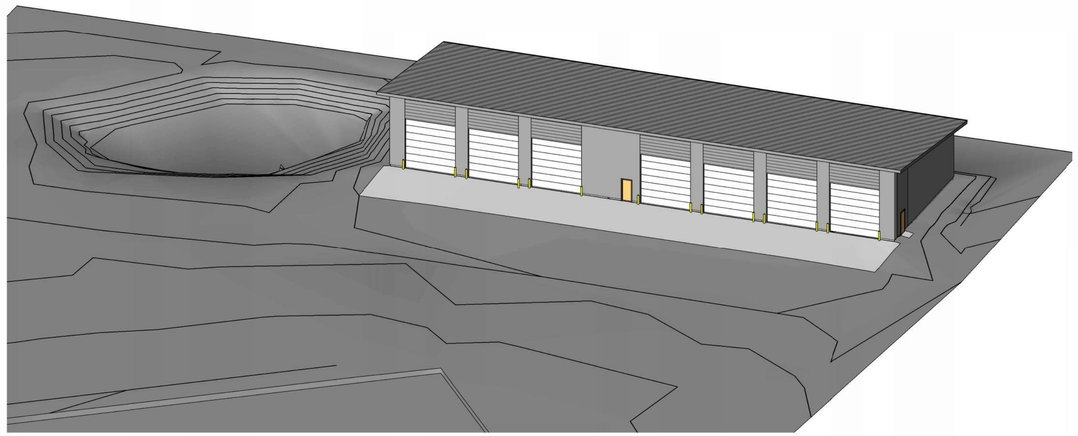
GALLATIN R&B EQUIPMENT STORAGE BUILDING

205 W BAXTER LN, BOZEMAN, MT 59718



PROJECT TEAM

OWNER
GALLATIN COUNTY
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BOZEMAN, MT 59715
406.209.0044
CONTACT: NICK BORZAK

ARCHITECTURAL
DOWLING ARCHITECTS
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MECHANICAL/ELECTRICAL
ASSOCIATED CONSTRUCTION ENGINEERING
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CIVIL
DOWL
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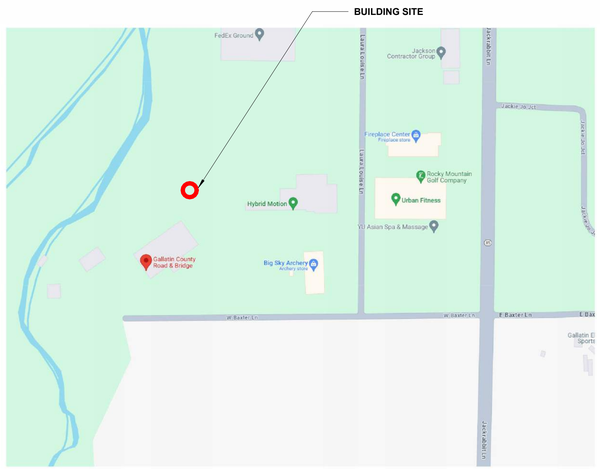
406.551.1446
CONTACT: EVAN GENAY

SHEET INDEX

ARCHITECTURAL

VICINITY MAP



PROJECT SUMMARY

HEATED STORAGE BUILDING TO HOUSE SNOWPLOWS FOR GALLATIN COUNTY. WOOD CONSTRUCTION WITH CMU SHEAR WALL SEPARTING THE BUILDING INTO TWO FIRE AREAS.

BID ALT #1: PROVIDE DEDUCT FOR NO OVERHANG AND ADJUSTED DOWNSPOUTS/GUTTERS AT NORTH SIDE (BACK) OF STRUCTURE.

PROJECT SPECIFIC NOTES

1. DIMENSIONS ARE SHOWN ON THE DRAWINGS. DO NOT SCALE THE DRAWINGS.

2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NEW MATERIALS (UNO) & QUALIFIED CRAFTPERSONS TO COMPLETE THE WORK.

3. CONSTRUCTION DOCUMENTS SHOW THE DESIGN INTENT OF THE PROJECT & MAY NOT SHOW MINOR DETAILS OF PROPOSED INSTALLATION. THE INCLUSION OF THESE MINOR DETAILS IS IMPLIED TO PROVIDE A COMPLETE PROJECT & ARE TO BE INCLUDED AS A PART OF A BID.

4. ALL HEIGHTS ARE DIMENSIONED FROM THE TOP OF FINISHED FLOOR (AFF) UNLESS NOTED OTHERWISE.

5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT EXISTING CONDITIONS PRIOR TO PROCEEDING WITH EACH INSTALLATION OR PART OF THE WORK. DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT PRIOR TO PROCEEDING.

6. THE CONTRACTOR IS TO COORDINATE THE INSTALLATION OF MATERIALS & WORK OF OTHERS WHO ARE NOT SUB-CONTRACTORS TO THE GC, YET ARE REQUIRED IN PROVIDING A COMPLETED PROJECT. AREAS OF WORK REQUIRING COORDINATION INCLUDE BUT ARE NOT LIMITED TO THOSE INDICATED AS NIC ON THE CONSTRUCTION DOCUMENTS.

7. REFER TO STRUCTURAL, MECHANICAL & ELECTRICAL DRAWINGS FOR COORDINATION OF WORK.

8. ALL DIMENSIONS ARE FROM FACE OF STUD UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL VERIFY ALL DIMENSION CONDITIONS PRIOR TO CONSTRUCTION.

9. IN THE CASE OF CONTRADICTIONS BETWEEN DRAWINGS OR BETWEEN DRAWINGS & SPECIFICATIONS, ASSUME THE MORE COSTLY APPROACH FOR BIDDING PURPOSES. BRING ALL CONTRADICTIONS TO THE ATTENTION OF THE ARCHITECT

10. THE CONSTRUCTION DOCUMENTS CONSIST OF THE CONSTRUCTION DRAWINGS & SPECIFICATIONS INCLUSIVELY. SOME ITEMS MAY BE SHOWN ONLY ON THE DRAWINGS OR INDICATED ONLY IN THE SPECIFICATIONS. FOR EXAMPLE: THE SPECIFICATIONS MAY SAY TO PAINT ALL EXPOSED STRUCTURAL STEEL, BUT THIS WILL NOT BE CALLED OUT ON ALL OF THE DRAWINGS.

11. 3-D VIEWS MAY BE USED THROUGHOUT THE CONSTRUCTION DOCUMENTS. 3-D VIEWS ARE SHOWN TO CLARIFY CONDITIONS THAT CANNOT BE SHOWN IN OTHER VIEWS. 3-D VIEWS MAY NOT SHOW ALL DETAILS REQUIRED TO COMPLETE THE AREA. REFER TO DETAILS AT ADJACENT AREAS AS NECESSARY OR ASK THE ARCHITECT PRIOR TO BIDDING.

CODE REQUIREMENTS

THIS PROJECT SHALL COMPLY WITH THESE CODES, OR LATER EDITIONS, AS REQUIRED BY THE STATE OF MONTANA:

2021 INTERNATIONAL BUILDING CODE
2021 INTERNATIONAL EXISTING BUILDING CODE
2021 INTERNATIONAL MECHANICAL CODE
2021 UNIFORM PLUMBING CODE
2021 INTERNATIONAL FUEL GAS CODE
2021 INTERNATIONAL ELECTRIC CODE
2021 INTERNATIONAL FIRE CODE
2021 INTERNATIONAL ENERGY CONSERVATION CODE
2017 ICC A117.1 - ACCESSIBILITY
ADMINISTRATIVE RULES OF MONTANA (ARM) TITLE 24, CH. 301

NO HAZARDOUS MATERIALS EXCEEDING THE LIMITS STATED IN THE 2021 INTERNATIONAL BUILDING CODE TABLES 414.2.5(1) & 414.5.1 WILL BE STORED IN THIS BUILDING.

REQUIRED STRUCTURAL TESTS & SPECIAL INSPECTIONS

IN ADDITION TO REGULAR INSPECTIONS, THE FOLLOWING ITEMS WILL ALSO REQUIRE STRUCTURAL TESTS & SPECIAL INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF THE 2021 INTERNATIONAL BUILDING CODE: SEE STRUCTURAL SHEET S000 - GENERAL STRUCTURAL NOTES FOR REGULAR INSPECTIONS, STRUCTURAL TEST REQUIREMENTS, & SPECIAL INSTRUCTIONS.

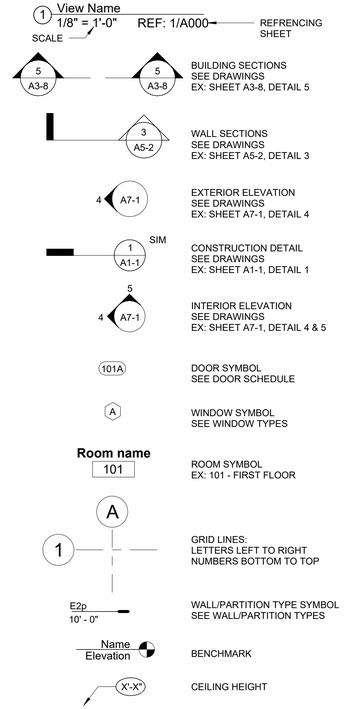
REQUIRED ENERGY CODE TESTS & SPECIAL INSPECTIONS

IN ADDITION TO REGULAR INSPECTIONS, COMPLY WITH TESTS & SPECIAL INSPECTIONS IN ACCORDANCE WITH THE 2021 INTERNATIONAL ENERGY CONSERVATION CODE.

NOTE:

THIS SET OF CONSTRUCTION DOCUMENTS IS GENERATED FROM AN INTELLIGENT, 3 DIMENSIONAL COMPUTER MODEL. THIS CONSTRUCTION DOCUMENT SET IS REPRESENTATIVE OF THE CONDITIONS ACTUALLY MODELED THAT CAN BE SHOWN.

REFERENCE SYMBOLS



CIVIL

STRUCTURAL

MECHANICAL

PLUMBING

ELECTRICAL

MICHAEL W. DOWLING LIC. #9857 REGISTERED ARCHITECT STATE OF MONTANA

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

DOWLING ARCHITECTS
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www.dsa-mt.com

COVER SHEET

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: LK

100% CD 12.21.2023

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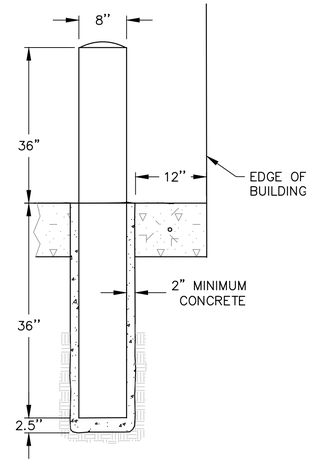


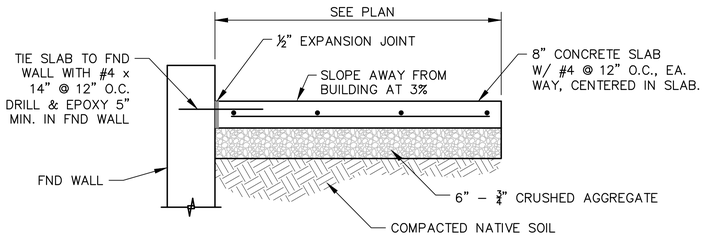
NOTES:
1. BOLLARDS SHALL BE 8"ø HEAVY-DUTY STEEL PIPE FILLED WITH 2000 P.S.I. CONCRETE.
2. BOLLARDS SHALL BE SET AT A MINIMUM OF 3 FEET BELOW FINISHED GRADE.

1/C2 TYP. PIPE BOLLARD
NTS

CONTROL POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	533927.641	1536862.016	4637.54	#5 REBAR
2	533780.042	1536967.544	4641.42	MAG NAIL
3	533740.070	1537088.281	4641.90	MAG NAIL
4	533703.908	1536989.417	4643.16	EXISTING FINISH FLOOR

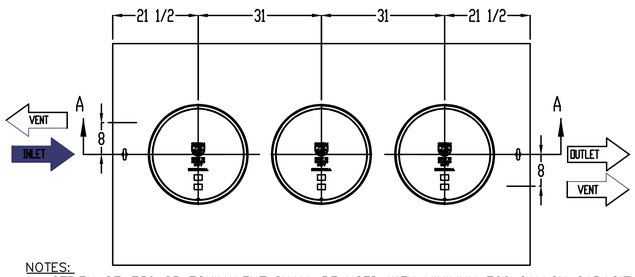
SURVEY NOTES:
1. HORIZONTAL: NAD 83 INTERNATIONAL FEET MONTANA STATE PLANE
2. VERTICAL: NAVD88 INTERNATIONAL FEET
3. CONTROL POINT 1 ESTABLISHED VIA TIE TO MTSU COR STATION USING SURVEY GRADE GNSS RECEIVERS. FINISH FLOOR ELEVATION AND CP 2 & 3 VERIFIED WITH OPTICAL LEVEL.



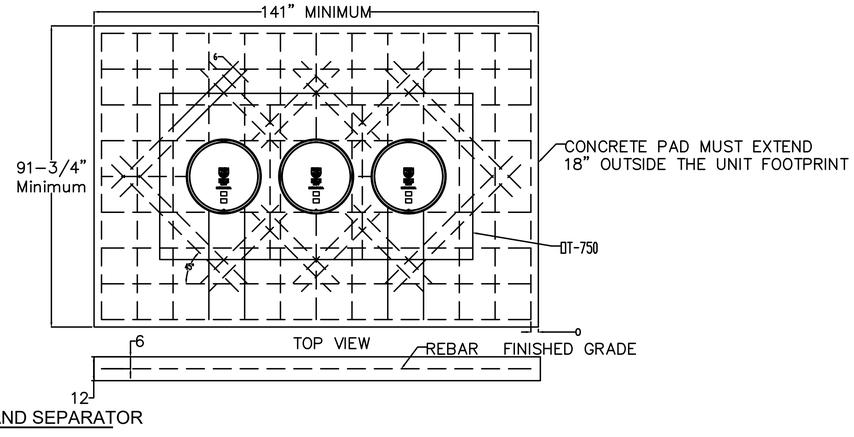
NOTES:
1. COMPACT SUBGRADE OR BASE COURSE TO 95% OF MAXIMUM DRY DENSITY, ±2% OF OPTIMUM MOISTURE CONTENT, PER ASTM D698.
2. CONTRACTION JOINTS SHALL BE PLACED AT 10' INTERVALS AND SHALL HAVE A MINIMUM DEPTH OF 3/4" AND MINIMUM WIDTH OF 1/8".
3. NO CONCRETE SHALL BE PLACED WITHOUT A FINAL FORM INSPECTION BY THE OWNER OR HIS REPRESENTATIVE.

2/C2 TYP. ACCESS DOOR CONCRETE SLAB
NTS

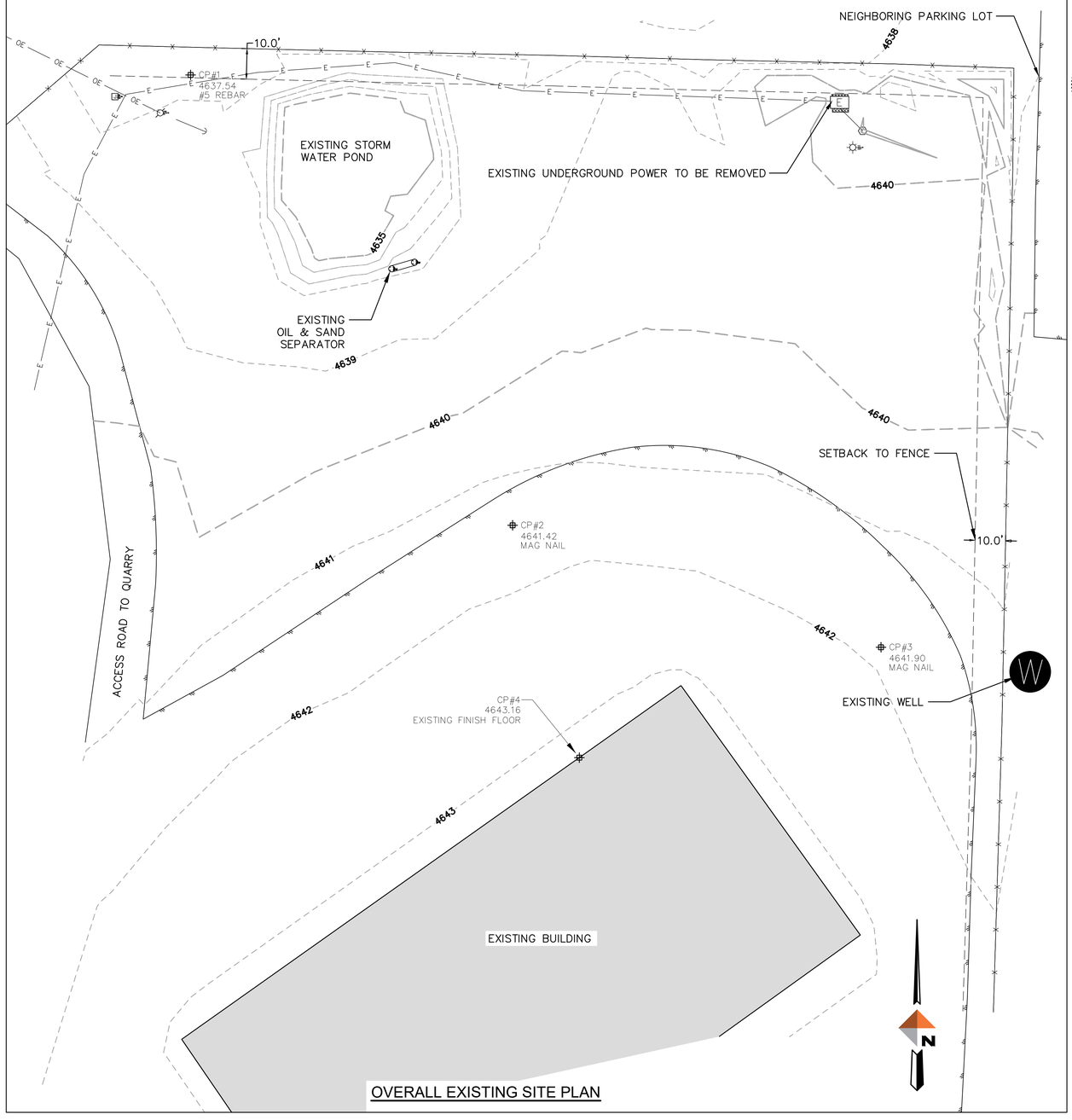
OIL SEPARATOR PLAN VIEW:



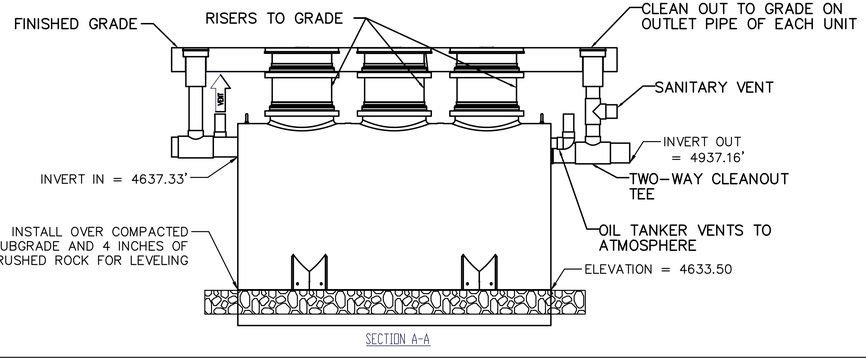
NOTES:
1. STRIEM OT-750 OR EQUIVALENT SHALL BE USED WITH MINIMUM 700 GALLON CAPACITY
2. INSTALL SEPARATOR IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
3. CONCRETE SLAB TO BE 8" THICKNESS OVER SEPARATOR & EXTENDED TO FULL AREA OF 11'8" BY 7' 7-3/4". SEE INSTALLATION INSTRUCTIONS FOR ADDITIONAL REBAR PLACEMENT



3/C2 OIL & SAND SEPARATOR
NTS



OVERALL EXISTING SITE PLAN



SECTION A-A

20 0 20 40
SCALE IN FEET

CAUTION ! ! !
EXISTING UTILITIES IN AREA
CONTRACTOR RESPONSIBLE FOR UTILITY LOCATES PRIOR TO AND DURING CONSTRUCTION

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10/18/2023 11:07:58 AM

KEVIN R. NAASZ
14863 PE
12/21/23
REGISTERED PROFESSIONAL ENGINEER

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

DOWLING ARCHITECTS
734 N.Last Chance Gulch | Helena, MT 59601 | 406.457.5470
www.dowlingarchitects.com

OVERALL, EXISTING SITE PLAN, CONTROL, DETAILS

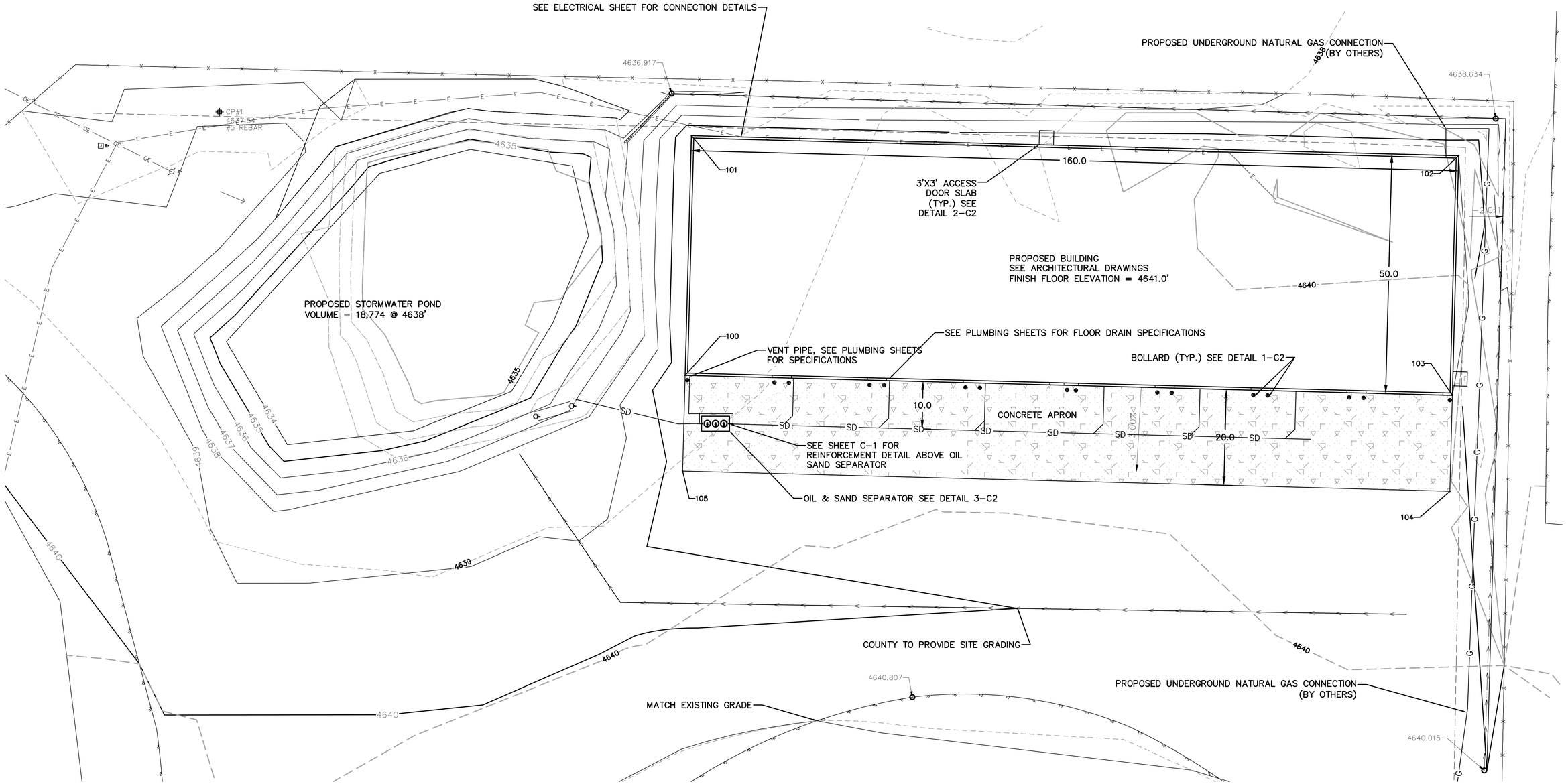
PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: EG

C-1

SD 12.21.23



1. THE LOCATION OF EXISTING UTILITIES SHOWN IS APPROXIMATE AND THE CONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEANS TO PROTECT EXISTING UTILITIES AND COORDINATE WITH THE OWNER FOR UTILITY LOCATIONS.
2. WHERE CONDITIONS ARE ENCOUNTERED WHICH APPEAR DIFFERENT FROM THOSE INDICATED ON THE PLANS OR IN THE SPECIFICATIONS, THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER PRIOR TO THE PERFORMANCE OF WORK.
3. THE CONTRACTOR SHALL FOLLOW ALL RULE AND REGULATION REQUIRED BY THE OWNER, GALLATIN COUNTY.
4. CONSTRUCTION SAFETY AND SANITATION FACILITIES SHALL BE PROVIDED BY THE CONTRACTOR AND MAINTAINED PER THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. THE CONTRACTOR SHALL PROTECT ADJACENT PRIVATE AND PUBLIC PROPERTY FROM DAMAGE DURING CONSTRUCTION. ANY DISTURBED PROPERTY OR SECTION CORNERS ARE TO BE RESET BY A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF MONTANA AT THE CONTRACTORS EXPENSE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND LOCATING ANY AND ALL UTILITIES IN THE AREA PRIOR TO BEGINNING ANY WORK ON THIS PROJECT.
7. THE CONTRACTOR SHALL REPLACE EXISTING FENCING AND ROADSIDE APPURTENANCES DISPLACED OR DAMAGED BY CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE OWNER AND OWNER'S OPERATIONS TO MINIMIZE IMPACTS TO EXISTING UTILITIES AND OPERATIONS.
9. ALL AREAS OF DISTURBANCE SHALL BE RECLAIMED TO A CONDITION THAT IS EQUAL TO OR BETTER THAN THE ORIGINAL. TOPSOIL IS TO BE SALVAGED AND REPLACED.
10. ANY REMOVED STRUCTURES SHALL BE SALVAGED TO THE OWNER AS REQUESTED OR DISPOSED OF OFF THE SITE IN A LAWFUL MANNER.
11. CONTRACTOR SHALL PROVIDE A SET OF AS–BUILT DRAWINGS PRIOR TO THE FINAL ACCEPTANCE AND FINAL PAYMENT.

BUILDING POINT TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	533872.70	1536959.07	4641.00	BLDG CRNR
101	533922.68	1536960.39	4641.00	BLDG CRNR
102	533918.48	1537120.33	4641.00	BLDG CRNR
103	533868.49	1537119.02	4641.00	BLDG CRNR
104	533848.50	1537118.49	4640.40	APRON CRNR
105	533852.70	1536958.55	4640.40	APRON CRNR

CAUTION ! ! !
EXISTING UTILITIES IN AREA
CONTRACTOR RESPONSIBLE FOR UTILITY LOCATES PRIOR TO AND DURING CONSTRUCTION

KEVIN R. [illegible]
14863 PE
12/21/23
REGISTERED PROFESSIONAL ENGINEER
STATE OF MONTANA

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

DOWLING ARCHITECTS
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SITE PLAN

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: EG

C-2

SD 12.21.23

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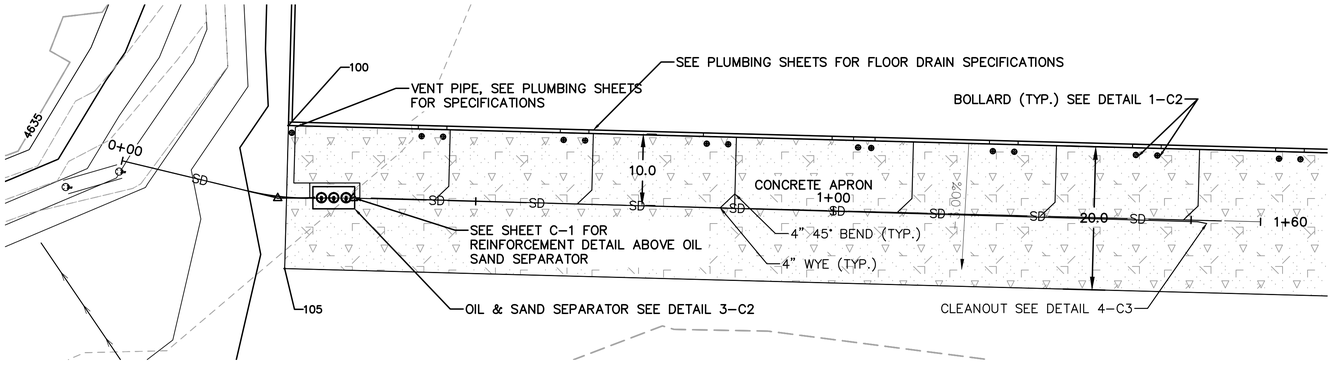
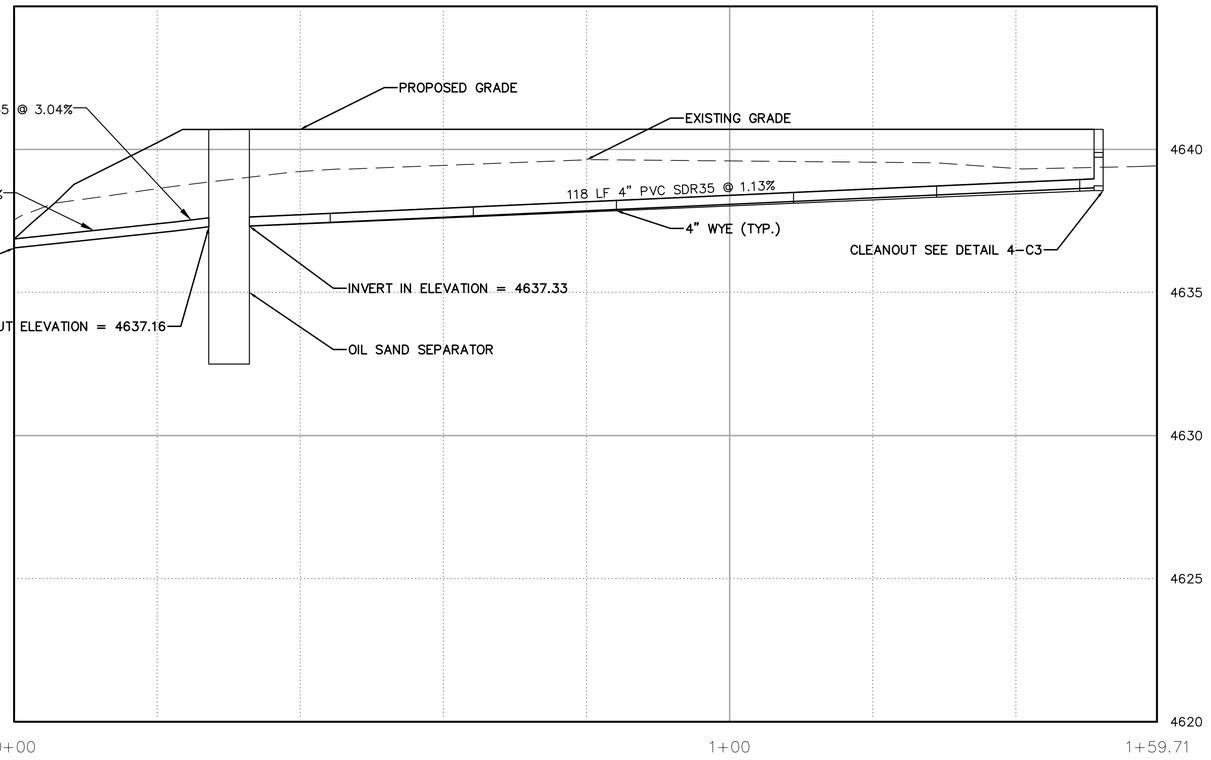
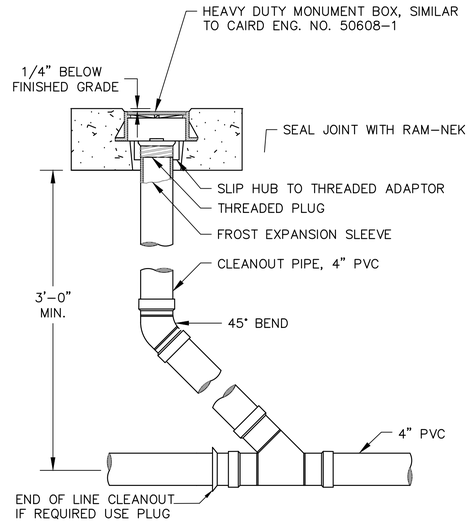
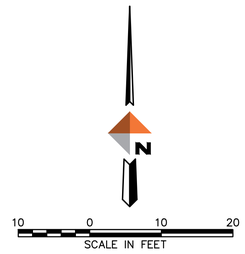






4 / C03 CLEANOUT
NTS



CAUTION ! ! !
EXISTING UTILITIES IN AREA
CONTRACTOR RESPONSIBLE FOR UTILITY LOCATES PRIOR TO AND DURING CONSTRUCTION

MONTANA
KEVIN R. [illegible]
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12/21/23
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DOWL

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DRAIN PLAN & PROFILE

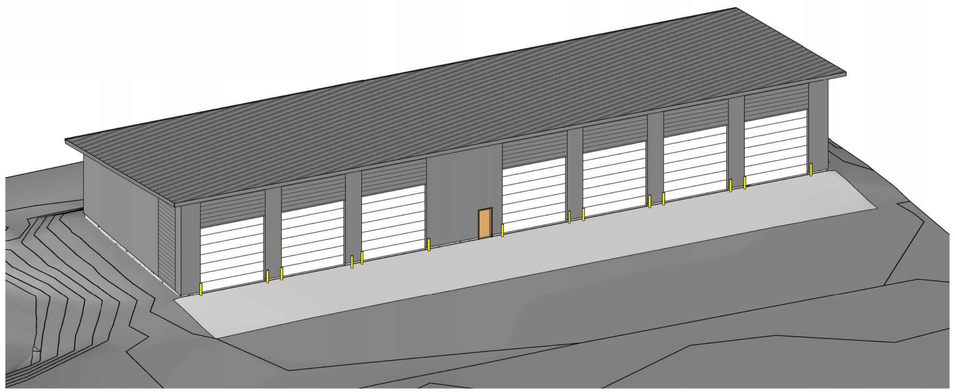
PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: EG

C-3

SD 12.21.23



5 A0-2 {3D}

LEGEND

- OCCUPANCY GROUP S-1 AREA
- (IU: 1) INCIDENTAL USE (W/ OCCUPANT LOAD) W/ REQUIRED SEPARATION PER TABLE 509. CALCULATED AS PART OF MAJOR USE FOR AREA CALCULATION PURPOSES.
- (AO: 1) ACCESSORY OCCUPANCY AREA: (W/ OCCUPANT LOAD) W/ NO SEPARATION REQUIRED AND CALCULATED AS PART OF MAJOR USE FOR ALLOWABLE AREA CALCULATION IF TOTAL ACCESSORY OCCUPANCIES OCCUPY LESS THAN 10% OF MAJOR OCCUPANCY CLASSIFICATION AREA PER FLOOR PER SECTION 508.2.
- FIRE RESISTIVE CORRIDOR: WITH OPENING, DUCT, PENETRATION, AND JOINT PROTECTION. SEE WALL TYPES AND JOINT DETAILS, DOOR AND WINDOW SCHEDULES, PENETRATION DETAILS, AND MECHANICAL DRAWINGS. (PART OF ADJACENT OCCUPANCY DESIGNATION AND CALCULATED AS PART OF IT FOR BUILDING AREA CALCULATION PURPOSES.)
- 3-HOUR FIRE WALL OR FIRE BARRIER: OR COMBINATION OF (WHERE OCCURS) CONFORMING TO THE MOST STRINGENT REQUIREMENTS OF EACH. SEE CODE ANALYSIS PLANS FOR SPECIFIC NAMES OF IBC WALL DESIGNATIONS. ALL WITH FIRE-RESISTIVE OPENING PROTECTION AT DOORS, WINDOWS, DUCTS (WITH EXCEPTIONS), PENETRATIONS, AND PROTECTION AT JOINTS. SEE WALL TYPES, DOOR AND WINDOW SCHEDULES, MECHANICAL DRAWINGS, PENETRATION DETAILS, AND JOINT DETAILS WHERE APPLICABLE.
- NONRATED WALL: WITH NO OPENING PROTECTION REQUIRED AT DOORS, WINDOWS, DUCTS, PENETRATIONS, AND JOINTS UON. SEE WALL TYPES.
- (2) ROOM OCCUPANT LOAD (OR TOTAL FLOOR OCCUPANT LOAD) PER SECTION 1004.
- MOER:2 MEANS OF EGRESS REQUIRED (QUANTITY) (ONLY DESIGNATED WHERE (2) OR MORE MEANS OF EGRESS ARE REQUIRED PER TABLE 1015.1.).
- EXIT SIGN W/ INTEGRATED DIRECTIONAL ARROW WHERE OCCURS AT ALL EXITS, EVERY 100' IN CORRIDORS, AND IN SPACES WHERE 2 MOE ARE REQUIRED PER SECTION 1015. SEE ELECTRICAL DRAWINGS. (W/ POCHE IN QUADRANT INDICATING "EXIT" TEXT SIDE OF SIGN.) SIGNS SHOWN IN CORRIDORS ARE CEILING HUNG. SIGNS SHOWN ON WALLS ARE WALL HUNG.
- 53 → REQUIRED EXIT AND EXIT EGRESS DIRECTION AND ACCUMULATIVE NUMBER OF OCCUPANTS SERVED WITH EGRESS DIRECTION AT ARROW LOCATION.
- Wmin MINIMUM EGRESS WIDTH (INCHES) BASED ON ACCUMULATIVE NUMBER OF OCCUPANTS SERVED AT INDICATED EGRESS COMPONENT, USING FACTORS FROM TABLE 1005.1: .2 INCHES/OCC FOR STAIRWAYS (FULLY SPRINKLERED BLDG); .2 INCHES/OCC FOR OTHER EGRESS COMPONENTS.
- EXIT ACCESS TRAVEL DISTANCE - MAXIMUM 250' FOR 'A'; 300' FOR 'B' OCCUPANCIES W/ SPRINKLER SYSTEM PER TABLE 1016.2. MOST RESTRICTIVE REQUIREMENT GOVERNS. MAXIMUM DISTANCE FOR EACH STORY SHOWN.
- COMMON PATH OF EGRESS TRAVEL DISTANCE - MAXIMUM 75' FOR 'A'; 100' FOR 'B' OCCUPANCIES W/ SPRINKER SYSTEM; PER TABLE 1014.3.
- FE PORTABLE FIRE EXTINGUISHER

CODE PLAN NOTES

1. THIS CODE ANALYSIS PLAN IS FOR REFERENCE ONLY. SEE ALL OTHER PLAN SHEETS FOR CONTRACT DOCUMENT INFORMATION. THIS CODE ANALYSIS IDENTIFIES SELECTED BUILDING CODE REQUIREMENTS BUT IS NOT INTENDED TO LIST ALL BUILDING CODE REQUIREMENTS.
2. SEE BUILDING CODE AREA CALCULATIONS FOR BUILDING ALLOWABLE AND ACTUAL AREAS CALCULATED PER CODE.
3. SEE CODE INFORMATION SHEET AND OTHER PLAN/DETAIL SHEETS FOR ACCESSIBILITY CONFORMANCE.
4. SEE SITE PLAN FOR EXIT DISCHARGE, PROPERTY LINE, PUBLIC WAY LOCATIONS AND COURTYARD LAYOUT (WHERE OCCURS).

BUILDING CODE AREA CALCULATIONS

NOTES:	1. SEE CODE ANALYSIS PLANS FOR ACCOMPANYING 2. INFORMATION. CODE INFORMATION BELOW LISTS SELECTED REQUIREMENTS BUT DOES NOT LIST ALL BUILDING CODE REQUIREMENTS.
OCCUPANCY GROUPS: (CHAPTER 3)	**S-1** ACCESSORY OCCUPANCIES PER SECTION 508.2 WHERE OCCUR. INCIDENTAL USE OCCUPANCIES PER TABLE 509 WHERE OCCUR.
CONSTRUCTION TYPE: (TABLE 601)	TYPE V-B, NON-SPRINKLERED
FIRE PROTECTION AND LIFE SAFETY MEASURES: (903.2.9)	GROUP S-1 REQUIRES A FIRE SPRINKLER UNLESS THE FIRE AREA IS LESS THAN 5,000 SF.
ALLOWABLE FLOOR AREA (At): (TABLE 503)	S-1: 9,000 SF
ALLOWABLE NO. OF STORIES / HEIGHT: (TABLE 504.3/504.4)	1 STORY, 40' ALLOWABLE HEIGHT
ACTUAL FLOOR AREA:	S-1: 8,000 SF
OCCUPANT LOADS: (SEC. 1004 + TABLE 1004.1.2)	SEE CODE ANALYSIS PLAN. OCCUPANT LOADS BASED ON MAX. FLOOR AREA IN SQ FT PER OCCUPANT FROM TABLE 1004.1.2: S-1: PARKING GARAGES: 200 GROSS WEST STORAGE..... 3867/200 = 20 EAST STORAGE..... 4133/200 = 21 **TOTAL OCCUPANTS..... 41 OCCUPANTS**
EGRESS WIDTH PER OCCUPANT SERVED: (SEC. 1005.1)	STAIRWAYS: 0.3 INCHES / OCCUPANT OTHER EGRESS COMPONENTS: 0.2 INCHES / OCCUPANT
SPACES WITH ONE EXIT ACCESS: (SEC. 1006.2.1)	S-1: MAXIMUM OCCUPANT LOAD OF EACH INDIVIDUAL SPACE = 29 100 FEET TRAVEL DISTANCE WITHOUT SPRINKLERS

BUILDING CODE INFORMATION

APPLICABLE BUILDING CODE:	2021 INTERNATIONAL BUILDING CODE
BUILDING AGENCY / JURISDICTION:	STATE MONTANA
SEISMIC DESIGN CATEGORY:	C (SEE STRUCTURAL)
BASIC WIND SPEED:	3 SECOND GUST = 90 MPH
TOTAL BUILDING AREA:	8,000 SF

TYPE OF CONSTRUCTION

(CHAPTER 6) CONSTRUCTION TYPE V-B

FIRE-RESISTANCE RATING REQUIREMENTS

	BUILDING ELEMENT	RATING
TABLE 601	EXTERIOR BEARING WALLS	0 HR
TABLE 601	INTERIOR NONBEARING WALLS	0 HR
TABLE 601	ROOFS	0 HR

FIRE AND SMOKE PROTECTION FEATURES

(CHAPTER 7)

FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE

> 10 FEET TO PROPERTY LINE, TYPE V-B CONSTRUCTION, OCCUPANCY S-1 = 0 HR (TABLE 705.5)

FIRE-RESISTANCE RATING REQUIREMENTS FOR FIRE BARRIER, FIRE WALLS OR HORIZONTAL ASSEMBLIES BETWEEN FIRE AREAS

707.3.10 FIRE AREAS: FIRE BARRIERS OR FIRE WALLS SEPARATING A SINGLE OCCUPANCY INTO DIFFERENT FIRE AREAS SHALL HAVE A FIRE RESISTANCE RATING AS INDICATED.

TABLE 707.3.10

OCC. GROUP	BUILDING ELEMENT	RATING
S-1	FIRE WALL	3 HR

707.6 OPENINGS: OPENINGS IN A FIRE BARRIER SHALL BE LIMITED TO A MAXIMUM AGGREGATE WIDTH OF 25% OF THE LENGTH OF THE WALL AND THE MAXIMUM AREA OF ANY SINGLE OPENING SHALL NOT EXCEED 156 SQ FT.

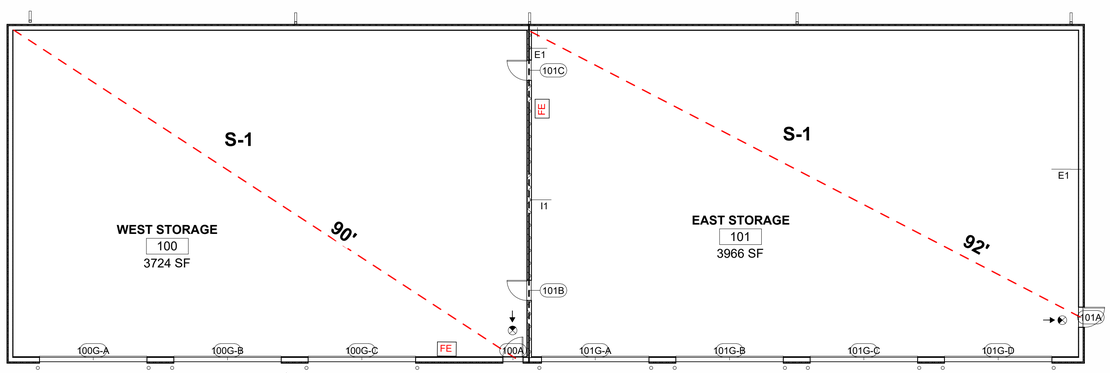
708.4 CONTINUITY. FIRE PARTITIONS SHALL EXTEND FROM THE TOP OF THE FOUNDATION OR FLOOR/CEILING ASSEMBLY BELOW AND BE SECURELY ATTACHED TO THE FOLLOWING:

1. THE UNDERSIDE OF THE FLOOR OR ROOF SHEATHING, DECK OR SLAB ABOVE.

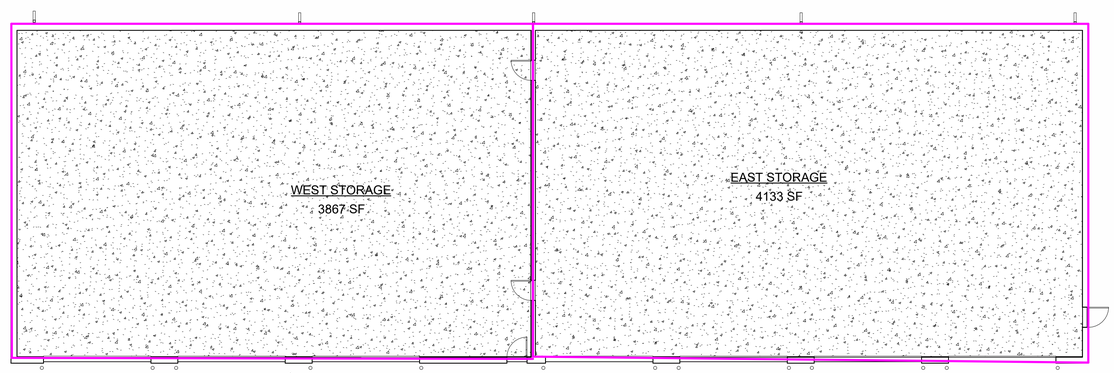
PLUMBING FIXTURE COUNTS

(PER ADMINISTRATIVE RULES OF MONTANA 24.301.351)

*** THIS BUILDING IS NOT OCCUPIED CONTNIUOUSLY AND IS PURELY FOR STORAGE ***



3 A0-2 CODE PLAN 3/32" = 1'-0"



4 A0-2 GROSS AREA PLAN 3/32" = 1'-0"

REGISTERED ARCHITECT
MICHAEL W. DOWLING
LIC. #9857
STATE OF MONTANA

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

DOWLING ARCHITECTS
734 N Last Chance Gulch | Helena, MT 59601 | 406.457.5470
www.dowling-mt.com

CODE INFORMATION

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: LK

100% CD 12.21.2023

A0-2

PRODUCT DATA

THE FOLLOWING LIST OF PRODUCTS & MATERIALS IS INTENDED TO PROVIDE A BASIS FOR THE CONSTRUCTION OF THE PROJECT. IT DOES NOT INCLUDE ALL MATERIALS & PRODUCTS REQUIRED TO COMPLETE CONSTRUCTION. ALL PRODUCTS & MATERIALS REQUIRED TO COMPLETE CONSTRUCTION ARE TO BE PROVIDED WITHIN THE CONTRACT. SEE DRAWINGS FOR ADDITIONAL INFORMATION.

SCOPE AND MATERIALS

WORK AND MATERIALS LISTED BELOW ARE TO INCLUDE ALL WORK AND MATERIALS NECESSARY FOR A COMPLETE, COMPENTENT AND FULLY FUNCTIONAL INSTALLATION. ITEMS LISTED BELOW INCLUDE THE MAJOR COMPONENTS NECESSARY FOR THE CONSTRUCTION OF THE ASSEMBLIES PERTINENT TO THE BUILDING. HOWEVER, THIS LIST IS NOT COMPREHENSIVE AND INCLUDES BY INFERENCE ANY AND ALL OTHER APPLIANCES, DEVICES, MATERIALS AND LABOR NECESSARY FOR A COMPLETE AND COMPETENT INSTALLATION. ALL MATERIALS ARE TO BE INSTALLED, AT A MINIMUM, IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTRUCTIONS. SUBSTITUTIONS MAY BE OFFERED FOR ANY ITEMS LISTED BY SPECIFIC PRODUCT NAME AND/OR MANUFACTURER.

DIVISON 2 - SITEWORK

02300 - EARTHWORK:/EROSION CONTROL/SITE DRAINAGE - MINIMIZE UNNECESSARY COMPACTION OF FUTURE LANDSCAPED AREAS BY RESTRICTING VEHICULAR ACCESS. EROSION CONTROL MEASURES SHALL BE IMPLEMENTED ON THE SITE PER EPA DOCUMENT NO. EPA 832/R-92-005, STORM WATER MANAGEMENT FOR CONSTRUCTION ACTIVITIES, CHAPTER 3. WORK INCLUDES EXCAVATIONS NECESSARY FOR FOOTINGS, PERIMETER INSULATION, AND FLAT WORK AS INDICATED IN THE DOCUMENTS. SEE CIVIL DRAWINGS FOR PROPER SUB-BASE AND BEDDING MATERIALS FOR AREAS TO RECEIVE SLABS ON GRADE. REFER ALSO TO "STRUCTURAL NOTES" FOR ADDITIONAL INFORMATION. PROTECT ALL WORK FROM HOT AND COLD TEMPERATURES DURING PREPARATION, PLACEMENT AND CURING PER ACI 318. SITE PREPARATION INCLUDES CLEARING SPECIFIC AREAS OF DELETERIOUS MATERIALS AFTER DEMOLITION AND BEFORE INSTALLATION OF NEW CONSTRUCTION MATERIALS OR ASSEMBLIES. SITE RETAINING WALLS SHALL CONSIST OF GABIONS FILLED WITH ON-SITE CONCRETE RUBBLE AT LOCATIONS SHOWN ON DRAWINGS. GABIONS SHALL BE MACCAFERRI 3'-0" X 3'-0" X 4'-6" GALVANIZED UNITS OR APPROVED EQUIVALENT. REPAIR OR REESTABLISH GRADES TO SPECIFIED TOLERANCES. LEGALLY DISPOSE OF SURPLUS SOIL AND WASTE MATERIAL OFF THE OWNER'S PROPERTY. MAINTAIN ALL UTILITIES, UNLESS PRIOR NOTICE TO OWNER IS GIVEN AND PREVENT DAMAGE TO EXISTING SERVICES.

DIVISON 5 - METALS

05100 - STRUCTURAL STEEL - REFER TO STRUCTURAL SPECIFICATION

05400 - COLD-FORMED METAL FRAMING - SEE STRUCTURAL SPECIFICATIONS.

DIVISION 6 - ROUGH CARPENTRY

1. FRAMING
A. STUD WALLS: USE CONTINUOUS, FULL HEIGHT STUDS WITH FULL BEARING ON PLATE.
B. BLOCKING: PROVIDE SOLID BLOCKING AT ALL PENDANT OR SURFACE-MOUNTED ELECTRICAL FIXTURES, RAILS, GRAB BARS, BATH ACCESSORIES, ETC.
C. BRIDGING: PROVIDE SOLID BRIDGING AT FLOOR AND CEILING JOISTS PER APPLICABLE CODE
D. FIRE BLOCKING: PROVIDE SOLID WOOD FIREBLOCKING IN CONCEALED SPACES AS REQUIRED BY APPLICABLE BUILDING CODE
E. STRUCTURAL LUMBER EXPOSED TO WEATHER SHALL BE PRESSURE TREATED OR MANUALLY SEALED AT TIME OF CONSTRUCTION. FASTENERS AND HARDWARE USED IN CONJUNCTION W/ ACQ TREATED LUMBER TO BE HOT-DIP GALVANIZED OR STAINLESS STEEL OR AS APPROVED BY MANUFACTURER FOR USE WITH ACQ LUMBER.
F. SEE I-JOIST & LSL MANUFACTURERS' LITERATURE FOR SPECIFIC CONSTRUCTION DETAILS NOT SHOWN ON PLANS.
G. USE PRESSURE TREATED LUMBER WHEN IN DIRECT CONTACT WITH CONCRETE FLOORS AND FOUNDATION WALLS

2. LUMBER MATERIALS
A. DIMENSIONAL FRAMING LUMBER: DOUGLAS FIR, NO. 2 OR BETTER.
B. POSTS: DOUGLAS FIR NO. 1 OR BETTER
C. TIMBER MEMBERS (BEAMS AND STRINGERS): DOUGLAS FIR NO. 2 OR BETTER
D. GLUE-LAMINATED BEAMS: DOUGLAS FIR

3. TRUSSES
A. TRUSS MANUFACTURER SHALL SUBMIT TRUSS SHOP DRAWINGS AND CALCULATIONS, STAMPED BY A REGISTERED ENGINEER, TO THE BUILDING DEPARTMENT AND STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF TRUSSES.
B. PROVIDE 1/2" MINIMUM CLEARANCE BETWEEN TOP PLATE OF INTERIOR PARTITIONS AND BOTTOM CHORD OF TRUSSES TO ENSURE LOADING WILL BE AS DESIGNED.
C. DO NOT PLACE VENTS AT TRUSSES OR ROOF SHEATHING SEAMS. BLOCK EDGES OF CUT-OUTS AS REQUIRED.

4. FLOOR UNDERLAYMENT:
A. AREA WITH EXPOSED UNDERLAYMENT PLYWOOD FLOORING TO BE 1/2" APA A-B, GROUP 2. AREAS RECIEVING RESILIENT FLOORING SUCH AS VCT TO HAVE APA UNDERLAYMENT GROUP 1, EXPOSURE 1.
B. INSTALL WITH THE LONG DIMENSION OR STRENGTH AXIS OF THE PANEL ACROSS SUPPORTS AND WITH PANEL CONTINUOUS OVER TWO OR MORE SPANS. PANEL EDGES SHALL BE TONGUE-AND-GROOVE. PROTECT AGAINST DAMAGE UNTIL FINISH FLOOR IS INSTALLED (WHERE VCT IS CALLED FOR). STAGGER PANEL END JOINTS. PANEL END JOINTS SHALL OCCUR OVER FRAMING. SPACING OF 1/8 INCH IS RECOMMENDED AT PANEL ENDS AND EDGES, UNLESS OTHERWISE INDICATED BY THE PANEL MANUFACTURER. FOR NAILED FLOORS, NAIL PANELS 6 INCHES O.C. AT SUPPORTED PANEL EDGES AND 12 INCHES O.C. AT INTERMEDIATE SUPPORTS, EXCEPT THAT WHEN SUPPORTS ARE SPACED 48 INCHES O.C., SPACE NAILS 6 INCHES O.C. AT ALL SUPPORTS. USE 6D RING- OR SCREW-SHANK NAILS FOR PANELS 3/4 INCH THICK OR LESS. FILL AND THOROUGHLY SAND END AND EDGE JOINTS. LIGHTLY SAND ANY SURFACE ROUGHNESS AND AROUND FASTENERS. FOR FIELD-GLUED FLOORS, USE ADHESIVES MEETING APA SPECIFICATION AFG-01, APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. APPLY CONTINUOUS LINE OF GLUE ON JOISTS, AND CONTINUOUS OR SPACED LINE OF GLUE IN GROOVE OF TONGUE-AND GROOVE PANELS. USE 6D RING- OR SCREW SHANK NAILS SPACED 12 INCHES O.C. AT SUPPORTED PANEL EDGES AND INTERMEDIATE BEARINGS.

5. PREPARATION OF SURFACES:
A. ALL PANELS – SURFACE SHALL BE CLEAN, DRY AND FREE OF LOOSE WOOD FIBERS. HOLES AND CRACKS SHALL BE FILLED WITH PUTTY OR PLASTIC WOOD (EXCEPT FOR RUSTIC TYPE PANELS). AFTER DRY, SAND LIGHTLY IN THE DIRECTION OF THE GRAIN OF FACE VENEER OR TEXTURE TO MATCH EXISTING SURFACES. ANY TREE PITCH OR SAP SPOTS SHALL BE FIRST TOUCHED UP WITH A SEALER WHERE THE FINISH IS PAINT.

DIVISION 7 - WEATHER RESISTANT MEMBRANES

1. MATERIALS
A. WATER RESISTANT BARRIER: SPUNBONDED OLEFIN, NONWOVEN, NON-PERFORATED:
1. CLASSIFICATION: ASTM E 1677, TYPE I; AIR LEAKAGE AT 25 MPH WIND PRESSURE LESS THAN 0.06 CUBIC FEET PER MINUTE PER SQUARE FOOT.
2. WATER VAPOR TRANSMISSION: GREATER THAN 20 PERMS, WHEN TESTED IN ACCORDANCE WITH ASTM E 96 PROCEDURE B.
3. WATER PENETRATION RESISTANCE: MINIMUM 78.7 INCHES PER AATCC TEST METHOD 127.
B. SEALING TAPE: DUPONT CONTRACTOR TAPE OR EQUAL.

DIVISION 7 - 07 21 00 BOARD AND BATT INSULATION

BOARD INSULATION MATERIALS (RIGID INSULATION)
A. EXTRUDED POLYSTYRENE BOARD INSULATION: ASTM C 578, TYPE IV; EXTRUDED POLYSTYRENE BOARD WITH EITHER NATURAL SKIN OR CUT CELL SURFACES; WITH THE FOLLOWING CHARACTERISTICS:
1. BOARD SIZE: 48 X 96 INCH.
2. BOARD THICKNESS: 1.5 INCHES.
3. BOARD EDGES: SQUARE.
4. THERMAL CONDUCTIVITY (K FACTOR) AT 25 DEGREES F: 0.18.
5. COMPRESSIVE RESISTANCE: 25 PSI.
6. BOARD DENSITY: 1.6 LB/CU FT.
7. WATER ABSORPTION, MAXIMUM: 0.1 PERCENT, VOLUME.
8. SURFACE BURNING CHARACTERISTICS: FLAME SPREAD/SMOKE DEVELOPED INDEX OF 10/250, WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
COVER WITH THERMAL BARRIER WHERE EXPOSED TO INTERIOR OF BUILDING
B. NAIL STRIP INSULATION: TYPE I, 4" FOAM-CONTROL NAILSTRIP. NO EXCEPTIONS. OWNER TO PROVIDE FIRST (15) 4'x8' SHEETS.

2. BATT INSULATION MATERIALS
A. BATT INSULATION: ASTM C 665; PREFORMED GLASS FIBER BATT; CONFORMING TO THE FOLLOWING:
1. SURFACE BURNING CHARACTERISTICS: FLAME SPREAD INDEX OF 10 OR LESS; SMOKE DEVELOPED INDEX OF 10 OR LESS, WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
2. COMBUSTIBILITY: NON-COMBUSTIBLE WHEN TESTED IN ACCORDANCE WITH ASTM E 136, EXCEPT FOR FACING IF ANY.
3. PROVIDE INSULATION MADE WITHOUT FORMALDEHYDE.
4. THICKNESS: AS NOTED ON DRAWINGS OR IN RELATED SECTIONS.
5. FACING: UNFACED.
6. SUBSTITUTIONS: SEE SECTION 01600 - PRODUCT REQUIREMENTS.

3. ACCESSORIES
A. SHEET VAPOR RETARDER: CLEAR POLYETHYLENE FILM FOR ABOVE GRADE APPLICATION, 10 MIL THICK.
B. TAPE: BRIGHT ALUMINUM SELF-ADHERING TYPE, MESH REINFORCED, 2 INCH WIDE.
C. ADHESIVE: TYPE RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATION.

4. INSTALLATION
A. INSTALL THERMAL INSULATION IN ALL EXTERIOR WALL AND ROOF SPACES WITHOUT GAPS OR VOIDS. DO NOT COMPRESS INSULATION.

DIVISION 7 - SHEET METALS, FLASHINGS AND TRIM

07 4113 - METAL ROOF PANELS

1. MAXIMA 2" STANDING SEAM SHEET METAL ROOFING.
PROFILE: VERTICAL LEG STANDING SEAM PANEL WITH MALE/FEMALE SEAM TO BE MECHANICALLY INTERLOCKED AT JOBSITE WITH MECHANICAL SEAMER SPECIFICALLY DESIGNED FOR MAXIMA PROFILE.
2" FACTORY FORMED EAVE NOTCH, MAXIMA 2"
MATERIAL: GALVALUME STEEL SHEET CONFORMING TO ASTM A792, AZ50 COATING FOR PAINTED.

PROFILE:
A. MANUFACTURER: MCELROY METAL, INC.
1. CONTACT: 1500 HAMILTON RD., BOSSIER CITY, LA 71111; TELEPHONE: (800) 950-6531; FAX: (318) 747-8099; E-MAIL: INFO@MCELROYMETAL.COM; WEBSITE: WWW.MCELROYMETAL.COM.

2. PROPRIETARY PRODUCTS: MCELROY METAL PREFORMED SHEET METAL ROOFING PANELS.

B. SUBSTITUTIONS
1. BASIS OF DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS PROVIDE MCELROY METAL MAXIMA

2. SUBSTITUTION LIMITATIONS

A. REQUESTS FOR APPROVAL MUST BE SUBMITTED IN WRITING AT LEAST TEN (10) DAYS PRIOR TO BID DATE, AND ARE ACCOMPANIED BY ALL RELATED TEST REPORTS AND DESIGN CALCULATIONS LISTED IN SECTION 1.4 AND DESIGN AND PERFORMANCE CRITERIA SECTION 2.2.

B. SUBSTITUTE MANUFACTURERS WILL BE APPROVED BY WRITTEN ADDENDUM TO ALL BIDDERS. VOLUNTARY ALTERNATES WILL NOT BE CONSIDERED. SUBSTITUTIONS WILL NOT BE PERMITTED AFTER THE BID DATE OF THIS PROJECT.

C. ROOF PANELS PROPOSED FOR SUBSTITUTION SHALL FULLY COMPLY WITH SPECIFIED REQUIREMENTS IN APPEARANCE, ASSEMBLY, AND PERFORMANCE.

C. FORMING: USE CONTINUOUS END ROLLING METHOD. NO END LAPS ARE PERMITTED ON PANELS WITHOUT ARCHITECT APPROVAL. IT IS THE INTENT OF THE ARCHITECT TO PROVIDE FACTORY-MANUFACTURED PANEL SYSTEMS OR SYSTEMS MANUFACTURED ON-SITE BY FACTORY PERSONNEL ONLY FOR THIS PROJECT.

2. ACCESSORIES
A. GENERAL: PROVIDE COMPLETE METAL ROOF PANEL ASSEMBLY INCORPORATING TRIM, COPINGS, FACIAE, GUTTERS AND DOWNSPOUTS, AND MISCELLANEOUS FLASHINGS. PROVIDE REQUIRED FASTENERS, CLOSURE STRIPS, SPLICE PLATES, SUPPORT PLATES, AND SEALANTS AS INDICATED IN MANUFACTURER'S WRITTEN INSTRUCTIONS.
B. FLASHING AND TRIM: MATCH MATERIAL, THICKNES, AND FINISH OF METAL PANEL FACE SHEET.
C. PANEL CLIPS: ASTM A 653/A 653M, G90 (Z180) HOT-DIP GALVANIZED ZIC COATING, CONFIGURED FOR CNOCEALMENT IN PANEL JOINTS, AND IDENTICAL TO CLIPS UTILIZED IN TESTS DEMONSTRATING COMPLIANCE WITH PERFORMANCE REQUIREMENTS.
D. PANEL FASTENERS: SELF-TAPPING SCREWS AND OTHER ACCEPTABLE CORROSION-RESISTANT FASTENERS RECOMMENDED BY ROOF PANEL MANUFACTURER. WHERE EXPOSED FASTENERS CANNOT BE AVOIDED, SUPPLY FASTENERS WITH EPDM OR NEOPRENE GASKETS, WITH HEADS MATCHING COLOR OF METAL PANELS BY MEANS OF FACTORY-APPLIED COATING.
E. JOINT SEALERS: MANUFACTURER'S STANDARD OR RECOMMENDED LIQUID AND PREFORMED SEALERS AND TAPES, AND AS FOLLOWS:
a. FACTORY-APPLIED SEAM SEALANT: MANUFACTURER'S STANDARD HOT-MELT TYPE.
b. TAPE SEALERS: MANUFACTURER'S STANDARD NON-CURING BUTYL TAPE, AAMA 809.2.
c. CONCEALED JOINT SEALANT: NON-CURING BUTYL, AAMA 809.2.
F. STEEL SHEET MISCELLANEOUS FRAMING COMPONENTS: ASTM C 645, WITH ASTM A 653/A 653M, G60 (Z180) HOT-DIP GALVANIZED ZINC COATING.
G. ROOF ACCESSORIES: APPROVED BY METAL ROOF PANEL MANUFACTURER.
H. SNOW GUARDS: APPROVED BY METAL ROOF PANEL MANUFACTURER.

3. FABRICATION
A. GENERAL: PROVIDE FACTORY FABRICATED AND FINISHED METAL PANELS AND ACCESSORIES MEETING PERFORMANCE REQUIREMENTS, INDICATED PROFILES, AND STRUCTURAL REQUIREMENTS.
B. FABRICATE METAL PANEL JOINTS CONFIGURED TO ACCEPT FACTORY-APPLIED SEALANT PROVIDING WEATHERTIGHT SEAL AND PREVENTING METAL-TO-METAL CONTACT AND MINIMIZING NOISE RESULTING FROM THERMAL MOVEMENT.
C. FORM PANELS IN CONTINUOUS LENGTHS FOR FULL LENGTH OF DETAILED RUNS, EXCEPT WHERE OTHERWISE INDICATED ON APPROVED SHOP DRAWINGS.
D. SHEET METAL FLASHING AND TRIM: FABRICATE FLASHING AND TRIM TO COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPROVED SHOP DRAWINGS, AND PROJECT DRAWINGS. FORM FROM MATERIALS MATCHING METAL PANEL SUBSTRATE.

4. FINISHES
A. TWO COAT COIL APPLIED, BAKED ON FULL STRENGTH (70% RESIN, PVF2) FLUOROCARBON COATING CONSISTING OF A NOMINAL 0.25 MIL DRY FILM THICKNESS PRIMER, AND A NOMINAL DRY FILM THICKNESS OF 0.7 -0.8 MIL COLOR COAT FOR A TOTAL 0.9 TO 1.1 MIL TOTAL SYSTEM DRY FILM THICKNESS. FINISH TO BE SELECTED FROM MANUFACTURER'S STANDARD COLOR SELECTION. THE BACK SIDE OF THE MATERIAL SHOULD BE 0.25 MIL PRIMER AND A 0.25 MIL POLYESTER WASH COAT.
B. APPROVE COLOR SELECTIONS WITH ARCHITECT.

5. SOURCE QUALITY
A. SOURCE QUALITY: OBTAIN METAL PANEL PRODUCTS FROM A SINGLE MANUFACTURER.
B. QUALITY CONTROL: OBTAIN STRUCTURAL STANDING SEAM METAL ROOF PANELS, TRIM, AND OTHER ACCESSORIES FROM A MANUFACTURER CAPABLE OF PROVIDING ON-SITE TECHNICAL SUPPORT AND INSTALLATION ASSISTANCE.

6. GUTTER AND DOWNSPOUT FABRICATION
A. GUTTERS: SMACNA ARCHITECTURAL SHEET METAL MANUAL, RECTANGULAR PROFILE.
B. DOWNSPOUTS: RECTANGULAR PROFILE.
C. GUTTERS AND DOWNSPOUTS: SIZE FOR RAINFALL INTENSITY DETERMINED BY A STORM OCCURRENCE OF 1 IN 5 YEARS IN ACCORDANCE WITH SMACNA ARCHITECTURAL SHEET METAL MANUAL.
D. ACCESSORIES: PROFILED TO SUIT GUTTERS AND DOWNSPOUTS.
1. ANCHORAGE DEVICES: IN ACCORDANCE WITH SMACNA REQUIREMENTS.
2. GUTTER SUPPORTS: BRACKETS.
3. DOWNSPOUT SUPPORTS: BRACKETS.
E. SPLASH PADS: PRECAST CONCRETE TYPE, OF SIZE AND PROFILES INDICATED; MINIMUM 3000 PSI AT 28 DAYS, WITH MINIMUM 5 PERCENT AIR ENTRAINMENT.
F. DOWNSPOUT BOOTS: STEEL.
G. SEAL METAL JOINTS.
H. SECURE GUTTERS AND DOWNSPOUTS IN PLACE USING CONCEALED FASTENERS
I. SLOPE GUTTERS 1/4 INCH PER FOOT MINIMUM

07 4610 - METAL SIDING

1. METAL SIDING
A. **SIDING 1:** DELTA RIB, 29GA METAL SIDING. 24" NET COVERAGE. 13/16" PROFILE WITH 8" REPEATING PATTERN.
TAHOE BLUE, SRI: 33 DURA TECH XL, LRV: 14. OR SELECTED FROM MANUFACTURERS SELECTED COLORS.
B. **SIDING 2:** 2 1/2" CORRUGATED METAL SIDING, 29GA. 24"-32" WALL COVERAGE. 1/2" PROFILE.
OLD ZINC GRAY, SRI: 43, DURA TECH XL, LRV: 22. OR SELECTED FROM MANUFACTURERS SELECTED COLORS.

2. ACCESSORIES
A. FASTENERS: PREFINISHED STEEL, WITH SOFT NEOPRENE WASHERS.
B. PRIMER: ZINC CHROMATE TYPE.
C. SEALANT: TYPE 2 SPECIFIED IN SECTION 07900.
D. PLASTIC CEMENT: ASTM D 4586, TYPE I.
E. REGLETS: SURFACE MOUNTED TYPE, PREFINISHED STEEL; FACE AND ENDS COVERED WITH PLASTIC TAPE.

3. FABRICATION
A. FORM SECTIONS TRUE TO SHAPE, ACCURATE IN SIZE, SQUARE, AND FREE FROM DISTORTION OR DEFECTS.
B. FORM PIECES IN LONGEST POSSIBLE LENGTHS.
C. HEM EXPOSED EDGES ON UNDERSIDE 1/2 INCH; MITER AND SEAM CORNERS.
D. FORM MATERIAL WITH FLAT LOCK SEAMS, EXCEPT WHERE OTHERWISE INDICATED. AT MOVING JOINTS, USE SEALED LAPPED, BAYONET-TYPE OR INTERLOCKING HOOKED SEAMS.
E. FABRICATE CORNERS FROM ONE PIECE WITH MINIMUM 18 INCH LONG LEGS; SEAM FOR RIGIDITY, SEAL WITH SEALANT.
F. FABRICATE VERTICAL FACES WITH BOTTOM EDGE FORMED OUTWARD 1/4 INCH (6 MM) AND HEMMED TO FORM DRIP.
G. FABRICATE FLASHINGS TO ALLOW TOE TO EXTEND 2 INCHES OVER ROOFING GRAVEL. RETURN AND BRAKE EDGES.
H. SECURE FLASHINGS IN PLACE USING CONCEALED FASTENERS.

4. GUTTER AND DOWNSPOUT FABRICATION
A. GUTTERS: SMACNA ARCHITECTURAL SHEET METAL MANUAL, RECTANGULAR PROFILE.
B. DOWNSPOUTS: RECTANGULAR PROFILE.
C. GUTTERS AND DOWNSPOUTS: SIZE FOR RAINFALL INTENSITY DETERMINED BY A STORM OCCURRENCE OF 1 IN 5 YEARS IN ACCORDANCE WITH SMACNA ARCHITECTURAL SHEET METAL MANUAL.
D. ACCESSORIES: PROFILED TO SUIT GUTTERS AND DOWNSPOUTS.
1. ANCHORAGE DEVICES: IN ACCORDANCE WITH SMACNA REQUIREMENTS.
2. GUTTER SUPPORTS: BRACKETS.
3. DOWNSPOUT SUPPORTS: BRACKETS.
E. SPLASH PADS: PRECAST CONCRETE TYPE, OF SIZE AND PROFILES INDICATED; MINIMUM 3000 PSI AT 28 DAYS, WITH MINIMUM 5 PERCENT AIR ENTRAINMENT.
F. DOWNSPOUT BOOTS: STEEL.
G. SEAL METAL JOINTS.
H. SECURE GUTTERS AND DOWNSPOUTS IN PLACE USING CONCEALED FASTENERS
I. SLOPE GUTTERS 1/4 INCH PER FOOT MINIMUM

DIVISION 7 - 07 90 00 JOINT SEALERS

1. SEALANTS
A. SEALANTS AND PRIMERS - GENERAL: PROVIDE ONLY PRODUCTS HAVING LOWER VOLATILE ORGANIC COMPOUND (VOC) CONTENT THAN REQUIRED BY THE MORE STRINGENT OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE NO.1168.
B. TYPE 1 - GENERAL PURPOSE EXTERIOR SEALANT: POLYURETHANE; ASTM C 920, GRADE NS, CLASS 25, USES M, G, AND A; MULTI- COMPONENT.
a. COLOR: COLOR AS SELECTED.
C. TYPE 3 - GENERAL PURPOSE INTERIOR SEALANT: ACRYLIC EMULSION LATEX; ASTM C 834, TYPE OP, GRADE NF SINGLE COMPONENT, PAINTABLE.
a. COLOR: COLORS AS SELECTED.
b. APPLICATIONS: USE FOR:
- INTERIOR WALL AND CEILING CONTROL JOINTS.
- JOINTS BETWEEN DOOR AND WINDOW FRAMES AND WALL SURFACES.
- OTHER INTERIOR JOINTS FOR WHICH NO OTHER TYPE OF SEALANT IS INDICATED.

D. TYPE 4 - BATHTUB/TILE SEALANT: WHITE SILICONE; ASTM C 920, USES I, M AND A; SINGLE COMPONENT, MILDEW RESISTANT.
1. APPLICATIONS: USE FOR:
A. JOINTS BETWEEN PLUMBING FIXTURES AND FLOOR AND WALL SURFACES.
B. JOINTS BETWEEN KITCHEN AND BATH COUNTERTOPS AND WALL SURFACES.

2. ACCESSORIES
A. PRIMER: NON-STAINING TYPE, RECOMMENDED BY SEALANT MANUFACTURER TO SUIT APPLICATION.
B. JOINT CLEANER: NON-CORROSIVE AND NON-STAINING TYPE, RECOMMENDED BY SEALANT MANUFACTURER; COMPATIBLE WITH JOINT FORMING MATERIALS.
C. JOINT BACKING: ROUND FOAM ROD COMPATIBLE WITH SEALANT; ASTM D 1667, CLOSED CELL PVC; OVERSIZED 30 TO 50 PERCENT LARGER THAN JOINT WIDTH.
D. BOND BREAKER: PRESSURE SENSITIVE TAPE RECOMMENDED BY SEALANT MANUFACTURER TO SUIT APPLICATION.

3. JOINT SEALING
A. CAULK JOINTS AT ALL DISSIMILAR MATERIALS AT EXTERIOR OF BUILDING INCLUDING JUNCTION BOXES, HOSE BIBBS, WINDOW AND DOOR FRAMES, WINDOW FLASHINGS, VENTS AND EXHAUSTS ETC... UNLESS NOTED OTHERWISE.
B. SEAL JOINTS BETWEEN TOILETS, SINKS AND COUNTER TOPS TO WALLS, FLOORS AND BACKSPLASHES WITH LOW VOC CLEAR SILICONE SEALANT. SEALANT AT SHOWER SURROUNDS TO WALLS.
C. SEAL JOINTS BETWEEN ALL DISSIMILAR MATERIALS INCLUDING, WALLS, DOORS, WINDOWS, WINDOW SILLS, FLOOR JOINTS AT EXTERIOR & DEMISING WALLS.

4. FOAMING AT STRIP IT FURRING, EXTERIOR WALL AND FLOORS
A. APPLY LOW EXPANSION FOAM BETWEEN STRIP IT PANELS DURING INSTALLATION
B. APPLY EXPANDING FOAM AROUND ALL THRU WALL PENETRATIONS INCLUDING:
1. WINDOW FRAMES
2. DOOR FRAMES
3. THRU WALL VENTS & CONDUITS ETC...
C. APPLY FOAM AT ALL THRU FLOOR PENETRATIONS

SHOP DRAWINGS AND SUBMITTALS MUST BE PROVIDED OF THE BELOW:

- CONCRETE MIX DESIGNS
- REBAR SHOP
- OVERHEAD DOORS
- SIDING
- ROOFING
- MAN DOORS/FRAMES
- UNIT HEATERS
- ELECTRICAL PANELS
- LIGHTS
- HANGING HEATER
- SAND OIL SEPARATOR
- INSULATION
- LIGHT FIXTURES

DIVISION 8 - DOORS, WINDOWS & SKYLIGHTS

08 1113 - HOLLOW METAL DOORS AND FRAMES

1. METAL DOORS
A. EXTERIOR DOORS: STEELCRAFT L-SERIES 18 GA. INSULATED HOLLOW METAL DOORS OVERALL U-VALUES
MAIN ENTRANCE DOORS: 0.80 OVERALL U-VALUE
EXIT DOORS: 0.32 OVERALL U-VALUE
OVERHEAD SECTIONAL DOORS: 0.32 OVERALL U-VALUE
3-HOUR FIRE RATED DOOR: CODE COMPLIANT MUST MEET OR EXCEED ANSI A250.6 AND A250.6.

B. PRIME FINISH DOORS: CLEAN, PHOSPHATIZE AND FACTORY PRIME PAINTED DOORS INDICATED ON DOOR SCHEDULE AS H.M.

C. GLASS MOLDINGS AND STOPS: FABRICATE FROM 24 GAUGE STEEL.

D. PROVIDE DOOR REINFORCING:
1. HINGES 7 GAUGE
2. LOCKS 16 GAUGE
3. CLOSER 14 GAUGE

E. THERMAL PERFORMANCE
1. EXTERIOR DOORS - POLYSTYRENE CORE 0.32 U-FACTOR
2. INTERIOR DOORS, RATED & UN-RATED - HONEYCOMB OR SOLID CORE WOOD PER DOOR SCHEDULE

2. METAL DOOR FRAMES:
A. STEELCRAFT F16-SERIES FLUSH FRAMES OR APPROVED EQUIVALENT
1. EXTERIOR DOORS - WELDED FRAMES
2. FIRE RATED DOORS 3 HOURS - WELDED FRAMES MUST BE LABELED
3. NON-RATED DOORS - KNOCK DOWN FRAMES.

3. METAL DOOR ACCESSORIES:
A. PROVIDE ACCESSORIES AS SPECIFIED IN THE HARDWARE SCHEDULE AND AS NECESSARY FOR A COMPLETE DOOR AND FRAME ASSEMBLY
1. WALL ANCHORS PER MANUFACTURERS RECOMMENDATIONS.
2. ASTRAGALS FOR PAIRS OF DOORS
3. PLASTER GUARDS
4. SILENCERS - FACTORY INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

4. DOORS, WINDOWS & SKYLIGHT PERFORMANCE:
A. ALL WINDOWS, FIXED & OPERABLE TO HAVE AN OVERALL U-FACTOR OF 0.32
B. ALL EXTERIOR DOORS, SOLID & GLAZED TO HAVE AN OVERALL U-FACTOR OF 0.32
C. MAIN ENTRY DOUBLE DOOR AND COMMUNITY ROOM DOOR TO HAVE AN OVERALL U-FACTOR OF 0.80 WITH DOUBLE PANE, CLEAR GLASS SHGC 0.70, PF 0.50

08 3613 - SECTIONAL DOORS

1. MANUFACTURERS:
A. Basis of Design: Overhead Door Corp.; Product 599 Series Thermacore Insulated Steel Door.
B. Other Acceptable Manufacturers:
a. Wayne-Dalton, a Division of Overhead Door Corporation: www.wayne-dalton.com.
b. Raynor Garage Door: www.raynor.com.
c. Substitutions: See Section 01 6000 - Product Requirements.

2. STEEL DOOR COMPONENTS:
A. Steel Doors: Flush steel, insulated;standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
a. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330, using10 second duration of maximum load.
b. Door Nominal Thickness: 2 inches thick.
c. Exterior Finish: Pre-finished withtwo coats of baked-on polyester of white color.
d. Interior Finish: Pre-finished withtwo coats of baked-on polyester of white color.
e. Glazed Lights: Full panel width, two row; set in place withresilient glazing channel.
B. Door Panels: Flush steel construction; outer steel sheet of 0.015 inch thick,flat profile; inner steel sheet of 0.015 inch thick,flat profile; core reinforcement of 0.060 inch thick sheet steel roll formed tochannel shape, rabbeted weather joints at meeting rails; insulated.
C. Full Glazed Aluminum Sash Panels.
a. Glazing: Type3/4" tempered, insulated Low-E glass specified in Section08 8000.
D. Thermal Values: R-value of 17.50; U-value of 0.057.
E. Insulation: CFC-free and HCFC-free polyurethane, fully encapsulated.

3. COMPONENTS:
A. Track: Rolled galvanized steel, 0.090 inch minimum thickness; 3 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.
B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
D. Sill Weatherstripping: Resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.
E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.
F. Head Weatherstripping: EPDM rubber seal, one piece full length.
G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.
H. Lock Cylinders: Keyed alike.

4. MATERIALS
A. Aluminum Extrusions: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

5. ELECTRIC OPERATION
A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR).
a. Provide interlock switches on motor operated units.
B. Electric Operators:
a. Mounting: Side mounted on cross head shaft.
b. Motor Enclosure:
c. Motor Rating: 1/2 hp; continuous duty.
d. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
e. Controller Enclosure: NEMA 250, Type 1.
f. Opening Speed: 12 inches per second.
g. Brake: Adjustable friction clutch type, activated by motor controller.
h. Manual override in case of power failure.
i. Refer to Section 26 0583 for electrical connections.
C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.
D. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
a. 24 volt circuit.
b. Surface mounted, at interior door jamb.
c. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
E. Safety Edge: Located at bottom of sectional door panel, full width; electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object; hollow neoprene covered to provide weatherstrip seal.
F. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.
G. Hand Held Transmitter: Digital control, and resettable.

DIVISION 9 - PAINTS AND COATINGS

PAINT AND COATINGS ON BOLLARDS: - INCLUDES FURNISHING AND INSTALLING PAINT SYSTEMS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR THE SUBSTRATE CONDITIONS IN THE PROJECT. VOC EMISSIONS FROM PAINTS AND COATINGS MUST NOT EXCEED THE LIMITS LISTED IN LEED CERTIFICATION GUIDELINES, PART 2, "VOLATILE ORGANIC COMPOUND (VOC) LIMITS". PROVIDE A CUT SHEET AND/OR MATERIAL SAFETY DATA SHEET FOR EACH PAINT OR COATING SYSTEM USED WITHIN THE BUILDING (NOT INCLUDING THE EXTERIOR SURFACE OF THE BUILDING), WITH VOC LEVELS HIGHLIGHTED. MANUFACTURER: COLUMBIA PAINT & COATINGS.

PREPARATION OF SURFACES:
ALL UNDERLAYMENT PANEL SURFACE SHALL BE CLEAN, DRY AND FREE OF LOOSE WOOD FIBERS. HOLES AND CRACKS SHALL BE FILLED WITH PUTTY OR PLASTIC WOOD (EXCEPT FOR RUSTIC TYPE PANELS). AFTER DRY, SAND LIGHTLY IN THE DIRECTION OF THE GRAIN OF FACE VENEER OR TEXTURE TO MATCH EXISTING SURFACES. ANY TREE PITCH OR SAP SPOTS SHALL BE FIRST TOUCHED UP WITH A SEALER WHERE THE FINISH IS PAINT.

SEALED CONCRETE:
SEAL PRO 600 INDUSTRIAL STRENGHT HIGH GLOSS HEAVY DUTY CONCRETE SEALER OR OWNER APPROVED EQUIVALENT. PREPARE AND APPLY PER MANUFACTURERS SPECIFICATIONS.

REGISTERED ARCHITECT MICHAEL W. DOWLING LIC. #1987 STATE OF MONTANA

Gallatin R&B Equipment Storage Building
Project Address: 205 W Baxter Ln, Bozeman, MT 59718

DOWLING ARCHITECTS
734 N. Last Chance Gulch | Helena, MT 59601 | 406.457.5470
www.dsa-mt.com

SPECIFICATIONS

PROJECT #: 23-651
ISSUE DATES:
DRAWN BY: LK

A0-3
100% CD
12.21.2023

DOOR SCHEDULE & ELEVATIONS

NOTES

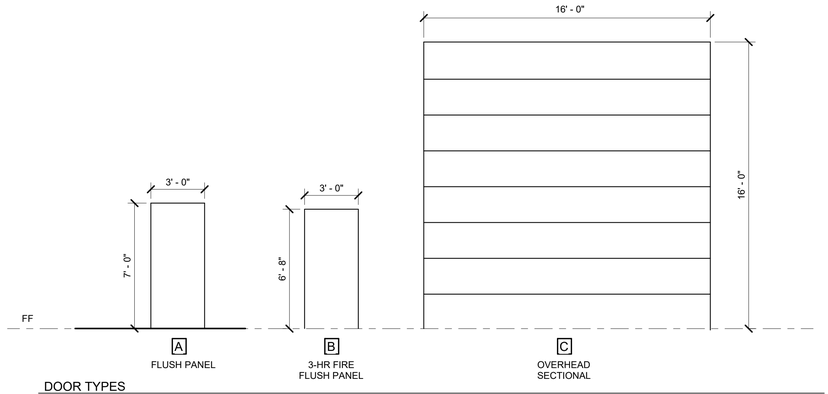
1. SEE SPECIFICATIONS FOR DOOR HARDWARE DESCRIPTIONS.
2. SEE WINDOW ELEVATIONS FOR FRAME TYPES FOR ALUM FRAMES

ABBREVIATIONS

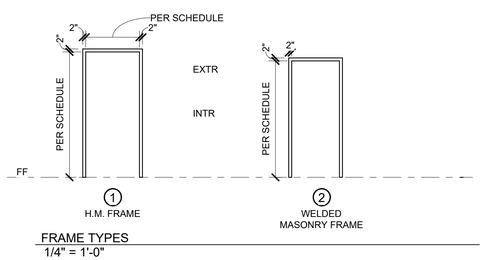
FACT	FACTORY FINISH
HM	HOLLOW METAL
P	PAINT
TS	TRANSPARENT FINISH - STAINED
WD	WOOD - SOLID CORE

DOOR SCHEDULE

DOOR NO.	ROOM NAME	DOOR TYPE	WIDTH	HEIGHT	DOOR FINISH	DOOR MAT	THICKNESS	FRAME FINISH	FRAME TYPE	HARDWARE	CLOSER	COMMENTS
100A	WEST STORAGE	A	3' - 0"	7' - 0"	PAINT	HM	1 3/4"	PAINT	1		--	
100G-A	WEST STORAGE	C	16' - 0"	16' - 0"	PAINT	METAL	2"	PAINT	3		--	
100G-B	WEST STORAGE	C	15' - 11 7/8"	16' - 0"	PAINT	METAL	2"	PAINT	3		--	
100G-C	WEST STORAGE	C	16' - 0"	16' - 0"	PAINT	METAL	2"	PAINT	3		--	
101A	EAST STORAGE	A	3' - 0"	7' - 0"	PAINT	HM	1 3/4"	PAINT	1		--	
101B	EAST STORAGE	B	3' - 0"	6' - 8"	PAINT	HM	1 3/4"	PAINT	2	CLOSER	YES	*3 HR RATED
101C	EAST STORAGE	B	3' - 0"	6' - 8"	PAINT	HM	1 3/4"	PAINT	2	CLOSER	YES	*3 HR RATED
101G-A	EAST STORAGE	C	16' - 0"	16' - 0"	PAINT	METAL	2"	PAINT	3		--	
101G-B	EAST STORAGE	C	16' - 0"	16' - 0"	PAINT	METAL	2"	PAINT	3		--	
101G-C	EAST STORAGE	C	16' - 0"	16' - 0"	PAINT	METAL	2"	PAINT	3		--	
101G-D	EAST STORAGE	C	16' - 0"	16' - 0"	PAINT	METAL	2"	PAINT	3		--	
Grand total: 11												



DOOR TYPES
1/4" = 1'-0"



FRAME TYPES
1/4" = 1'-0"

GENERAL WALL TYPE NOTES

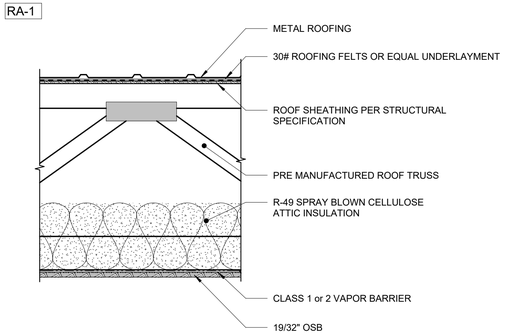
1. SEE STRUCTURAL SHEAR WALL SCHEDULE FOR SHEAR WALL ATTACHMENT AND EDGE BLOCKING REQUIREMENTS. STRUCTURAL SHEAR WALL SCHEDULE OVERRIDES LISTED ASSEMBLY ATTACHMENT AND BLOCKING REQUIREMENTS ONLY WHEN MORE RESTRICTIVE.
2. REFER TO CODE ANALYSIS PLANS WALL TYPE LEGEND FOR IBC DESIGNATION OF FIRE RESISTIVE WALLS WITH OPENING PROTECTION (FIRE RESISTIVE RATED DOORS AND GLAZING). SEE DOOR AND WINDOW SCHEDULES.
3. REFER TO CODE ANALYSIS PLANS WALL TYPE LEGEND FOR IBC DESIGNATION OF FIRE RESISTIVE WALLS WITH DUCTS AND AIR TRANSFER OPENING PROTECTION. SEE MECHANICAL DRAWINGS.
4. PENETRATIONS OF FIRE-RESISTIVE WALLS, FLOOR-CEILING AND ROOF-CEILINGS SHALL BE PROTECTED AS REQUIRED IN IBC SECTION 713.
5. PENETRATIONS THROUGH HORIZONTAL ASSEMBLIES SHALL COMPLY WITH SECTION 712.4. PROVIDE FIRE, SMOKE AND CEILING RADIATION DAMPERS AT DUCT AND AIR TRANSFER OPENINGS IN FIRE RATED ASSEMBLIES PER IBC SECTION 716.

ABBREVIATIONS

(1)	QUANTITY	EA	EACH	MAT	MATERIAL
&	AND	EIFS	EXTERIOR INSULATION FINISH SYSTEM	MAX	MAXIMUM
@	AT	EJ	EXPANSION JOINT	MECH	MECHANICAL
#	NUMBER	ELEV	ELEVATION - HEIGHT	MDF	MEDIUM DENSITY FIBER BOARD
		ELEC	ELECTRICAL	MFR	MANUFACTURER
AB	ANCHOR BOLT	EQ	EQUAL	MIL	MILLIMETER
A/C	AIR CONDITIONING	(E)/EXIST	EXISTING	MIN	MINIMUM
ACT	ACOUSTICAL CEILING TILE	ETR	EXISTING TO REMAIN	MIR	MIRROR
ADDM	ADDENDUM	EXT	EXTERIOR	MISC	MISCELLANEOUS
ADJ	ADJACENT			MO	MASONRY OPENING
AFF	ABOVE FINISHED FLOOR	FD	FLOOR DRAIN	MTL	METAL
AHU	AIR HANDLING UNIT	FDN	FOUNDATION		
ALT	ALTERNATE	FF	FINISH FLOOR	N/A	NOT APPLICABLE
ALUM	ALUMINUM	FDN	FOUNDATION	NIC	NOT IN CONTRACT
ARCH	ARCHITECTURAL	FEC	FIRE EXTINGUISHER CABINET	NTS	NOT TO SCALE
		FIN FLR or FF	FINISHED FLOOR		
BC	BRICK COURSE	FLR	FLOOR	OC or O.C.	ON CENTER
BO	BOTTOM OF	FOF	FACE OF FINISH	OH	OVERHEAD
BLDG	BUILDING	FOM	FACE OF MASONRY	OPNG	OPENING
BLKG	BLOCKING	FOS	FACE OF STUD	OPP	OPPOSITE
BTWN	BETWEEN	FT	FOOT		
BOW	BOTTOM OF WALL	FTG	FOOTING	PAF	POWER ACTUATED FASTENER
BU	BUILT UP	GA	GAUGE	PART BD	PARTICLE BOARD
		GB	GRAB BAR	PERP	PERPENDICULAR
CL	CENTERLINE	GC	GENERAL CONTRACTOR	PFM	PREFINISHED METAL
CB	CATCH BASIN	GALV	GALVANIZED	PL	PLATE
CC	CENTER TO CENTER	GLU LAM or GLB	GLUE LAMINATED BEAM	PLAM	PLASTIC LAMINATE
CDX	EXTERIOR GRADE PLYWOOD	GWB	GYPSUM WALL BOARD	PLWD	PLYWOOD
CF	CUBIC FEET			PNL	PANEL
CT	CERAMIC TILE	HD BD	HARD BOARD	PSF	POUNDS PER SQUARE FOOT
CH	CHANNEL	HM	HOLLOW METAL	PSI	POUNDS PER SQUARE INCH
CJ	CONTROL JOINT	HORIZ	HORIZONTAL	PSL	PARALLEL STRAND LUMBER
CLG	CEILING	HP	HIGH POINT	PT	POINT
CLR	CLEAR	HR	HOUR	P.T.	PRESSURE-TREATED
CMU	CONCRETE MASONRY UNIT	HT	HEIGHT	PTD	PAPER TOWEL DISPENSER
COL/COLS	COLUMN/COLUMNS	HTG	HEATING	PVC	POLYVINYLCHLORIDE
CONC	CONCRETE	HVAC	HEATING, VENTILATING, AIR CONDITIONING		
CONST	CONSTRUCTION			QTY	QUANTITY
CONT	CONTINUOUS	IN	INCH	RADIUS INNER	
COORD	COORDINATE	INFO	INFORMATION	RD	ROOF DRAIN
CTR	CENTER	INSUL	INSULATION	REF	REFERENCE
CTRD	CENTERED	INT	INTERIOR	REFG	REFRIGERATOR
				REINF	REINFORCING
DBL	DOUBLE	JST	JOIST	REQD	REQUIRED
DF	DRINKING FOUNTAIN	JT	JOINT	RES	RESILIENT
DIA	DIAMETER			RM	ROOM
DIM	DIMENSION	LB	POUND	RO	ROUGH OPENING
DN	DOWN	LF	LINEAL FEET		
DR	DOOR	LTWT	LIGHTWEIGHT	SCHED	SCHEDULE
DS	DOWNSPOUT	LVL	LAMINATED VENEER LUMBER	SACT	SUSPENDED ACOUSTICAL CEILING TILE
DTL/DET	DETAIL			SD	SOAP DISPENSER
DWG	DRAWING			SF	SQUARE FEET
				SHT	SHEET
				SHTG	SHEATHING
				SHWR	SHOWER
				SIM	SIMILAR
				SIP	STRUCTURAL INSULATED PANEL
				SND	SANITARY NAPKIN DISPOSAL
				SPEC	SPECIFICATIONS
				SS	STAINLESS STEEL
				STD	STANDARD
				STL	STEEL
				STOR	STORAGE
				STRUCT	STRUCTURAL
				SUB FLR	SUBFLOOR
				T&G	TONGUE AND GROOVE
				TJI	TRUSS JOIST INCORPORATED
				TO	TOP OF
				TOB	TOP OF BEAM
				TOP	TOP OF PLATE
				TO FTG	TOP OF FOOTING
				TOS	TOP OF STEEL
				TOSL	TOP OF SLAB
				TOW	TOP OF WALL
				TPD	TOILET PAPER DISPENSER
				T	TREAD
				TS	TUBULAR STEEL
				TYP	TYPICAL
				UG	UNDERGROUND
				UNO	UNLESS NOTED OTHERWISE
				VCT	VINYL COMPOSITION TILE
				VERT	VERTICAL
				VB	VAPOR BARRIER
				VIF	VERIFY IN FIELD
				W/	WITH
				WC	WATER CLOSET
				WD	WOOD
				WNDW	WINDOW
				W/O	WITHOUT
				WP	WATERPROOF
				WR	WATER RESISTANT
				WRB	WEATHER RESISTIVE BARRIER
				WT	WEIGHT
				WWF	WELDED WIRE FABRIC

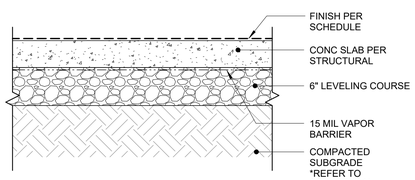
ROOF/CEILING ASSEMBLIES

RA-1



FLOOR/CEILING ASSEMBLIES

FA-1



WALL ASSEMBLIES

WALL TYPE TAG

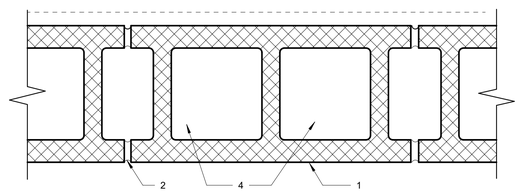
WALL TYPE
WALL HEIGHT
E26
4' - 0"
PARTIAL HEIGHT WALL

WALL HEIGHT DESIGNATION

c	EXTEND WALL TO UNDERSIDE OF CEILING
d	STUDS EXTEND TO STRUCTURE, FINISH EXTENDS TO 6" ABOVE CEILING
p	PARTIAL HEIGHT WALL, SEE PLANS
s	EXTEND ENTIRE WALL TO UNDERSIDE OF STRUCTURE (UNDERSIDE OF ROOF SHEATHING, DECK OR SLAB AT FIRE WALLS)
x	SHAFT: WALL IS CONTINUOUS THROUGH FLOOR ASSEMBLIES

3-HR FIRE SEPARATION WALL (PLAN VIEW)
UL FIRE RATED
DESIGN NO. U904

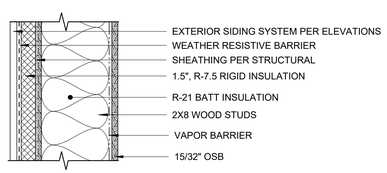
I1



1. CONCRETE BLOCKS - Various designs. Classification C-3 (3 hr).
2. MORTAR - Blocks laid in full bed of mortar, nom. 3/8 in. thick, of not less than 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50 percent hydrated lime (by cement volume.) Vetical joints staggered.
3. PORTLAND CEMENT STUCCO OR GYPSUM PLASTER - If used, add 1/2 hr. to Classification. Attached to concrete blocks. (Item 1)
4. LOOSE MASONRY FILL - If all core spaces are fileld with loose dry expanded slag, explanded clay or shale (rotary kiln process), water repelant vemiculite masonry fill insulation, or silicone treated perlite loose fill insulatino add 1 hr to Classification.
5. FOAMED PLASTIC* (Optional - not shown) 1-1/2 in thick max, 4 ft wide sheathing attached to concrete blocks (Item 1). Celotex Corp. - Type Thermax

*Bearing the UL Classification Marking

E1



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

MICHAEL W. DOWLING LIC. #9857 STATE OF MONTANA
Michael W. Dowling

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

DOWLING ARCHITECTS
734 N Last Chance Gulch | Helena, MT 59601 | 406.457.5470
www.dow-mt.com

DOOR SCHEDULES, WALL, CEILING, ROOF ASSEMBLIES

PROJECT #: 23-651

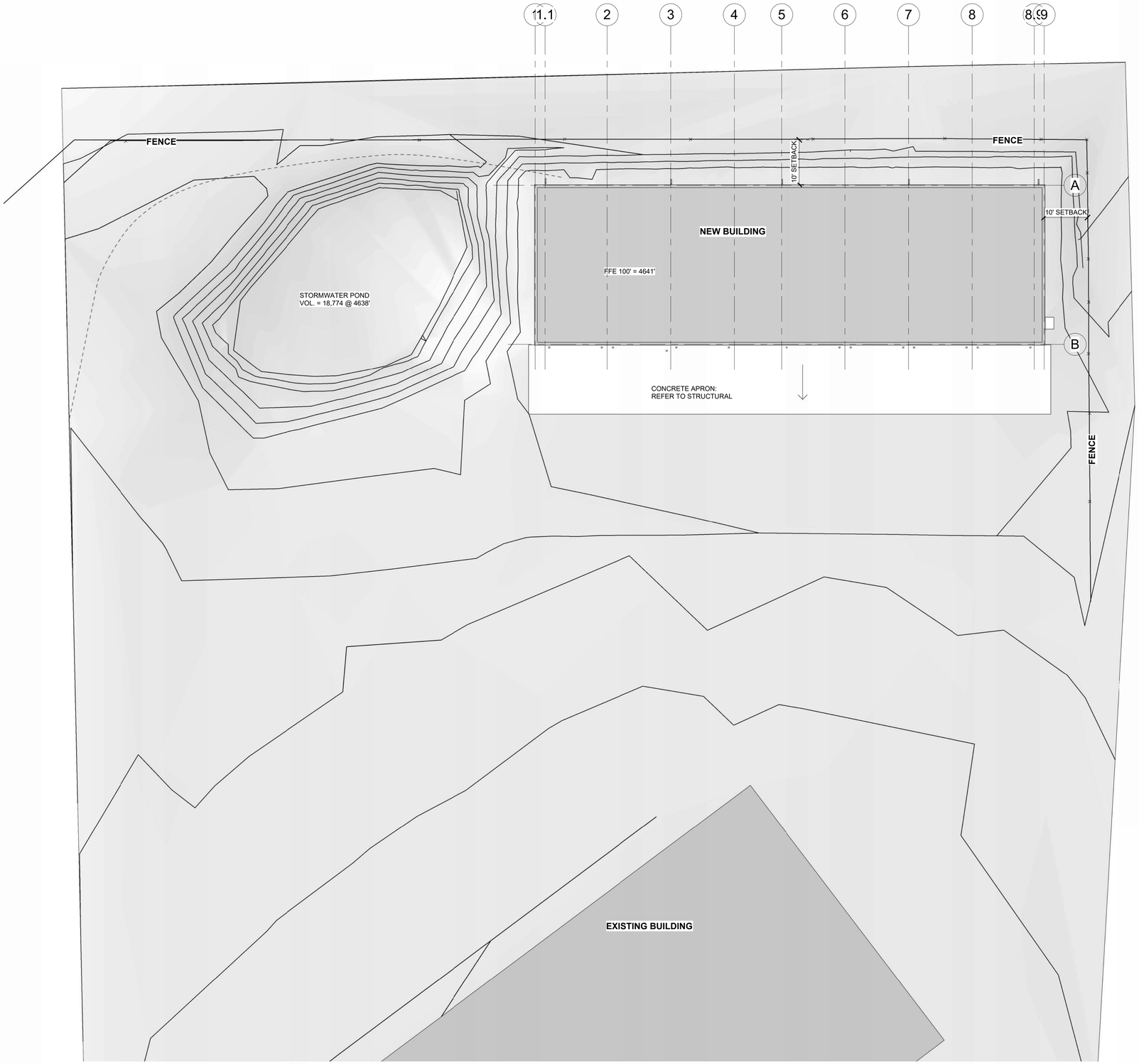
ISSUE DATES:

DRAWN BY: LK

100% CD

A1-1

12.21.2023



1 A2-1 SITE PLAN
1/16" = 1'-0" REF:A4-1

GENERAL SITE NOTES:

1. WORK UNDER THIS CONTRACT INCLUDES ALL DESIGNATED CONCRETE WALKS, PADS & CURBS. ASPHALT PAVING TO BE COMPLETED BY OWNER. SEE CIVIL, LANDSCAPE, MECHANICAL, & ELECTRICAL FOR EXTENT OF WORK UNDER THESE SUBCONTRACTORS.
2. DIMENSIONS ARE TYPICALLY TO FACE OF CONCRETE FOUNDATION, EDGE OF WALK OR PAVING SIDE OF CURB.
3. LOCATE SIDEWALK CONTROL OR EXPANSION JOINTS AS SHOWN ON WALKS AND SLABS. IF JOINTS ARE NOT SPECIFICALLY DIMENSIONED ALIGN WITH BUILDING COLUMNS, BUILDING OFFSETS, CENTERED ON OPENINGS OR ALIGNED WITH BUILDING ELEMENTS AS SHOWN.
4. PRIOR TO FINAL ACCEPTANCE, REPLACE DISTURBED AREAS OF ADJACENT LANDSCAPING & IRRIGATION BACK TO ORIGINAL CONDITION.
5. PATCH & REPAIR OR REPLACE ALL EXISTING SIDEWALKS TO REMAIN DAMAGED BY CONSTRUCTION.

ZONING ANALYSIS

ZONING DISTRICT: FOUR CORNERS

LAND USE: COMMERCIAL

ZONING CODE: FOUR CORNERS DISTRICT REGULATIONS: AMENDED COUNTRY COMMISSION RESOLUTION 2021-186

GEOCODE: 06090335401050000

LOT DESC: S35, T01 S, R04 E, C.O.S. 2420, PARCEL A, ACRES 51.982, & COS 442 SW4SE4

LOT AREA: 7.86 ACRES

FLOOR AREA: 8,000 SF

LOT COVERAGE:
- MAXIMUM: NONE
- PROPOSED: 13%

SETBACK REQUIREMENTS:
- FRONT: NONE
- REAR: NONE
- SIDE: NONE
- PROPOSED: SEE SITE PLAN (10' SET BACK FROM EXISTING FENCE)

BUILDING HEIGHT:
- MAXIMUM: 60'
- PROPOSED: 24'-10"

N PLAN N

REGISTERED ARCHITECT
MICHAEL W. DOWLING
LIC. #3857
STATE OF MONTANA

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

DOWLING ARCHITECTS
734 N. Last Chance Gulch | Helena, MT 59601 | 406.457.5470
www.dowl-mt.com

SITE INFORMATION

PROJECT #: 23-651

ISSUE DATES:

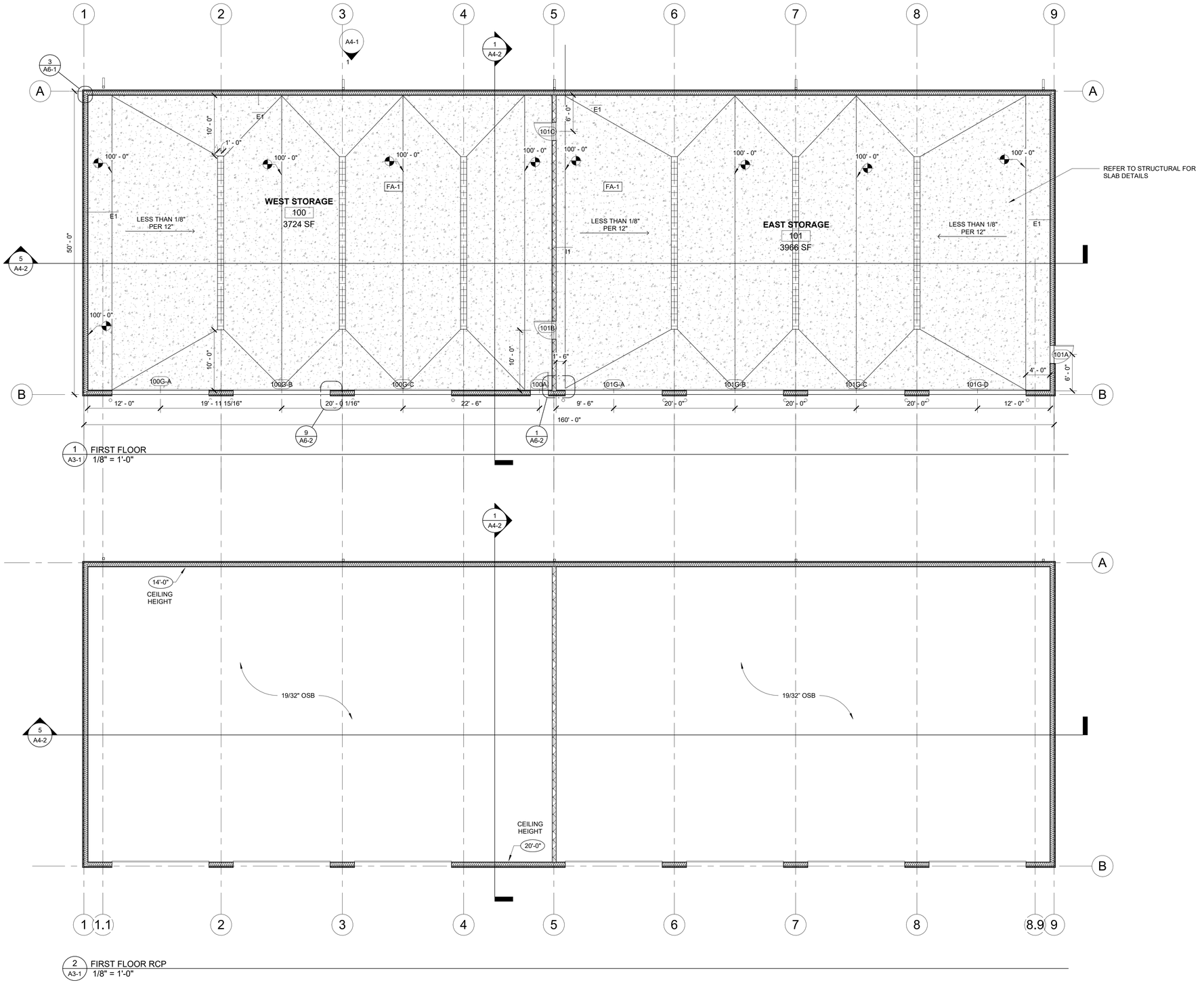
DRAWN BY: LK

100% CD

A2-1

12.21.2023

FINISH SCHEDULE										
ROOM NUMBER	NAME	BASE FINISH	FLOOR FINISH	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL	CEILING HEIGHT	CEILING FINISH	COMMENTS
100	WEST STORAGE	--	SEALED CONC	OSB	OSB	OSB	OSB	14' - 0"	OSB	SLOPE CEILING
101	EAST STORAGE	--	SEALED CONC	OSB	OSB	OSB	OSB	14' - 0"	OSB	SLOPE CEILING



1 A3-1 FIRST FLOOR
1/8" = 1'-0"

2 A3-1 FIRST FLOOR RCP
1/8" = 1'-0"

GENERAL NOTES:

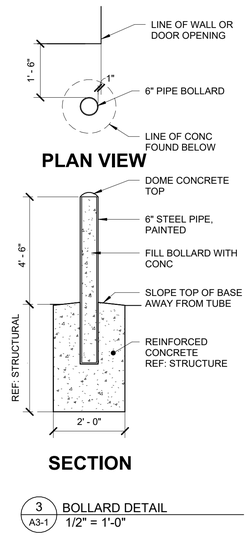
1. DIMENSIONS ARE TO GRID, FACE OF STUD, MASONRY, OR DOOR/WINDOW OPENINGS. DIMENSIONS TO OPENINGS ARE NOMINAL. VERIFY ALL OPENINGS WITH ROUGH OPENING REQUIREMENTS.
2. ALL DOOR OPENINGS PERPENDICULAR TO A WALL ARE 4" TO THE WALL FRAMING UNO.
3. SEE SHEET A1-1 FOR WALL TYPES.
4. ALL INTERIOR WALL TYPES ARE I1s UNO.
5. ALL EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.
6. ALL SIGNAGE TO COMPLY WITH IBC SECTION 1110 AND APPLICABLE ICC/ANSI PROVISIONS. SEE SPECIFICATIONS.
7. TOP OF DRAIN AT 99'-10 3/4". SLOPE TO DRAINS 1/8" PER 12" UNO.

LINEWORK LEGEND

NEW ELEMENTS

EXISTING ELEMENTS TO REMAIN

NOT IN PROJECT SCOPE, UNO



3 A3-1 BOLLARD DETAIL
1/2" = 1'-0"

N PLAN N

REGISTERED ARCHITECT MICHAEL W. DOWLING LIC. #9857 STATE OF MONTANA

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FIRST FLOOR PLAN

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: LK

100% CD

A3-1

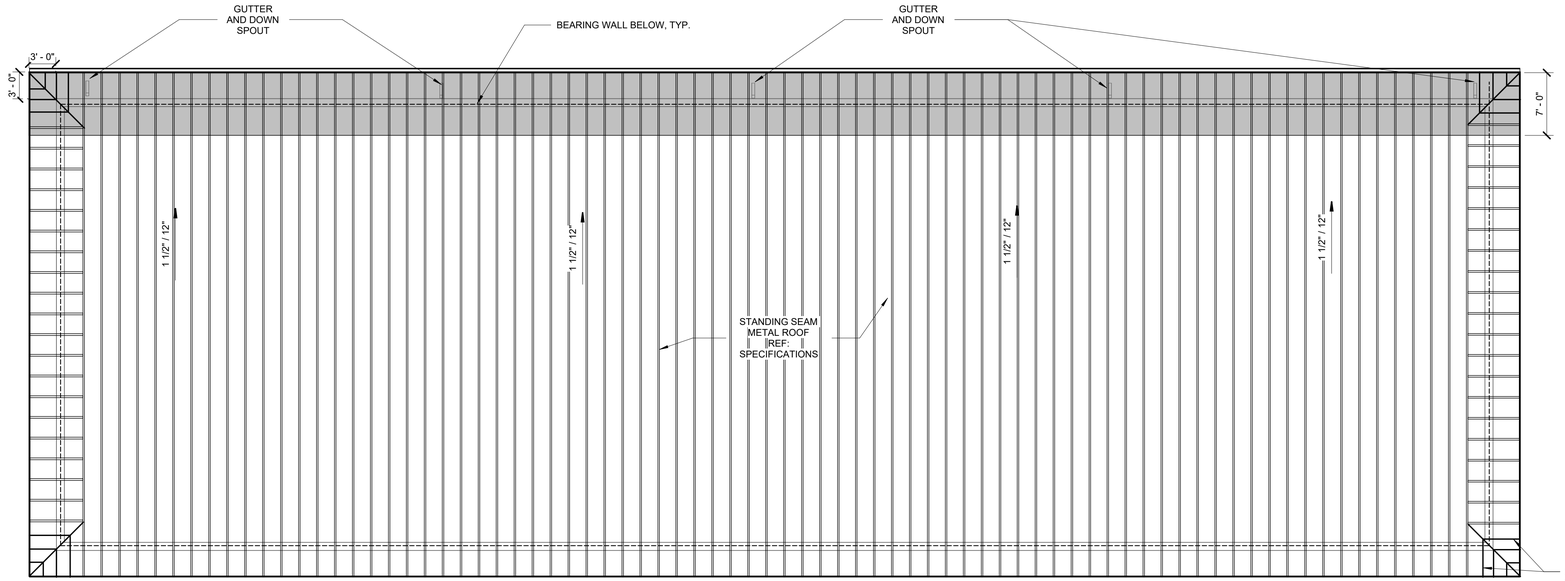
12.21.2023

GENERAL NOTES:

1. DIMENSIONS ARE TO GRID, FACE OF STUD, MASONRY, OR DOOR/WINDOW OPENINGS. DIMENSIONS TO OPENINGS ARE NOMINAL. VERIFY ALL OPENINGS WITH ROUGH OPENING REQUIREMENTS.
2. ALL DOOR OPENINGS PERPENDICULAR TO A WALL ARE 4" TO THE WALL FRAMING UNO.
3. SEE SHEET A1-1 FOR WALL TYPES.
4. ALL INTERIOR WALL TYPES ARE l1s UNO.
5. ALL EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.
6. ALL SIGNAGE TO COMPLY WITH IBC SECTION 1110 AND APPLICABLE ICC/ANSI PROVISIONS. SEE SPECIFICATIONS.
7. TOP OF DRAIN AT 99'-10 3/4". SLOPE TO DRAINS 1/8" PER 12" UNO.

MATERIAL LEGEND

ICE AND WATER SHEILD



1 / A3-2 FIRST FLOOR ROOF PLAN
1/8" = 1'-0" REF:A4-1

N

REGISTERED ARCHITECT
MICHAEL W. DOWLING
LIC. #3857
STATE OF MONTANA

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

DOWLING ARCHITECTS
734 N. Last Chance Gulch | Helena, MT 59601 | 406.457.5470
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ROOF PLAN

PROJECT #: 23-651

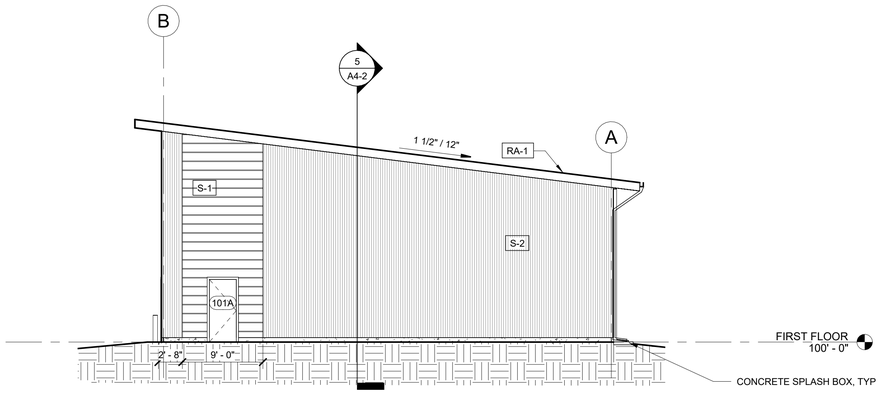
ISSUE DATES:

DRAWN BY: LK

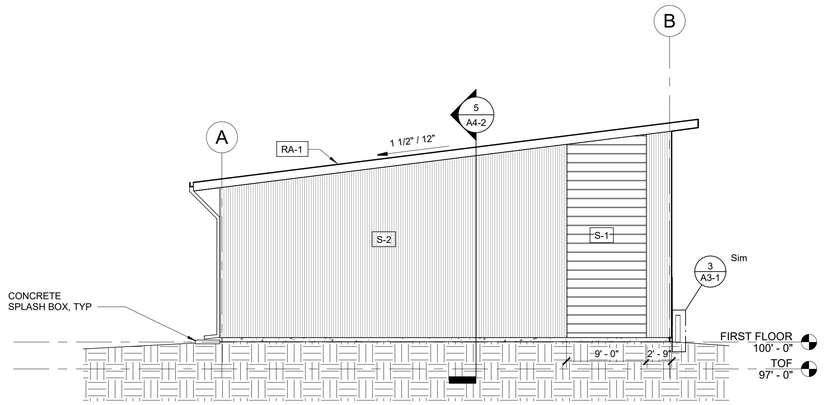
100% CD

A3-2

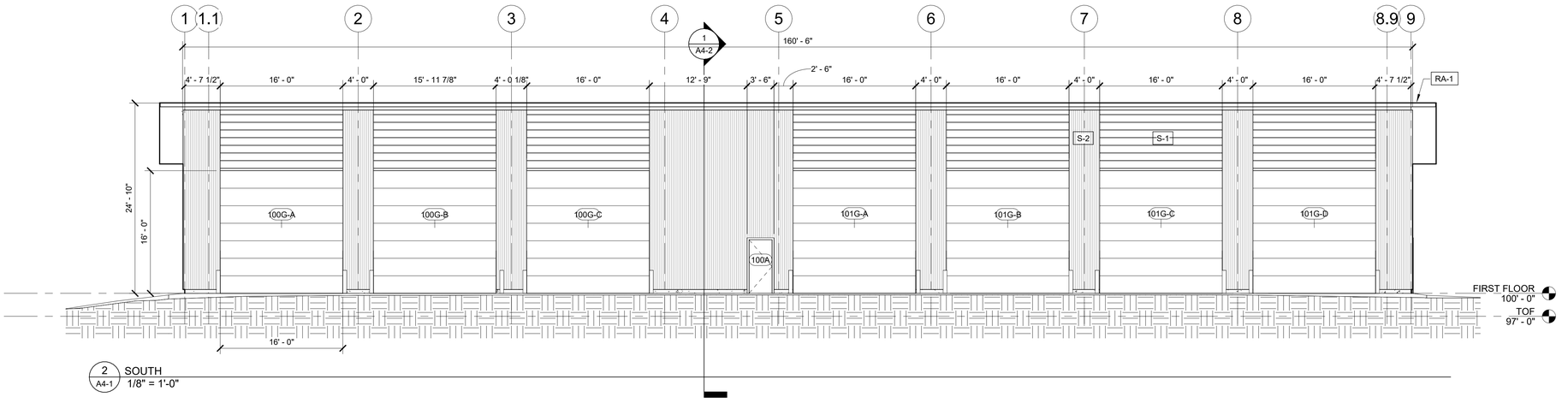
12.21.2023



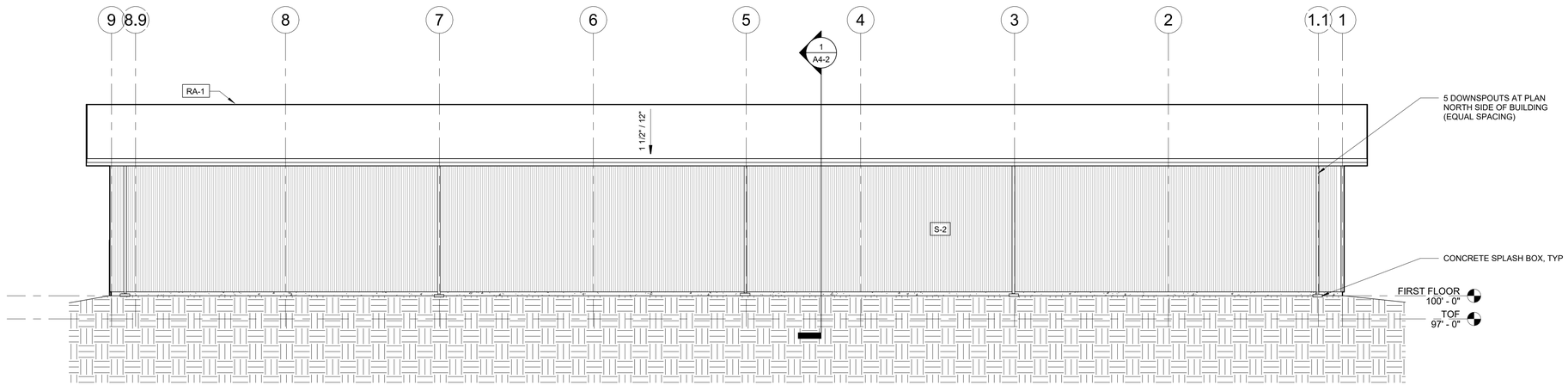
4 A4-1 EAST
1/8" = 1'-0"



3 A4-1 WEST
1/8" = 1'-0"



2 A4-1 SOUTH
1/8" = 1'-0"



1 A4-1 NORTH
1/8" = 1'-0"

EXTERIOR FINISH MATERIALS

S-1 | SIDING 1: REFERENCE 07 4610 METAL SIDING IN SPECS

S-2 | SIDING 2: REFERENCE 07 4610 METAL SIDING IN SPECS

REGISTERED ARCHITECT
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EXTERIOR ELEVATIONS

PROJECT #: 23-651

ISSUE DATES:

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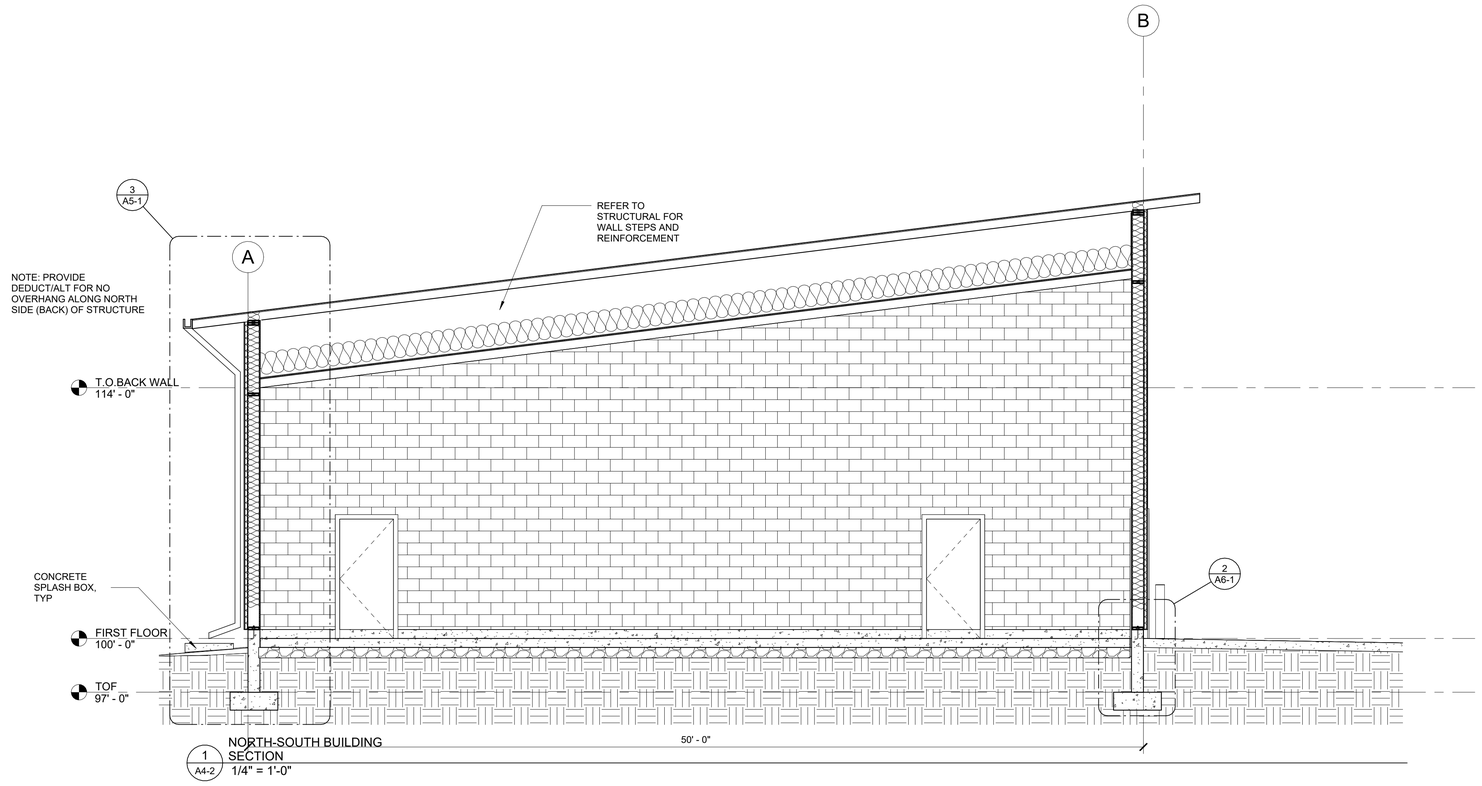
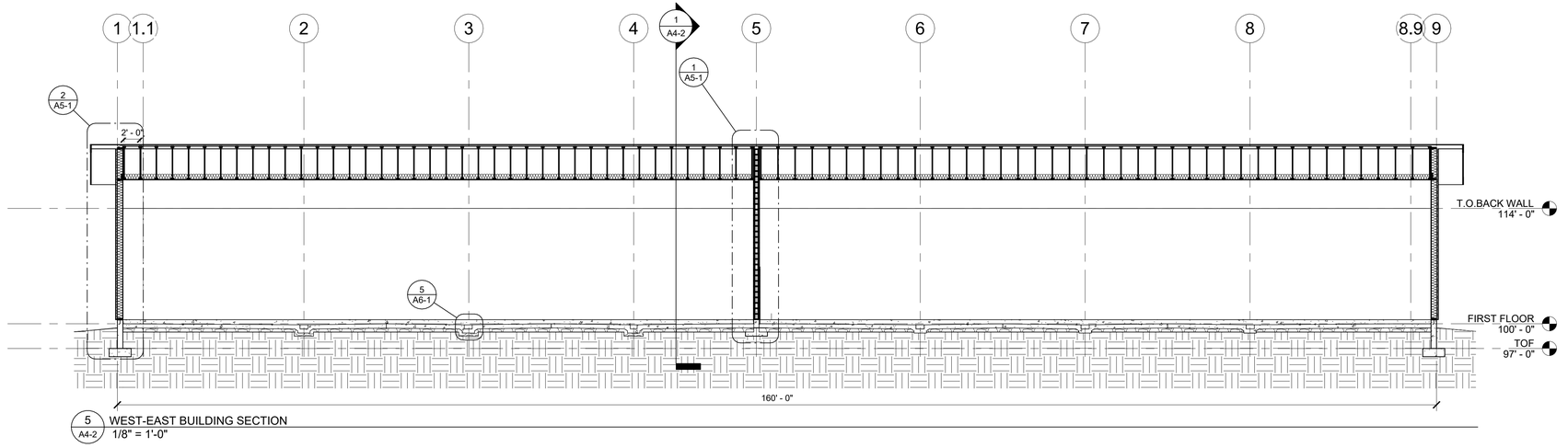
BUILDING SECTIONS ARE SHOWN TO PROVIDE A GENERAL OVERALL SECTION OF THE ENTIRE BUILDING. THEY ARE NOT SHOWN IN DETAIL & DO NOT SHOW ALL CONDITIONS, INCLUDING INSULATION. THE BUILDING ENVELOPE SHALL INCLUDE AN UNINTERRUPTED INSULATION BARRIER. SEE WALL SECTIONS & DETAILS FOR MORE INFORMATION.





REGISTERED ARCHITECT
MICHAEL W. DOWLING
LIC. #9857
STATE OF MONTANA

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

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734 N Last Chance Gulch | Helena, MT 59601 | 406.457.5470
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BUILDING SECTIONS AND DETAILS

PROJECT #: 23-651

ISSUE DATES:

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A4-2

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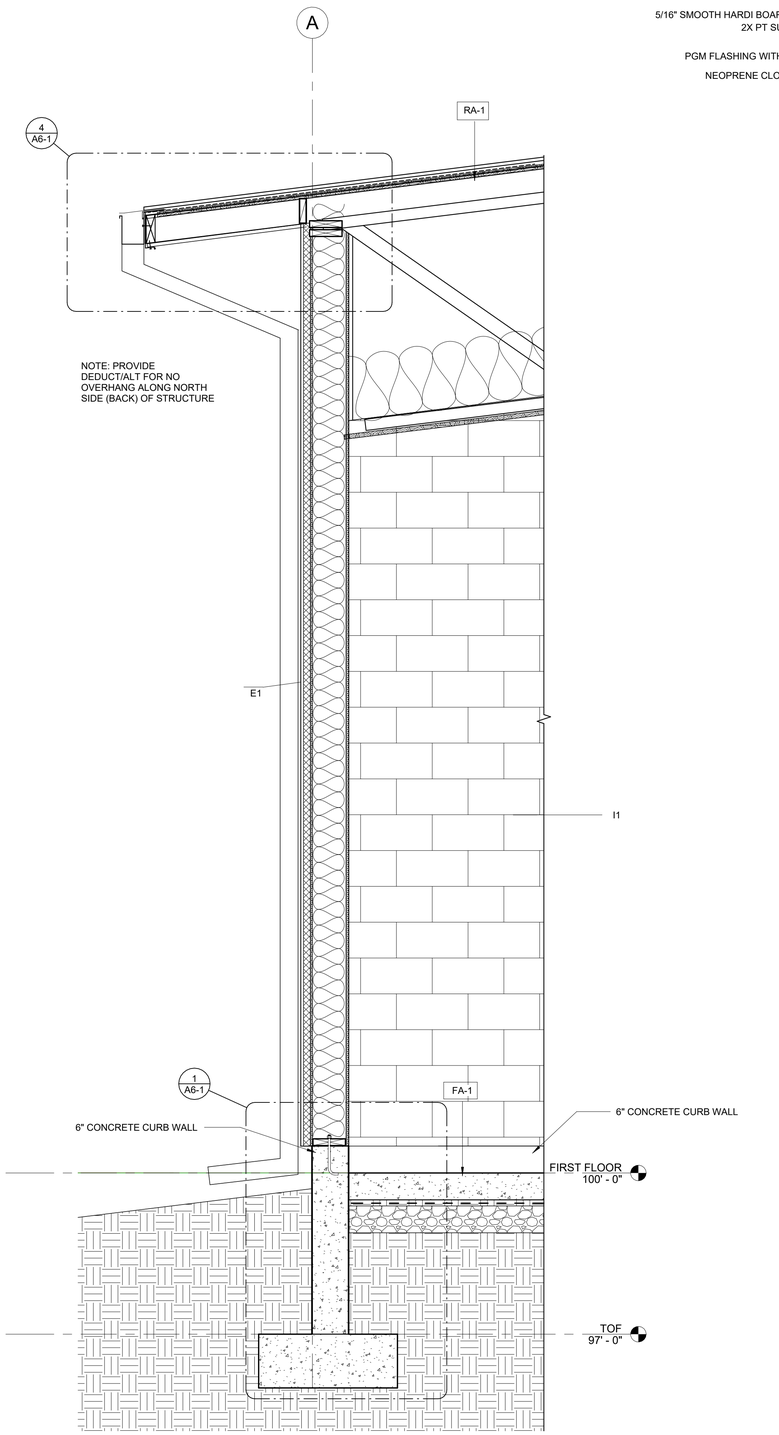
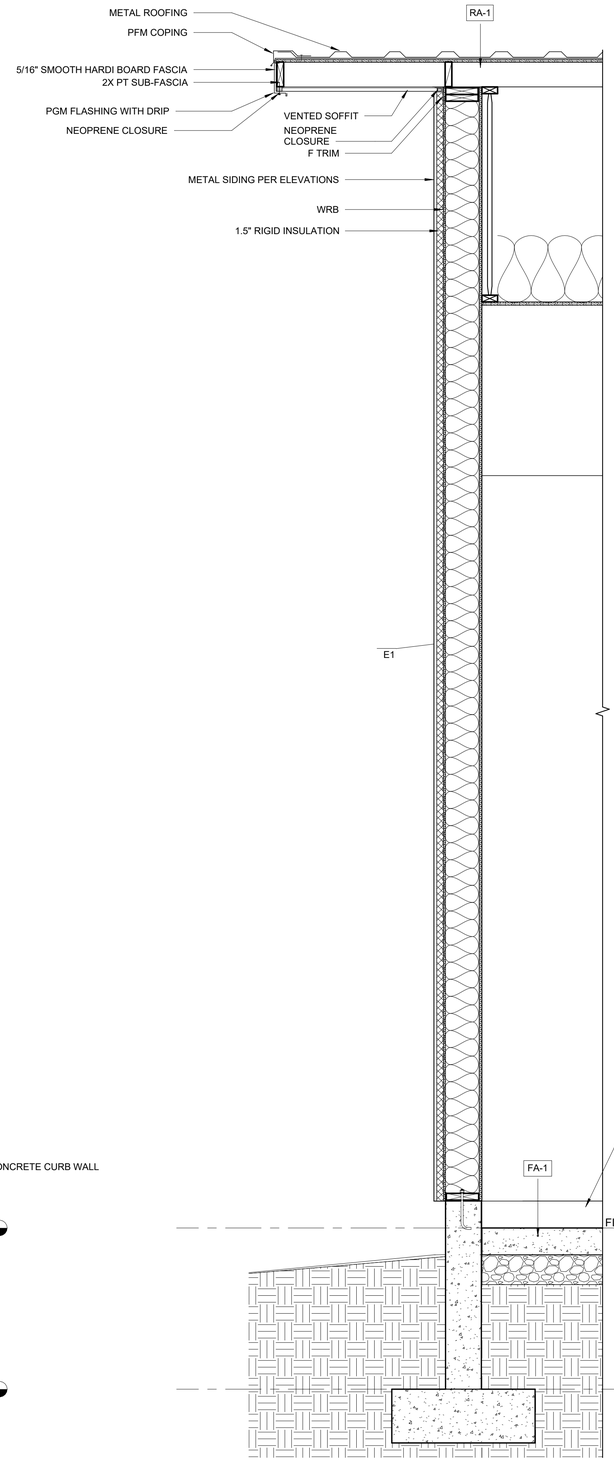
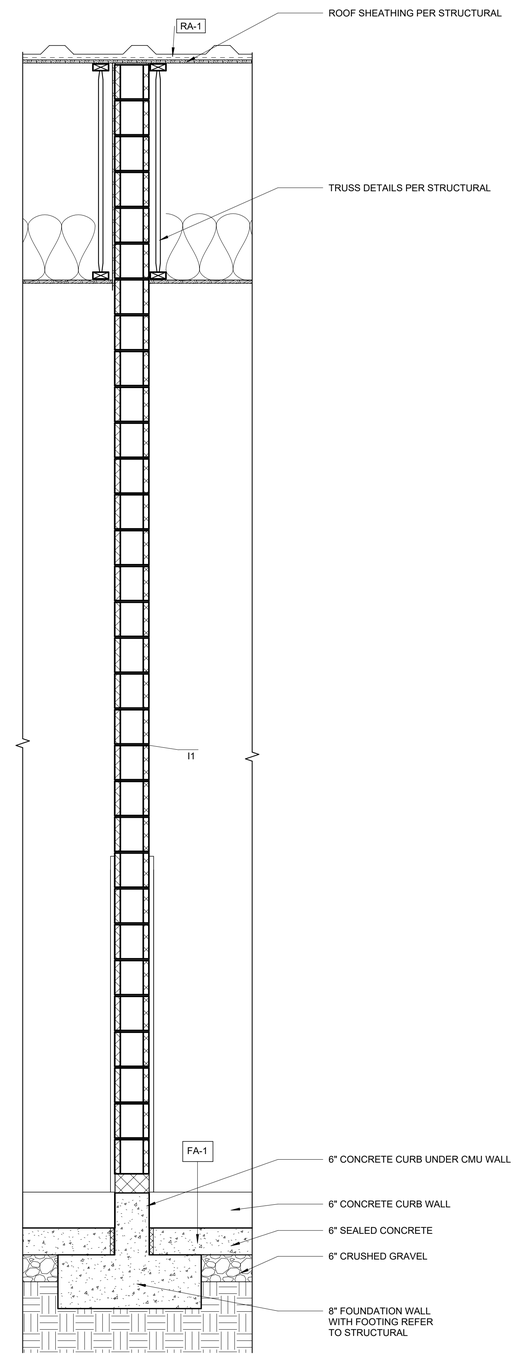


3 A5-1 PLAN NORTH WALL SECTION
3/4" = 1'-0"



2 A5-1 PLAN WEST WALL SECTION
3/4" = 1'-0"



1 A5-1 3 HR FIRE SEPARATION WALL SECTION
3/4" = 1'-0"

REGISTERED ARCHITECT
MICHAEL W.
DOWLING
LIC. #9857
STATE OF MONTANA

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WALL SECTIONS

PROJECT #: 23-651

ISSUE DATES:

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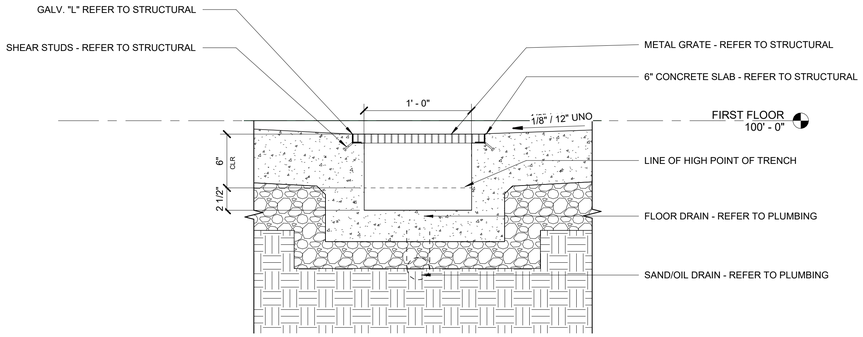
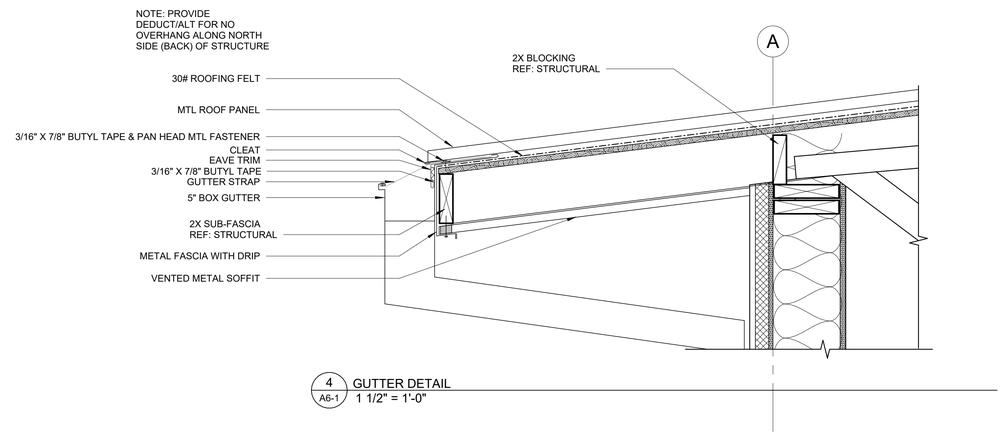
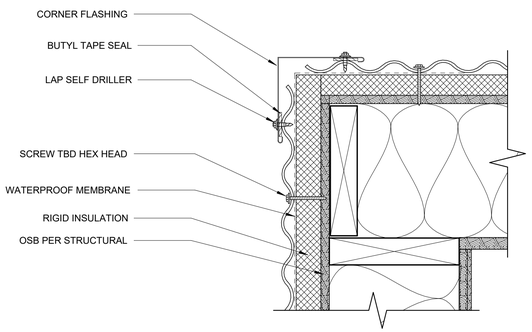


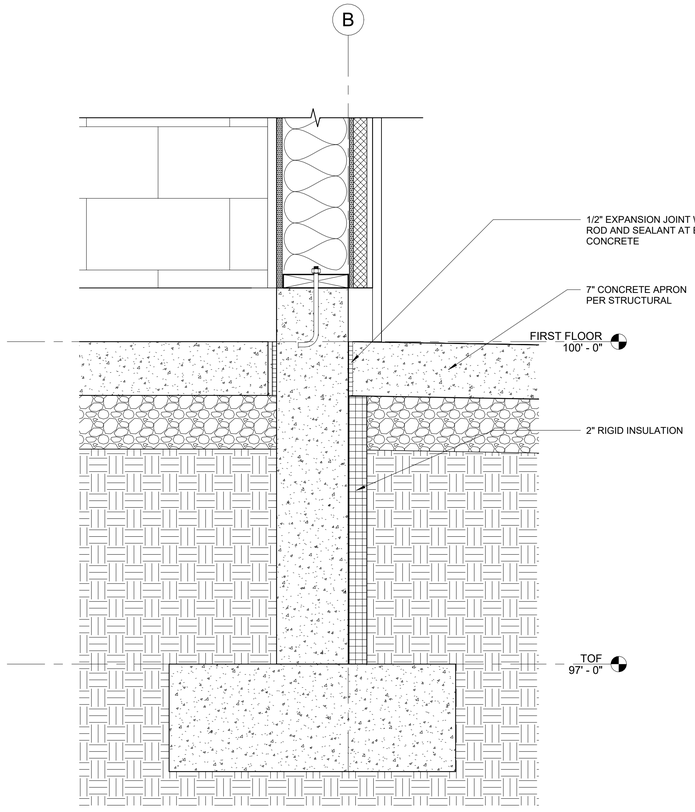
5 A6-1 TRENCH DRAIN DETAIL
1 1/2" = 1'-0"



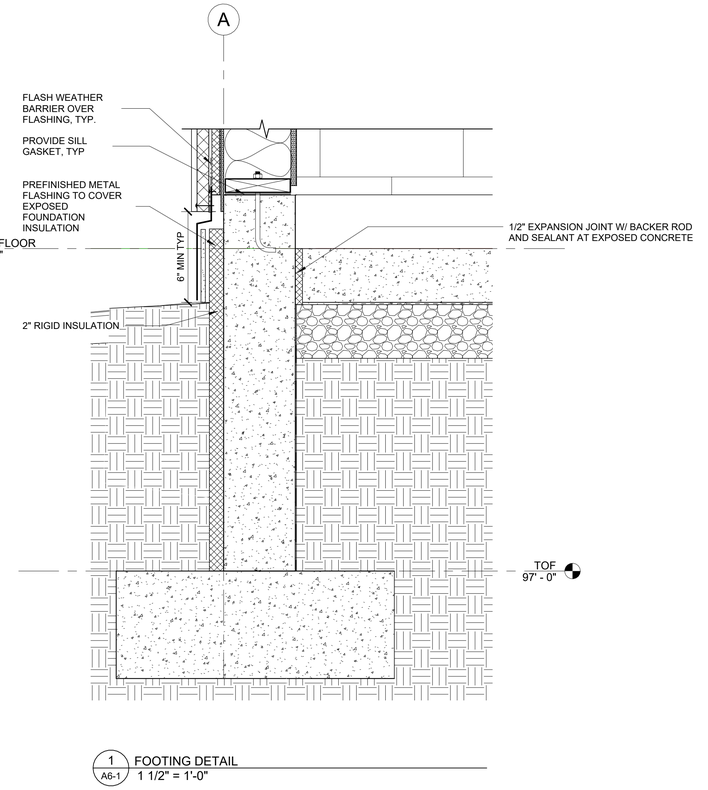
4 A6-1 GUTTER DETAIL
1 1/2" = 1'-0"



3 A6-1 CORNER SIDING DETAIL
3" = 1'-0"



2 A6-1 ENTRY WALL AT APRON
1 1/2" = 1'-0"



1 A6-1 FOOTING DETAIL
1 1/2" = 1'-0"

MICHAEL W. DOWLING
LIC. #9857
REGISTERED ARCHITECT
STATE OF MONTANA

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DOWLING ARCHITECTS
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EXTERIOR DETAILS

PROJECT #: 23-651

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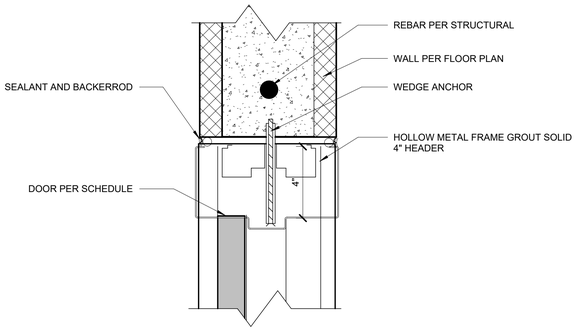
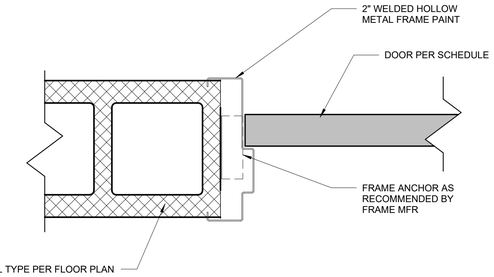
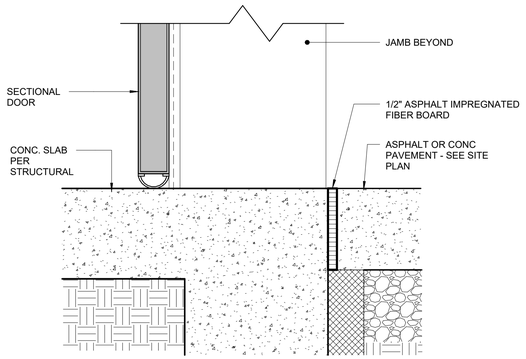


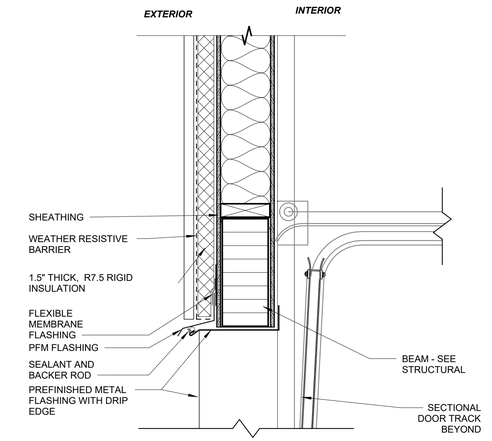
8 A6-2 INTERIOR - DOOR HEAD DETAIL
3" = 1'-0"



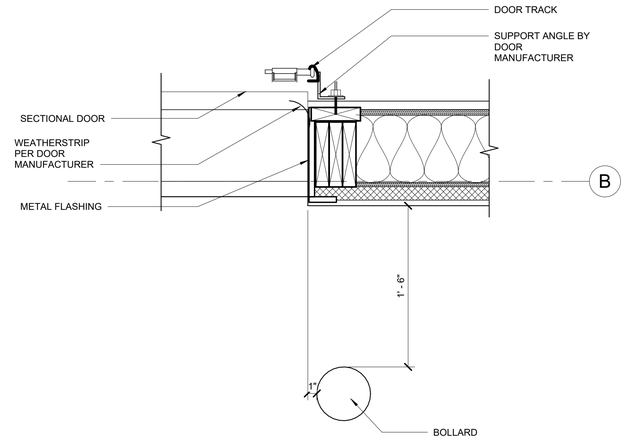
7 A6-2 INTERIOR HM DOOR JAMB at CMU WALL
3" = 1'-0"



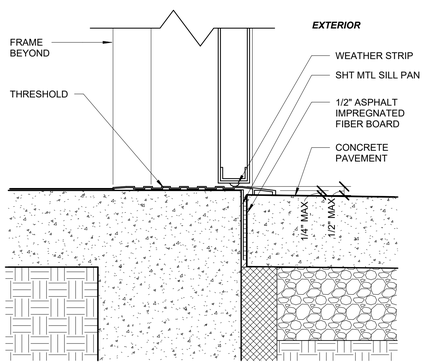
6 A6-2 OH DOOR THRESHOLD
3" = 1'-0"



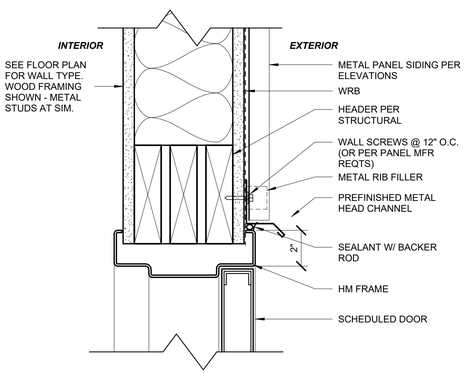
5 A6-2 OH DOOR HEAD
1 1/2" = 1'-0"



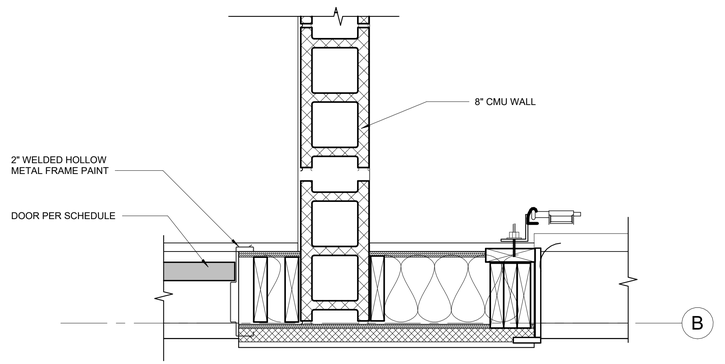
9 A6-2 OH DOOR PLAN DETAIL
1 1/2" = 1'-0"



3 A6-2 EXTERIOR STEEL DOOR AT THRESHOLD
3" = 1'-0"



2 A6-2 EXTERIOR DOOR HEAD @ WOOD STUD
3" = 1'-0"



1 A6-2 3 HR WALL INTERSECT 2X8 EXTERIOR
1 1/2" = 1'-0"

DOWLING ARCHITECTS
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Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

DETAILS - DOORS

PROJECT #: 23-651

ISSUE DATES:

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A6-2

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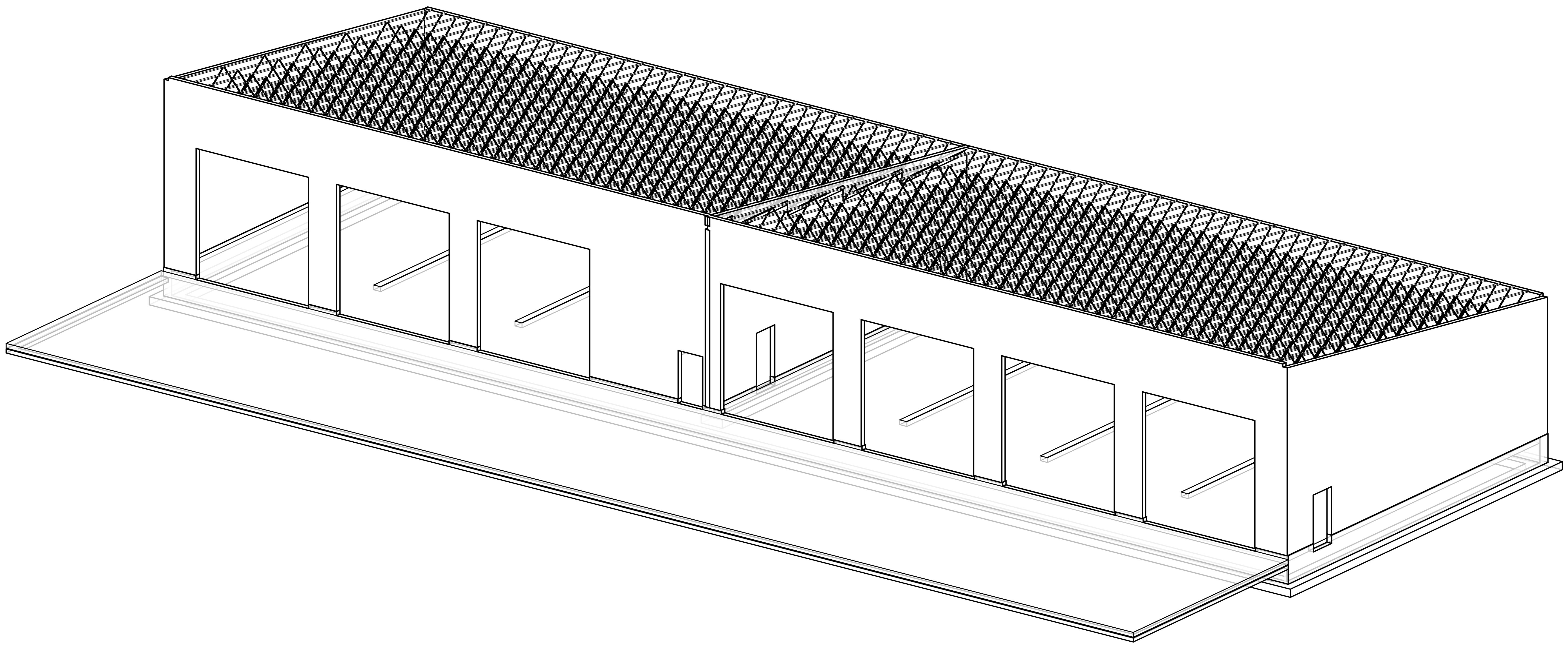

JOHN MATUSZEWSKI
No. 90542PE
LICENSED
PROFESSIONAL ENGINEER
MONTANA

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

McNAMARA · SALVIA
STRUCTURAL ENGINEERS
101 Federal St, 11th Floor
Boston, MA 02110 USA
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DOWLING ARCHITECTS
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COVER SHEET

PROJECT #:
2023230.000

ISSUE DATES:

DRAWN BY:

100% CD

S0-0

12.21.2023

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF 2021 INTERNATIONAL BUILDING CODE.
2. VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO COMMENCING WORK. WHERE DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION COULD AFFECT THE NEW CONSTRUCTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE FIELD MEASUREMENTS IN TIME FOR THEIR INCORPORATION IN THE SHOP DRAWINGS. NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES THAT MAY EXIST.
3. SEE ARCHITECTURAL DRAWINGS FOR FLOOR ELEVATIONS, SLOPES, LOCATIONS OF DEPRESSED FLOOR AREAS, AND FLOOR OPENINGS. COMPARE THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL DRAWINGS AND REPORT ANY DISCREPANCY TO THE ARCHITECT AND ENGINEER PRIOR TO CONSTRUCTION.
4. PROVIDE ALL OPENINGS REQUIRED BY THE MECHANICAL, ELECTRICAL, OR PLUMBING TRADES, WHETHER SHOWN OR NOT SHOWN IN THE STRUCTURAL DRAWINGS. ANY DEVIATION FROM THE OPENINGS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR REVIEW.
5. FURNISH AND PLACE ALL SUPPORTS, TEMPORARY AND PERMANENT, WHETHER SHORING, BRACING, NEEDLING, UNDERPINNING, OR SHEET PILING, NECESSARY TO BRACE EXISTING WALLS OR FRAMING TO REMAIN, SO THAT NO HORIZONTAL OR VERTICAL SETTLEMENT OCCURS TO THE EXISTING STRUCTURES. MAINTAIN TEMPORARY SUPPORTS IN PLACE UNTIL PERMANENT SUPPORTS ARE INSTALLED. DESIGN OF THESE SUPPORTS SHALL BE BY A REGISTERED STRUCTURAL ENGINEER IN THE STATE OF MONTANA IN THE EMPLOY OF THE CONTRACTOR.
6. INCLUDE WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES.
7. THE SAFETY OF ADJACENT STRUCTURES, PROPERTY, HIS WORKMEN, AND THE PUBLIC, AS AFFECTED BY THE CONSTRUCTION OF THIS PROJECT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. ALL CONTRACTORS ARE REQUIRED TO EXAMINE THE DRAWINGS AND SPECIFICATIONS CAREFULLY, VISIT THE SITE AND FULLY INFORM THEMSELVES AS TO ALL EXISTING CONDITIONS AND LIMITATIONS, PRIOR TO AGREEING TO PERFORM THE WORK. FAILURE TO VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND LIMITATIONS WILL IN NO WAY RELIEVE THE CONTRACTOR FROM FURNISHING ANY MATERIALS OR PERFORMING ANY WORK IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS WITHOUT ADDITIONAL COST TO THE OWNER.
9. STRUCTURAL DRAWINGS MAY REPRESENT CONSTRUCTION WITH A REFERENCE SCALE. DUE TO THE INHERENT PROCESS OF DRAWING DEVELOPMENT AND PRESENTATION NOT ALL WORK MAY BE SHOWN "EXACT" IN THAT SCALE. DO NOT "SCALE" DRAWINGS TO OBTAIN ANY MISSING INFORMATION OR TO INTERPRET ANY INFORMATION NOT SPECIFICALLY DIMENSIONED FOR "EXACT" DETAILING OR CONSTRUCTION PURPOSES.
10. THE CONTRACT DOCUMENTS REPRESENT FINAL CONDITIONS. STABILITY OF THE STRUCTURE DURING CONSTRUCTION AND MEANS AND METHODS THAT IMPOSE TEMPORARY LOADING CONDITIONS ON THE INCOMPLETE STRUCTURE IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES, BUT IS NOT LIMITED TO, THE DESIGN AND FURNISH
OF ANY TEMPORARY SUPPORTS, SHORING, AND/OR BRACING REQUIRED FOR THE SAFETY AND STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

DESIGN LOADS

Design Code: ASCE 7 -16		
Occupancy Risk category: II		
Snow Loads	Ground snow load, pg	30psf
	Flat roof snow load, p=0.7(Ce)(Ct)(Is)(pg)	30psf
	Snow exposure factor, Ce	1.0
	Thermal factor, Ct	1.0
	Snow load importance factor, I	1.0
	Snow drift conditions in accordance with Section 1608.0	
Wind Loads	Ultimate Design wind speed (3-Second gust), V_{ult}	107 mph
	Nominal Design Wind Speed, V_{asd}	87 mph
	Wind exposure	C
	Design wind pressures for main wind force resisting system in accordance with ASCE 7 Chapter 27	
	Design wind pressures on components and cladding in accordance with ASCE 7 Chapter 30 – See *Components and Cladding Table*	
Earthquake Loads	Seismic importance factor, I	1
	Spectral response acceleration, Ss	0.720
	Spectral response acceleration, S1	0.200
	Long-period transitional period, T	6 sec
	Site class	C
	Design spectral response coefficient, Sds	0.520
	Design spectral response coefficient, Sd1	0.190
	Seismic design category	D
	Basic seismic force resisting system	
	Special Reinforced Masonry Shear Walls Light Framed Shear Walls (E-W) Special Reinforced Masonry Shear Walls (N-S)	
	Seismic base shear	15k (E-W) 20k (N-S)
	Seismic response coefficient, Cs	0.080 (E-W) 0.100 (N-S)
	Response modification factor, R	6.50 (E-W) 5.00 (N-S)
	Analysis procedure: Equivalent Lateral Force	

SUBMITTAL REVIEW:

1. REVIEW OF CONTRACTOR SUBMITTALS SUCH AS SHOP DRAWINGS, PRODUCT DATA AND SAMPLES IS FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH INFORMATION GIVEN AND THE DESIGN CONCEPT EXPRESSED IN THE CONTRACT DOCUMENTS. REVIEW OF SUCH SUBMITTALS IS NOT FOR THE PURPOSE OF DETERMINING THE ACCURACY AND COMPLETENESS OF OTHER INFORMATION SUCH AS DIMENSIONS, QUANTITIES, AND INSTALLATION OR PERFORMANCE OF EQUIPMENT OR SYSTEMS, WHICH ARE THE CONTRACTOR'S RESPONSIBILITY. OUR REVIEW SHALL NOT CONSTITUTE APPROVAL OF SAFETY PRECAUTIONS OR, UNLESS OTHERWISE SPECIFICALLY STATED IN THE CONTRACT DOCUMENTS, OF ANY CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES. APPROVAL OF A SPECIFIC ITEM SHALL NOT INDICATE APPROVAL OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT.
2. SUBMITTALS AND SHOP DRAWINGS ARE THE PROPERTY OF THE CONTRACTOR.
3. SUBMITTALS WILL NOT BE REVIEWED UNLESS FIRST REVIEWED BY THE CONTRACTOR AND INDICATED AS SUCH ON THE SUBMITTAL.
4. REVIEW IS LIMITED ONLY TO THOSE ELEMENTS LISTED ON THE TRANSMITTAL THAT ARE INDICATED AS BEING SUBMITTED FOR APPROVAL, EVEN IF OTHER ELEMENTS ARE INCLUDED (E.G., A FABRICATOR'S MODEL OR ERECTION PLAN). CHANGES TO PREVIOUSLY REVIEWED ELEMENTS ARE NOT REVIEWED UNLESS REQUESTED AS REVISE AND RESUBMIT OR UNLESS A DESIGN CHANGE BULLETIN CREATES A CHANGE TO THE ELEMENT. IN THE EVENT OF A CHANGE BULLETIN, ONLY THOSE ELEMENTS AFFECTED BY THAT BULLETIN AND WHICH ARE CLEARLY INDICATED AS A CHANGE BY CLOUDS, OR SIMILAR DISTINGUISHING MEANS, ARE REVIEWED.
5. SUBMITTALS SENT "FOR RECORD" OR "FOR FIELD USE" ARE NOT REVIEWED.
6. STRUCTURAL SUBMITTALS ARE ELEMENTS DESIGNED BY THE ENGINEER OF RECORD AND SHOWN INTHE CONTRACT DOCUMENTS AND THEY ARE REVIEWED IN ACCORDANCE WITH NOTE 1.
7. STRUCTURAL DELEGATED DESIGN SUBMITTALS ARE REVIEWS OF ELEMENTS WHERE THE CONTRACT DOCUMENTS SPECIFICALLY REQUIRE THE CONTRACTOR TO PROVIDE PROFESSIONAL DESIGN SERVICES OR CERTIFICATIONS BY A DESIGN PROFESSIONAL RELATED TO SYSTEMS, MATERIALS OR EQUIPMENT AND THE CONTRACT DOCUMENTS SPECIFY THE APPROPRIATE PERFORMANCE AND DESIGN CRITERIA THAT SUCH SERVICES MUST SATISFY. SUBMITTALS AND SHOP DRAWINGS THAT BEAR THE DELEGATED PROFESSIONAL'S SEAL AND SIGNATURE WILL BE REVIEWED FOR CONFORMANCE WITH THE DESIGN CRITERIA. THE ENGINEER SHALL BE ENTITLED TO RELY UPON THE ADEQUACY, ACCURACY AND COMPLETENESS OF THE SERVICES, CERTIFICATIONS AND APPROVALS PERFORMED OR PROVIDED BY THE DELEGATED DESIGN PROFESSIONAL.
8. NON-STRUCTURAL COMPONENT SUBMITTALS ARE REVIEWED FOR THE EFFECT ON STRUCTURE ONLY. INDICATE COMPONENT LOADS ON THE STRUCTURE DIRECTLY ON THE SUBMITTAL. THE DESIGN OF THE COMPONENTS IS NOT REVIEWED. COMMENTS ARE LIMITED TO THE EFFECT ON THE BUILDING STRUCTURE. THE ENGINEER SHALL BE ENTITLED TO RELY UPON THE ADEQUACY, ACCURACY AND COMPLETENESS OF THE CALCULATIONS AND/OR LOADING INFORMATION PROVIDED.
9. MODEL SUBMITTAL REVIEW ELEMENTS ARE REVIEWED PARAMETRICALLY IN THE MODEL SENT BY THE CONTRACTOR. STATUS UPDATES AND COMMENTS ARE SUBMITTED AS DATA VIA XML FILE, A PDF SUMMARY OF WHICH IS PROVIDED WITH THE SUBMITTAL RETURN TRANSMISSION. IN THE EVENT OF A DISCREPANCY BETWEEN THE XML FILE AND THE PDF SUMMARY, THE PDF WILL GOVERN.
10. RESUBMISSIONS OF ERECTION DRAWINGS ARE USED FOR PIECE MARKS REFERENCE ONLY AND ARE NOT REVIEWED, EXCEPT WHERE CHANGES HAVE BEEN EXPLICITLY NOTED AND CLOUDED.

LOADING SCHEDULE

Occupancy	Superimposed Dead Load (psf)	Live Load (psf) [Snow Load]	Live Load Reduction	Concentrated Load (lbs)
Storage (light)	15	125	No	
Stairs	15	100	No	
Elevator machine rooms	15	75+Equip but not less than 150	No	
Roof	15	20	No	300, on 6in²
Offices lobbies and 1st floor corridors	25	100	Yes	2000
Corridors above 1st floor	25	80	Yes	2000

WIND LOADS - COMPONENTS & CLADDING TABLE (PSF)

Effective Wind Area (ft²)	Roof								Wall			
	Zone 1'		Zone 1		Zone 2		Zone 3		Zone 4		Zone 5	
	Interior		Interior		Edge		Corner		Interior		Corner	
10	19.8	-33.9	19.8	-52.5	19.8	-66.5	19.8	-87.6	36.2	-38.5	36.2	-45.5
20	19.1	-33.9	19.1	-49.6	19.1	-62.8	19.1	-80.1	34.9	-37.3	34.9	-43.0
50	18.2	-33.9	18.2	-45.8	18.2	-57.9	18.2	-70.3	33.3	-35.6	33.3	-39.8
100	17.5	-33.9	17.5	-42.9	17.5	-54.2	17.5	-62.8	32.1	-34.4	32.1	-37.3

NOTES:
1. COMPONENTS & CLADDING WIND PRESSURES VARY BASED UPON EFFECTIVE WIND AREA. THE COMPONENT & CLADDING DESIGNER SHALL EMPLOY A REGISTERED PROFESSIONAL ENGINEER TO CALCULATE APPROPRIATE DESIGN VALUE FOR APPLICABLE EFFECTIVE AREA FOR EACH COMPONENT AND/OR SYSTEM IN ACCORDANCE WITH ASCE 7, CHAPTER 30.
2. DESIGN PRESSURE FOR COMPONENTS & CLADDING SHALL NOT BE LESS THAN 16 PSF (ULTIMATE WIND PRESSURE) ACTING IN EITHER DIRECTION NORMAL TO THE SURFACE.
3. MULTIPLY VALUES BY 0.6 FOR SERVICE LEVEL WIND PRESSURES.
4. POSITIVE AND NEGATIVE VALUES SIGNIFY PRESSURES ACTING TOWARDS AND AWAY FROM SURFACES, RESPECTIVELY.

FOUNDATIONS:

1. PLACE ALL FOOTINGS ON UNDISTURBED SOIL OR COMPACTED ENGINEERED FILL. ALLOWABLE BEARING PRESSURE IS 3,000 POUNDS PER SQUARE FOOT (PER THE RECOMMEDIATIONS PROVIDED BY GALLATIN COUNTY ROAD AND BRIDGE FINAL GEOTECHNICAL ENGINEERING REPORT DATED DECEMBER 2023. ELEVATIONS, IF GIVEN, ARE THE TOP OF THE FOOTINGS, ARE MINIMUM DEPTHS, AND ARE NOT TO BE CONSTRUED AS LIMITING IN ANY WAY THE DEPTH OF EXCAVATION REQUIRED TO REACH GOOD BEARING OR FROST DEPTH.
2. STRUCTURAL EOR IS NOT RESPONSIBLE FOR ADEQUACY OF ACTUAL SOILS TO CARRY THE DESIGN BEARING LOAD. IT IS RECOMMENDED THE BLDG OWNER CONSULT W/ A GEOTECH ENGINEER TO VERIFY EXIST SOIL CAPACITY
3. FINISH ALL FOOTING EXCAVATIONS BY HAND.
4. DO NOT PLACE FOUNDATIONS IN WATER OR ON FROZEN GROUND.
6. CENTER ALL FOUNDATIONS AND BUTTRESSES UNDER SUPPORTED MEMBERS UNLESS OTHERWISE NOTED.
7. CAREFULLY FOLLOW THE REQUIREMENTS OF THE SPECIFICATIONS FOR BACK FILL UNDER OR ADJACENT TO ANY PORTION OF THE BUILDING.
8. WHERE FOUNDATION ELEMENTS ARE TO HAVE FILL ON BOTH SIDES, FILL EACH SIDE SIMULTANEOUSLY, MAINTAINING A COMMON ELEVATION.
9. COORDINATE UNDER FLOOR DRAIN REQUIREMENTS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND THE REQUIREMENTS OF THE GEOTECHNICAL ENGINEER.
10. PROVIDE CONTINUOUS CONTROL OF SURFACE AND UNDERGROUND WATER AS REQUIRED DURING CONSTRUCTION SUCH THAT THE WORK IS DONE IN THE DRY. HOWEVER, INSURE THAT GROUND WATER LEVELS UNDER ADJACENT STRUCTURES ARE NOT LOWERED BY SELECTED CONSTRUCTION TECHNIQUES. ADDITIONALLY, IF SO DIRECTED BY NOTES IN THE PLANS, CONTINUE TO MAINTAIN A CONDITION OF NO HYDROSTATIC PRESSURE UNTIL SUFFICIENT BUILDING WEIGHT IS IN PLACE TO PREVENT FLOTATION OF ANY PART OF THE STRUCTURE.

CONCRETE:

1. CONFORM ALL CONCRETE WORK TO THE 2019 EDITION OF THE ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND THE IBC CODE. IN CASE OF CONFLICT, THE IBC GOVERNS.
2. ALL CONCRETE SHALL BE CONTROLLED CONCRETE, MIXED AND PLACED UNDER THE SUPERVISION OF AN APPROVED CONCRETE TESTING AGENCY.
3. PROVIDE NORMAL WEIGHT CONCRETE, UNLESS OTHERWISE NOTED, WITH SAND AND GRAVEL AGGREGATE, WITH TYPE I OR TYPE II PORTLAND CEMENT, AND WITH THE MINIMUM COMPRESSIVE STRENGTH (F'C) IN 28 DAYS OF 4,000PSI TABLE (UNO).
4. PROVIDE AND AIR ENTRAINMENT ADMIXTURE FOR ALL CONCRETE EXPOSED TO THE WEATHER OR POSSIBLE FREEZE/THAW ACTION. AIR CONTENT TO BE 6% ± 1 1/2%.
5. PROPORTION ALL CONCRETE FOR A MAXIMUM ALLOWABLE UNIT SHRINKAGE OF 0.03% MEASURED AT 28 DAYS AFTER CURING IN LIME WATER AS DETERMINED BY ASTM C 157 (USING AIR STORAGE).
6. CONSTRUCTION JOINT LOCATIONS OTHER THAN SHOWN ON THE DRAWINGS ARE PERMITTED SUBJECT TO PRIOR APPROVAL OF THE ENGINEER. EXPANSION JOINT AND CONTROL JOINT LOCATIONS ARE MANDATORY AS SHOWN. SUBMIT DRAWINGS SHOWING INTENDED PLACING SEQUENCES AND LOCATIONS OF CONSTRUCTION JOINTS TO THE ENGINEER FOR APPROVAL.
7. ALL KEYS SHALL BE 2" X 4" (NOMINAL) UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
8. BEGIN PLACEMENT OF CONCRETE CAST ON SLOPED SURFACES AT THE LOWEST ELEVATION AND CONTINUE MONOLITHICALLY TOWARD THE HIGHER ELEVATIONS UNTIL THE INTENDED POUR IS COMPLETED.
9. DO NOT CAST CONCRETE BEFORE OBTAINING REVIEW AND APPROVAL OF THE REINFORCING AND EMBEDDED ITEMS FROM THE SPECIAL INSPECTOR.
10. CHAMFER ALL EXPOSED EDGES OF CONCRETE MEMBERS 3/4" UNLESS SHOWN OTHERWISE ON ARCHITECTURAL DRAWINGS.
11. CONCRETE MUST REACH THE FOLLOWING PERCENTAGES OF ITS 28-DAY COMPRESSIVE STRENGTH (F'C) BEFORE FORMS OR SHORES MAY BE REMOVED: COLUMNS....40% (1500PSI MIN)
12. REFER TO ARCHITECTURAL DRAWINGS FOR CONCRETE FINISHES. WHERE FINISH IS NOT SPECIFIED, CONFORM TO REQUIREMENTS OF ACI 301 - "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS."
13. SEE ARCHITECTURAL DRAWINGS FOR DOOR AND WINDOW OPENINGS, DRIPS, WASHES, REGLETS, CONCRETE FINISHES, MASONRY ANCHORS, AND FOR MISCELLANEOUS EMBEDDED PLATES, BOLTS, ANCHORS, ANGLES, ETC.
14. THE PLACEMENT OF SLEEVES, OUTLET BOXES, BOX-OUTS, ANCHORS, ETC., FOR THE MECHANICAL, ELECTRICAL AND PLUMBING TRADES IS THE RESPONSIBILITY OF THE TRADE INVOLVED. HOWEVER, ANY BOX-OUTS NOT COVERED BY TYPICAL DETAILS IN THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.
14. AT SLABS ON GRADE, AFTER FLOATING, BEGIN FIRST TROWEL OPERATION USING A POWER-DRIVEN TROWEL. BEGIN FINAL TROWELING WHEN SURFACE PRODUCES A RINGING SOUND AS TROWEL IS MOVED OVER SURFACE. CONSOLIDATE CONCRETE SURFACE BY FINAL HAND-TROWELING OPERATION, FREE OR TROWEL MARKS, UNIFORM IN TEXTURE AND APPEARANCE. FLATNESS NUMBER FOR THE FLOOR SURFACE TO BE (FF) NOT LESS THAN 25 AND LEVELNESS NUMBER (FL) NOT LESS THAN 15. GRIND SMOOTH SURFACE DEFECTS, WHICH COULD TELEGRAPH THROUGH APPLIED FLOOR COVERING SYSTEM. 80% OR MORE OF THE FLOOR SURFACE PROFILE SHALL FALL WITHIN A PLUS OR MINUS ¼" ENVELOPE WITHIN ANY 10'-0' LENGTH AT THE TIME OF TESTING.

15. Admixtures:
    - A. General: Unless specified, no admixtures may be used without specific approval of the Structural Engineer.
    - B. Prohibited Products: Calcium chloride or admixtures containing maore than 0.05% chloride ions or thiocyanates are not permitted.
    - C. Air - Entraining Admixture: ASTM C260:
        - a. Subject to compliance with requirements, provide one of the following:
            1. "Air Mix" - Euclid Chemical Co.
            2. "Daravair" - W.R. Grace
            3. "MB-VR" or "MB-AE" - Master Builders
    - D. Water Reducing Admixture: ASTM C494, Type A:
        - a. Subject to compliance with requirements, provide one of the following:
            1. "Econ WR-75" - Euclid Chemical Co
            2. "Pozzolith 200N" - Master Builders
            3. "Plastocrete 161" - Sika Chemical Co.
            4. "WRDA" - W.R. Grace & Co.
    - E. High-Range Water Reducing Admixture (Superplasticizer):ASTM C494, TypeF or G:
        - a. Subject to compliance with requirements, provide one of the following:
            1. "Eucon 37" - Euclid Chemical Co.
            2. "Pozzolith 400N" - Mater Builders
            3. "Sikament" - Sika Chemical Co.
            4. "Daracem" - W.R. Grace & Co.
    - F. Non-Corosive, Non-Chloride Accelerator: ASTM C494, Type C or E. The Admixture Manufacturer must have long-term , non-corrosive test data (of at least a years duration) using an acceptable accelerated corrosion test method such as electrical potential measurements.
        - a. Subject to compliance with requirements, provide one of the following:
            1. "Accelgaurd 80" - Euclid Chemical Co.
            2. "Daraset Accelerator" - W.R. Grace & Co.
            3. "Pozzolith-40" - Master Builders
    - G. Retarding Admixture: ASTM C494, Type D:
        - a. Subject to compliance with requirements, provide one of the following:
            1. "Eucon Retarder 75" - Euclid Chemical Co.
            2. "Daraset Accelerator" - W.R. Grace & Co.
            3. "Pozzolith 300-R" - Master Builders

20. Cold Weather Concreting (ACI 306R):
    When concrete is placed after the first frost or under conditions of cold weather concreting (defined as a period when mean daily temperature drops below 40°F for more than three successive days), take additional precautions as specified in this Section and in ACI 306R, whn placing, curing, monitoring and protecting fresh concrete.
21. Hot Weather Concreting (ACI 305R):
    Hot weather is defined as a condition of high temperature, low humidity and high wind velocity which causes rate of evaporation in excess of0.2 pounds per square ft. per hour as determined by ACI 305R, Figure 2.1.5. When concrete is placed under coditions of hot weather concreting. Contractor shall provide extra protection of concrete against excessive placement temperatures and excessive drying throughout placing and curing operations and follow items 1-5 below:
    1. Forms, reinforcement, and air shall be cooled by water for spraying immediately before placing concrete. Placement temperature of concrete shall not exceed 90°F.
22. Supports for Reinforcement: Provide supports for reinforcment including bolsters, chair, spaces and other devices for spacing, supporting and fastening reinfocing bars and welded wire fabric in place within specified tolerances. Use wire bare-typed supports complying with CRSI, Class 1 or 2, unless otherwise acceptable.
    1. Use supports with sand plates or horizontal runners for slab-on-grade where base material will not support chair legs.
    2. All materials that come in direct contact with epoxy coated, galvanized bars, such as slab bolsters, high chairs, tie wires, etc, shall be plastic coated.
    3. Provide accessories and supports for welding wire fabric and reinforcement in slabs as required to maintain position as shown on the drawings.

REINFORCING:

1. DETAIL CONCRETE REINFORCEMENT AND ACCESSORIES IN ACCORDANCE WITH ACI 315 - "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES," LATEST EDITION.
2. PROVIDE CONTINUOUS REINFORCEMENT THROUGH ALL CONSTRUCTION JOINTS UNLESS OTHERWISE NOTED.
3. PROVIDE AND SCHEDULE ON THE SHOP DRAWINGS, ALL NECESSARY ACCESSORIES TO HOLD REINFORCING SECURELY IN POSITION. MINIMUM SUPPORT REQUIREMENTS: HIGH CHAIRS - 4'-0" ON CENTER. SLAB BOLSTERS -4'-0" ON CENTER. SUPPORT BARS FOR HIGH CHAIRS - #5, MINIMUM.
4. ALL CONTINUOUS REINFORCEMENT SHALL HAVE A MINIMUM LAP AS REQUIRED FOR A CLASS B SPLICE (AC1 318) UNLESS NOTED OTHERWISE.
5. PROVIDE CONCRETE PROTECTION FOR REINFORCEMENT AS FOLLOWS IN THE CONCRETE COVER TABLE UNLESS OTHERWISE NOTED.
6. ALL HOOKS SHOWN ON DRAWINGS SHALL BE STANDARD HOOKS UNLESS NOTED OTHERWISE.
7. WHERE CONTINUOUS BARS ARE CALLED FOR, RUN THEM CONTINUOUSLY AROUND CORNERS AND LAP THEM AT NECESSARY SPLICES, OR PROVIDE HOOKS AT DISCONTINUOUS ENDS. LAP LENGTHS SHALL BE AS GIVEN IN THE SPLICE AND DEVELOPMENT TABLE. LAP BEAM TOP BARS AT MID-SPAN AND BEAM BOTTOM BARS AT SUPPORTS, UNLESS OTHERWISE NOTED.

REINFORCING MATERIAL TABLE

Reinforcing element	ASTM	Grade, Fy (ksi)	Comments
Reinforcing bars less than #11	A615	60	

CONCRETE COVER TABLE (UNO)

Condition		Cover
Surfaces cast against earth		3 inches
Formed surfaces exposed to earth or weather:	#6 bars and larger	2 inches
	#5 bars and smaller	1 1/2 inches
Maximum deviation from these requirements shall be ±1/4 inch for sections 10 inches thick or less; and ±1/2 inch for sections over 10 inches thick. See ACI 318, section 7.7.1 for conditions not listed.		

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GENERAL NOTES I

PROJECT #: 2023230.000

ISSUE DATES:

DRAWN BY:

100% CD

S0-1

12.21.2023

REINFORCED MASONRY:

1. Conform all masonry work to the ``Building Code Requirements and specifications for Masonry Structures" TMS-402/602-16.
2. Minimum compressive strength of the masonry, f'm = 2,000 psi. Unless otherwise approved by the Structural Engineer on the basis of Unit Strength Method testing, provide components of the masonry with compressive strengths as given below:
3. All concrete masonry units (CMU): ASTM C90, normal weight, with a net area compressive strength as shown in *Masonry Material Properties Table*.
4. Provide vertical control joints at all walls at a spacing not to exceed 24'-0", unless noted otherwise. Control joints to be discontinuous at horizontal bond beams and tie beams.
5. Mortar for block wall construction: Type M or S conforming to ASTM C270.
6. Grout for piers and block walls: ASTM C476 with a minimum compressive strength *Masonry Material Properties Table*, determined in accordance with the provisions of ASTM C1019.
7. Reinforcing bars: ASTM A615, Grade 60, except welded reinforcing bars: ASTM A706.
8. Wire for joint reinforcing: ASTM 951, yield point = 70 ksi (min.).
9. Provide minimum reinforcing per the *Minimum Reinforcing Table*, unless otherwise noted.
10. Provide bond beams with (2)-#5 continuous, at the top of parapets, at each floor level, and where shown on the drawings.
11. Unless noted otherwise on plans, provide the following additional vertical reinforcement in the cell immediately adjacent to each side of a masonry opening and in the cell of discontinuous walls. These bars are to extend full height of the wall or in the case of masonry openings at multi-story walls, from story to level above to story level below the opening. For 6" and 8" CMU Walls provide (2)-#5. For 10" and 12" CMU Walls provide (2)-#6.
12. Extend additional reinforcement a minimum of 36 bar diameters beyond the opening.
13. The minimum length of lap for reinforcing bars placed in grout is per the Development Length Tables on sheet S3.2
14. Place reinforcing bars before grouting. Place grout in lifts not exceeding 5 feet. Consolidate each lift by mechanical vibration. The next lift of the pour may be made after the initial water loss and reconsolidation of the prior lift, while it is still plastic. High lift grouting is not permitted without written approval of the Engineer of Record.
15. Properly secure reinforcing bars to maintain the positions indicated on the drawings. Locate bars in the center of cells unless otherwise noted.
16. Brace all CMU during construction for the governing code lateral design loads until permanent restraints have been installed.
17. Follow the following steps when laying masonry in the temperatures stated below:

MASONRY MATERIAL PROPERTIES TABLE		
f'm (psi)	Minimum Compressive Strength of Masonry Unit (psi)	Minimum Grout Compressive Strength
2000	2000	2000

COLD WEATHER MASONRY CONSTRUCTION	
Mean daily air temperature	Instructions
40° - 32° F	Heat mixing water or aggregate to 70° F. Protect masonry from rain or snow for 24 hours.
32° - 20° F	Heat mixing water and aggregate to 70° F. Provide wind breaks for wind velocity in excess of 15 m.p.h. Cover masonry with insulating blankets for 24 hours and provide heat sources on both sides of masonry construction.
Below 20° F	Heat mixing water and aggregate to 70° F. Provide enclosures and heat to maintain 40° minimum temperature. Temperature of masonry units must be 40° F minimum when laid. Maintain masonry above 40° F for 24 hours by enclosures and supplemental heat.

MINIMUM [INTERIOR] MASONRY REINFORCING TABLE				
CMU	<8' High	8' - 12' High	>12' High	Horizontal Reinforcing
6" & 8"	#4@[48"]	#4@32"	#5@[32"]	#9 Dur-o-wal Ladur ((2)-W1.7 wires) @16"
10" & 12"	#4@24"	#5@32"	#6@32"	3/16" Dur-o-wal Ladur ((2)-W1.7 wires) @16"

[See plans for exterior CMU wall requirements]

WOOD FRAMING:

CONVENTIONAL 2x FRAMING:

1. Lumber and its fastenings, shall conform to the National Design Specifications of stress-grade lumber and its fastenings, latest edition, as recommended by the National Forest Products Association. Current Edition of Wood grading rules are to be followed. All connections shall conform to the current edition of the National Design Specification for Wood Construction, and the contract documents.
2. Refer to *Dimensional Lumber Material Properties Table* for minimum property requirements.
3. For overlay framing at roofs or other conventional roof framing, contractor shall provide 2x framing [XXXX]
4. All flush connections shall have metal beam or joist hangers. Refer to wood fasteners and hardware section for additional information.
5. All Beam over post connections shall have a metal post cap unless otherwise noted.
6. Bolt holes through wood shall be drilled 1/16" maximum larger than the diameter of the bolts to be installed.
7. Bolts through wood shall be fitted with standard washers at head and nut ends.
8. A hole greater in diameter than 40 percent of the stud width may not be bored in any wood stud. bored holes in diameter equal to 60 percent of the width of the stud are permitted in non-load bearing partitions or walls where each bored stud is doubled, provided not more than two such successive double studs occur. Edge of a bored hole shall not be within 5/8 inch of the studs edge. Bored holes shall not be located at cut or notch in the studs.
9. All wood framing exposed to weather shall be preservative pressure treated in accordance with the latest applicable requirements of the American Wood Preservers Association (AWPA).
10. Unless otherwise shown on architectural drawings non-load bearing interior partitions shall be 2x4 studs at 16"o.c. Headers over openings in interior non-load bearing partitions shall be (2)-2x4. Refer to plan notes for exterior wall construction.
11. Verify that surfaces to receive rough carpentry are prepared to required grades and dimensions. Do not begin work until unsatisfactory conditions are corrected.
12. Coordinate with other trades. Provide required grounds, blocking, wood backing and framing. Perform cutting and patching or rough carpentry work as required.
13. Framing lumber shall be sound, thoroughly seasoned, surfaced four sides, well manufactured and free from warp not correctable by bridging, blocking or nailing. Moisture content shall be a maximum of 19 percent.
14. Stack all material minimum of 6"above ground to insure proper ventilation and cover with waterproof covering.
15. Wood Joists:
    a. Fasten in accordance with framing nailing schedule
    b. Minimum bearing for joists - 1 1/2".
    c. End of joists shall be lapped over bearing and nailed together with 3-16d nails; minimum lap, 4".
    d. Maximum joist overhang, 12" unless otherwise noted.
    e. Joist shall be doubled under parallel partition.
    f. Bridging will be solid using 2"x joist depth installed in offset fashion. Maximum spacing = 8ft.
16. Bearing Walls:
    a. Bearing walls will be as indicated on plans or bearing wall schedule.
    b. Studs shall be fastened to the sole plate as shown in framing-nailing schedule.
    c. Where structural sheathing overlaps sole plate nail sheathing to sole plate as indicated in diaphragm nailing schedule.
    d. Provide 2 x horizontal blocking as noted in bearing wall schedule
17. Plates (Bearing or Non-Bearing):
    a. Sole plates shall be nailed to subfloor and joists as indicated in framing nailing schedule.
    b. Top plates for bearing partitions shall be two 2 x or a continuous header. Refer to typical wood details for splice information.
    c. Top plates for non-bearing partitions may be single. Nail plate to stud with two 16d nails. Refer to typical wood details for connection of top of wall to structure.
    d. When top or sole plates are cut for piping or duct work, reinforce with steel straps, 16 ga minimum, 1 1/2" and fasten with (6)-16d nails, each side of the cut.
    e. Sole plates in contact with concrete or masonry support shall be southern pine #2 or better and pressure treated as noted above.
18. Beams and Girders:
    a. Girders will not rest less than 4"on supports.
    b. All beams must splice only over supports unless specifically instructed otherwise by Structural Engineer.
    c. All built-up wood beams wider than 6"will be bolted with 5/8"diameter through-bolts at 2'-0"o.c. staggered spacing, unless otherwise noted. Refer to typical nailing pattern for multiple pieces with width < 6"
19. Flitch Beams when shown on plans shall be bolted together with one 1/2" dia. bolt, top and bottom over the support and/or at the ends of the beam 24" on center, staggered full length of the beam.

DIMENSIONAL LUMBER MEMBER MATERIALS TABLE					
Member	Location	Material	PT	FRT	Remarks
Sole Plate - Lowest Level	Interior Walls	SYP No. 1	Yes	No	
Sole Plate - Elevated Levels	Exterior Walls	DF No. 1	No	No	
Wall Studs	Interior Walls	DF No. 1	No	No	
Wall Studs	Exterior Walls	DF No. 1	No	No	
Headers	Interior Walls	DF No. 1	No	No	UNO as engineered lumber on plans or schedule
Headers	Exterior Walls	DF No. 1	No	No	UNO as engineered lumber on plans or schedule
Posts	Interior Walls	DF No. 1	No	No	UNO as engineered lumber on plans or schedule
Posts	Exterior Walls	DF No. 1	No	No	UNO as engineered lumber on plans or schedule
Top Plates	Interior Walls	DF No. 1	No	No	
Top Plates	Exterior Walls	DF No. 1	No	No	
Joists	Floors	DF No. 1	No	No	
Horizontal Blocking	-	Match Wall/ Floor	No	No	

NOTES:
1. REFER TO DIMENSIONAL LUMBER MATERIAL PROPERTIES TABLE FOR MINIMUM PROPERTY REQUIREMENTS

DIMENSIONAL LUMBER MATERIAL PROPERTIES TABLE(Part 1)		
Species:		
Douglas Fir Larch (DF)	Grade	No. 1
	Bending (Fb)	1000psi
	Tension Parallel to Grain (N-Ft)	675psi
	Shear Parallel to Grain (N-Fv)	180psi
	Compression Perpendicular to Grain (N-Fc⊥)	625psi
	Compression Parallel to Grain (N-Fc)	1,500psi
	Modulus of Elasticity (E)	1,700,000psi
	Modulus of Elasticity (Emin)	620,000psi
	Max Moisture Content (MC)	19%
	Specific Gravity	0.50
	Remarks:	
Douglas Fir Larch (SS)	Grade	SS
	Bending (Fb)	1,500psi
	Tension Parallel to Grain (N-Ft)	1,000psi
	Shear Parallel to Grain (N-Fv)	180psi
	Compression Perpendicular to Grain (N-Fc⊥)	625psi
	Compression Parallel to Grain (N-Fc)	1,700psi
	Modulus of Elasticity (E)	1,900,000psi
	Modulus of Elasticity (Emin)	690,000psi
	Max Moisture Content (MC)	19%
	Specific Gravity	0.50
	Remarks:	

(CONT'D: SEE PART 2

DIMENSIONAL LUMBER MATERIAL PROPERTIES TABLE(Part 2)		
Species:		
Southern Pine (SP)	Grade	No. 1
	Bending (Fb)	1250psi
	Tension Parallel to Grain (N-Ft)	800psi
	Shear Parallel to Grain (N-Fv)	175psi
	Compression Perpendicular to Grain (N-Fc⊥)	565psi
	Compression Parallel to Grain (N-Fc)	1,500psi
	Modulus of Elasticity (E)	1,600,000psi
	Modulus of Elasticity (Emin)	580,000psi
	Max Moisture Content (MC)	19%
	Specific Gravity	0.55
	Remarks:	

NOTES:
1. VALUES ABOVE ARE THE MINIMUM REQUIRED PROPERTY VALUES. SUBMIT PRODUCT DATA FOR EACH SPECIES USED ON PROJECT.
2. REFER TO DIMENSONAL LUMBER MEMBER MATERIALS TABLE FOR LOCATIONS WHERE ABOVE MATERIAL IS USED.

DECKING AND SHEATHING:

Current edition of American Plywood Association Grading Rules are to be followed.

Floor:
1. Refer to *Sheathing Material Table* for floor sheathing requirements.
2. Panels to be manufactured with a tongue and groove edge profile.
3. Attachment of decking to joists and wall top plates shall be as indicated in the diaphragm nailing schedule on S4.1
4. Space panel ends 1/16"and panel edges 1/8"to permit expansion due to varying moisture conditions.

Roof:
1. Refer to *Sheathing Material Table* for roof sheathing requirements.
2. Panels to be manufactured with a tongue and groove edge profile.
3. Attachment of decking to joists and wall top plates shall be as indicated in the diaphragm nailing schedule on S4.1.
4. Space panel ends 1/16"and panel edges 1/8"to permit expansion due to varying moisture conditions.

Walls:
1. Refer to *Sheathing Material Table* for wall sheathing requirements.
2. Fasten wood sheathing to studs, plates, and blocking as follows:
    a. Exterior Walls
       Panel Edges – 8d at 6" on center
       Field Nails – 8d at 12" on center
    b. Shearwalls
       See Shearwall Schedule.
3. Space panel ends 1/16"and panel edges 1/8"to permit expansion due to varying moisture conditions.

PREMANUFACTURED WOOD COMPONENTS:

1. Construction of premanufactured wood components (PWC) i.e. continuous bearing members, shear blocks, header trusses, etc. shall be in accordance with all applicable codes.
2. Material used for component shall be in accordance with lumber quality standards established in "Premanufactured Wood Trusses" section of this sheet.
3. All premanufactured wood components shall be designed and fabricated by truss manufacturer. The design shall be prepared by a Registered Engineer and shall bear a license in the state the project is located. See general notes loading section for loading criteria and plans for any other additional loads.
4. Shear blocks shall be located within the shearwall length and designed for force shown in shearblock schedule.
5. Continuous bearing (CB) members shall be designed to resist all roof and floor gravity loads. Parts of CB located within the shearwalls shall be designed to resist the scheduled floor shear.

WIRE NAILS:

1. Nailing installation and material are to be in compliance with A.I.T.C., NDS and in accordance with the Massachusetts State Building Code-9th edition, Table 2304.10.1 unless noted otherwise on drawings.
2. All nails shown in nailing schedules shall be common. Threaded, hardened steel nails may be substituted for common size nails of corresponding size for plywood. Use annular-ring, common wire, galvanized nails for plywood.
3. Galvanized nails shall be hot-dip galvanized, ASTM-A153.
4. Gun nails may be used in lieu of hand nailing. Gun nail sizes shall be as follows:
5. Nails shall have a minimum penetration of 10 times the wire diameter, into the main member, unless otherwise noted on plans.
6. Edge distance for all nails shall be minimum of 2 times the wire diameter, unless otherwise noted on drawings.

Common Nail Penny Weight	Minimum Gun Nail Diameter
8d	0.131"
10d	0.148"
12d	0.148"
16d	0.162"

WOOD FASTENERS AND HARDWARE:

1. All wood fasteners and hardware shall be as manufactured by Simpson Strong-tie. Alternates shall be submitted to engineer for review but shall have a capacity that equals or exceeds that of the simpson strong-tie product.
2. Holdowns, straps and hurricane clips shall be installed according to manufacturer's recommendations.
3. Metal framing anchors shall be used for all connections where shown on the drawings. Provide nails and bolts according to manufacturer's requirements. All hardware specified on drawings assume that all holes have been filled in accordance with manufacturers requirements.

SHEATHING MATERIAL TABLE						
LOCATION	MATERIAL	THICKNESS (in)	GRADE	BOND CLASSIFICATION	SPAN RATING	REMARKS
WALLS	OSB	15/32	STURD-I-FLOOR	EXPOSURE 1	16" oc	CONFORM TO APA PS-1 AND PS-2 STANDARD
ROOF	OSB	19/32	STURD-I-FLOOR	EXPOSURE 1	16" oc	CONFORM TO APA PS-1 AND PS-2 STANDARD

SUBMITTALS:

1. Dimensional Lumber:
    a. Submit product data for all proposed material indicating material properties that meet or exceed requirements indicated in the *Dimensional Lumber Material Properties Table*.
2. Prefabricated Stairs and Handrails:
   Manufacturer shall furnish stair and handrail design drawings bearing the seal of a professional structural engineer registered in Montana. Drawings shall be submitted for review by both the structural engineer and architect prior to fabrication. Design drawings shall include, but not be limited to, the following:
    a. Building code used for design.
    b. Wood components shall have the species and grade defined for all material used, steel components shall indicate ASTM designation and grade specified, concrete components shall indicate 28-day compressive strength and reinforcement.
    c. Span, depth slope and spacing stringer.
    d. Tread and riser size, thickness, and configuration.
    e. Required bearing or connection requirements at support.
    f. Calculated maximum deflections for both live and total load conditions.
3. CONCRETE: Submit substantiating data for each concrete mix design contemplated for use to the Landscape Architect and Structural engineer not less than six weeks prior to first concrete placement. data for each mix shall, as minimum, including the following:
    a. Mix identification (unique for each mix submitted)
    b. Statement of intended use mix
    c. Mix proportions, including all admixtures used.
    d. Manufacturer's data and/ or certifications verifying conformance of mix materials, including dmixtures, with specified requirements.
    e. Wet and dry unit weight, ASTM C138
    f. Entrained air content, ASTM C173
    g. Design slump, ASTM C143
    h. Required average strength qualification data per ACI 301 4.2.3. Submit seperate qualification data for ach production facility, which supply concrete to project.
    i. Average strength qualification data (trial mix data of field test data per ACI 301 4.2.3.3 and 4.2.3.4). hen field test data is used to qualify average strength, submit seperate qualification data for each roduction facility, which will supply concrete to the project.
    j. Field test data submitted for qualification of average strength under ACI 301 4.2.3 shall includ copies f Concrete Testing Agency's Reports from which the data was compiled.
    k. Submit one copy of a representative concrete batch trip ticket containing information as specified herein.
4. Seperate concrete design mixes are required for each strength and class of concrete, each change in type and/ or quantity of mix materials including admixtures, each change in slump limits, and each change in entrained air content.
5. Sumbit rebar shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI Detailing Manual (SP 66). Provide scale elevations of all walls with frinforcing shown. Include special reinforcement required to support reinforcement. Identify location of proposed construction joints and show them on the shop drawings.

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GENERAL NOTES II

PROJECT #: 2023230.000

ISSUE DATES:

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12.21.2023

SPECIAL INSPECTION/TESTING/QUALITY ASSURANCE:

1. General Contractor's Quality Control System:
   a. General: The General Contractor shall establish a quality control system ans shall perform sufficient inspection and and tests of all items of work, including that of (his/her) Subcontractors, to ensure conformance to the Contract Documents of materials, workmanship, construction, finish, functional performance and identification. Contractor's quality system is the means by which (he/she) assures (himself/herself) that (his/her) construction complies with the requirements of the Contract Documents. Controls shall be adequate tjo cover all construction operations.
   b. Records: Contractor shall maintain correct records on an appropriate for all inspections and tests performed, instructions received from the Architect. Structural Engineer or Testing Agency, and actions taken as a results of those instructions. These records shall include evidence that the required inspections or tests have been performed (including type and number of inspections or tests, nature of defects, causes for rejection, etc.) proposed or directed remedial action, and corrective action taken. Contractor shall document inspections and tests as required by this section.
2. The Owner shall employ and Independent Testing Laboratory acceptable to the Architect and Structural Engineer with documented experience or training with projects of similar complexity and material qualities to provide testing services spicified in the following material inspections of the general notes in agreement with IBC chapter 17.
3. The Owner shall employ a Independent Special Inspection Company acceptable to the Architect and Structural Engineer with documented experience or training with projects of similar complexity and material qualities to provide inspection services. The special instpeciton

INSPECTION – CONCRETE

1. Concrete inspection and testing will be made in accordance with building code requirements, and Contract Documents, and will include the following:
   a. Testing concrete for strength, slump, air content, temperature, and unit weight.
   b. Making and testing concrete cylinders, including furnishing cylinder containers for specimens.
   c. Transporting and storing of all specimens involved in testing and inspection. Test cylinders are to be transported to laboratory not later than 24 hours after casting, not earlier than 16 hours after casting.
   d. Inspection of mixing and placing of concrete at the site, including recording of: amount and location of concrete placement, method of placing concrete, and any other pertinent information.
2. The Testing laboratory will take specimens as follows: At least one set of four cylinders for each 50 cubic yards or fraction thereof of each class of concrete, but not less than one set for any one day's operation.
   a. For concrete placed by pumping, test specimens and concrete used for determination of slump, air content, and weight are to be taken at the point of placement of concrete into the forms.
   b. Samples will be obtained in accordance with ASTM C172.
   c. Marking, curing and subsequent handling of test cylinders, except as modified herein shall be in accordance with ASTM C31. Testing shall be in accordance with ASTM C39.
   d. The cylinders shall be placed in laboratory storage under moist curing conditions at approximately 70 degrees F within 24 hours after molding, and maintain therein until tested. Tests will be as follows:
      i. One cylinder shall be tested at 7 days for information.
      ii. Two cylinders shall be tested at 28 days for acceptance. The acceptance test results shall be the average strength of these two cylinders.
      iii. One cylinder shall be kept for eventual testing at 56 days to verify any marginal results of 28-day tests. If not required to be tested, cylinder may be discarded after 28 days.
3. Test Reports: Reports of cylinder tests shall be submitted as specified herein within five days of laboratory testing. Test reports shall, as a minimum, include:
   a. Results of field testing at time of sampling including date and time of sampling, amount of water added at site prior to sampling, ambient air temperature and concrete temperature, concrete slump and air content, and concrete wet unit weight.
   b. For concrete place by pumping, test specimens and concrete used for determination of slump, air content, and weight are to be taken at the point of placement of concrete into forms.
   c. Results of laboratory testing including date test specimens were transported to laboratory, date and age of concrete at time of testing, compressive strength of each cylinder tested, average compressive strength of tested cylinders, and specified design strength of concrete represented by the test.
4. Additional Testing: Contractor shall bear the cost of testing and inspection resulting as a consequence of the following:
   a. Work not in compliance with the Contract Documents.
   b. Testing requested by the Contractor or Subcontractor such as additional cylinders for early breaks, etc.
   c. Testing to verify the adequacy of work done without prior notice, without proper supervision, or contrary to standard construction practice.
5. Reinforcing Steel Inspection: concrete reinforcing shall be inspected prior to closing of concrete form work or placing of concrete. Inspector to verify size, spacing, quantity of reinforcing per latest contract documents.

INSPECTION – POST INSTALLED INSERTS:

1. The Testing Agency shall inspect self-expanding, drilled-ins inserts shown on the structural drawings as follows:
   a. Self-Expanding Inserts: Prior to installation the testing agency shall determine that the installing contractor has the proper materials and equipment for drilling holes in the receiving surface of required diameter and length.
   b. Epoxy-Bonded Inserts: The testing agency shall be present at the site to observe the installation of the first 10 inserts placed. Such observation shall be to ensure that drilled holes are of required diameter and depth, holes are properly cleaned prior to installation of the insert, and that holes are completely filled with properly mixed epoxy after installation.
2. Inspect all inserts visually after installation to ensure that they have been installed perpendicular to the receiving surface and to the proper depth.
3. Inspect 10% of all inserts at each level for a tension load of 150% of the manufacturer's recommended allowable working loads in tension. If at any time the number of rejectable inserts exceeds 10% of the number of inserts tested at that level, all inserts in that group shall be tested by the same method and this 100% testing rate shall be continued until 10% or less of the inserts tested in a group are found to be rejectable. Cost of additional testing required by this paragraph shall be borne by the contractor.
4. Reports by the Testing Agency's inspector will contain, as a minimum, an adequate description of each anchor tested, the identifying mark of the contractor responsible for the anchor, and a critique of any defects noted by visual inspection or testing. Reports shall be distributed as early as possible but not later that one work week after the tests have been performed. The Structural Engineer shall be notified by phone, if in the judgment of the Inspector, test results require immediate comment.

TABLE 1704.2.5
INSPECTION OF FABRICATORS

Verification and Inspection Task	Frequency of Inspection	Referenced Standard	Agent
1. Verification that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and fabricator's ability to conform to approved construction documents and referenced standards.	Periodic	IBC 2015 1704.2.5, Applicable standards as required elsewhere in this statement pertaining to fabricator's scope of work	TA
2. Review the procedures for completeness and adequancy relative to the code requirements for the fabricator's scope of work.	Periodic	IBC 2015 1704.2.5, Applicable standards as required elsewhere in this statement pertaining to fabricator's scope of work	TA

Exceptions per IBC 1704.2.5

TABLE 1705.3
REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

Verification and Inspection Task	Frequency of Inspection	Referenced Standard	Agent
1. Inspect reinforcement and verify reinforcement placement.	Periodic	IBC 1908.4, ACI Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	TA
2. Inspect anchors cast in concrete.	Periodic	ACI 17.8.2	TA
3. Inspect anchors post-installed in hardened concrete members.		ACI 17.8.2.4	TA
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	Continuous		
b. Mechanical anchors and adhesive anchors not defined in 4.a	Periodic	ACI 17.8.2	
4. Verify use of required design mix.	Periodic	IBC 1904.1, 1904.2, 1908.2, 1908.3, ACI Ch. 19, 26.4.3, 26.4.4	TA
5. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests and determine the temperature of the concrete.	Continuous	IBC 1908.4, ACI Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	TA
6. Inspect concrete placement for proper application techniques.	Continuous	IBC 1908.6 – 1908.8, ACI 318: 26.5	TA
7. Verify maintenance of specified curing temperature and techniques.	Periodic	IBC 1908.9, ACI 318: 26.5.3, 26.5.4, 26.5.5	TA
8. Inspect formwork for shape, location, and dimensions of the concrete member being formed.	Periodic	ACI 318: 26.11.1.1(b)	TA

TABLE 1705.4.1.2
LEVEL 2 REQUIRED SPECIAL INSPECTIONS AND TESTS OF MASONRY CONSTRUCTION

Verification and Inspection Task	Frequency of Inspection	Referenced Standard		Agent
		TMS 402/ACI 530/ASCE 5	TMS 602/ACI 530.1/ASCE 6	
1. Compliance with required inspection provisions of the construction documents and the approved submittals.	Periodic	-	Art. 1.5	TA
2. Verification of f'm prior to construction and for every 5,000 square feet during construction.	Periodic	-	Art. 1.4B	TA
3. Verification of proportions of materials in premixed or preblended mortar and grout as delivered to the site.	Periodic	-	Art. 1.5B	TA
4. Verification of slump flow and VSI as delivered to the site for self-consolidating grout	Continuous	-	Art. 1.5B.1.b.3	TA
5. The following shall be verified to ensure compliance:				
a. Proportions of site-prepared mortar and grout.	Periodic	-	Art. 2.6A	TA
b. Placement of masonry units and construction of mortar joints.	Periodic	-	Art. 3.3B	TA
c. Placement of reinforcement, connectors and anchorages.	Periodic	Sec. 1.15	Art. 3.4, 3.6A	TA
d. Grout space prior to grout.	Continuous	-	Art. 3.2D	TA
e. Placement of grout.	Continuous	-	Art. 3.5	TA
f. Size and location of structural elements.	Periodic	-	Art. 3.3F	TA
g. Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction.	Continuous	Sec, 1.2.2(e), 1.16.1	-	TA
h. Specified size, grade and type of reinforcement, anchor bolts, and anchorages.	Periodic	Sec. 1.15	Art. 2.4, 3.4	TA
i. Preparation, construction, and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F).	Periodic	-	Art. 1.8C, 1.8D	TA
6. Preparation of any required grout specimens shall be observed.	Continuous	-	Art. 1.4	TA

TABLE 1705.5
REQUIRED SPECIAL INSPECTIONS AND TESTS OF WOOD CONSTRUCTION

Verification and Inspection Task	Frequency of Inspection	Referenced Standard	Agent
1. Inspection of the fabrication process of prefabricated wood structural elements and assemblies.	Periodic	IBC 1704.2.5	TA
2. High-load diaphragms designed in accordance with Section 2306.2:			
a. Inspection of the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved building plans.	Periodic	IBC 1705.5.1	TA
b. Verify nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved construction documents.	Periodic		TA

TABLE 1705.6
REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

Verification and Inspection Task	Frequency of Inspection	Agent
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Periodic	GER
2. Verify excavations are extended to proper depth and have reached proper material.	Periodic	GER
3. Perform classification and testing of compacted fill materials.	Periodic	GER
4. Verify use of proper materials, densities and lift thickness during placement and compaction of compacted fill.	Continuous	GER
5. Prior to placement of compacted fill observe subgrade and verify site has been prepared properly.	Periodic	GER

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SPECIAL INSPECTIONS, TESTING, AND QUALITY ASSURANCE

PROJECT #: 2023230.000

ISSUE DATES:

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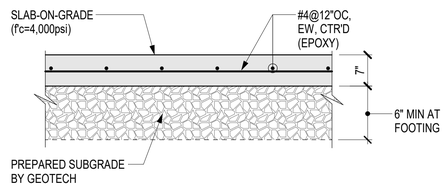
S0-3

12.21.2023

ABBREVIATIONS LIST

(E)or EXIST	Existing
(S)	Salvaged
(T)	Transfer
/	Per
@	At
AB	Anchor Bolt
ADD'L	Additional
AESS	Architectural Exposed Structural Steel
ALT	Alternate
ALUM	Aluminum
ANCH	Anchor
APPROX	Approximate
ARCH	Archiectural
BE	Boundary Element
BF	Braced Frame
BL	Brick Ledge
BLDG	Building
BM	Beam
BO	Bottom of
BOS	Bottom of Steel
BOT or B	Bottom
BRDG	Bridging
BRG	Bearing
BTWN	Between
C	Channel
CANT	Cantilever
CF	Cold Formed
CFSF	Cold Formed Steel Fabricator
CIP	Cast-In-Place
CJ	Control Joint
CJP	Complete Joint Penetration
CL	Centerline
CLG	Ceiling
CLR	Clear
CMU	Concrete Masonry Unit
COL	Column
CONC	Concrete
CONN(S)	Connection(s)
CONST	Construction
CONT	Continue or Continuous
COORD	Coordinate
CSJ	Construction Joint
CTR(D)	Center(ed)
DB	Bar Diameter
DBA	Deformed Bar Anchor
DBL	Double
DIA or Ø	Diameter
DIAG	Diagonal
DIM	Dimension
DL	Dead Load
DN	Down
DO	Ditto
DTL(S)	Detail(s)
DWG(S)	Drawing(s)
DWL(S)	Dowel(s)
E-W	East-West
EA	Each
EC	Epoxy Coated
EE	Each End
EF	Each Face
EJ	Expansion Joint
EL	Elevation
ELEV	Elevator
EMBED	Embedded
EN	Edge Nail
ENGR	Engineer
EOR	Engineer-of-Record
EOS	Edge of Slab
EQ	Equal
EQ SP	Equally Spaced
EQUIP	Equipment
EQUIV	Equivalent
ES	Each Side
EW	Each Way
EXP	Expansion
EXP ANC	Expansion Anchor
EXT	Exterior
FA	Face
FAB	Fabricate
FD	Floor Drain
FDN	Foundation
FF	Finished Floor
FIN	Finish(ed)
FLG	Flange
FLR	Floor
FO	Face Of
FP	Full Penetration Or Fire Proofing
FRT	Fire Retardant Treated
FS	Far Side
FT	Foot or Feet
FTG	Footing
GA	Gage or Gauge
GALV	Galvanized
GB	Grade Beam
GEN	General
GR	Grade or Grind
HAS or HDAS	Headed Anchor Stud
HDAR	Headed Anchor Rod
HDG	Hot Dipped Galvanized
HGR	Hanger
HK	Hook
HORZ	Horizontal
HP	High Point
HSS	Hollow Structural Shape
HT	Height
HVAC	Heating-Ventilating and A/C
ID	Inside Diameter
IF	Inside Face
IN	Inch
INT	Interior
JT	Joint
K	Kip
KSF	Kip Per Square Foot
KSI	Kip Per Square Inch

L	Length
LB(S)	Pound(s)
LCE	Compression Embedment
LCS	Compression Lap Splice
LDH	Hook Development Length
LG	Long
LL	Live Load
LLBB	Long Leg Back to Back
LLH	Long Leg Horizontal
LLV	Long Leg Vertical
LOC(S)	Location(s) or Locate
LONG	Longitudinal
LP	Low Point
LT	Light
LTE	Tension Embedment
LTS	Tension Lap Splice Length
LWC	Light Weight Concrete
MAS	Masonry
MATL	Material
MAX	Maximum
MC	Moment Connection
MECH	Mechanical
MEP	Mech/Elect/Plumb
MEZZ	Mezzanine
MFR	Manufacturer
MIN	Minimum
MISC	Miscellaneous
MLS	Masonry Lap Splice
MTL	Metal
N	North
N-S	North-South
NIC	Not in Contract
NO or #	Number
NOM	Nominal
NS	Non-Shrink or Near Side
NTS	Not To Scale
NWC	Normal Weight Concrete
OC	On Center
OD	Outside Diameter
OF	Outside Face
OH	Opposite Hand
OPNG(S)	Opening(s)
OPP	Opposite
OVB	Overbuild
OVS	Oversized
OWS	One Way Slab
PAF	Power Actuated Fastener
PC	Precast
PEN	Penetration
PERP	Perpendicular
PL	Plate (Steel)
PLF	Pounds Per Lineal Foot
PREFAB	Prefabricated
PRELIM	Preliminary
PS	Prestressed
PSF	Pounds Per Square Foot
PSI	Pounds Per Square Inch
PT	Point or Post-Tension or Pretensioned or Pressure Treated
QTY	Quantity
RAD or R	Radius
RE: of REF	Refer to (Reference)
REINF	Reinforce(ing)(d)(ment)
REQD	Required
REQT(S)	Requirement(s)
RET	Return
REV	Revision
RTC	Roof Top Unit
S	South
SB	Strap Beam
SC	Slip Critical
SCHED	Schedule
SECT	Section
SHT	Sheet
SIM	Similar
SLBB	Short Leg Back to Back
SLH	Short Leg Horizontal
SLV	Short Leg Vertical
SOG	Slab on Grade
SP	Space(s)
SP @	Space at
SPECS	Specifications
SPRT	Support
SQ	Square
SS	Stainless Steel
STD	Standard
STIFF	Stiffener
STIR	Stirrup
STL	Steel
STR	Structural
SW	Shearwall
SYM	Symmetrical
T	Top
T&B	Top & Bottom
THK	Thick or Thickness
TL	Total Load
TO	Top of
TOC	Top of Concrete
TOS	Top of Steel
TOW	Top of Wall
TPG	Topping
TRANS	Transverse
TWS	Two Way Slab
TYP	Typical
ULT	Ultimate
UNO	Unless Noted Otherwise
VERT	Vertical
VIF	Verify in Field
W/	With
W/O	Without
WF	Wide Flange
WP	Working Point or Waterproofing
WT	Wide Flange Tee Section
WWR	Welded Wire Reinforcement
WxH	Width x Height



TYPICAL SLAB-ON-GRADE SECTION

SCALE: 3/4" = 1'-0"

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PLAN NOTES AND LEGENDS

PROJECT #: 2023230.000

ISSUE DATES:

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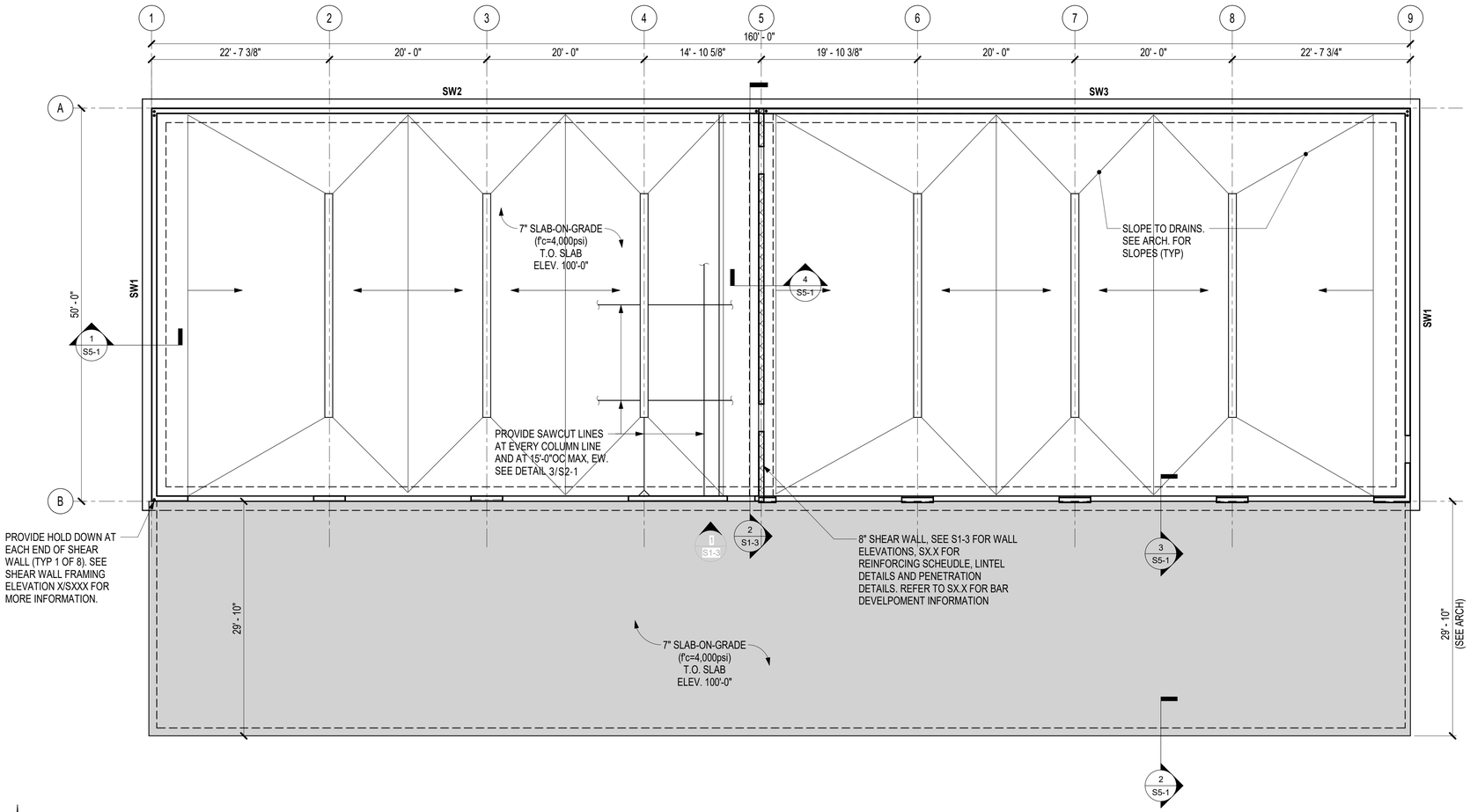
S0-4

12.21.2023



PLAN NORTH

FIRST FLOOR/FOUNDATION PLAN

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

NOTE: SEE S003 FOR PLAN NOTES AND DETAILS

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FOUNDATION PLAN

PROJECT #: 2023230.000

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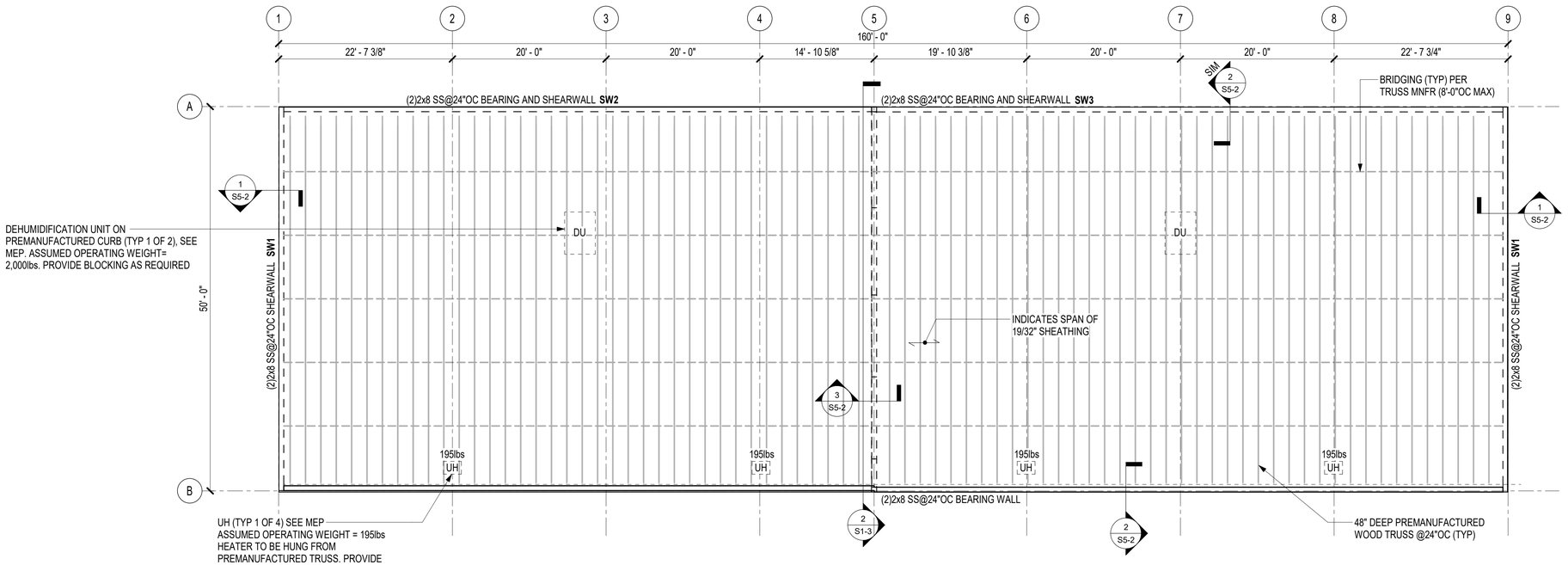
S1-1

12.21.2023



PLAN NORTH

ROOF FRAMING PLAN

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

NOTE: SEE S003 FOR PLAN NOTES AND DETAILS

PREMANUFACTURED WOOD TRUSSES TO BE DESIGNED FOR LOADING CRITERIA IN S0.X SERIES AS WELL AS POINT LOAD FROM MECHANICAL EQUIPMENT SHOWN ON PLAN

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ROOF FRAMING PLAN

PROJECT #: 2023230.000

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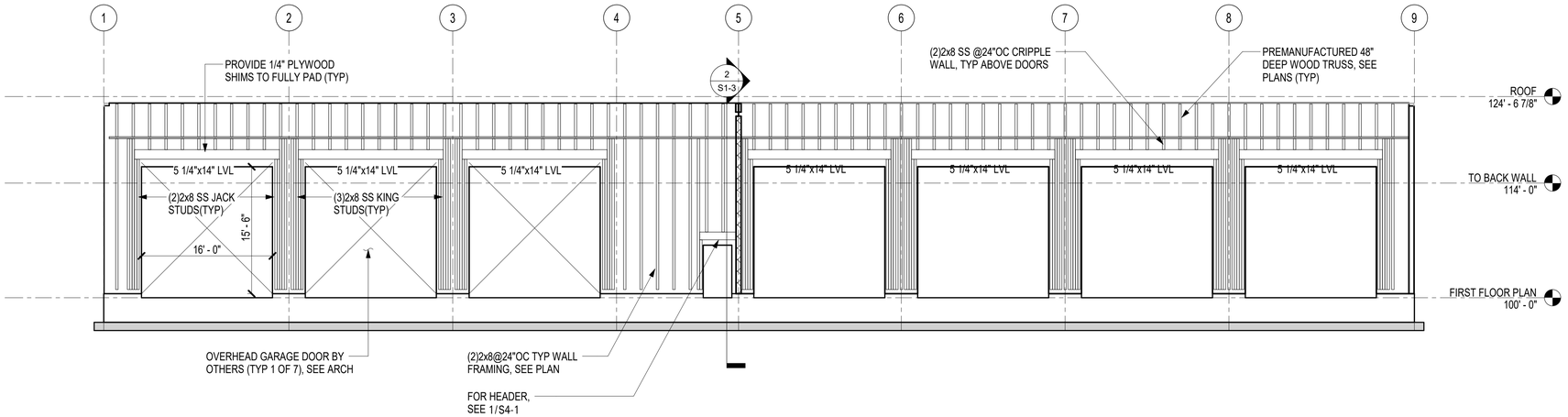
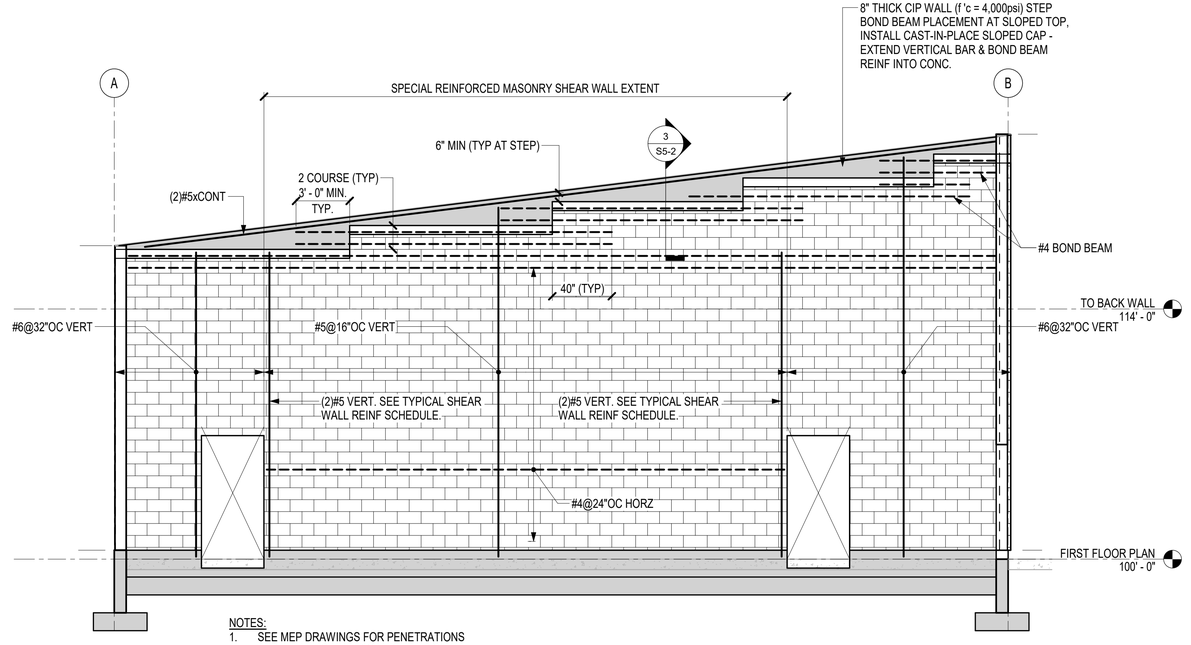
S1-2

12.21.2023



SOUTH ELEVATION

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



NOTES:

1. SEE MEP DRAWINGS FOR PENETRATIONS THRU WALL. SEE TYPICAL DETAILS S3-1 FOR REINF OF PENETRATIONS.
2. SEE S3-1 FOR TYPICAL CMU SHEAR WALL REINF DETAILS NOT REPEATED HERE.

CMU SHEAR WALL ELEVATION

SCALE: 1/4" = 1'-0"

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ELEVATION

PROJECT #: 2023230.000

ISSUE DATES:

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S1-3

12.21.2023

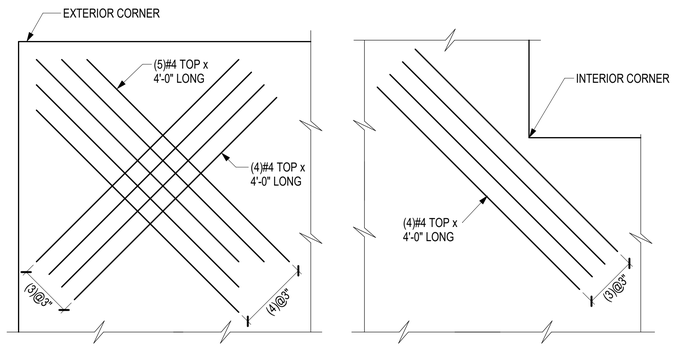
TENSION DEVELOPMENT LENGTH (Lap Class A) AND LAP SPLICE LENGTHS (Lap Class B) FOR GRADE 60 DEFORMED REINFORCING BARS (inches)

(UNLESS SHOWN OTHERWISE ON DRAWINGS)

f'c = 4000 PSI, NORMAL WEIGHT CONCRETE

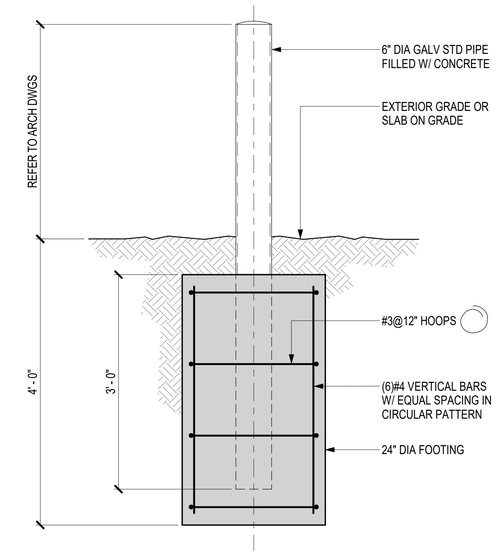
BAR SIZE	LAP CLASS	CONCRETE COVER >=0.75 in. CLEAR BAR SPACING[2] >=1.5 in.				CONCRETE COVER >=1.00 in. CLEAR BAR SPACING[2] >=2.0 in.				CONCRETE COVER >=1.50 in. CLEAR BAR SPACING[2] >=3.0 in.				CONCRETE COVER >=2.00 in. CLEAR BAR SPACING[2] >=4.0 in.				CONCRETE COVER >=3.00 in. CLEAR BAR SPACING[2] >=6.0 in.			
		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED	
		TOP[1]	OTHER	TOP[1]	OTHER	TOP[1]	OTHER	TOP[1]	OTHER	TOP[1]	OTHER	TOP[1]	OTHER	TOP[1]	OTHER	TOP[1]	OTHER	TOP[1]	OTHER	TOP[1]	OTHER
#3	A	12	12	15	13	12	12	15	13	12	12	14	12	12	12	14	12	12	12	14	12
	B	16	16	19	17	16	16	19	17	16	16	18	16	16	16	18	16	16	16	18	16
#4	A	19	15	24	22	15	12	20	17	15	12	18	14	15	12	18	14	15	12	18	14
	B	24	19	32	28	20	16	25	22	20	16	23	18	20	16	23	18	20	16	23	18
#5	A	28	21	36	32	22	17	29	26	19	15	24	22	19	15	22	17	19	15	22	17
	B	36	28	47	41	29	22	38	33	24	19	32	28	24	19	29	22	24	19	29	22
#6	A	37	29	49	43	31	24	40	35	22	17	29	26	22	17	29	26	22	17	27	21
	B	48	37	63	56	40	31	52	46	29	22	38	34	29	22	38	34	29	22	35	27
#7	A	60	46	78	69	50	38	65	57	37	28	48	42	33	25	43	38	33	25	39	30
	B	78	60	102	90	64	50	84	74	48	37	62	55	42	33	55	49	42	33	51	39
#8	A	74	57	97	86	62	48	81	71	47	36	61	54	37	29	49	43	37	29	45	34
	B	96	74	126	111	80	62	105	93	60	47	79	70	48	37	63	56	48	37	58	45
#9	A	90	69	117	104	76	58	99	87	57	44	75	66	46	36	60	53	42	32	55	48
	B	117	90	153	135	98	76	128	113	74	57	97	86	60	46	78	69	55	42	71	63
#10	A	108	83	141	125	92	70	120	106	70	54	92	81	57	44	74	66	47	36	62	55
	B	140	108	183	162	119	92	155	137	91	70	119	105	74	57	97	85	61	47	80	71
#11	A	127	98	166	146	108	83	141	125	84	64	109	97	68	53	89	79	52	40	69	60
	B	165	127	215	190	141	108	184	162	109	84	142	125	89	68	116	102	68	52	89	79

NOTES:
1. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
2. CLEAR BAR SPACING = CENTER TO CENTER SPACING - BAR DIAMETER.
3. AVOID SPLICES IN REGIONS OF MAXIMUM MOMENT. IF THIS IS NOT POSSIBLE, STAGGER SPLICES SO THAT SPLICES DO NOT REQUIRE MORE THAN 50% OF THE BARS ARE SPLICED WITHIN A REQUIRED SPLICE LENGTH OTHERWISE INCREASE SPLICE LENGTH BY 30%.
4. FOR GRADE 75, DEVELOPMENT AND SPLICE LENGTHS SHOWN ABOVE SHALL BE INCREASED BY A FACTOR = 1.25.

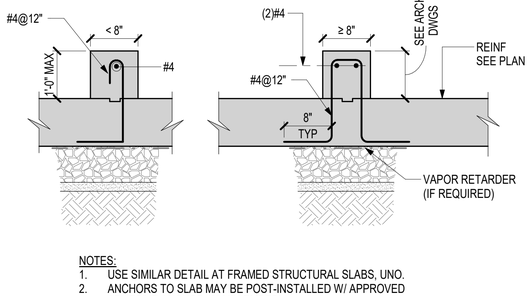


NOTE:
1. AT REINFORCED CONCRETE SLABS ONLY (NOT SLABS ON METAL DECK UNO).

1 TYPICAL ADDITIONAL REINFORCING AT SLAB CORNERS
SCALE: 1" = 1'-0"

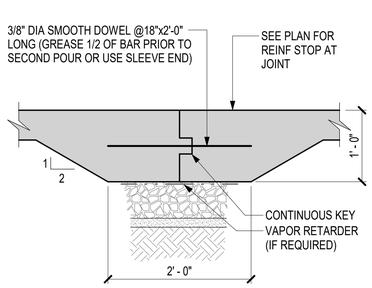


2 TYPICAL BOLLARD AT GRADE DETAIL
SCALE: 1" = 1'-0"

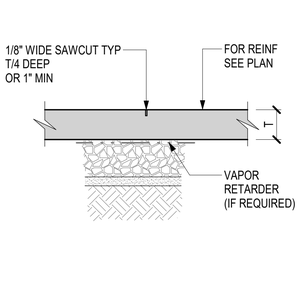


NOTES:
1. USE SIMILAR DETAIL AT FRAMED STRUCTURAL SLABS, UNO.
2. ANCHORS TO SLAB MAY BE POST-INSTALLED W/ APPROVED ADHESIVE ANCHOR (3" MIN EMBED).

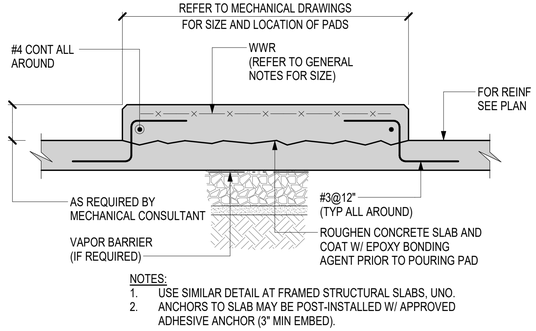
CONCRETE CURB



CONSTRUCTION JOINT



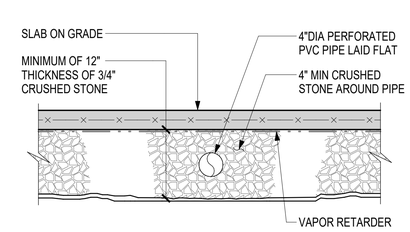
CONTROL JOINT



NOTES:
1. USE SIMILAR DETAIL AT FRAMED STRUCTURAL SLABS, UNO.
2. ANCHORS TO SLAB MAY BE POST-INSTALLED W/ APPROVED ADHESIVE ANCHOR (3" MIN EMBED).

HOUSEKEEPING PAD
PARKING GARAGE ISLAND CURBS

3 TYPICAL SLAB ON GRADE DETAILS
SCALE: 1" = 1'-0"



4 TYPICAL UNDERSLAB DRAINAGE PIPE
SCALE: 1" = 1'-0"

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TYPICAL CONCRETE DETAILS I

PROJECT #: 2023230.000

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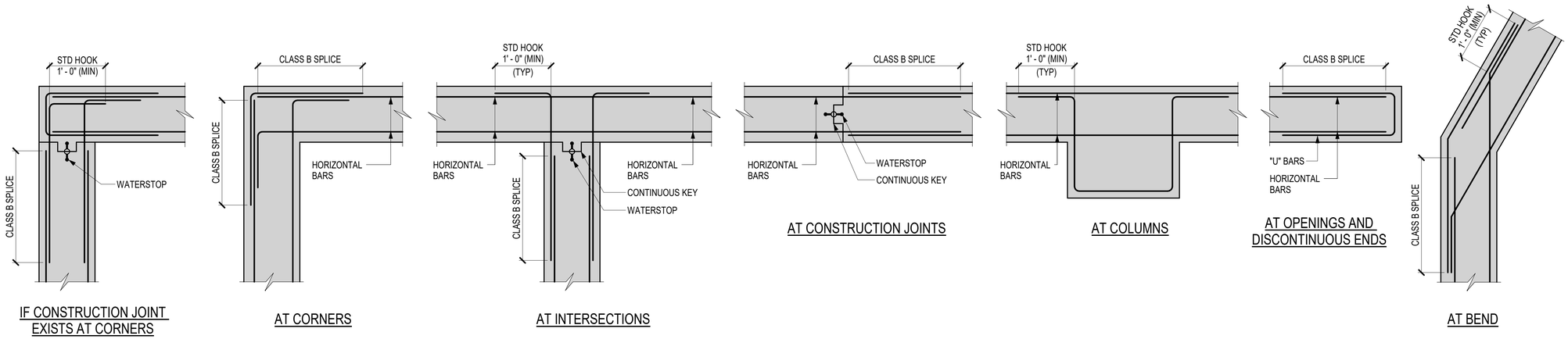
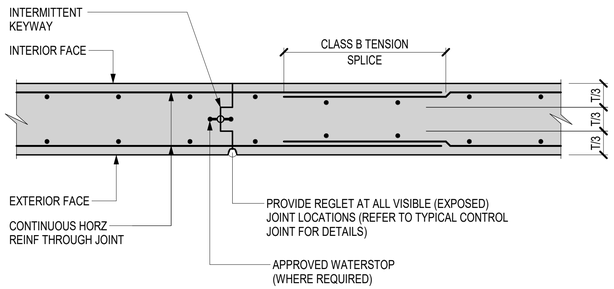


NOTES:
1. VERTICAL REINF BARS ARE NOT SHOWN FOR CLARITY (TYP).

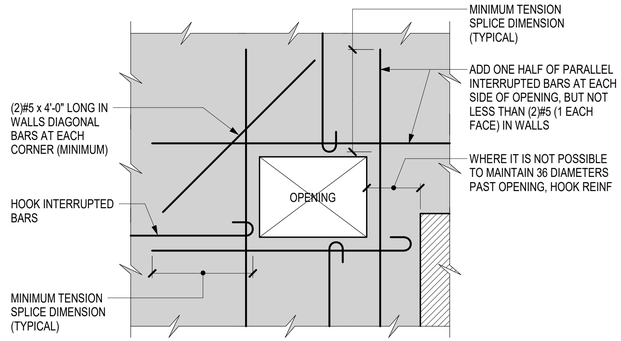
1 TYPICAL PLAN DETAIL OF HORIZONTAL WALL REINFORCING

SCALE: 1" = 1'-0"



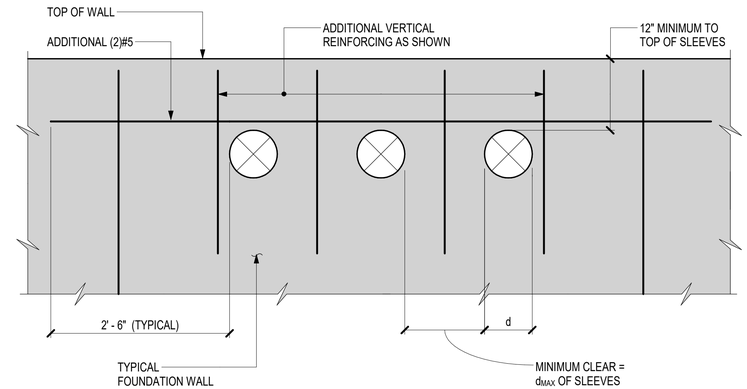
2 TYPICAL CONSTRUCTION JOINT DETAIL AT VERTICAL WALL

SCALE: 1" = 1'-0"



3 TYPICAL REINFORCING AT OPENINGS IN CONCRETE WALLS

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



USE FOR 3 OR MORE SLEEVES

NOTES:
1. ALL SLEEVES SHALL BE CLEARLY SHOWN ON SHOP DRAWINGS FOR APPROVAL.

4 TYPICAL MULTI-SLEEVE DETAIL AT FOUNDATION WALL

SCALE: 1" = 1'-0"

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TYPICAL CONCRETE DETAILS II

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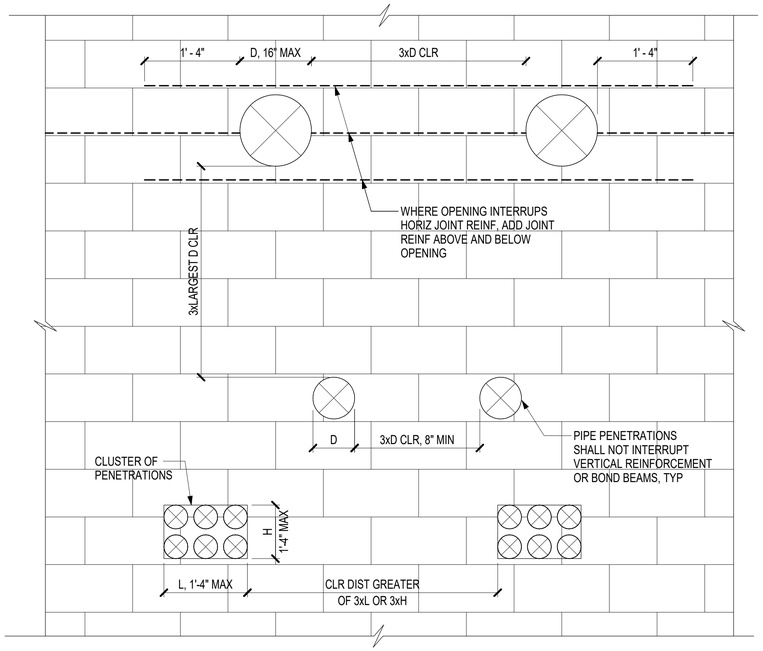
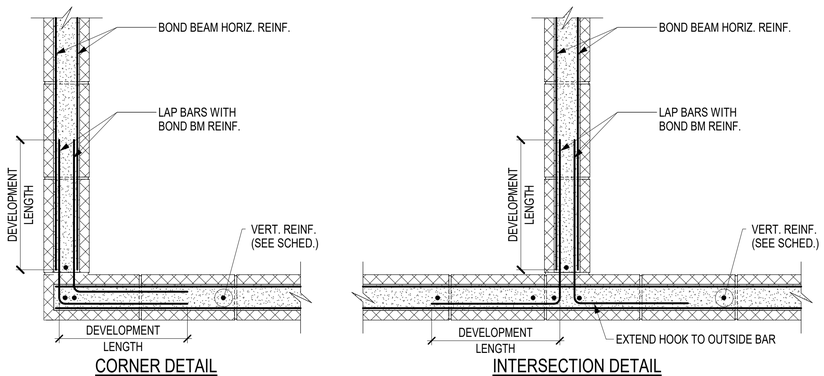


1 TYPICAL MASONRY WALL PENETRATIONS
SCALE: 1" = 1'-0"

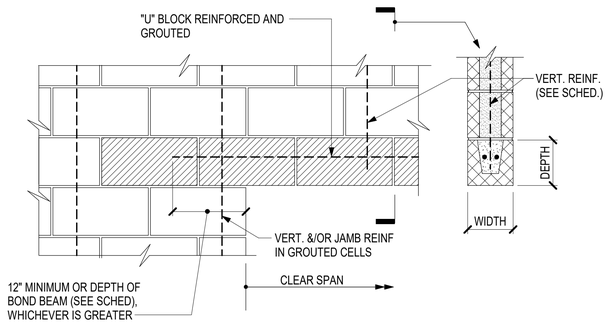
TYPICAL SHEAR WALL REINFORCING SCHEDULE			
WALL TYPE	VERTICAL REINFORCING EACH END (FULL HEIGHT)	VERTICAL REINFORCING FIELD (FULL HEIGHT)	HORIZONTAL REINFORCING
CMU WALL	(2) #5	#5 @ 16"OC	#4 @ 24"OC

NOTE: "EACH END" REINFORCING ALSO APPLIES AT EITHER SIDE OF DOOR OPENING (TYP).
WALL SEGMENTS MEASURING 40" OR LESS IN PLAN ARE TO BE GROUTED SOLID WITH TABULATED VERTICAL REINFORCING BAR IN EACH CELL.
SEE 4/S3.1 FOR TYPICAL WALL ELEVATION AND ADDITIONAL INFORMATION.



NOTES:
1.- REFER TO SECTION THROUGH DOOR/WINDOW FOR ADDITIONAL BOND BEAM/LINTEL REQUIREMENT.
2.- REFER TO ARCH. DWGS. FOR CMU LAYOUT.

3 TYPICAL CMU LINTEL DETAILS
SCALE: 1" = 1'-0"

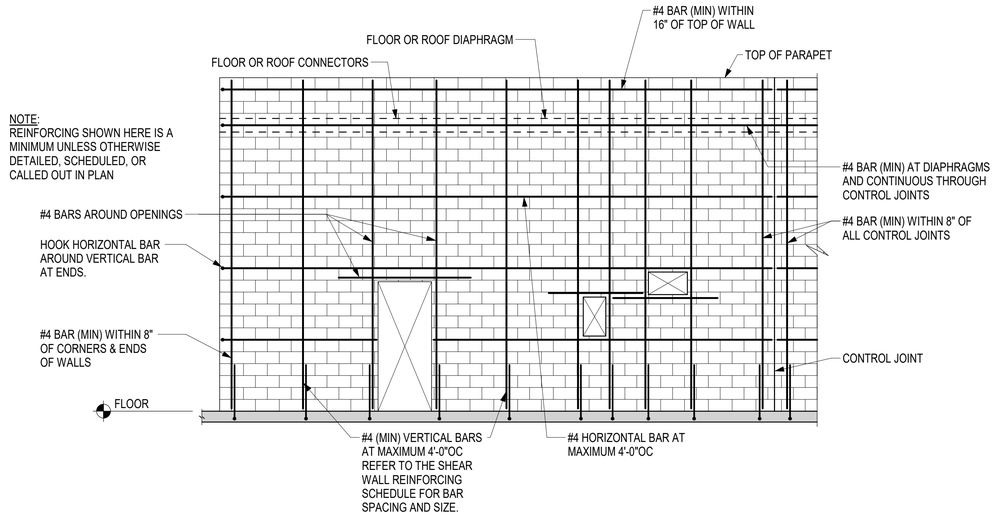


CMU LINTEL SCHEDULE			
CLEAR SPAN	WIDTH	DEPTH	REINF.
< 5'-0"	8"	8"	(2)-#5
4'-0" - 6'-0"	8"	8"	(2)-#6
> 6'-0" - 9'-0"	8"	16"	(2)-#5

NOTE:

1. SEE GENERAL NOTES FOR ALTERNATIVE STEEL LOOSE LINTELS.
2. KNOCK OUT BLOCKS SHALL NOT BE USED FOR REINFORCED LINTEL BLOCK DETAILS ("U" BLOCK ONLY).

2 TYPICAL CMU LINTEL DETAILS
SCALE: 1" = 1'-0"



4 MINIMUM REINFORCEMENT REQUIREMENTS FOR SPECIAL REINFORCED MANSONRY SHEAR WALLS
SCALE: 1/4" = 1'-0"

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TYPICAL MASONRY DETAILS I

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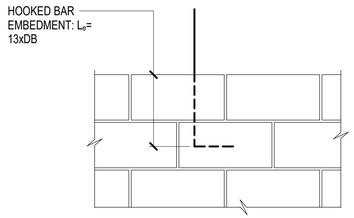
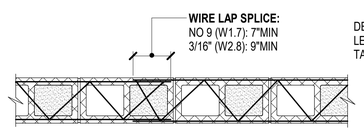
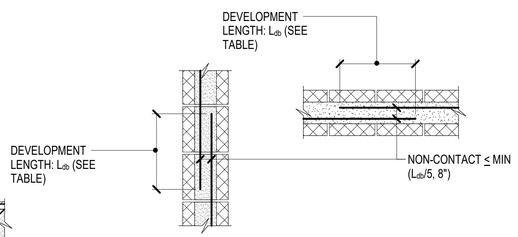


ELEVATION VIEW



PLAN VIEW



SECTION VIEW PLAN VIEW

DEVELOPMENT LENGTH OF REBAR IN CMU			
f'm =	1900		
	Centered Bar	Bar at Face	2 bars in
	Block Size		1 cell
Bar size	8		
3	12	17	26
4	13	31	36
5	21	45	45
6	40	54	54
7	55	63	63
8	72	72	72
9		81	81
10		90	90
11		99	99

NOTES:
1. GRAY SHADE INDICATES BAR SIZES NOT RECOMMENDED FOR BLOCK.
2. EPOXY COATED REBAR VALUES ARE REQUIRED TO BE 150% INCREASED FOR LDB GREATER THAN 12 INCHES.
3. WELDED OR MECHANICAL SPLICES SHALL BE DESIGNED FOR 1.25XFy.
4. DO NOT PLACE REINFORCING IN CELL THAT HAS A COMBINED AREA EXCEEDING 4% OF THE CELL AREA:
   8" CMU: As MAX = 1.29 IN²
   10" CMU: As MAX = 1.75 IN²
   12" CMU: As MAX = 2.24 IN²

1 TYPICAL CMU REINFORCING & SPLICE DEVELOPMENT

SCALE: 1" = 1'-0"

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TYPICAL MASONRY DETAILS II

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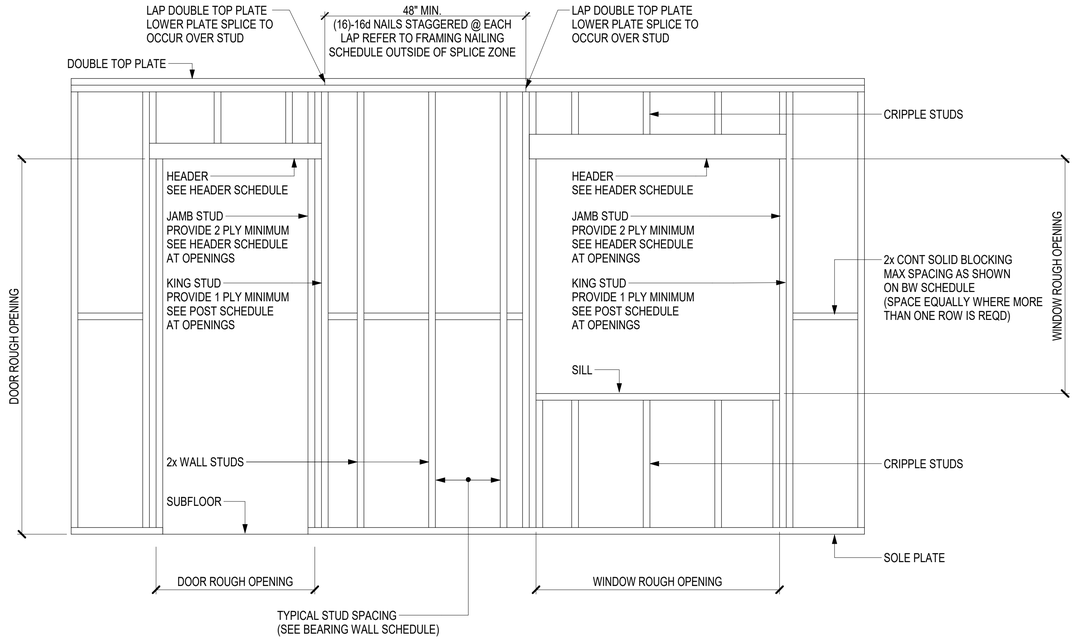
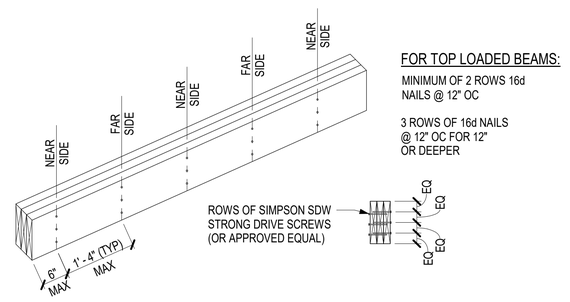
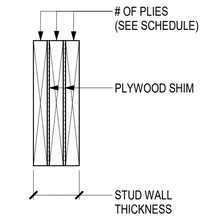


1 TYPICAL BEARING WALL ELEVATION
SCALE: 3/4" = 1'-0"



2 TYPICAL BUILT UP BEAM DETAIL
SCALE: 3/4" = 1'-0"



3 TYPICAL HEADER DETAIL
SCALE: 1 1/2" = 1'-0"

FRAMING NAILING SCHEDULE

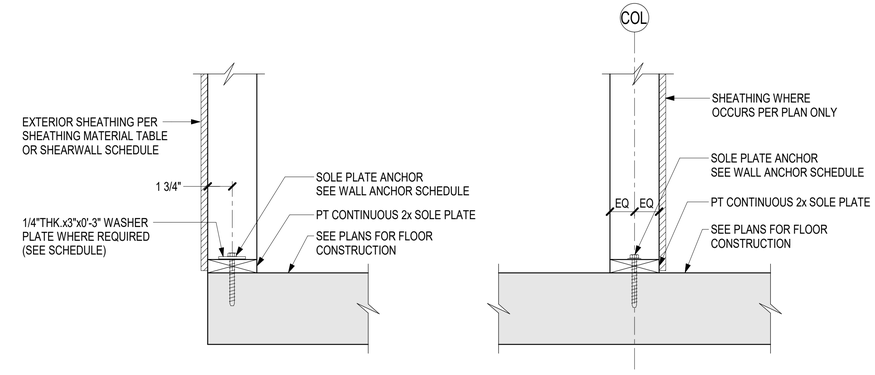
TRUSS OR CONNECTION	TYPE	NAILING (Common Nails)
JOIST TO TOP PLATE OR GIRDER	TOENAIL	(3)-8d
BRIDGING TO JOIST	TOENAIL(each end)	(2)-8d
SOLE PLATE TO JOIST OR BLOCKING (INTERIOR WALL)	FACE NAIL	16d @16"OC
SOLE PLATE TO JOIST OR BLOCKING (EXTERIOR WALL)	FACE NAIL	(2)-16d @16"OC
TOP PLATE TO STUD	END NAIL	(2)-16d
STUD TO SOLE PLATE	TOENAIL OR END NAIL	(4)-8d OR (2)-16d
DOUBLE STUDS	FACE NAIL	16d @16"OC
DOUBLED TOP PLATE	FACE NAIL	16d @16"OC
TOP PLATES, LAPS AND INTERSECTIONS	FACE NAIL	(2)-16d
CONTINUOUS HEADER, TWO PIECES	ALONG EACH EDGE	16d @16"OC
CEILING JOISTS TO PLATE	TOENAIL	(3)-8d
KING STUD TO OPENING HEADER/LINTEL	END NAIL	(4)-16d
CONTINUOUS HEADER TO STUD	TOENAIL	(4)-16d
WINDOW SILL TO KING STUD	END NAIL	(3)-16d
CEILING JOISTS, LAPS OVER PARTITIONS	FACE NAIL	(3)-16d
FLOOR JOIST TO PLATE	TOENAIL	(2)-16d
BUILT-UP CORNER STUDS	ALONG FACE	16d @16"OC
BUILT-UP GIRDER AND BEAMS	T&B STAGGER	16d @16"OC
	ENDS AND SPLICES	(4)-16d
SHEAR PANELS TO BEARING PLATES	FACE NAIL	(12)-10d T&B

HEADER SCHEDULE

2x8 EXTERIOR WALLS

LENGTH (L) ft	DESIGNATION
L ≤ 3	(3)2x12
3 < L ≤ 6	(4)2x12

NOTES:
1. UNO ON PLAN / ELEVATION REFER TO SCHEDULE ABOVE FOR HEADER SIZES.
2. ENGINEER OF RECORD TO BE NOTIFIED FOR ANY SIZE THAT EXCEEDS LENGTH IN SCHEDULE AND IS NOT INDICATED ON PLAN.
3. PROVIDE DOUBLE 2x STUD (JACK STUDS) BELOW HEADER ON EACH END MINIMUM.
4. HEADERS NOTED ON PLAN WITH (SP#1) SHALL BE DOUGLAS FIR LARCH GRADE MATERIAL.
5. HEADERS SHALL BE PADDED OUT TO FULL THICKNESS OF WALL STUD WITH PLYWOOD SHIMS.



(PERIMETER WALLS) (INTERIOR WALLS)

4 TYPICAL WALL BASE ANCHORAGE DETAIL
SCALE: 1 1/2" = 1'-0"

WALL ANCHOR SCHEDULE			
LOCATION	PRODUCT	SPACING	REMARKS
EXTERIOR WALLS	1/2" TITEN HD	24"	
EXTERIOR SHEARWALLS	1/2" TITEN HD	24"	PROVIDE 3"x3"x1/4" THICK PLATE WASHER AT EACH ANCHOR

NOTES:
1. ALL ANCHORS TO BE INSTALLED PER MANUFACTURERS PRINTED INSTRUCTIONS.

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TYPICAL WOOD DETAILS I

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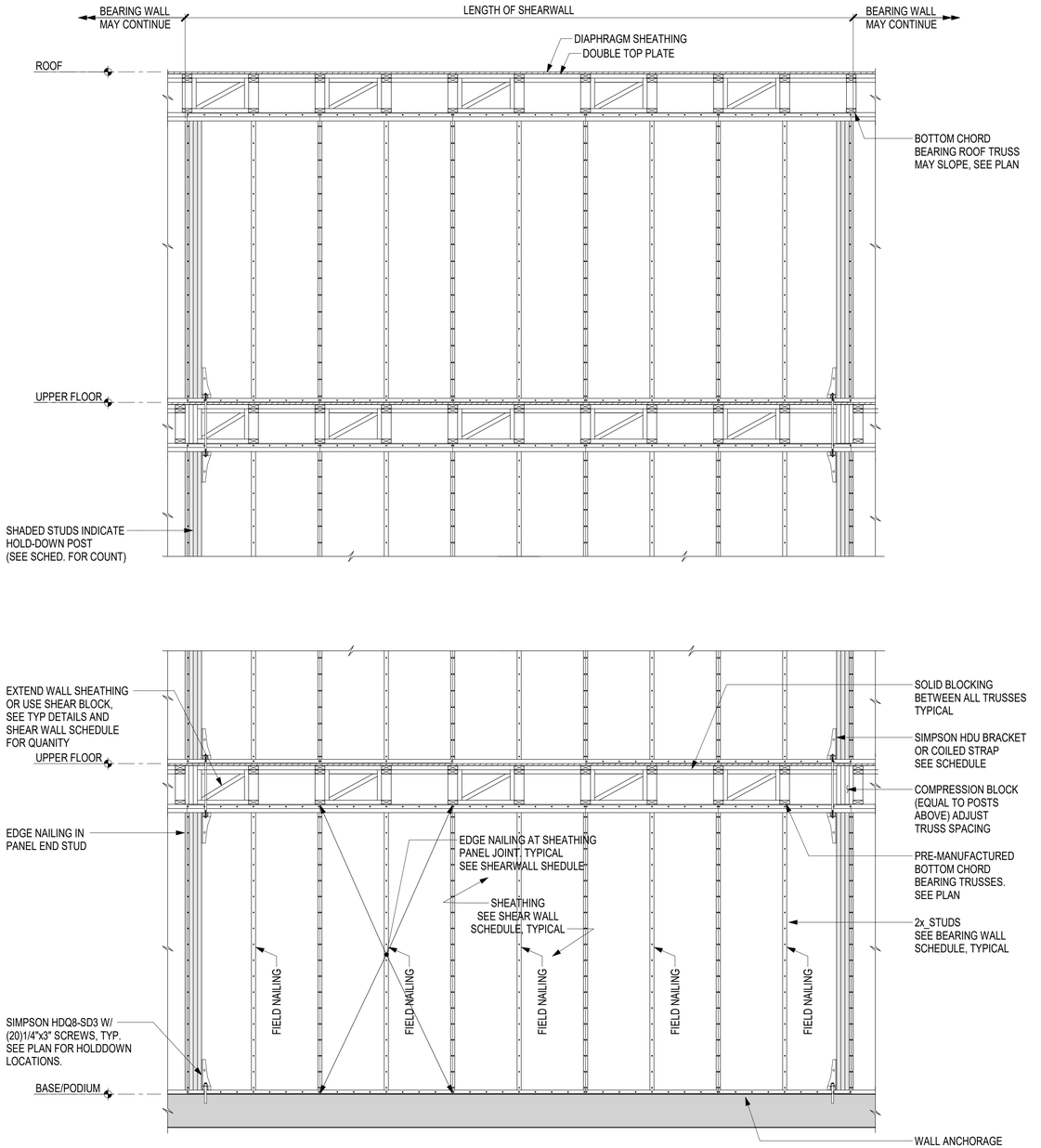

NOTE:
1. ELEVATION INDICATES SHEATHING WITH LONG SIDE OF SHEET ORIENTED VERTICALLY. WHERE SHEET IS ORIENTED HORIZONTALLY OR IF WALL IS GREATER THAN 8 FT TALL, PROVIDE CONTINUOUS BLOCKING AND EDGE NAIL (EN) PANEL EDGES.

1 TYPICAL SHEAR WALL ELEVATION WITH HOLD DOWNS (BOTTOM CHORD BEARING TRUSSES)

SCALE: 1/2" = 1'-0"

SHEAR WALL SCHEDULE										
DESIGNATION	SHEATHING TYPE	SHEATHING THICKNESS	EDGE NAILS (SIZE AND SPACING)	INTERIOR/FIELD NAILS (SIZE AND SPACING)	SHEATHING ON TWO SIDES	# OF SOLE PLATE FASTENERS	HOLD DOWN POST (CHORD MEMBER SIZE)	HOLD DOWN SYSTEM	INCREMENTAL BEARING FORCE (POUNDS)	CUMULATIVE TENSION FORCE (POUNDS)
SW1	Sheathing	15/32	8d @ 6"	8d @ 6"	No	25	(2) DFL-SS (2)-2x8	HDU	1560	1560
SW2	Sheathing	15/32	8d @ 3"	8d @ 6"	No	38	(2) DFL-SS (2)-2x8	HDU	3980	3980
SW3	Sheathing	15/32	8d @ 3"	8d @ 6"	No	41	(2) DFL-SS (2)-2x8	HDU	3740	3740

SHEAR WALL SCHEDULE NOTES:

1. REFER TO BEARING WALL SCHEDULE FOR STUD SIZE AND SPACING.
2. CHORD MEMBERS CONSIST OF A SINGLE OR PAIRS OF HOLD DOWN POSTS SET 6" APART IN ACCORDANCE WITH THE APPROVED ANCHOR TIEDOWN SYSTEM. REFER TO ``HOLD DOWN POST" COLUMN IN SCHEDULE FOR DESIGNATION AND WOOD POST SCHEDULE FOR OTHER INFORMATION. CHORD MEMBERS SHALL ALIGN VERTICALLY THROUGH THE BUILDING.
3. WHERE STRAP AND TIE SYSTEM IS SPECIFIED, HOLD DOWN HARDWARE SHALL BE ATTACHED TO SUCCESSIVE CHORD MEMBERS TO PROVIDE CONTINUOUS TIE VERTICALLY THROUGH THE BUILDING. LOWER CONNECTION OF HOLD DOWNS MAY BE COMPLETELY CONNECTED. UPPER CONNECTION SHALL NOT BE COMPLETED UNTIL AFTER ALL MOISTURE SHRINKAGE AND CONSTRUCTION SETTLEMENT HAS OCCURRED. (MINIMUM OF 7 DAYS AFTER THE BUILDING ENVELOPE IS AIR TIGHT AND HEATED.)
4. WHERE STRAPS ARE INDICATED THEY SHALL BE INSTALLED WITH A MINIMUM AMOUNT OF NAILS PER MANUFACTURER'S PRINTED INSTRUCTIONS, UNO.
5. LONG SIDE OF SHEATHING PANELS MAY BE INSTALLED VERTICALLY OR HORIZONTALLY AND NOT BE LESS THAN 4ft - 8ft EXCEPT BOUNDARIES AND CHANGES IN FRAMING. FRAMING MEMBERS OR BLOCKING SHALL BE PROVIDED AT EDGES OF ALL PANELS. AT CONTRACTORS DISCRETION 15/32" PANELS MAY BE SUBSTITUTED FOR 7/16" PANELS SO LONG AS LONG SIDE OF SHEATHING PANELS IS INSTALLED HORIZONTALLY ACROSS WALL STUDS.
6. NAIL SIZES SHOWN ARE BASED ON COMMON NAIL SIZES. REFER TO GENERAL NOTES SHEET FOR SUBSTITUTION OF GUN NAIL OR OTHER FASTENERS.
7. PROVIDE 1/4" DIA SDS SCREWS AT EACH SOLE PLATE TO TOP PLATE OR LADDER TRUSS BELOW. CAPACITY TO MATCH NAILING OF SHEAR WALL SHEATHING AT LEVEL ABOVE.
8. TOP OF SHEAR WALLS THAT RUN PARALLEL TO ROOF TRUSSES SHALL EXTEND TO UNDERSIDE OF ROOF SHEATHING.

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TYPICAL WOOD DETAILS II

PROJECT #: 2023230.000

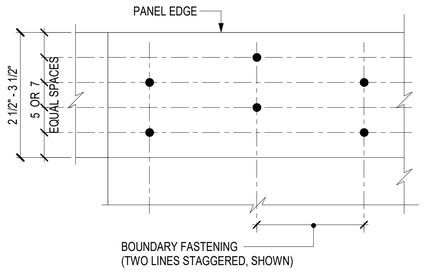
ISSUE DATES:

DRAWN BY:

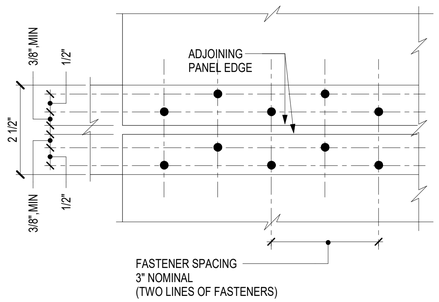
100% CD

S4-2

12.21.2023



DETAIL A



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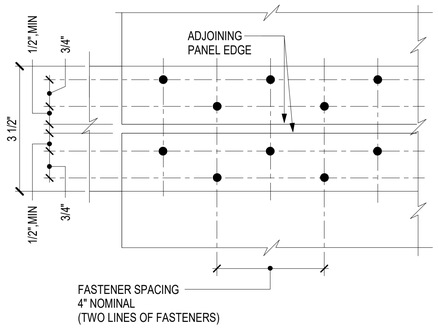
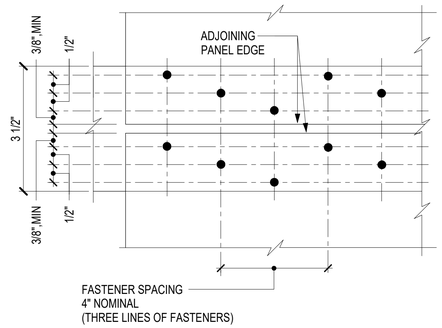


DETAIL B



DETAIL B

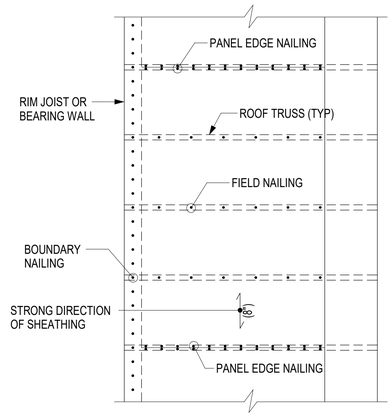
NOTE:
1. SPACING ADJOINING PANEL EDGE JOINTS 1/8" MINIMUM SPACING BETWEEN LINES OF FASTENERS IS 3/8".

1 TYPICAL NAILING PATTERNS

SCALE: 6" = 1'-0"

DIAPHRAGM NAILING SCHEDULE		
TYPICAL ROOF DIAPHRAGM		
LOCATION	SIZE	SPACING
BOUNDARY	8d	6"
PANEL EDGE	8d	6"
FIELD	8d	12"

NOTES:
1. NAIL SIZE SHOWN ARE BASED ON COMMON NAIL SIZES. REFER TO GENERAL NOTE SHEET FOR SUBSTITUTION OF GUN NAILS OR OTHER FASTENERS.
2. REFER TO PLANS FOR LOCATIONS OF HIGH SHEAR DIAPHRAGMS (IF APPLICABLE).



TYPICAL ROOF DIAPHRAGM PLAN

NOTES:
1. MINIMUM PENETRATION IN FRAMING IS 1 1/2".
2. DIAPHRAGMS ARE UNBLOCKED.

2 TYPICAL NAILING PATTERNS

SCALE: 3/4" = 1'-0"

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TYPICAL
WOOD
DETAILS III

PROJECT #:
2023230.000

ISSUE DATES:

DRAWN BY:

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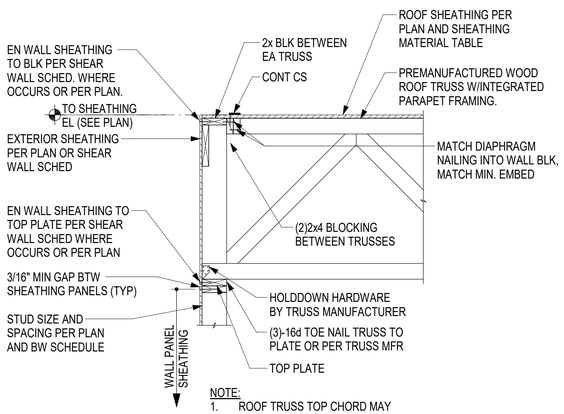
S4-3

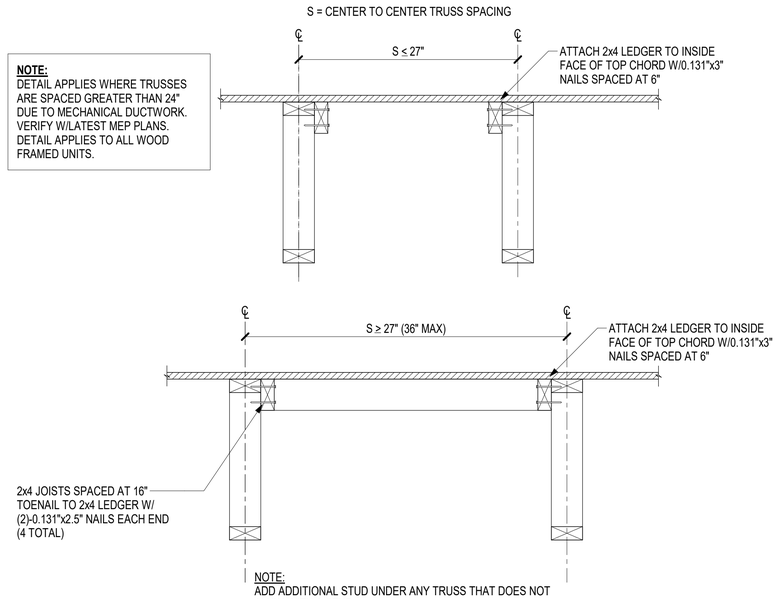
12.21.2023



NOTE:
1. ROOF TRUSS TOP CHORD MAY BE SLOPED. SEE PLANS.

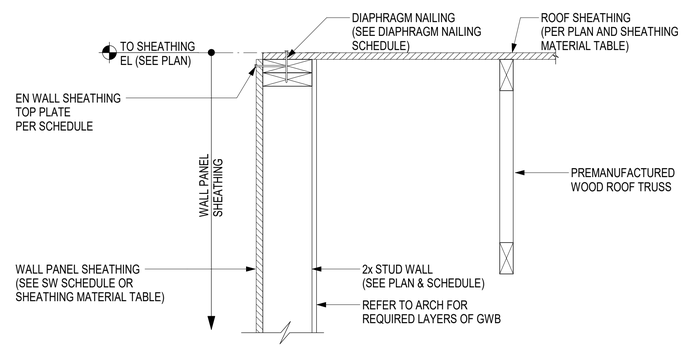
1 ROOF TRUSS BOTTOM CHORD BEARING AT EXTERIOR WALL

SCALE: 3/4" = 1'-0"



2 FLOOR LADDER TRUSS FRAMING AT TRUSS SPACINGGREATER THAN 24"

SCALE: 1 1/2" = 1'-0"



3 ROOF TRUSS PARALLEL AT EXTERIOR WALL (AT SHORT PARAPET)

SCALE: 1 1/2" = 1'-0"

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TYPICAL WOOD DETAILS IV

PROJECT #: 2023230.000

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S4-4

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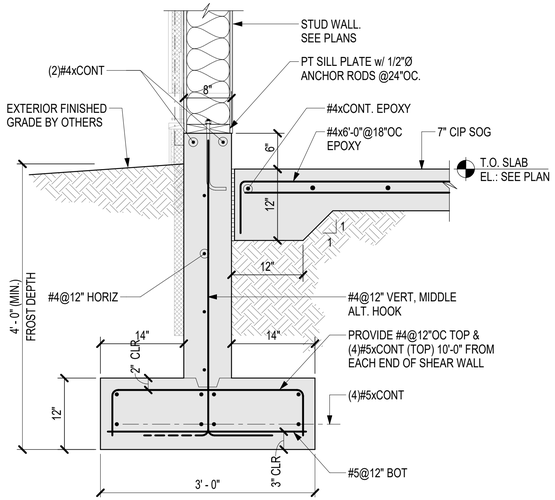
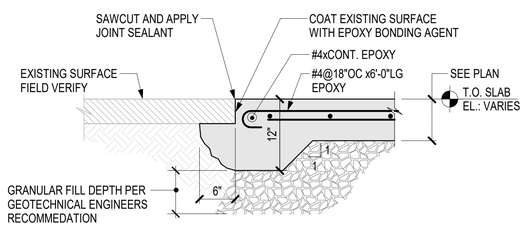


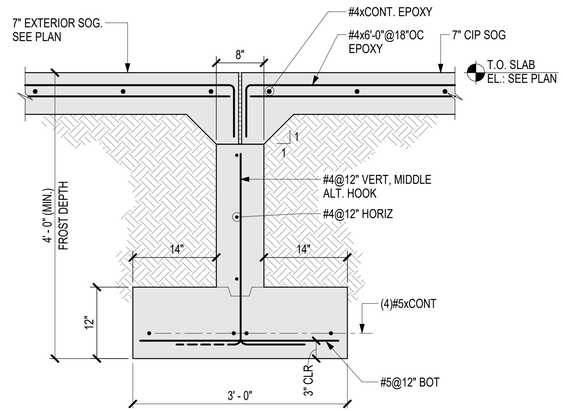
1 SECTION AT PERIMETER KNEEWALL

SCALE: 1" = 1'-0"



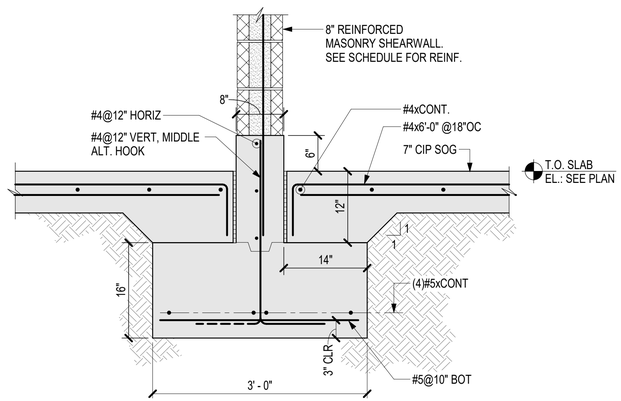
2 TYPICAL EXTERIOR SLAB EDGE DETAIL

SCALE: 1" = 1'-0"



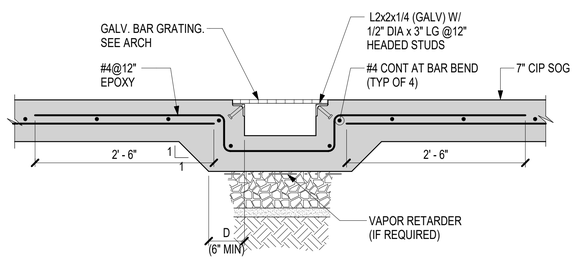
3 SECTION AT OVERHEAD DOOR EXTERIOR SOG & INTERIOR SOG INTERFACE

SCALE: 1" = 1'-0"



4 SECTION AT CMU SHEAR WALL

SCALE: 1" = 1'-0"



5 SECTION AT TRENCH DRAIN IN SLAB ON GRADE

SCALE: 1" = 1'-0"

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SECTIONS & DETAILS I

PROJECT #: 2023230.000

ISSUE DATES:

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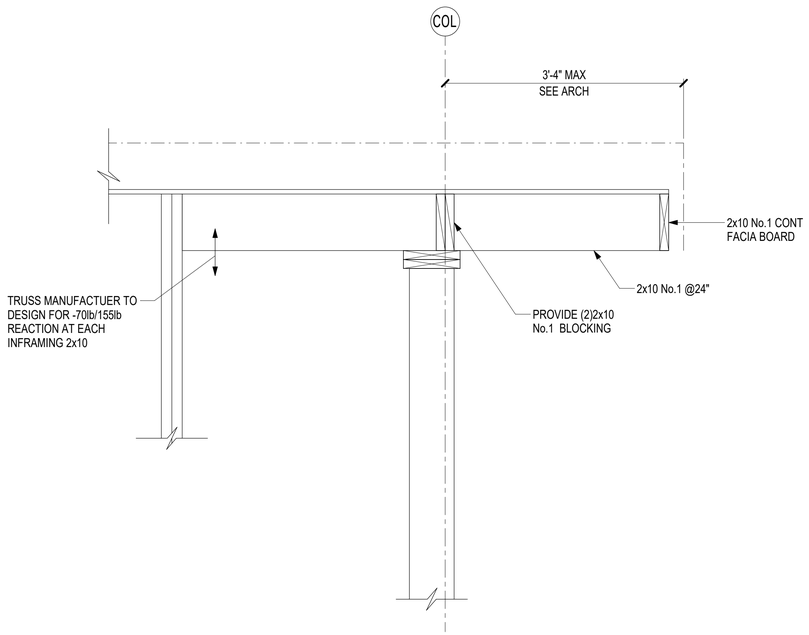
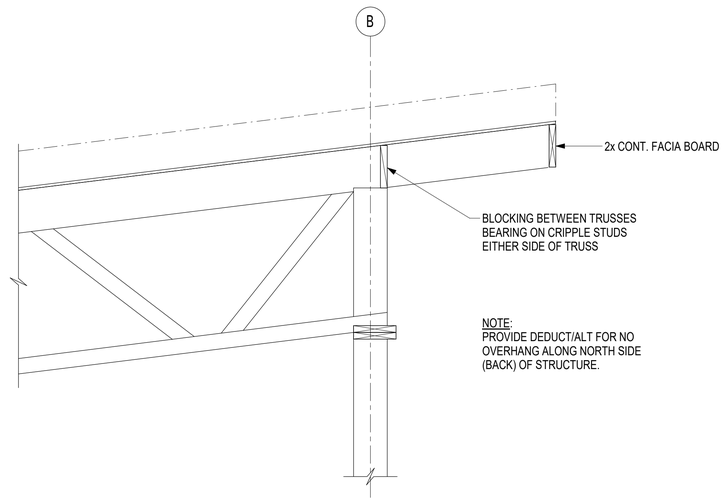
S5-1

12.21.2023



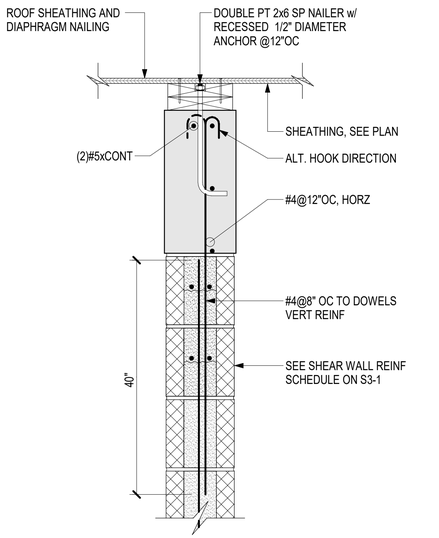
1 S1-2 SECTION AT EAST & WEST ROOF OVERHANG

SCALE: 1" = 1'-0"



2 S1-2 SECTION AT NORTH & SOUTH ROOF OVERHANG

SCALE: 3/4" = 1'-0"



3 S1-2 SECTION

SCALE: 1 1/2" = 1'-0"

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SECTIONS & DETAILS II

PROJECT #: 2023230.000

ISSUE DATES:

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S5-2

12.21.2023

EXHAUST FAN SCHEDULE

PLAN CODE	MANUFACTURER	MODEL NUMBER	CFM	ESP	RPM	DRIVE TYPE	ELECTRICAL DATA				STATIC EFFICIENCY	SONES	WEIGHT	CONTROL NOTES	AREA SERVED	REMARKS
							HP	VOLT	FLA	PH						
EF-1	COOK	10XWD28D17(VF)	200	.008	568	DIRECT	0.125	120	3	1	25%	0.4	73	CONTINUOUS	100 - WEST STORAGE	SEE NOTES #1 AND #3
EF-2	COOK	10XWD28D17(VF)	200	.008	568	DIRECT	0.125	120	3	1	25%	0.4	73	CONTINUOUS	101 - EAST STORAGE	SEE NOTES #1 AND #3
EF-3	COOK	20WX32D17(VF)	3000	.008	904	DIRECT	0.125	120	3	1	3%	9.1	112	VCS-1	100 - WEST STORAGE	SEE NOTES #2 AND #3
EF-4	COOK	20WX32D17(VF)	3000	.008	904	DIRECT	0.125	120	3	1	3%	9.1	112	VCS-2	101 - EAST STORAGE	SEE NOTES #2 AND #3

NOTES:
1. WALL-MOUNTED EXHAUST FAN. PROVIDE WITH GRAVITY ALUMINUM BACKDRAFT SHUTTER, WIRE GUARD, WALL COLLAR, AND 45 DEGREE WEATHER HOOD.
2. WALL-MOUNTED EXHAUST FAN. PROVIDE WITH AIR BALANCE KIT FOR CONTROL BY VCS, MOTORIZED ALUMINUM SHUTTER, WIRE GUARD, WALL COLLAR, AND 45 DEGREE WEATHER HOOD.
3. COORDINATE EXACT MOUNTING LOCATION AND ELEVATION WITH ARCHITECT PRIOR TO ROUGH-IN.

VENTILATION CONTROL SYSTEM SCHEDULE

PLAN CODE	MANUFACTURER	MODEL NUMBER	SENSORS		EQUIPMENT SERVED	REMARKS
			# DEVICES	TYPE		
VCS-1	TOX-ALERT	TSM	1	CO & NO2 SENSOR	EF-3, L-1	SEE NOTES
VCS-2	TOX-ALERT	TSM	1	CO & NO2 SENSOR	EF-4, L-2	SEE NOTES

NOTES:
1. CONTROL SYSTEM SHALL ENABLE CORRESPONDING EXHAUST FANS.
2. PROVIDE VENTILATION CONTROL SYSTEM PANEL HIGH CO/NO2 ALARM CONDITION FOR EACH SENSOR, FAN ON LED (1 FOR EACH OUTPUT), LOCAL ALARM HORN AND LIGHT WITH SILENCE SWITCH, SENSOR POWER INDICATION, AND MISC RELAYS, ETC FOR A COMPLETE AND OPERABLE INSTALLATION.
3. CONDUIT SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR FROM VENTILATION CONTROL UNIT TO CONTROL DEVICES, SENSORS, AND/OR EQUIPMENT. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND TERMINATING WIRING IN ITS ENTIRETY.
4. MOUNT SENSORS AT ELEVATION PER MANUFACTURERS RECOMMENDATION

LOUVER SCHEDULE

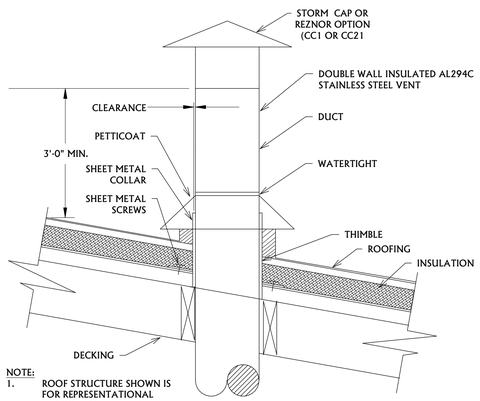
PLAN CODE	MANUFACTURER	MODEL NUMBER	FUNCTION	SIZE	FACE AREA (SQFT)	FACE VELOCITY (FPM)	MATERIAL	FINISH	CFM	DAMPER	LOCATION	REMARKS
L-1	RUSKIN	EME620DD	INTAKE	48" X 36"	5.46	550	ALUMINUM	70% PVFD	3000	MOTORIZED	100 - WEST STORAGE	SEE NOTES
L-2	RUSKIN	EME620DD	INTAKE	48" X 36"	5.46	550	ALUMINUM	70% PVFD	3000	MOTORIZED	101 - EAST STORAGE	SEE NOTES

NOTES:
1. ALL LOUVERS SHALL BE FACTORY FINISHED WITH A HIGH PERFORMANCE POWER COAT WITH ZERO-VOC EMISSIONS AND 10 YEAR WARRANTY. PROVIDE STANDARD COLOR CHART FOR SELECTION BY ARCHITECT DURING SUBMITTAL REVIEW.
2. DAMPERS SHALL BE PROVIDED AS PARALLEL BLADE ULTRA-LOW LEAKAGE WITH 120V MOTORIZED ACTUATORS.

UNIT HEATER SCHEDULE

PLAN CODE	MFGR	MODEL NUMBER	FUEL TYPE	STYLE	CFM	MIN MBH					ELECTRICAL DATA				WEIGHT	REMARKS
						MBH INPUT	MBH OUTPUT	EAT °F	LAT °F	EFFICIENCY	HP	VOLT	FLA	PH		
UH-1	DETROIT RADIANT	FA-150	NATURAL GAS	CEILING HUNG	2600	150	120	50	100	80%	.125	120	10.7	1	195	SEE NOTES
UH-2	DETROIT RADIANT	FA-150	NATURAL GAS	CEILING HUNG	2600	150	120	50	100	80%	.125	120	10.7	1	195	SEE NOTES
UH-3	DETROIT RADIANT	FA-150	NATURAL GAS	CEILING HUNG	2600	150	120	50	100	80%	.125	120	10.7	1	195	SEE NOTES
UH-4	DETROIT RADIANT	FA-150	NATURAL GAS	CEILING HUNG	2600	150	120	50	100	80%	.125	120	10.7	1	195	SEE NOTES

NOTES:
1. PROVIDE WITH THREE UH-150DN30 DOWNTURN NOZZLES TO COMPLETE A FULL 90° TURN.
2. PROVIDE WITH 7 DAY PROGRAMMABLE THERMOSTAT, HANGER HARDWARE, RUBBER-IN-SHEAR VIBRATION ISOLATORS, AND VENTING AS REQUIRED.
3. PROVIDE WITH OPTICAL GARAGE DOOR SWITCHES FOR EACH GARAGE DOOR FOR OVERRIDE OFF CONTROL OF UNIT HEATERS IN THEIR RESPECTIVE SPACES.
4. SEE MECHANICAL DETAILS FOR ADDITIONAL REQUIREMENTS.



NOTE:
1. ROOF STRUCTURE SHOWN IS FOR REPRESENTATIONAL PURPOSES ONLY. VERIFY ACTUAL CONSTRUCTION WITH ARCHITECTURAL DRAWINGS.
2. MAINTAIN 6' CLEARANCE BEWTEEN FLUE TERMINATION AND ANY ADJACENT WALLS.

1 FLUE ROOF TERMINATION
NOT TO SCALE

MECHANICAL PROJECT NOTES

1. ALL WORK ON THE PROJECT SHALL CONFORM TO ALL LOCAL, CITY, STATE, AND NAT'L CODES AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THE N.F.P.A., N.E.C., I.B.C., I.M.C., U.P.C., I.E.C.C., AND THE LOCAL SERVING UTILITY COMPANIES.
2. THE WORK ON THIS PROJECT SHALL CONSIST OF ALL ITEMS, ARTICLES, MATERIALS, EQUIPMENT, AND LABOR ALONG WITH ALL INCIDENTAL ITEMS REQUIRED BY GOOD PRACTICE AND WORKMANSHIP TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
3. EXAMINE AND REFER TO ALL ARCHITECTURAL, STRUCTURAL, CIVIL, AND ELECTRICAL DRAWINGS FOR CONSTRUCTION CONDITIONS WHICH MAY AFFECT THE PLUMBING/MECHANICAL WORK. INSPECT THE EXISTING FACILITIES FOR VERIFICATION OF EXISTING CONDITIONS AND SYSTEMS.
4. THE MECHANICAL CONTRACTORS SHALL BE RESPONSIBLE FOR AND PAY FOR ALL FEES AND PERMITS REQUIRED FOR WORK UNDER THEIR CONTRACT AND UNDER THEIR SUPERVISION BY SUBCONTRACT.
5. MANUFACTURER TRADE NAMES AND CATALOG NUMBERS ARE LISTED TO INDICATE SPECIAL CONDITIONS AND QUALITY OF MATERIALS OR EQUIPMENT SUPPLIED. ALTERNATIVE EQUIPMENT OR MATERIALS MAY BE SUBMITTED FOR REVIEW FOR APPROVAL PRIOR TO ANY BIDDING.
6. THE DRAWINGS DO NOT NECESSARILY SHOW THE EXACT LOCATION OF ALL DUCTWORK. ACTUAL CONDITIONS AND LOCATIONS SHALL BE FIELD VERIFIED.
7. ALL WORK BY THE CONTRACTOR IS SUBJECT TO REVIEW AT ANY TIME BY THE ARCHITECT/ENGINEER.
8. ALL WORK TO BE PERFORMED SHALL FIRST BE SCHEDULED AND SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR ACCEPTANCE.
9. SMOKING SHALL NOT BE PERMITTED ANYWHERE IN THIS FACILITY.
10. THE CONTRACTOR SHALL BE CAREFUL NOT TO BLOCK ANY PATHS OF EGRESS WHILE PERFORMING THE WORK SPECIFIED.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP OF ALL MATERIALS RESULTING FROM HIS/HER WORK. CLEAN-UP SHALL BE PERFORMED TO THE LEVEL OF ACCEPTANCE OF THE OWNER'S REPRESENTATIVE.
12. THE CONTRACTOR SHALL AND HEREBY DOES WARRANT AND GUARANTEE THAT ALL WORK EXECUTED UNDER HIS/HER CONTRACT SHALL BE FREE OF DEFECTS OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
13. ALL DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF SMACNA DUCTWORK CONSTRUCTION MANUALS, MINIMUM GAUGE OF 26, GALVANIZED STEEL.
14. SUBMIT ALL SHOP DRAWINGS (ELECTRONIC PDF) FOR ALL EQUIPMENT ASSOCIATED WITH THIS PROJECT TO THE ARCHITECT/ENGINEER FOR REVIEW/APPROVAL PRIOR TO ORDERING ANY EQUIPMENT.
15. UPON SUBSTANTIAL COMPLETION THE CONTRACTOR SHALL SUBMIT (3 COPIES AND ELECTRONIC PDF) OF AN O&M MANUAL/BROCHURE OF EQUIPMENT TO THE OWNER AND PROVIDE THE NECESSARY TRAINING TO THE FACILITIES PERSONNEL REGARDING ALL EQUIPMENT ASSOCIATED WITH THIS PROJECT.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF A SATISFACTORY AND COMPLETE SYSTEM IN ACCORDANCE WITH DRAWINGS. PROVIDE, AT NO EXTRA COST TO THE OWNER, ALL INCIDENTAL ITEMS REQUIRED FOR A COMPLETE SYSTEM.

MECHANICAL SYMBOLS LEGEND

AIR TERMINALS, EQUIPMENT & SPECIALTIES

- NEW EQUIPMENT
- EXISTING TO REMAIN
- EXISTING EQUIP TO BE REMOVED OR RELOCATED
- SUPPLY AIR TERMINAL (NEW, EXIST., DEMO.)
- RETURN AIR TERMINAL (NEW, EXIST., DEMO.)
- EXHAUST AIR TERMINAL (NEW, EXIST., DEMO.)
- LINEAR SLOT AIR TERMINAL
- PUMP
- P.O.D.C. - POINT OF DISCONNECTION
- P.O.C. - POINT OF CONNECTION

EQUIPMENT TAG: EF — TYPE OF EQUIPMENT; EQUIPMENT NUMBER (REFER TO SCHEDULE)

DIFFUSER/GRILLE TAG: SD-1 / 220 — AIR TERMINAL NUMBER; AIR TERMINAL CFM (REFER TO SCHEDULE)

- WALL LOUVER
- SIDEWALL AIR TERMINAL
- T — T'STAT
- S — SWITCH

DUCTWORK & ACCESSORIES

- NEW DUCTWORK
- EXISTING DUCTWORK TO REMAIN
- EXISTING DUCTWORK TO BE REMOVED
- DUCT BREAK
- UP — RISE IN DUCTWORK
- DN — FALL IN DUCTWORK
- FD — FIRE DAMPER
- SD — SMOKE DAMPER
- F/SD — FIRE/SMOKE DAMPER
- BDD — BACKDRAFT DAMPER
- VD — MANUAL VOLUME DAMPER
- MOTORIZED DAMPER
- 18x12 — INSIDE CLEAR DUCT SIZE: FIRST FIGURE INDICATED IS SIDE OF DUCT SHOWN
- DUCTWORK END CAP
- FLEXIBLE DUCTWORK
- SQUARE ELBOW UP SUPPLY/RETURN/EXH.
- SQUARE ELBOW DN SUPPLY/RETURN/EXH.
- ROUND ELBOW UP SUPPLY/RETURN/EXH.
- ROUND ELBOW DN SUPPLY/RETURN/EXH.
- SQUARE DIFFUSERS SUPPLY/RETURN/EXH.
- ROUND DIFFUSERS FULL / HALF
- INDICATED AIR FLOW SUPPLY / RETURN
- DUCT REDUCER

DUCTWORK SHADING

- SUPPLY AIR
- RETURN AIR
- EXHAUST AIR
- OUTSIDE AIR
- EXISTING
- DEMOLITION
- NEW

HVAC/HYDRONIC PIPING

-CWS-	CHILLED WATER SUPPLY
-CWR-	CHILLED WATER RETURN
-HWS-	HOT WATER SUPPLY
-HWR-	HOT WATER RETURN
STM	STEAM
LPS	LOW PRESSURE STEAM
MPS	MEDIUM PRESSURE STEAM
HPS	HIGH PRESSURE STEAM
-CD-	CONDENSATE DRAIN
LPC	LOW PRESSURE CONDENSATE
MPC	MEDIUM PRESSURE CONDENSATE
HPC	HIGH PRESSURE CONDENSATE

THIS IS A STANDARDIZED SYMBOLS LEGEND, ALL SYMBOLS SHOWN MAY NOT APPEAR ON OR WITHIN THIS SET OF CONTRACT DOCUMENTS.

SITE ELEVATION NOTES

1. THE BUILDING SITE IS LOCATED IN FOUR CORNERS, MT AND IS APPROXIMATELY AT 4700 FEET ELEVATION ABOVE SEA LEVEL. ACCOUNT FOR THIS ELEVATION IN ALL EQUIPMENT SELECTIONS.

PROJECT SEISMIC RESTRAINT NOTES

1. MECHANICAL/PLUMBING SYSTEMS AND EQUIPMENT ON THIS PROJECT SHALL BE INSTALLED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH THE 2006 INTERNATIONAL BUILDING CODE (SEISMIC USE GROUP 'II', SEISMIC DESIGN CATEGORY 'D', COMPONENT IMPORTANCE FACTOR 1.5) AND THE LATEST EDITION OF SMACNA'S SEISMIC RESTRAINT MANUAL. SPRINKLER SYSTEMS AND EQUIPMENT SHALL BE INSTALLED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 13.
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3. SEE SPECIFICATION SECTION 220548 AND 230548.

MECHANICAL SHEET LIST

MONTANA — Kristi A. WEEDA — No. 12615 PE — 12/21/23 — LICENSED PROFESSIONAL ENGINEER

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

ACE INC. ASSOCIATED CONSTRUCTION & ENGINEERING
12 N. BROADWAY, SECOND FLOOR
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406-388-3120
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DOWLING ARCHITECTS
734 N Last Chance Gulch | Helena, MT 59601 | 406.457.5470
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MECHANICAL COVER SHEET

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: KD

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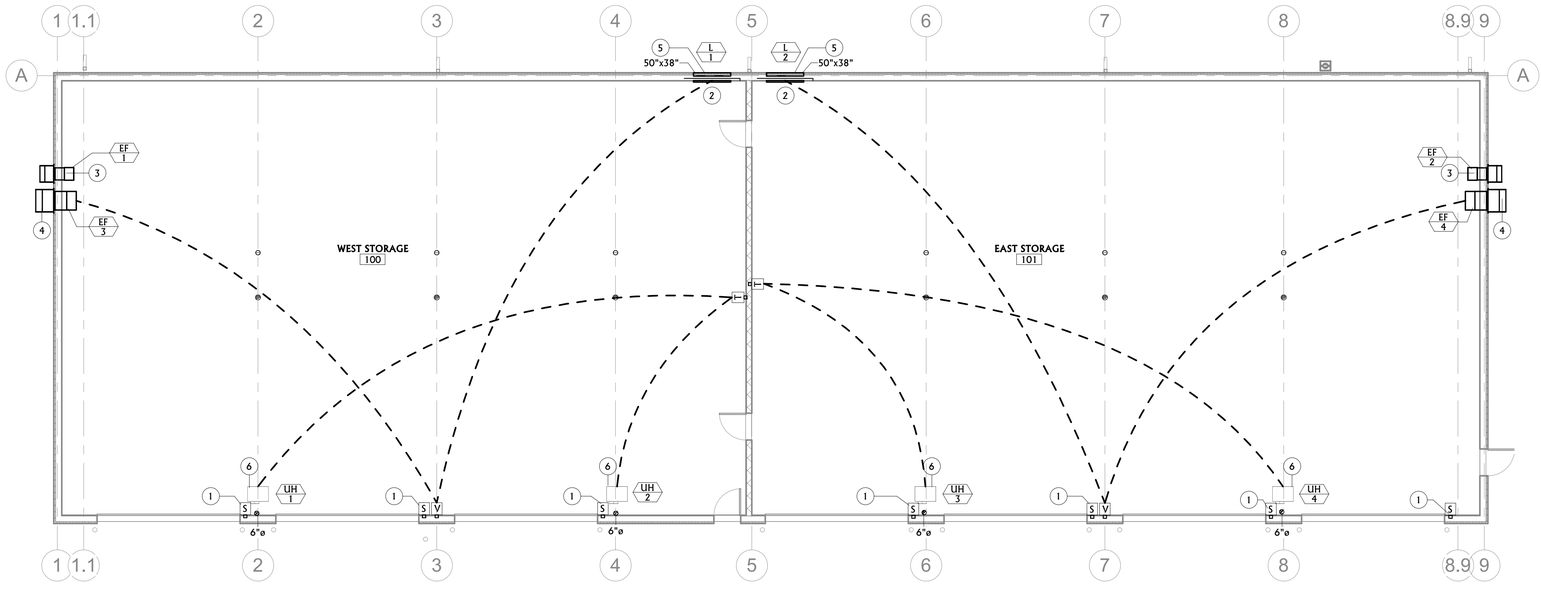
12.21.2023

MECHANICAL GENERAL NOTES	
A	CONTRACTOR SHALL CUT ALL FLOORS, WALLS, CEILINGS, AND ROOF AS REQUIRED TO PERFORM THE WORK DEPICTED IN THESE CONTRACT DOCUMENTS AND SPECIFICATIONS. GENERAL CONTRACTOR SHALL PATCH ALL ASSOCIATED FLOORS, WALLS, CEILINGS, AND ROOF AS REQUIRED TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.
B	COORDINATE EXACT LOCATION OF DIFFUSERS AND GRILLES WITH REFLECTED CEILING PLAN AND LIGHTING LAYOUT.
C	FLEX DUCT RUN OUTS SHALL BE LIMITED TO 5'-0".
D	COORDINATE HVAC AND PLUMBING EQUIPMENT WITH ALL OTHER TRADES AS REQUIRED.
E	ALL CEILING DIFFUSERS TO BE 4-WAY UNLESS OTHERWISE NOTED.
F	DUCT PENETRATIONS THROUGH ROOF TO BE COORDINATED WITH JOIST LAYOUT.
G	VERIFY EXACT LOCATION OF T-STATS WITH ARCHITECT PRIOR TO INSTALLATION.
H	SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES WITH UL-APPROVED FIRE RATED SYSTEM.

MECHANICAL KEYNOTES	
1	PROVIDE DOOR OPEN SWITCH AT APPROXIMATE LOCATION TO TURN OFF ALL HEATING IN BAY.
2	PROVIDE MOTORIZED DAMPER FOR LOUVER AT APPROXIMATE LOCATION.
3	BOTTOM OF UNIT AT APPROXIMATE LOCATION SHALL BE MOUNTED AT AN ELEVATION OF APPROXIMATELY 13'-4".
4	BOTTOM OF UNIT AT APPROXIMATE LOCATION SHALL BE MOUNTED AT AN ELEVATION OF APPROXIMATELY 13'-0"
5	BOTTOM OF UNIT AT APPROXIMATE LOCATION SHALL BE MOUNTED AT AN ELEVATION OF APPROXIMATELY 9'-9"
6	BOTTOM OF UNIT AT APPROXIMATE LOCATION SHALL BE MOUNTED AT AN ELEVATION OF APPROXIMATELY 16'-0"



N

1 / M1.0 FIRST FLOOR MECHANICAL PLAN

1/8" = 1'-0"

MONTANA
Kyle A. WEEDA
10712615
12/21/23
REGISTERED PROFESSIONAL ENGINEER

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FIRST FLOOR MECHANICAL PLAN

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: KD

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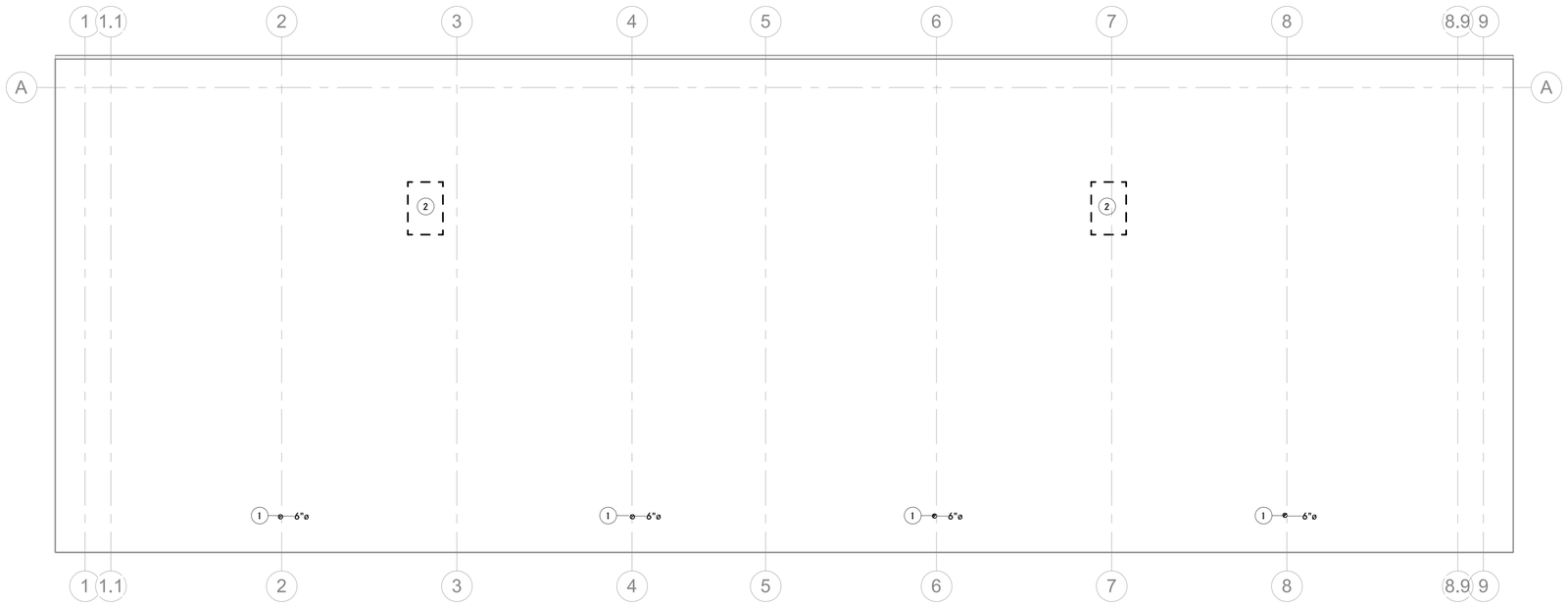
H	SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES WITH UL-APPROVED FIRE RATED SYSTEM.

MECHANICAL KEYNOTES	
1	UNIT HEATER EXHAUST DUCT TERMINATES ABOVE ROOF AT APPROXIMATE LOCATION. SEE 1/M0.1 FOR ADDITIONAL REQUIREMENTS.
2	FUTURE ROOF TOP DEHUMIDIFICATION UNIT SHALL BE AT APPROXIMATE LOCATION. NOT IN THE SCOPE OF THIS PROJECT.



N

1 / M1.1 ROOF MECHANICAL PLAN

1/8" = 1'-0"

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ROOF MECHANICAL PLAN

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PLUMBING FIXTURE SCHEDULE

PLAN CODE	MANUFACTURER	MODEL NUMBER	ITEM	MATERIAL & FINISH	TRIM	ROUGH-IN SIZE				REMARKS
						CW	HW	SAN	VENT	
FCO	JAY R SMITH	4103S-G	FLOOR CLEAN OUT	GALVANIZED CAST IRON BODY NICKLE BRONZE STRAINER	BRONZE PLUG	--	--	SEE PLANS	--	HEAVY DUTY CLEAN OUT WITH TAPER THREAD BRONZE PLUG AND NICKEL BRONZE TOP. COORDINATE LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. SEE PLUMBING DETAILS FOR ADDITIONAL REQUIREMENTS.
FD-1	JAY R SMITH	2005Y-A-B-G	FLOOR DRAIN	GALVANIZED CAST IRON BODY NICKLE BRONZE STRAINER	NICKLE BRONZE ROUND STRAINER	--	--	SEE PLANS	2"	6" DIAMETER ADJUSTABLE STRAINER HEAD WITH NICKEL BRONZE FINISH. PROVIDE WITH TRAP GUARD. COORDINATE LOCATION WITH THE FLOOR...

NOTES:
1. FIXTURE ROUGH-IN SIZES LISTED ABOVE FOR CW, HW, SAN, AND VENT ARE THE BRANCH RUN-OUT LINE SIZES TO THE FIXTURE. THE POINT-OF-CONNECTION AT THE FIXTURE MAY BE SMALLER OR LARGER PENDING ON THE SPECIFIC FIXTURE'S CONNECTION SIZES. CONTRACTOR TO MAKE THE APPROPRIATE CONNECTION SIZE TRANSITION AT THE FIXTURE.
2. PROVIDE ALL FIXTURES WITH THE APPROPRIATE COMMERCIAL CARRIERS, CAST P-TRAPS, GRID STRAINERS, QUARTER-TURN BALL STOPS AND MIXING VALVES FOR A COMPLETE INSTALLATION. REFER TO THE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS.
3. VERIFY FLOOR FINISH AND FINISH THICKNESS BEFORE SETTING ANY FIXTURES.

NATURAL GAS FUEL LOAD SUMMARY

ITEM		INPUT DEMAND	DEMAND UNITS
TAG	DESCRIPTION		
UH-1	GAS FIRED UNIT HEATER	150	MBH
UH-2	GAS FIRED UNIT HEATER	150	MBH
UH-3	GAS FIRED UNIT HEATER	150	MBH
UH-4	GAS FIRED UNIT HEATER	150	MBH
TOTAL		600	MBH

NOTES:
1. EQUIPMENT INPUT DEMAND AT SITE ELEVATION IS BASED ON "ANSI Z21-13/CSA 4.9 INPUT RATING REQUIREMENTS AT SITE ELEVATION" OR THE
2. PUBLISHED INPUT DEMAND RATING AT THE SITE ELEVATION BY THE EQUIPMENT MANUFACTURER.
3. SYSTEM DELIVERY PRESSURE TO BE MINIMUM 2 PSIG COORDINATE WITH THE LOCAL UTILITY PROVIDER. GAS PRESSURE SHALL BE REDUCED TO 14" W.C.
4. AT EACH PIECE OR GROUP OF EQUIPMENT AS INDICATED.
5. MOST REMOTE ZONE IS ~230' EQUIVALENT PIPE LENGTH.
6. PLUMBING CONTRACTOR SHALL PRIME AND PAINT ALL NATURAL GAS PIPING ON THE BUILDING EXTERIOR TO MATCH THE BUILDING COLOR. COORDINATE WITH THE GENERAL CONTRACTOR.

PLUMBING PROJECT NOTES

1. ALL WORK ON THE PROJECT SHALL CONFORM TO ALL LOCAL, CITY, STATE, AND NAT'L CODES AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THE N.F.P.A., N.E.C., I.B.C., I.M.C., U.P.C., I.E.C.C., AND THE LOCAL SERVING UTILITY COMPANIES.
2. THE WORK ON THIS PROJECT SHALL CONSIST OF ALL ITEMS, ARTICLES, MATERIALS, EQUIPMENT, AND LABOR ALONG WITH ALL INCIDENTAL ITEMS REQUIRED BY GOOD PRACTICE AND WORKMANSHIP TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
3. EXAMINE AND REFER TO ALL ARCHITECTURAL, STRUCTURAL, CIVIL, AND ELECTRICAL DRAWINGS FOR CONSTRUCTION CONDITIONS WHICH MAY AFFECT THE PLUMBING/MECHANICAL WORK. INSPECT THE EXISTING FACILITIES FOR VERIFICATION OF EXISTING CONDITIONS AND SYSTEMS.
4. THE PLUMBING CONTRACTORS SHALL BE RESPONSIBLE FOR AND PAY FOR ALL FEES AND PERMITS REQUIRED FOR WORK UNDER THEIR CONTRACT AND UNDER THEIR SUPERVISION BY SUBCONTRACT.
5. MANUFACTURER TRADE NAMES AND CATALOG NUMBERS ARE LISTED TO INDICATE SPECIAL CONDITIONS AND QUALITY OF MATERIALS OR EQUIPMENT SUPPLIED. ALTERNATIVE EQUIPMENT OR MATERIALS MAY BE SUBMITTED FOR REVIEW FOR APPROVAL PRIOR TO ANY BIDDING.
6. THE DRAWINGS DO NOT NECESSARILY SHOW THE EXACT LOCATION OF ALL PIPING. ACTUAL CONDITIONS AND LOCATIONS SHALL BE FIELD VERIFIED.
7. ALL WORK BY THE CONTRACTOR IS SUBJECT TO REVIEW AT ANY TIME BY THE ARCHITECT/ENGINEER.
8. ALL WORK TO BE PERFORMED SHALL FIRST BE SCHEDULED AND SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR ACCEPTANCE.
9. SMOKING SHALL NOT BE PERMITTED ANYWHERE IN THIS FACILITY.
10. THE CONTRACTOR SHALL BE CAREFUL NOT TO BLOCK ANY PATHS OF EGRESS WHILE PERFORMING THE WORK SPECIFIED.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP OF ALL MATERIALS RESULTING FROM HIS/HER WORK. CLEAN-UP SHALL BE PERFORMED TO THE LEVEL OF ACCEPTANCE OF THE OWNER'S REPRESENTATIVE.
12. THE CONTRACTOR SHALL AND HEREBY DOES WARRANT AND GUARANTEE THAT ALL WORK EXECUTED UNDER HIS/HER CONTRACT SHALL BE FREE OF DEFECTS OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
13. CONTRACTOR SHALL FIELD VERIFY LOCATION AND EXISTENCE OF ALL UNDERGROUND UTILITIES. PROTECT EXISTING UTILITIES TO REMAIN FROM DAMAGE DURING CONSTRUCTION. TRENCH AND BACKFILL ALL RELOCATED/REROUTED UTILITIES AS SPECIFIED PER LOCAL, CITY, AND STATE CODE REQUIREMENTS AND REGULATIONS. TRENCH FOR GAS SERVICE SHALL BE AS REQUIRED BY THE LOCAL SERVING UTILITY CO. TRENCH FOR WATER SERVICE SHALL PROVIDE A MINIMUM COVER OF 5 FEET OVER THE TOP OF PIPE FROM FINISHED GRADE. COMPACT TRENCH BACKFILL TO A DENSITY OF AT LEAST 95% OF THE MAXIMUM DRY DENSITY. BACKFILL MATERIAL SHALL HAVE A MOISTURE CONTENT IN THE RANGE OF 5% ABOVE TO 5% BELOW OPTIMUM MOISTURE AT THE TIME IT IS PLACED. USE ONLY MATERIALS IN BACKFILL SUITABLE FOR SUCH USE AND APPLY PROPERLY COMPACTED SAND AND GRAVEL BEDS AS REQUIRED FOR A SOUND AND COMPLETE INSTALLATION.
14. ALL NEW PIPING SHALL BE IDENTIFIED WITH SETON SETMARK PIPEMARKERS, LETTERED TO MATCH EXISTING AND MARKED AT A MAXIMUM OF EVERY 20 FT BUT NOT LESS THAN ONE TAG PER ROOM AND VISIBLE FROM THE FLOOR LEVEL. ALL NEW VALVES SHALL BE IDENTIFIED WITH BRASS OR ALUMINIUM VALVE TAGS. ALL EQUIPMENT SHALL BE IDENTIFIED WITH PLAN CODE ON DRAWINGS.
15. SUBMIT ALL SHOP DRAWINGS (ELECTRONIC PDF) FOR ALL EQUIPMENT ASSOCIATED WITH THIS PROJECT TO THE ARCHITECT/ENGINEER FOR REVIEW/APPROVAL PRIOR TO ORDERING ANY EQUIPMENT.
16. UPON SUBSTANTIAL COMPLETION THE CONTRACTOR SHALL SUBMIT (3 COPIES AND ELECTRONIC PDF) OF AN O&M MANUAL/BROCHURE OF EQUIPMENT TO THE OWNER AND PROVIDE THE NECESSARY TRAINING TO THE FACILITIES PERSONNEL REGARDING ALL EQUIPMENT ASSOCIATED WITH THIS PROJECT.
17. PROVIDE PIPE GUIDES, EXPANSION JOINTS, AND HANGERS PER MANUFACTURER'S RECOMMENDATIONS.
18. SANITARY SEWER AND VENT PIPING SHALL CONSIST OF SCHEDULE 40 PVC PIPE AND FITTINGS.
19. ALL NATURAL GAS PIPING SHALL BE LOW PRESSURE. ABOVE GROUND PIPING SHALL BE SCHEDULE 40, TYPE A -53, BLACK STEEL PIPE WITH THREADED OR WELDED JOINTS. UNDERGROUND GAS PIPING SHALL BE THE SAME AS ABOVE WITH THE ADDITION OF SCOTCH WRAP EXTERIOR COVERING.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF A SATISFACTORY AND COMPLETE SYSTEM IN ACCORDANCE WITH DRAWINGS. PROVIDE, AT NO EXTRA COST TO THE OWNER, ALL INCIDENTAL ITEMS REQUIRED FOR A COMPLETE SYSTEM.

PLUMBING SYMBOLS LEGEND

GENERAL PIPING

DIRECTION OF FLOW		TEE IN HORIZ. RUN	
REDUCER FITTING		BRANCH TEE W/ OFFSET	
ELBOW TURNED UP		BRANCH TEE TURNED UP	
ELBOW TURNED DN.		BRANCH TEE TURNED DN.	
DROP IN HORIZ. RUN		CROSS IN HORIZ. RUN	
TEE TURNED UP		90° AND 45° ELBOWS	
TEE TURNED DN.		END CAP CONNECTION	
BELL AND SPIGOT		UNION FITTING	

PIPING PHASE

EXISTING PIPING		TEMPORARY PIPING	
NEW UNDERFLOOR PIPING		DEMOLISHED PIPING	
NEW ABOVE FLOOR PIPING			

-CW-	DOMESTIC COLD WATER	SAN	SANITARY WASTE
-HW-	DOMESTIC HOT WATER	-SD-	STORM DRAINAGE - PRIMARY
HWRC	DOMESTIC HOT WATER RECIRC.	-SD-OF-	STORM DRAINAGE - OVERFLOW
NPCW	NON-POTABLE COLD WATER	-AW-	ACID WASTE
NPHW	NON-POTABLE HOT WATER	-GW-	GREASE WASTE
NPHWRC	NON-POTABLE HOT WATER RECIRC.	-V-	VENT
SCW	SOFT COLD WATER	AV	ACID VENT
-SHW-	SOFT HOT WATER	-TW-	TEMPERED WATER

MISCELLANEOUS/MECHANICAL PIPING TYPES

CWS	CHILLED WATER SUPPLY	STM	STEAM
CWR	CHILLED WATER RETURN	LPS	LOW PRESSURE STEAM
HWS	HOT WATER SUPPLY	MPS	MEDIUM PRESSURE STEAM
HWR	HOT WATER RETURN	HPS	HIGH PRESSURE STEAM
CA	COMPRESSED AIR	MA	MEDICAL AIR
CD	CONDENSATE DRAIN	N2	NITROGEN
LPC	LOW PRESSURE CONDENSATE	N2O	NITROUS OXIDE
MPC	MEDIUM PRESSURE CONDENSATE	NO2	NITROUS DIOXIDE
HPC	HIGH PRESSURE CONDENSATE	O2	OXYGEN
FOR	FUEL OIL RETURN	RL	REFRIGERANT LIQUID
FOS	FUEL OIL SUPPLY	RS	REFRIGERANT SUCTION
HGB	HOT GAS BYPASS	VAC	VACUUM
G	NATURAL GAS	WAGD	WASTE ANESTHETIC GAS DISPOSAL
LPG	LIQUID PETROLEUM GAS	CO2	CARBON DIOXIDE
F-WET	FIRE PROTECTION WET		
F-DRY	FIRE PROTECTION DRY		

PIPING FITTINGS, VALVES & SPECIALTIES

EXIST. FIXTURE TO REMAIN	NEW PLUMBING FIXTURE	EXIST. FIXT. TO BE REMOVED

P-1 or P1	FIXT. NUMBER - SEE SCHED.		ANGLE VALVE
	BALL VALVE		BUTTERFLY VALVE
	GATE VALVE		PRESS. REDUCING
	GLOBE VALVE		2-WAY (ELECTRIC)
	PLUG VALVE		2-WAY (PNEU. MTR.)
	CHECK VALVE		2-WAY (SOLENOID)
	SOLENOID GATE VALVE		PNEUMATIC MOTOR
	BALANCING VALVE		3-WAY (ELECTRIC)
	FLOAT VALVE		3-WAY (PNEUMATIC)
	DRAIN		3-WAY (PNEU. MTR.)
	WALL HYDRANT OR HOSE BIBB		STRAINER
	FLEX. CONNECTION		STRAINER W/ BLOW-OFF
T F	SENSOR (TEMP./FLOW)	VTR	VENT THRU ROOF
	TEMP. GAUGE		PUMP
	PRESSURE GAUGE		P.O.D.C. - POINT OF DISCONNECTION
	FIRE EXTINGUISHER		P.O.C. - POINT OF CONNECTION
	FIRE SPRINKLER HEAD		

THIS IS A STANDARDIZED SYMBOLS LEGEND, ALL SYMBOLS SHOWN MAY NOT APPEAR ON OR WITHIN THIS SET OF CONTRACT DOCUMENTS.

SITE ELEVATION NOTES

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3. SEE SPECIFICATION SECTION 220548 AND 230548.

PLUMBING SHEET LIST

STATE OF MONTANA
Kasia A. WEEDA
No. 12615 PE
12/21/23.
LICENSED PROFESSIONAL ENGINEER

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PLUMBING COVER SHEET

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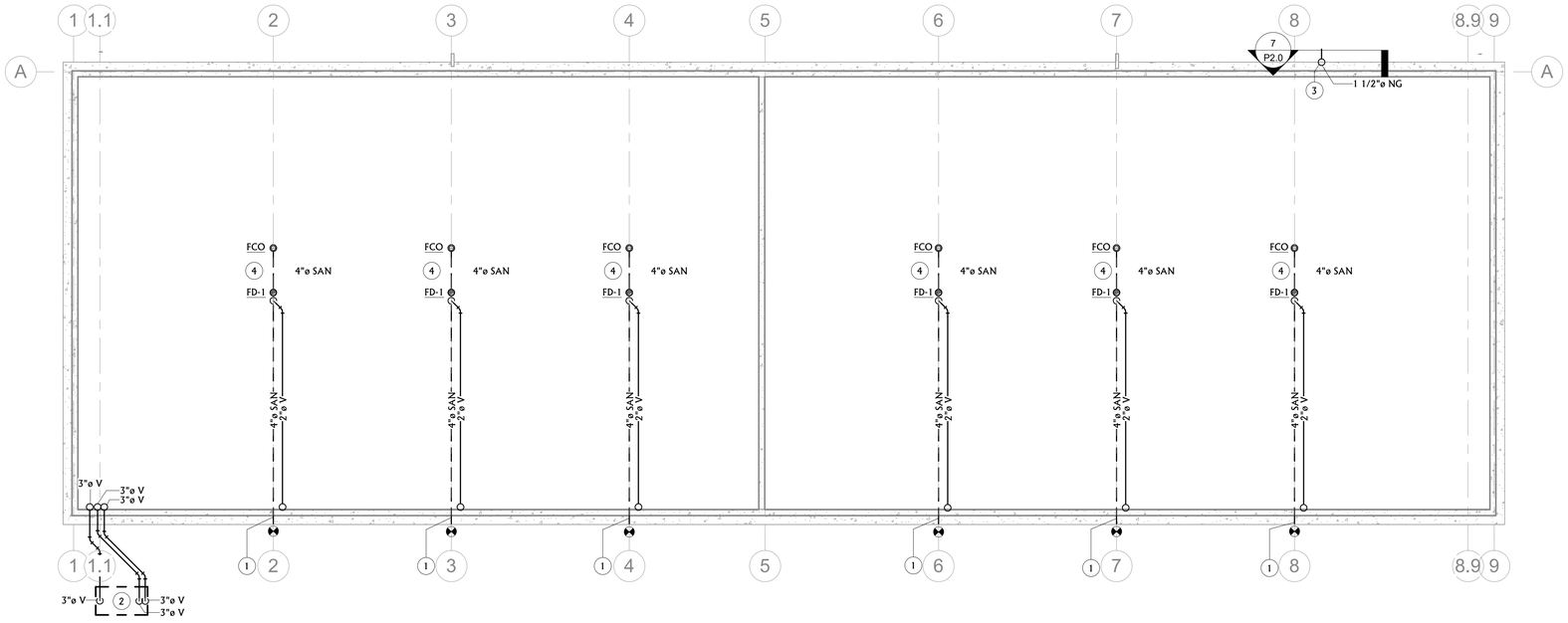
D	ALL VALVES LESS THAN 2" SHALL BE BALL VALVES UNLESS OTHERWISE NOTED.
E	COORDINATE UNDERSLAB PIPING WITH FOOTINGS AND STEM WALLS.
F	ALL UNDERFLOOR VENT SHALL BE MINIMUM 2".
G	ALL UNDERFLOOR COPPER SHALL BE TYPE "K" SEAMLESS.
H	PROVIDE CLEANOUTS ON ALL LINES SERVING SINKS AND URINALS.

PLUMBING KEYNOTES	
1	CONNECT TO CIVIL SANITARY WASTE PIPING AT APPROXIMATE LOCATION. SEE CIVIL DRAWINGS FOR COORDINATION.
2	OIL AND DIRT SEPARATOR PROVIDED BY CIVIL CONTRACTOR AT APPROXIMATE LOCATION.
3	NATURAL GAS SERVICE AT APPROXIMATE LOCATION. SEE 7/M2.0 FOR REFERENCE.
4	FLOOR DRAIN AND CLEAN OUT LOCATED IN FIELD FABRICATED TRENCH DRAIN. SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR COORDINATION.



N

1 P1.0 UNDERSLAB PLUMBING PLAN

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UNDERSLAB PLUMBING PLAN

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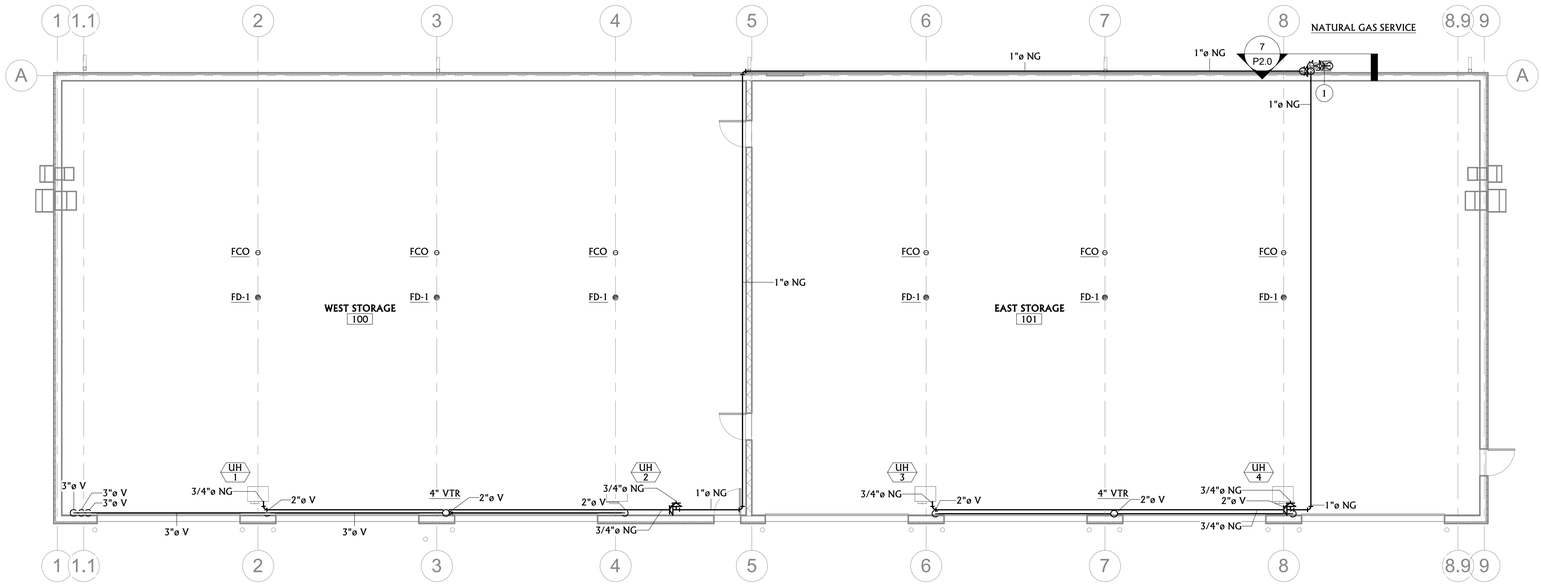
1	NATURAL GAS SERVICE AT APPROXIMATE LOCATION. SEE 7/M2.0 FOR REFERENCE.



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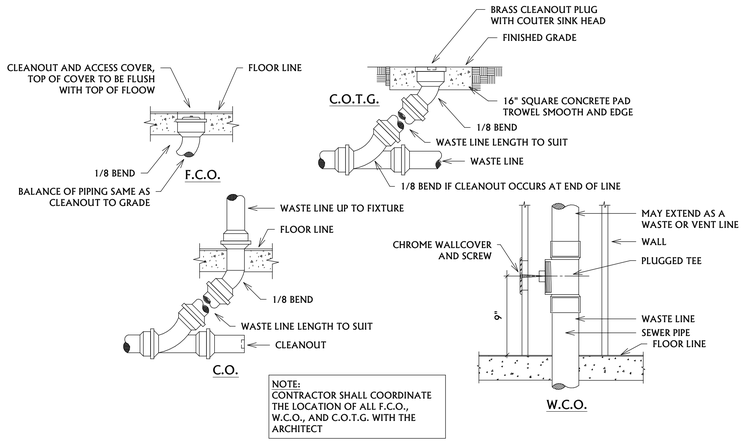
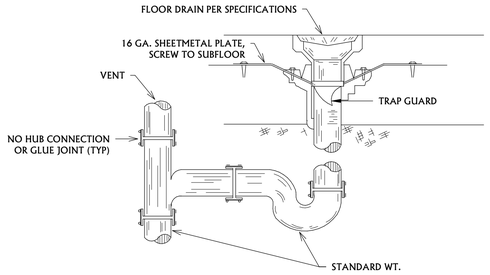


1 CLEAN OUT DETAILS
NOT TO SCALE



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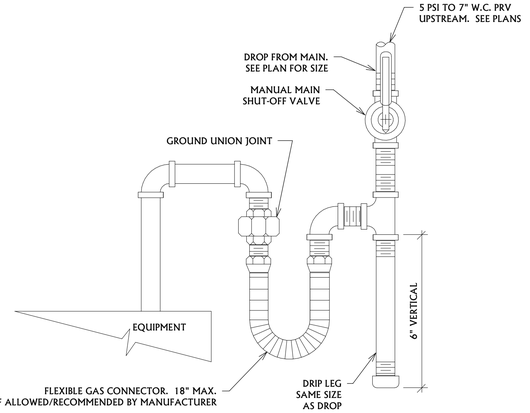

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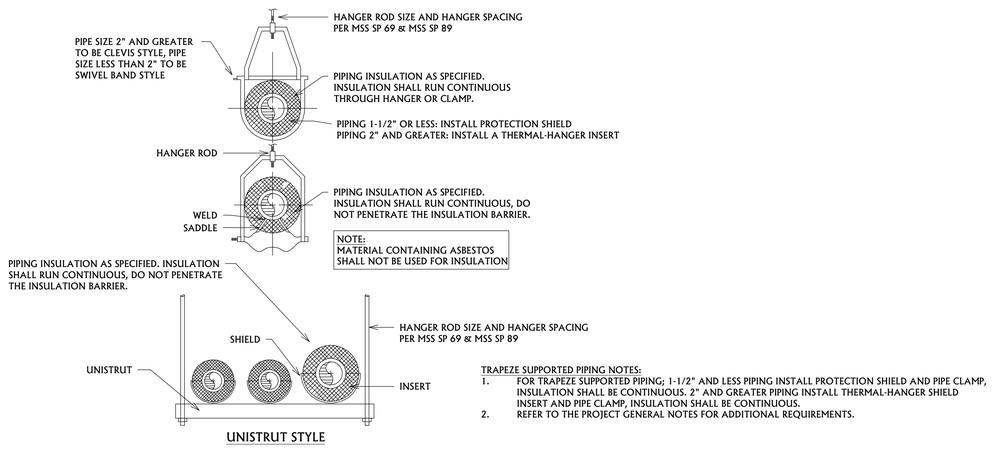

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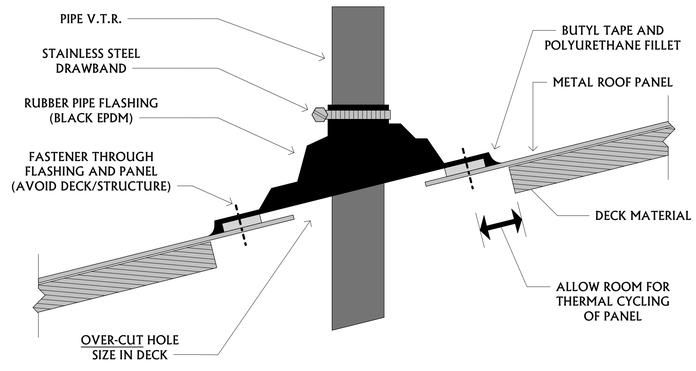

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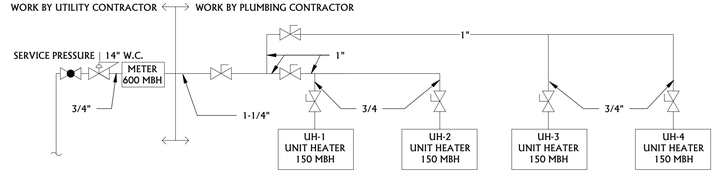

6 NATURAL GAS RISER SCHEMATIC
NOT TO SCALE

MAIN PIPE SIZING CRITERIA

14" W.C. | 250' E.L. | 3.0 W.C. P.D. | SCH 40. METALIC PIPE

PIPE DIA.	CAPACITY IN CUBIC FEET PER HOUR
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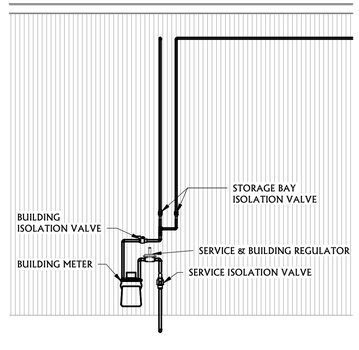

7 NATURAL GAS SERVICE
NOT TO SCALE

MONTANA
Kyle A. WEEDA
12615 PE
12/21/23
REGISTERED PROFESSIONAL ENGINEER

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

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PLUMBING DETAILS

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: KD

100% CD

P2.0

12.21.2023

PLUMBING FIXTURE SCHEDULE

PLAN CODE	MANUFACTURER	MODEL NUMBER	ITEM	MATERIAL & FINISH	TRIM	ROUGH-IN SIZE				REMARKS
						CW	HW	SAN	VENT	
FCO	JAY R SMITH	4103S-G	FLOOR CLEAN OUT	GALVANIZED CAST IRON BODY NICKLE BRONZE STRAINER	BRONZE PLUG	--	--	SEE PLANS	--	HEAVY DUTY CLEAN OUT WITH TAPER THREAD BRONZE PLUG AND NICKEL BRONZE TOP. COORDINATE LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. SEE PLUMBING DETAILS FOR ADDITIONAL REQUIREMENTS.
FD-1	JAY R SMITH	2005Y-A-B-G	FLOOR DRAIN	GALVANIZED CAST IRON BODY NICKLE BRONZE STRAINER	NICKLE BRONZE ROUND STRAINER	--	--	SEE PLANS	2"	6" DIAMETER ADJUSTABLE STRAINER HEAD WITH NICKEL BRONZE FINISH. PROVIDE WITH TRAP GUARD. COORDINATE LOCATION WITH THE FLOOR...

NOTES:
1. FIXTURE ROUGH-IN SIZES LISTED ABOVE FOR CW, HW, SAN, AND VENT ARE THE BRANCH RUN-OUT LINE SIZES TO THE FIXTURE. THE POINT-OF-CONNECTION AT THE FIXTURE MAY BE SMALLER OR LARGER PENDING ON THE SPECIFIC FIXTURE'S CONNECTION SIZES. CONTRACTOR TO MAKE THE APPROPRIATE CONNECTION SIZE TRANSITION AT THE FIXTURE.
2. PROVIDE ALL FIXTURES WITH THE APPROPRIATE COMMERCIAL CARRIERS, CAST P-TRAPS, GRID STRAINERS, QUARTER-TURN BALL STOPS AND MIXING VALVES FOR A COMPLETE INSTALLATION. REFER TO THE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS.
3. VERIFY FLOOR FINISH AND FINISH THICKNESS BEFORE SETTING ANY FIXTURES.

NATURAL GAS FUEL LOAD SUMMARY

ITEM		INPUT DEMAND	DEMAND UNITS
TAG	DESCRIPTION		
UH-1	GAS FIRED UNIT HEATER	150	MBH
UH-2	GAS FIRED UNIT HEATER	150	MBH
UH-3	GAS FIRED UNIT HEATER	150	MBH
UH-4	GAS FIRED UNIT HEATER	150	MBH
TOTAL		600	MBH

NOTES:
1. EQUIPMENT INPUT DEMAND AT SITE ELEVATION IS BASED ON "ANSI Z21-13/CSA 4.9 INPUT RATING REQUIREMENTS AT SITE ELEVATION" OR THE
2. PUBLISHED INPUT DEMAND RATING AT THE SITE ELEVATION BY THE EQUIPMENT MANUFACTURER.
3. SYSTEM DELIVERY PRESSURE TO BE MINIMUM 2 PSIG COORDINATE WITH THE LOCAL UTILITY PROVIDER. GAS PRESSURE SHALL BE REDUCED TO 14" W.C.
4. AT EACH PIECE OR GROUP OF EQUIPMENT AS INDICATED.
5. MOST REMOTE ZONE IS ~230' EQUIVALENT PIPE LENGTH.
6. PLUMBING CONTRACTOR SHALL PRIME AND PAINT ALL NATURAL GAS PIPING ON THE BUILDING EXTERIOR TO MATCH THE BUILDING COLOR. COORDINATE WITH THE GENERAL CONTRACTOR.

PLUMBING PROJECT NOTES

1. ALL WORK ON THE PROJECT SHALL CONFORM TO ALL LOCAL, CITY, STATE, AND NAT'L CODES AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THE N.F.P.A., N.E.C., I.B.C., I.M.C., U.P.C., I.E.C.C., AND THE LOCAL SERVING UTILITY COMPANIES.
2. THE WORK ON THIS PROJECT SHALL CONSIST OF ALL ITEMS, ARTICLES, MATERIALS, EQUIPMENT, AND LABOR ALONG WITH ALL INCIDENTAL ITEMS REQUIRED BY GOOD PRACTICE AND WORKMANSHIP TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
3. EXAMINE AND REFER TO ALL ARCHITECTURAL, STRUCTURAL, CIVIL, AND ELECTRICAL DRAWINGS FOR CONSTRUCTION CONDITIONS WHICH MAY AFFECT THE PLUMBING/MECHANICAL WORK. INSPECT THE EXISTING FACILITIES FOR VERIFICATION OF EXISTING CONDITIONS AND SYSTEMS.
4. THE PLUMBING CONTRACTORS SHALL BE RESPONSIBLE FOR AND PAY FOR ALL FEES AND PERMITS REQUIRED FOR WORK UNDER THEIR CONTRACT AND UNDER THEIR SUPERVISION BY SUBCONTRACT.
5. MANUFACTURER TRADE NAMES AND CATALOG NUMBERS ARE LISTED TO INDICATE SPECIAL CONDITIONS AND QUALITY OF MATERIALS OR EQUIPMENT SUPPLIED. ALTERNATIVE EQUIPMENT OR MATERIALS MAY BE SUBMITTED FOR REVIEW FOR APPROVAL PRIOR TO ANY BIDDING.
6. THE DRAWINGS DO NOT NECESSARILY SHOW THE EXACT LOCATION OF ALL PIPING. ACTUAL CONDITIONS AND LOCATIONS SHALL BE FIELD VERIFIED.
7. ALL WORK BY THE CONTRACTOR IS SUBJECT TO REVIEW AT ANY TIME BY THE ARCHITECT/ENGINEER.
8. ALL WORK TO BE PERFORMED SHALL FIRST BE SCHEDULED AND SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR ACCEPTANCE.
9. SMOKING SHALL NOT BE PERMITTED ANYWHERE IN THIS FACILITY.
10. THE CONTRACTOR SHALL BE CAREFUL NOT TO BLOCK ANY PATHS OF EGRESS WHILE PERFORMING THE WORK SPECIFIED.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP OF ALL MATERIALS RESULTING FROM HIS/HER WORK. CLEAN-UP SHALL BE PERFORMED TO THE LEVEL OF ACCEPTANCE OF THE OWNER'S REPRESENTATIVE.
12. THE CONTRACTOR SHALL AND HEREBY DOES WARRANT AND GUARANTEE THAT ALL WORK EXECUTED UNDER HIS/HER CONTRACT SHALL BE FREE OF DEFECTS OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
13. CONTRACTOR SHALL FIELD VERIFY LOCATION AND EXISTENCE OF ALL UNDERGROUND UTILITIES. PROTECT EXISTING UTILITIES TO REMAIN FROM DAMAGE DURING CONSTRUCTION. TRENCH AND BACKFILL ALL RELOCATED/REROUTED UTILITIES AS SPECIFIED PER LOCAL, CITY, AND STATE CODE REQUIREMENTS AND REGULATIONS. TRENCH FOR GAS SERVICE SHALL BE AS REQUIRED BY THE LOCAL SERVING UTILITY CO. TRENCH FOR WATER SERVICE SHALL PROVIDE A MINIMUM COVER OF 5 FEET OVER THE TOP OF PIPE FROM FINISHED GRADE. COMPACT TRENCH BACKFILL TO A DENSITY OF AT LEAST 95% OF THE MAXIMUM DRY DENSITY. BACKFILL MATERIAL SHALL HAVE A MOISTURE CONTENT IN THE RANGE OF 5% ABOVE TO 5% BELOW OPTIMUM MOISTURE AT THE TIME IT IS PLACED. USE ONLY MATERIALS IN BACKFILL SUITABLE FOR SUCH USE AND APPLY PROPERLY COMPACTED SAND AND GRAVEL BEDS AS REQUIRED FOR A SOUND AND COMPLETE INSTALLATION.
14. ALL NEW PIPING SHALL BE IDENTIFIED WITH SETON SETMARK PIPEMARKERS, LETTERED TO MATCH EXISTING AND MARKED AT A MAXIMUM OF EVERY 20 FT BUT NOT LESS THAN ONE TAG PER ROOM AND VISIBLE FROM THE FLOOR LEVEL. ALL NEW VALVES SHALL BE IDENTIFIED WITH BRASS OR ALUMINIUM VALVE TAGS. ALL EQUIPMENT SHALL BE IDENTIFIED WITH PLAN CODE ON DRAWINGS.
15. SUBMIT ALL SHOP DRAWINGS (ELECTRONIC PDF) FOR ALL EQUIPMENT ASSOCIATED WITH THIS PROJECT TO THE ARCHITECT/ENGINEER FOR REVIEW/APPROVAL PRIOR TO ORDERING ANY EQUIPMENT.
16. UPON SUBSTANTIAL COMPLETION THE CONTRACTOR SHALL SUBMIT (3 COPIES AND ELECTRONIC PDF) OF AN O&M MANUAL/BROCHURE OF EQUIPMENT TO THE OWNER AND PROVIDE THE NECESSARY TRAINING TO THE FACILITIES PERSONNEL REGARDING ALL EQUIPMENT ASSOCIATED WITH THIS PROJECT.
17. PROVIDE PIPE GUIDES, EXPANSION JOINTS, AND HANGERS PER MANUFACTURER'S RECOMMENDATIONS.
18. SANITARY SEWER AND VENT PIPING SHALL CONSIST OF SCHEDULE 40 PVC PIPE AND FITTINGS.
19. ALL NATURAL GAS PIPING SHALL BE LOW PRESSURE. ABOVE GROUND PIPING SHALL BE SCHEDULE 40, TYPE A -53, BLACK STEEL PIPE WITH THREADED OR WELDED JOINTS. UNDERGROUND GAS PIPING SHALL BE THE SAME AS ABOVE WITH THE ADDITION OF SCOTCH WRAP EXTERIOR COVERING.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF A SATISFACTORY AND COMPLETE SYSTEM IN ACCORDANCE WITH DRAWINGS. PROVIDE, AT NO EXTRA COST TO THE OWNER, ALL INCIDENTAL ITEMS REQUIRED FOR A COMPLETE SYSTEM.

PLUMBING SYMBOLS LEGEND

GENERAL PIPING

DIRECTION OF FLOW		TEE IN HORIZ. RUN	
REDUCER FITTING		BRANCH TEE W/ OFFSET	
ELBOW TURNED UP		BRANCH TEE TURNED UP	
ELBOW TURNED DN.		BRANCH TEE TURNED DN.	
DROP IN HORIZ. RUN		CROSS IN HORIZ. RUN	
TEE TURNED UP		90° AND 45° ELBOWS	
TEE TURNED DN.		END CAP CONNECTION	
BELL AND SPIGOT		UNION FITTING	

PIPING PHASE

EXISTING PIPING		TEMPORARY PIPING	
NEW UNDERFLOOR PIPING		DEMOLISHED PIPING	
NEW ABOVE FLOOR PIPING			

-CW-	DOMESTIC COLD WATER	SAN	SANITARY WASTE
-HW-	DOMESTIC HOT WATER	-SD-	STORM DRAINAGE - PRIMARY
HWRC	DOMESTIC HOT WATER RECIRC.	-SD-OF-	STORM DRAINAGE - OVERFLOW
NPCW	NON-POTABLE COLD WATER	-AW-	ACID WASTE
NPHW	NON-POTABLE HOT WATER	-GW-	GREASE WASTE
NPHWRC	NON-POTABLE HOT WATER RECIRC.	-V-	VENT
SCW	SOFT COLD WATER	AV	ACID VENT
-SHW-	SOFT HOT WATER	-TW-	TEMPERED WATER

MISCELLANEOUS/MECHANICAL PIPING TYPES

CWS	CHILLED WATER SUPPLY	STM	STEAM
CWR	CHILLED WATER RETURN	LPS	LOW PRESSURE STEAM
HWS	HOT WATER SUPPLY	MPS	MEDIUM PRESSURE STEAM
HWR	HOT WATER RETURN	HPS	HIGH PRESSURE STEAM
CA	COMPRESSED AIR	MA	MEDICAL AIR
CD	CONDENSATE DRAIN	N2	NITROGEN
LPC	LOW PRESSURE CONDENSATE	N2O	NITROUS OXIDE
MPC	MEDIUM PRESSURE CONDENSATE	NO2	NITROUS DIOXIDE
HPC	HIGH PRESSURE CONDENSATE	O2	OXYGEN
FOR	FUEL OIL RETURN	RL	REFRIGERANT LIQUID
FOS	FUEL OIL SUPPLY	RS	REFRIGERANT SUCTION
HGB	HOT GAS BYPASS	VAC	VACUUM
G	NATURAL GAS	WAGD	WASTE ANESTHETIC GAS DISPOSAL
LPG	LIQUID PETROLEUM GAS	CO2	CARBON DIOXIDE
F-WET	FIRE PROTECTION WET		
F-DRY	FIRE PROTECTION DRY		

PIPING FITTINGS, VALVES & SPECIALTIES

EXIST. FIXTURE TO REMAIN	NEW PLUMBING FIXTURE	EXIST. FIXT. TO BE REMOVED

P-1 or P1	FIXT. NUMBER - SEE SCHED.		ANGLE VALVE
	BALL VALVE		BUTTERFLY VALVE
	GATE VALVE		PRESS. REDUCING
	GLOBE VALVE		2-WAY (ELECTRIC)
	PLUG VALVE		2-WAY (PNEU. MTR.)
	CHECK VALVE		2-WAY (SOLENOID)
	SOLENOID GATE VALVE		PNEUMATIC MOTOR
	BALANCING VALVE		3-WAY (ELECTRIC)
	FLOAT VALVE		3-WAY (PNEUMATIC)
	DRAIN		3-WAY (PNEU. MTR.)
	WALL HYDRANT OR HOSE BIBB		STRAINER
	FLEX. CONNECTION		STRAINER W/ BLOW-OFF
T F	SENSOR (TEMP./FLOW)	VTR	VENT THRU ROOF
	TEMP. GAUGE		PUMP
	PRESSURE GAUGE		P.O.D.C. - POINT OF DISCONNECTION
	FIRE EXTINGUISHER		P.O.C. - POINT OF CONNECTION
	FIRE SPRINKLER HEAD		

THIS IS A STANDARDIZED SYMBOLS LEGEND, ALL SYMBOLS SHOWN MAY NOT APPEAR ON OR WITHIN THIS SET OF CONTRACT DOCUMENTS.

SITE ELEVATION NOTES

1. THE BUILDING SITE IS LOCATED IN FOUR CORNERS, MT AND IS APPROXIMATELY AT 4700 FEET ELEVATION ABOVE SEA LEVEL. ACCOUNT FOR THIS ELEVATION IN ALL EQUIPMENT SELECTIONS.

PROJECT SEISMIC RESTRAINT NOTES

1. MECHANICAL/PLUMBING SYSTEMS AND EQUIPMENT ON THIS PROJECT SHALL BE INSTALLED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH THE 2006 INTERNATIONAL BUILDING CODE (SEISMIC USE GROUP 'III', SEISMIC DESIGN CATEGORY 'D', COMPONENT IMPORTANCE FACTOR 1.5) AND THE LATEST EDITION OF SMACNA'S SEISMIC RESTRAINT MANUAL. SPRINKLER SYSTEMS AND EQUIPMENT SHALL BE INSTALLED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 13.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE SHOP DRAWINGS AND PROFESSIONAL STRUCTURAL ENGINEER SEISMIC RESTRAINT DRAWINGS FOR REVIEW AND APPROVAL. SUBMIT SHOP DRAWING INFORMATION ON EACH MAJOR PIECE OF EQUIPMENT AND FOR EACH MAJOR CATEGORY OF COMMONLY INSTALLED EQUIPMENT.
3. SEE SPECIFICATION SECTION 220548 AND 230548.

PLUMBING SHEET LIST

STATE OF MONTANA
Kasia A. WEEDA
No. 12615 PE
12/21/23.
LICENSED PROFESSIONAL ENGINEER

ACE INC
ASSOCIATED CONSTRUCTION ENGINEERING
12 N. BROADWAY SECOND FLOOR
BILLINGS, MT 59101
406-389-3120
ACE FAX 2303865

DOWLING ARCHITECTS
734 N. Last Chance Gulch | Helena, MT 59601 | 406.457.5470
www.dowl-mt.com

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

PLUMBING COVER SHEET

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: KD

100% CD

P0.1

12.21.2023

PLUMBING GENERAL NOTES	
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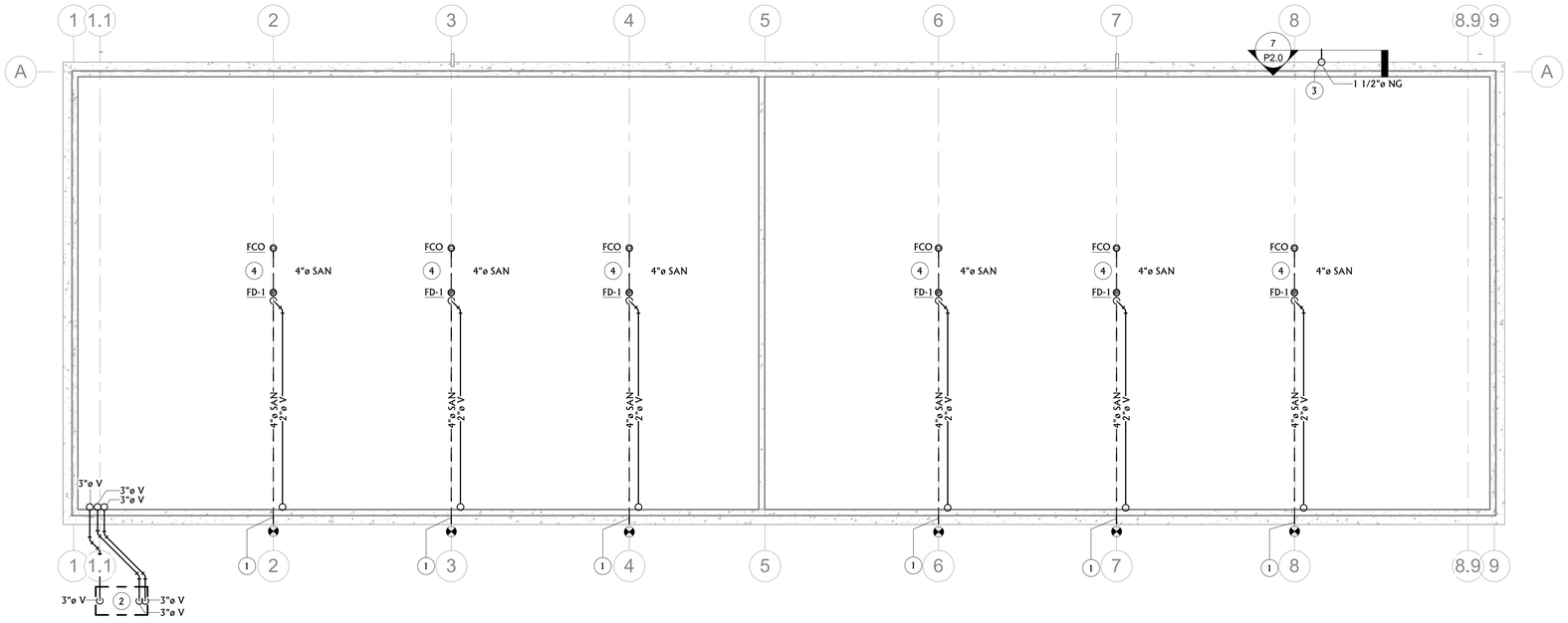
B	COORDINATE HVAC AND PLUMBING EQUIPMENT WITH ALL OTHER TRADES AS REQUIRED.
C	REFERENCE ARCHITECTURAL PLANS FOR EXACT FIXTURE LOCATIONS.
D	ALL VALVES LESS THAN 2" SHALL BE BALL VALVES UNLESS OTHERWISE NOTED.
E	COORDINATE UNDERSLAB PIPING WITH FOOTINGS AND STEM WALLS.
F	ALL UNDERFLOOR VENT SHALL BE MINIMUM 2".
G	ALL UNDERFLOOR COPPER SHALL BE TYPE "K" SEAMLESS.
H	PROVIDE CLEANOUTS ON ALL LINES SERVING SINKS AND URINALS.

PLUMBING KEYNOTES	
1	CONNECT TO CIVIL SANITARY WASTE PIPING AT APPROXIMATE LOCATION. SEE CIVIL DRAWINGS FOR COORDINATION.
2	OIL AND DIRT SEPARATOR PROVIDED BY CIVIL CONTRACTOR AT APPROXIMATE LOCATION.
3	NATURAL GAS SERVICE AT APPROXIMATE LOCATION. SEE 7/M2.0 FOR REFERENCE.
4	FLOOR DRAIN AND CLEAN OUT LOCATED IN FIELD FABRICATED TRENCH DRAIN. SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR COORDINATION.



N

1 P1.0 UNDERSLAB PLUMBING PLAN

1/8" = 1'-0"

MONTANA
Kyle A. WEEDA
12615 PE
12/21/23
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UNDERSLAB PLUMBING PLAN

PROJECT #: 23-651

ISSUE DATES:

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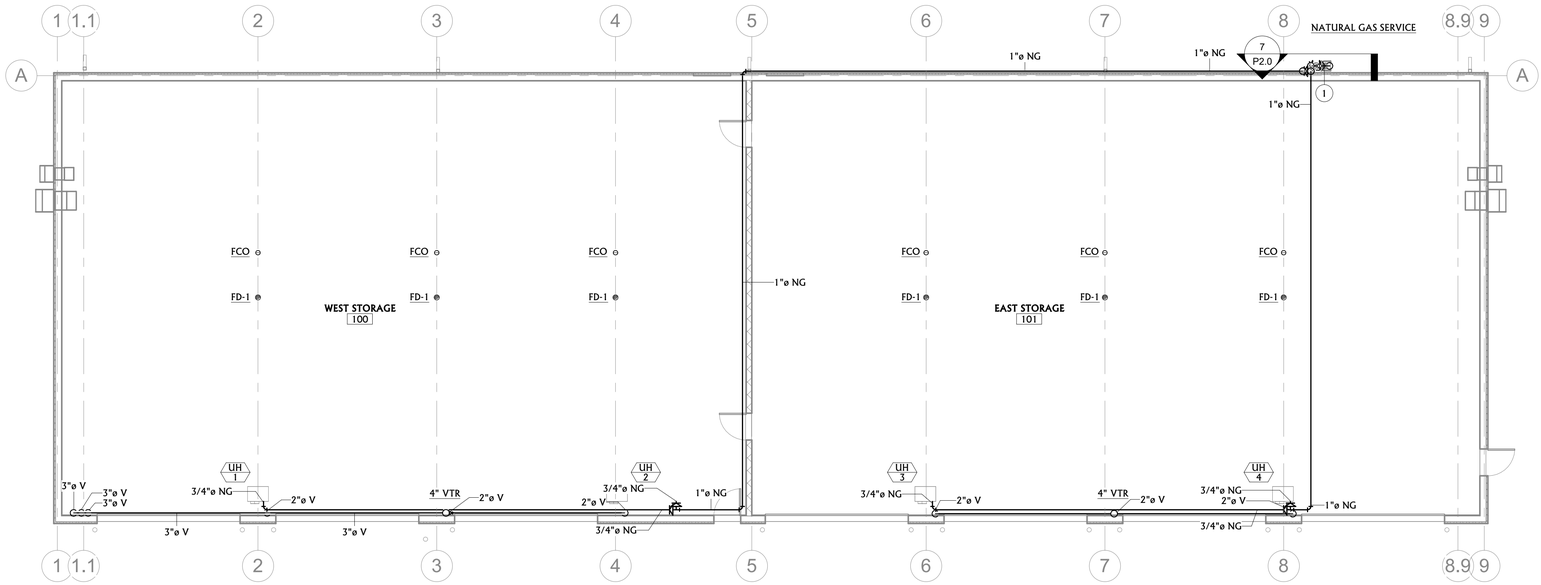

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1 / P1.1 FIRST FLOOR PLUMBING PLAN

1/8" = 1'-0"

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FIRST FLOOR PLUMBING PLAN

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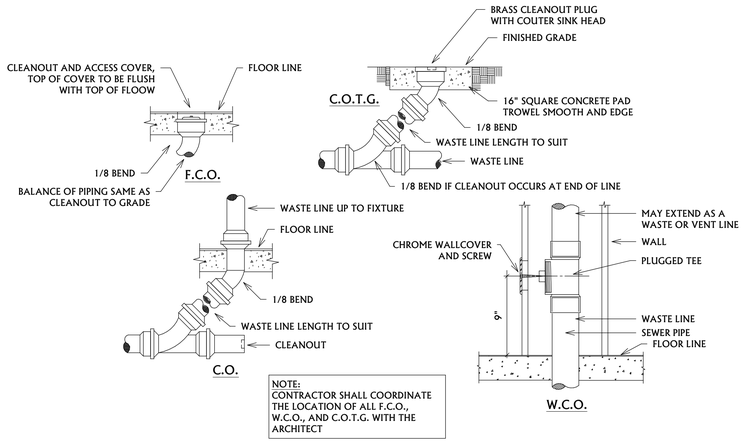

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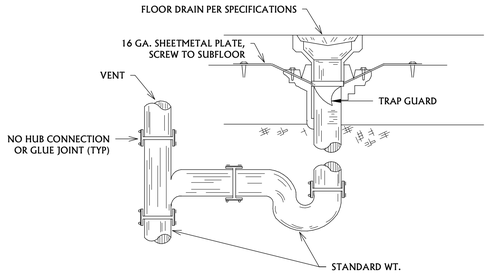

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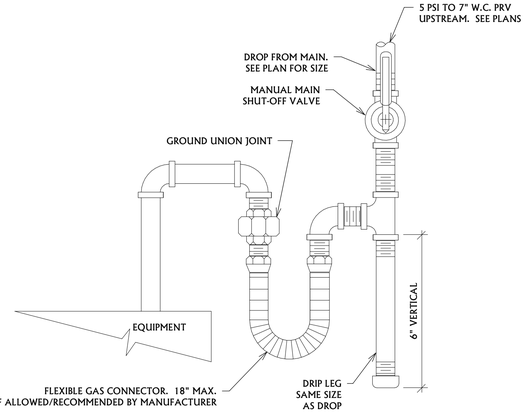

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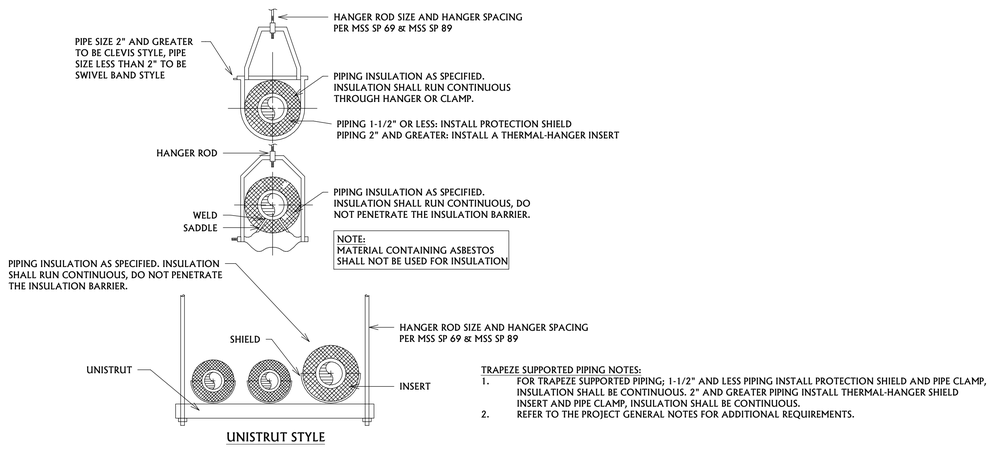

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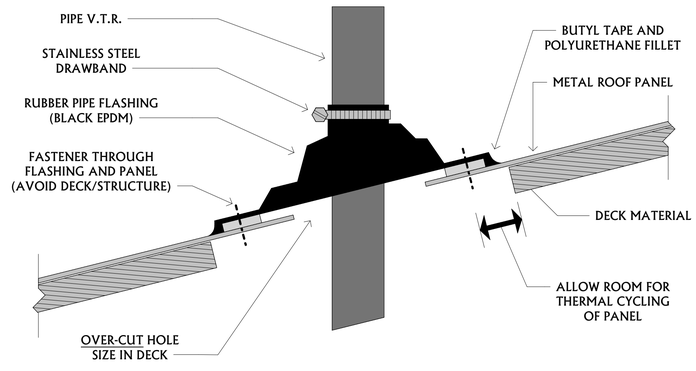

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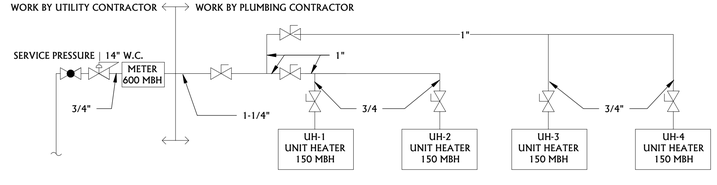

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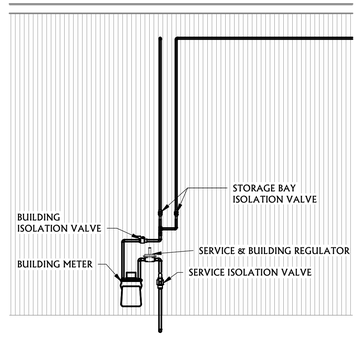
NOTE:
DATA PER IFGC TABEL 402.4



7 NATURAL GAS SERVICE
NOT TO SCALE

MONTANA
Kyle A. WEEDA
12615 PE
12/21/23
REGISTERED PROFESSIONAL ENGINEER

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

ACE | INC
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BILLINGS, MT 59101
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DOWLING ARCHITECTS
734 N. Last Chance Gulch | Helena, MT 59601 | 406.457.5470
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PLUMBING DETAILS

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: KD

100% CD

P2.0

12.21.2023

PROJECT NOTES

1. THE ELECTRICAL WORK SHALL INCLUDE ALL ITEMS, ARTICLES, MATERIALS, OPERATIONS, AND METHODS LISTED, MENTIONED OR SCHEDULED IN THESE DRAWINGS. ALL MATERIAL, EQUIPMENT AND LABOR SHALL BE FURNISHED TOGETHER WITH ALL INCIDENTAL ITEMS REQUIRED BY GOOD PRACTICE TO PROVIDE THE COMPLETE ELECTRICAL SYSTEM DESCRIBED.

2. EXAMINE AND REFER TO ALL ARCHITECTURAL, MECHANICAL AND STRUCTURAL DRAWINGS FOR CONSTRUCTION CONDITIONS WHICH MAY AFFECT THE ELECTRICAL WORK. INSPECT THE BUILDING SITE AND EXISTING FACILITIES FOR VERIFICATION OF PRESENT CONDITIONS. MAKE PROPER PROVISIONS FOR THESE CONDITIONS IN PERFORMANCE OF THE WORK AND COST THEREOF.

3. THE ELECTRICAL WORK SHALL MEET THE REQUIREMENTS OF THE PLANS AND SHALL NOT BE LESS THAN THE MINIMUM REQUIREMENTS OF ALL APPLICABLE SECTIONS OF THE LATEST CODES AND STANDARDS THAT ARE ADOPTED BY THE AUTHORITY HAVING JURISDICTION.

4. THE ELECTRICAL CONTRACTOR SHALL PAY ALL FEES AND ARRANGE FOR ALL PERMITS REQUIRED FOR WORK DONE UNDER HIS CONTRACT AND UNDER HIS SUPERVISION BY SUBCONTRACT.

5. THE ELECTRICAL CONTRACTOR SHALL AND HEREBY DOES WARRANT AND GUARANTEE THAT ALL WORK EXECUTED UNDER HIS CONTRACT WILL BE FREE FROM DEFECTS OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THIS WORK AND THAT HE WILL, AT HIS OWN EXPENSE, REPAIR AND/OR REPLACE ALL SUCH DEFECTIVE MATERIALS AND WORK DURING THE TERM OF THE WARRANTY.

6. MANUFACTURER'S TRADE NAMES AND CATALOG NUMBERS LISTED ARE INTENDED TO INDICATE THE QUALITY OF EQUIPMENT OR MATERIAL DESIRED. MANUFACTURERS NOT LISTED MUST HAVE PRIOR APPROVAL. WRITTEN PRIOR APPROVAL MUST BE OBTAINED FROM THE ARCHITECT SEVEN (7) BUSINESS DAYS PRIOR TO BID OPENING.

7. PROVIDE SIX (1) PDF COPY OF MANUFACTURER'S LITERATURE AND/OR CERTIFIED PRINTS WITHIN THIRTY (30) DAYS OF AWARD OF CONTRACT FOR SHOP DRAWING REVIEW. MANUFACTURER'S LITERATURE SHOWING MORE THAN ONE ITEM SHALL BE CLEARLY MARKED AS TO WHICH ITEM IS BEING FURNISHED. EACH SUBMITTAL SHALL BE STAMPED AND SIGNED BY THE ELECTRICAL CONTRACTOR OR THEY WILL BE REJECTED AND RETURNED WITHOUT REVIEW.

8. THE DRAWINGS ARE PARTLY DIAGRAMMATIC AND DO NOT NECESSARILY SHOW EXACT LOCATIONS OF CONDUIT UNLESS SPECIFICALLY DIMENSIONED. THEY SHALL NOT BE USED FOR OBTAINING QUANTITIES OR LINEAL RUNS OF CONDUIT.

9. ALL WIRING DEVICES, INCLUDING SWITCHES AND RECEPTACLES SHALL BE SPECIFICATION GRADE. SWITCHES AND RECEPTACLES SHALL BE 20-AMPERE UNLESS OTHERWISE NOTED. DEVICES SHALL HAVE METALLIC COVER PLATES MOUNTED ON SURFACE BACK BOXES. ALL GFCI DEVICES AS SHOWN IN PLAN SHALL EQUAL ONE DEVICE. THE USE OF FEED THROUGH PROTECTION IS NOT ACCEPTABLE.

10. ALL CONDUCTORS SHALL BE COPPER. ALUMINUM CONDUCTORS WILL NOT BE PERMITTED. MINIMUM CONDUCTOR SIZE SHALL BE NO. 12 AWG. ALL CONDUCTORS SHALL BE INSTALLED IN CONDUIT. ALL CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED. UTILIZE NO. 10 AWG MINIMUM WIRE SIZE FROM PANEL BOARD TO FIRST LIGHTING FIXTURES AND FIRST RECEPTACLE FOR CIRCUIT RUNS OF 50 FEET OR MORE. PROVIDE DEDICATED NEUTRAL CONDUCTORS FOR ALL 120V CIRCUITS UTILIZED ON PROJECT AS COMBINING OF CIRCUITS TO UTILIZE A COMMON NEUTRAL IS NOT ACCEPTABLE.

11. PROVIDE DISCONNECT SWITCHES WHERE REQUIRED BY NEC. DISCONNECT SWITCHES SHALL BE HEAVY DUTY NEMA RATED, UL LISTED AND SERVICE ENTRANCE RATED WHERE REQUIRED.

12. REFER TO DEVICE MOUNTING HEIGHT DETAIL FOR INSTALLATION HEIGHT OF DEVICES IN PROJECT.

13. ALL DEVICES SHALL BE SURFACE MOUNTED AND PAINTED TO MATCH SURROUNDING AREA. COORDINATE WITH ARCHITECT AND OWNER FOR PAINT COLOR.

14. ALL NEW PANELBOARDS SHALL CONTAIN COPPER BUSSING, BOLT ON CIRCUIT BREAKERS AND FLUSH LOCKABLE TRIM COVER BOLTING TO FRONT OF CAN.

15. PROVIDE UPDATED TYPE WRITTEN PANEL DIRECTORIES FOR ALL PANELS AT PROJECT CLOSE AFFECTED BY REMODEL REGARDLESS IF EXISTING OR NEW PANEL. DIRECTORIES SHALL IDENTIFY/ DESCRIBE LOAD LOCATION. HAND WRITTEN DIRECTORIES ARE NOT ACCEPTABLE.

16. FIRE SEAL ALL CONDUIT PENETRATIONS WITH UL-LISTED FIRE RATED CAULKING MATERIALS / ASSEMBLY. WHERE REQUIRED BY APPLICABLE CODES FIRE SEAL ALL FIRE-RATED MEMBRANE PENETRATIONS.

17. LABEL ALL MOTOR STARTERS, DISCONNECTS AND PANEL BOARDS WITH SELF ADHESIVE BACKED ENGRAVED ACRYLIC LABELS WITH 1/2 INCH HIGH WHITE LETTERS ON A 1-1/2 INCH HIGH BLACK BACKGROUND LABEL.

18. UPON COMPLETION OF WORK, PREPARE A "BROCHURE OF EQUIPMENT" CONTAINING DATA PERTINENT TO EQUIPMENT AND SYSTEMS ON JOB. BINDERS CONTAINING MATERIALS SHALL BE (3) THREE RING BINDERS OF SUFFICIENT NUMBER TO HOLD ALL LITERATURE. CONTAINED IN BINDERS SHALL BE: INSTALLATION, MAINTENANCE, AND OPERATING INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT; PARTS LISTS; WIRING DIAGRAMS; ONE CLEAN COPY OF EACH SHOP DRAWING THAT REFLECTS ANY REQUIRED SHOP DRAWING REVIEW COMMENTS AND LITERATURE SUBMITTAL; RECORD DRAWINGS, ETC.

19. EC SHALL MAINTAIN A CLEAN COPY OF AS-BUILDS ON SITE, NOTING ANY DEVIATIONS FROM PLAN. AT PROJECT CLOSE THE AS-BUILDS SHALL BE GIVEN TO THE ARCHITECT FOR USE IN PRODUCING ELECTRONIC AS-BUILD PLANS OF THE PROJECT.

20. VERIFY ALL EXISTING CONDITIONS THAT AFFECT ELECTRICAL WORK PRIOR TO SUBMITTING ANY PRICING. MAKE ALLOWANCE TO ACCOMMODATE ALL EXISTING CONDITIONS.

WORK BY EC, SHOWN ON OTHERS PLANS

1. THE EC SHALL BE RESPONSIBLE FOR ALL THERMOSTAT ROUGH-IN FOR MECHANICAL SYSTEMS. SEE MECHANICAL DRAWINGS FOR LOCATIONS.

LUMINAIRE SCHEDULE

CALLOUT	MANUFACTURER	MODEL	MOUNTING	LAMP	ELECTRICAL DATA	DESCRIPTION
EM1	LITHONIA	ELM4L UVOLT LTP	SURFACE/WALL	LED	120 V/1-5 VA	LED EMERGENCY LIGHTING FIXTURE
P1	LITHONIA	CLX L96 8000LM SEF L/LENS WD MVOLT GZ10 35K 80CRI WH	PENDANT	LED	120 V/1-51 VA	8' 8000 LUMEN 3500K LED SHOP LIGHT. COORDINATE FINISH WITH ARCHITECT. PROVIDE WITH HANGER CHAINS FOR MOUNTING, COORDINATE LENGTH WITH HEIGHTS SHOWN ON PLANS AND ARCHITECTURAL PLANS.
P2 P2	LITHONIA	CLX L48 4000LM SEF L/LENS WD MVOLT GZ10 35K 80CRI WH	PENDANT	LED	120 V/1-26 VA	4' 4000 LUMEN 3500K LED SHOP LIGHT. COORDINATE FINISH WITH ARCHITECT. PROVIDE WITH HANGER CHAINS FOR MOUNTING, COORDINATE LENGTH WITH HEIGHTS SHOWN ON PLANS AND ARCHITECTURAL PLANS.
W1	LITHONIA	WDGE P1 40K 80CRI T1S MVOLT E20WC PIR1FC3V DBLXD	SURFACE/WALL	LED	120 V/1-11 VA	ABOVE DOOR EXTERIOR EGRESS LIGHT. COORDINATE FINISH WITH ARCHITECT.
W2	LITHONIA	WDGE P2 40K 80CRI T2M MVOLT PIRH1FC3V DBLXD	SURFACE/WALL	LED	120 V/1-19 VA	2000 LUMEN 4000K EXTERIOR ABOVE GRAGE DOOR LED LIGHT WITH PRE-PROGRAMMED PHOTOCELL AND BI-LEVEL DIMMING MOTION SENSOR. COORDINATE FINISH WITH ARCHITECT.
X1	LITHONIA	LQM S W 3 R MVOLT EL N SD	SURFACE/WALL	LED	120 V/1-5 VA	LED EXIT SIGN

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

CALLOUT	ELECTRICAL DATA	FLA	MOCP	WIRE SIZE (Cu)'	PANEL	CIRCUIT	DISCONNECT PROVIDED BY	DISCONNECT INSTALLED BY
EF-1	120 V/1-360 VA	4 A	15 A	#12	1LB	1	EC	EC
EF-2	120 V/1-360 VA	4 A	15 A	#12	1LA	1	EC	EC
EF-3	120 V/1-360 VA	4 A	15 A	#12	1LB	2	EC	EC
EF-4	120 V/1-360 VA	4 A	15 A	#12	1LA	2	EC	EC
UH-1	120 V/1-1284 VA	11 A	20 A	#12	1LB	3	EC	EC
UH-2	120 V/1-1284 VA	11 A	20 A	#12	1LA	3	EC	EC
UH-3	120 V/1-1284 VA	11 A	20 A	#12	1LB	4	EC	EC
UH-4	120 V/1-1284 VA	11 A	20 A	#12	1LA	4	EC	EC

ELECTRICAL LEGEND

MISCELLANEOUS LEGEND

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

- (1) REFER TO ELECTRICAL NOTES
- HOMERUN TO ELECTRICAL PANEL
- NUMBER OF HASH MARKS INDICATES NUMBER OF CURRENT CARRYING CONDUCTORS. NO MARKS INDICATES TWO. GROUNDING CONDUCTOR NOT SHOWN BUT SHALL BE INCLUDED IN ALL CONDUITS.
- NORMAL CIRCUIT CONCEALED IN WALL OR EXPOSED
- UNDERGROUND OR BURIED CIRCUIT

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

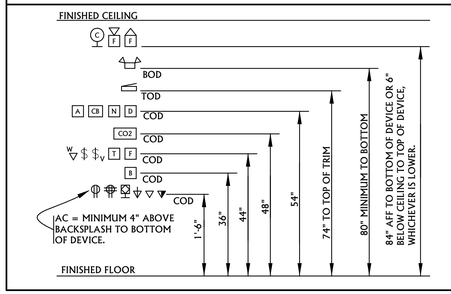
LIGHTING DEVICES

- LAY-IN OR RECESSED LIGHTING FIXTURE
- SURFACE MOUNTED LIGHTING FIXTURE
- DIRECT/ INDIRECT LIGHTING PENDANT MOUNTED FIXTURE.
- SURFACE MOUNTED OR CHAIN HUNG STRIP FIXTURE
- WALL BRACKET LIGHTING FIXTURE
- RECESSED DOWN LIGHT, HALF MOON INDICATES WALL WASH TRIM AND DIRECTION.
- SURFACE MOUNTED CYLINDER FIXTURE
- WALL MOUNTED FIXTURE
- WALL SCONCE FIXTURE
- FILLED CENTER OR SLASH INDICATES FIXTURE IS AN EMERGENCY DEVICE WITH EMERGENCY BATTERY PACK OR CONNECTED TO EMERGENCY POWER.
- EXIT SIGN, BRACKET INDICATES WALL MOUNTING. NUMBER OF FACES AND DIRECTION INDICATED BY FILLED AREAS.
- REMOTE DOUBLE HEAD EGRESS FIXTURE
- SITE GROUND MOUNTED FLOOD FIXTURE
- DOUBLE HEAD WALL MOUNTED BATTERY PACK POWERED EGRESS FIXTURE.
- SQUARE HEAD POLE MOUNTED SITE LIGHT FIXTURE.
- ROUND HEAD POLE MOUNTED SITE LIGHT FIXTURE.

ELECTRICAL ABBREVIATIONS

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

INTERIOR MOUNTING HEIGHTS



ELECTRICAL SHEET LIST

DARIN VAN OOSTERHOUT
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12/21/23
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ELECTRICAL COVER SHEET

PROJECT #: 23-651

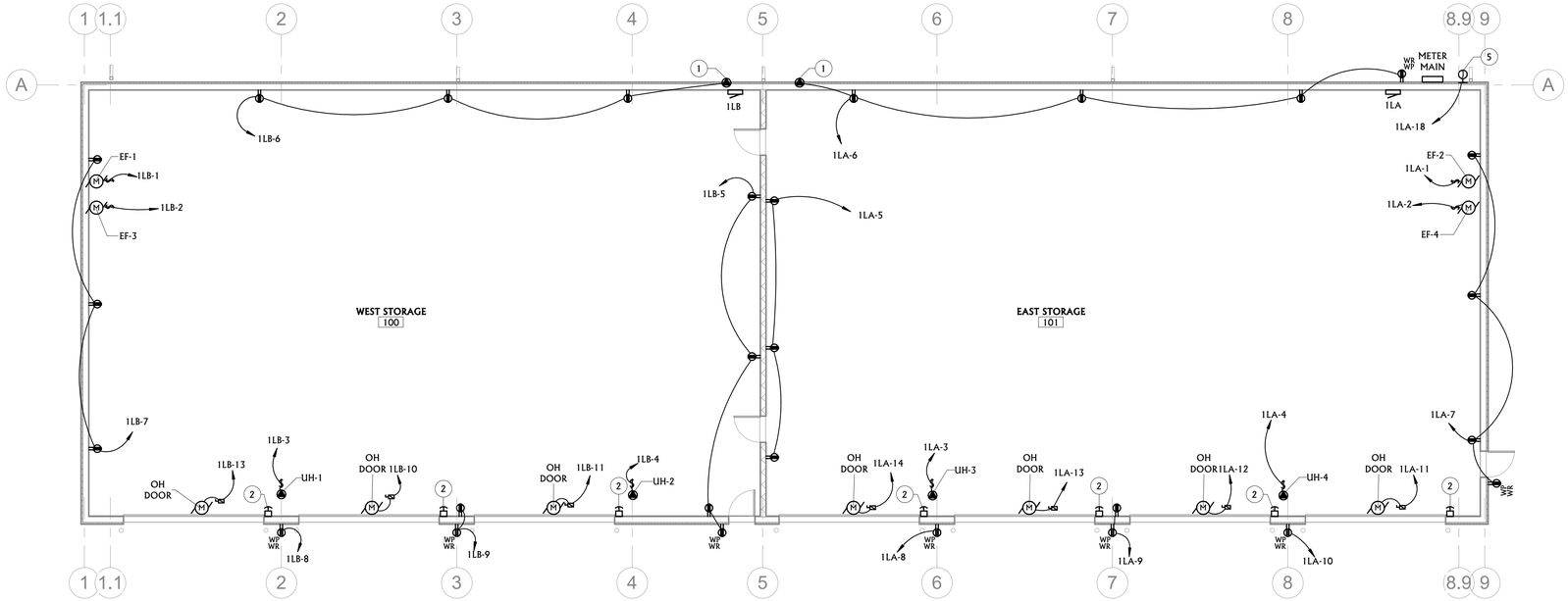
ISSUE DATES:

DRAWN BY: ST

100% CD

E1.0

12.21.2023



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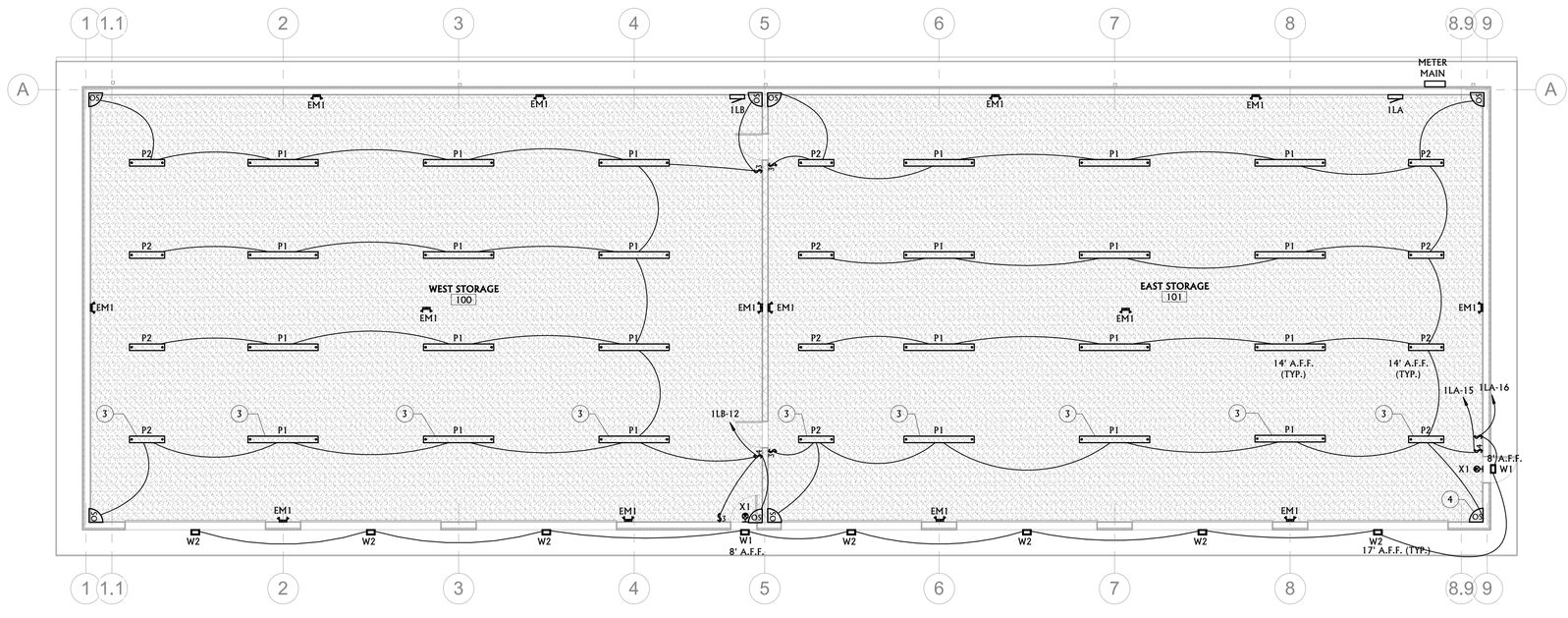
FIRST FLOOR P&SS PLAN

1/8" = 1'-0"



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FIRST FLOOR LIGHTING PLAN

1/8" = 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 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	VERIFY VOLTAGE OF EXISTING LIGHTING CIRCUITS PRIOR TO SUBMITTALS. COORDINATE ANY MODIFICATIONS TO LIGHTING CIRCUITS OR FIXTURES WITH ENGINEER.
C	PROVIDE UNSWITCHED HOT CONDUCTOR FROM LOCAL LIGHTING CIRCUIT TO ALL EMERGENCY AND EXIT FIXTURES.
D	WHEN LIGHT SWITCHES ARE SHOWN LOCATED ON THE WALL THAT IS COMMON WITH THE END OF THE DOOR SWING INTO A SPACE, DO NOT LOCATE THE SWITCHES BEHIND THE DOOR BUT RATHER A MINIMUM OF 6" FROM THE END OF THE SWING. VERIFY EXACT DOOR SWING PRIOR TO ROUGH-IN.
E	FIRE SEAL ALL PENETRATIONS IN FIRE RATED WALLS. COORDINATE WITH ARCHITECTURAL FOR LOCATIONS.

ELECTRICAL KEYNOTES

1	PROVIDE POWER CONNECTION FOR MOTORIZED DAMPER. EC TO PROVIDE WIRING TO CONNECT TO DAMPER. COORDINATE LOCATION AND REQUIREMENTS WITH MC AND MECHANICAL PLANS.
2	PROVIDE ROUGH IN FOR OVERHEAD DOOR OPERATOR IN APPROXIMATE LOCATION. COORDINATE REQUIREMENTS WITH EQUIPMENT PROVIDER.
3	COORDINATE MOUNTING OF LIGHT FIXTURE WITH OVERHEAD DOOR TRACK TO AVOID INTERFERENCE WITH DOOR.
4	PROVIDE SENSOR SWITCH #WVRPDT16 CORNER MOUNTED, DUAL TECHNOLOGY, LINE VOLTAGE OCCUPANCY SENSOR OR EQUAL. MOUNT AT 10' A.F.F. TYPICAL OF ALL CORNER MOUNTED OCCUPANCY SENSORS SHOWN ON PLANS.
5	PROVIDE 3R RATED JUNCTION BOX AND CIRCUIT FOR FUTURE HEAT TRACE. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO ROUGH IN.

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FIRST FLOOR POWER & LIGHTING PLANS

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: ST

100% CD

E2.0

12.21.2023

Panel: METER MAIN

Location:
Supply From: UTILITY TRANSFORMER
Mounting: Surface
Enclosure: Type 1

Volts: 240/120 Single
Phases: 1
Wires: 3

A.I.C. Rating: 22,000
Mains Type: MLO
Bus Rating: 400 A

Notes:

CKT	Load Name	Trip	Poles	A		B		Poles	Trip	Load Name	CKT
1	1LA	200 A	2	7040	6360			2	200 A	1LB	2
3	--	--	--			8278	5927	--	--	--	4
				Total Load:		13400 VA		14205 VA			
				Total Amps:		112 A		118 A			

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Heating	5136 VA	100.00%	5136 VA		
Motor	14880 VA	103.23%	15360 VA	Total Conn. Load:	27601 VA
Other	0 VA	0.00%	0 VA	Total Est. Demand:	28503 VA
Receptacle	5040 VA	100.00%	5040 VA	Total Conn.:	115 A
Power	860 VA	100.00%	860 VA	Total Est. Demand:	119 A
Lighting	1748 VA	125.00%	2184 VA		

Notes:

Panel: 1LB

Location: WEST STORAGE 100
Supply From: METER MAIN
Mounting: Surface
Enclosure: Type 1

Volts: 240/120 Single
Phases: 1
Wires: 3

A.I.C. Rating: 22,000
Mains Type: MLO
Bus Rating: 200 A

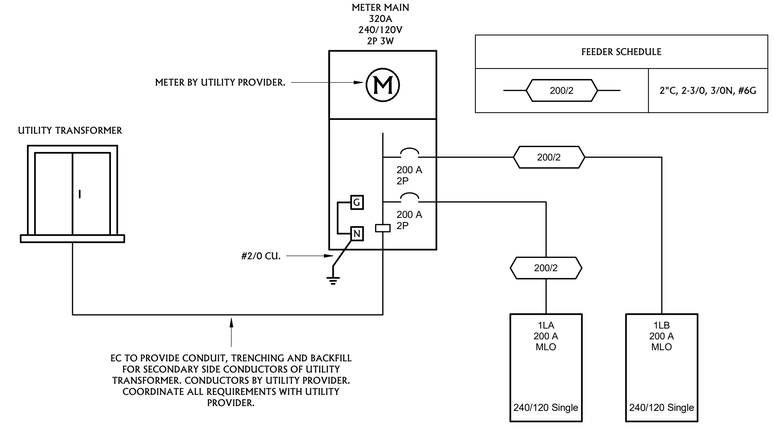
Notes:

CKT	Load Name	Trip	Poles	A		B		Poles	Trip	Load Name	CKT
1	EF-1	15 A	1	360	360			1	15 A	EF-3	2
3	UH-1	20 A	1			1284	1284	1	20 A	UH-2	4
5	WEST STORAGE 100 RCPTS	20 A	1	720	720			1	20 A	WEST STORAGE 100 RCPTS	6
7	WEST STORAGE 100 RCPTS	20 A	1			540	180	1	20 A	WEST STORAGE 100 EXTERIOR RCPT	8
9	WEST STORAGE 100 EXTERIOR RCPT	20 A	1	360	1920			1	20 A	WEST STORAGE 100 OH DOOR	10
11	WEST STORAGE 100 OH DOOR	20 A	1			1920	749	1	20 A	LIGHTING WEST STORAGE 100	12
13	WEST STORAGE 100 OH DOOR	20 A	1	1920	0			1	20 A	SPARE	14
15	SPARE	20 A	1			0	0	1	20 A	SPARE	16
17	SPARE	20 A	1	0	0			1	20 A	SPARE	18
19	SPARE	20 A	1			0	--	1	--	SPACE	20
21	SPACE	--	1	--	--			1	--	SPACE	22
23	SPACE	--	1			--	--	1	--	SPACE	24
25	SPACE	--	1	--	--			1	--	SPACE	26
27	SPACE	--	1			--	--	1	--	SPACE	28
29	SPACE	--	1	--	--			1	--	SPACE	30
31	SPACE	--	1			--	--	1	--	SPACE	32
33	SPACE	--	1	--	--			1	--	SPACE	34
35	SPACE	--	1			--	--	1	--	SPACE	36
37	SPACE	--	1	--	--			1	--	SPACE	38
39	SPACE	--	1			--	--	1	--	SPACE	40
41	SPACE	--	1	--	--			1	--	SPACE	42
				Total Load:		6360 VA		5927 VA			
				Total Amps:		53 A		49 A			

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Heating	2568 VA	100.00%	2568 VA		
Motor	6480 VA	107.41%	6960 VA	Total Conn. Load:	12284 VA
Other	0 VA	0.00%	0 VA	Total Est. Demand:	12944 VA
Receptacle	2340 VA	100.00%	2340 VA	Total Conn.:	51 A
Power	180 VA	100.00%	180 VA	Total Est. Demand:	54 A
Lighting	749 VA	125.00%	936 VA		

Notes:



2 ONE-LINE DIAGRAM
NOT TO SCALE

Panel: 1LA

Location: EAST STORAGE 101
Supply From: METER MAIN
Mounting: Surface
Enclosure: Type 1

Volts: 240/120 Single
Phases: 1
Wires: 3

A.I.C. Rating: 22,000
Mains Type: MLO
Bus Rating: 200 A

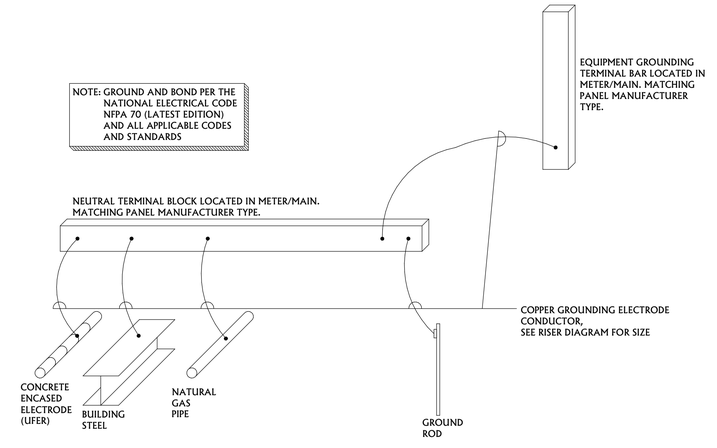
Notes:

CKT	Load Name	Trip	Poles	A		B		Poles	Trip	Load Name	CKT
1	EF-2	15 A	1	360	360			1	15 A	EF-4	2
3	UH-3	20 A	1			1284	1284	1	20 A	UH-4	4
5	EAST STORAGE 101 RCPTS	20 A	1	540	900			1	20 A	EAST STORAGE 101 RCPTS	6
7	EAST STORAGE 101 RCPTS	20 A	1			720	180	1	20 A	EAST STORAGE 101 EXTERIOR RCPT	8
9	EAST STORAGE 101 EXTERIOR RCPT	20 A	1	360	180			1	20 A	EAST STORAGE 101 EXTERIOR RCPT	10
11	EAST STORAGE 101 OH DOOR	20 A	1			1920	1920	1	20 A	EAST STORAGE 101 OH DOOR	12
13	EAST STORAGE 101 OH DOOR	20 A	1	1920	1920			1	20 A	EAST STORAGE 101 OH DOOR	14
15	LIGHTING EAST STORAGE 101	20 A	1			851	155	1	20 A	EXTERIOR LIGHTING	16
17	SPARE	20 A	1	0	500			1	20 A	FUTURE HEAT TAPE	18
19	SPARE	20 A	1			0	0	1	20 A	SPARE	20
21	SPARE	20 A	1	0	0			1	20 A	SPARE	22
23	SPACE	--	1			--	0	1	20 A	SPARE	24
25	SPACE	--	1	--	--			1	--	SPACE	26
27	SPACE	--	1			--	--	1	--	SPACE	28
29	SPACE	--	1	--	--			1	--	SPACE	30
31	SPACE	--	1			--	--	1	--	SPACE	32
33	SPACE	--	1	--	--			1	--	SPACE	34
35	SPACE	--	1			--	--	1	--	SPACE	36
37	SPACE	--	1	--	--			1	--	SPACE	38
39	SPACE	--	1			--	--	1	--	SPACE	40
41	SPACE	--	1	--	--			1	--	SPACE	42
				Total Load:		7040 VA		8278 VA			
				Total Amps:		59 A		69 A			

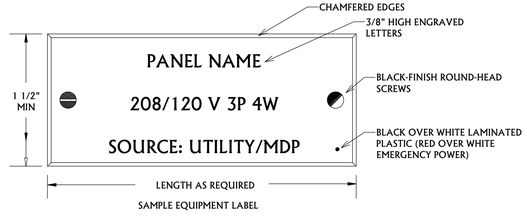
Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Heating	2568 VA	100.00%	2568 VA		
Motor	8400 VA	105.71%	8880 VA	Total Conn. Load:	15316 VA
Other	0 VA	0.00%	0 VA	Total Est. Demand:	16039 VA
Receptacle	2700 VA	100.00%	2700 VA	Total Conn.:	64 A
Power	680 VA	100.00%	680 VA	Total Est. Demand:	67 A
Lighting	999 VA	125.00%	1249 VA		

Notes:



1 SERVICE GROUNDING DETAIL
NOT TO SCALE



SAMPLE EQUIPMENT LABEL

3 EQUIPMENT IDENTIFICATION LABEL DETAIL
NOT TO SCALE

DARIN VAN OOSTERHOUT
62700 PE
12/21/23
LICENSED PROFESSIONAL ENGINEER

Gallatin R&B Equipment Storage Building

Project Address: 205 W Baxter Ln, Bozeman, MT 59718

ACE | INC
ASSOCIATED CONSTRUCTION ENGINEERING
12 N. BROADWAY SECOND FLOOR
BILLINGS, MT 59101
406.388.3320
ACE.ID# 2.3823865

DOWLING ARCHITECTS
734 N. Last Chance Gulch | Helena, MT 59601 | 406.457.5470
www.dowlingarchitects.com

ELECTRICAL DETAILS & SCHEDULES

PROJECT #: 23-651

ISSUE DATES:

DRAWN BY: ST

100% CD 12.21.2023

E4.0