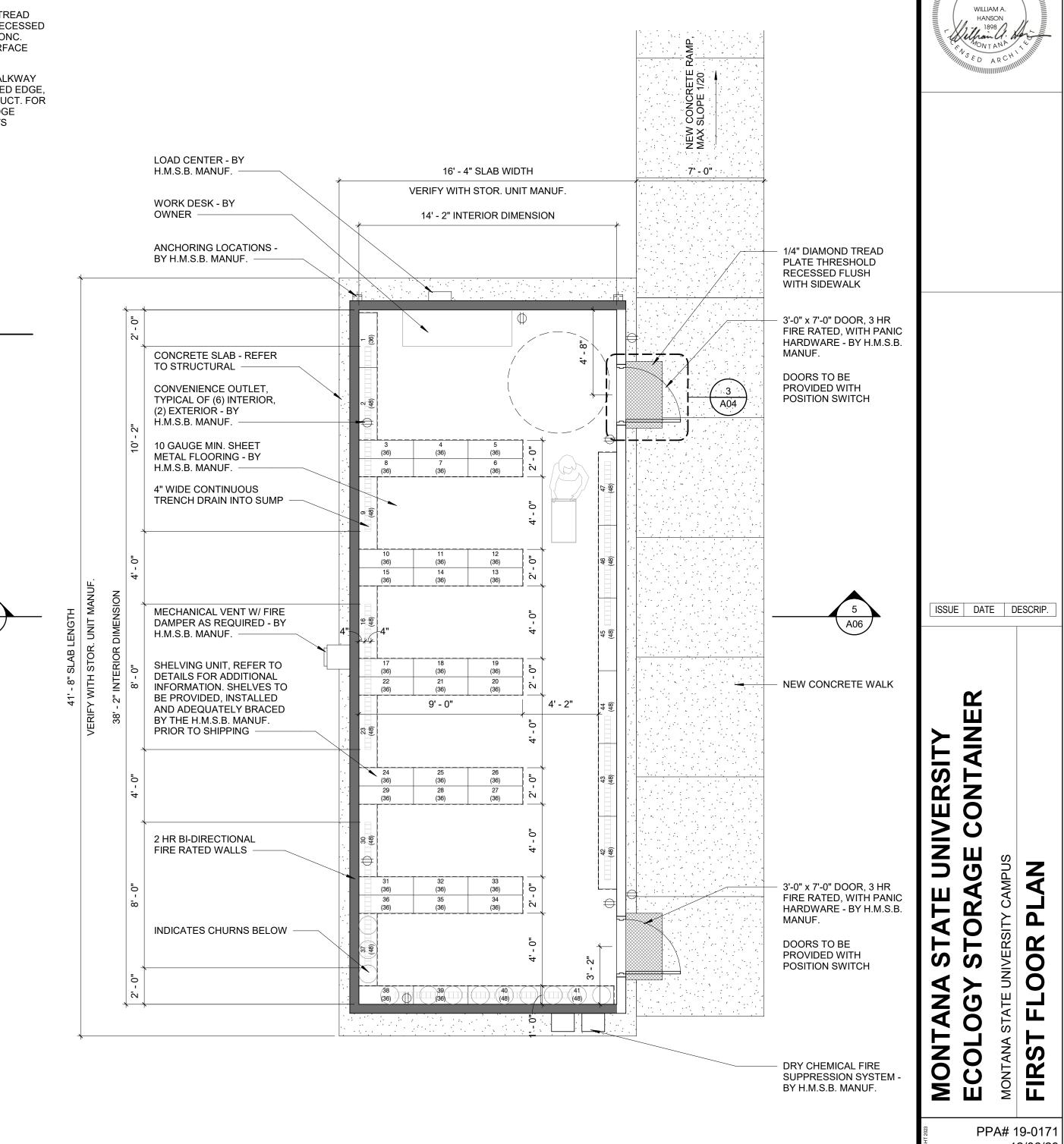
SECTION VIEW

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



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





1 FIRST FLOOR PLAN

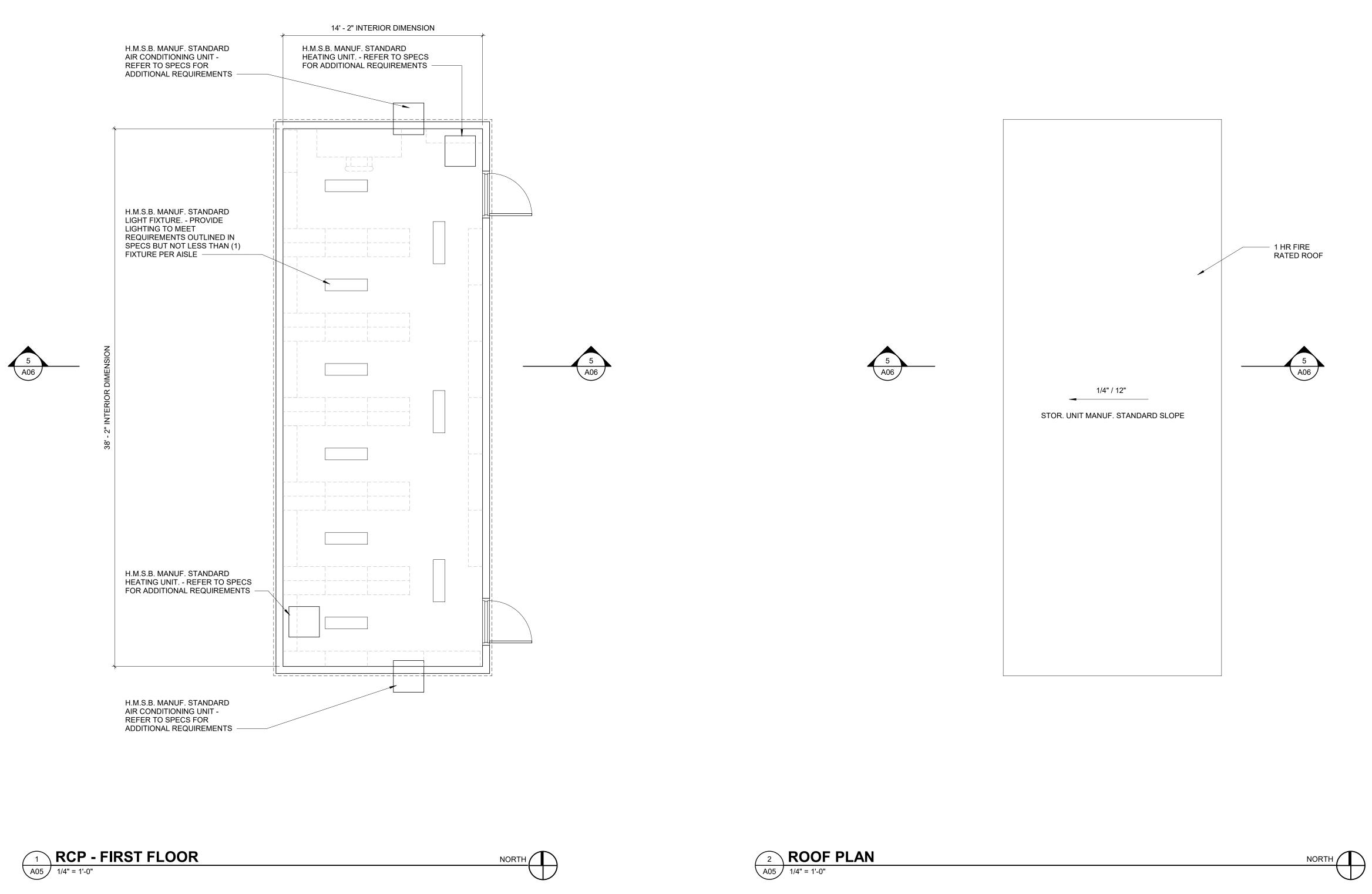
A04 1/4" = 1'-0"

METAL STORAGE SHELVING UNITS

12/06/23 BID/PERMIT SET **A04**

OR

0

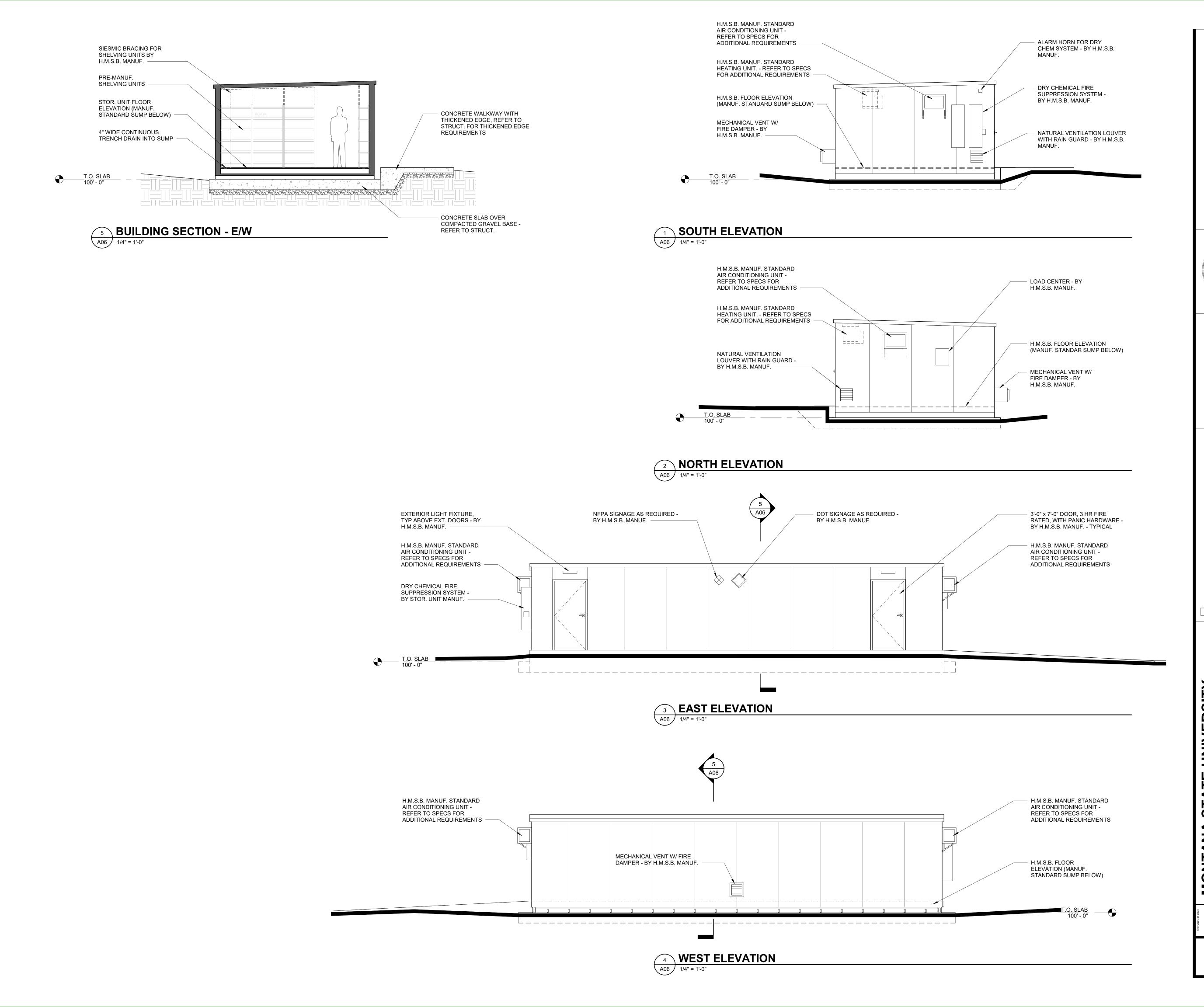


MONTANA STATE UNIVERSITY
ECOLOGY STORAGE CONTAINER
MONTANA STATE UNIVERSITY CAMPUS
RCP & ROOF PLAN

ISSUE DATE DESCRIP.

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

A05



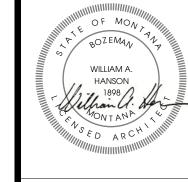
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E UNIVERSITY AGE CONTAINER **EVATION**

EXTERIOR MONT PPA# 19-0171

> BID/PERMIT SET **A06**

12/06/23





ISSUE DATE DESCRIP.

LEWIS HALL-4TH FLOOR-EXISTING

PPA# 19-0171

12/06/23 BID/PERMIT SET

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

401 STORAGE

401A

- EXISTING RADIATOR

EXISTING
---PHOTO 2--

- EXSITING SINK AND CABINETRY

EXISTING PHOTO 1

- EXISTING WINDOW, TYPICAL

DASHED AREAS INDICATE APPROX.
LOCATIONS OF EXISTING SHELVING,
FILE CABINETS, FURNITURE ETC. TO BE
REMOVED OR RELOCATED BY OWNER

EXISTING SURFACE
 MOUNTED LIGHT FIXTURE

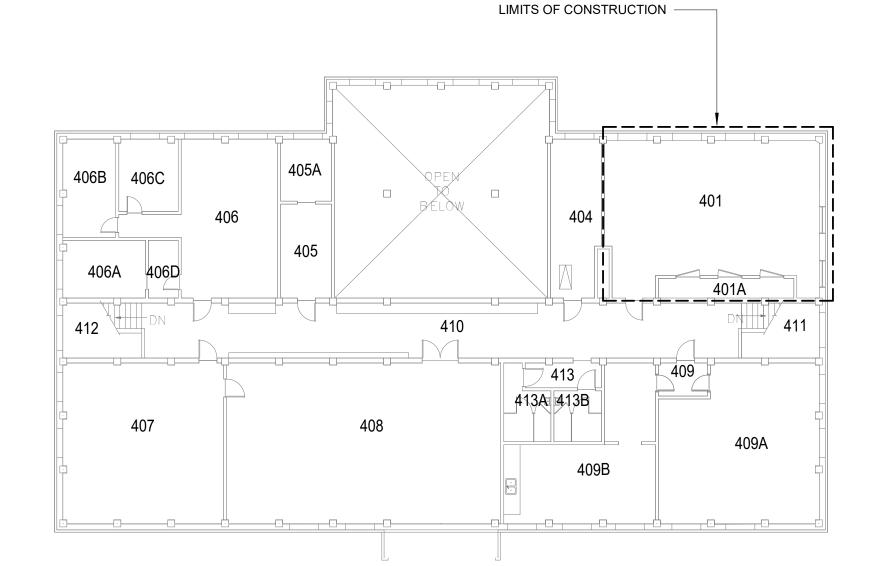
LEWIS HALL 4th FLOOR - ENLARGED - EXISTING RCP

401 STORAGE

EXISTING PLASTER CEILING @ 11'-2" —

401A



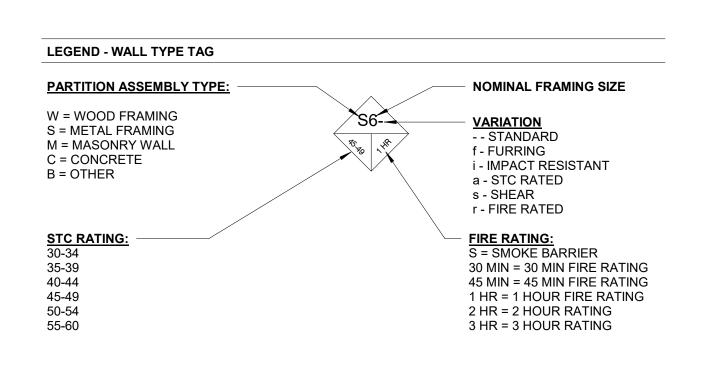


2 LEWIS HALL 4th FLOOR - OVERALL - EXISTING
A07 1/16" = 1'-0"



EXISTING PHOTO 1

A07 1/4" = 1'-0"



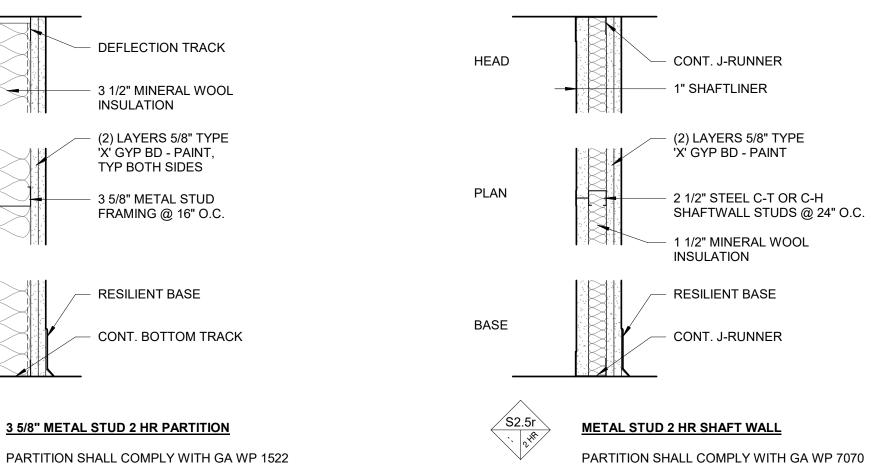
GENERAL NOTES

PLAN

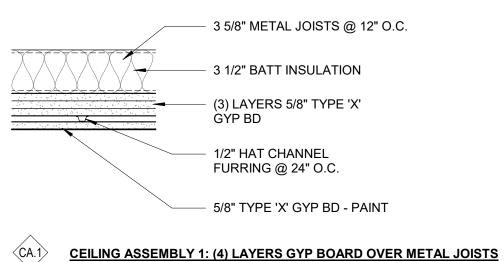
BASE

A08 1 1/2" = 1'-0"

- 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

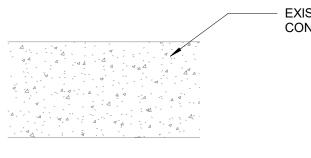


WALL TYPES AND ASSEMBLIES



CEILING ASSEMBLY TO COMPLY WITH GA FC 4750





WALLS AND INTERIOR PARTITIONS, NONCOMBUSTIBLE

GYPSUM WALLBOARD, STEEL STUDS

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

Joints staggered 24" each layer and side. Sound tested with 3 1/2" glass fiber friction fit in stud space. (NLB)

GYPSUM PANEL PRODUCTS, STEEL C-T, OR C-H STUDS

One layer 1" x 24" proprietary type X fiberglass mat gypsum panels inserted between 21/2"

OPPOSITE SIDE: Base layer 5/8" proprietary type X fiberglass mat gypsum substrate,

floor and ceiling runners with tab-flange section of 21/2" steel C-T, or C-H studs between

fiberglass mat water-resistant gypsum backing board, gypsum wallboard or gypsum

veneer base applied parallel or at right angles to studs with 1" Type S drywall screws

24" o.c. Face layer 5/8" proprietary type X fiberglass mat gypsum substrate, fiberglass mat water-resistant gypsum backing board, gypsum wallboard or gypsum veneer base

applied parallel to studs with 15/8" Type S drywall screws 24" o.c. along top and bottom

tracks and 12" o.c. at vertical joints and intermediate studs. Face layer joints offset 24"

PROPRIETARY GYPSUM PANEL PRODUCTS

Sound tested with 1" glass fiber insulation friction fit in stud space. (NLB)

at right angles to each side with 1 5/8" Type S drywall screws 12" o.c.

GA FILE NO. WP 1522

GA FILE NO. WP 7070

from base layer joints.

Georgia-Pacific Gypsum LLC

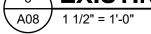
EXISTING 8"
CONCRETE FLOOR



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

EXISTING FLOOR TYPES AND ASSEMBLIES



55 to 59 STC

SOUND

2 HOUR

FIRE

6 1/8 "

See WP 1548

(WHI-495-0236, 1-30-80)

45 to 49 STC

SOUND

NRCC 818-NV, 2-3-81

Limiting Height: Refer to Section IV

Approx. Weight: 12 psf

Fire Test:

Sound Test:

FIRE

Approx. Weight: 9 psf

Fire Test:

UL R2717, 08NK012297,

UL Design V473

Sound Test: RAL TL89-379, 11-7-89

PROPRIETARY*

5/8" ToughRock® Fireguard®

1" Ultraliner® Shaftliner

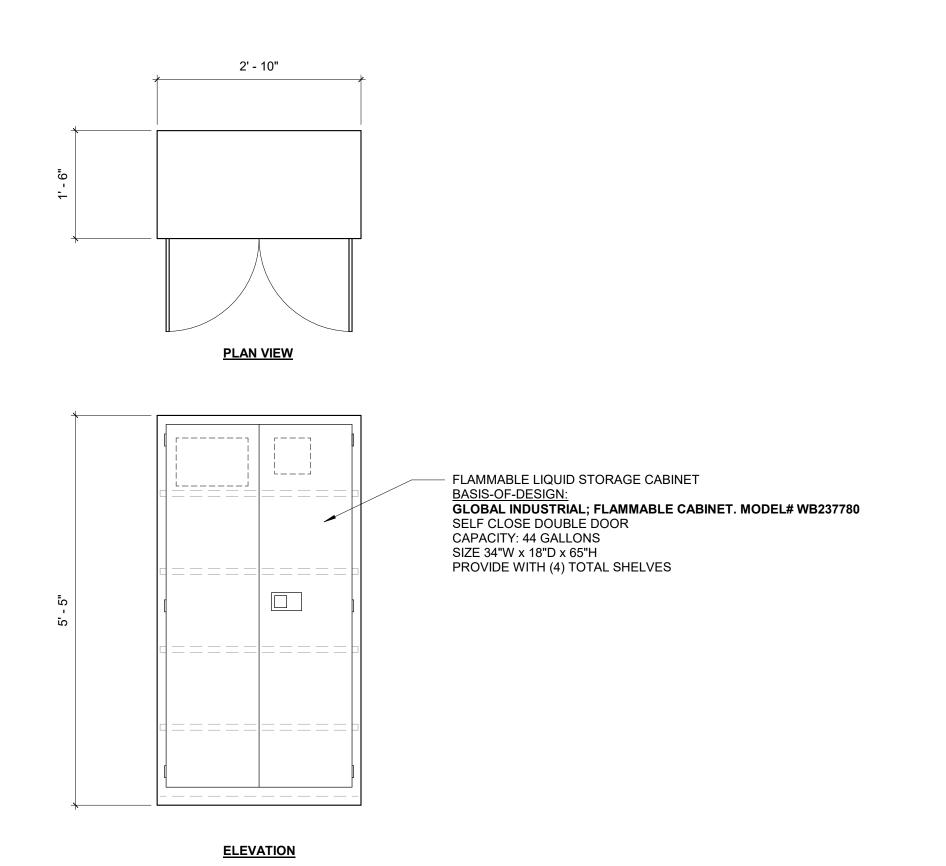
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MONTANA ECOLOGY S

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

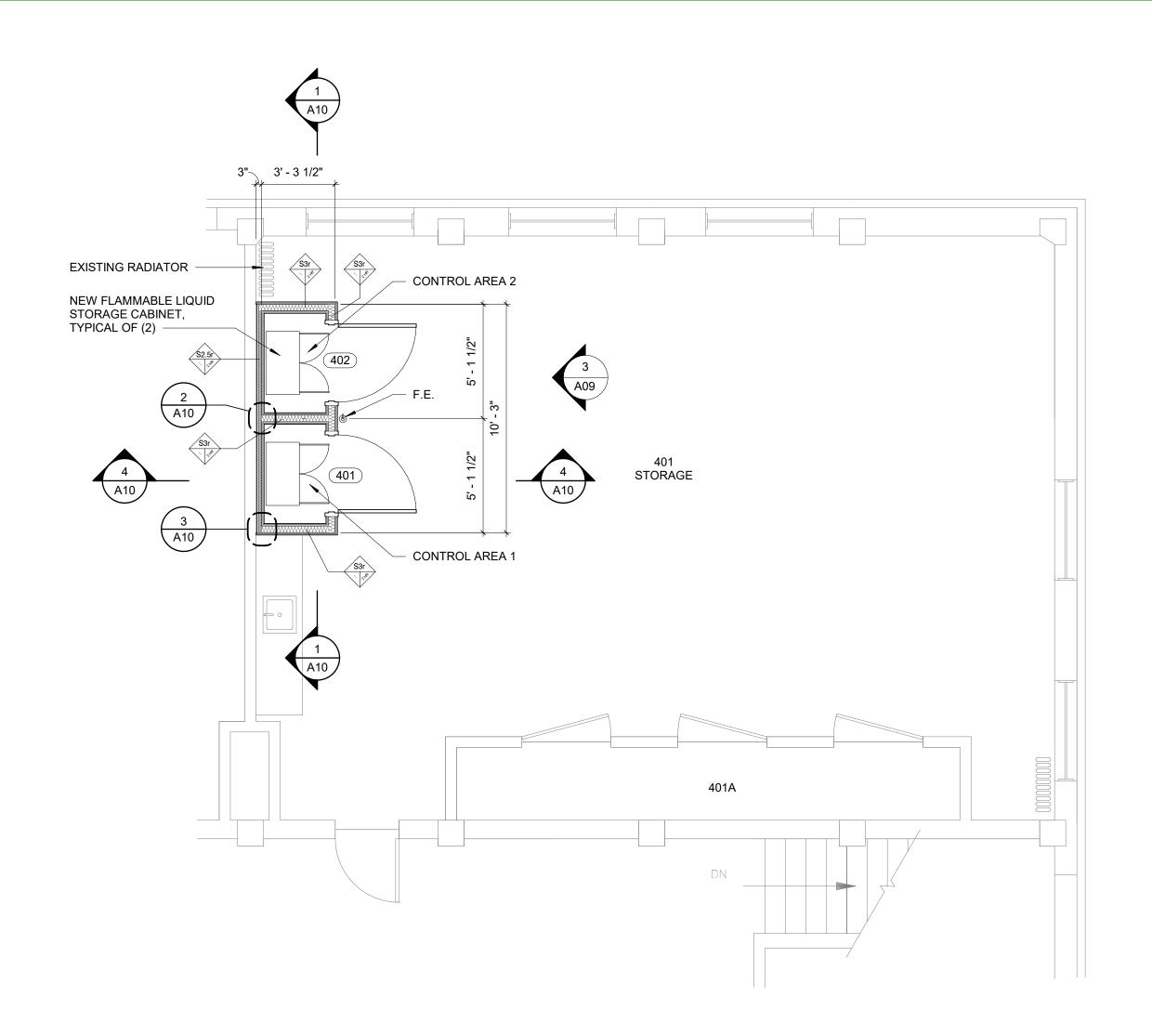
A08

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

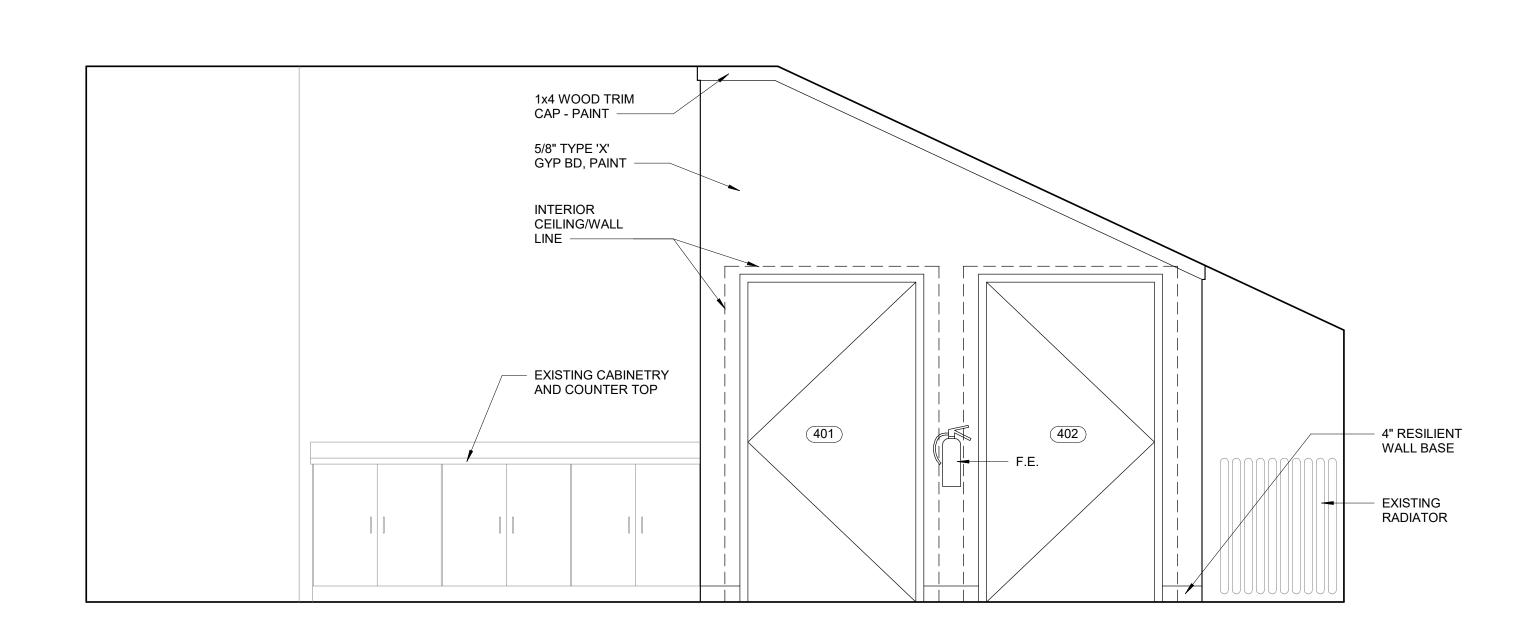


FLAMMABLE LIQUID STORAGE CABINET

3/4" = 1'-0"



LEWIS HALL 4th FLOOR - ENLARGED - NEW CONST.



CONTORL AREA ELEVATION

1/2" = 1'-0"

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

ISSUE DATE DESCRIP. .00R MONTANA PPA# 19-0171 BID/PERMIT SET | ₹

ISSUE DATE DESCRIP.

STATE UNIVERSITY STORAGE CONTAINER

DETAILS

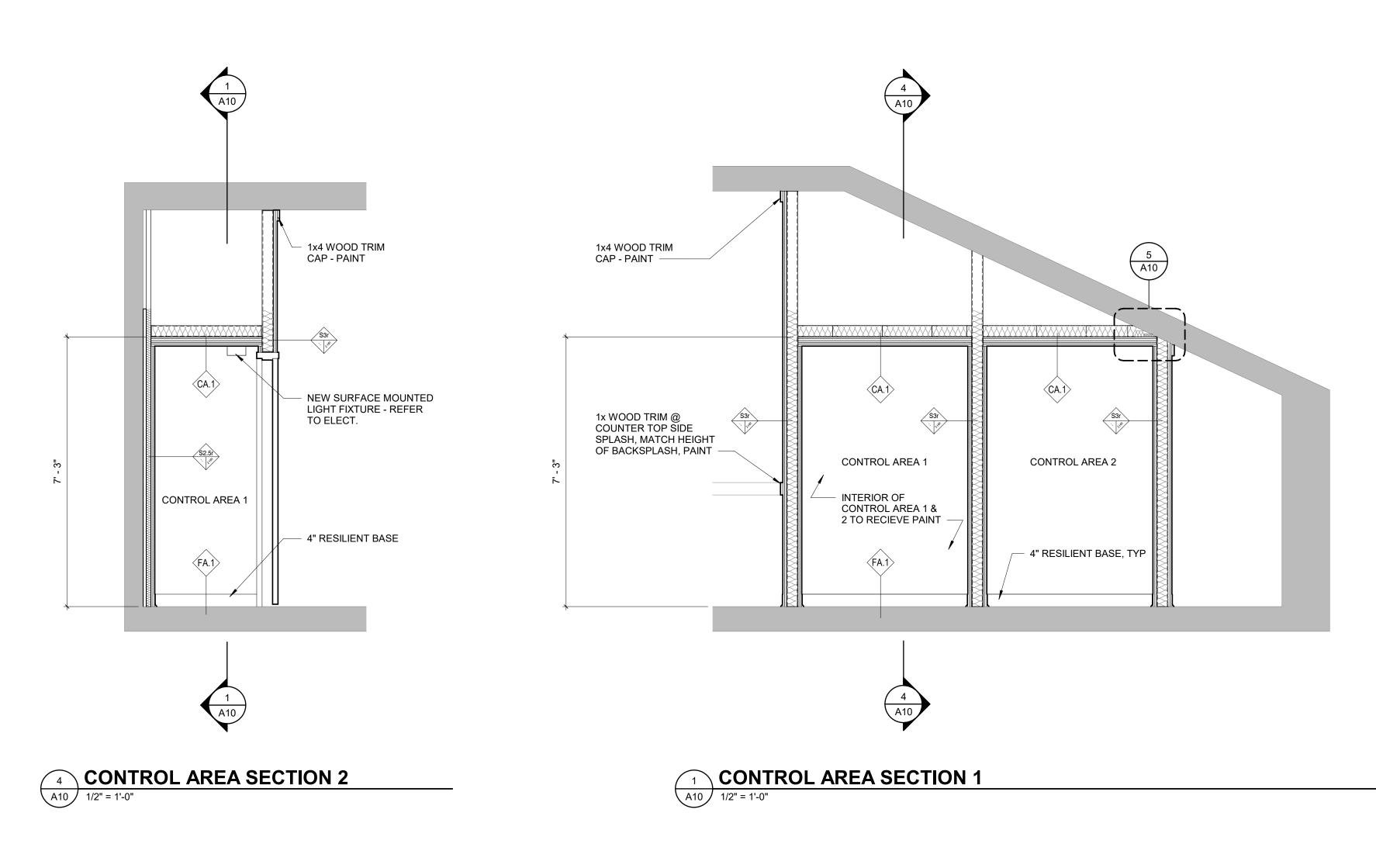
AND

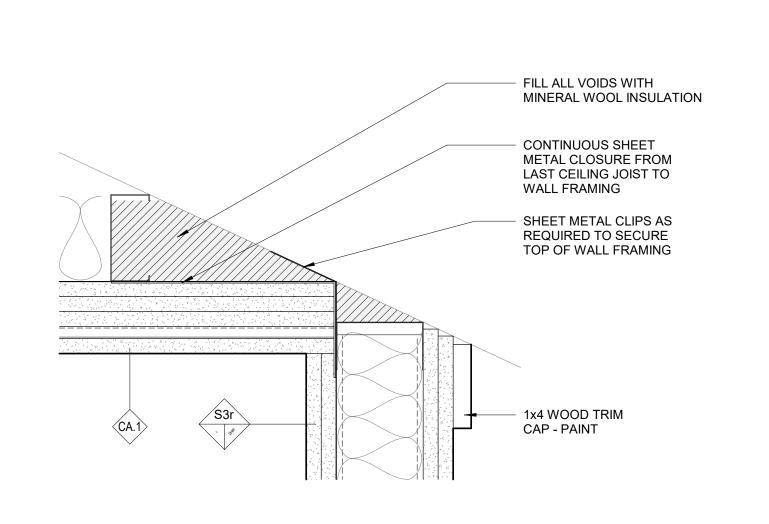
MONTANA ECOLOGY

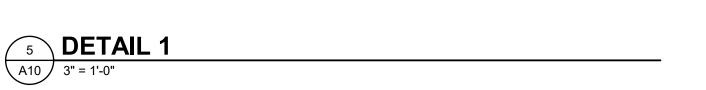
SECTIONS PPA# 19-0171 12/06/23

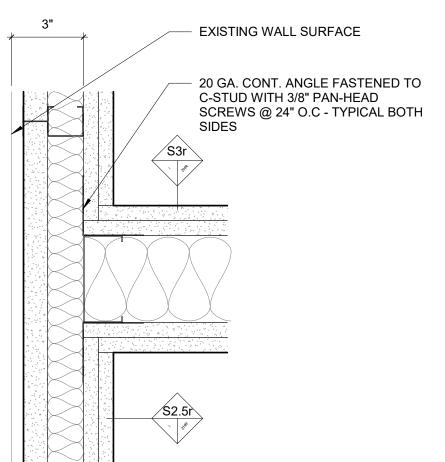
BID/PERMIT SET

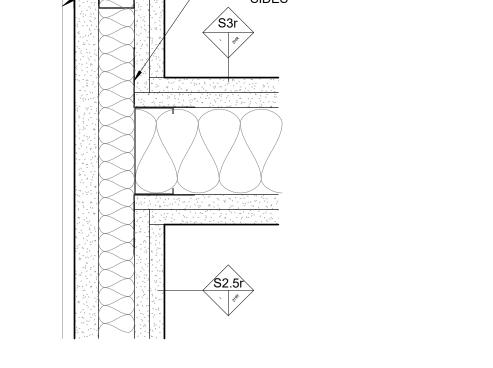
ALL WORK SHOWN ON THIS SHEET IS ADDITIVE ALTERNATE NO.1













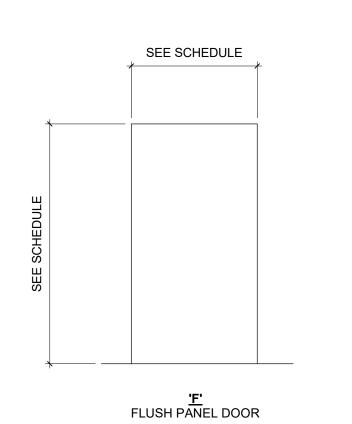
EXISTING WALL SURFACE

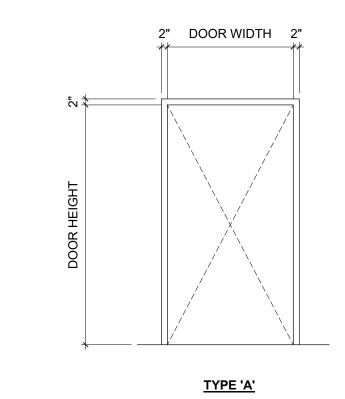
20 GA. CONT. ANGLE FASTENED TO C-STUD WITH 3/8" PAN-HEAD SCREWS @ 24" O.C

CONT. J-RUNNER

1x4 WOOD TRIM - PAINT

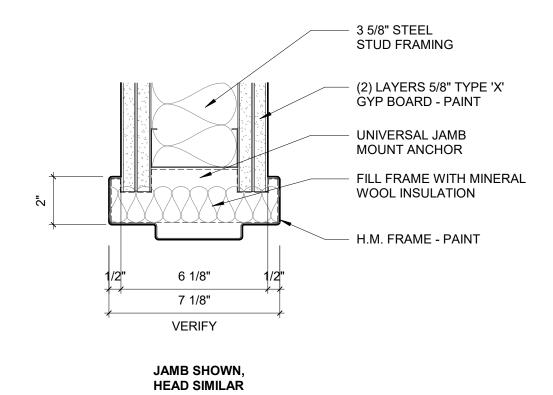
	DOOR & FRAME SCHEDULE													
			DOOR				FRAME							
	DOOR			DOOR	DOOR	FRAME		FRAME	HEAD	JAMB	THRESHOLD	FIRE		
NO.	TYPE	WIDTH	HEIGHT	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	DETAIL	DETAIL	DETAIL	RATING	HARDWARE	COMMENTS
401	F	3'-6"	6'-8"	НМ	PAINT	Α	НМ	PAINT	1/A11	1/A11	-	2 HR	01	
402	F	3'-6"	6'-8"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





DOOR TYPE3/8" = 1'-0"

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



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

ISSUE DATE DESCRIP.

DETAILS

TYPES MONTANA STATE U
ECOLOGY STORAGI
MONTANA STATE UNIVERSITY CAMPUS
DOOR SCHEDULE, 1

PPA# 19-0171

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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
- CONTROL CONTRACTOR SHALL FURNISH A CONTORLS ENCLOSURE FOR MOUNTING BY THE ELECTIRCAL 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.
- 6. 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 REMOTRE CONNECTION FOR INITIAL ALARM DISTRIBUTION AS REQURIED. 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:
 - A. 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.
- 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. EXHASUT FAN MONITORING
- MONITOR THE STATUS OF THE EXHAUST FAN AND PROVIDE RUN TIME.
 - ALARM TO THE BMS UNDER THE FOLLOWING CONDITIONS:
 - TEMPERATURE IS BELOW 30°F (ADJ.).

IF THE EXHAUST FAN STATUS IS "ON" FOR LONGER THAN 60 MINUTES AND THE OUTDOOR AIR

Total Amps:

46 A

Total Est. Demand: 46 A

A.I.C. Rating: 65,000

Mains Type: MCB

Mains Rating: 2000 A

Buss Rating 2000 A

TRENDING ON ALL POINTS SHALL BE PROVIDED AT LEAST EVERY 15 MINUTES OR UPON CHANGE OF STATE.

Switchboard: (E) MDP

Volts: 208/120 Wye Phases: 3 **Mounting:** Surface Enclosure: Type 1

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	

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	

ELECTRICAL LEGEND

POWER DEVICES

- SINGLE POLE SWITCH, SUBSCRIPT INDICATES TYPE:
- 3-WAY
- 4-WAY
- DIMMER
- LV LOW VOLTAGE
- MC MOMENTARY CONTAC
- OS OCCUPANCY SENSOR
- PILOT LIGHT TIMER - 1 HOUR TIMER, MOTOR RATED FOR EXHAUST FANS
- D DUPLEX RECEPTACLE SUBSCRIPT INDICATES TYPE: AC ABOVE COUNTER
- GFCI GROUND FAULT CIRCUIT INTERRUPTER
- IG ISOLATED GROUND TR TAMPER RESISTANT
- USB WP WEATHERPROOF
- WR WEATHER-RESISTANT FILLED CENTER INDICATES GFCI DEVICE
- D 🛊 📗 DOUBLE DUPLEX RECEPTACLE, SUBSCRIPT ABOVE INDICATE TYPE
- DID DUPLEX RECEPTACLE IN FLOOR BOX
- 🕽 🚯 📗 DOUBLE DUPLEX RECEPTACLE IN FLOOR BOX
- SIMPLEX RECEPTACLE
- DUPLEX RECEPTACLE, CEILING MOUNTED. DEVICE AND COVER SHALL MATCH
- CEILING FINISH
- $\P^{lacktriangle}$ | 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 BUTTON
- PHOTO CELL (C) WALL MOUNTED CLOCK HANGER/ POWER RECEPTACLE
- CORNER WALL MOUNTED OCCUPANCY SENSOR
- CEILING MOUNTED OCCUPANCY SENSOR, STYLE 1
- CEILING MOUNTED OCCUPANCY SENSOR, STYLE 2
- OS, CEILING MOUNTED OCCUPANCY SENSOR, STYLE 3
- PP POCCUPANCY SENSOR POWER PACK, BOX INDICATES WALL MOUNTING
- INDICATES FLOOR MOUNTING
- $\mathbb{P}_{\mathbb{Q}}$ JUNCTION BOX, BRACKET INDICATES WALL MOUNTING, BOX INDICATES FLOOR
- MOUNTING
- M MOTOR CONNECTION
- RELAY NON-FUSED DISCONNECT SWITCH
 - FUSED DISCONNECT SWITCH
- COMBINATION STARTER/DISCONNECT SWITCH
 - CONTACTOR
 - S_{M} | MANUAL MOTOR STARTER
 - AS AQUASTAT BY PLUMBING CONTRACTOR, WIRED BY EC.
 - VFD 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

AFF ABOVE FINISHED FLOOR AFG ABOVE FINISHED GRADE

GC GENERAL CONTRACTOR

WM WIRE MOLD

UG UNDER GROUND

TOD TOP OF DEVICE

COD | CENTER OF DEVICE

BOD BOTTOM OF DEVICE

BOF BOTTOM OF FIXTURE

PC PLUMBING CONTRACTOR

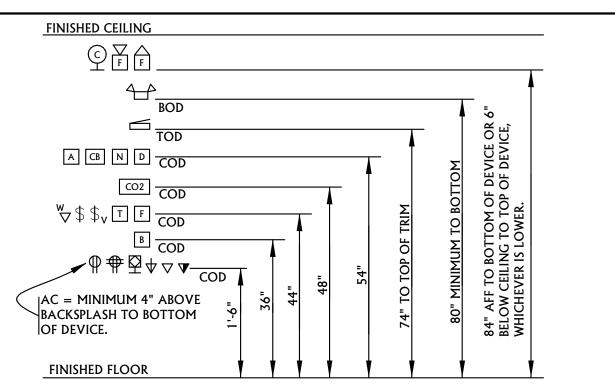
GND GROUND

- ABOVE COUNTER EC ELECTRICAL CONTRACTOR
- (E) EXISTING RELOCATED NEW DEVICE CONDUIT
- BELOW FINISHED GRADE UC UNDER COUNTER WP WEATHER PROOF MC MECHANICAL 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

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

INTERIOR MOUNTING HEIGHTS



ELECTRICAL SHEET LIST

ELECTRICAL COVER SHEET ELECTRICAL PLANS E2.2 **ELECTRICAL LEWIS HALL PLANS**

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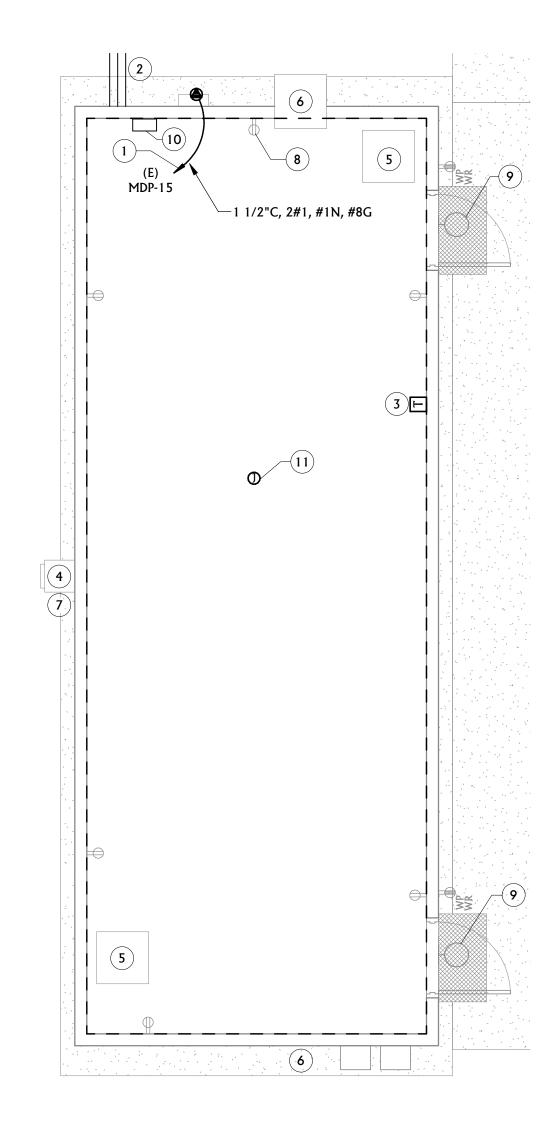
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HAZARDOUS LOCATION NOTES

- 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 FLECTRICAL SYSTEM WITHIN A CLASS LDIV II AREA SHALL BE GROUNDED AS SPECIFIED IN NEC ARTICLE 250.
- 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 501.115(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.
- 1. REFER TO NEC ARTICLE 501.35(B) FOR REQUIREMENTS OF RECEPTACLES WITHIN A CLASS I DIV. II AREA.





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

PROVIDE NEW 250AF 100AT CIRCUIT BREAKER IN EXISTING MAIN DISTRIBUTION PANEL. SEE PANEL SCHEDULE FOR PANEL TYPE. SEE ARCHITECTURAL PLANS FOR ELECTRICAL ROOM LOCATION.

- 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.
- 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.
- FACTORY PROVIDED UNIT HEATER AT APPROXIMATE LOCATION. PROVIDE MONITORING AS REQUIRED PER THE TEMPERATURE CONTROLS SEQUENCE.
 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.
- 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.







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MONTANA STATE UNIVERSITY ECOLOGY STORAGE CONTAINER

ECOLOGY STORAGE
MONTANA STATE UNIVERSITY CAMPUS
ELECTRICAL PLANS

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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.
- 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.
- 5. 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.
- . THE ELECTRICAL SYSTEM WITHIN A CLASS I DIV. II AREA SHALL BE GROUNDED AS SPECIFIED IN NEC ARTICLE TO SURGE ARRESTERS AND SURGE-PROTECTIVE DEVICES SHALL BE NON-ARCING, SEALED TYPE AND BE OF TYPE
- DESIGNED FOR SPECIFIC DUTY.
- REFER TO NEC ARTICLE 501.115(B) FOR REQUIREMENTS OF SWITCHES IN CLASS I DIV. II.

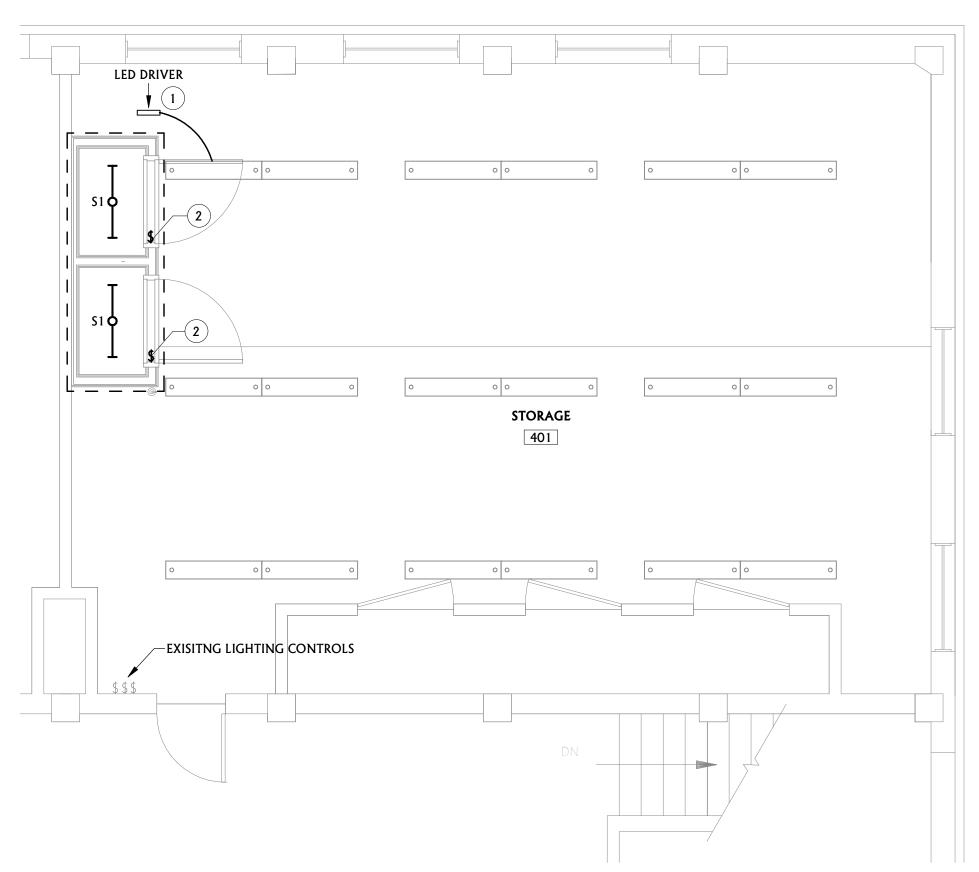
REFER TO NEC ARTICLE 501.145 FOR REQUIREMENTS OF RECEPTACLES WITHIN A CLASS I DIV. II AREA.

REFER TO NEC ARTICLE 501.130(B) FOR REQUIREMENTS OF LUMINARIES WITHIN A CLASS I DIV. II AREA.

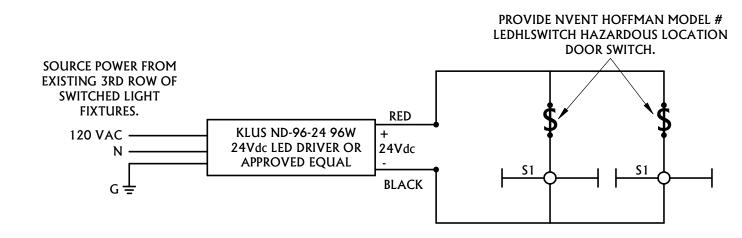
REFER TO NEC ARTICLE 501.35(B) FOR REQUIREMENTS OF UTILIZATION EQUIPMENT WITHIN A CLASS I DIV. II AREA.

LUMINAIRE SCHEDULE								
					ELECTRICAL			
CALLOUT	MANUFACTURER	MODEL	MOUNTING	LAMP	DATA	DESCRIPTION		
S 1	NVFNT HOFFMAN	I FDHI 24V36	SLIREACE	LED	24 V/1-32 VA	3' 1750 LUMEN 5000K HAZARDOUS LOCATION LED STRIP		

LIGHT.







2 HAZARDOUS LED LIGHTING WIRING DETAIL

ELECTRICAL LIGHTING 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 ALL DARK ITEMS ARE NEW, UNLESS NOTED OTHERWISE. ALL SHADED ITEMS ARE EXISTING TO REMAIN.
- C 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.
- D CONNECT ALL LIGHTING FIXTURES TO EXISTING LIGHTING CIRCUITS UNLESS NOTED OTHERWISE. VERIFY EXISTING LOAD PRIOR TO CONNECTING ADDITIONAL LIGHTING FIXTURES
- E VERIFY VOLTAGE OF EXISTING LIGHTING CIRCUITS PRIOR TO SUBMITTALS. COORDINATE ANY MODIFICATIONS TO LIGHTING CIRCUITS OR FIXTURES WITH ENGINEER.
- F FIRE SEAL ALL PENETRATIONS IN FIRE RATED WALLS. COORDINATE WITH ARCHITECTURAL FOR LOCATIONS.

ELECTRICAL KEYNOTES

PROVIDE KLUS 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.

2 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.







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HALL PLANS

STORAGE CONJUNIVERSITY CAMPUS

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E2.2