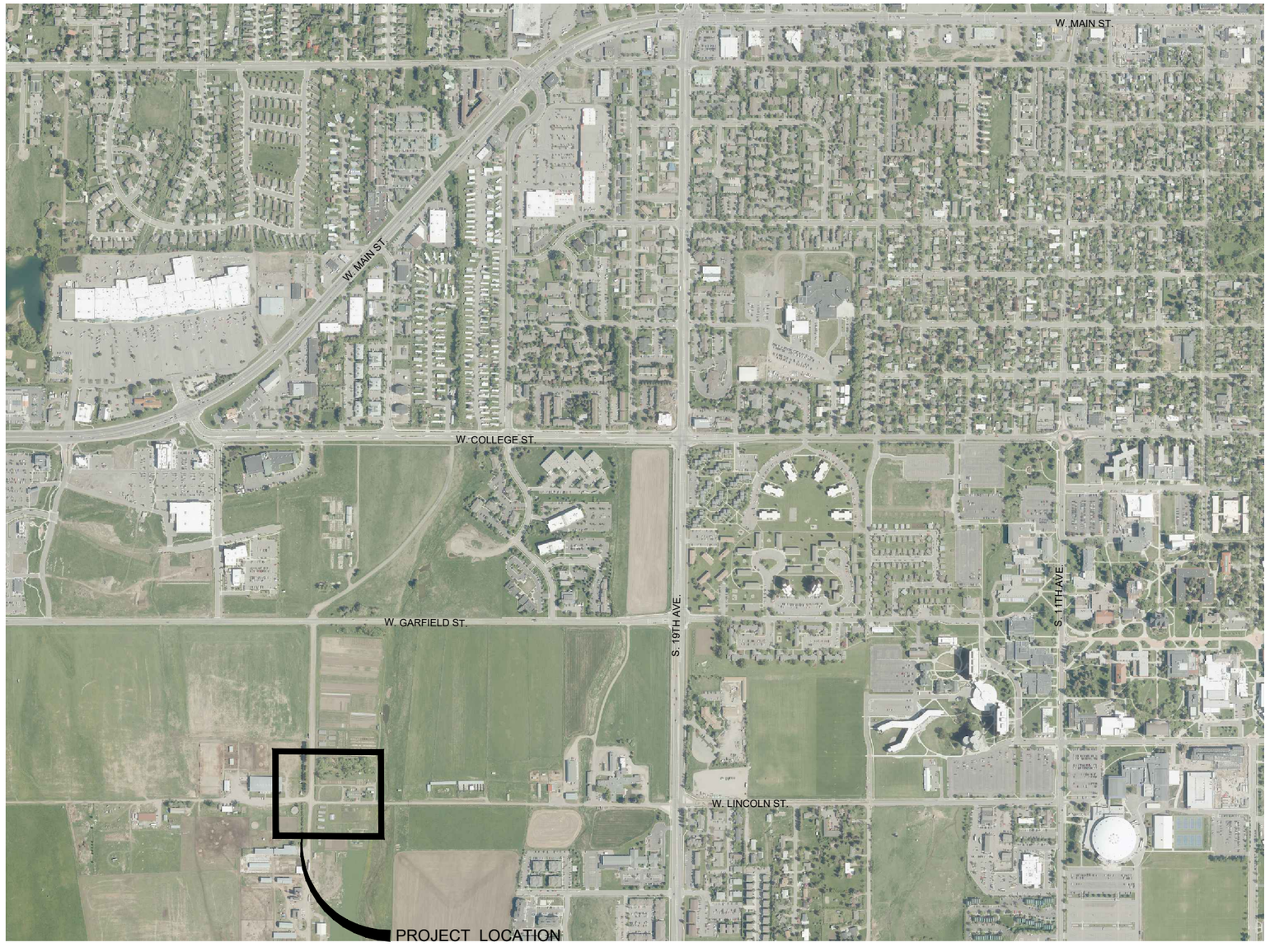
MONTANA STATE UNIVERSITY

BOZEMAN, MT

MONTANA
STATE UNIVERSITY

AES BART FARM
CITY WATER SERVICE

PPA 20-0116



SHEET INDEX

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MONTANA STATE UNIVERSITY

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CONSTRUCTION DOCUMENTS

AES BART FARM
CITY WATER SERVICE

Morrison Maierle
engineers • surveyors • planners • scientists

DRAWN BY: CRN		
REVIEWED BY: JRN		
REV.	DESCRIPTION	DATE

STATE OF MONTANA
JAMES R. NICKELSON
No. 9063 PE
REGISTERED PROFESSIONAL ENGINEER

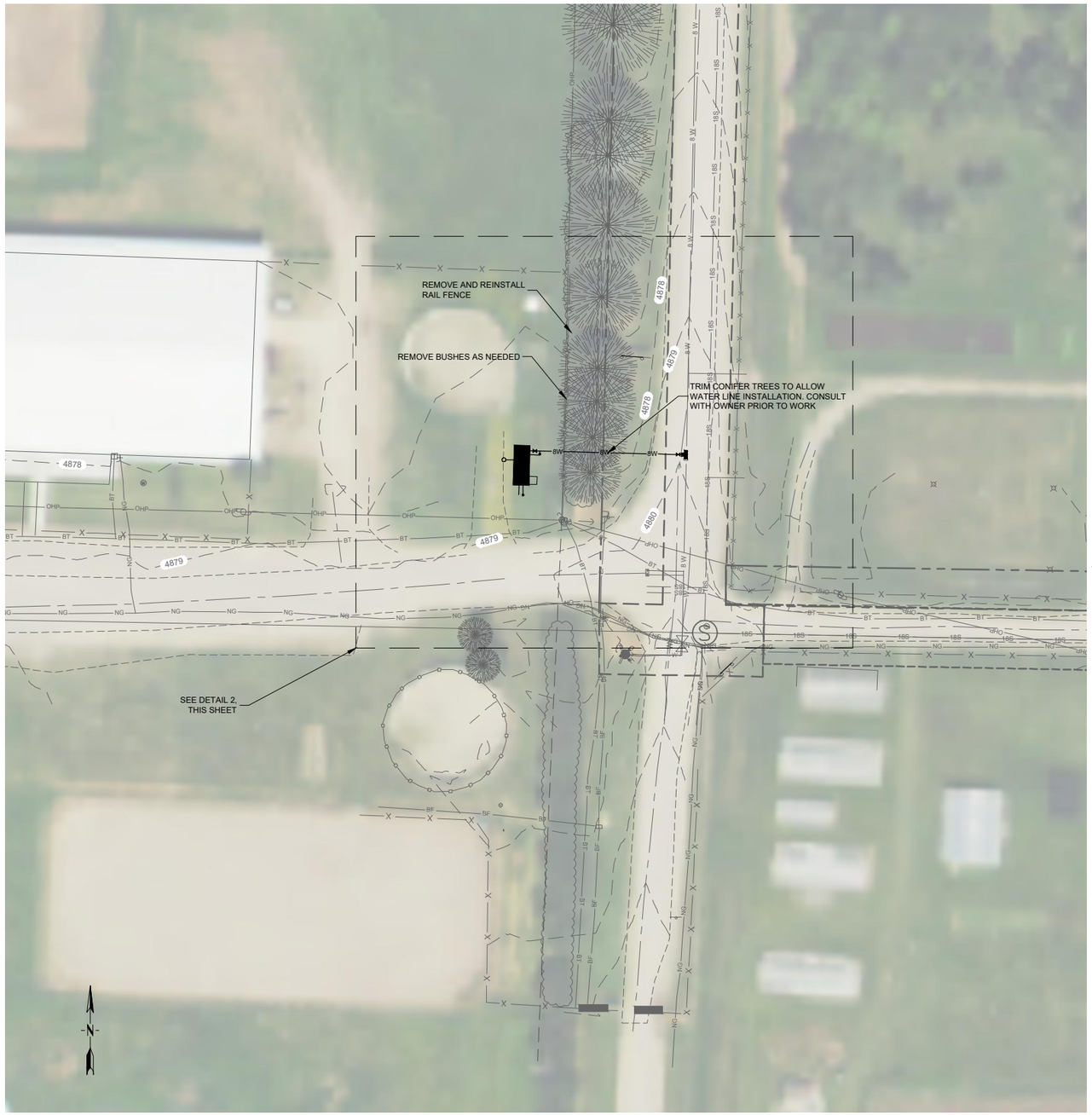
PPA#20-0116

MMI# 0747.075

SHEET TITLE
COVER

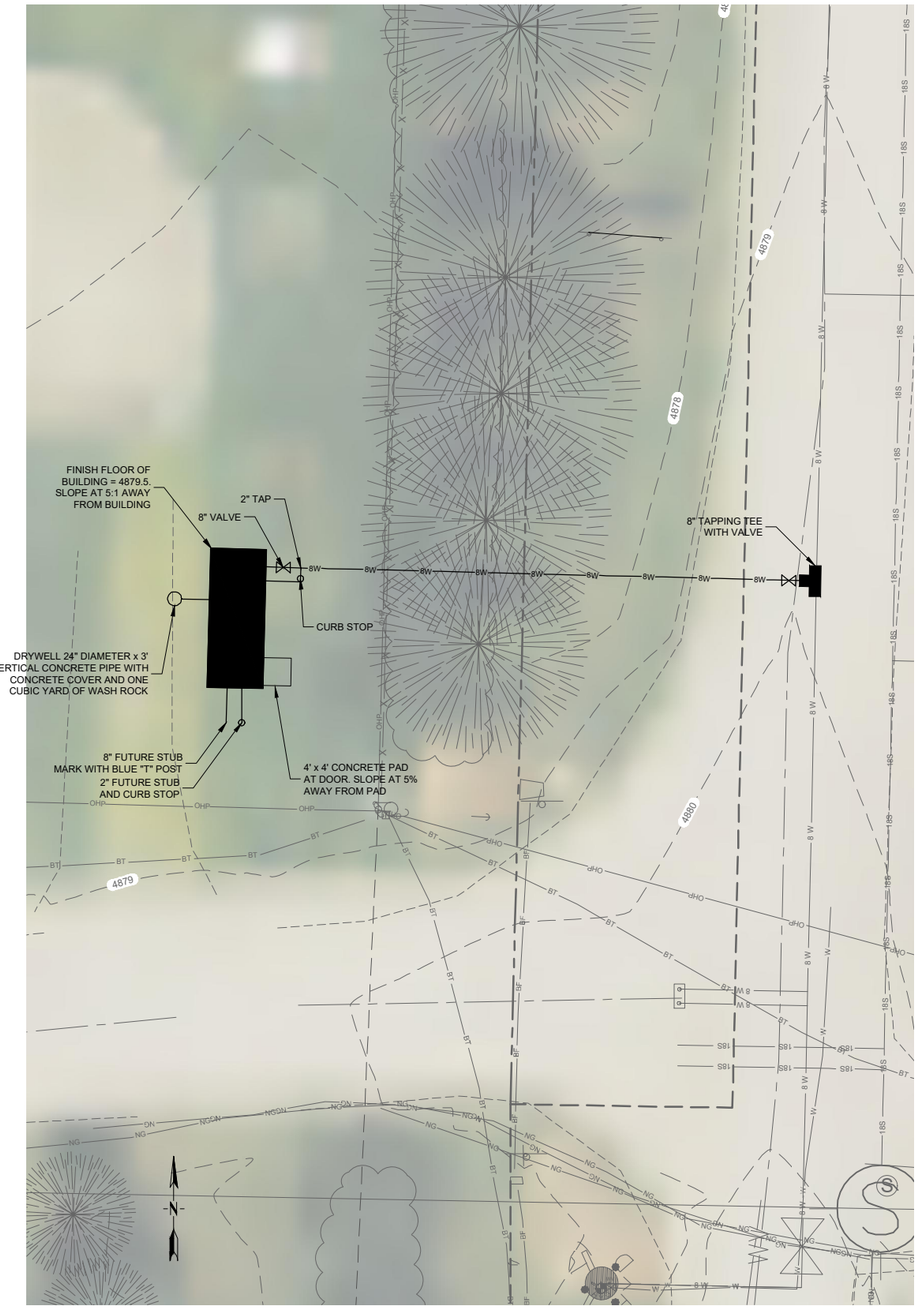
SHEET
G-1.0

DATE
12-01-2021



1 PLAN VIEW
C-1.1
SCALE: 1" = 30'

30 15 0 30 60
SCALE IN FEET



2 ENLARGED PLAN VIEW
C-1.1
SCALE: 1" = 10'

10 5 0 10 20
SCALE IN FEET

CONSTRUCTION DOCUMENTS

AES BART FARM CITY WATER SERVICE

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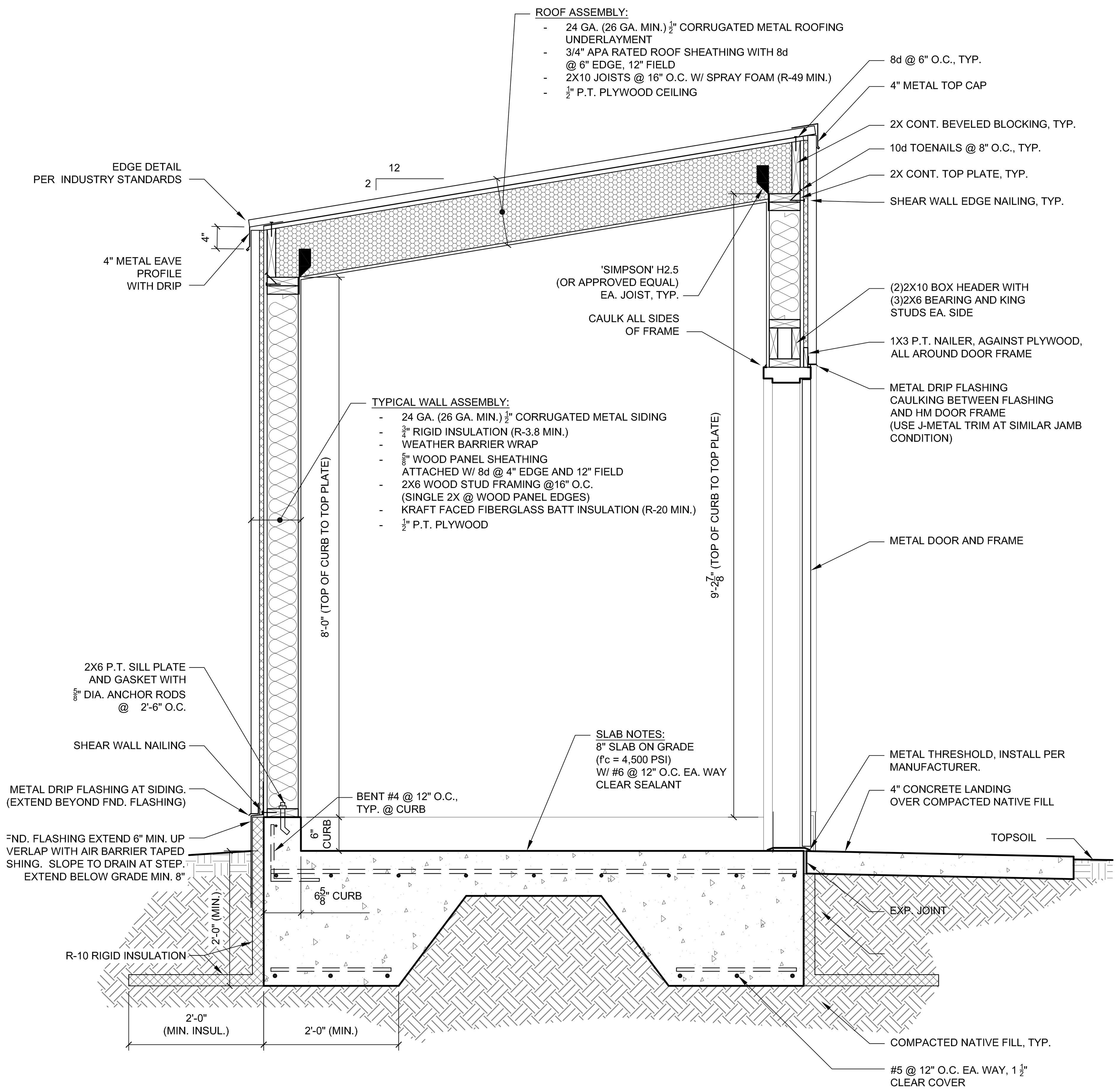
PPA#20-0116

MMI# 0747.075

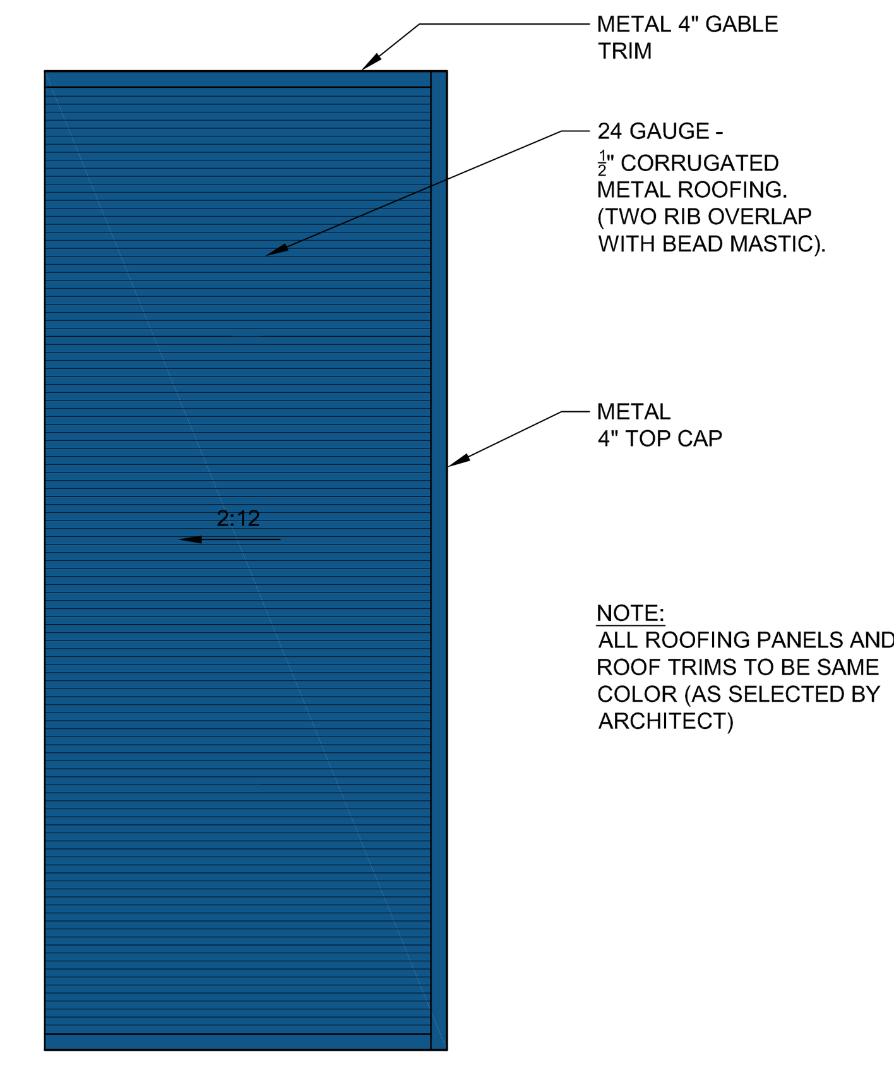
SHEET TITLE
SITE AND UTILITY PLAN

SHEET
C-1.1

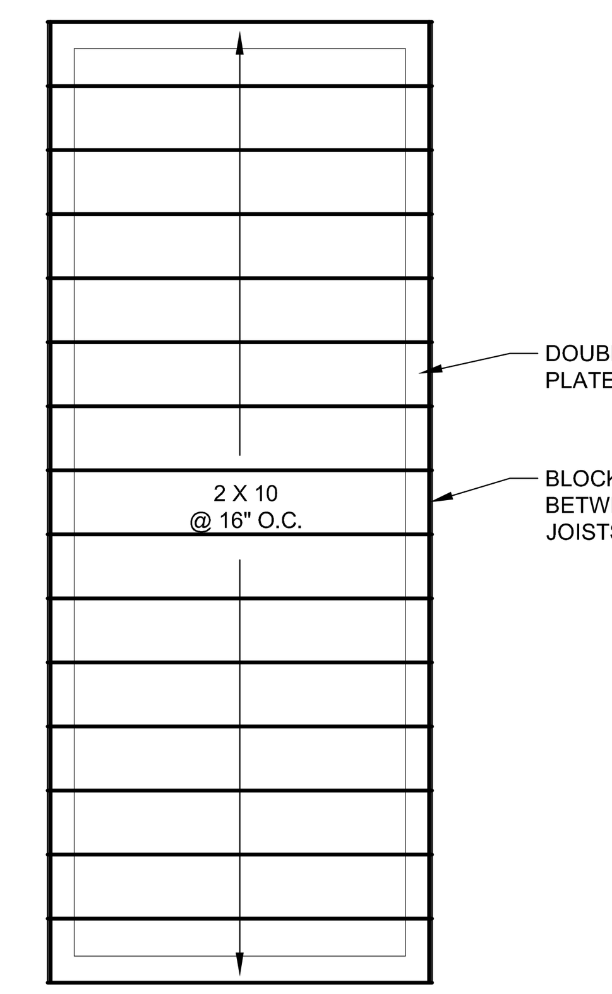
DATE
12-01-2021



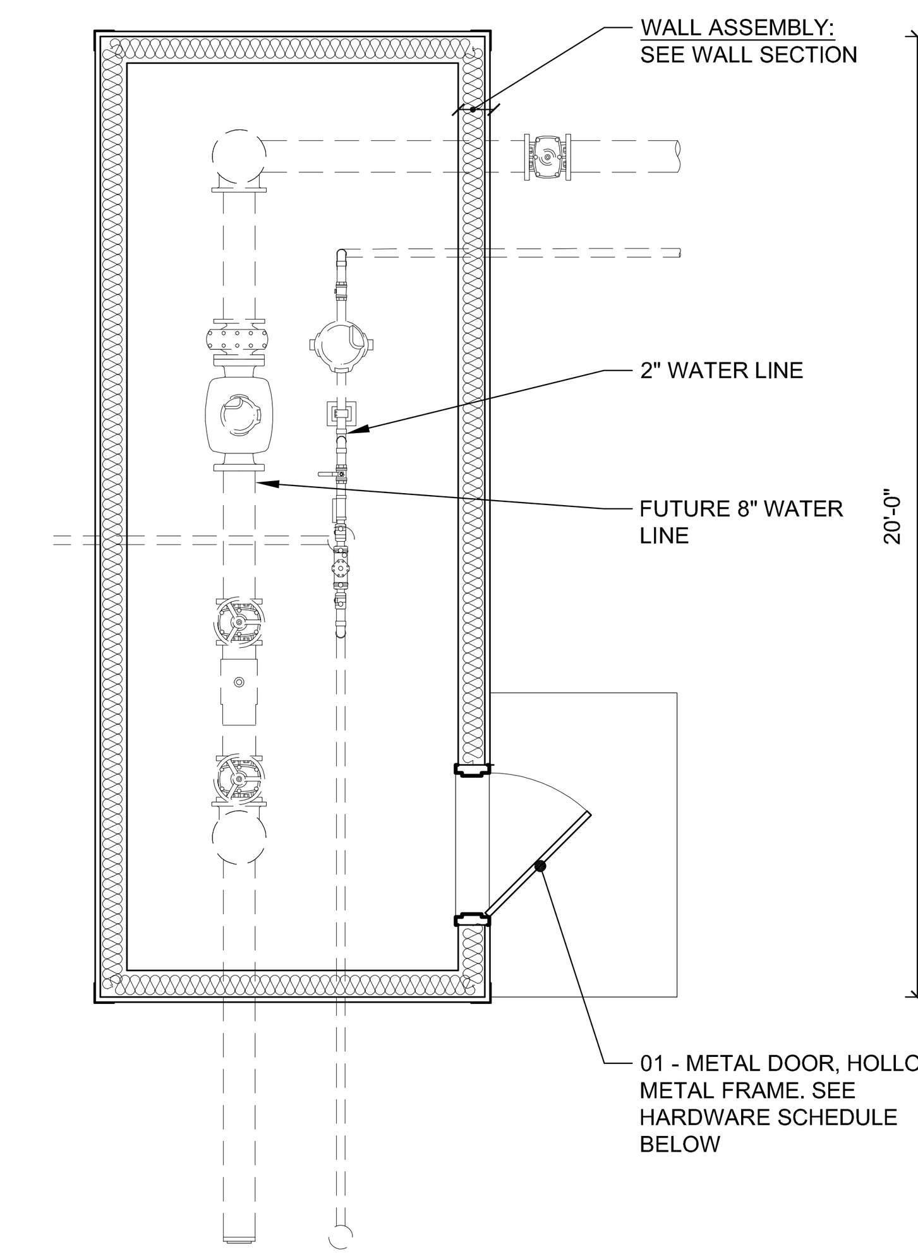
W-E Building Section
8 A1.1 3/4" = 1'-0"



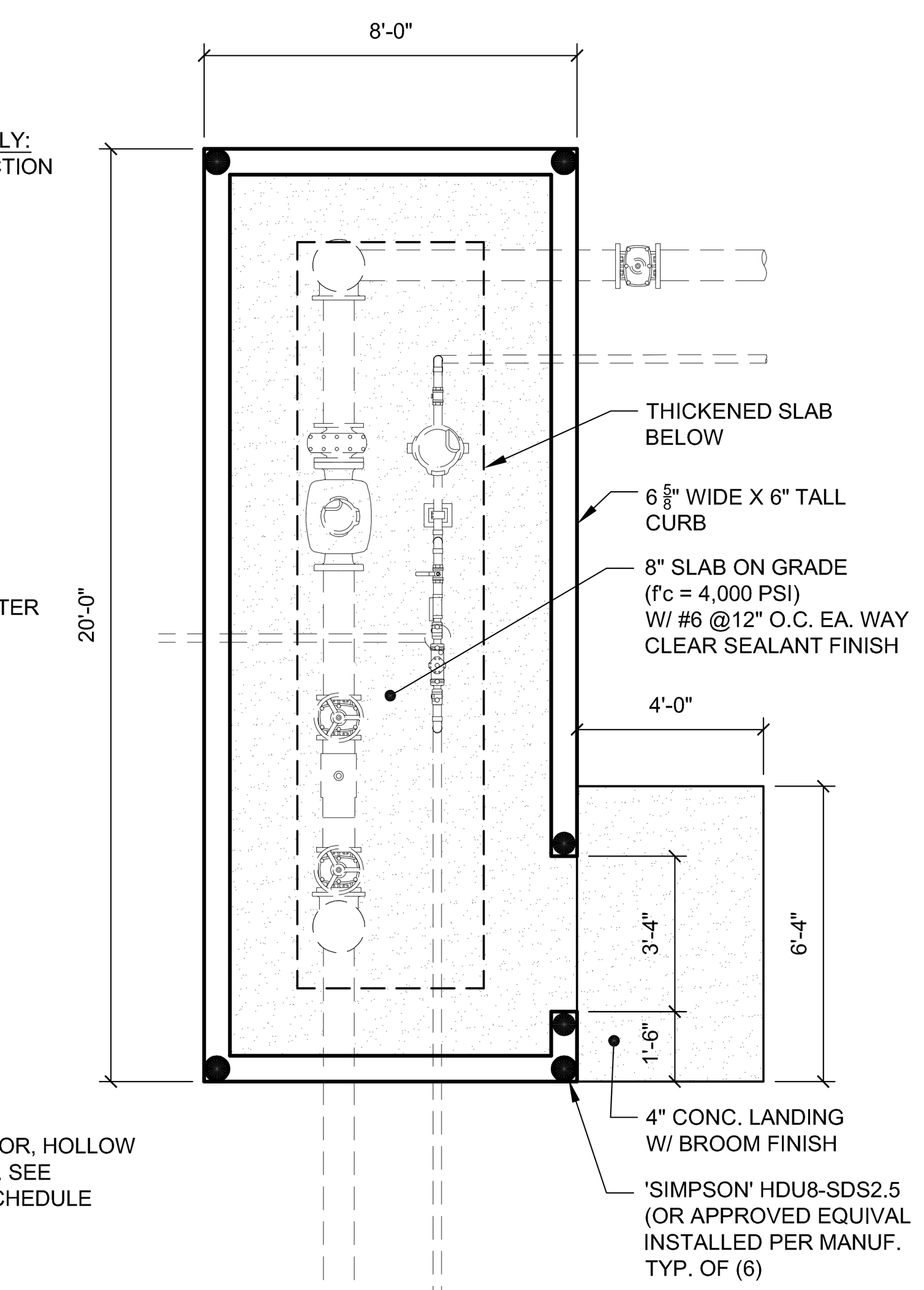
Roof Plan
4 A1.1 1/4" = 1'-0"



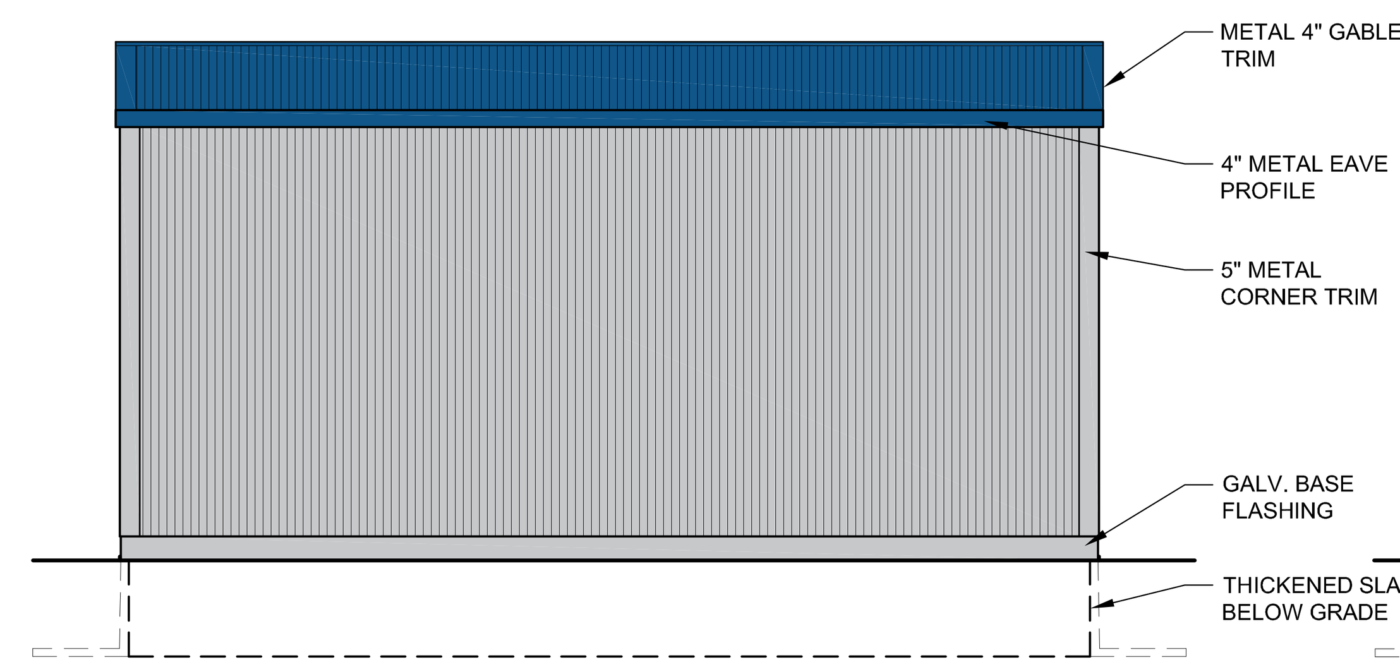
Roof Framing Plan
3 A1.1 1/4" = 1'-0"



Floor Plan
2 A1.1 1/4" = 1'-0"

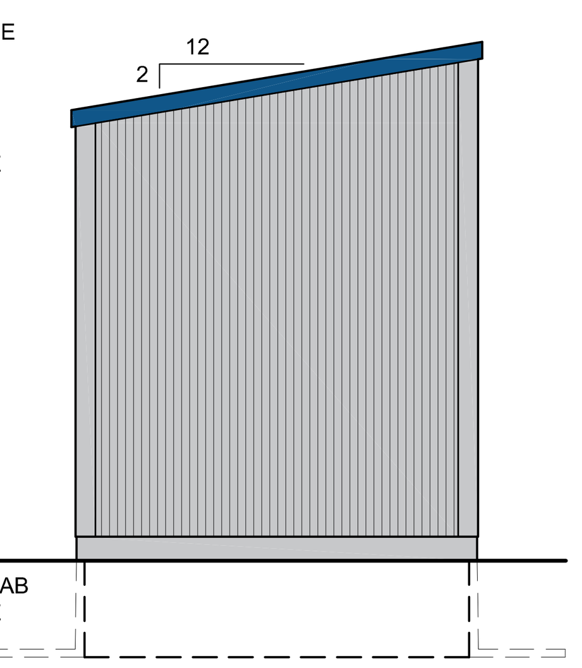


Slab Plan
1 A1.1 1/4" = 1'-0"

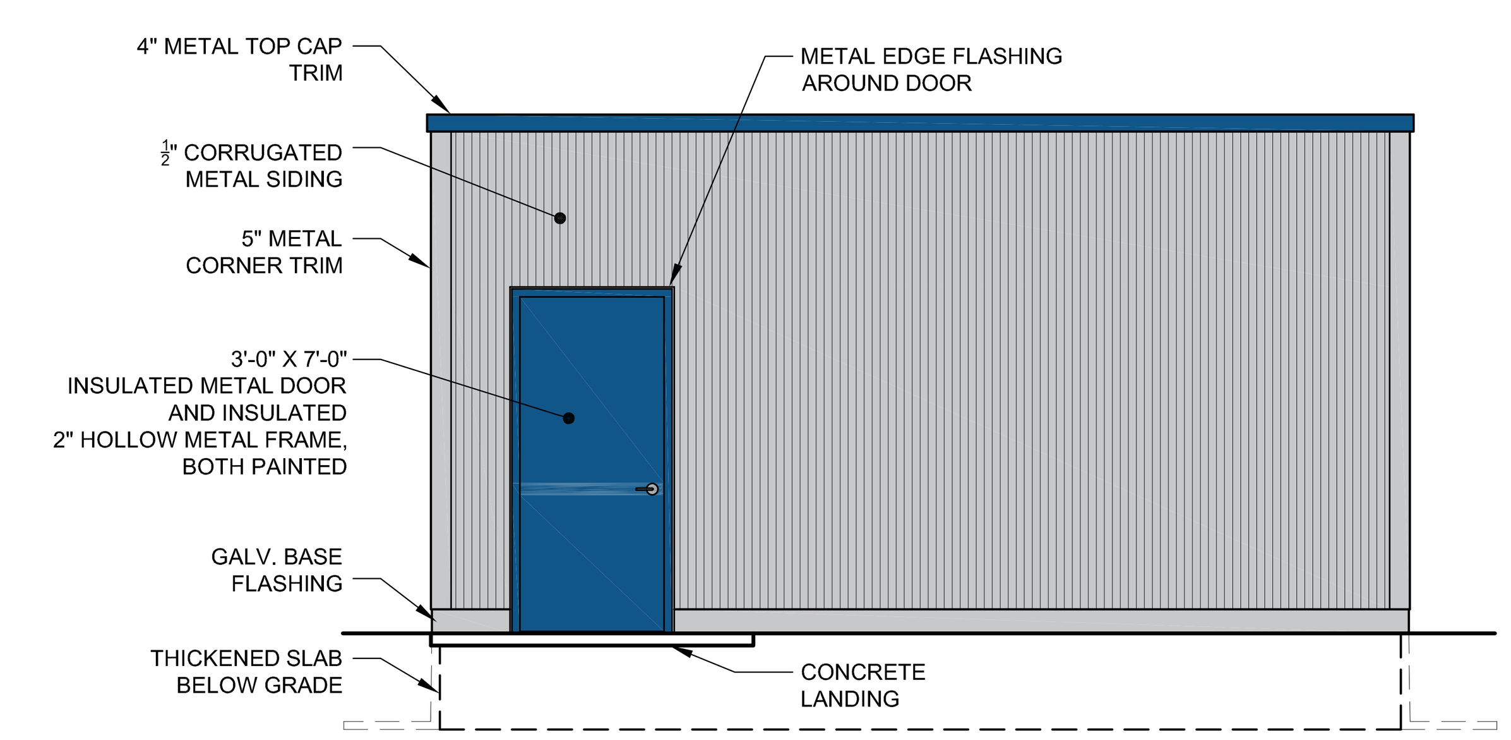


West Building Elevation
7 A1.1 1/4" = 1'-0"

NOTE: ALL WALL PANELS AND WALL TRIMS/FLASHINGS TO BE GALVANIZED



South Building Elevation
6 A1.1 1/4" = 1'-0" (North Similar)



East Building Elevation
5 A1.1 1/4" = 1'-0"

Door Hardware Schedule:

Hardware Group No. 01

Door List Label

01

Provide each door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	SET	HINGES	5BB1 (QTY, WEIGHT, SIZE AS REQ'D) NRP	630	IVE
1	EA	STOREROOM LOCK	ND80HD RHO	626	SCH
1	EA	SFIC PERMANENT CORE	FURNISHED & INSTALLED BY OWNER	626	MED
1	EA	LOCK GUARD	LG12	630	IVE
1	EA	SURFACE CLOSER (W/ SPRING STOP)	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" B-CS	630	IVE
1	SET	GASKETING	328A @ HEAD & JAMBS	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	SADDLE THRESHOLD	½" HIGH X DEPTH AS REQ'D BY SILL DETAIL	A	ZER
1	EA	RAIN DRIP	142A	A	ZER

Code Summary:

CITY OF BOZEMAN ADOPTED CODES:
- 2018 INTERNATIONAL BUILDING CODE
- 2018 INTERNATIONAL ENERGY CONSERVATION CODE

BUILDING CODE SUMMARY:

OCCUPANCY GROUP:	U - UTILITY
OCCUPANT LOAD:	1
BUILDING TYPE:	V-B
ALLOWABLE AREA:	5,500 SF
VAPOR RETARDER:	CLASS II

ENERGY CODE SUMMARY:
THERMAL ENVELOPE REQUIREMENTS (PRESCRIPTIVE): PER IECC TABLE C402.2

ACCESSIBILITY:
NOT APPLICABLE

General Notes:

1. STRUCTURAL DETAILING IS SHOWN ON THIS SHEET. PLEASE SEE STRUCTURAL SHEET FOR ADDITIONAL NOTES AND INFO.
2. THE CONTRACTOR SHALL SCHEDULE & COORDINATE ALL REQUIRED INSPECTIONS FROM THE APPROPRIATE REGULATORY AGENCIES.
3. THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND PAY ALL FEES REQUIRED BY LOCAL LAWS, ORDINANCES AND REGULATIONS PERTAINING TO THIS WORK.
4. THE CONTRACTOR IS REPONSIBLE TO LOCATE ALL SITE UTILITIES. THE CONTRACTOR SHALL VERIFY AND PROCEED WITH CAUTION DURING ALL EXCAVATION WORK.
5. THE CONTRACTOR SHALL INSTITUTE AND MAINTAIN SAFETY MEASURES AND PROVIDE ALL EQUIPMENT OR TEMPORARY CONSTRUCTION TO SAFEGUARD ALL PERSONS AND PROPERTY AFFECTED BY HIS OPERATIONS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIRE SAFING AND JOINT SEALANTS OF BUILDING PENETRATIONS THAT OCCUR FROM CONSTRUCTION ACTIVITIES, TYP.
7. THE ARCHITECT MAKES NO CLAIMS REGARDING THE PRESENCE OF HAZARDOUS MATERIALS. CONTRACTOR IS RESPONSIBLE FOR ALL REGULATIONS PERTAINING TO HAZARDOUS MATERIALS IN THIS PROJECT.
8. THE CONTRACTOR IS RESPONSIBLE ANY DEVIATIONS MADE FROM THE PLANS IF NOT FIRST APPROVED BY THE ARCHITECT.

CONSTRUCTION DOCUMENTS

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AES BART FARM AG WATER SERVICE

Henneberry Eddy Architects

Morrison Maierle
engineers • surveyors • planners • scientists

DRAWN BY:		
REVIEWED BY:		
REV.	DESCRIPTION	DATE
-	-	-

PPA#20-0116

MMI# 0747.075

SHEET TITLE
Arch / Struct Building Plans

SHEET
A-1.1

DATE
12/01/2021

GENERAL STRUCTURAL NOTES:

DESIGN CODES AND STANDARDS:

1. 2018 INTERNATIONAL BUILDING CODE (IBC), 2018 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
2. ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
3. ACI 318-14 BUILDING CODE REQUIREMENTS FOR CONCRETE STRUCTURES
4. 2018 NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION

DESIGN LOADS:

1. DEAD LOADS: CONCRETE SLAB = 4PSF + SELF WT

2. LIVE LOADS: UNIFORM LIVE LOAD = 125 PSF (LIGHT STORAGE)

3. SNOW LOADS: FLAT ROOF SNOW LOAD, Pf = 50 PSF (CITY OF BOZEMAN MIN.)
   - GROUND SNOW LOAD, Pg = 46 PSF (CITY OF BOZEMAN MIN.)
   - SNOW EXPOSURE FACTOR, Ce = 1.0 (BASED ON EXPOSURE CATEGORY C)
   - SNOW LOAD IMPORTANCE FACTOR, Is = 1.0
   - THERMAL FACTOR, Ct = 1.0

4. WIND LOADS: ULTIMATE DESIGN WIND SPEED (3-SECOND GUST), Vult = 115 MPH
   RISK CATEGORY = II
   WIND EXPOSURE = C
   INTERNAL WIND PRESSURE COEFFICIENT = ± 0.55
   WIND IMPORTANCE FACTOR = 1.0

5. SEISMIC LOADS: SEISMIC DESIGN CATEGORY = D
   - RISK CATEGORY = II
   - SEISMIC IMPORTANCE FACTOR = 1.0
   - MAPPED ACCELERATION PARAMETER: SS = 0.692, S1 = 0.217
   - SOIL SITE CLASS = D
   - DESIGN SPECTRAL ACCELERATION PARAMETER, SDS = 0.575, SD1 = 0.313
   - DESIGN BASE SHEAR: 0.65 KIPS
   - SEISMIC RESPONSE COEFFICIENT, Cs = 0.088
   - RESPONSE MODIFICATION FACTOR, R = 6.5

   ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE
   BASIC SEISMIC-FORCE-RESISTING SYSTEM: LIGHT-FRAME WOOD SHEARWALLS

MISCELLANEOUS:

1. STRUCTURAL DRAWINGS SHALL BE USED FOR BIDDING AND CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO BIDDING AND CONSTRUCTION.

2. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER OF RECORD.

3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL DISCREPANCIES WHICH REQUIRE A SIGNIFICANT CHANGE IN THE DESIGN AND/OR CONSTRUCTION FROM THAT SHOWN ON THE DRAWINGS.

4. THE CONTRACTOR SHALL CHECK AND COORDINATE WITH THE OWNER FOR BLOCKOUTS, CONDUIT, PIPE SLEEVES, EMBEDDED ITEMS, ETC. TO BE EMBEDDED IN CONCRETE AND MASONRY, AS WELL AS OPENINGS IN STRUCTURE FOR MECHANICAL AND ELECTRICAL INSTALLATIONS. STRUCTURAL DRAWINGS SHOW THIS INFORMATION FOR COORDINATION PURPOSES ONLY.

5. ENGINEER SHALL REVIEW SHOP DRAWINGS ONLY FOR THE CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND FOR COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. DIMENSIONS AND QUANTITIES NOTED ON THE SHOP DRAWINGS ARE NOT GUARANTEED BY THE ENGINEER, AND THEREFORE, MUST BE VERIFIED BY THE GENERAL CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR INFORMATION THAT PERTAINS TO THE FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION. SHOP DRAWINGS MUST BE REVIEWED, STAMPED, AND SIGNED BY THE CONTRACTOR PRIOR TO THE REVIEW BY THE ENGINEER.

6. THE STRUCTURE SHALL BE ADEQUATELY BRACED FOR SOIL, WIND, EARTHQUAKE AND CONSTRUCTION LOADS UNTIL ALL FLOOR, ROOF, AND WALL UNITS HAVE BEEN PERMANENTLY ATTACHED THERETO.

EARTHWORK:

1. DESIGNS HAVE BEEN DEVELOPED BASED ON AN ALLOWABLE BEARING PRESSURE OF 3000 PSF PER IBC TABLE 1806.2 FOR SANDY GRAVEL AND GRAVEL.

2. DATA ON INDICATED SUBSURFACE CONDITIONS ARE NOT INTENDED AS REPRESENTATIONS OR WARRANTIES OF CONTINUITY OF SUCH CONDITIONS. IT IS EXPRESSLY UNDERSTOOD THAT OWNER AND ENGINEER WILL NOT BE RESPONSIBLE FOR INTERPRETATIONS OR CONCLUSIONS DRAWN THEREFROM BY THE CONTRACTOR.

CAST-IN-PLACE CONCRETE:

1. CONCRETE PROPERTIES:

CAST-IN-PLACE CONCRETE	FOUNDATIONS / SLABS ON GRADE
MINIMUM 28 DAY COMPRESSIVE STRENGTH	4500 PSI *
MAXIMUM WATER-CEMENT RATIO (BY WT.)	0.40
MAXIMUM AGGREGATE SIZE	1 1/2"
PERCENT RANGE OF AIR CONTENT	6.5% ± 1.5% **
MAXIMUM SLUMP	3" ***

** AIR CONTENT OF SLABS ON GRADE MAY BE REDUCED TO 2% MIN. IF THE SLAB WILL BE PROTECTED FROM FREEZE/THAW CYCLES DURING AND AFTER CONSTRUCTION.
*** MAXIMUM SLUMP MAY BE INCREASED TO 8" W/ THE USE OF WATER-REDUCING ADMIXTURES TO MAINTAIN THE SPECIFIED W/C RATIO.

2. ALL CONCRETE REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60, EXCEPT FOR REINFORCING INDICATED AS REQUIRING WELDING, WHICH SHALL CONFORM TO ASTM A706, GR.60.

3. CLEARANCE FOR REINFORCEMENT BARS, UNLESS SHOWN OTHERWISE, SHALL BE:
   WHEN PLACED ON GROUND: --- 3"
   EXPOSED TO WATER, WEATHER, BACKFILL OR CONDENSATION:
   #5 BAR OR SMALLER -----1-1/2"
   #6 BAR OR LARGER ---------2"
   INTERIOR DRY SURFACES:
   SLABS --------- 3/4"
   BEAMS -------- 1-1/2"
   COLUMNS ------ 1-1/2"
   WALLS --------- 1"

4. ALL BENDS, UNLESS OTHERWISE SHOWN, SHALL BE A 90 DEGREE STANDARD HOOK AS DEFINED IN THE LATEST EDITION OF ACI 318. DETAIL ALL REINFORCEMENT IN ACCORDANCE WITH ACI 315.

5. ALL REINFORCEMENT LAPS, UNLESS OTHERWISE NOTED, SHALL BE AS FOLLOWS:

DETAIL OF REINFORCEMENT - LAP LENGTHS **

BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
		4500 PSI								
GR. 60	TOP BAR *	1'-7"	2'-1"	2'-7"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"
	OTHER BAR	1'-4"	1'-7"	2'-0"	2'-4"	2'-9"	3'-6"	4'-6"	5'-1"	5'-8"

* TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR, IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.

** INCREASE LAP LENGTHS SHOWN ABOVE BY 25% WHERE BARS ARE SPACED CLOSER THAN 6" O.C. OR WHERE EDGE OF BAR MEASURED IN DIRECTION OF SPACING IS LESS THAN 3" FROM FACE OF MEMBER.

6. TOLERANCES IN PLACING REINFORCEMENT SHALL BE: +/- 3/8 IN. FOR MEMBERS WITH D LESS THAN 8 IN. +/- 1/2 IN. FOR MEMBERS WITH D GREATER THAN 8 IN. WHERE D IS THE DISTANCE FROM THE OPPOSITE FACE OF CONCRETE TO THE CENTER OF THE REINFORCING.

7. PROVIDE SUPPORTS FOR REINFORCING AS SPECIFIED TO MAINTAIN BAR POSITION IN CONCRETE.

8. DOWELS SHALL BE THE LENGTH INDICATED. DOWELS SHALL BE WIRED IN POSITION PRIOR TO POURING CONCRETE.

9. AT ALL FOUNDATION/CONCRETE WALL AND FOOTING CORNERS AND WALL INTERSECTIONS, CORNER BARS SHALL BE PROVIDED TO MATCH THE HORIZONTAL BARS.

10. UNLESS INDICATED OTHERWISE, ALL ANCHOR BOLTS, HOLDOWNS AND OTHER REQUIRED ACCESSORIES SHALL BE WIRED IN PLACE PRIOR TO FOUNDATION INSPECTION AND CONCRETE PLACEMENT. DO NOT STAB THE ABOVE LISTED ITEMS INTO FRESH CONCRETE AFTER PLACEMENT. PROPERLY VIBRATE AROUND INSTALLED ITEMS TO ENSURE PROPER CONSOLIDATION OF CONCRETE.

11. AT SLABS-ON-GRADE, PROVIDE JOINTING AS INDICATED IN THE DRAWINGS WITH SPACING NOT TO EXCEED 36 TIMES THE SLAB THICKNESS.

12. AT SLABS-ON-GRADE, PROVIDE JOINTING AS INDICATED IN THE DRAWINGS.

13. WHERE "DRILLING & EPOXYING" OF REINFORCING STEEL OR THREADED ANCHOR RODS (ASTM A36, U.N.O.) IS INDICATED, UNLESS NOTED OTHERWISE, PROVIDE THE FOLLOWING SYSTEM OR APPROVED EQUIVALENT:

APPLICATION	EPOXY SYSTEM
NEW OR EXISTING CONCRETE	HILTI HIT HY200

SAWN LUMBER:

1. ALL LUMBER SHALL BE GRADED AND MARKED ACCORDING TO THE WESTERN WOOD PRODUCTS ASSOCIATION (WWPA) GRADING RULES OR APPROVED EQUIVALENT. ARCHITECTURAL/EXPOSED MEMBERS SHALL NOT BE STAMPED. A CERTIFICATE OF COMPLIANCE BY THE MANUFACTURER SHALL BE PROVIDED IN LIEU OF MARKING.

2. PROVIDE THE FOLLOWING FRAMING LUMBER SPECIES AND GRADE WITH MOISTURE CONTENT LESS THAN 19%, S4S:
   - 2x FRAMING LUMBER (NOT INCLUDING WALL STUDS AND PLATES) = DOUGLAS FIR-LARCH, GR. NO. 2
   - POSTS AND BEAMS, 4x AND LARGER = DOUGLAS FIR - LARCH, GR. NO. 1
   - BEARING/SHEAR WALL STUDS = DOUGLAS FIR - LARCH, GR. NO.2
   - SILL PLATES IN CONTACT WITH CONCRETE OR MASONRY = PRESSURE TREATED HEM FIR, STUD GRADE.

3. ALL BUILT-UP POSTS SHALL BE NAILED AS FOLLOWS, BEGINNING AND ENDING NAILING 3" FROM BOTTOM AND TOP OF POST:
   - 2 PLY 2X4 - ONE ROW OF 10d NAILS @ 12" O.C. EA. SIDE, STAGGERED 1 1/2" HORIZ. 6" VERT.
   - 2 PLY 2X6 - TWO ROWS OF 10d NAILS @ 16" O.C. EA. SIDE, ROWS SPACED 2 1/2" APART, STAGGERED 8" VERT.

ROOF, FLOOR, AND SHEAR WALL SHEATHING:

1. ALL SHEATHING SHALL BE APA RATED, EXPOSURE 1, WITH SPAN RATINGS, THICKNESS & NAILING FOR SHEATHING AS INDICATED IN THE PLANS.

2. PLACE FLOOR AND ROOF SHEATHING W/ THE LONG AXIS PERPENDICULAR TO SUPPORTS & STAGGER 48-INCHES.

3. DRIVE SHEATHING NAILS (OR OTHER SPECIFIED ATTACHMENTS) FLUSH WITH BUT NOT FRACTURING, THE WOOD PANEL SURFACE.

4. LOCATION OF SHEATHING ON FACE OF WALL IS SHOWN FOR REPRESENTATION ONLY, CONTRACTOR TO COORDINATE W/ ARCH. ON WHICH FACE THE SHEATHING SHALL BE PLACED, PROVIDE TRANSFER BLOCKING PER DETAIL

WOOD CONNECTIONS:

1. ALL NAILS SHALL BE "COMMONS" UNLESS INDICATED OTHERWISE. USE OF SMALLER DIAMETER "BOX" NAILS FREQUENTLY USED IN NAIL GUNS REQUIRES USE OF LARGER PENNY WEIGHT TO PROVIDE AN EQUIVALENT DIAMETER/LENGTH NAIL PROVIDE ASTM A153 GALVANIZED FASTENERS @ TREATED WOOD.

2. STEEL CONNECTION PLATE MATERIAL SHALL CONFORM TO ASTM STANDARD A36. WELDING SHALL CONFORM TO AWS D1.1.

3. CONNECTION HARDWARE SHALL BE THE SIMPSON TYPE INDICATED, OR APPROVED EQUAL. PROVIDE ASTM G185 GALVANIZE COATING AT CONNECTORS AND ASTM A153 GALVANIZED COATING AT FASTENERS AT CONNECTIONS TO TREATED WOOD. FILL ALL HOLES IN CONNECTION WITH THE TYPE, SIZE, AND NUMBER OF BOLTS/NAILS LISTED BY THE MANUFACTURE. FINISH FOR EXPOSED CONNECTION HARDWARE SHALL BE EPOXY-BASED CORROSION RESISTANT PAINT WITH COLOR AS CHOSEN BY ARCHITECT.

4. WHERE MULTIPLE FRAMING MEMBERS ARE SHOWN, PROVIDE HANGERS OF SIMILAR TYPE AS CALLED OUT BUT SIZED TO CARRY MULTIPLE MEMBERS.

5. BOLTS AND LAG SCREW MATERIAL SHALL CONFORM TO ASTM STANDARD A307.

6. BOLT HOLES IN WOOD MEMBERS SHALL BE A MAXIMUM OF 1/16" LARGER THAN THE BOLT DIAMETER.

7. FOR LAG SCREWS, THE CLEARANCE HOLE SHALL BE THE SAME DIAMETER AS THE SHANK AND THE SAME DEPTH AS THE UNTHREADED SHANK. THE LEAD HOLE SHALL BE 60 PERCENT OF THE SHANK DIAMETER AND A LENGTH EQUAL TO THE THREADED PORTION.

8. PROVIDE STANDARD WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD.

9. ALL FASTENING SHALL BE IN ACCORDANCE WITH 2012 IBC TABLE NO. 2304.9.1 UNLESS THE PLANS INDICATE A HEAVIER NAILING.

10. STAGGER SPLICES OF ALL DOUBLE TOP PLATES 48" (MIN.) AND NAIL WITH (2) 10d's @ 12" O.C. FOR 2'-0" EACH SIDE OF SPLICE (4 TOTAL NAILS EACH SIDE OF SPLICE)

11. AT ALL EXPOSED, WOOD TO WOOD BOLTED CONNECTIONS, CUT OFF EXTENDED BOLT AND "KNICK" TO PRECLUDE LOOSENING.

12. ALL WASHERS FOR ANCHOR BOLTS ATTACHING SILL PLATES SHALL BE STEEL WASHERS WITH A MINIMUM OF 1/4"x3"x3" IN SIZE.

13. UNLESS NOTED OTHERWISE, PROVIDE 3/4" DIA. x 7" EMBED ANCHOR BOLTS AT 4'-0" MAX. O.C. AT ALL SILL AND BEARING PLATE TO FOUNDATION WALL CONNECTIONS WITH (2) BOLTS MINIMUM PER EACH SILL PLATE PIECE AND WITH BOLTS 12" MAX. FROM CORNERS AND ENDS OD SILL PLATE PIECES.

CONSTRUCTION DOCUMENTS

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Morrison Maierle
engineers - surveyors - planners - scientists

DRAWN BY:	RLS	
REVIEWED BY:	NJM	
REV.	DESCRIPTION	DATE

MONTANA
REBECCA L. SCHEETZ
Reg. No. 22662PE
LICENSED PROFESSIONAL ENGINEER

PPA#20-0116

MMI #: 0747.075

SHEET TITLE
GENERAL STRUCTURAL NOTES

SHEET
S0.0

DATE
12/01/2021

ELECTRICAL PROJECT GENERAL NOTES

A. PRIOR TO BID CONTRACTOR SHALL VISIT THE SITE. NOT ALL WORK REQUIRED TO COMPLETE THE PROJECT IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL BECOME THOROUGHLY FAMILIAR WITH ALL THE WORK REQUIRED TO COMPLETE THE PROJECT IN ADDITION TO THE LOCAL CONDITIONS AND INCLUDE SAID WORK IN THE BID.
B. MONTANA STATE UNIVERSITY OWNS THE PRIMARY ELECTRICAL MEDIUM VOLTAGE DISTRIBUTION SYSTEM ON PROPERTY, RATED AT 7.2/12.47KV. CONTRACTOR SHALL PROVIDE ALL REQUIRED MEDIUM VOLTAGE WORK SHOWN ON PLANS AS PART OF PROJECT SCOPE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ALL SCHEDULES ARE MET.
C. GENERAL WORK PRACTICES FOR ELECTRICAL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NECA 1, "STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING." THIS PUBLICATION IS AVAILABLE FROM NECA BY TELEPHONE AT 301-657-3110 OR ON-LINE AT WWW.NECANET.ORG.
D. FIRE-RESISTANCE: PROVIDE A MINIMUM HORIZONTAL DISTANCE OF 24" BETWEEN OUTLET BOXES LOCATED ON OPPOSITE SIDES OF FIRE-RESISTANCE RATED WALLS. WHERE THIS IS NOT POSSIBLE INSTALL UL LISTED PUTTY PADS ON ALL OUTLET BOXES NOT MEETING THE 24" SEPARATION. PROVIDE A UL LISTED THROUGH -PENETRATION FIRESTOP FOR PENETRATIONS OF FIRE-RESISTANCE RATED ASSEMBLIES.
E. CONDUCTORS ARE SIZED PER THE 75 DEGREE C RATING COLUMN OF NEC TABLE 310.16. IF THE TERMINAL USED FOR A TERMINATION OF A PARTICULAR CONDUCTOR IS NOT MARKED, OR THE TERMINAL IS MARKED FOR 60 DEGREE C CONDUCTORS, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EITHER ADJUST THE AMPACITY OF THE CONDUCTOR TO MATCH THE 60 DEGREE COLUMN OF TABLE 310.16, OR REPLACE THE TERMINAL WITH ONE RATED FOR AT LEAST 75 DEGREES C.
F. BASED ON ACTUAL HOMERUN LENGTHS REQUIRED IN THE FIELD, THE CONTRACTOR SHALL CALCULATE AND INCREASE THE WIRE SIZES AS REQUIRED TO LIMIT BRANCH CIRCUIT VOLTAGE DROP TO 3%. FOR 20A BRANCH CIRCUITS THE MINIMUM CONDUCTOR SIZES SHALL BE AS FOLLOWS: #10 AWG CU FOR RUNS BETWEEN 100 AND 200 LINEAR FEET, #8 AWG CU FOR RUNS BETWEEN 200 AND 325 LINEAR FEET, AND AS CALCULATED BY THE CONTRACTOR FOR CIRCUITS EXTENDING BEYOND 325 LINEAR FEET. IN ALL CASES WHERE WIRE SIZES INCREASE, THE CONTRACTOR SHALL PROVIDE LARGER CONDUITS AS REQUIRED.
G. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH 120V BRANCH CIRCUIT.

ABBREVIATIONS AND SYMBOLS GENERAL NOTES

A. THE ABBREVIATIONS ON THIS SHEET COMPRISE A STANDARD LIST; NOT ALL ABBREVIATIONS APPEAR ON THIS PROJECT.
B. THE SYMBOLS ON THIS SHEET COMPRISE A STANDARD LIST; NOT ALL SYMBOLS APPEAR ON THIS PROJECT.
C. ALL MOUNTING HEIGHTS ARE TO CENTER OF DEVICE ABOVE FINISHED FLOOR, UNLESS NOTED OTHERWISE. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS, MAKING ADJUSTMENTS AS REQUIRED TO AVOID INTERFERENCE WITH EQUIPMENT SUCH AS BASEBOARD FIN-TUBE, CABINET UNIT HEATERS, ETC. ARCHITECT/ENGINEER SHALL BE NOTIFIED OF ALL SUCH HEIGHT ADJUSTMENTS. MOUNTING HEIGHTS INDICATED ON ARCHITECTURAL WALL ELEVATIONS OR AS NOTED SPECIFICALLY ON THE DRAWINGS OR IN THE SPECIFICATIONS SHALL TAKE PRECEDENCE OVER MOUNTING HEIGHTS LISTED.

ELECTRICAL ABBREVIATIONS LEGEND

A, AMP	AMPERES
AC	ALTERNATING CURRENT
A/C	AIR CONDITIONING
AF	AMP FUSE
AFC	AVAILABLE FAULT CURRENT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AS	AMP SWITCH
ATS	AUTOMATIC TRANSFER SWITCH
BAS	BUILDING AUTOMATION SYSTEM
BKR	BREAKER
BOF	BOTTOM OF FIXTURE
C	RACEWAY/CONDUIT
CB	CIRCUIT BREAKER
CCT	COLOR RENDERING TEMPERATURE
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
C.O.	RACEWAY/CONDUIT ONLY, WITH PULL STRING
COD	CENTER OF DEVICE
CNTRL	CONTROL
CU	COPPER
(D)	EXISTING TO BE DEMOLISHED
DISC	DISCONNECT
DIST	DISTRIBUTION
DPDT	DOUBLE POLE DOUBLE THROW
DWG	DRAWING
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEC	ELECTRIC
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
EX. EXIST	EXISTING
FA	FIRE ALARM
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FD	FUSED DISCONNECT
FLR	FLOOR
FO	FIBER OPTIC
FSD	FIRE SMOKE DAMPER RELAY, CONTROLLED BY ASSOCIATED SMOKE DETECTOR AND CIRCUITED BACK TO FACP
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GEC	GROUNDED ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HVAC	HEATING, VENTILATION & AIR CONDITIONING
HZ	HERTZ
J-BOX	JUNCTION BOX
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
LCP	LIGHTING CONTROL PANEL
LPW	LUMENS PER WATT
LTG	LIGHTING
LM	LUMENS
LV	LOW VOLTAGE
MAG	MAGNETIC STARTER
MAN	MANUAL
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL, PLUMBING
MH	METAL HALIDE
MIN	MINIMUM
MSS	MOTOR STARTER SWITCH WITH THERMAL OVERLOADS
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFD	NON-FUSED DISCONNECT
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
#	NUMBER
OAE	OR APPROVED EQUAL
OC	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
OH	OVERHEAD
P	POLE
PB	PUSHBUTTON
PC	PLUMBING CONTRACTOR
PH	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE CONDUIT
PWR	POWER
(R)	EXISTING TO REMAIN
RCPT	RECEPTACLE
RECEPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RM	ROOM
RVNR	REDUCED VOLTAGE NON-REVERSING
RVR	REDUCED VOLTAGE REVERSING
SP	SINGLE POLE TOGGLE SWITCH
SPD	SURGE PROTECTIVE DEVICE (TVSS)
SPEC	SPECIFICATION
SPST	SINGLE POLE SINGLE THROW
SSPB	START-STOP PUSHBUTTON
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TB	TELEPHONE BOARD
TC	TIME CLOCK
TD	TIME DELAY
TEL	TELEPHONE
TR	TAMPER RESISTANT
TSP	TWISTED SHIELDED PAIR
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VA	VOLT-AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
WP	WEATHERPROOF
W/O	WITHOUT
XFMR	TRANSFORMER
Y	WYE-CONNECTED
Δ	DELTA-CONNECTED
ø	PHASE

LIGHTING CONTROL LEGEND

STANDARD LIGHTING CONTROLS:
SWITCHES AND LINE VOLTAGE DIMMERS

$X — TOGGLE SWITCH (MOUNT AT +48", UNO)
"X" INDICATES TYPE:
BLANK - SINGLE POLE
3 - INDICATES THREE-WAY
4 - INDICATES FOUR-WAY
D - INDICATES DIMMER SWITCH
PHILIPS SUNRISE - ON/OFF
K - INDICATES KEYED SWITCH
T - INDICATES TIMER
P - INDICATES PILOT LIGHT
OS - INDICATES WALL SWITCH OCC SENSOR
WATTSTOPPER DW100 (SINGLE OR DUAL DW-200 SWITCH)
OSD - INDICATES WALL SWITCH OCC SENSOR WITH 0-10V DIMMING - WATTSTOPPER PW-311
a - INDICATES SINGLE POLE LIGHTING SWITCH ZONE FOR ZONE a
b - INDICATES SINGLE POLE LIGHTING SWITCH ZONE FOR ZONE b
ab - INDICATES LIGHTING SWITCHES WITH MULTIPLE ZONES

(OS) (OS) — OCCUPANCY SENSOR - DUAL TECHNOLOGY CEILING MOUNT: WATTSTOPPER DT-300, OR EQUAL WALL MOUNT: WATTSTOPPER DT-200, OR EQUAL WALL MOUNTED SHALL BE AT +96", UNO PROVIDE WITH BZ-50 POWER PACKS AS NEEDED.

(P) — PHOTOCELL - EXTERIOR

ELECTRICAL ONE-LINE LEGEND

- (M) — CT AND CUSTOMER POWER METER
- (M) — MOTOR
- [M] — UTILITY ELECTRIC METER AND BASE (BASE BY CUSTOMER)
- SPD — SURGE PROTECTION DEVICE
- L — LIGHTNING ARRESTER, TYPE 1 SPD, MOUNTED ON EXTERIOR OF MAIN SWITCHGEAR (SQUARE D NO. SDSA3650, OAE)
- STRESS RELIEF CONE
- PFC — POWER FACTOR CORRECTION CAPACITOR
- $X — EQUIPMENT TOGGLE DISCONNECT SWITCH
  "X" INDICATES TYPE:
  F - FUSTAT
  M - MOTOR STARTER SWITCH W/ THERMAL OVERLOADS
- CONTACTOR NORMALLY OPEN, NORMALLY CLOSED
- TRANSFORMER, 3-PH, 3-WIRE DELTA CONNECTION
- TRANSFORMER, 3-PH, 4-WIRE GROUNDED WYE CONNECTION
- AUTOMATIC TRANSFER SWITCH
- VFD — VARIABLE FREQUENCY DRIVE
- FIXED MOUNT LV BREAKER
- FUSED SWITCH ("XXAS/XXAF" - SW AND FUSE AMP RATING)
- G — GENERATOR
- CB — WALL MOUNTED BREAKER
- THERMAL OVERLOAD ELEMENT
- DISCONNECT SWITCH ("XXAS" = SWITCH AMP RATING)
- FUSED DISCONNECT SWITCH ("XXAS/XXAF" = SW AND FUSE AMP RATING)
- COMBINATION MOTOR STARTER (STR SIZE, TYP, AS, AF, SEE MEP COORDINATION SCHEDULE)
- SWITCHBOARD OR PANELBOARD; NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED

ELECTRICAL POWER LEGEND

- D-1 (X) — PANEL AND CIRCUIT DESIGNATION ARE SHOWN NEXT TO EACH DEVICE (PANEL NAME - CIRCUIT NUMBER). BRANCH CIRCUIT WIRE SIZE IS #12, UNO. A SINGLE INSULATED GREEN GROUND CONDUCTOR SHALL BE PROVIDED WITH EACH HOME RUN. PROVIDE A SEPARATE NEUTRAL FOR EACH CIRCUIT. HOME RUNS SHALL HAVE NO MORE THAN THREE CIRCUITS. LINE VOLTAGE AND LOW VOLTAGE WIRING IS NOT SHOWN ON PLANS. FOR EQUIPMENT CIRCUITING, SEE MEP COORDINATION SCHEDULE.
  "X" INDICATES TYPE:
  GFI - GROUND FAULT INTERRUPTER
  WP - WEATHERPROOF WHILE-IN-USE COVER
  U - PROVIDE WITH (2) USB PORTS
  TR - TAMPER RESISTANT
- SIMPLEX RECEPTACLE - CEILING MOUNT, WALL MOUNT (+18", UNO)
- DUPLEX RECEPTACLE - CEILING MOUNT, WALL MOUNT (+18", UNO)
- QUADRUPLEX RECEPTACLE - CEILING MOUNT, WALL MOUNT (+18", UNO)
- ABOVE COUNTER RECEPTACLE - MOUNT AT +4" ABOVE BACKSPLASH
- PANELBOARD OR LOAD CENTER
- SPECIAL PURPOSE RECEPTACLE (MOUNT AT +18", UNO)
  "X" INDICATES TYPE:
  A - NEMA 5-20R, #12 CU; B - NEMA 5-30R, #10 CU;
  C - NEMA 5-50R, #8 CU; D - NEMA 6-20R, #12 CU;
  E - NEMA 6-30R, #10 CU; F - NEMA 6-50R, #8 CU;
  G - NEMA 14-20R, #12 CU; H - NEMA 14-30R, #10 CU;
  I - NEMA 14-50R, #6 CU*
  * +4" AFF FOR RANGE
- PUSHBUTTON (MOUNT AT +48", UNO)
  "X" INDICATES TYPE:
  EPO - EMERGENCY POWER OFF
  ADA - HANDICAPPED ACCESSIBLE DOOR (DEVICE BY OTHERS)
  ODO - OVERHEAD DOOR OPERATOR (DEVICE BY OTHERS)
- J — JUNCTION BOX
- SURFACE MOUNTED RACEWAY
- RACEWAY CONCEALED IN WALL, FLOOR, OR CEILING IN FINISHED SPACES, EXPOSED IN UNFINISHED SPACES
- RACEWAY BELOW FLOOR OR BELOW GRADE
- RACEWAY STUB-OUT WITH CAPPED END
- RACEWAY STUB-OUT WITH BRUSHED END
- GROUNDING BUS

ELECTRICAL LIGHTING FIXTURE LEGEND

- RECESSED LED FIXTURE - "a" & "b" DESIGNATES SWITCH
- RECESSED EMERGENCY LED FIXTURE - "a" & "b" DESIGNATES SWITCH
- SURFACE LED FIXTURE - "a" & "b" DESIGNATES SWITCH
- SURFACE EMERGENCY LED FIXTURE - "a" & "b" DESIGNATES SWITCH
- SURFACE WALL MOUNT LED FIXTURE
- LED STRIP OR INDUSTRIAL, SURFACE OR CHAIN HUNG
- EMERGENCY LED STRIP OR INDUSTRIAL, SURFACE OR CHAIN HUNG
- POLE MOUNTED FIXTURE
- LIGHTED BOLLARD
- PENDANT FIXTURE; HIGH BAY, LOW BAY, DECORATIVE
- EXIT SIGN - WALL MOUNT, CEILING MOUNT. ARROW INDICATES DIRECTION OF TRAVEL, SHADING INDICATES LIGHTED FACE.
- COMBINATION EXIT SIGN/ EGRESS LIGHTING UNIT - WALL MOUNT, CEILING MOUNT. ARROW INDICATES DIRECTION OF TRAVEL, SHADING INDICATES LIGHTED FACE.
- DUAL HEAD EMERGENCY EGRESS BATTERY PACK, WALL MOUNT OR CEILING MOUNT
- WALL MOUNTED SCONCE
- SURFACE DOWNLIGHT
- SURFACE EMERGENCY DOWNLIGHT
- RECESSED CAN DOWNLIGHT
- RECESSED CAN EMERGENCY DOWNLIGHT
- RECESSED CAN WALL WASHER
- TRACK LIGHTING. SEE FIXTURE SCHEDULE AND LIGHTING PLANS.

CONSTRUCTION DOCUMENTS

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AES BART FARM
CITY WATER SERVICE

Morrison Maierle
engineers - surveyors - planners - scientists

DRAWN BY: RPM
REVIEWED BY: MJS

REV.	DESCRIPTION	DATE

MONTANA
RYAN P. MAHONEY
No. 49006 PE
LICENSED PROFESSIONAL ENGINEER

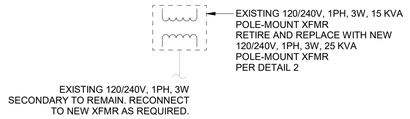
PPA#20-0116

MMI#0747.075

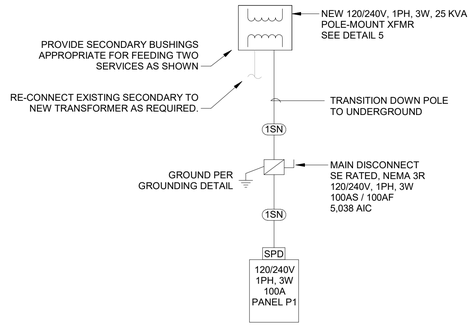
SHEET TITLE
ELECTRICAL LEGENDS

SHEET
E0.1

DATE
12/01/2021



1 EXISTING ONE LINE DIAGRAM
N.T.S.



FEEDER SCHEDULE - COPPER

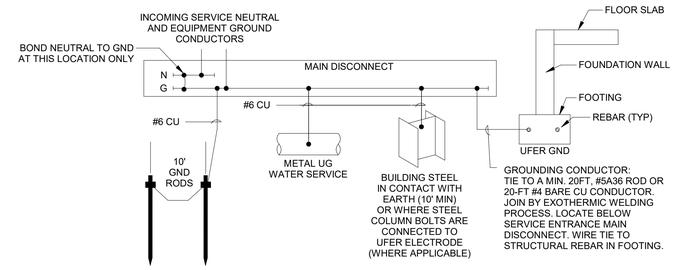
SCHEDULE IS BASED ON 75 DEGREE C. COPPER CONDUCTORS IN NEC 310.60 TABLE.

FEEDER NUMBER KEY:
N = INCLUDES NEUTRAL CONDUCTOR
S = SINGLE PHASE

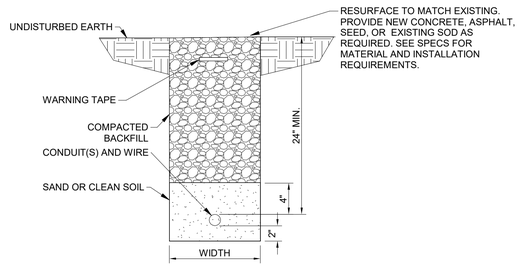
NOTE: GROUNDING CONDUCTOR IS SIZED ACCORDING TO NEC 250.122 TABLE, UNLESS FEEDER NUMBER IS FOLLOWED BY AN ASTERISK (*) INDICATING THAT THE GROUNDING CONDUCTOR IS SIZED ACCORDING TO NEC 250.66 TABLE.

FEEDER NUMBER	AMPS	WIRE QTY PER CONDUIT	SETS IN PARALLEL	75 DEG COPPER			
				CONDUIT	PHASE QTY AND AWG	NEUTRAL AWG	GROUND AWG
1SN	100	3W	1	1-1/2"	2#2	1#2	1#6

2 NEW ONE LINE DIAGRAM
N.T.S.

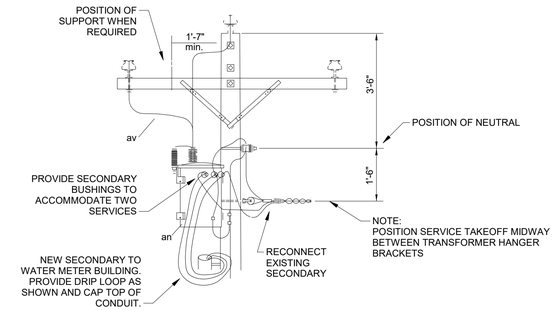


3 GROUNDING AND BONDING RISER DIAGRAM
N.T.S.



NOTES:
1. WIDTH: MINIMUM 6"
2. WHERE POSSIBLE PUSH CONDUIT UNDER SIDEWALKS AND DRIVES TO AVOID EXCAVATION.
3. CONTRACTOR MAY USE BORING MACHINE IN LIEU OF TRENCHING WHERE CONDITIONS PERMIT. EQUIPMENT AND CONDUIT SHALL BE PRE-APPROVED BY ARCHITECT/ENGINEER.

4 ELECTRICAL TRENCH DETAIL
N.T.S.



ITEM	QTY	MATERIAL
c	2	BOLT, MACHINE, 5/8" X REQ'D LENGTH
d	2	WASHER, SQUARE, 2 1/4"
p		CONNECTORS, COMPRESSION TYPE, AS REQ'D
an	1	TRANSFORMER, 12.47 kV, SELF-PROTECTED

ITEM	QTY	MATERIAL
ap	1	CLAMP, HOT LINE
av		JUMPERS, STRANDED, AS REQ'D
bv	1	ROD, ARMOR (AS REQ'D)
ek	2	LOCKNUTS

5 SINGLE-PHASE POLE-MOUNT TRANSFORMER DETAIL
N.T.S.

CONSTRUCTION DOCUMENTS

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AES BART FARM
CITY WATER SERVICE

Morrison Maierle
engineers · surveyors · planners · scientists

DRAWN BY: RPM
REVIEWED BY: MJS

REV.	DESCRIPTION	DATE

MONTANA
RYAN P. MAHONEY
No. 60006 PE
LICENSED PROFESSIONAL ENGINEER

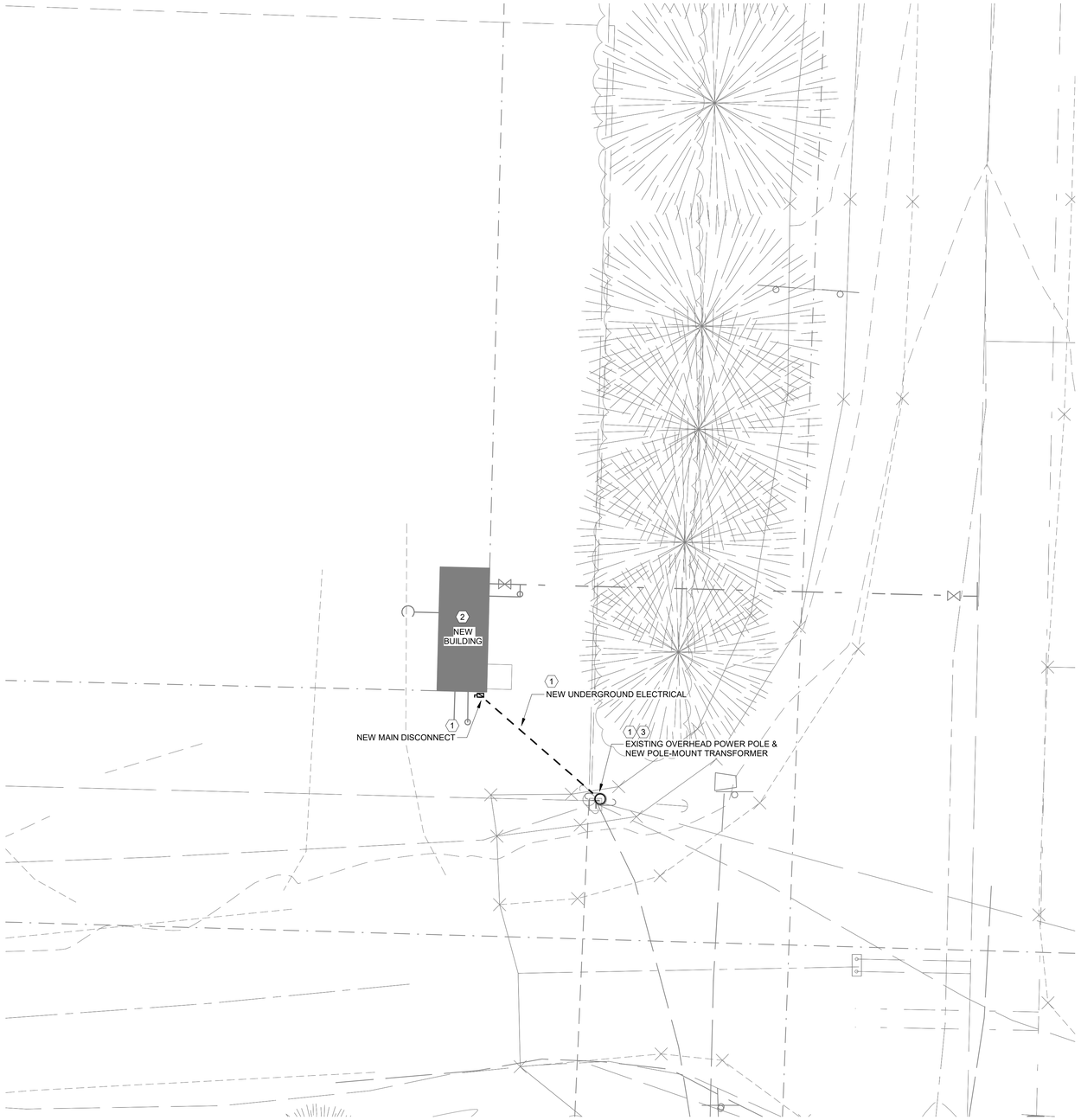
PPA#20-0116

MMI#0747.075

SHEET TITLE
ELECTRICAL DETAILS

SHEET
E0.2

DATE
12/01/2021



1 ELECTRICAL SITE PLAN
1" = 10'-0"

GENERAL ELECTRICAL NOTES

A. IT IS ABSOLUTELY NECESSARY FOR ALL TRADES INVOLVED TO COORDINATE WITH EACH OTHER AND VERIFY THAT THERE ARE NO CONFLICTS IN LOCATION OF DUCTS, CONDUITS, DIFFUSERS, BOXES, AND OTHER ITEMS THROUGHOUT THIS PROJECT BEFORE FINAL PLACEMENT OF MATERIALS.
B. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING OF FLOORS, WALLS, CEILINGS, AND ROOFS TO PERFORM THE REQUIRED WORK DEPICTED IN THESE DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR ALL PATCHING OF HOLES TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.

(#) KEY NOTES:

1. SEE ONE-LINE ON SHEET E0.2 FOR FURTHER INFORMATION.
2. SEE SHEET E2.0 FOR ENLARGED ELECTRICAL PLAN FOR NEW BUILDING.
3. EXISTING OVERHEAD POWER POLE TO REMAIN. REMOVE EXISTING TRANSFORMER AND REPLACE WITH NEW TRANSFORMER. RECONNECT EXISTING SECONDARY WIRE TO NEW TRANSFORMER AS REQUIRED. SEE DETAILS ON SHEET E0.2.

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PPA#20-0116

MMI#0747.075

SHEET TITLE
ELECTRICAL SITE PLAN

SHEET
E1.0

DATE
12/01/2021

LUMINAIRE SCHEDULE

TYPE	LAMPS	LOAD (W)	OUTPUT (LM, NOMINAL)	CCT (K)	DESCRIPTIONS	MFR	CATALOG NO. OR SERIES	MOUNTING	VOLTAGE	NOTES
E1	LED	11	1,550	3000	LED FULL CUTOFF WALL PACK WITH INTEGRAL COLD WEATHER BATTERY BACKUP	LITHONIA	WPX1 LED P1 30K MVOLT E14WC DDBXD	WALL	120	1
F1	LED	34	5,000	4000	4' LENSED INDUSTRIAL STRIP	LITHONIA	ZL1N-L48-5000LM-FST-MVOLT-40K -80CRI-WH-HC36	SUSPENSION	120	1
X1	LED	5		NA	EXIT SIGN, WITH THERMOPLASTIC HOUSING, DUAL LED HEADS, HIGH-OUTPUT NI-CAD BATTERY, RED LETTERING, AND SELF-DIAGNOSTICS.	LITHONIA	LHQM-LED-R-SD-HO	UNIVERSAL	120	1

NOTES:
1. ANY ALTERNATE LIGHT FIXTURE SUBSTITUTIONS MUST BE SUBMITTED FOR APPROVAL PRIOR TO BID WITH MSU SUBSTITUTION REQUEST FORM.

GENERAL NOTE:
THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL MOUNTING TYPES AND PROVIDE ALL REQUIRED MOUNTING ACCESSORIES.

ELECTRIC UNIT HEATER SCHEDULE

MARK	MFGR.	MODEL	SERVES	BTU/HR (HIGH / LOW)	ELECTRICAL DATA				WEIGHT (LBS)	REMARKS
					VOLTAGE	PHASE	WATTS (HIGH / LOW)	AMPS (HIGH / LOW)		
EWH-1	QMARK	CWH1207DSF	METER BUILDING	5120 / 2560	240	1	1500 / 750	6.25 / 3.2	12	SEE NOTES

NOTES: PROVIDE UNIT COMPLETE WITH INTEGRAL THERMOSTAT, FACTORY MOUNTED DISCONNECT, SURFACE MOUNTING FRAME, AND ALL ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.

Branch Panel: P1

Location: INDOORS
Supply From: MAIN DISC.
Mounting: Surface
Enclosure: NEMA 1

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

A.I.C. Rating: 4,935
Mains Type: MLO
Mains Rating: 100 A

Notes:
PROVIDE WITH SURGE PROTECTION DEVICE.

CKT	Circuit Description	Load Classification	Trip	Poles	A		B		Poles	Trip	Load Classification	Circuit Description	CKT
1	ELECTRIC WALL HEATER EWH-1	HVAC	20 A	2	750	0			1	20 A	--	SPARE	2
3							750	0	1	20 A	--	SPARE	4
5	RECEPTACLES	Receptacle	20 A	1	720	0			1	20 A	--	SPARE	6
7	LIGHTS	Lighting	20 A	1			107	0	1	20 A	--	SPARE	8
9	SURGE PROTECTION DEVICE	--	30 A	2	0	0			1	20 A	--	SPARE	10
11							0	0	1	20 A	--	SPARE	12
				Total Load:	1470 VA		788 VA						
				Total Amps:	12 A		7 A						

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	1500 VA	100.00%	1500 VA		
Lighting	107 VA	125.00%	133 VA	**Total Conn. Load:**	2253 VA
Receptacle	720 VA	100.00%	720 VA	**Total Est. Demand:**	2262 VA
				Total Conn.:	9 A
				Total Est. Demand:	9 A

Notes:

GENERAL ELECTRICAL NOTES

A. IT IS ABSOLUTELY NECESSARY FOR ALL TRADES INVOLVED TO COORDINATE WITH EACH OTHER AND VERIFY THAT THERE ARE NO CONFLICTS IN LOCATION OF DUCTS, CONDUITS, DIFFUSERS, BOXES, AND OTHER ITEMS THROUGHOUT THIS PROJECT BEFORE FINAL PLACEMENT OF MATERIALS.
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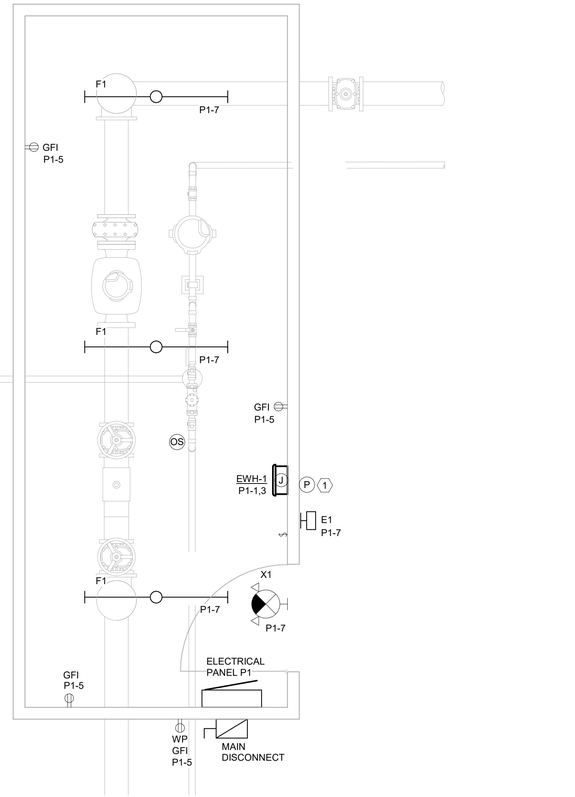
KEY NOTES:

1. PROVIDE 120V EXTERIOR PHOTOCELL (INTERMATIC EK4436SM, OR EQUAL) FOR AUTOMATIC ON/OFF CONTROL OF E1 LUMINAIRE. INSTALL AND WIRE PER MANUFACTURER REQUIREMENTS.



1 ELECTRICAL BUILDING PLAN
1/2" = 1'-0"

CONSTRUCTION DOCUMENTS

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DRAWN BY: **RPM**
REVIEWED BY: **MJS**

REV.	DESCRIPTION	DATE

MONTANA
RYAN P. MARONEY
No. 20006 PE
LICENSED PROFESSIONAL ENGINEER

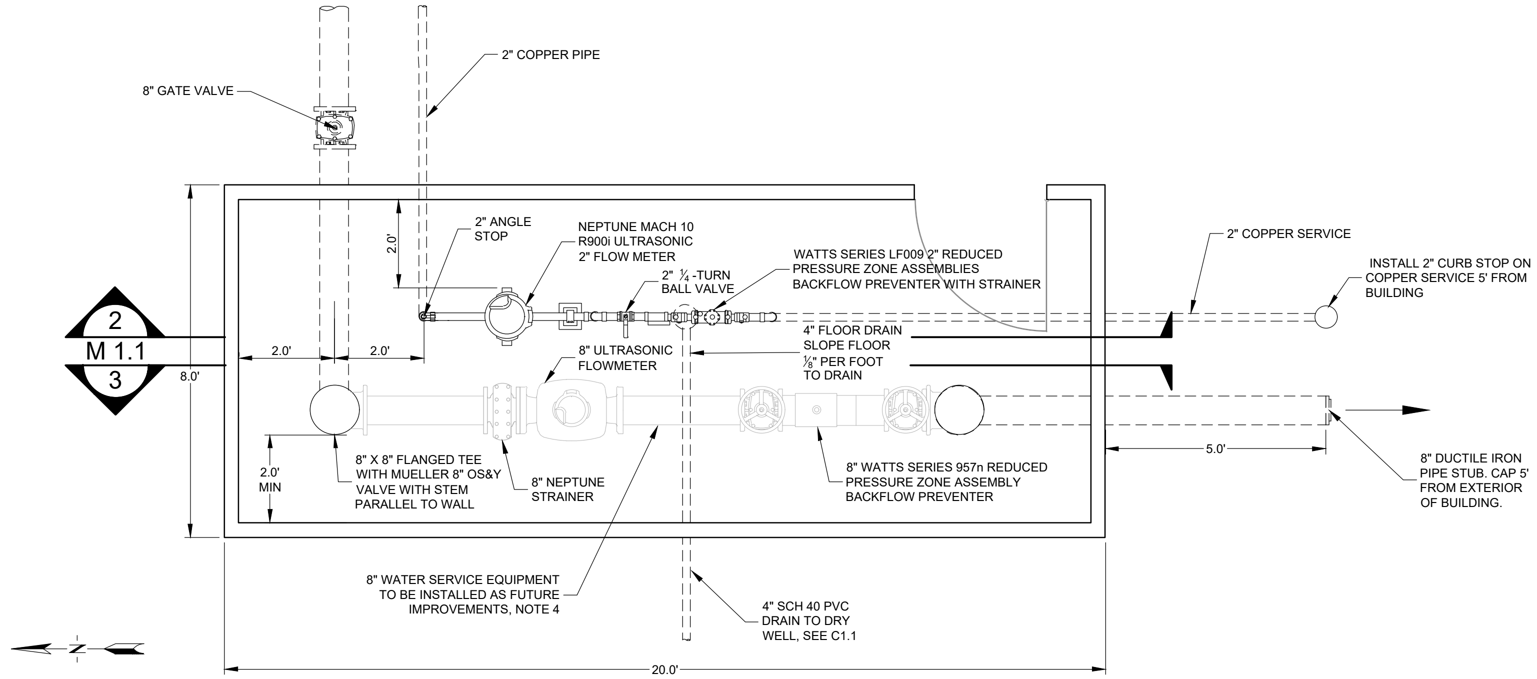
PPA#20-0116

MMI#0747.075

SHEET TITLE
ELECTRICAL BUILDING PLAN

SHEET
E2.0

DATE
12/01/2021

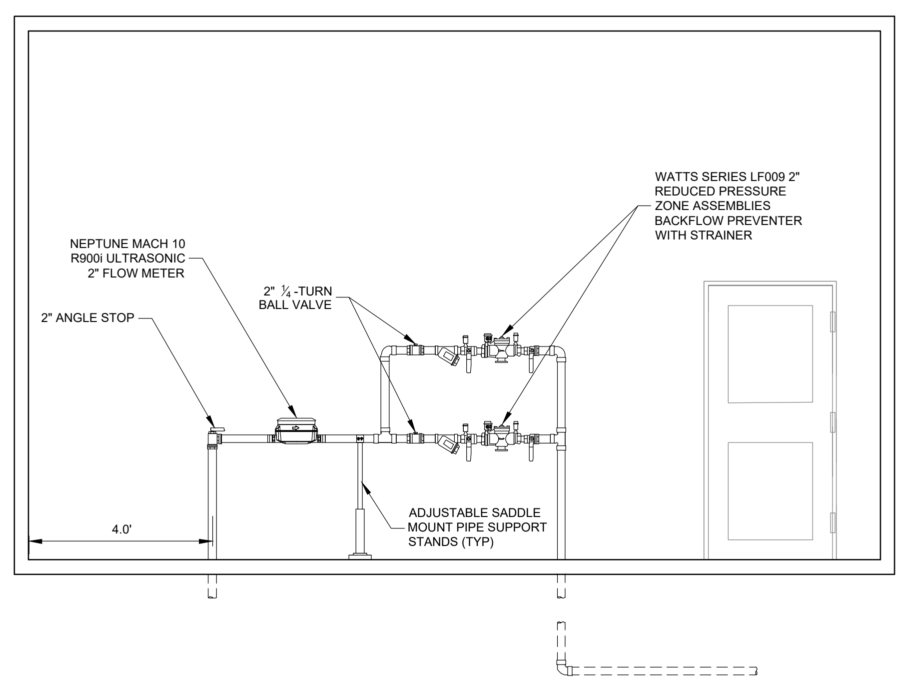


1 METER HOUSE BUILDING PLAN VIEW

SCALE: 1" = 2'

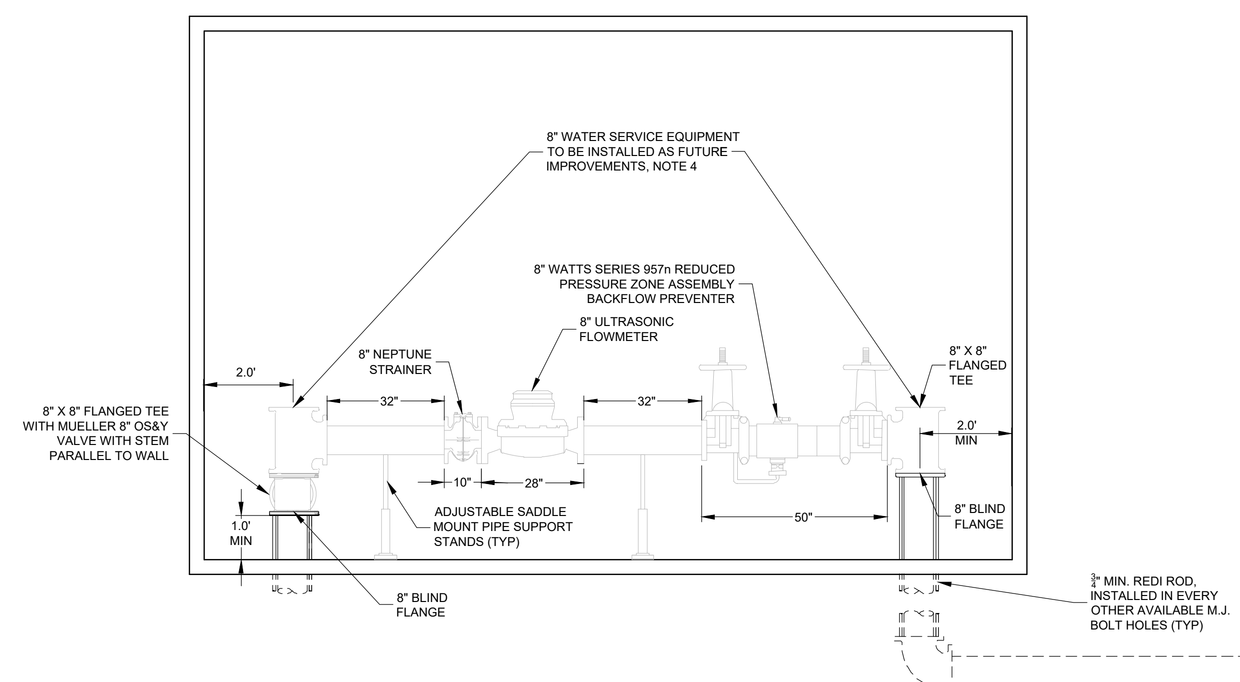
GENERAL NOTES

1. NEPTUNE MACH 10 R900i WATER METER PROVIDED BY THE CITY.
2. 8" SERVICE LINE STUBBED INTO STRUCTURE FOR FUTURE METER INSTALLATION.
3. 2" METER RUN WILL BE REMOVED WHEN 8" METER RUN IS INSTALLED.
4. INSTALL BLIND FLANGE ON 8" RISERS THROUGH FLOOR, 8" WATER SERVICE EQUIPMENT TO BE INSTALLED AS FUTURE IMPROVEMENTS
5. FUTURE 8" COMPONENTS TO BE MODIFIED TO MEET FUTURE CITY OF BOZEMAN STANDARDS AS REQUIRED.



2 METER HOUSE BUILDING 2" SERVICE PROFILE

SCALE: 1" = 2'



3 METER HOUSE BUILDING FUTURE 8" SERVICE PROFILE

SCALE: 1" = 2'

CONSTRUCTION DOCUMENTS

MONTANA STATE UNIVERSITY

MSU-CPDC

MONTANA STATE UNIVERSITY
BOZEMAN, MONTANA
PHONE: 406.994.5413
FAX: 406.994.5665

AES BART FARM CITY WATER SERVICE

Morrison Maierle
engineers • surveyors • planners • scientists

DRAWN BY: CRN
REVIEWED BY: JRN

REV.	DESCRIPTION	DATE

MONTANA JAMES R. NICKELSON No.9063 PE REGISTERED PROFESSIONAL ENGINEER

PPA#20-0116

MMI# 0747.075

SHEET TITLE
METER HOUSE SCHEMATICS

SHEET
M-1.1

DATE
12-01-2021