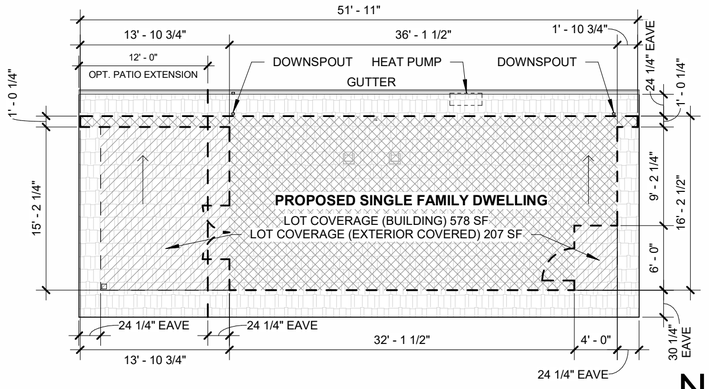
MODERN MILL HOUSE

PROJECT ADDRESS



1 SITE PLAN (BUILDING ONLY)
1" = 10'-0"

IDEAL SOLAR ORIENTATION (NOT REQUIRED)
NORTH TO BE DEFINED ON APPLICANT'S SITE PLAN

SITE GENERAL NOTES

1) ALL STORMWATER DRAINAGE TO BE MAINTAINED ON SITE. APPLICANT'S SITE PLAN TO ILLUSTRATE SITE SPECIFIC METHODS.

2) LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM NEW FOUNDATION WALLS. THE GRADE SHALL FALL NOT FEWER THAN 6" WITHIN THE FIRST 10'. WHERE LOT LINES, WALLS, SLOPES OR OTHER PHYSICAL BARRIERS PROHIBIT 6" OF FALL WITHIN 10', DRAINS, SWALES, OR OTHER MEANS SHALL BE PROVIDED AND SHALL BE CONSTRUCTED TO ENSURE DRAINAGE AWAY FROM THE STRUCTURE.

3) IMPERVIOUS SURFACES WITHIN 10' OF THE BUILDING FOUNDATION SHALL BE SLOPED NOT LESS THAN 2 PERCENT (1/4" PER FOOT) AWAY FROM THE BUILDING.

4) THESE MASTER REISSUE DRAWINGS ARE ONLY FOR USE ON SITES THAT DO NOT EXCEED 2' SLOPE ACROSS THE SITE AT THE FOOTING AND SITES WITH TYPICAL LOCAL GEOLOGICAL CONDITIONS.

PROJECT SYMBOLS

- NORTH ARROW
- EXTERIOR ELEVATION (1 / A2.0)
- INTERIOR ELEVATION (1 / A7.0)
- BUILDING SECTION (1 / A101)
- ENLARGED PLAN / DETAIL (1 / A101)
- BUILDING ASSEMBLY TYPE (W1)
- DOOR TAG (101)
- WINDOW TAG (1)
- REVISION TAG (1)
- CENTER LINE

ABBREVIATIONS

A.F.F.	ABOVE FINISH FLOOR
ALUM.	ALUMINUM
B.O.	BOTTOM OF
CAB.	CABINET
C.J.	CONTROL JOINT
C.L.	CENTER LINE
CLG.	CEILING
CLR.	CLEAR
COL.	COLUMN
CONC.	CONCRETE
CONT.	CONTINUOUS
CPT.	CARPET
C.T.	CERAMIC TILE
DBL.	DOUBLE
DF-L	DOUGLAS FIR - LARCH
DIA.	DIAMETER
DIM.	DIMENSION
DN.	DOWN
DW	DISHWASHER
EA.	EACH
E.J.	EXPANSION JOINT
EWF	ENGINEERED WOOD FLOORING
ELEC.	ELECTRICAL
E.O.S.	EDGE OF SLAB
EQ.	EQUAL
(E)	EXISTING
E.J.	EXPANSION JOINT
EXT.	EXTERIOR
FLR.	FLOOR
F.F.	FINISH FACE OR FINISH FLOOR
F.F.E.	FINISH FLOOR ELEVATION
F.O.S.	FACE OF STRUCTURE / STUD
GALV.	GALVANIZED
GLB	GLUE LAMINATED BEAM
G.W.B.	GYPSUM WALL BOARD
INSUL.	INSULATED OR INSULATION
INT.	INTERIOR
LVP	LUXURY VINYL PLANK
MAX.	MAXIMUM
MECH.	MECHANICAL
M.E.P.	MECHANICAL, ELECTRICAL & PLUMBING
MFR.	MANUFACTURER
MIN.	MINIMUM
NFVA	NET FREE VENTILATION AREA
N.I.C.	NOT IN CONTRACT
NOM.	NOMINAL
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
P.T.	PRESSURE TREATED
PTD.	PAINT OR PAINTED
RCP	REFLECTED CEILING PLAN
REC.	RECOMMENDED
REF.	REFRIGERATOR
REQ.	REQUIRED
R.O.	ROUGH OPENING
S.F.	SQUARE FEET
SHGC	SOLAR HEIGHT GAIN COEFFICIENT
IN²	SQUARE INCHES
SIM.	SIMILAR
SPEC.	SPECIFIED OR SPECIFICATION
SSTL.	STAINLESS STEEL
S.T.C.	SOUND TRANSMISSION CLASS
S.W.	SHEAR WALL
T&G	TONGUE AND GROOVE
T.O.	TOP OF
T.P.D.	TOILET PAPER DISPENSER
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
V.I.F.	VERIFY IN FIELD
W/	WITH
W/O	WITHOUT
W/D	CLOTHES WASHER & DRYER
WD.	WOOD
W.R.B.	WEATHER RESISTANT BARRIER

PLANNING & CODE SUMMARY

APPLICABLE CODES
2023 OREGON RESIDENTIAL SPECIALTY CODE (ORSC)
2022 OREGON MECHANICAL SPECIALTY CODE (OMSC)
2023 OREGON ELECTRICAL SPECIALTY CODE (OESC)
2023 OREGON PLUMBING SPECIALTY CODE (OPSC)
BEND DEVELOPMENT CODE

CONSTRUCTION TYPE
TYPE V-B, NON SPRINKLED

SETBACKS*
RL (LOW DENSITY RESIDENTIAL)
FRONT 20', REAR 20', SIDE 10'
RS (STANDARD DENSITY RESIDENTIAL)
FRONT 10', REAR 5', SIDE 5'
RM-10, RM & RH
FRONT 10', REAR 5', SIDE 5'

*NORTH SOLAR SETBACK APPLIES TO SITES OVER 5,000 SF & NORTH - SOUTH LOT DIMENSION OVER 80'

SPECIAL SETBACKS & EASEMENTS
APPLICANT TO VERIFY AND SHOW ON SITE PLAN

MAXIMUM LOT COVERAGE

RL	35%
RS & RM-10	45%-60%
RM	45%-60%
RH	NONE

FLOOR AREA RATIO

RL	NONE
RS & RM-10	1.1 FOR 3-STORY RESIDENTIAL USES & ACCESSORY STRUCTURES, NONE FOR ALL OTHER USES
RM	NONE
RH	NONE

ENERGY - BUILDING ENVELOPE
CLIMATE ZONE - 5B (BEND) (ASHRAE STANDARD 169)

ADDITIONAL ENERGY MEASURE OPTIONS
TABLE N1101.1(2)
#5 DUCTLESS HEAT PUMP (DWELLING UNITS W/ ALL-ELECTRIC HEAT)
A) PROVIDE DUCTLESS HEAT PUMP OF MINIMUM HSPF 10.0
B) PROVIDE PROGRAMMABLE THERMOSTAT FOR ALL HEATERS IN BEDROOMS

PROJECT DESCRIPTION

CITY OF BEND PRE-APPROVED SINGLE FAMILY DWELLING

PROJECT GENERAL NOTES

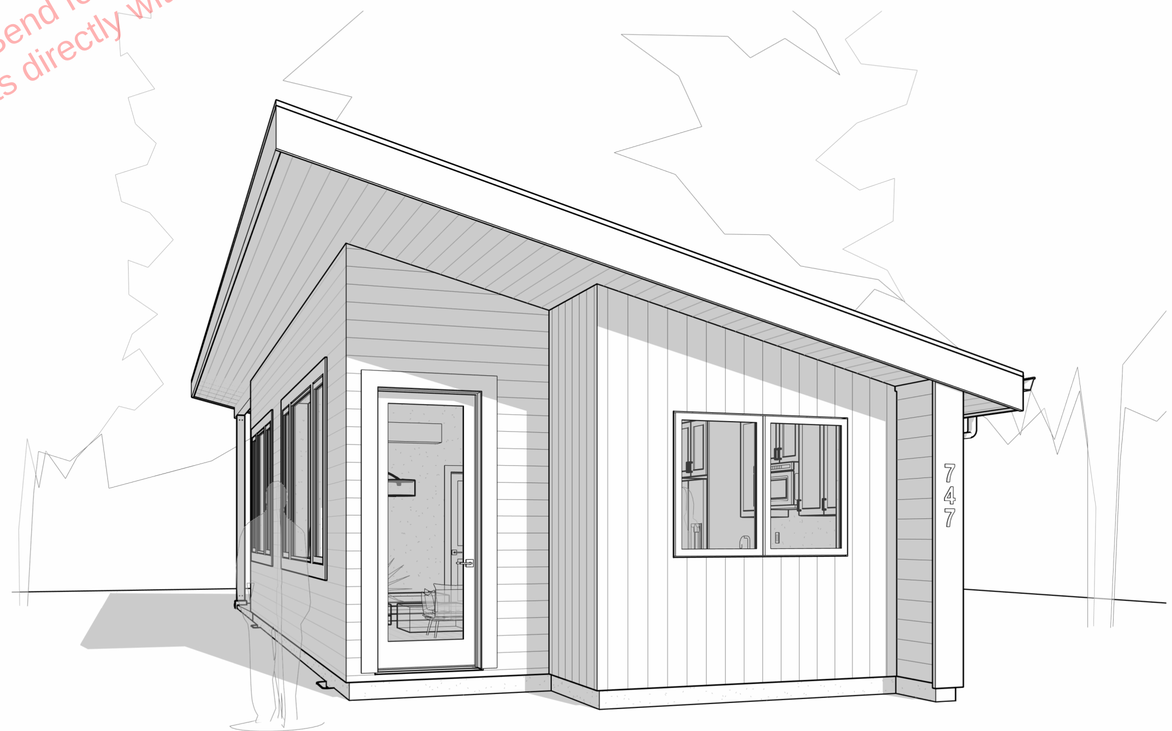
1) DO NOT SCALE PRINTED DRAWINGS. DO NOT SCALE OFF DRAWINGS WITHOUT CONSULTING ARCHITECT FIRST.

2) DIMENSIONS ARE TO FACE OF STRUCTURE (FRAMING, CONCRETE, ETC.) U.N.O. "CLEAR" OR "CLR" DIMENSIONS ARE TO FINISH FACE.

3) PROJECTS UTILIZING THE MASTER/REISSUE PROGRAM ARE LIMITED TO THOSE THAT WILL BE CONSTRUCTED "EXACTLY" AS SHOWN ON THESE APPROVED "MASTER" APPLICATION PLANS AND LOCATED ON A SITE THAT DOES NOT EXCEED 2' SLOPE ACROSS THE SITE AT THE FOOTING OR REQUIRE MODIFICATIONS TO THE DESIGN CRITERIA OR BUILDING CONSTRUCTION.

SHEET LIST

NUMBER	NAME
ARCHITECTURAL	
A1.0	GENERAL INFORMATION
A1.1	PROPOSED SITE PLAN, N.I.C. (APPLICANT TO PROCURE)
A1.2	FLOOR & ROOF PLAN
A1.3	REFLECTED CEILING / ELECTRICAL PLAN
A2.1	EXTERIOR ELEVATIONS
A3.1	BUILDING SECTIONS
A5.1	EXTERIOR DETAILS
A7.1	INTERIOR - KITCHEN
A7.2	INTERIOR - BATHROOM
A9.1	3D VIEWS - EXTERIOR
A9.2	3D VIEWS - INTERIOR
STRUCTURAL	
S1	FOUNDATION
S2	SUBFLOOR FRAMING
S3	MAIN LEVEL FRAMING
S4	MAIN LEVEL SHEAR
S5	DETAILS



JURISDICTION APPROVAL

REGISTERED ARCHITECT
IAN BURGESS
BEND, OREGON
LIC # 6925
STATE OF OREGON
EXPIRES 12/31/2027

SIERRA JAMES

GENERAL INFORMATION

MASTER / REISSUE PERMIT
12/12/2025

(541) 306-3775
INFO@SIERRA-JAMES.COM

MODERN MILL HOUSE

PROJECT ADDRESS

A1.0

WINDOW SCHEDULE

#	TYPE	SILL	WIDTH	HEIGHT	COMMENTS
01	DOUBLE CASEMENT	40"	66"	48"	
02	CASEMENT	36"	30"	72"	
03	FIXED	36"	72"	72"	
04	CASEMENT	36"	30"	72"	
05	CASEMENT	36"	30"	72"	
06	FIXED	36"	48"	72"	
07	CASEMENT	36"	30"	72"	
08	DOUBLE CASEMENT	36"	72"	60"	OPTION 2B (EGRESS)
09	CASEMENT	33 1/8"	30"	54"	SAFETY GLASS
Grand total: 9					

DOOR SCHEDULE

#	OPERATION	WIDTH	HEIGHT	COMMENTS
Exterior				
01	IN-SWING	36"	96"	
02	DOUBLE OUT-SWING	68"	96"	OPTION 2A (EGRESS)
Interior				
03	SWING	32"	80"	
04A	POCKET	28"	80"	OPTION
04B	SWING	28"	80"	OPTION
05	SWING	30"	80"	1" UNDERCUT FOR DRYER
06	SWING	24"	80"	

WINDOW & DOOR GENERAL NOTES

1) FRAMING SUBCONTRACTOR TO VERIFY ALL ROUGH OPENING DIMENSIONS WITH WINDOW & DOOR MANUFACTURERS BEFORE FRAMING BEGINS. WINDOW SCHEDULE SIZES ARE ROUGH OPENINGS AND DOOR SCHEDULE SIZES ARE NOMINAL DOOR SIZE, UNLESS NOTED OTHERWISE.

2) EXTERIOR DOORS TO BE U-0.20 OR LESS, EXCEPT A MAXIMUM OF 28 SF OF EXTERIOR DOOR AREA PER DWELLING UNIT CAN HAVE A U-FACTOR OF 0.54 OR LESS

3) WINDOWS TO HAVE A U-FACTOR OF 0.27 OR LESS

4) SKYLIGHTS TO HAVE A U-FACTOR OF 0.50 OR LESS

5) UNSHADED SOUTH AND WEST FACING GLASS TO HAVE A LOW SOLAR HEIGHT GAIN COEFFICIENT (SHGC)

6) WINDOWS TO BE INSTALLED PER AAMA 2400-21 METHOD A OR METHOD B USING BUTYL FLEXIBLE FLASHING TAPE, TYPICAL.

FLOOR PLAN LEGEND

- SMOKE DETECTOR, HARD-WIRED W/ BATTERY BACKUP; CARBON MONOXIDE DETECTOR REQ'D WITHIN 15' OF PROPOSED SLEEPING AREAS
- BATH EXHAST FAN ON TIMER SWITCH AND/OR AUTOMATIC HUMIDISTAT SWITCH
- HB — HOSE BIBB, FROST-PROOF W/ BACKFLOW PREVENTER, ALIGNED WITH PERPENDICULAR INTERIOR WALL. APPLICANT TO DEFINE LOCATION(S) QUANTITIES ON SITE PLAN & WATER METER & SUPPLY SIZING WORKSHEET
- WALL MOUNTED HEAT PUMP HEAD ABOVE
- ELECTRIC CADET WALL HEATER ON THERMOSTAT

FLOOR & ROOF PLAN GENERAL NOTES

1) DIMENSIONS ON THIS SHEET ARE TO FACE OF STRUCTURE (STUD OR CONCRETE) AND CENTER OF OPENING / FIXTURE, U.N.O. ROOF EDGE DIMENSIONS ARE TO FINISH FACE OF FASCIA / BARGE.

2) DIMENSIONS NOTED "F.F." ARE TO FACE OF FINISH. DIMENSIONS NOTED "CLEAR" OR "CLR" ARE TO FACE OF FINISH.

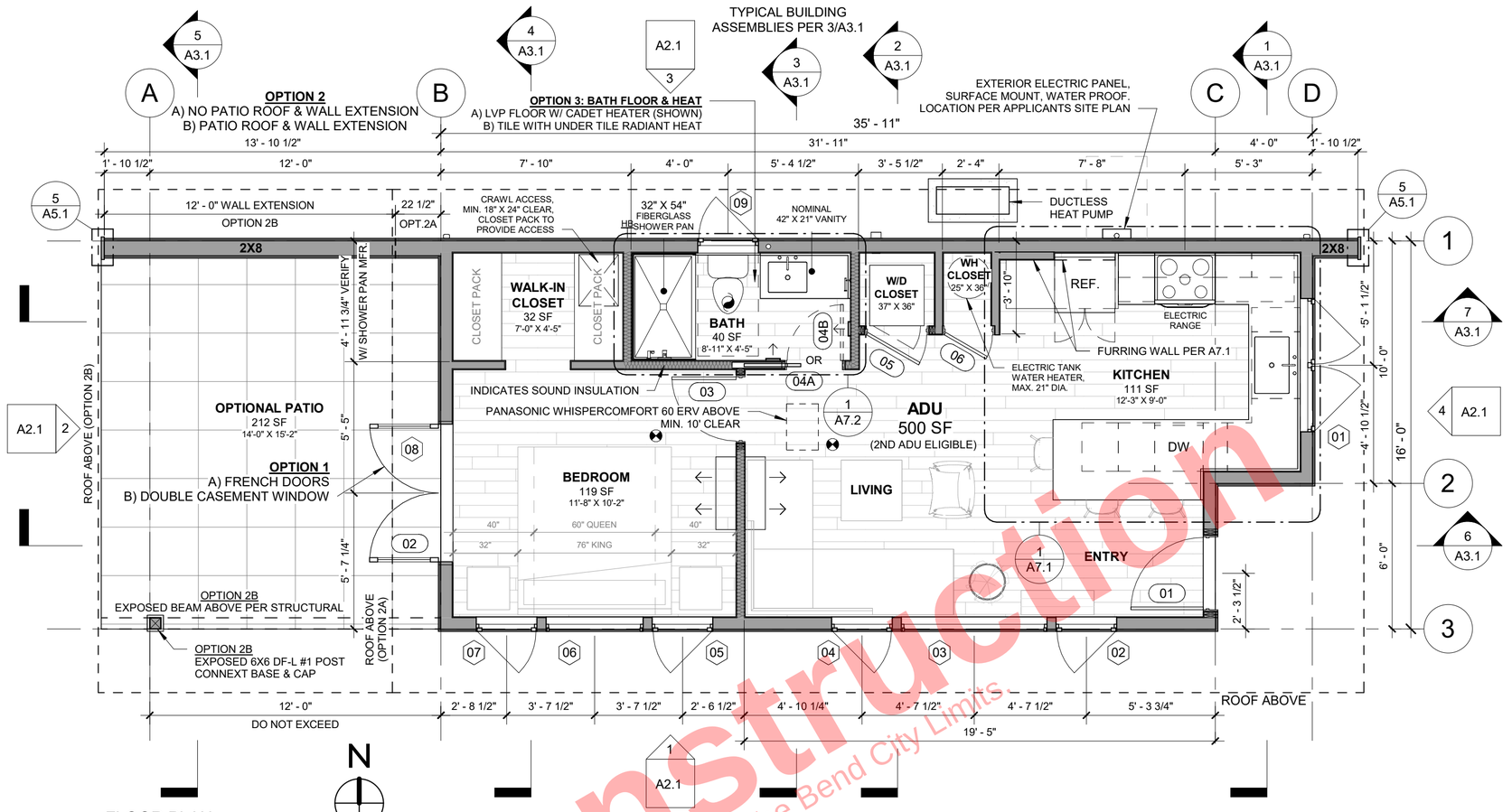
3) OVERALL ROOM DIMENSIONS ARE TO FINISH FACE OF WALL AND ROUNDED TO NEAREST INCH. DO NOT FRAME FROM THESE DIMENSIONS.

4) DEVIATION FROM THESE DRAWINGS MUST BE APPROVED BY THE CITY OF BEND, ARCHITECT OF RECORD AND ENGINEER OF RECORD.

5) SUBCONTRACTORS TO SIZE, SELECT AND VERIFY LOCATION OF ALL PROPOSED M.E.P. EQUIPMENT IN COMPLIANCE WITH LOCAL BEND DEVELOPMENT CODE AND STATE BUILDING CODES.

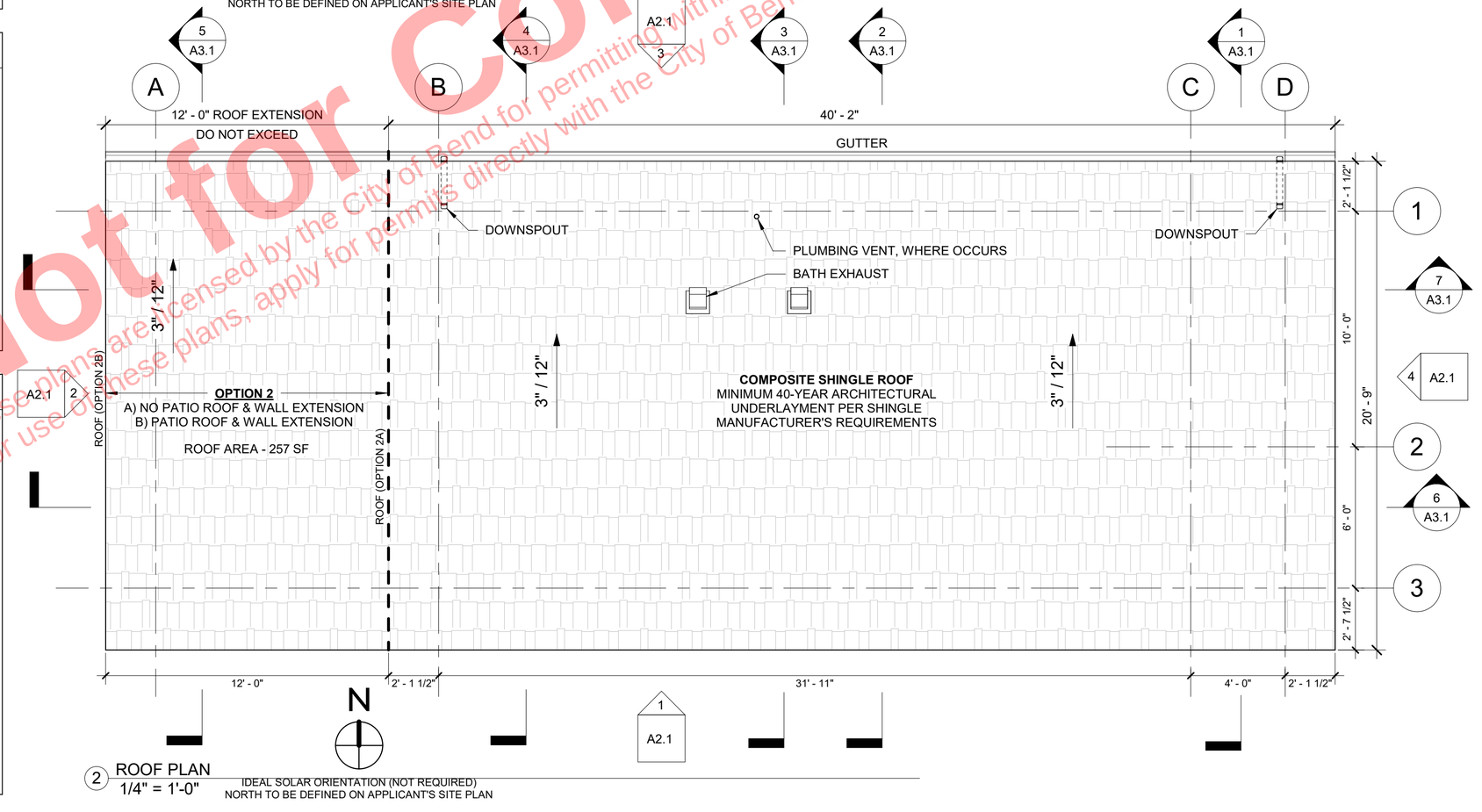
6) EXTERIOR WALLS ARE 2X6 STUDS @ 24" O.C., U.N.O.
WIDE WING WALLS ARE 2X8 @ 24" O.C.

7) INTERIOR WALLS ARE 2X4 STUDS @ 16" O.C., U.N.O.



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

IDEAL SOLAR ORIENTATION (NOT REQUIRED)
NORTH TO BE DEFINED ON APPLICANT'S SITE PLAN



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

IDEAL SOLAR ORIENTATION (NOT REQUIRED)
NORTH TO BE DEFINED ON APPLICANT'S SITE PLAN

JURISDICTION APPROVAL

REGISTERED ARCHITECT
IAN BURGESS
BEND, OREGON
LIC # 6925
STATE OF OREGON
EXPIRES 12/31/2027

SIERRA JAMES

(541) 306-3775
INFO@SIERRA-JAMES.COM

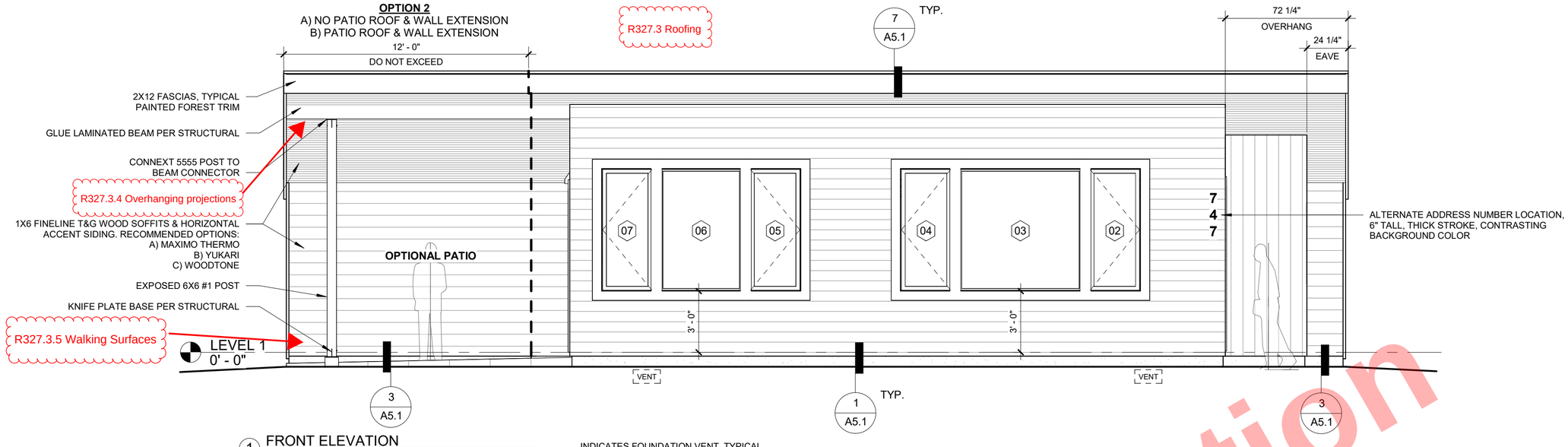
FLOOR & ROOF PLAN

MASTER / REISSUE PERMIT
12/12/2025

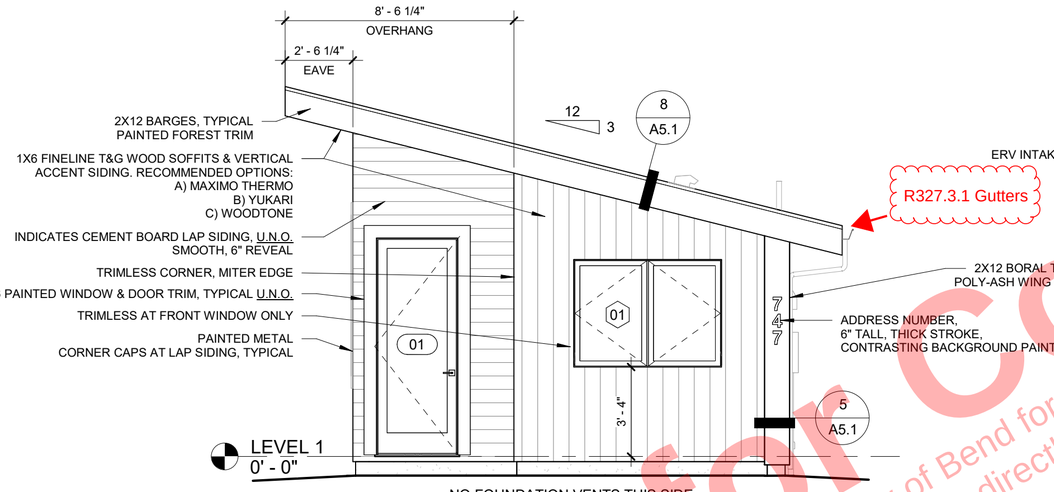
MODERN MILL HOUSE

PROJECT ADDRESS

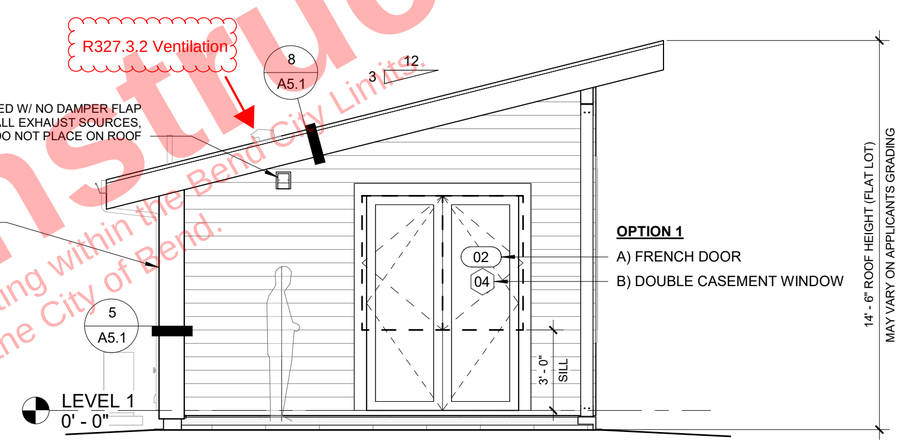
A1.2



1 FRONT ELEVATION
1/4" = 1'-0"



4 RIGHT ELEVATION
1/4" = 1'-0"



2 LEFT ELEVATION
1/4" = 1'-0"

EXTERIOR - GENERAL NOTES

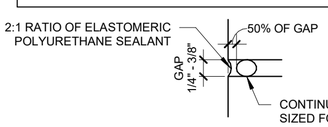
1) SILL DIMENSIONS ARE FROM T.O. SUBFLOOR TO B.O. ROUGH OPENING. WINDOW SHALL BE HUNG CENTERED IN OPENING.

2) WINDOWS TO BE INSTALLED PER AAMA 2400-21 METHOD A OR METHOD B USING BUTYL FLEXIBLE FLASHING TAPE. ALL EXTERIOR OPENINGS TO RECEIVE HEAD FLASHING W/ W.R.B. OVER FLASHING.

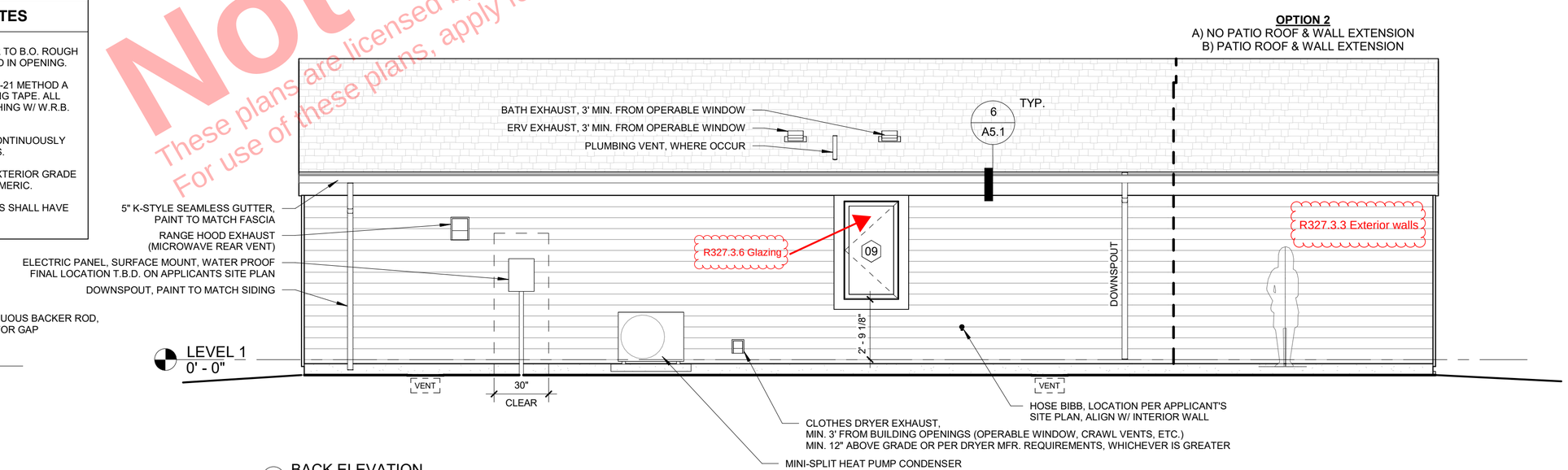
3) LOW EXPANSION FOAM TO BE INSTALLED CONTINUOUSLY ON ALL SIDES OF WINDOW & EXTERIOR DOORS.

4) ALL EXTERIOR CAULKING SEALANT TO BE EXTERIOR GRADE POLYURETHANE WITH MINIMUM 25%+ ELASTOMERIC.

5) ALL WINDOW & DOOR FRAME TO TRIM JOINTS SHALL HAVE AN EXPANSION JOIST PER DETAIL BELOW.



5 EXTERIOR EXPANSION JOINT
6" = 1'-0"



3 BACK ELEVATION
1/4" = 1'-0"

JURISDICTION APPROVAL

REGISTERED ARCHITECT
IAN BURGESS
BEND, OREGON
LIC # 6925
STATE OF OREGON
EXPIRES 12/31/2027

SIERRA JAMES

EXTERIOR ELEVATIONS

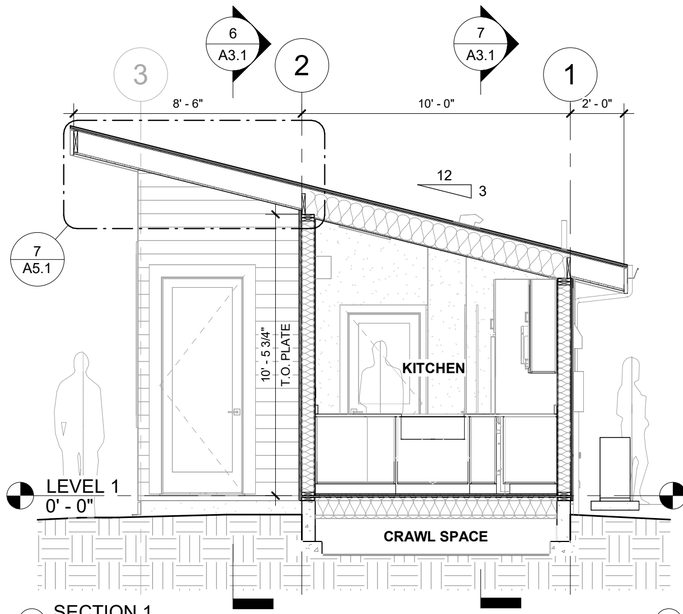
MASTER / REISSUE PERMIT
12/12/2025

(541) 306-3775
INFO@SIERRA-JAMES.COM

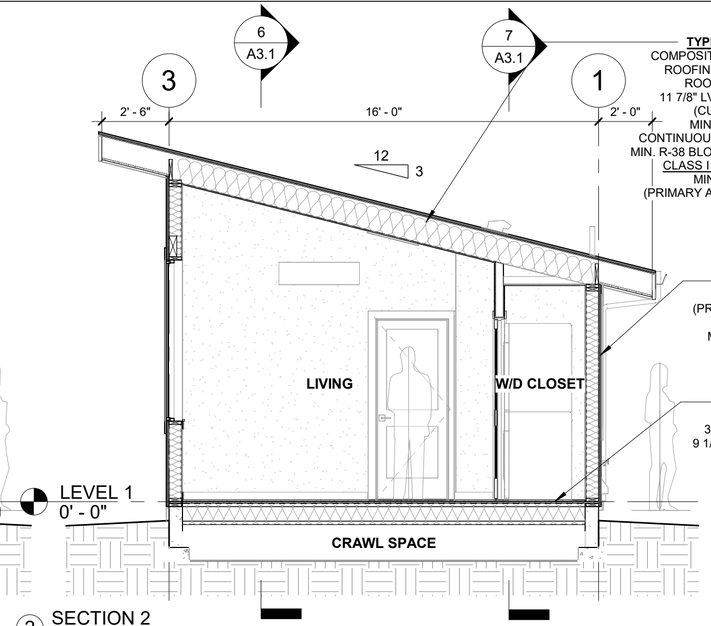
MODERN MILL HOUSE

PROJECT ADDRESS

A2.1



1 SECTION 1
1/4" = 1'-0"

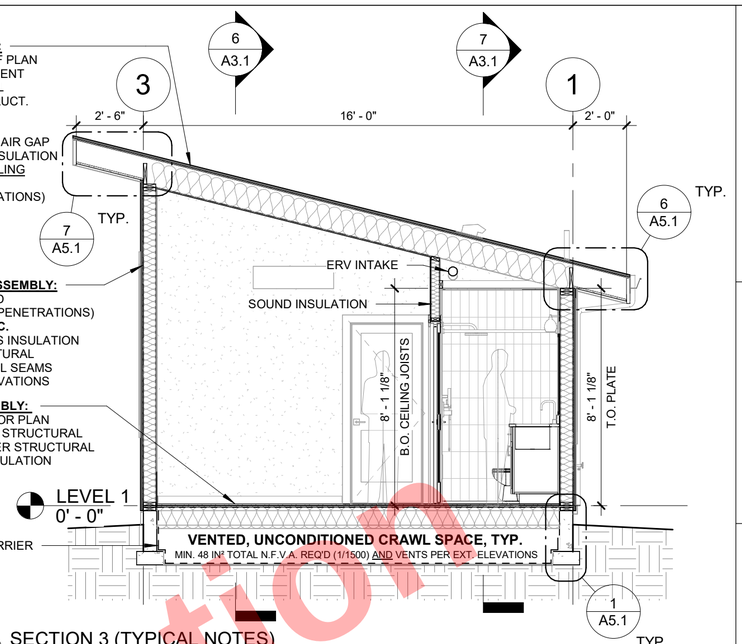


2 SECTION 2
1/4" = 1'-0"

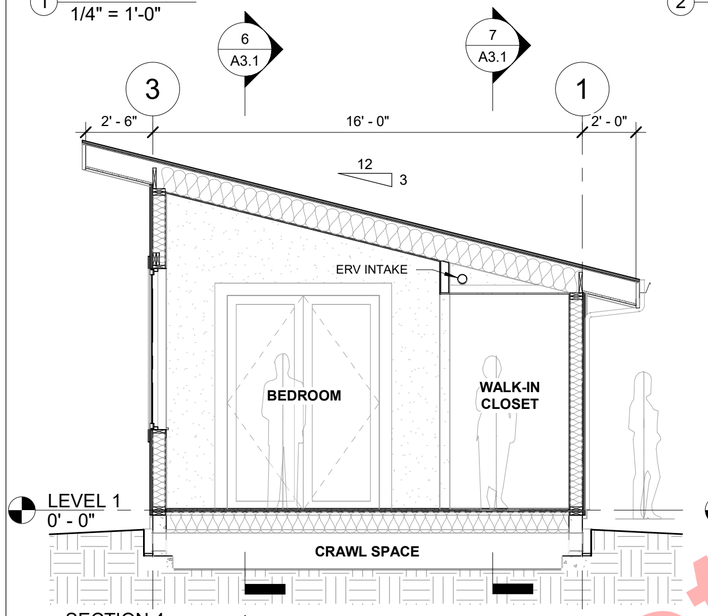
TYPICAL VENTED ROOF ASSEMBLY:
COMPOSITE SHINGLE ROOFING PER ROOF PLAN
ROOFING MFR. APPROVED UNDERLAYMENT
ROOF SHEATHING PER STRUCTURAL
11 7/8" LVL RAFTERS @ 24" O.C. PER STRUCT.
(CUT DOWN TO 9.5" AT EXTERIOR)
MIN. R-49 TOTAL ROOF INSULATION
CONTINUOUS VENT BAFFLES, MIN. 1" CONT. AIR GAP
MIN. R-38 BLOWN-IN OR BATT FIBERGLASS INSULATION
CLASS I OR II VAPOR RETARDER AT CEILING
MIN. 1/2" GYPSUM BOARD CEILING
(PRIMARY AIR BARRIER, SEAL ALL PENETRATIONS)

TYPICAL EXTERIOR WALL ASSEMBLY:
1/2" GYPSUM BOARD
(PRIMARY AIR BARRIER, SEAL ALL PENETRATIONS)
2X6 STUDS @ **24" O.C.**
MIN. R-21 BLOWN-IN FIBERGLASS INSULATION
SHEATHING PER STRUCTURAL
DRAINABLE W.R.B., TAPE ALL SEAMS
SIDING PER EXTERIOR ELEVATIONS

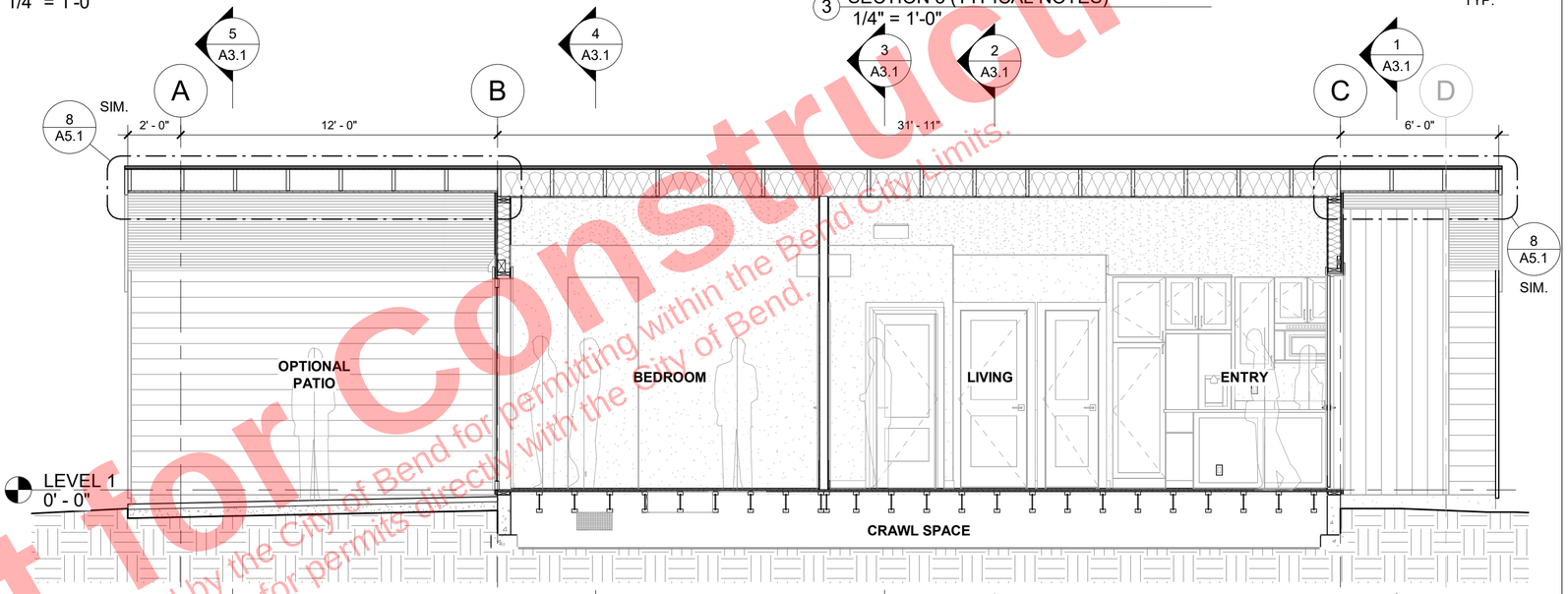
TYPICAL FLOOR ASSEMBLY:
FINISH FLOORING PER FLOOR PLAN
3/4" T&G FLOOR SHEATHING PER STRUCTURAL
9 1/2" WOOD I-JOISTS @ 16" O.C. PER STRUCTURAL
MIN. R-30 UNDERFLOOR INSULATION



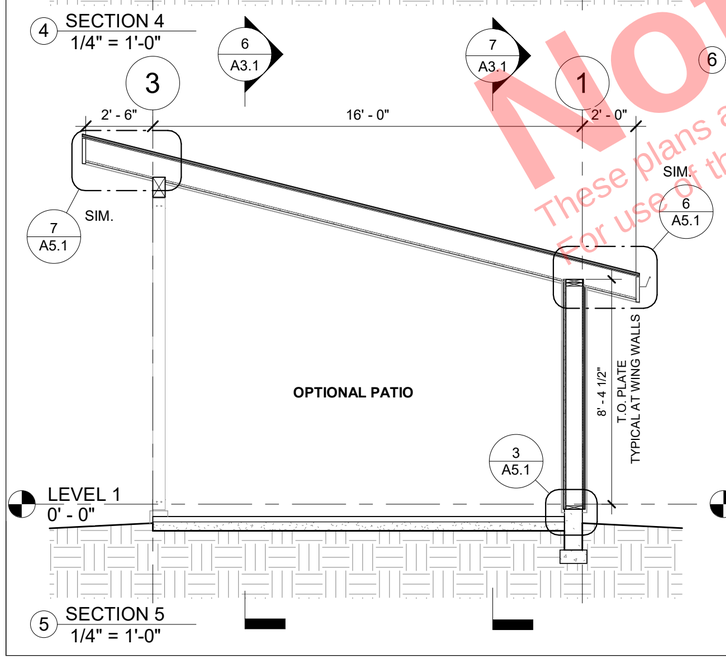
3 SECTION 3 (TYPICAL NOTES)
1/4" = 1'-0"



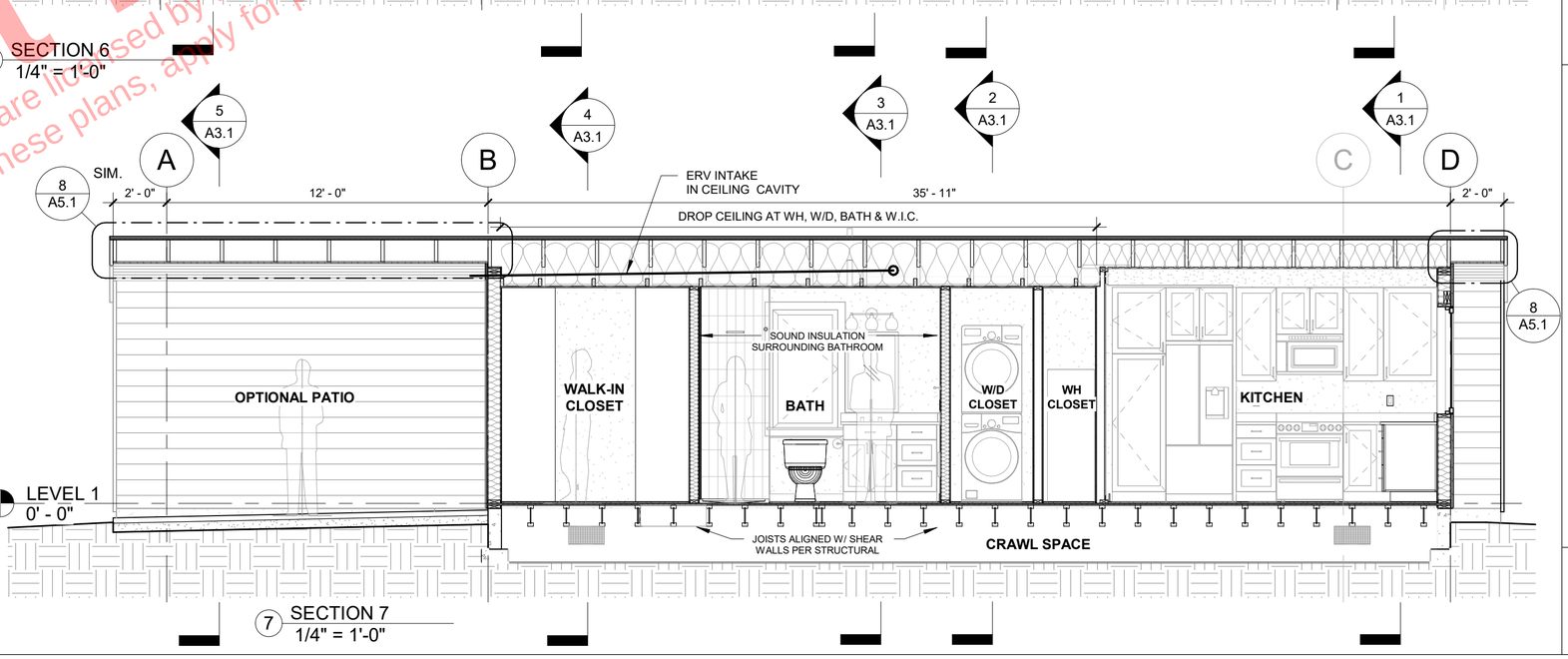
4 SECTION 4
1/4" = 1'-0"



6 SECTION 6
1/4" = 1'-0"



5 SECTION 5
1/4" = 1'-0"



7 SECTION 7
1/4" = 1'-0"

JURISDICTION APPROVAL

REGISTERED ARCHITECT
IAN BURGESS
BEND, OREGON
LIC # 6925
STATE OF OREGON
EXPIRES 12/31/2027

SIERRA JAMES

BUILDING SECTIONS

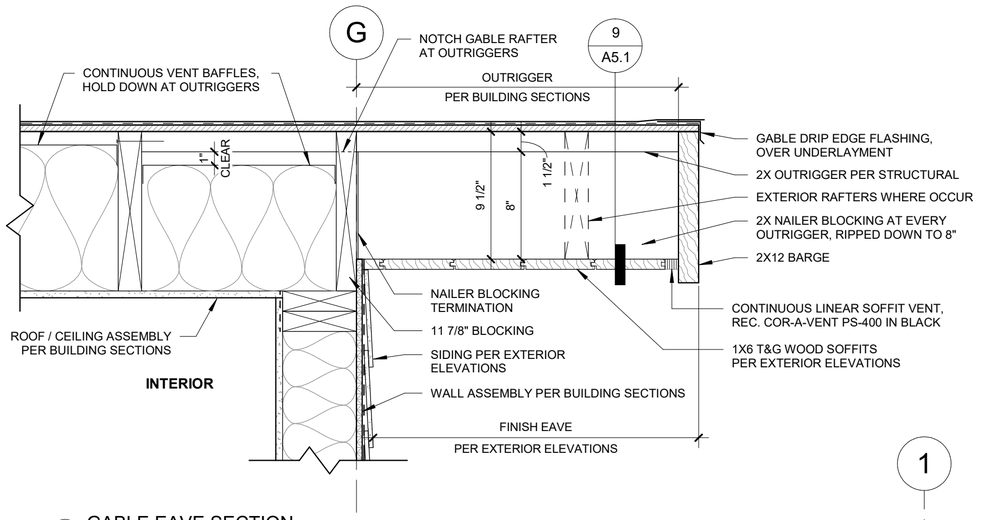
MASTER / REISSUE PERMIT
12/12/2025

(541) 306-3775
INFO@SIERRA-JAMES.COM

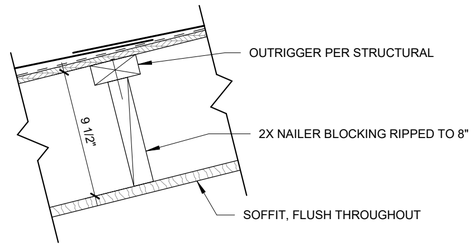
MODERN MILL HOUSE

PROJECT ADDRESS

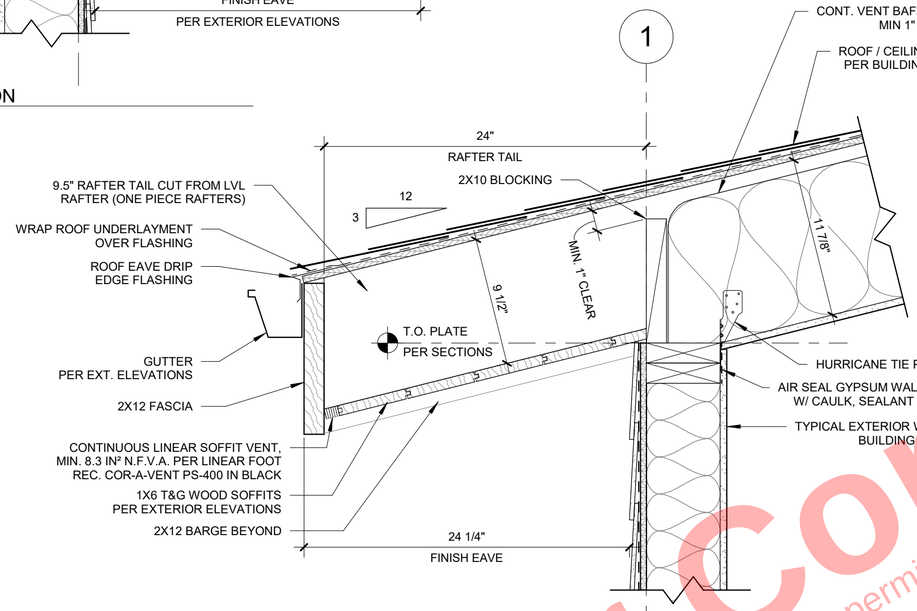
A3.1



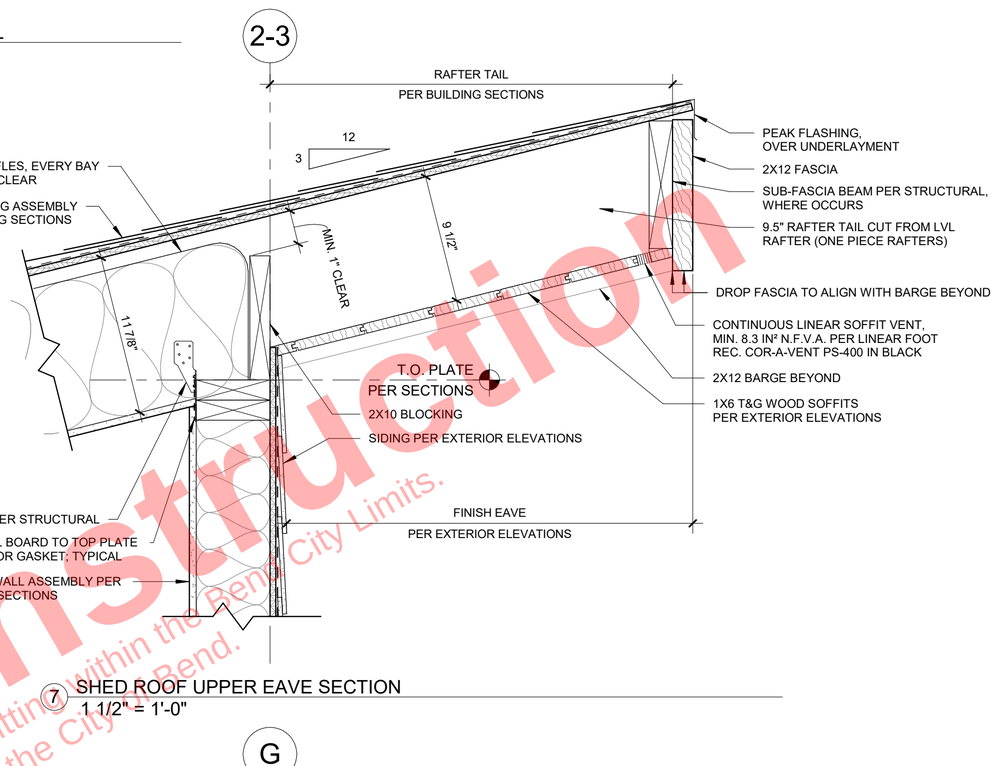
8 GABLE EAVE SECTION
1 1/2" = 1'-0"



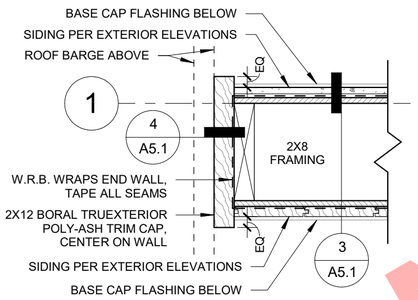
9 OUTRIGGER DETAIL
1 1/2" = 1'-0"



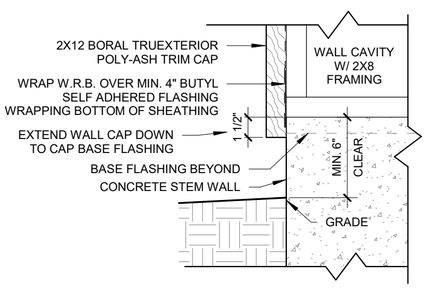
6 SHED ROOF LOWER EAVE SECTION
1 1/2" = 1'-0"



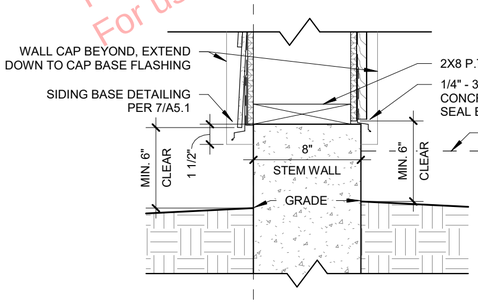
7 SHED ROOF UPPER EAVE SECTION
1 1/2" = 1'-0"



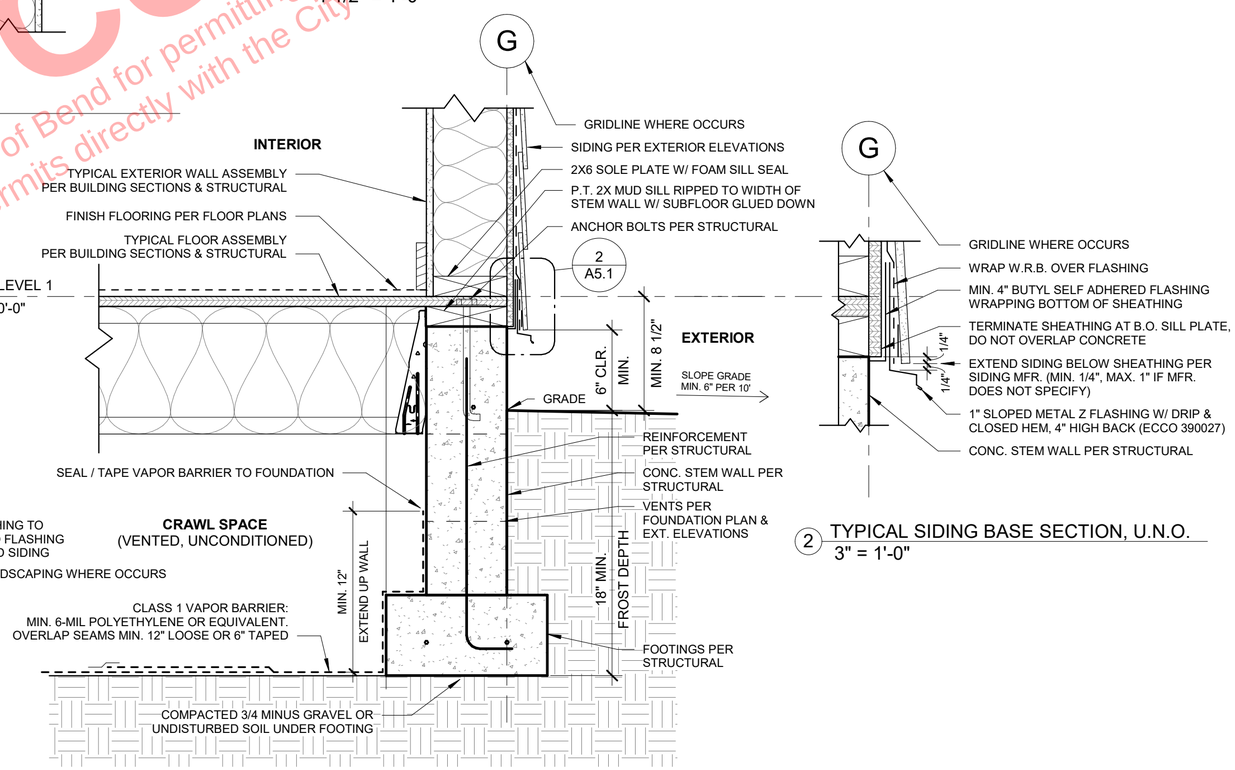
5 WING WALL CAP - PLAN VIEW
1 1/2" = 1'-0"



4 WING WALL BASE END CAP - SECTION
1 1/2" = 1'-0"



3 WING WALL BASE - SECTION
1 1/2" = 1'-0"



1 TYPICAL STEM WALL SECTION
1 1/2" = 1'-0"

2 TYPICAL SIDING BASE SECTION, U.N.O.
3" = 1'-0"

JURISDICTION APPROVAL

REGISTERED ARCHITECT
IAN BURGESS
BEND, OREGON
LIC # 6925
STATE OF OREGON
EXPIRES 12/31/2027

SIERRA JAMES

EXTERIOR DETAILS

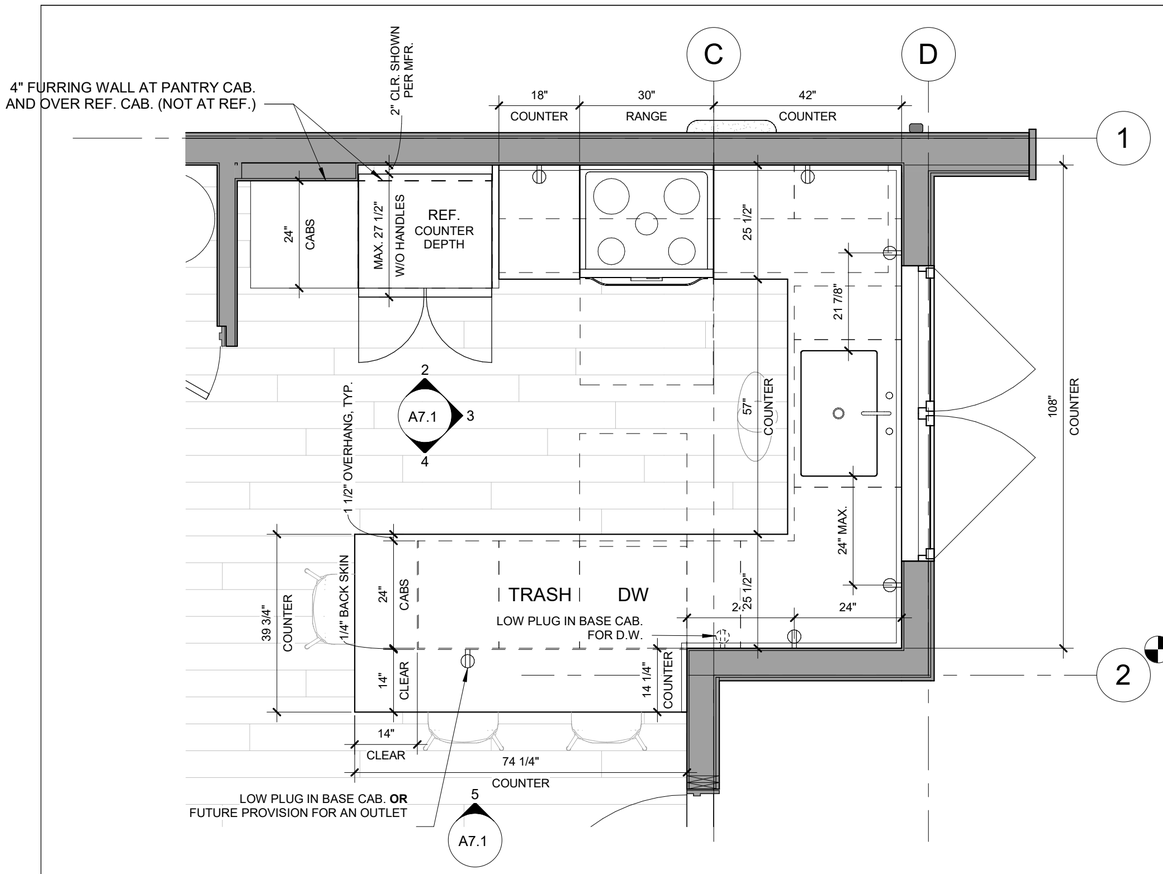
MASTER / REISSUE PERMIT
12/12/2025

(541) 306-3775
INFO@SIERRA-JAMES.COM

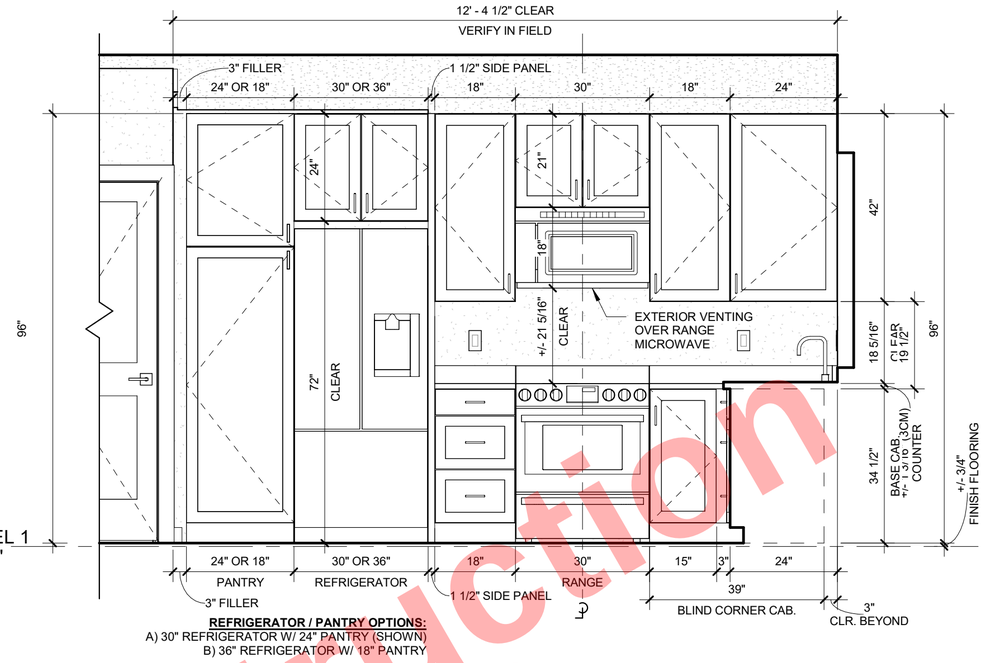
MODERN MILL HOUSE

PROJECT ADDRESS

A5.1

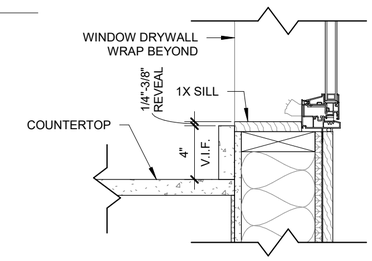


1 ENLARGED KITCHEN PLAN
1/2" = 1'-0"



REFRIGERATOR / PANTRY OPTIONS:
A) 30" REFRIGERATOR W/ 24" PANTRY (SHOWN)
B) 36" REFRIGERATOR W/ 18" PANTRY

2 KITCHEN FRONT
1/2" = 1'-0"



6 KITCHEN WINDOW SILL
1 1/2" = 1'-0"

INTERIOR GENERAL NOTES

1) DIMENSIONS ON THIS SHEET ARE TO FINISH FACE AND/OR CENTER OF FIXTURE, U.N.O.

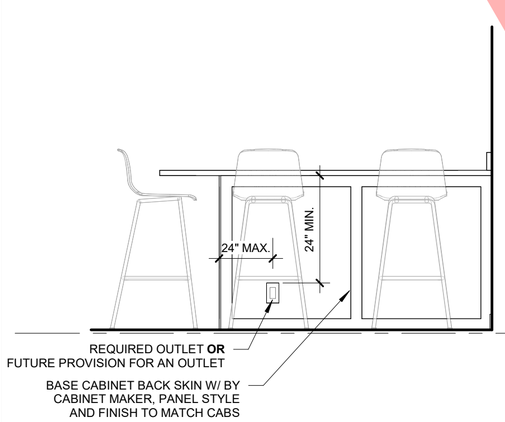
2) OUTLETS AND SWITCHES TO BE DECORA WHITE, NYLON PLATE COVERS, TYPICAL

3) INTERIOR DESIGN NOT INCLUDED IN ARCHITECT'S SCOPE OF WORK. APPLICANT IS RESPONSIBLE FOR SELECTING ALL FINISH MATERIALS, HARDWARE, FIXTURES AND APPLIANCES IN COMPLIANCE WITH THESE DRAWINGS. IF NO INTERIOR DESIGNER WILL BE USED, RECOMMEND ARCHITECT DOCUMENT INTERIOR SELECTIONS AS AN ADDITIONAL SERVICE.

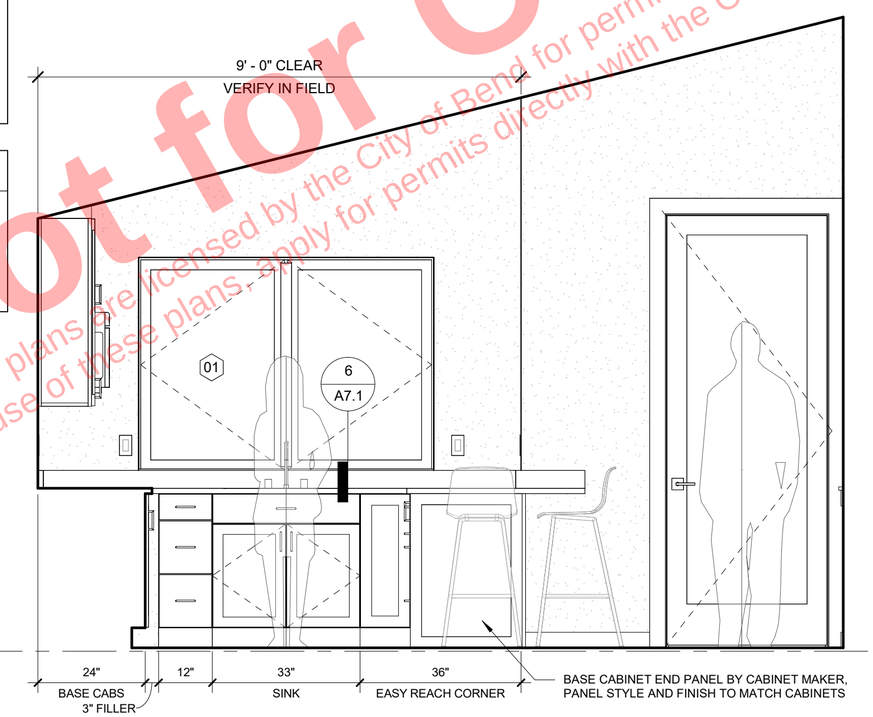
TYPICAL INTERIOR TRIM

ALL INTERIOR TRIM TO BE PRIMED SOLID WOOD (FINGER JOINTED PINE OR SIM.)
APPLICANT MAY CHOOSE SOLID STAIN GRADE TRIM INSTEAD.

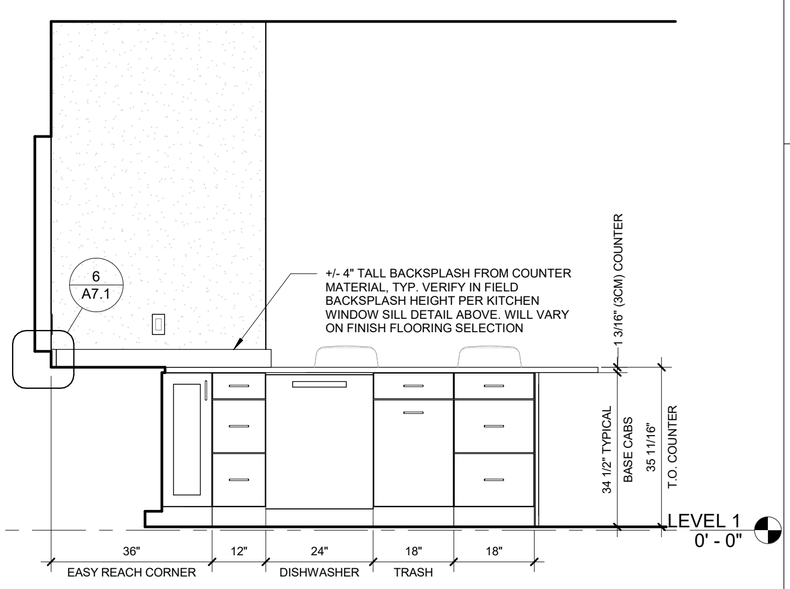
WINDOWS: DRYWALL WRAP AT SIDES AND TOP OF WINDOWS, TYPICAL
1X PROJECTING SILL W/ 1/2"X4 APRON U.N.O. (KITCHEN WINDOW VARIES)
DOORS 1X4 FACE WRAP (TOP & SIDES)
BASEBOARDS 1/2" X 4



5 PENINSULA FRONT
1/2" = 1'-0"



3 KITCHEN & PENINSULA RIGHT
1/2" = 1'-0"



4 KITCHEN BACK
1/2" = 1'-0"

JURISDICTION APPROVAL

REGISTERED ARCHITECT
IAN BURGESS
BEND, OREGON
LIC # 6925
STATE OF OREGON
EXPIRES 12/31/2027

SIERRA JAMES

(541) 306-3775
INFO@SIERRA-JAMES.COM

INTERIOR - KITCHEN

MASTER / REISSUE PERMIT
12/12/2025

MODERN MILL HOUSE

PROJECT ADDRESS

A7.1

INTERIOR GENERAL NOTES

1) DIMENSIONS ON THIS SHEET ARE TO FINISH FACE AND/OR CENTER OF FIXTURE, U.N.O.

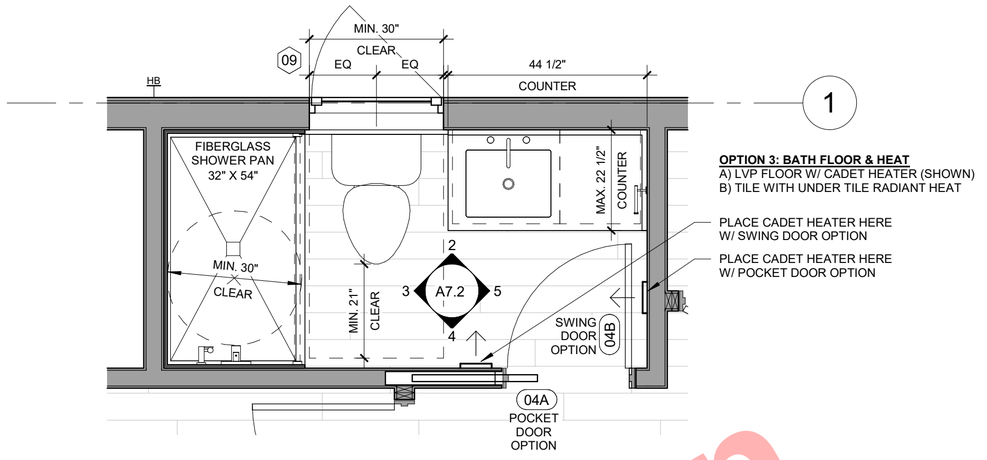
2) OUTLETS AND SWITCHES TO BE DECORA WHITE, NYLON PLATE COVERS, TYPICAL

3) INTERIOR DESIGN NOT INCLUDED IN ARCHITECT'S SCOPE OF WORK. APPLICANT IS RESPONSIBLE FOR SELECTING ALL FINISH MATERIALS, HARDWARE, FIXTURES AND APPLIANCES IN COMPLIANCE WITH THESE DRAWINGS. IF NO INTERIOR DESIGNER WILL BE USED, RECOMMEND ARCHITECT DOCUMENT INTERIOR SELECTIONS AS AN ADDITIONAL SERVICE.

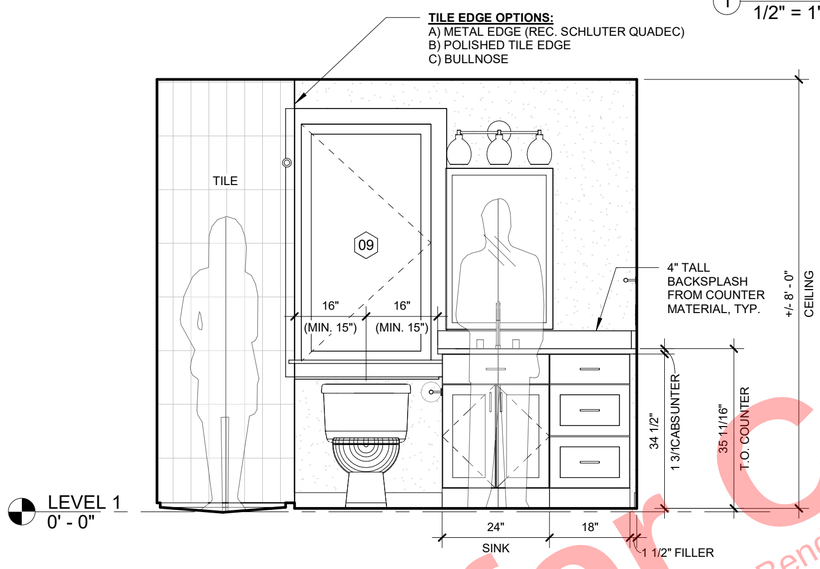
TYPICAL INTERIOR TRIM

ALL INTERIOR TRIM TO BE PRIMED SOLID WOOD (FINGER JOINTED PINE OR SIM.)
APPLICANT MAY CHOOSE SOLID STAIN GRADE TRIM INSTEAD.

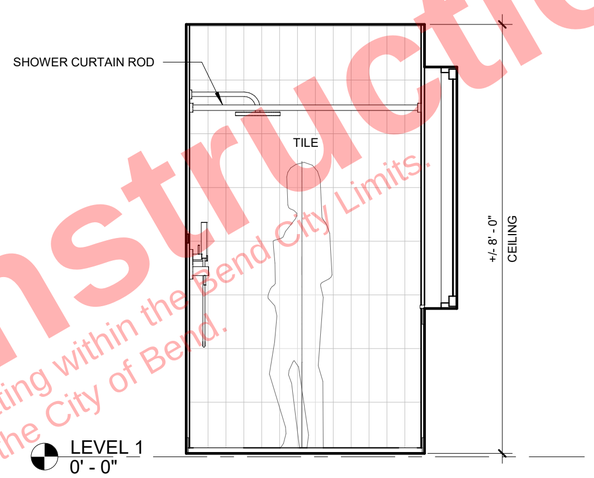
WINDOWS: DRYWALL WRAP AT SIDES AND TOP OF WINDOWS, TYPICAL
1X PROJECTING SILL W/ 1/2"X4 APRON U.N.O. (KITCHEN WINDOW VARIES)
DOORS 1X4 FACE WRAP (TOP & SIDES)
BASEBOARDS 1/2" X 4



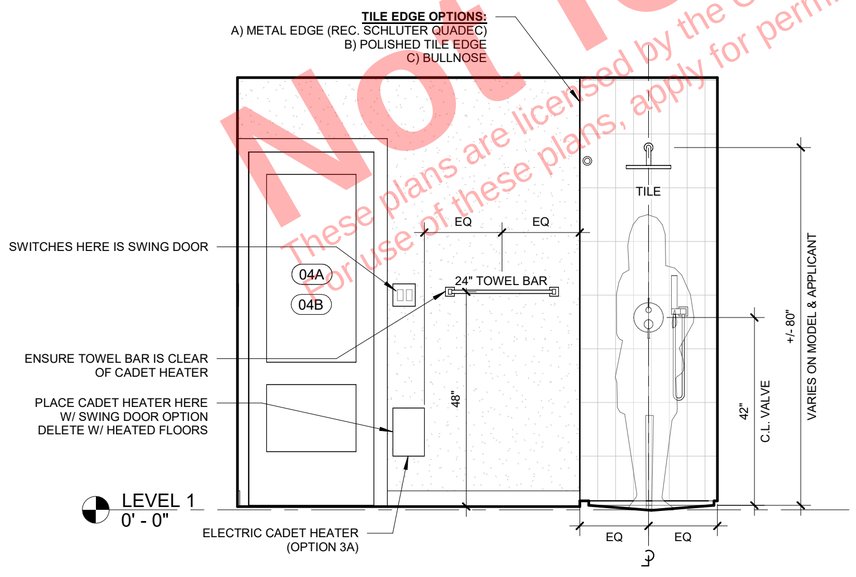
1 ENLARGED BATH PLAN
1/2" = 1'-0"



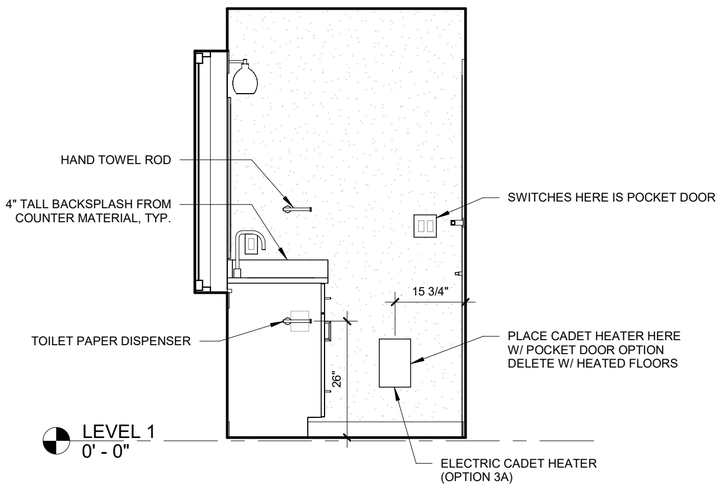
2 BATH FRONT
1/2" = 1'-0"



3 BATH RIGHT
1/2" = 1'-0"



4 BATH BACK
1/2" = 1'-0"



5 BATH LEFT
1/2" = 1'-0"

JURISDICTION APPROVAL

REGISTERED ARCHITECT
IAN BURGESS
BEND, OREGON
LIC # 6925
STATE OF OREGON
EXPIRES 12/31/2027

SIERRA JAMES
(541) 306-3775
INFO@SIERRA-JAMES.COM

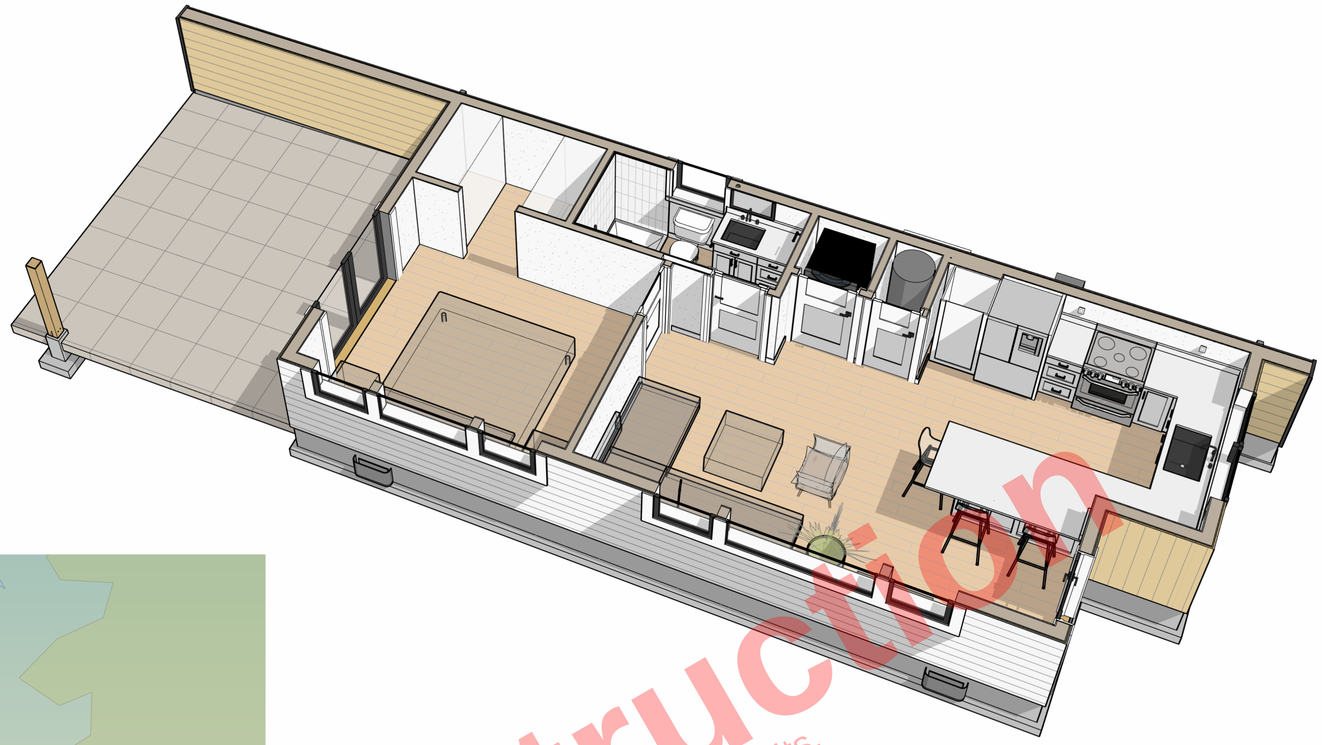
INTERIOR - BATHROOM

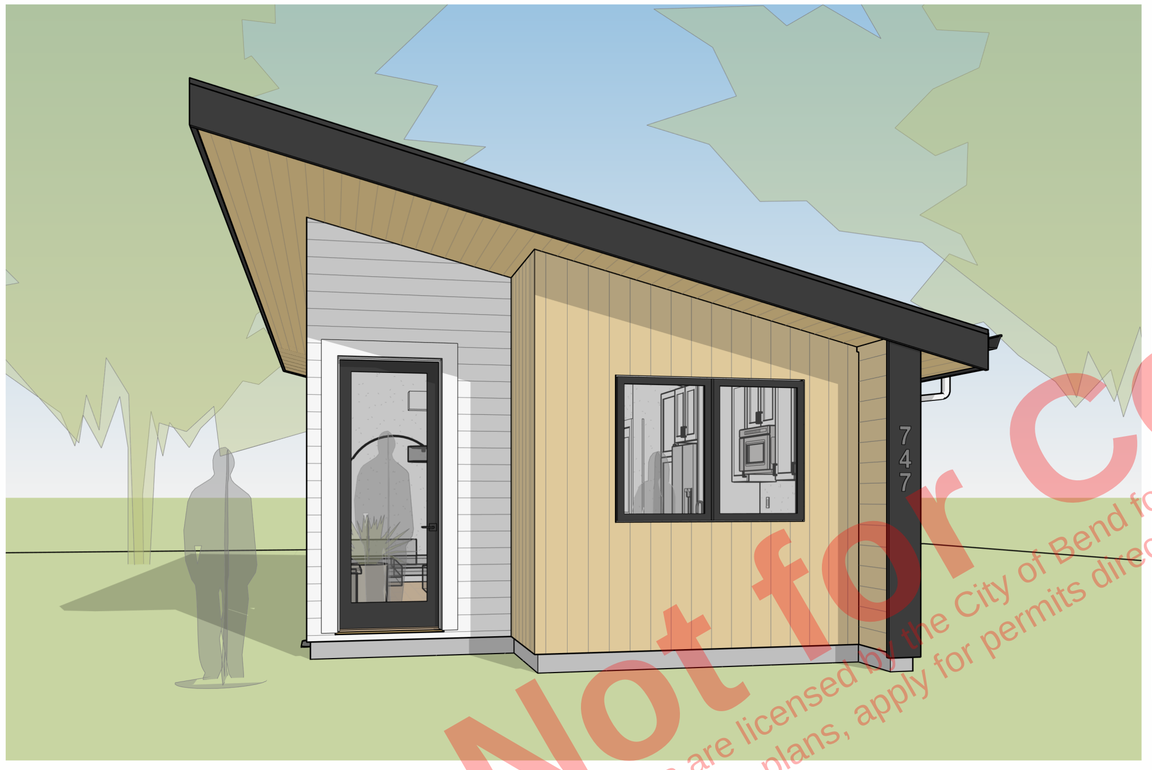
MASTER / REISSUE PERMIT
12/12/2025

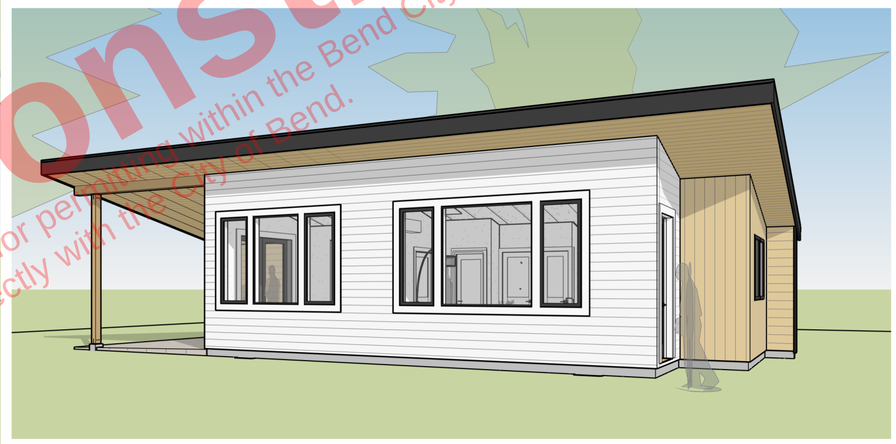
MODERN MILL HOUSE

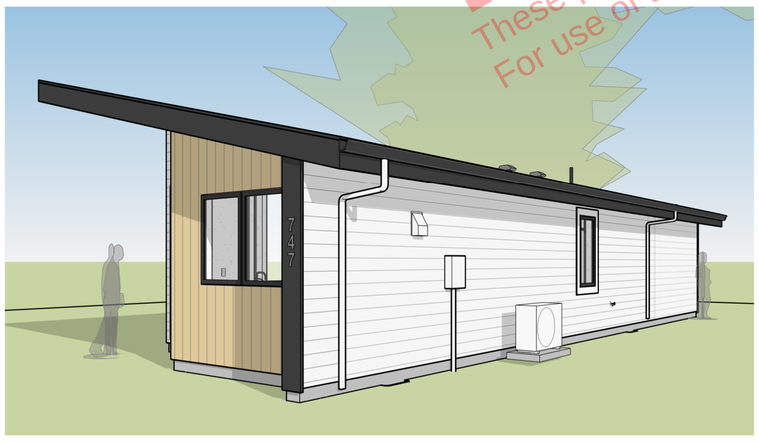
PROJECT ADDRESS

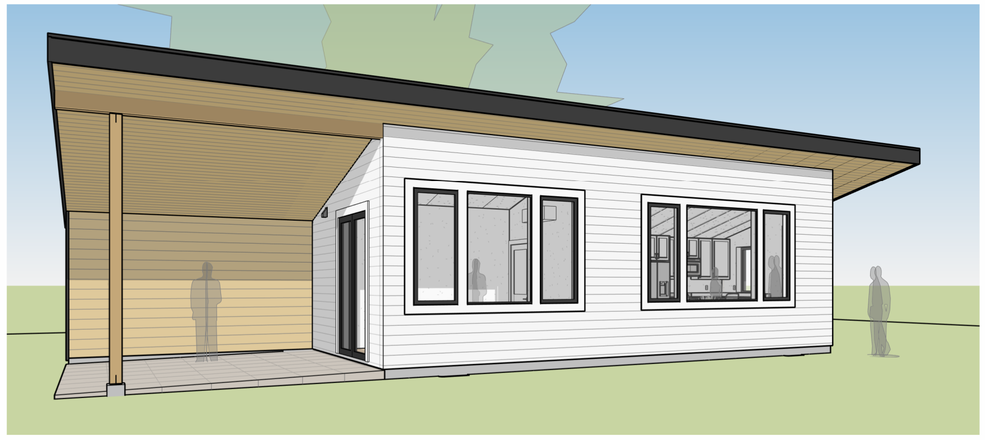
A7.2











JURISDICTION APPROVAL

REGISTERED ARCHITECT
IAN BURGESS
BEND, OREGON
LIC # 6925
STATE OF OREGON
EXPIRES 12/31/2027

SIERRA JAMES

3D VIEWS - EXTERIOR

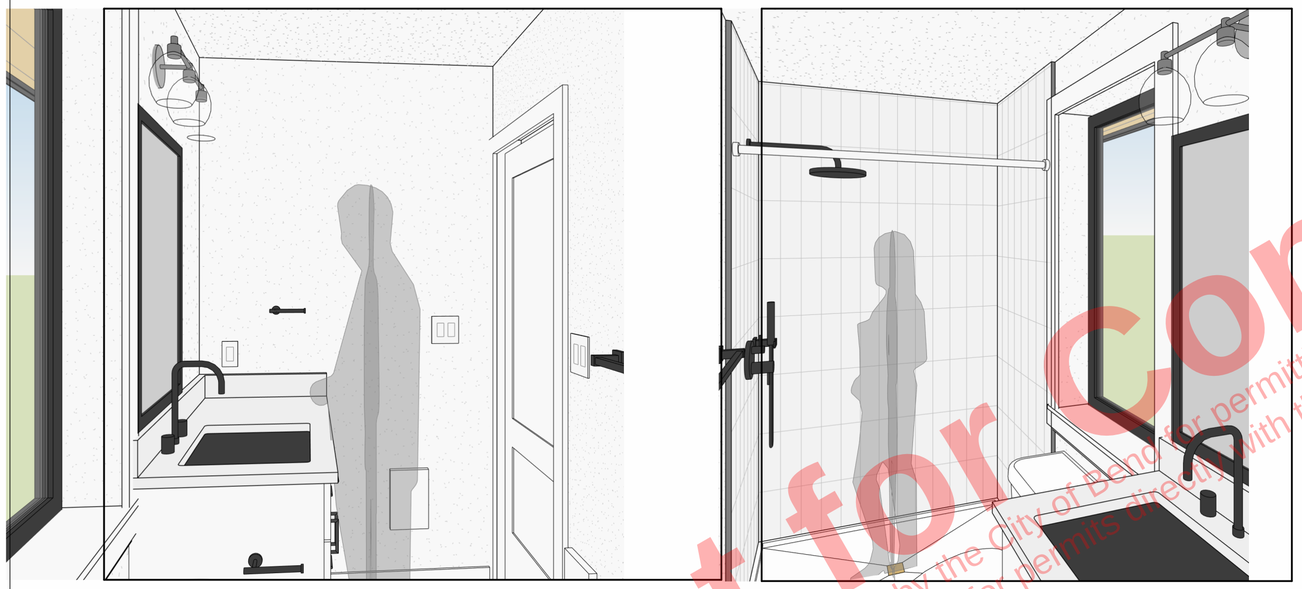
MASTER / REISSUE PERMIT
12/12/2025

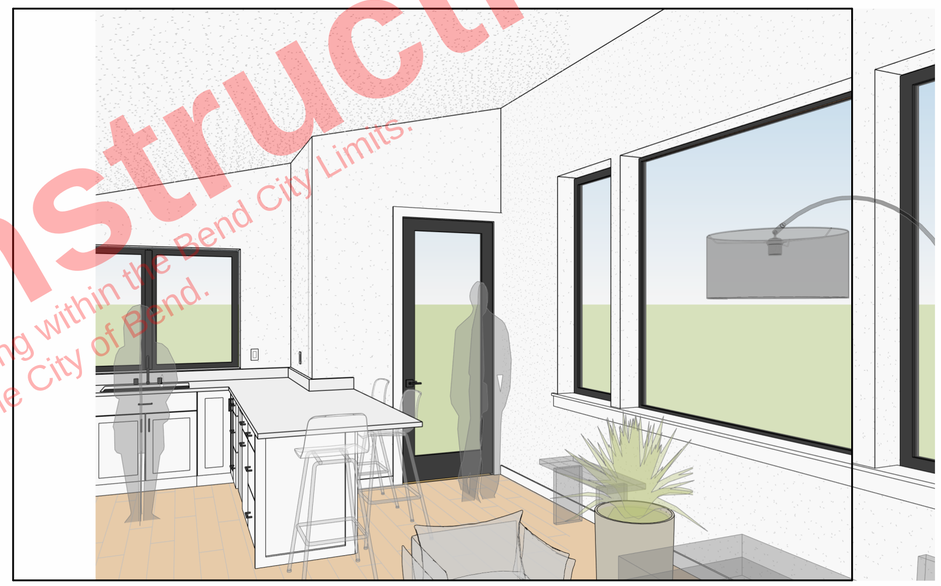
(541) 306-3775
INFO@SIERRA-JAMES.COM

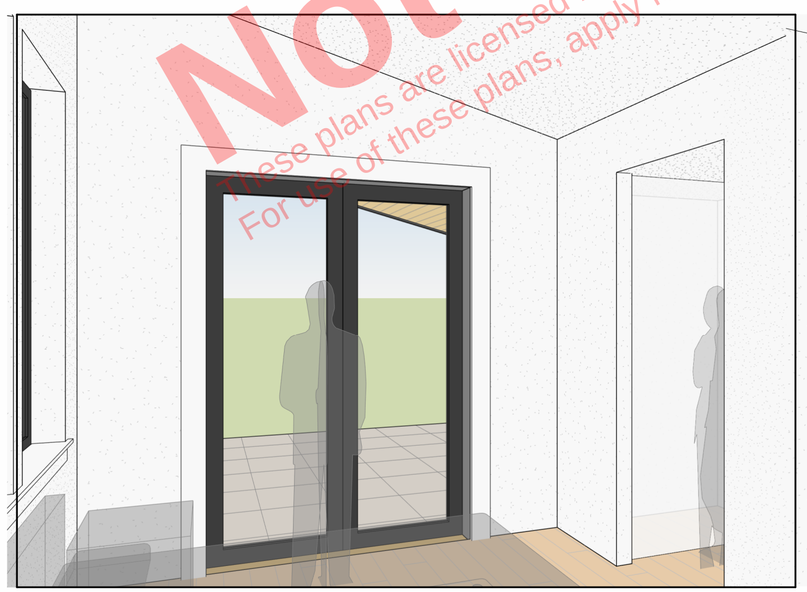
MODERN MILL HOUSE

PROJECT ADDRESS

A9.1







JURISDICTION APPROVAL

REGISTERED ARCHITECT
IAN BURGESS
BEND, OREGON
LIC # 6925
STATE OF OREGON

EXPIRES 12/31/2027

SIERRA JAMES

3D VIEWS - INTERIOR

MASTER / REISSUE PERMIT
12/12/2025

(541) 306-3775
INFO@SIERRA-JAMES.COM

MODERN MILL HOUSE

PROJECT ADDRESS

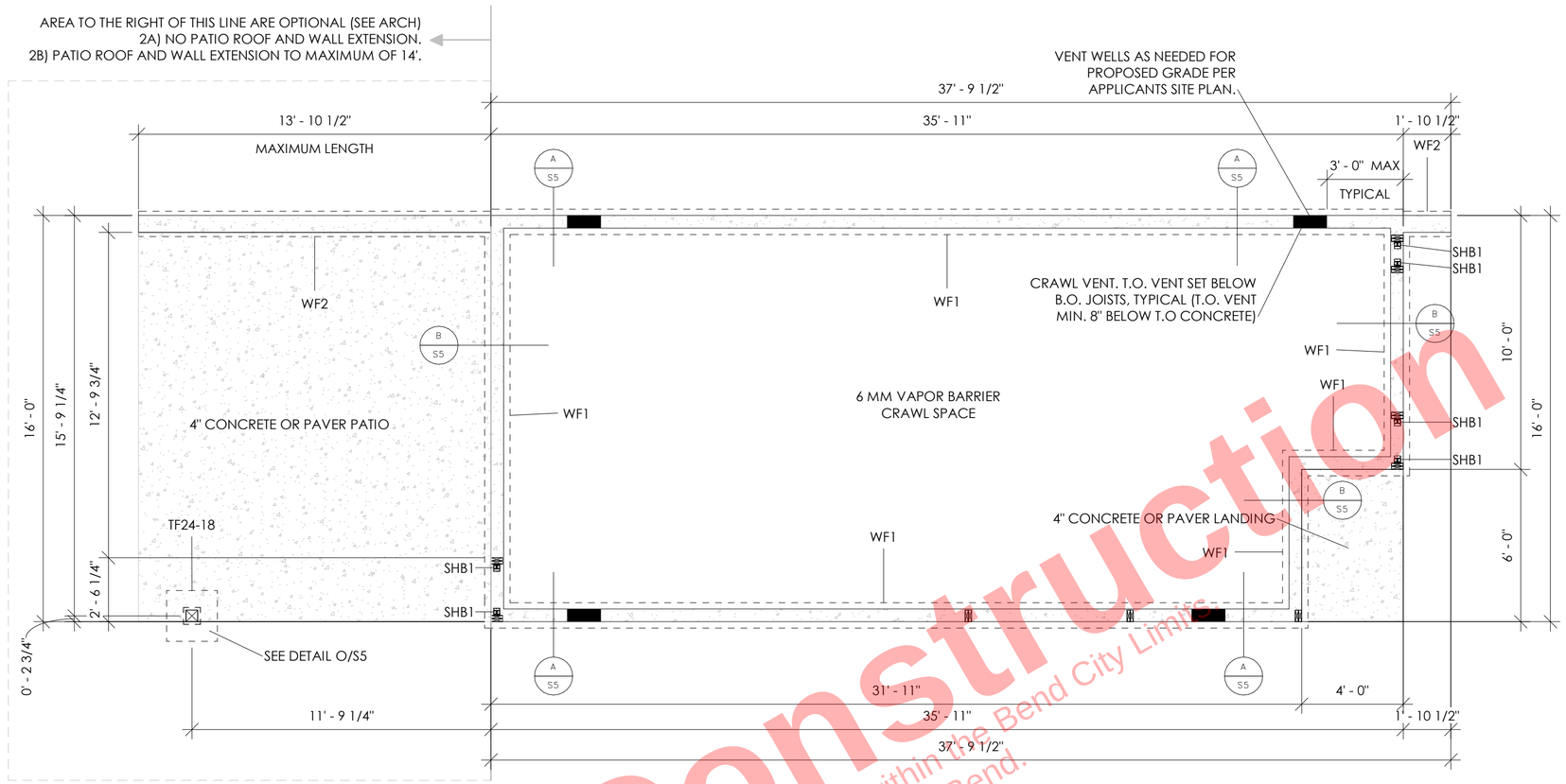
A9.2

WIND SPEED, EXPOSURE, SNOW LOAD AND SDS MAY NOT BE EXCEEDED. CONTACT ENGINEER FOR REDESIGN IF LOCATION EXCEEDS THESE VALUES.

VARIABLE TABLE

VARIABLE	VALUE	CODE REFERENCE
WIND SPEED	99 MPH, EXP C	[IBC-ASCE7-16]
SNOW LOAD	50 PSF	[SEAO-ASCE7-16]
SEISMIC	0.38 g	[ASCE7-16]
FROST DEPTH	18"	[ORSC R301.2]
PLAN EVALUATED: MODERN MILL ADU (SJC)		

DEVIATION STATEMENT
ANY DEVIATION FROM ARCHITECTURAL OR STRUCTURAL PLAN REQUIRES REVIEW BY LICENSED ENGINEER.



FOUNDATION

1/4" = 1'-0"

FOUNDATION NOTES:

1. BUILDING IS REQUIRED TO MEET MINIMUM SETBACK REQUIREMENTS (SITE PLAN)
2. FINISH GRADE SHALL SLOPE AWAY FROM FOUNDATION WALLS (OR SIDEWALKS AND SLABS ADJACENT TO FOUNDATION WALLS).
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OR 2500 PSI (DEFAULT) OR AS SPECIFIED IN THE ENGINEERING.
4. EXTERIOR FOOTINGS SHALL EXTEND BELOW THE FROST DEPTH FOR THE SITE. REF IRC TABLE R301.2(1)
5. FOUNDATION WALLS SHALL EXTEND AT LEAST 6" ABOVE THE FINISHED GRADE.
6. FOUNDATION DESIGN ASSUMES 1500 PSF SOIL BACK PRESSURE (CODE DEFAULT). USE OF SOIL PRESSURES GREATER THAN 1500 PSF REQUIRES SOIL TEST.
7. FOUNDATION REINFORCEMENT AS SPECIFIED ON THIS PLAN.
8. FOUNDATION REBAR SHALL HAVE A MINIMUM 24" LAP SPLICE OR AS SPECIFIED ON THIS PLAN.
9. FOUNDATION FOOTING SIZES AS SPECIFIED ON THIS PLAN.
10. SILL PLATE SHALL BE PRESSURE TREATED AND ANCHORED TO STEM WALL USING ANCHOR BOLTS AS SPECIFIED IN THE SHEAR PLAN.
11. DRAINS SHALL BE PROVIDED AROUND ALL CONCRETE OR MASONRY FOUNDATIONS ENCLOSING HABITABLE OR USABLE SPACES LOCATED BELOW GRADE.
12. FOUNDATION VENTILATION SHALL BE A MINIMUM 1 SF VENT SPACE FOR EACH 150 SF OF UNDERFLOOR AREA AND VENTS SET WITHIN 3' EACH CORNER. (1/1500 W/6 MIL VAPOR BARRIER-IRC R408.1).
13. PROVIDE A MINIMUM 18"X24" CLEAR ACCESS OPENING TO UNDER FLOOR CRAWL SPACE. IF THE FURNACE IS INSTALLED IN THE CRAWL SPACE, THE OPENING MUST BE LARGE ENOUGH TO REMOVE THE LARGEST PIECE OF EQUIP. BUT NOT LESS THAN 30"X30". FLOOR ACCESS SHALL BE WITHIN 20' OF PLUMBING CLEANOUT. NO PIPE OR DUCTWORK SHALL INTERFERE WITH ACCESSIBILITY.
14. FOOTINGS TO BEAR ON UNDISTURBED LEVEL SOIL DEVOID OF ANY ORGANIC MATERIAL AND STEPPED AS REQUIRED TO MAINTAIN A MINIMUM FROST DEPTH BELOW FINISHED GRADE.
15. PROVIDE GROUND COVER OF 6 MIL POLYETHYLENE OR EQUAL LAPPED 12" AT ALL JOINTS AND TURNED UP 12" UP THE FOUNDATION WALL IN THE CRAWL SPACE. PROVIDE 6 MIL POLYETHYLENE UNDER CONCRETE SLABS.
16. PROVIDE SILL SEAL BETWEEN THE WALL AND FOUNDATION WHERE FOUNDATION WALL ENCLOSES HEATED SPACE.
17. PROVIDE ON #4 REBAR TTIED TO THE FOUNDATION REBAR AND EXTENDED 12" ABOVE THE STEM WALL FOR GROUND ROD.
18. COLUMN BASES SHALL BE PROTECTED AGAINST DECAY OR CORROSION UNLESS PRESSURE TREATED WOOD IS USED. STEEL POST BASES SHALL BE GALVANIZED AND BE SIZED TO COVER THE ENTIRE BOTTOM OF THE COLUMN.
19. CONCRETE SLABS MIN 2500 PSI W/OPTIONAL W6SX6 10/10WW MESH OR APPROVED FIBER MESH. USE EXPANSION JOINTS OR SAW CUT AT MIN 12' O.C. SLOPE GARAGE SLABS MIN 1/8/12 TOWARD DOORS.
20. ALL EXTERIOR WALLS, BEARING WALLS, COLUMNS AND PIERS SHALL BE SUPPORTED ON CONTINUOUS SOLID MASONRY OR CONCRETE FOOTINGS AND SHALL EXTEND BELOW THE FROST DEPTH. FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR 4" GRANULAR MATERIAL COMPACTED TO 95%.
21. BEAM POCKETS IN STEM WALLS TO HAVE 1/2" AIR SPACE AT SIDES AND END, AND A MINIMUM BEARING OF 4".
22. REF SHEAR DIAGRAM FOR ANCHOR BOLT SPACING.

HOLD DOWN SCHEDULE

MARK	HOLD DOWN	ANCHOR	SCREW OPTION	EPOXY ANCHOR OPTION	COUNT
SHB1	HDUE3	SABR5/8X24	5/8" TITENHD W/ 4" EMBEDDMENT	5/8" ATR W/ 6" EMBEDDMENT	6

SPREAD FOOTING SCHEDULE

MARK	WIDTH	LENGTH	FOOTING THICKNESS	REBAR SCHEDULE	POST BASE
TF24-18	24"	24"	10"	2-#4(G40) REBAR E.W.	CPT66Z

WALL FOOTING SCHEDULE

MARK	WIDTH	FOUNDATION THICKNESS	STEM WIDTH	FOOTING REBAR	STEM REBAR
WF1	12"	6"	6"	2-#4(G40) HORIZ REBAR	1-#4(G40)HORIZ REBAR <6" FROM TOP, 1-#4(G40) VERT REBAR AT 48" O.C.
WF2	12"	6"	8"	2-#4(G40) HORIZ REBAR	1-#4(G40)HORIZ REBAR <6" FROM TOP, 1-#4(G40) VERT REBAR AT 48" O.C.

SITE SLOPE AND FOUNDATION
STEMWALL MAXIMUM HEIGHT IS 4' MEASURED FROM GRADE. STEMWALL UNBALANCED LOAD MAXIMUM HEIGHT IS 4'. IF EITHER CONDITION IS EXCEEDED CONTACT LICENSED STRUCTURAL ENGINEER.

REGISTERED PROFESSIONAL ENGINEER
87488PE
OREGON
JANUARY 08, 2019
GARRETT J BANTON
EXPIRES: 12/31/2027

Garrett J. Banton, PE
3008 NE Charleston Ct.
Bend, OR 97701
Phone: (541) 306-7893
team@bantonengineering.com

BANTON ENGINEERING, INC.

MODERN MILL ADU (MIRROED)
CITY OF BEND LIMITS

FOUNDATION

FILE:
SCALE: 1/4" = 1'-0"
DATE: 1/29/26

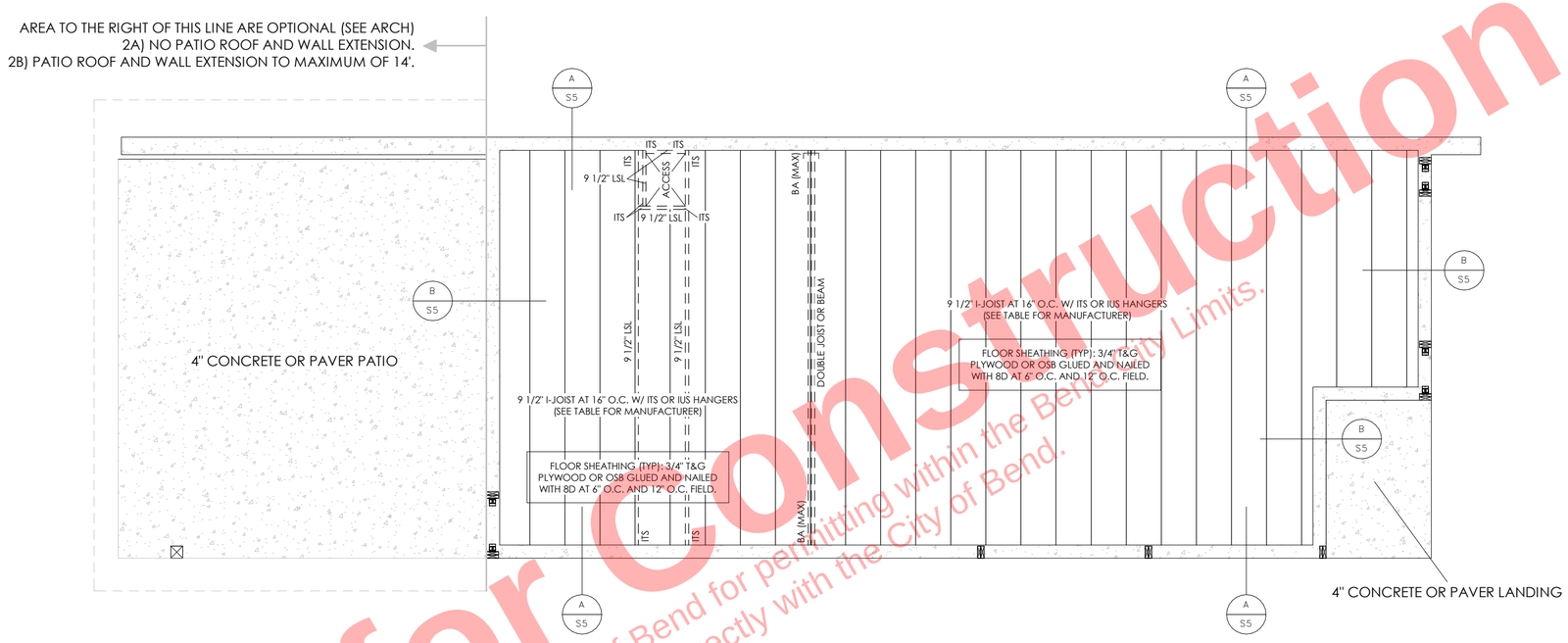
S1

WIND SPEED, EXPOSURE, SNOW LOAD AND SDS MAY NOT BE EXCEEDED. CONTACT ENGINEER FOR REDESIGN IF LOCATION EXCEEDS THESE VALUES.

VARIABLE TABLE

VARIABLE	VALUE	CODE REFERENCE
WIND SPEED	99 MPH, EXP C	[IBC-ASCE7-16]
SNOW LOAD	50 PSF	[SEAO-ASCE7-16]
SEISMIC	0.38 g	[ASCE7-16]
FROST DEPTH	18"	[ORSC R301.2]
PLAN EVALUATED: MODERN MILL ADU (SJC)		

DEVIATION STATEMENT
ANY DEVIATION FROM ARCHITECTURAL OR STRUCTURAL PLAN REQUIRES REVIEW BY LICENSED ENGINEER.



SUBFLOOR FRAMING

1/4" = 1'-0"

FLOOR FRAMING NOTES

1. SILL PLATE SHALL BE PRESSURE TREATED AND ANCHORED TO STEM WALL USING ANCHOR BOLTS AS SPECIFIED IN THE SHEAR PLAN.
2. PROVIDE A MINIMUM 18"X24" CLEAR ACCESS OPENING TO UNDER FLOOR CRAWL SPACE. IF THE FURNACE IS INSTALLED IN THE CRAWL SPACE, THE OPENING MUST BE LARGE ENOUGH TO REMOVE THE LARGEST PIECE OF EQUIPMENT BUT NO LESS THAN 30"X30". FLOOR ACCESS SHALL BE WITHIN 20' OF PLUMBING CLEANOUT. NO PIPE OR DUCTWORK SHALL INTERFERE WITH ACCESSIBILITY.
3. PROVIDE GROUND COVER OF 6 MIL POLYETHYLENE OR EQUAL LAPPED 12" AT ALL JOINTS AND TURNED UP 12" UP THE FOUNDATION WALL IN THE CRAWL SPACE. PROVIDE 6 MIL POLYETHYLENE UNDER CONCRETE SLABS.
4. PROVIDE SILL SEAL BETWEEN THE WALL AND FOUNDATION WHERE THE FOUNDATION WALL ENCLOSES HEATED SPACE.
5. ALL EXTERIOR WALLS, BEARING WALLS, COLUMNS, AND PIERS SHALL BE SUPPORTED ON CONTINUOUS SOLID MASONRY OR CONCRETE FOOTINGS AND SHALL EXTEND BELOW THE FROST DEPTH. FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR 4" GRANULAR MATERIAL COMPACTED TO 95%.
6. REFERENCE SHEAR DIAGRAM FOR ANCHOR BOLT SPACING.
7. FOLLOW MANUFACTURER'S RECOMMENDATIONS WHEN INSTALLING I JOISTS.
8. CONSTRUCTION ADHESIVE TO BE USED AT ALL FLOOR CONNECTIONS INCLUDING FLOOR SHEETING TO JOIST, IN JOIST HANGERS, JOIST HANGER PLATES, JOIST TO PONY WALL CONNECTIONS, AND BLOCKING CONNECTIONS.
9. IF FLOOR SHEETING GETS WET DURING CONSTRUCTION, RECOMMENDED THE NAILS GET RE-SET WITH A BALL-PEEN HAMMER.

ENGINEERING NOTES:

1. COLUMN, CONNECTION AND BEAM SIZING ARE MINIMUMS. UPGRADED SIZE OR QUALITY PER ARCH IS ACCEPTABLE.
2. ALTERNATIVE MATERIALS OR SIZES MAY BE FOUND IN THE ENGINEERING CALCULATIONS IF NOT NOTED ON THE DRAWING.
3. UNLESS OTHERWISE NOTED MINIMUM BEAM SUPPORT OR TRIMMER IS A 2x6 DF#2 OR 2x4 DF#2.
4. UNLESS OTHERWISE NOTED EXTERIOR FOOTING OR STRIP FOOTING MEETS MINIMUM LOAD REQUIREMENTS.
5. IF CONNECTION IS UNSPECIFIED USE NAILED FRAMING CONNECTION.
6. BOLTED CONNECTION OR SIMPSON PC POST CAP. U.N.O.

FLOOR JOIST SPECIFICATIONS

MANUFACTURER	TYPE
BOISE CASCADE (BCI)	9-1/2" BCI-5000S1.8 AT 16" O.C.
SIMPSON STRONG-TIE(TJI)	9-1/2" TJI 210 AT 16" O.C.
LP SOLIDSTART (LP)	9-1/2" LPI 20Plus AT 16" O.C.
ROSEBURG (RFPI)	9-1/2" RFPI 40S AT 16" O.C.

Garrett J. Banton, PE
3008 NE Charleston Ct.
Bend, OR 97701
Phone: (541) 306-7893
team@bantonengineering.com

BANTON ENGINEERING, INC.

MODERN MILL ADU (MIRROED)
CITY OF BEND LIMITS

SUBFLOOR FRAMING

FILE:
SCALE: 1/4" = 1'-0"
DATE: 1/29/26

S2

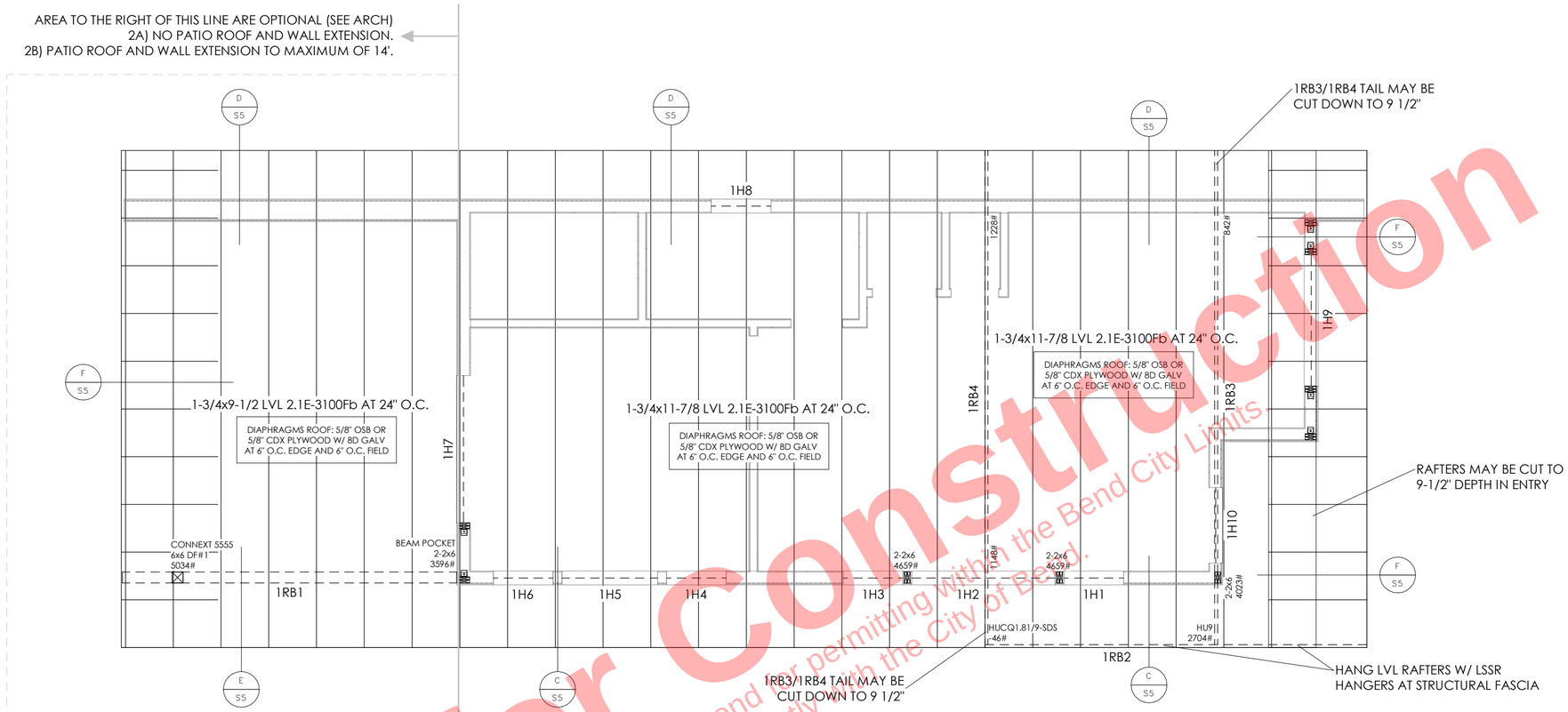
WIND SPEED, EXPOSURE, SNOW LOAD AND SDS MAY NOT BE EXCEEDED. CONTACT ENGINEER FOR REDESIGN IF LOCATION EXCEEDS THESE VALUES.

VARIABLE TABLE

VARIABLE	VALUE	CODE REFERENCE
WIND SPEED	99 MPH, EXP C	[IBC-ASCE7-16]
SNOW LOAD	50 PSF	[SEAO-ASCE7-16]
SEISMIC	0.38 g	[ASCE7-16]
FROST DEPTH	18"	[ORSC R301.2]
PLAN EVALUATED: MODERN MILL ADU (SJC)		

DEVIATION STATEMENT
ANY DEVIATION FROM ARCHITECTURAL OR STRUCTURAL PLAN REQUIRES REVIEW BY LICENSED ENGINEER.

REGISTERED PROFESSIONAL ENGINEER
87488PE
OREGON
JANUARY 08, 2019
GARRETT J BANTON
EXPIRES: 12/31/2027



MAIN LEVEL FRAMING

1/4" = 1'-0"

FRAMING LEGEND

= INTERIOR LOAD BEARING WALL
= FIRE WALL PER ARCH
= ROOF OVERFRAME
= STANDARD EXTERIOR WALL

WALL FRAMING NOTES
1. ONE STORY WALLS TO BE MINIMUM 2x6 DF#2 OR STUD AT 24" O.C.
2. TWO STORY WALLS TO BE MINIMUM 2x6 DF#2 OR STUD AT 16" O.C.
3. INTERIOR LOAD BEARING WALLS TO BE MINIMUM 2x4 DF#2 AT 16" O.C.
4. WALLS OVER 10' - 0" TALL TO REQUIRE SOLID MID PLANE BLOCKING AND 2x6 DF#2 OR LSL AT 16" O.C.

ENGINEERING NOTES:
1. COLUMN, CONNECTION AND BEAM SIZING ARE MINIMUMS. UPGRADED SIZE OR QUALITY PER ARCH IS ACCEPTABLE.
2. ALTERNATIVE MATERIALS OR SIZES MAY BE FOUND IN THE ENGINEERING CALCULATIONS IF NOT NOTED ON THE DRAWING.
3. UNLESS OTHERWISE NOTED MINIMUM BEAM SUPPORT OR TRIMMER IS A 2x6 DF#2 OR 2x4 DF#2.
4. UNLESS OTHERWISE NOTED EXTERIOR FOOTING OR STRIP FOOTING MEETS MINIMUM LOAD REQUIREMENTS.
5. IF CONNECTION IS UNSPECIFIED USE NAILED FRAMING CONNECTION.
6. BOLTED CONNECTION OR SIMPSON PC POST CAP. U.N.O.

ROOF FRAMING NOTES
1. REFERENCE ENGINEER'S GRAVITY LOADS ENGINEERING FOR BEAM ALTERNATIVES.
2. PLYWOOD ROOF SHEATHING SHALL NOT EXCEED THE ALLOWABLE SPANS INDICATED BY THE PANEL ID.
3. ATTIC SPACES HAVING 30" OR GREATER VERTICAL CLEAR HEIGHT ARE REQUIRED TO A MINIMUM OF 22"X30" ATTIC ACCESS.
4. USE SIMPSON H1 OR H2.5A PLATE TIES ON ALL RAFTER AND TRUSS PLATE CONNECTIONS.
5. RAFTER, CEILING JOISTS, AND TRUSSES SHALL BE SUPPORTED LATERALLY AT BEARING POINTS BY SOLID BLOCKING TO PREVENT ROTATION AND LATERAL DISPLACEMENT.
6. THE ROOFING MATERIAL MUST BE AN APPROVED MATERIAL INSTALLED AS SPECIFIED IN ARCH.
7. DIAPHRAGMS ROOF: 5/8" OSB OR 5/8" CDX PLYWOOD W/ 8D GALV AT 6" O.C. EDGE AND 6" O.C. FIELD
8. USE ICE SHIELD 48" ABOVE WALL LINES AND 36" UP VALLEYS.
9. 30# FELT UNDER STANDING SEAM METAL AND COMPOSITE ROOF.
10. ATTIC VENTILATION: 1SF VENT SPACE TO 150SF ATTIC SPACE. VENTING PER ARCH.

1 LEVEL BEAMS

MARK	LENGTH	SIZE & MATERIAL
1H1	3'	2x6 D.Fir-L No. 2
1H2	6.5'	3-1/2x9 24F-V4 DF
1H3	3'	2x6 D.Fir-L No. 2
1H4	3'	2x6 D.Fir-L No. 2
1H5	4.5'	2-2x6 D.Fir-L No. 2
1H6	3'	2x6 D.Fir-L No. 2
1H7	7'	4x6 D.Fir-L No. 2
1H8	3'	2x6 D.Fir-L No. 2
1H9	6'	2-2x6 D.Fir-L No. 2
1H10	4'	2x6 D.Fir-L No. 2
1RB1	14'	5-1/2x9 24F-V4 DF
1RB2	16'	1-3/4x9-1/2 Versa-Lam LVL 2.1E-2800Fb
1RB3	22'	(2) 1-3/4x11-7/8 Versa-Lam LVL 2.1E-3100Fb
1RB4	22'	(2) 1-3/4x11-7/8 Versa-Lam LVL 2.1E-3100Fb

Garrett J. Banton, PE
3008 NE Charleston Ct.
Bend, OR 97701
Phone: (541) 306-7893
team@bantonengineering.com

BANTON ENGINEERING, INC.

MODERN MILL ADU (MIRROED)
CITY OF BEND LIMITS

MAIN LEVEL FRAMING

FILE:
SCALE: 1/4" = 1'-0"
DATE: 1/29/26

S3

WIND SPEED, EXPOSURE, SNOW LOAD AND SDS MAY NOT BE EXCEEDED. CONTACT ENGINEER FOR REDESIGN IF LOCATION EXCEEDS THESE VALUES.

VARIABLE TABLE

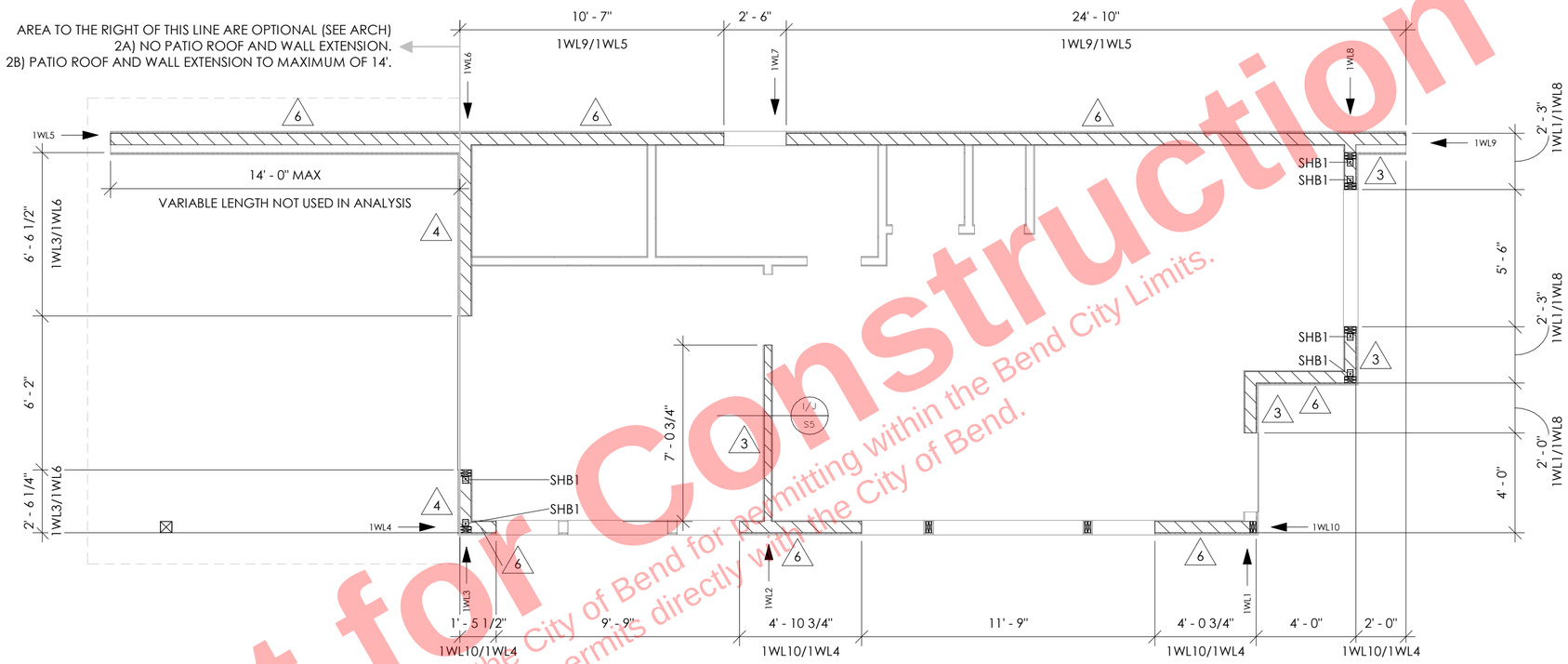
VARIABLE	VALUE	CODE REFERENCE
WIND SPEED	99 MPH, EXP C	[IBC-ASCE7-16]
SNOW LOAD	50 PSF	[SEAO-ASCE7-16]
SEISMIC	0.38 g	[ASCE7-16]
FROST DEPTH	18"	[ORSC R301.2]
PLAN EVALUATED: MODERN MILL ADU (SJC)		

DEVIATION STATEMENT
ANY DEVIATION FROM ARCHITECTURAL OR STRUCTURAL PLAN REQUIRES REVIEW BY LICENSED ENGINEER.

REGISTERED PROFESSIONAL ENGINEER
87488PE
OREGON
JANUARY 08, 2019
GARRETT J BANTON
EXPIRES: 12/31/2027

Garrett J. Banton, PE
3008 NE Charleston Ct.
Bend, OR 97701
Phone: (541) 306-7893
team@bantonengineering.com

BANTON ENGINEERING, INC.



MAIN LEVEL LATERAL DIAGRAM

1/4" = 1'-0"

SHEAR WALL SCHEDULE

WARNING: IT IS THE RESPONSIBILITY OF THE USER OF THIS DOCUMENT TO ENSURE THAT ALL THE TECHNICAL INFORMATION IS PROPERLY IMPLEMENTED DURING CONSTRUCTION OF THE STRUCTURE. FAILURE TO INCORPORATE ALL OF THE REQUIREMENTS OF THIS DESIGN MAY INVALIDATE THE LATERAL INTEGRITY OF THE STRUCTURE AND RELEASE RESPONSIBILITY FROM THE ENGINEER OF RECORD.

No.	SHEAR WALL	SILL FASTENER	CONCRETE ANCHOR BOLTS
6	7/16" OSB OR 1/2" CDX W/8D AT 6" O.C. EDGE/12" O.C. FIELD SHEAR VALUES: (240 PLF24)(260 PLF16)(170 PLF Staple)(223 PLF HF)(242 PLF HF)	2x SOLE PLATE TO JOIST, DECK, BLOCKING W/16D AT 6" O.C. (TOP)/8D AT 6" O.C. (EDGE)	5/8" x 10" J BOLTS AT 48" O.C. 1/2" x 10" J BOLTS AT 48" O.C.
4	7/16" OSB OR 1/2" CDX W/8D AT 4" O.C. EDGE/12" O.C. FIELD SHEAR VALUES: (350 PLF24)(380 PLF16)(260 PLF Staple)(326 PLF HF)(354 PLF HF)	2x SOLE PLATE TO JOIST, DECK, BLOCKING W/16D AT 6" O.C. (TOP)/8D AT 4" O.C. (EDGE)	5/8" x 10" J BOLTS AT 40" O.C. 1/2" x 10" J BOLTS AT 24" O.C.
3	7/16" OSB OR 1/2" CDX W/8D AT 3" O.C. EDGE/12" O.C. FIELD SHEAR VALUES: (450 PLF24)(490 PLF16)(345 PLF Staple)(418 PLF HF)(456 PLF HF)	2x SOLE PLATE TO JOIST, DECK, BLOCKING W/16D AT 4" O.C. (TOP)/8D AT 3" O.C. (EDGE)	5/8" x 10" J BOLTS AT 30" O.C. 1/2" x 10" J BOLTS AT 20" O.C.
2	7/16" OSB OR 1/2" CDX W/8D AT 2" O.C. EDGE/12" O.C. FIELD SHEAR VALUES: (585 PLF24)(640 PLF16)(440 PLF Staple)(544 PLF HF)(595 PLF HF)	4x SOLE PLATE TO JOIST, DECK, BLOCKING W/16D AT 4" O.C. (TOP)/8D AT 2" O.C. (EDGE) USE 2"x2" COMMERCIAL WASHERS	5/8" x 12" J BOLTS AT 24" O.C. 1/2" x 12" J BOLTS AT 16" O.C.
*	1/2" GYP W/5D x 1-5/8" COOLER OR #6/1.25" SCREW AT 7" O.C. EDGE/12" O.C. FIELD SHEAR VALUES: (100 PLF)	2x SOLE PLATE TO JOIST, DECK, BLOCKING W/16D AT 6" O.C. (TOP)/CEILING BLOCKING	1/2" x 10" J BOLTS AT 72" O.C.
C	RAKE AND PONY WALLS ABOVE STEM WALL TO USE WALL LINE BRACING REQUIREMENT. SOLID CONCRETE WALL LATERAL RESISTANCE EQUAL OR GREATER TO DESIGNATED WALL LINE REQUIREMENT. ENGINEER TO USE UPGRADED LATERAL RESISTANCE VALUES AT THEIR OWN DISCRETION.		

SHEAR ANALYSIS

1. MIN. ROOF DIAPHRAGM 5/8" OSB OR 5/8" CDX PLYWOOD W/ 8D GALV AT 6" O.C. EDGE AND 6" O.C. FIELD
2. MINIMUM FLOOR DIAPHRAGM: 3/4" T&G OSB OR PLYWOOD GLUED AND NAILED W/10D RING SHANK AT 6" O.C. EDGE AND 12" O.C. FIELD, 4" CONCRETE.
3. UNLESS SPECIFICALLY NOTED, ALL EXTERIOR WALLS SHALL BE SHEETED ONE SIDE WITH 7/16" OSB OR 1/2" STRUCT. PLYWOOD W/ MIN. NAIL SCHEDULE OF 8D GALV NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD.
4. SIMPSON H1 OR H2.5A HOLD DOWNS AT ALL RAFTER/TRUSS-PLATE CONNECTIONS.
5. ANCHORS, HOLD DOWNS, STRAPS AS SHOWN.
6. BLOCKING REQUIRED ON ALL EXTERIOR SHEETING HORIZONTAL JOINTS.
7. ALL CREDITED INTERIOR SHEAR WALLS REQUIRE BLOCKING AT FLOOR PLATE AND CEILING.
8. ALL SIMPSON HARDWARE INSTALLED PER GUIDELINES.
9. J BOLTS CAN BE REPLACED WITH WEDGE ANCHORS OR TITENHD SCREWS OF THE SAME DIAMETER. MINIMUM LENGTH OF ANCHOR/SCREW TO BE 8" LONG.

HOLD DOWN SCHEDULE

MARK	HOLD DOWN	ANCHOR	SCREW OPTION	EPOXY ANCHOR OPTION	COUNT
SHB1	HDUE3	SABR5/8X24	5/8" TITENHD W/ 4" EMBEDDMENT	5/8" ATR W/ 6" EMBEDDMENT	6

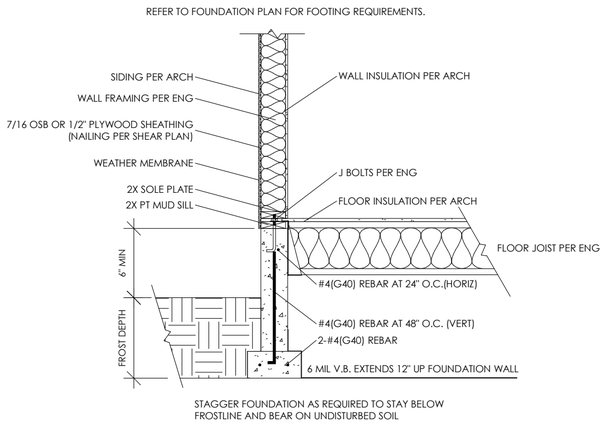
MODERN MILL ADU (MIRROED)
CITY OF BEND LIMITS

MAIN LEVEL SHEAR

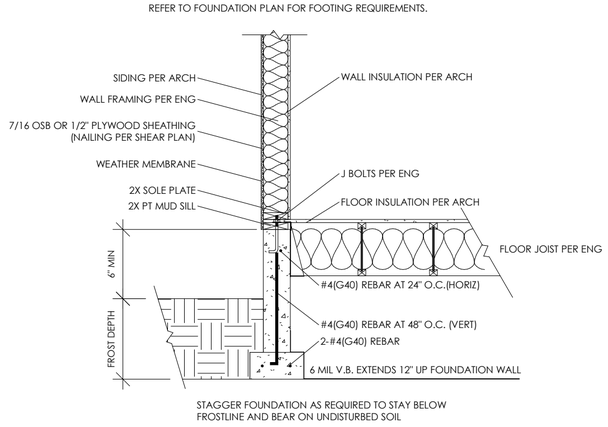
FILE:
SCALE: 1/4" = 1'-0"
DATE: 1/29/26

S4

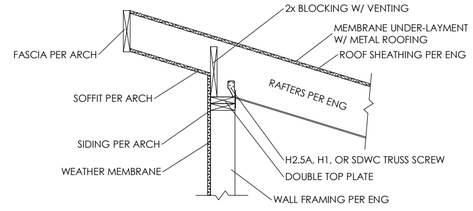
DEVIATION STATEMENT
ANY DEVIATION FROM ARCHITECTURAL OR STRUCTURAL PLAN REQUIRES REVIEW BY LICENSED ENGINEER.



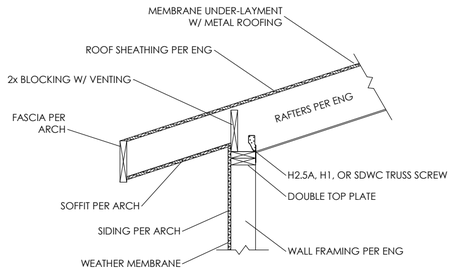
A **EXTERIOR FOUNDATION DETAIL**
1/2" = 1'-0"



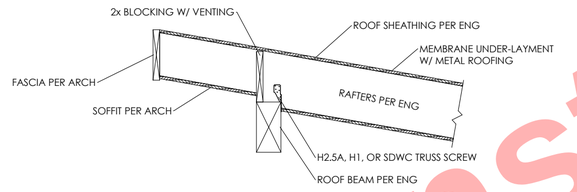
B **EXTERIOR FOUNDATION DETAIL (PERPENDICULAR)**
1/2" = 1'-0"



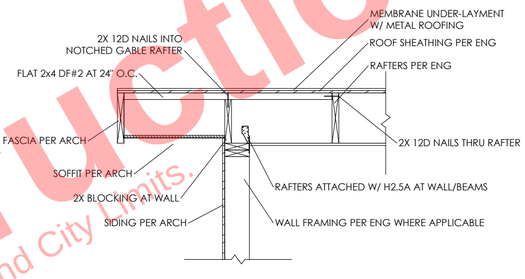
C **ROOF CONNECTION DETAIL (VAULTED WALL)**
1/2" = 1'-0"



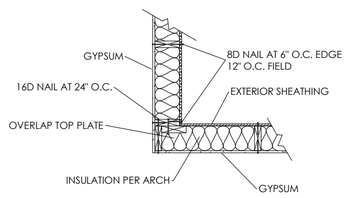
D **ROOF CONNECTION DETAIL (VAULTED WALL)**
1/2" = 1'-0"



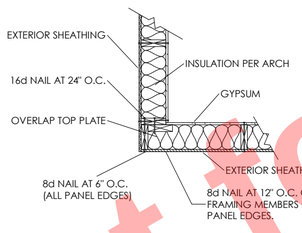
E **ROOF CONNECTION DETAIL (VAULTED BEAM)**
1/2" = 1'-0"



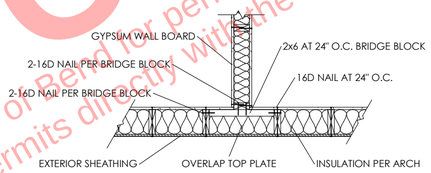
F **ROOF CONNECTION DETAIL (GABLE)**
1/2" = 1'-0"



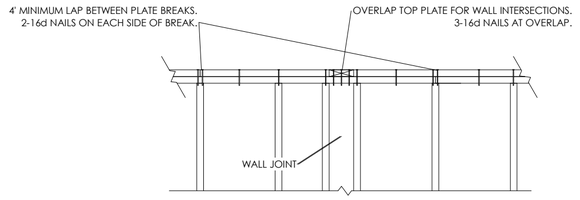
G **EXTERIOR WALL FRAME (INSIDE CORNER)**
1/2" = 1'-0"



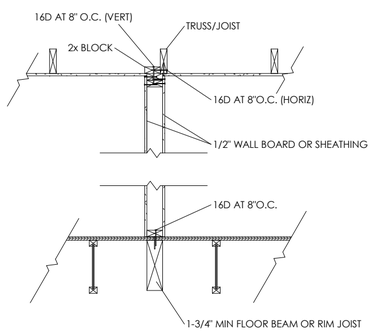
H **EXTERIOR WALL FRAME (OUTSIDE CORNER)**
1/2" = 1'-0"



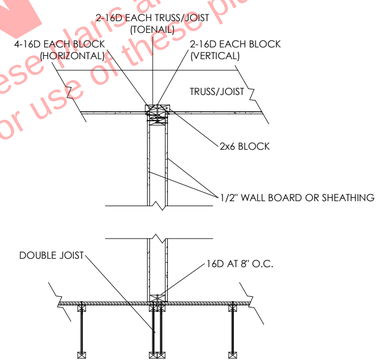
I **EXTERIOR WALL FRAME (WALL JOINT)**
1/2" = 1'-0"



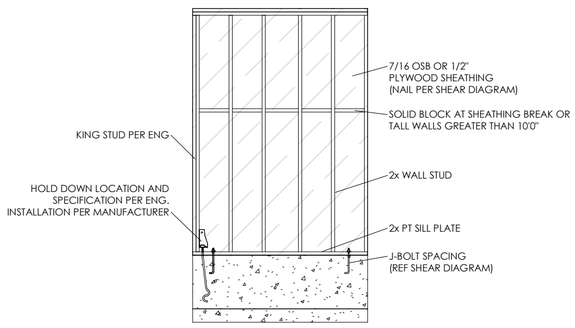
K **TOP PLATE FRAMING**
1/2" = 1'-0"



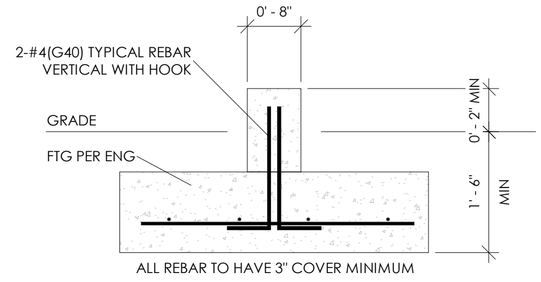
L **INTERIOR SHEAR WALL (FLOOR BEAM)**
1/2" = 1'-0"



M **INTERIOR SHEAR WALL (TYP) (PARA JOIST OPT)**
1/2" = 1'-0"



N **SHEAR WALL**
1/4" = 1'-0"



O **PIER FOOTING**
3/4" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
87488PE
OREGON
JANUARY 08, 2019
GARRETT J BANTON
EXPIRES: 12/31/2027

Garrett J. Banton, PE
3008 NE Charleston Ct.
Bend, OR 97701
Phone: (541) 306-7893
team@bantonengineering.com

BANTON ENGINEERING, INC.

MODERN MILL ADU (MIRROED)
CITY OF BEND LIMITS

DETAILS

FILE:
SCALE: As indicated
DATE: 1/29/26

S5

MXZ-2D20NLHZ
20,000 BTU/H HYPER HEAT PUMP OUTDOOR UNIT

Job Name:

System Reference: Date:

GENERAL FEATURES

- Built-in base pan heater
- Compressor overcurrent detection
- Compressor thermal protection
- Fan motor overheating/voltage protection
- High pressure protection
- Hyper-Heating INVERTER®: Hyper-heating performance offers 100% heating capacity at 5°F and 75% heating capacity at -13°F
- INVERTER-driven compressor: An inverter-driven compressor generates the precise capacity needed to maintain a temperature set point.
- Quiet operation: Outdoor units are as quiet as a typical conversation, and most indoor units are whisper quiet.
- Seacoast protection: Seacoast protection on heat exchanger and base panel (rated for 2,000 hrs. in accordance with ASTM B117 testing)
- Thermal Differential 1°F

Specifications			System
Unit Type			MXZ-2D20NLHZ
Cooling at 95F[1] (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	20,000 // 20,000 // 20,000
	Rated Capacity	Btu/h	18,000 // 19,000 // 20,000
	Minimum Capacity	Btu/h	11,600 // 13,800 // 16,000
	Maximum Power Input	W	2,680 // 2,340 // 2,000
	Rated Power Input	W	1,333 // 1,568 // 1,802
	Power Factor (208V)	%	0.99 // 0.99 // 0.99
	Power Factor (230V)	%	0.99 // 0.99 // 0.99
Heating at 47F[2] (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	25,500 // 25,500 // 25,500
	Rated Capacity	Btu/h	22,000 // 22,000 // 22,000
	Minimum Capacity	Btu/h	11,400 // 13,850 // 16,300
	Maximum Power Input	W	2,400 // 2,520 // 2,640
	Rated Power Input	W	1,612 // 1,650 // 1,688
	Power Factor (208V)	%	0.99 // 0.99 // 0.99
	Power Factor (230V)	%	0.99 // 0.99 // 0.99
Heating at 17F[3] (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	22,000 // 22,000 // 22,000
	Rated Capacity	Btu/h	14,300 // 13,400 // 12,500
	Maximum Power Input	W	3,300 // 3,325 // 3,350
	Rated Power Input	W	1,518 // 1,501 // 1,510
Heating at 5F[4] (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	22,000 // 22,000 // 22,000
	Maximum Power Input	W	3,220 // 3,256 // 3,256
Heating at -13F[8] (Non-Ducted // Mixed // Ducted)	Maximum Capacity	Btu/h	19,200 // 19,200 // 19,200
	Maximum Power Input	W	2,622 // 2,622 // 2,622
Efficiency (Non-Ducted // Mixed // Ducted)	SEER2[1]		19.30 // 16.80 // 14.30
	EER2[1]		13.50 // 12.30 // 11.10
	HSPF2 (IV)[2]		10 // 8.95 // 7.90
	COP at 47°F[2]		4.00 // 3.90 // 3.82
	COP at 17°F at Maximum Capacity[3]		1.94 // 1.92 // 1.92
	COP at 5°F at Maximum Capacity[4]		2 // 1.98 // 1.98
	ENERGY STAR® Certified		Yes // Yes // Yes
Electrical	Electrical Power Requirements	V AC / V AC, ø, Hz	208 / 230, 1, 60
	Guaranteed Voltage Range	V AC	198 - 253
	Voltage: Indoor - Outdoor, S1-S2	V AC	208/230
	Voltage: Indoor - Outdoor, S2-S3	V DC	24
	Recommended Wire Size (Indoor - Outdoor)	AWG	14
	Short-circuit Current Rating (SCCR)	kA	5
	MCA	A	21.7
	MOCP	A	38

NOTES
[1]Cooling at 95°F (Indoor: 80°F DB, 67°F WB // Outdoor: 95°F DB, 75°F WB)
[2]Heating at 47°F (Indoor: 70°F DB, 60°F WB // Outdoor: 47°F DB, 43°F WB)
[3]Heating at 17°F (Indoor: 70°F DB, 60°F WB // Outdoor: 17°F DB, 15°F WB)
[4]Heating at 5°F (Indoor: 70°F DB, 60°F WB // Outdoor: 5°F DB, 4°F WB)
[8]Heating at -13°F (Indoor: 70°F DB, 60°F WB // Outdoor: -13°F DB, -14°F WB)
Capacity varies based on the number of indoor units operating and the model of the Multi-zone Outdoor Unit. For reference to connected capacity charts, please refer to Multi-zone Outdoor Unit Operational Performance.
For actual capacity performance based on indoor unit type and number of indoor units connected, please refer to MXZ Operational Performance.
Although the maximum connectable capacity is 130%, the outdoor unit cannot provide more than 100% of the rated capacity.
Please utilize this over capacity capability for load shedding or applications where it is known that all connected units will NOT be operating at the same time.
* Indoor/Outdoor Unit Operating Temperature Range (Cooling Air Temp [Maximum / Minimum]):
• Applications should be restricted to comfort cooling only; equipment cooling applications are not recommended for low ambient temperature conditions.
** Outdoor Unit Operating Temperature Range (Cooling Thermal Lock-out / Re-start Temperatures; Heating Thermal Lock-out / Re-start Temperatures):
• System cuts out in heating mode and automatically restarts at these temperatures.

SPECIFICATIONS: MXZ-2D20NLHZ

Specifications			System
Unit Type			MXZ-2D20NLHZ
Outdoor Unit	Fan Motor Full Load Amperage	A	1.74
	Fan Motor Output	W	88
	Defrost Method		Reverse Cycle
	Blue Fin Heat Exchanger Coating		Yes
	Airflow Rate Cooling/Heating	CFM	2,119 / 2,228
	Sound Pressure Level, Cooling[1]	dB (A)	51
	Sound Pressure Level, Heating[2]	dB (A)	53
	Compressor Type		Twin Rotary
	Compressor Model		SRB220FQYMC-L
	Compressor Oil Type // Charge	Type // oz	RM68EH // 20.3
	External Finish Color		Munsell 3.0Y 7.8/1.1
	Base Pan Heater		Built-in
	Unit Dimensions (W x D x H)	inch x inch x inch [mm x mm x mm]	37-11/32 x 13 x 31-11/32 [950 x 330 x 796]
	Package Dimensions (W x D x H)	inch x inch x inch [mm x mm x mm]	41-11/32 x 17-5/16 x 38-31/32 [1,050 x 440 x 990]
	Unit Weight	lbs [kg]	137 [62]
	Package Weight	lbs [kg]	163 [74]
ODU Operating Temp. Range	Cooling Intake Air Temp (Maximum / Minimum[C])	°FDB	115 / 14
	Cooling Thermal Lock-out / Re-start Temperatures	°FDB	10 / 14
	Heating Intake Air Temp [Maximum / Minimum]	°FDB, °FWB / °FDB, °FWB	75, 65 / -12, -13
	Heating Thermal Lock-out / Re-start Temperatures**	°FDB	-22.5 / -14
Refrigerant	Type		R454B
	Pre-Charged Refrigerant Amount	lbs, oz	5, 5
	Maximum Pre-Charged Piping Length	ft	164
IDU Connection	Minimum Number of Connected IDU		2
	Maximum Number of Connected IDU		2
	Minimum Connected Capacity	Btu/h	12,000
	Maximum connected capacity	Btu/h	24,000
Piping	Liquid Pipe Size O.D. (Flared)	inch	A: 1/4 B: 1/4
	Gas Pipe Size O.D. (Flared)	inch	A: 3/8 B: 3/8
	Total Piping Length	ft [m]	164 [50]
	Farthest Piping Length	ft [m]	82 [25]
	Maximum Height Difference*[B], ODU above IDU	ft [m]	49 [15]
	Maximum Height Difference*[B], ODU below IDU	ft [m]	49 [15]
	Maximum Number of Bends for IDU		50

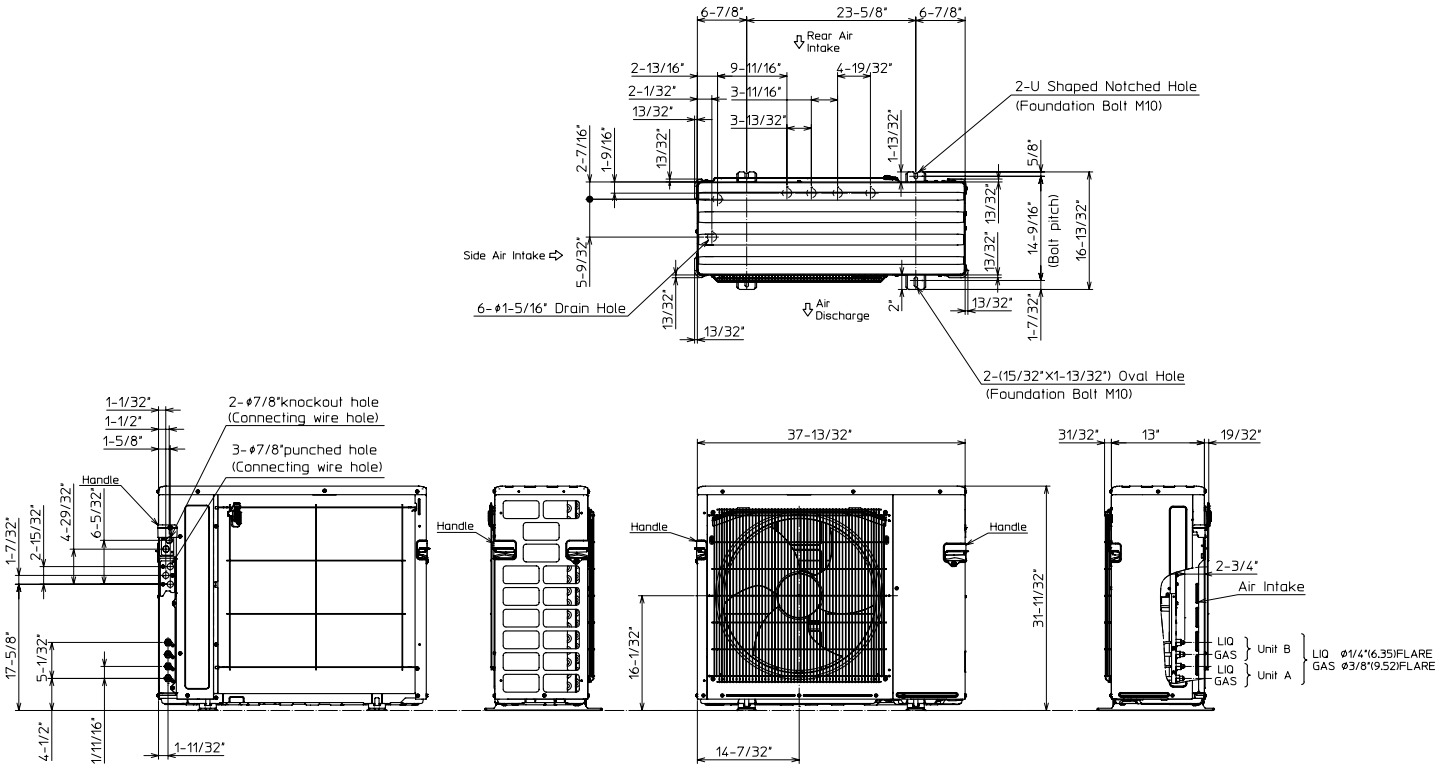
NOTES
[1]Cooling at 95°F (Indoor: 80°F DB, 67°F WB // Outdoor: 95°F DB, 75°F WB)
[2]Heating at 47°F (Indoor: 70°F DB, 60°F WB // Outdoor: 47°F DB, 43°F WB)
[3]Heating at 17°F (Indoor: 70°F DB, 60°F WB // Outdoor: 17°F DB, 15°F WB)
[4]Heating at 5°F (Indoor: 70°F DB, 60°F WB // Outdoor: 5°F DB, 4°F WB)
[8]Heating at -13°F (Indoor: 70°F DB, 60°F WB // Outdoor: -13°F DB, -14°F WB)
Capacity varies based on the number of indoor units operating and the model of the Multi-zone Outdoor Unit. For reference to connected capacity charts, please refer to Multi-zone Outdoor Unit Operational Performance.
For actual capacity performance based on indoor unit type and number of indoor units connected, please refer to MXZ Operational Performance.
Although the maximum connectable capacity is 130%, the outdoor unit cannot provide more than 100% of the rated capacity.
Please utilize this over capacity capability for load shedding or applications where it is known that all connected units will NOT be operating at the same time.
* Indoor/Outdoor Unit Operating Temperature Range (Cooling Air Temp [Maximum / Minimum]):
• Applications should be restricted to comfort cooling only; equipment cooling applications are not recommended for low ambient temperature conditions.
** Outdoor Unit Operating Temperature Range (Cooling Thermal Lock-out / Re-start Temperatures; Heating Thermal Lock-out / Re-start Temperatures):
• System cuts out in heating mode and automatically restarts at these temperatures.

OUTDOOR UNIT ACCESSORIES: MXZ-2D20NLHZ

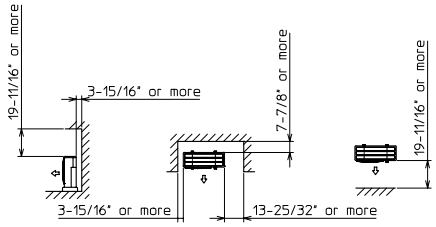
Stand	18 Single Fan Stand	QSMS1801M
	24 Single Fan Stand	QSMS2401M
	Condenser Wall Bracket - Stainless Steel Finish	QSWBSS
	Condenser Wall Bracket	QSWB2000M-1
	Outdoor Unit 3-14 inch Mounting Base Pair - Plastic	DSD-400P
	Outdoor Unit Stand 12 High	QSMS1201M
Port Adaptor	Adaptor 1/2 x 3/8	PAC-SK88RJ-E
	Adaptor 1/2 x 5/8	PAC-SK89RJ-E
	Adaptor 1/4 x 3/8	PAC-493PI
	Adaptor 3/8 x 1/2	ADP3812
	Adaptor 3/8 x 5/8	PAC-SK90RJ-E
Mini-Split Wire	14 Gauge 4 wire Armored MiniSplit Cable250 ft roll	SW144-250
	14 Gauge 4 wire Armored MiniSplit Cable50 ft roll	SW144-50
	14 Gauge 4 wire MiniSplit Cable250 ft roll	S144-250
	14 Gauge 4 wire MiniSplit Cable50 ft roll	S144-50
	16 Gauge 4 wire Armored MiniSplit Cable250 ft roll	SW164-250
	16 Gauge 4 wire Armored MiniSplit Cable50 ft roll	SW164-50
	16 Gauge 4 wire MiniSplit Cable250 ft roll	S164-250
	16 Gauge 4 wire MiniSplit Cable50 ft roll	S164-50
Air Outlet Guide	Air Outlet Guide 1 Piece	PAC-SH96SG-E (two pieces are required)
Drain Socket	Drain Socket	PAC-SG60DS-E
Ball Valve	Refrigeration Ball Valve - 1/2	BV12FFSI2
	Refrigeration Ball Valve - 1/4	BV14FFSI2
	Refrigeration Ball Valve - 3/8	BV38FFSI2
	Refrigeration Ball Valve - 5/8	BV58FFSI2
Mounting Pad	Condensing Unit Mounting Pad 16 x 36 x 3	ULTRILITE1
Control Interface	M-NET Interface for MXZ	PAC-IF01MNT-E
Hail Guards	Hail Guard	HG-A9
Snow/Rain Diverter	SnowRain Diverter	SRD-4
Control/Service Tool	Maintenance Tool Interface	PAC-USCMS-MN-1
NOTES		

OUTDOOR UNIT DIMENSIONS: MXZ-2D20NLHZ

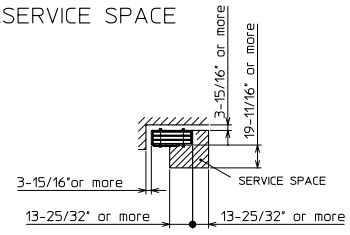
MXZ-2D20NLHZ-U1



1.FREE SPACE



2.SERVICE SPACE



1340 Satellite Boulevard Suwanee, GA 30024
Toll Free: 800-433-4822 https://mitsubishicomfort.com

METUS_2025-05_PROPIN

Building Safety Division
City of Bend
(541) 388-5580
building@bendoregon.gov
710 NW Wall Street, Bend OR 97703

This submittal form is to be completed as part of your application with the City of Bend. *Download this form before completing fillable fields,* then upload with your application through the Online Permit Center at www.bendoregon.gov/permitcenter.

RESIDENTIAL MINI-SPLIT WORKSHEET

Oregon Building Codes Division requires that an additional heat source is available when installing mini-split or other heating/cooling absorption unit (heat pump) in Central Oregon; a mini-split system cannot be the sole source of heat for an entire home.

Please indicate the additional heat source for an entire home.

- ☐ Electric Wall Heater (i.e. Cadet heater)
- ☐ Furnace
- ☐ Radiant heat provided throughout residence
- ☐ Electric baseboard provided throughout residence
- ☐ Hydronic heat provided throughout residence
- ☑ * Other: Mini-split as sole heat source

  * Mini-split as the sole heat source: A heat calculation showing the heat load at design conditions and the manufacturer's performance data must be provided for the unit showing heating output of 68°F in conditions of 5°F.
  * Application to be reviewed by Plans Examiner

Every dwelling unit shall be provided with heating facilities capable of maintaining a minimum room temperature of 68°F at a point 3 feet above the floor and 2 feet from exterior walls in all habitable rooms at the design temperature of 5°F.

The following uses are prohibited within all yard setbacks per Bend Development Code 2.1.300.F.7: satellite dishes greater than 18 inches in diameter, heat pumps and other similar objects, unless screened for visual and noise abatement by a solid enclosure 2 feet higher than the object/use being screened. In no instance shall these uses be allowed within the front yard setbacks.

°=degrees F=Fahrenheit

Effective Aug. 5, 2025
(Ref.: ORS 455.610)

2023 Oregon Residential Specialty Code Amendments

BCD Building Codes Division
Department of Consumer and Business Services

Summary: In accordance with Senate Bill 83 (2025) this amendment makes Section R327, *Wildfire Hazard Mitigation*, available for local adoption and applicable to new construction of new ORSC governed buildings.

This code amendment was adopted by temporary rule effective Aug. 5, 2025 through Jan. 2, 2026 and subsequently adopted by permanent rule effective Jan. 1, 2026.

The following amendments are adopted as part of the 2023 Oregon Residential Specialty Code (ORSC).

The changes are denoted as follows:

Blue/underline = Added code language
~~Red/strikethrough~~ = Deleted code language

SECTION R302—FIRE-RESISTANT CONSTRUCTION

R302.2.12 Townhouse roof coverings. In addition to the requirements of Chapter 9, structurally independent townhouses shall be provided with a minimum Class C roof covering, and structurally dependent townhouses shall be provided with a minimum Class B roof covering.

Exceptions:

1. Structurally dependent townhouses may use Class C roof coverings where all of the following conditions are met:
   1.1. The townhouses are not more than two stories in height.
   1.2. The townhouses do not have more than 6,000 square feet (557 m^2) of projected roof area.
   1.3. There is not less than 3 feet (914 mm) from the extremity of the roof to the exterior lot line or an assumed lot line on all sides except for street fronts.
2. Where adopted by the local *municipality*, roof coverings for townhouses located in areas determined by the *municipality* to be "Wildfire Hazard Zones" shall be in accordance with Section R327.

SECTION R327—WILDFIRE HAZARD MITIGATION

R327.1 General. Where adopted by the local *municipality*, the provisions of this section shall apply to new *dwellings* and their *accessory structures* required ~~by a local *municipality* via local ordinance~~ to be protected against *wildfire*.

~~Nothing in the code prevents a local *municipality* from modifying the requirements of this section for any lot, property or *dwelling*, or the remodel, replacement or reconstruction of a *dwelling* within the jurisdiction, as provided in Section R104.10.~~

R327.1.1 Local adoption. The provisions of this section may be adopted in whole by a *municipality* ~~via local ordinance~~ without following ORS 455.040 or OAR 918-020-0370. ~~Where a *municipality* chooses to adopt these provisions locally, the following shall be included in the adopting ordinance:~~

~~1. Identification of areas subject to the additional construction standards of Section R327.~~
~~2. A transition plan or other measures to address subdivisions already under development at the time of local adoption.~~
~~3. A local appeal process for customers to follow. Where a *municipality* has previously adopted the provisions of Section R327 locally, the requirements of Section R327.1.1 do not apply and the existing local ordinance may continue without change, to include those based on prior iterations of this section.~~

R327.1.2 Notification. Where a *municipality* adopts Section R327 locally, ~~or where a *municipality* has previously adopted Section R327 locally,~~ the *municipality* shall notify the State of Oregon, Building Codes Division, and ~~provide a copy of the locally adopted map identifying~~ identify areas of the jurisdiction where the additional construction standards of Section R327 are required.

R327.1.3 Application. Where ~~required~~ adopted by a local *municipality* ~~via local ordinance~~, newly constructed *dwellings*, and their *accessory structures*, ~~and new *additions* to existing *dwellings* and their *accessory structures*~~ located in areas designated by the *municipality* shall be protected against *wildfire* in accordance with this section. ~~Where existing exterior elements that are within the scope of this section are replaced in their entirety, the replacement shall be made in accordance with the provisions of this section.~~

Exceptions:

1. Nonhabitable detached *accessory structures* with a *floor area* of not greater than 400 square feet (37.2 m^2) located not less than 50 feet (15 240 mm) from all ~~other~~ structures on the *lot* that contain habitable space.
2. ~~Partial *repairs* made in accordance with Section R105.2.2.~~
2. Structures exempted by ORS 455.315.
3. Detached accessory *membrane-covered frame structures*

R327.2 Definitions. The following words and terms shall, for purposes of Section R327, have the meanings shown herein. See Chapter 2 for general definitions.

HEAVY TIMBER. For the use in this section, *heavy timber* shall be sawn lumber or glued-laminated wood with the smallest minimum nominal dimension of 4 inches (102 mm). *Heavy timber* walls or floors shall be sawn or glued-laminated planks splined, tongue-and-groove or set close together and well spiked.

IGNITION-RESISTANT MATERIAL. A type of building material that resists ignition or sustained flaming combustion sufficiently so as to reduce losses from wildland urban interface conflagrations under worst-case weather and fuel conditions with *wildfire exposure* of burning embers and small flames. Such materials include any product designed for exterior exposure that, when tested in accordance with ASTM E84 or UL 723 for surface burning characteristics of building materials, extended to a 30-minute duration, exhibits a flame spread index of not more than 25, shows no evidence of significant progressive combustion, and whose flame front does not progress more than $10^1/_2$ feet (3200 mm) beyond the centerline of the burner at any time during the test.

NONCOMBUSTIBLE MATERIAL. Any material that in the form in which it is used and under the conditions anticipated will not ignite, burn, support combustion or release flammable vapors when subjected to fire or heat in accordance with ASTM E136.

WILDFIRE. Any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property or resources.

WILDFIRE EXPOSURE. One or a combination of circumstances exposing a structure to ignition, including radiant heat, convective heat, direct flame contact and burning embers being projected by a vegetation fire to a structure and its immediate environment.

R327.3 Roofing. Roofing shall be asphalt shingles in accordance with Section R905.2, slate shingles in accordance with Section R905.6, metal roofing in accordance with Section R905.4, tile, clay or concrete shingles in accordance with Section R905.3 or other *approved* roofing that is deemed to be equivalent to a minimum Class B-rated roof assembly. Wood shingle and shake roofs are not permitted on structures ~~in areas designated by the *municipality* that fall within the scope of this section.~~

Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be fireblocked with *approved* materials, or have one layer of minimum 72-pound (32.6 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909 installed over the combustible decking.

Where valley flashing is installed, the flashing shall be not less than 0.019-inch (0.48 mm) No. 26 gage galvanized sheet corrosion-resistant metal installed over not less than one layer of minimum 72-pound (32.6 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909 not less than 36-inch-wide (914 mm) running the full length of the valley.

R327.3.1 Gutters and downspouts. Where provided, ~~required, roof~~ gutters and downspouts shall be constructed of *noncombustible materials* and be provided with an *approved* means to prevent accumulation of leaves and debris in the gutter.

R327.3.2 Ventilation. Where provided, the minimum net area of ventilation openings for enclosed attics, enclosed soffit spaces, enclosed rafter spaces and underfloor spaces shall be in accordance with Sections R408 and R806.

All ventilation openings shall be covered with noncombustible corrosion-resistant metal wire mesh, vents designed to resist the intrusion of burning embers and flame, or other *approved* materials or devices.

Ventilation mesh and screening shall be a minimum of $^1/_{16}$-inch (1.6 mm) and a maximum of $^1/_8$-inch (3.2 mm) in any dimension.

R327.3.2.1 Eaves, soffits and cornices. Ventilation openings shall not be installed on the underside of eaves, soffits or cornices.

Exceptions:

1. The *building official* may *approve* eave, soffit or cornice vents that are manufactured to resist the intrusion of flame and burning embers.
2. Ventilation openings complying with the requirements of Section R327.3.2 may be installed on the underside of eaves, soffits or cornices where the opening is located 12 feet (3658 mm) or greater above *grade* or the surface below.

R327.3.3 Exterior walls. The *exterior wall covering* or wall assembly shall comply with one of the following requirements:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. *Heavy timber* assembly.
4. Log wall construction assembly.
5. Wall assemblies that have been tested in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in ASTM E2707, complying with the conditions of acceptance listed in Section R327.3.3.2.

Exception: Any of the following shall be deemed to meet the assembly performance criteria and intent of this section:

1. One layer of $^5/_8$-inch (15.9 mm) Type X exterior gypsum sheathing applied behind the *exterior wall covering* or cladding on the exterior side of the framing.
2. The exterior portion of a 1-hour fire-resistance-rated *exterior wall* assembly designed for exterior fire exposure, including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association *Fire Resistance and Sound Control Design Manual*.

R327.3.3.1 Extent of exterior wall covering. *Exterior wall coverings* shall extend from the top of the foundation to the roof and terminate at 2-inch (50.8 mm) nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves or soffits, shall terminate at the underside of the enclosure.

R327.3.3.2 Conditions of acceptance. ASTM E2707 tests shall be conducted in triplicate and the following conditions of acceptance shall be met. If any one of the three replicates do not meet the conditions of acceptance, three additional tests shall be conducted. All additional tests shall meet the following conditions of acceptance:

1. Absence of flame penetration through the wall assembly at any time during the test.
2. Absence of evidence of glowing combustion on the interior surface of the assembly at the end of the 70-minute test.

R327.3.4 Overhanging projections. All exterior projections (exterior balconies, carports, decks, patio covers, porch ceilings, unenclosed roofs and floors, overhanging buildings and similar architectural appendages and projections) shall be protected as specified in this section.

R327.3.4.1 Enclosed roof eaves, soffits and cornices. The exposed underside of rafter or truss eaves and enclosed soffits, where any portion of the framing is less than 12 feet (3658 mm) above *grade* or similar surface below, shall be protected by one of the following:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. One layer of $^5/_8$-inch (15.9 mm) Type X exterior gypsum sheathing applied behind an exterior covering on the underside of the rafter tails, truss tails or soffit.
4. The exterior portion of a 1-hour fire-resistance-rated *exterior wall* assembly applied to the underside of the rafter tails or soffit, including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association *Fire Resistance and Sound Control Design Manual*.
5. Soffit assemblies with an underside surface that meets the performance criteria in Section R327.3.4.5 when tested in accordance ASTM E2957.

Exceptions: The following materials do not require protection required by this section:

1. Eaves and soffits where all portions of the framing members are 12 feet (3658 mm) or greater above *grade*, and 2-inch (610 mm) nominal eave fireblocking is provided between roof framing members from the wall top plate to the underside of the roof sheathing.
2. Gable end overhangs and roof assembly projections beyond an *exterior wall* other than at the lower end of the rafter tails.
3. Fascia and other architectural trim boards.

R327.3.4.2 Exterior patio and porch ceilings. The exposed underside of exterior patio and porch ceilings greater than 200 square feet (18.58 m^2) in area and less than 12 feet (3658 mm) above *grade* shall be protected by one of the following:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. One layer of $^5/_8$-inch (15.9 mm) Type X exterior gypsum sheathing applied behind the exterior covering on the underside of the ceiling.
4. The exterior portion of a 1-hour fire-resistance-rated *exterior wall* assembly applied to the underside of the ceiling assembly, including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association *Fire Resistance and Sound Control Design Manual*.
5. Porch ceiling assemblies with a horizontal underside that meet the performance criteria in Section R327.3.4.5 when tested in accordance with the test procedures set forth in ASTM E2957.

Exception: Architectural trim boards.

R327.3.4.3 Floor projections. The exposed underside of cantilevered floor projections less than 12 feet (3658 mm) above *grade* or the surface below shall be protected by one of the following:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. One layer of $^5/_8$-inch (15.9 mm) Type X exterior gypsum sheathing applied behind an exterior covering on the underside of the floor projection.
4. The exterior portion of a 1-hour fire-resistance-rated *exterior wall* assembly applied to the underside of the floor projection, including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association *Fire Resistance and Sound Control Design Manual*.
5. An assembly that meets the performance criteria in Section R327.3.4.5 when tested in accordance with ASTM E2957.

Exception: Architectural trim boards.

R327.3.4.4 Underfloor protection. The underfloor area of elevated structures shall be enclosed to *grade* in accordance with the requirements of this section, or the underside of the exposed underfloor shall be protected by one of the following:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. One layer of $^5/_8$-inch (15.9 mm) Type X exterior gypsum sheathing applied behind an exterior covering on the underside of the floor assembly.
4. The exterior portion of a 1-hour fire-resistance-rated *exterior wall* assembly applied to the underside of the floor, including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association *Fire Resistance and Sound Control Design Manual*.
5. An assembly that meets the performance criteria in Section R327.3.4.5 when tested in accordance with ASTM E2957.

Exception: *Heavy timber* structural columns and beams do not require protection.

R327.3.4.5 Conditions of acceptance. ASTM E2957 tests shall be conducted in triplicate, and the following conditions of acceptance shall be met. If any one of the three replicates do not meet the conditions of acceptance, three additional tests shall be conducted. All additional tests shall meet the following conditions of acceptance:

1. Absence of flame penetration of the eaves or horizontal projection assembly at any time during the test.
2. Absence of structural failure of the eaves or horizontal projection subassembly at any time during the test.
3. Absence of sustained combustion of any kind at the conclusion of the 40-minute test.

R327.3.5 Walking surfaces. Deck, porch and balcony walking surfaces located greater than 30 inches (762 mm) and less than 12 feet (3658 mm) above *grade* or the surface below shall be constructed with one of the following materials:

1. Materials that comply with the performance requirements of Section R327.3.5.1 when tested in accordance with both ASTM E2632 and ASTM E2726.
2. *Ignition-resistant* materials that comply with the performance requirements of Section R327.2 when tested in accordance with ASTM E84 or UL 723.
3. Exterior fire-retardant-treated wood.
4. *Noncombustible material*.
5. Any material that complies with the performance requirements of Section R327.3.5.2 when tested in accordance with ASTM E2632, where the *exterior wall covering* of the structure is noncombustible or *ignition-resistant* material.
6. Any material that complies with the performance requirements of ASTM E2632, where the *exterior wall covering* of the structure is noncombustible or *ignition-resistant* material.

   Exception: *Wall covering* material may be of any material that otherwise complies with this chapter where the decking surface material complies with the performance requirements ASTM E84 with a Class B flame spread rating.

Exception: Walking surfaces of decks, porches and balconies not greater than 200 square feet (18.58 m^2) in area, where the surface is constructed of nominal 2-inch (51 mm) lumber.

R327.3.5.1 Requirements for Section R327.3.5, Item 1. The material shall be tested in accordance with ASTM E2632 and ASTM E2726, and shall comply with the conditions of acceptance in Sections R327.3.5.1.1 and R327.3.5.1.2. The material shall also comply with the performance requirements of Section R327.2 for ignition-resistant material when tested in accordance with ASTM E84 or UL 723.

R327.3.5.1.1 Conditions of acceptance. ASTM E2632 tests shall be conducted in triplicate and the following conditions of acceptance shall be met. If any one of the three replicates do not meet the conditions of acceptance, three additional tests shall be conducted. All additional tests shall meet the following conditions of acceptance:

1. Peak heat release rate of less than or equal to 25 kW/ft^2 (269 kW/m^2).

2. Absence of sustained flaming or glowing combustion of any kind at the conclusion of the 40-minute observation period.
3. Absence of falling particles that are still burning when reaching the burner or floor.

R327.3.5.1.2 Conditions of acceptance. ASTM E2762 tests shall be conducted in triplicate and the following conditions of acceptance shall be met. If any one of the three replicates do not meet the conditions of acceptance, three additional tests shall be conducted. All of the additional tests shall meet the following conditions of acceptance:

1. Absence of sustained flaming or glowing combustion of any kind at the conclusion of the 40-minute observation period.
2. Absence of falling particles that are still burning when reaching the burner or floor.

R327.3.5.2 Requirements for Section R327.3.5, Item 6. The material shall be tested in accordance with ASTM E2632 and shall comply with the following conditions of acceptance. The test shall be conducted in triplicate and the peak heat release rate shall be less than or equal to 25 kW/ft^2 (269 kW/m^2). If any one of the three replicates do not meet the conditions of acceptance, three additional tests shall be conducted. All of the additional tests shall meet the conditions of acceptance.

R327.3.6 Glazing. Exterior windows, windows within exterior doors, and skylights shall be tempered glass, multilayered glazed panels, glass block or have a fire-resistance rating of not less than 20 minutes.

For questions about the 2023 ORSC, visit the division website to contact a building code specialist.

Lateral and Gravity Loads Analysis

(Engineering Design)

1/29/2026

Modern Mill ADU (Pre-Approved)
City Limits
Bend, OR

Project Specifications

Plan Evaluated	SJC "Moder Mill ADU"		
Design Summary	Occupancy Group R, Construction Type VB		
Structural Drawings	S1 Foundation		1/29/2026
	S2 Subfloor Framing		1/29/2026
	S3 Main Floor Framing		1/29/2026
	S4 Main Level Shear		1/29/2026
	S5 Details		1/29/2026

Orientation	See drawings for orientation.		
Design Parameters	Basic Wind Speed	99 MPH, Exp C	[IBC]
	Seismic Design	0.38g	[ASCE7-16 Zip Code]
	Soil Bearing	1500 PSF	[Table R401.4.1]
	Ground Snow Load	50 PSF	[SEAO-ASCE7-16]
	Roof Dead Load	20 PSF	
	Floor Live Load	40 PSF	
	Floor Dead Load	12 PSF	

NOTE: All Specifications are minimums. Upgraded size and quality is acceptable.
WARNING: It is the responsibility of the user of this document to ensure that all the technical information is properly transferred to the applicable construction documents and that it is properly implemented during the construction of the structure. Failure to incorporate all the requirements of this design may invalidate the integrity of the structure and release responsibility from the engineer of record.

BANTON ENGINEERING, INC.
Garrett J. Banton, PE
Engineering License #87488PE (Oregon)
3008 NE Charleston Ct.
Bend, Oregon 97701
Business Phone: (541) 306-7893

REGISTERED PROFESSIONAL ENGINEER
87488PE
OREGON
JANUARY 08, 2019
GARRETT J BANTON
EXPIRES: 12/31/2027

Wind and Seismic Force Calculation

Based on IBC and ASCE 7-16 Directional Procedure, Chapter 27.2

Wind Pressure Boundary Conditions		
Risk Category	II	
Ultimate Wind Speed	99 Mph	[IBC]
Wind directionality Factor (Kd)	0.85	[ASCE 7-16, Table 26.6-1]
Wind exposure Category	C	[ASCE 7-16, 26.7]
Topographic Factor (Kzt)	1 $\frac{H}{L} < 0.2$	[ASCE 7-16, Figure 26.8-1]
Gust Effect Factor (G)	0.85	[ASCE 7-16, 26.9]
Enclosure Classification	Enclosed	[ASCE 7-16, 26.11]
Internal Pressure Coefficient (Gcpi)	0.18	[ASCE 7-16, 26.11]
Velocity Pressure Exposure Coefficient (Kh)	0.85	[ASCE 7-16, Table 27.3-1]
Velocity Pressure (qh)	18.1 Psf	
External Pressure Coefficients (Cp) [Walls, Roof]	0.8, 0.4	[ASCE 7-16, Table 27.3-1]
Wind Pressure (p)	17.2 Psf	
Flat Walls Use	17.2 Psf	

Direction F/B Wind Pressure

Flat Wall Height	h = 12'	
Wall Horizontal	w = 36'	
Wall Wind Force	17.2 Psf x 12' x 36' = 7430.4 lb	[ASCE 7-16, 27.1.5]
Slope Roof Height	h = 0' (Pitch: 3:12)	
Roof Horizontal	w = 36'	
Roof Wind Force	17.2 Psf x 0' x 36' = 0 lb	
Average Wind Pressure	17.2 Psf (Weighted Average)	
Total Wind Pressure	7430.4 lb + 0 lb = 7430.4 lb	

Direction L/R Wind Pressure

Flat Wall Height	h = 10'	
Wall Horizontal	w = 16'	
Wall Wind Force	17.2 Psf x 10' x 16' = 2752 lb	[ASCE 7-16, 27.1.5]
Slope Roof Height	h = 0' (Pitch: 3:12)	
Roof Horizontal	w = 16'	
Roof Wind Force	17.2 Psf x 0' x 16' = 0 lb	
Average Wind Pressure	17.2 Psf (Weighted Average)	
Total Wind Pressure	2752 lb + 0 lb = 2752 lb	

Seismic Force Calculation

Design Short-Period Spectral Acceleration (S_{ds})	0.38g	[ASCE 7-16, Ch 11.4.5]
Seismic Response Coefficient (C_s)	0.0588	[ASCE 7-16, Cl 12.8.1.1]

Base Shear: V = Cs x W = 0.0588 x 42480 = 2498 lb

Governing Forces

7430.4 lb (F/B) - Wind Governs

2752 lb (L/R) - Wind Governs

Wind Force/ Seismic Wall Resistance Summary

1. Wind Force: IBC – ASCE7-16 (Ult wind speed 99 mph, Exposure C)
2. Seismic: IBC – ASCE7-16 (Seismic Design Sds = 0.38g)
3a. Diaphragms Roof: 5/8" OSB or 5/8" CDX Plywood w/ 8d galv @ 6" O.C. edge and 12" O.C. field
3b. Diaphragms Main Floor 3/4" OSB or Plywood w/ 10d @ " O.C. edge and 12" O.C. Field. 4" concrete

Wall Line	Wind Force (Trib x H x P) [lbs]	Wall Length [ft]	Load [plf]	Shear Wall	Resistance [lbs]	Safety Factor
1WL1 / 1WL8	12' x 12' x 17.2 psf = 2476.8	6.5	381.0	3	2925	
1WL2 / 1WL7	12' x 12' x 17.2 psf = 2476.8	7	353.8	3	3150	
1WL3 / 1WL6	12' x 12' x 17.2 psf = 2476.8	9	275.2	4	3150	
Total F/B 1:	7430.4				9225	124%
1WL10 / 1WL4	8' x 10' x 17.2 psf = 1376	14	98.3	6	3360	
1WL9 / 1WL5	8' x 10' x 17.2 psf = 1376	35	39.3	6	8400	
Total L/R 1:	2752				11760	427%
	NOTE 1: 1WL1/1WL8 HOLD DOWNS ON 2'3" AND 2'3" SECTION.					
	NOTE 2: 1WL1/1WL8 HOLD DOWNS ON 2'6".					

Roof Snow Load Calculation

Based on 2019 OSSC 1603.1.3, ASCE7-16, Chapter 7, SEAO

Ground Snow Load Adjustment	0.007 psf/ft (East of the Cascades)	[OSSC 1608, Table 7-2]
Exposure Factor (Ce)	1 (Exposure C Part Sheltered)	[ASCE7-16, Table 7-2]
Thermal Factor (Ct)	1 (Heated Structure)	[ASCE7-16, Table 7-3]
Importance Factor (I)	1 (Category II Structure)	[Section 7.3, Table 1.5.2]
Cold Roof Slope Factor (Cs)	1 (Fig 7-2a w/ 3:12 pitch)	[ASCE7-16 Section 7.4]

Structure Elevation	4200' ASL	
Ground Snow Load (pg)	50 psf (model at 4229' ASL)	[ASCE7-16, SEAO]
Adjusted Ground Snow Load (pga)	50 psf + 0.007(4200'-4229') = 49.8 psf	[OSSC 1608, Table 7-2]
Flat Roof Snow Load (pf)	0.7 x 1 x 1 x 1 x 49.8 = 34.86 psf	[ASCE7-16 Section 7.3]
Sloped Roof Snow Load (ps)	1 x 34.86 psf = 34.9 psf	[ASCE7-16 Section 7.4]
Snow Load Used	**35 psf**	
Unheated Roof Option	**45 psf**	

Foundation Wall Footings

Note: The following footing and stem wall sizes are minimums and were used in the gravity loadings analysis. All rebar to be specified on drawing schedules.

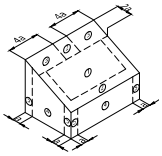
WF1 - 1 Story Exterior Wall Footings (Max)
12"W X 6"D FTG W/ 6"W x 24"D STEM WALL

Stem Wall (6")	150 plf	(0SL/0LL/150DL)
Roof (11X)	770 plf	(550SL/0LL/220DL)
Floor (8X)	416 plf	(0SL/320LL/96DL)
Wall (12')	120 plf	(0SL/0LL/120DL)
Total:	1456 plf	(550SL/320LL/586DL)

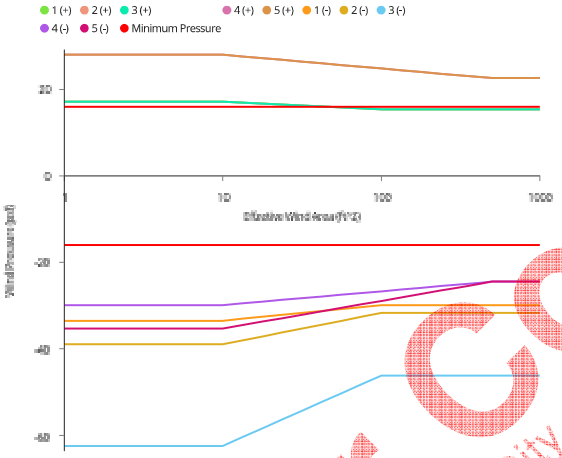
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **WIND** (LATERAL ANALYSIS)
References: ASCE 7-16		

Summary

Zones



Note: Some wind pressures are below 16 psf which is the code-required minimum. The horizontal red lines on the diagram below indicate the minimum positive/ negative wind pressures.



Corner Zone Width $a = 3\ \text{ft},\ 0\ \text{in}$

Wind Pressures $p =$

Zone	Positive Wind Pressure p^+ (psf)	Negative Wind Pressure p^- (psf)
1	17.2	−33.5
2	17.2	−38.9
3	17.2	−62.5
4	28.1	−29.9
5	28.1	−35.3

Project Defaults

Building Code $code =$ International Residential Code (IRC) 2021

Basic Wind Speed $V = 99\ \text{mi/hr}$

Exposure Category: C: Open terrain with scattered obstructions

Key Properties

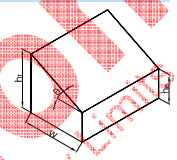
Basic Wind Speed $V = 99\ \text{mi/hr}$

Exposure Category: C

Effective Roof Member Wind Area $A_{\text{roof}} = 1\ \text{ft}^2$

Effective Wall Member Wind Area $A_{\text{wall}} = 1\ \text{ft}^2$

Building Properties



Roof Pitch $\alpha = 3:12$

Roof Eave Height $h_e = 9\ \text{ft},\ 0\ \text{in}$

Roof Mean Height $h = 11\ \text{ft},\ 0\ \text{in}$

Width (Perpendicular to Ridge) $w = 16\ \text{ft}$

Length (Parallel to Ridge) $\ell = 36\ \text{ft}$

Enclosure Type: Partially enclosed

Terrain Properties (ASCE 7-16, Cl 26.7-9)

Warning: No address is specified in Project Details. No elevation will be determined and the elevation factor Ke will conservatively be taken as 1.0. This can be changed by setting an address in Project Details or manually entering a ground elevation.

Wind Load Parameters (ASCE 7-16, Cl 26.6-10)

Wind Directionality Factor $K_d = 0.85$

Topographic Factor $K_{zt} = 1$

Ground Elevation Factor $K_e = 1$

Velocity Pressure Exposure Coefficient $K_h = 0.849$

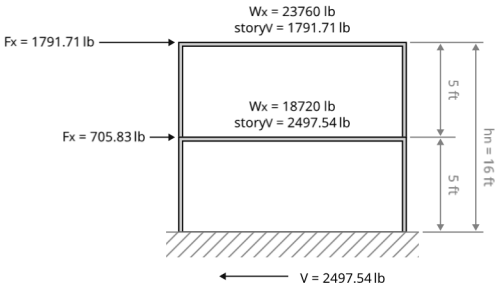
Velocity Pressure $q_h = 18.1\ \text{psf}$

Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **SEISMIC** (LATERAL ANALYSIS) PASS
References: ASCE 7-16		

Summary

Design Short-Period Spectral Acceleration	$S_{DS} =$	0.382
Design Long-Period Spectral Acceleration	$S_{D1} =$	0.44
Seismic Design Category	$SDC =$	D
Seismic Base Shear	$V =$	2498 lb
Number of Stories	$n_{story} =$	2



Project Defaults Override

Override Project Defaults?		Yes
Building Risk Category		II - Regular Building
Site Class		D - Default
Short-Period Spectral Acceleration	$S_{s,input} =$	0.384
Long-Period Spectral Acceleration	$S_{1,input} =$	0.2
Long-Period Transition Period	$T_{L,input} =$	16 s

Site Parameters (ASCE 7-16)

Building Risk Category	$RC =$	II
Site Class	$SC =$	D-default
Short-Period Spectral Acceleration	$S_s =$	0.384
Long-Period Spectral Acceleration	$S_1 =$	0.2
Long-Period Transition Period	$T_L =$	16 s

Key Building Properties (ASCE 7-16)

Seismic Force-Resisting System	15. Light-frame (wood) walls sheathed with wood structural panels rated for shear resistance

SFRS Properties (ASCE 7-16, Cl 12)

Building System Height Limit (ft)	Height Limit =65

Equivalent Lateral Force (ELF) Procedure (ASCE 7-16, Cl 12.8)

Approximate Fundamental Period	$T_a =$	0.112 s
Building Fundamental Period	$T =$	0.112 s
Total Structural SFRS Height	$h_n =$	10 ft, 0 in
Total Effective Seismic Weight	$W_{total} =$	42 480 lb
Seismic Importance Factor	$I_e =$	1
Seismic Response Coefficient	$C_s =$	0.0588

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Residence.ec6

LIC# : KW-06016746, Build:20.23.12.07 STEVEN G. BANTON, LPE

DESCRIPTION: Modern Mill ADU MAX UPLIFT CONDITION (1WL1/1WL8)- ASPECT RATIO NOT REQUIRED

General Information

Calculations per NDS 2018, IBC 2021, ASCE 7-16

Total Wall Length	2.250 ft
Number of Stories	1
Story #1 Height	10.50 ft

Framing & Chord Material :

Wood Species :	Douglas Fir-Larch		
Wood Grade :	No.2		
Fc - Prll =	1,350.0 psi	Ft - Tension	575.0 psi
Fc - Perp =	625.0 psi	E	1,600.0 ksi
Specific Gravity =	.5002		
SDC : Seismic Design Category :	D		

Some Shear Panel Aspect Ratios Exceed Limits, Panel Size Changes REQUIRED

Sheathing

Main Sheathing

SDPWS 2021 Construction Table : 4.3A

Wood Structural Panels, Struct I, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs

Sheathing is Blocked

Nominal Seismic Shear Capacities (plf) :

6" Spac.	510	3" Spac.	1010
4" Spac.	790	2" Spac.	1340

Nominal Wind Shear Capacities (plf) :

6" Spac.	715	3" Spac.	1415
4" Spac.	1105	2" Spac.	1875

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.

Level 1 Chord Size : 2x6 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1

Chord Area = 8.250 in^2

All chords treated as fully braced about both axes

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Residence.ec6

DESCRIPTION: Modern Mill ADU MAX UPLIFT CONDITION (1WL1/1WL8)- ASPECT RATIO NOT REQUIRED

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Applied Distributed Vertical Loads

Load Location (ft)			Load Magnitude (klf)					
Start Location	End Location	Height of Application	Dead	Roof Live	Live	Snow	Wind	Seismic
	2.50	9.0	0.170			0.0750		

Applied Concentrated Lateral Loads

Load "Y" Location (ft)	Load Magnitude (kips)					
	Dead	Roof Live	Live	Snow	Wind	Seismic
10.50					0.8580	

Shear Panel Summary

Panel ID	Level #	Max Shear (kips)	Load Comb	# Sides Used	Shear Summary & Attachment: Actual (plf)	Allow	Status	Attachment	Height/Width Ratio: Actual	Allow	Notes
P1	1	0.015	+0.60D+0.70E	1	228.8	0.0	NG!	CAPACITY EXCEEDED	4.67	3.50	Ratio NG

Chord Summary

Chord ID	Level #	Dist from Left (ft)	Force (kips)	Load Comb	CHORD DESIGN SUMMARY: # Req'd @ Location	Member Size	Stress Ratio	Governs	Status
C1	1	0.00	0.0	+D+S	**1**	**2x6**	**0.03**	**Comp**	**OK**

Comp Values : Max. Down : 0.4 k Load Comb :+D+S — Max fc = 44 psi — Allow F'c = 1,350 psi
Tens Values : Max. Uplift : 0.0 k Load Comb : — Max ft = 0 psi — Allow F't = 575 psi
User-specified anchorage device : **HDUE3 W/ SABR5/8X24**

Chord ID	Level #	Dist from Left (ft)	Force (kips)	Load Comb	# Req'd @ Location	Member Size	Stress Ratio	Governs	Status
C2	1	2.25	0.0	+D+0.60W	**1**	**2x6**	**0.24**	**Comp**	**OK**

Comp Values : Max. Down : 2.7 k Load Comb :+D+0.60W — Max fc = 325 psi — Allow F'c = 1,350 psi
Tens Values : Max. Uplift : 0.0 k Load Comb : — Max ft = 0 psi — Allow F't = 575 psi
User-specified anchorage device : **HDUE3 W/ SABR5/8X24**

Chord Naming Informatio C : Item is a Chord L : Followed by level numbe # : Followed by chord number from left to r
WL : Indicates Chord is on left edge of wall WR : Indicates Chord is on right edge of wall

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Residence.ec6

LIC# : KW-06016746, Build:20.23.12.07 STEVEN G. BANTON, LPE

DESCRIPTION: Modern Mill ADU MAX UPLIFT CONDITION (1WL1/1WL8)- ASPECT RATIO NOT REQUIRED

Footing Information

Footing Dimensions

Dist. Left	3.0 ft	f'c	250.0	ksi	Rebar Cover	3.0 in
Wall Length	2.250 ft	Fy	40.0	ksi	Footing Thickness	6.0 in
Dist. Right	3.0 ft				Width	1.0 ft
Total Ftg Length	8.250 ft					

Max Factored Soil Pressures

@ Left Side of Footing 196.438 psf
.... governing load comb +1.20D+1.60S

@ Right Side of Footing 1,338.06 psf
.... governing load comb +1.20D+0.50W

Max UNfactored Soil Pressures

@ Left Side of Footing 159.675 psf
.... governing load comb +D+S

@ Right Side of Footing 1,588.14 psf
.... governing load comb +D+0.450W

Footing One-Way Shear Check...

vu @ Left End of Footing	17.921 psi
vu @ Right End of Footing	50.908 psi
vn * phi : Allowable	850.0 psi

Overturning Stability...

	@ Left End of Ftg	@ Right End of Ftg
Overturning Moment	5.663 k-ft	5.663 k-ft
Resisting Moment	6.335 k-ft	6.271 k-ft
Stability Ratio	1.119 : 1	1.107 : 1
.... governing load comb	+0.60D+0.60W	+0.60D+0.60W

Footing Bending Design...

	@ Left End	@ Right End
Mu	0.8937 k-ft	3.214 k-ft
Ru	110.334 psi	396.817 psi
As % Req'd	0.003679 in^2	0.009930 in^2
As Req'd in Footing Width	0.1324 in^2	0.3575 in^2

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Residence.ec6

LIC# : KW-06016746, Build:20.23.12.07 STEVEN G. BANTON, LPE

DESCRIPTION: Modern Mill ADU MAX UPLIFT CONDITION (1WL3/1WL6)- ASPECT RATIO NOT REQUIRED

General Information

Calculations per NDS 2018, IBC 2021, ASCE 7-16

Total Wall Length	2.50 ft
Number of Stories	1
Story #1 Height	10.0 ft

Framing & Chord Material :

Wood Species :	Douglas Fir-Larch		
Wood Grade :	No.2		
Fc - Prll =	1,350.0 psi	Ft - Tension	575.0 psi
Fc - Perp =	625.0 psi	E	1,600.0 ksi
Specific Gravity =	.5002		
SDC : Seismic Design Category :	D		

Some Shear Panel Aspect Ratios Exceed Limits, Panel Size Changes REQUIRED

Sheathing

Main Sheathing

SDPWS 2021 Construction Table : 4.3A

Wood Structural Panels, Struct I, 7/16" Thk, 1-3/8" Min Pen, 8d Fstnrs

Sheathing is Blocked

Nominal Seismic Shear Capacities (plf) :

6" Spac.	510	3" Spac.	1010
4" Spac.	790	2" Spac.	1340

Nominal Wind Shear Capacities (plf) :

6" Spac.	715	3" Spac.	1415
4" Spac.	1105	2" Spac.	1875

Chord Data

Chord Member Size for each level : See Chord Summary Tables for number of Chords required at each panel end.

Level 1 Chord Size : 2x6 Chord Cf: Comp: 1.0 Tens: 1.0 Max. Allow Stress Ratio : 1.0 : 1

Chord Area = 8.250 in^2

All chords treated as fully braced about both axes

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Residence.ec6

DESCRIPTION: Modern Mill ADU MAX UPLIFT CONDITION (1WL3/1WL6)- ASPECT RATIO NOT REQUIRED

Opening ID	Dist to Left Edge	Opening Width	Dist to Bottom	Opening Height
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft
				ft

Applied Distributed Vertical Loads

Load Location (ft)			Load Magnitude (klf)					
Start Location	End Location	Height of Application	Dead	Roof Live	Live	Snow	Wind	Seismic
	2.50	9.0	0.170			0.0750		

Applied Concentrated Lateral Loads

Load "Y" Location (ft)	Load Magnitude (kips)					
	Dead	Roof Live	Live	Snow	Wind	Seismic
10.50					0.8580	

Shear Panel Summary

Panel ID	Level #	Max Shear (kips)	Load Comb	# Sides Used	Shear Summary & Attachment Actual (plf)	Allow	Status	Attachment	Height/Width Ratio Actual	Allow	Notes
P1	1	0.016	+0.60D+0.70E	1	6.3	0.0	NG!	CAPACITY EXCEEDED	4.00	3.50	Ratio NG

Chord Summary

Chord ID	Level #	Dist from Left (ft)	Force (kips)	Load Comb	CHORD DESIGN SUMMARY # Req'd @ Location	Member Size	Stress Ratio	Governs	Status
C1	1	0.00	0.0	+D+S	**1**	**2x6**	**0.03**	**Comp**	**OK**

Comp Values : Max. Down : 0.4 k Load Comb :+D+S Max fc = 47 psi Allow F'c = 1,350 psi
Tens Values : Max. Uplift : 0.0 k Load Comb : Max ft = 0 psi Allow F't = 575 psi
User-specified anchorage device : **HDUE3 W/ SABR5/8X24**

Chord ID	Level #	Dist from Left (ft)	Force (kips)	Load Comb	CHORD DESIGN SUMMARY # Req'd @ Location	Member Size	Stress Ratio	Governs	Status
C2	1	2.50	0.0	+D+0.750S+0.5250E	**1**	**2x6**	**0.04**	**Comp**	**OK**

Comp Values : Max. Down : 0.4 k Load Comb :+D+0.750S+0.5250E Max fc = 50 psi Allow F'c = 1,350 psi
Tens Values : Max. Uplift : 0.0 k Load Comb : Max ft = 0 psi Allow F't = 575 psi
User-specified anchorage device : **HDUE3 W/ SABR5/8X24**

Chord Naming Informatio C : Item is a Chord L : Followed by level numbe # : Followed by chord number from left to r
WL : Indicates Chord is on left edge of wall WR : Indicates Chord is on right edge of wall

Project Title:
Engineer:
Project ID:
Project Descr:

Wood Shear Wall

Project File: Residence.ec6

LIC# : KW-06016746, Build:20.23.12.07 STEVEN G. BANTON, LPE

DESCRIPTION: Modern Mill ADU MAX UPLIFT CONDITION (1WL3/1WL6)- ASPECT RATIO NOT REQUIRED

Footing Information

Footing Dimensions

Dist. Left	3.0 ft	f'c	250.0	ksi	Rebar Cover	3.0 in
Wall Length	2.50 ft	Fy	40.0	ksi	Footing Thickness	6.0 in
Dist. Right	3.0 ft				Width	1.0 ft
Total Ftg Length	8.50 ft					

Max Factored Soil Pressures

@ Left Side of Footing 202.941 psf
.... governing load comb +1.20D+1.60S+0.50W

@ Right Side of Footing 202.941 psf
.... governing load comb +1.20D+1.60S+0.50W

Max UNfactored Soil Pressures

@ Left Side of Footing 164.706 psf
.... governing load comb +D+S

@ Right Side of Footing 164.706 psf
.... governing load comb +D+S

Footing One-Way Shear Check...

vu @ Left End of Footing	18.238 psi
vu @ Right End of Footing	18.238 psi
vn * phi : Allowable	850.0 psi

Overturning Stability...

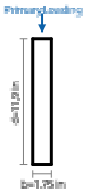
	@ Left End of Ftg	@ Right End of Ftg
Overturning Moment	5.663 k-ft	5.663 k-ft
Resisting Moment	6.668 k-ft	6.668 k-ft
Stability Ratio	1.178 : 1	1.178 : 1
.... governing load comb	+0.60D+0.60W	+0.60D+0.60W

Footing Bending Design...

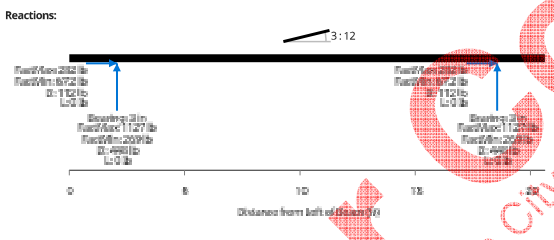
	@ Left End	@ Right End
Mu	0.9132 k-ft	0.9132 k-ft
Ru	112.745 psi	112.745 psi
As % Req'd	0.003759 in^2	0.003759 in^2
As Req'd in Footing Width	0.1353 in^2	0.1353 in^2

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **ROOF RAFTERS** (RAFTERS AND JOISTS) PASS
References: NDS 2018 (ASD)		

Summary



	Member	1-3/4x11-7/8 Versa-Lam LVL 2.1E-3100Fb
27%	Moment Utilization	$M/M' =$ 3486 lb*ft* / 12 722 lb*ft*
20%	Shear Utilization	$V/V' =$ 902 lb / 4541 lb
25%	Bearing Utilization	$R/R' =$ 1127 lb / 4430 lb
	Minimum Bearing Length (Int Supports)	$\ell_{b,min,int} =$ 0.763 in
39%	Governing Live / Short-Term Deflection	$\delta_{ST} =$ 0.0809 in (L/306)

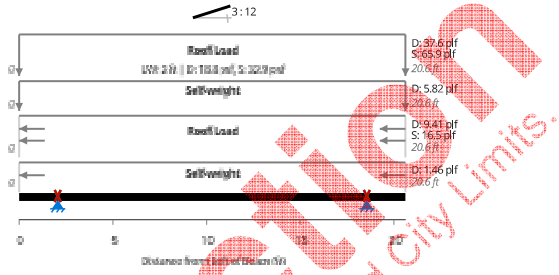


Key Properties

Beam Plan Length	$L_X =$	20 ft
Enter Support and Load Locations Based on Plan or Inclined length?		Plan
Continuous Bracing for Lateral Torsional Buckling		Top Braced

Top and bottom flange bracing corresponds to positive and negative bending respectively, but cantilever spans typically require a brace on the top flange despite being in negative bending.

Loads



Center-to-Center Spacing (= tributary width) $s =$ 24 in

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$ 20.8 in^2
Strong Axis Moment of Inertia	$I_{xx} =$ 244 in^4
Section Modulus	$S =$ 41.1 in^3
Base Allowable Bending Stress	$F_b =$ 3100 psi
Base Allowable Shear Stress	$F_v =$ 285 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$ 750 psi
True Modulus of Elasticity	$E_{true} =$ 2.10×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$ 2.00×10^6 psi
Modulus of Elasticity for Deflections	$E =$ 2.00×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$ 2.00×10^6 psi

Section Bending (NDS 2018 2.3)

Volume Factor	$C_V =$ 1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$ 3712 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$ 924 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$ 328 psi

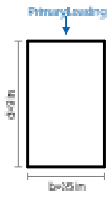
Bearing (NDS 2018 3.10)

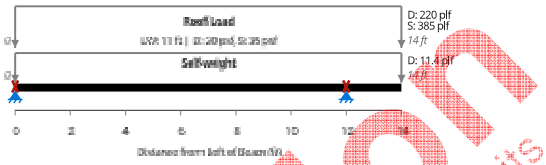
Base Bearing Strength	$F_{c\perp}'/C_b =$ 750 psi

Comments

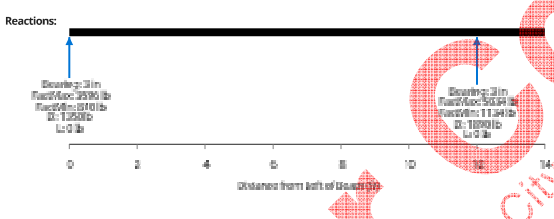
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **1RB1** (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary





	Member		5-1/2x9 24F-V4 DF
62%	Moment Utilization	$M/M' =$	10 487 lbft / 16 880 lbft
38%	Shear Utilization	$V/V' =$	3801 lb / 10 057 lb
42%	Bearing Utilization	$R/R' =$	5034 lb / 12 066 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	1.01 in
	Minimum Bearing Length (Int Supports)	$\ell_{b,min,int} =$	1.25 in
70%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	0.139 in (L/172)



Key Properties

Beam Plan Length	$L_X =$	14 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	49.5 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	334 in^4
Section Modulus	$S =$	74.3 in^3
Base Allowable Bending Stress	$F_b =$	2400 psi
Base Allowable Shear Stress	$F_v =$	265 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	650 psi
True Modulus of Elasticity	$E_{true} =$	1.90×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.80×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.80×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.80×10^6 psi

Section Bending (NDS 2018 2.3)

Volume Factor	$C_V =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	2728 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	2109 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	305 psi

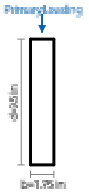
Bearing (NDS 2018 3.10)

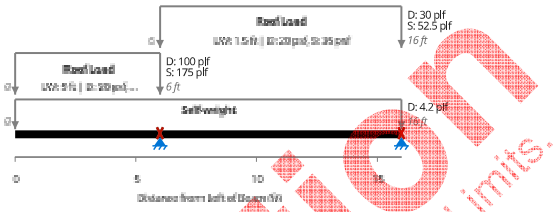
Base Bearing Strength	$F_{c\perp}'/C_b =$	650 psi

Comments

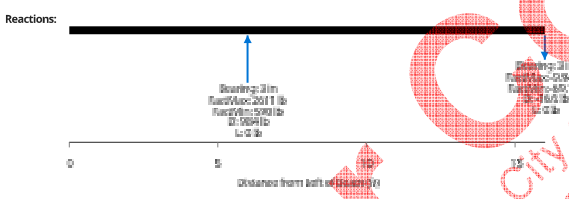
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** 1RB2 (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary





	Member		1-3/4x9-1/2 Versa-Lam LVL 2.1E-2800Fb
96%	Moment Utilization	$M/M' =$	-5026 lbft / *5238 lbft*
46%	Shear Utilization	$V/V' =$	1675 lb / 3633 lb
59%	Bearing Utilization	$R/R' =$	2611 lb / 4430 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.0526 in
	Minimum Bearing Length (Int Supports)	$\ell_{b,min,int} =$	1.77 in
90%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.541 in (L/133)



Key Properties

Beam Plan Length	$L_X =$	16 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	16.6 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	125 in^4
Section Modulus	$S =$	26.3 in^3
Base Allowable Bending Stress	$F_b =$	2800 psi
Base Allowable Shear Stress	$F_v =$	285 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	750 psi
True Modulus of Elasticity	$E_{true} =$	2.10×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	2.00×10^6 psi
Modulus of Elasticity for Deflections	$E =$	2.00×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	2.00×10^6 psi

Section Bending (NDS 2018 2.3)

Volume Factor	$C_V =$	1.03

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	2157 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	2388 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	328 psi

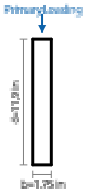
Bearing (NDS 2018 3.10)

Base Bearing Strength	$F_{c\perp}'/C_b =$	750 psi

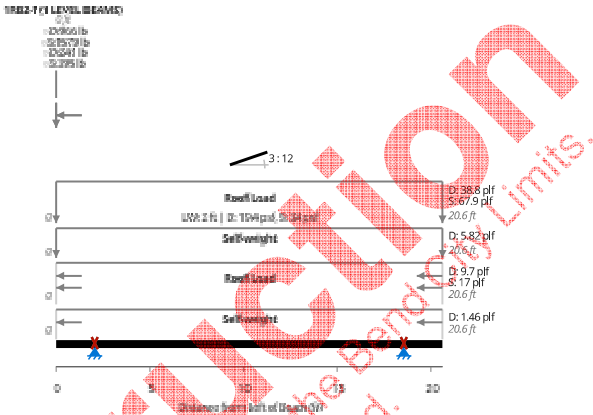
Comments

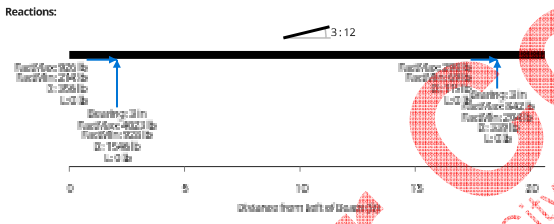
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **1RB3** (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary



	Member	1-3/4x11-7/8 Versa-Lam LVL 2.1E-3100Fb
78%	Moment Utilization	$M/M' =$ -5485 lbft / 7065 lbft
61%	Shear Utilization	$V/V' =$ 2776 lb / 4541 lb
91%	Bearing Utilization	$R/R' =$ 4023 lb / 4430 lb
	Minimum Bearing Length (Int Supports)	$\ell_{b,min,int} =$ 2.72 in
31%	Governing Live / Short-Term Deflection	$\delta_{ST} =$ -0.0635 in (L/390)





Key Properties

Beam Plan Length	$L_X =$	20 ft
Enter Support and Load Locations Based on Plan or Inclined length?		Plan
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	20.8 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	244 in^4
Section Modulus	$S =$	41.1 in^3
Base Allowable Bending Stress	$F_b =$	3100 psi
Base Allowable Shear Stress	$F_v =$	285 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	750 psi
True Modulus of Elasticity	$E_{true} =$	2.10×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	2.00×10^6 psi
Modulus of Elasticity for Deflections	$E =$	2.00×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	2.00×10^6 psi

Section Bending (NDS 2018 2.3)

Volume Factor	$C_V =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	2061 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	2061 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	328 psi

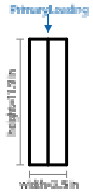
Bearing (NDS 2018 3.10)

Base Bearing Strength	$F_{c\perp}'/C_b =$	750 psi

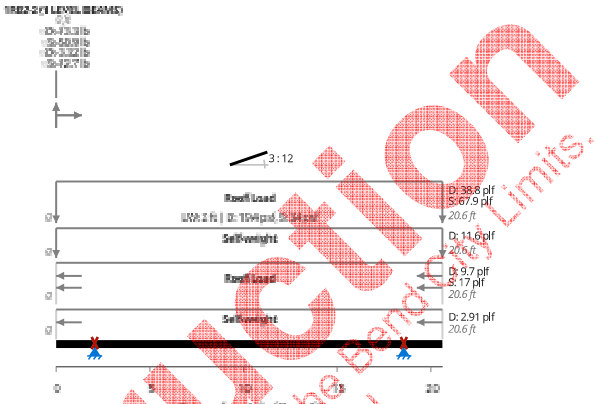
Comments

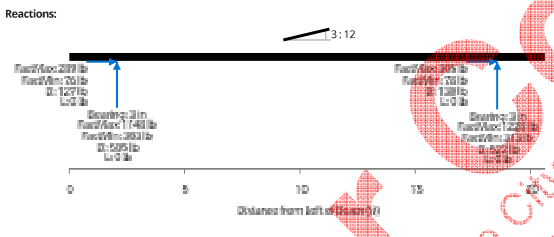
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **1RB4** (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary



	Member		2 plies - 1-3/4x11-7/8 Versa-Lam LVL 2.1E-3100Fb
19%	Moment Utilization	$M/M' =$	3839 lbft / 20461 lbft
11%	Shear Utilization	$V/V' =$	984 lb / 9081 lb
14%	Bearing Utilization	$R/R' =$	1228 lb / 8859 lb
	Minimum Bearing Length (Int Supports)	$\ell_{b,min,int} =$	0.416 in
21%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	0.044 in (L/562)





Key Properties

Beam Plan Length	$L_X =$	20 ft
Enter Support and Load Locations Based on Plan or Inclined length?		Plan
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	41.6 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	488 in^4
Section Modulus	$S =$	82.3 in^3
Base Allowable Bending Stress	$F_b =$	3100 psi
Base Allowable Shear Stress	$F_v =$	285 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	750 psi
True Modulus of Elasticity	$E_{true} =$	2.10×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	2.00×10^6 psi
Modulus of Elasticity for Deflections	$E =$	2.00×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	2.00×10^6 psi

Section Bending (NDS 2018 2.3)

Volume Factor	$C_V =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	2985 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	2985 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	328 psi

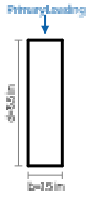
Bearing (NDS 2018 3.10)

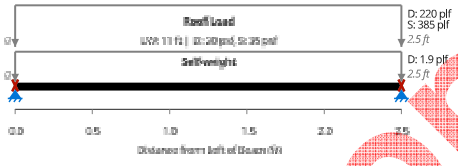
Base Bearing Strength	$F_{c\perp}'/C_b =$	750 psi

Comments

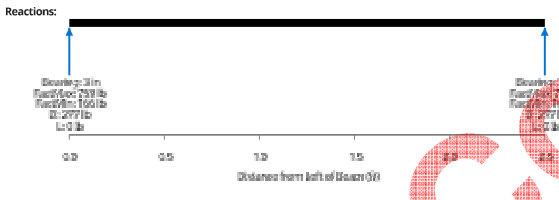
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** 1H1 (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary





	Member		2x6 D.Fir-L No. 2
57%	Moment Utilization	$M/M' =$	474 lb*ft* / 827 lb*ft*
67%	Shear Utilization	$V/V' =$	759 lb / 1138 lb
27%	Bearing Utilization	$R/R' =$	759 lb / 2812 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.809 in
8%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.0102 in (L/2950)



Key Properties

Beam Plan Length	$L_X =$	2.5 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	8.25 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	20.8 in^4
Section Modulus	$S =$	7.56 in^3
Base Allowable Bending Stress	$F_b =$	900 psi
Base Allowable Shear Stress	$F_v =$	180 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	625 psi
True Modulus of Elasticity	$E_{true} =$	1.60×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.60×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.60×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.60×10^6 psi

Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} =$	1.3
Incising Factor	$C_{i,b} =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	1313 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1034 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	207 psi

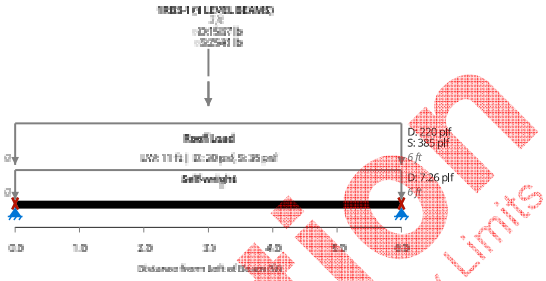
Bearing (NDS 2018 3.10)

Base Bearing Strength	$F_{c\perp}'/C_b =$	625 psi

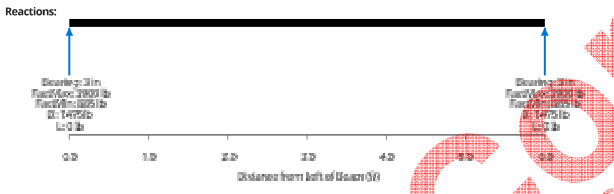
Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **1H2** (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary



	Member		3-1/2x9 24F-V4 DF
84%	Moment Utilization	$M/M' =$	8946 lb*ft* / *10 694 lb*ft
61%	Shear Utilization	$V/V' =$	3900 lb / 6400 lb
57%	Bearing Utilization	$R/R' =$	3900 lb / 6825 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	1.71 in
27%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.0809 in (L/889)



Key Properties

Beam Plan Length	$L_X =$	6 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	31.5 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	213 in^4
Section Modulus	$S =$	47.3 in^3
Base Allowable Bending Stress	$F_b =$	2400 psi
Base Allowable Shear Stress	$F_v =$	265 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	650 psi
True Modulus of Elasticity	$E_{true} =$	1.90×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.80×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.80×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.80×10^6 psi

Section Bending (NDS 2018 2.3)

Volume Factor	$C_V =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	2716 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1651 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	305 psi

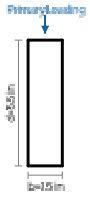
Bearing (NDS 2018 3.10)

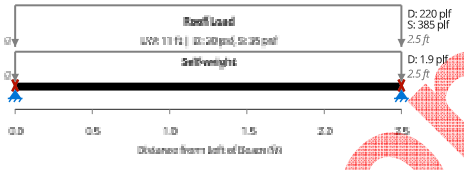
Base Bearing Strength	$F_{c\perp}'/C_b =$	650 psi

Comments

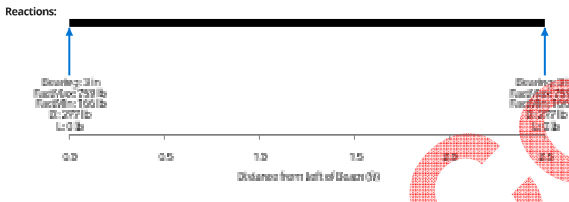
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** 1H3 (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary





	Member		2x6 D.Fir-L No. 2
57%	Moment Utilization	$M/M' =$	474 lb*ft* / 827 lb*ft*
67%	Shear Utilization	$V/V' =$	759 lb / 1138 lb
27%	Bearing Utilization	$R/R' =$	759 lb / 2812 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.809 in
8%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.0102 in (L/2950)



Key Properties

Beam Plan Length	$L_X =$	2.5 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	8.25 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	20.8 in^4
Section Modulus	$S =$	7.56 in^3
Base Allowable Bending Stress	$F_b =$	900 psi
Base Allowable Shear Stress	$F_v =$	180 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	625 psi
True Modulus of Elasticity	$E_{true} =$	1.60×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.60×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.60×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.60×10^6 psi

Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} =$	1.3
Incising Factor	$C_{i,b} =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	1313 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1034 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	207 psi

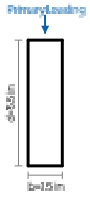
Bearing (NDS 2018 3.10)

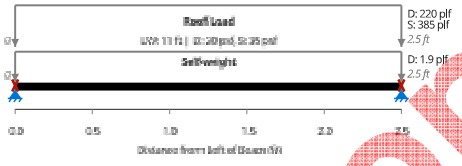
Base Bearing Strength	$F_{c\perp}'/C_b =$	625 psi

Comments

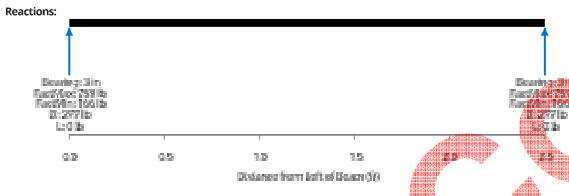
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** 1H4 (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary





	Member		2x6 D.Fir-L No. 2
57%	Moment Utilization	$M/M' =$	474 lb*ft* / 827 lb*ft*
67%	Shear Utilization	$V/V' =$	759 lb / 1138 lb
27%	Bearing Utilization	$R/R' =$	759 lb / 2812 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.809 in
8%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.0102 in (L/2950)



Key Properties

Beam Plan Length	$L_X =$	2.5 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	8.25 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	20.8 in^4
Section Modulus	$S =$	7.56 in^3
Base Allowable Bending Stress	$F_b =$	900 psi
Base Allowable Shear Stress	$F_v =$	180 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	625 psi
True Modulus of Elasticity	$E_{true} =$	1.60×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.60×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.60×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.60×10^6 psi

Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} =$	1.3
Incising Factor	$C_{i,b} =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	1313 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1034 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	207 psi

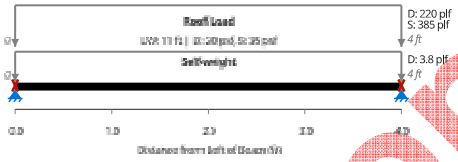
Bearing (NDS 2018 3.10)

Base Bearing Strength	$F_{c\perp}'/C_b =$	625 psi

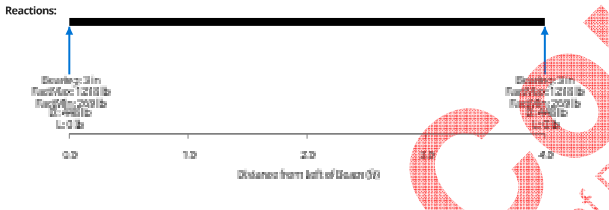
Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** 1H5 (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary



	Member		2 plies - 2x6 D.Fir-L No. 2
72%	Moment Utilization	$M/M' =$	1218 lb*ft* / *1685 lb*ft
53%	Shear Utilization	$V/V' =$	1218 lb / 2277 lb
22%	Bearing Utilization	$R/R' =$	1218 lb / 5625 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.649 in
17%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.0333 in (L/1441)



Key Properties

Beam Plan Length	$L_X =$	4 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	16.5 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	41.6 in^4
Section Modulus	$S =$	15.1 in^3
Base Allowable Bending Stress	$F_b =$	900 psi
Base Allowable Shear Stress	$F_v =$	180 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	625 psi
True Modulus of Elasticity	$E_{true} =$	1.60×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.60×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.60×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.60×10^6 psi

Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} =$	1.3
Incising Factor	$C_{i,b} =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	1337 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1048 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	207 psi

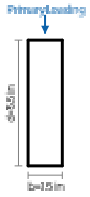
Bearing (NDS 2018 3.10)

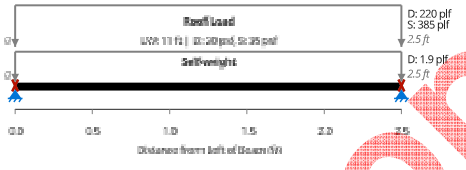
Base Bearing Strength	$F_{c\perp}'/C_b =$	625 psi

Comments

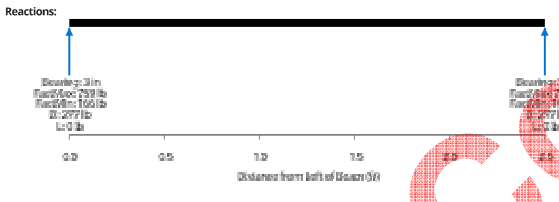
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** 1H6 (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary





	Member		2x6 D.Fir-L No. 2
57%	Moment Utilization	$M/M' =$	474 lb*ft* / 827 lb*ft*
67%	Shear Utilization	$V/V' =$	759 lb / 1138 lb
27%	Bearing Utilization	$R/R' =$	759 lb / 2812 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.809 in
8%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.0102 in (L/2950)



Key Properties

Beam Plan Length	$L_X =$	2.5 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	8.25 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	20.8 in^4
Section Modulus	$S =$	7.56 in^3
Base Allowable Bending Stress	$F_b =$	900 psi
Base Allowable Shear Stress	$F_v =$	180 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	625 psi
True Modulus of Elasticity	$E_{true} =$	1.60×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.60×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.60×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.60×10^6 psi

Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} =$	1.3
Incising Factor	$C_{i,b} =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	1313 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1034 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	207 psi

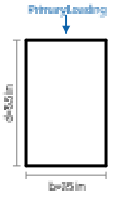
Bearing (NDS 2018 3.10)

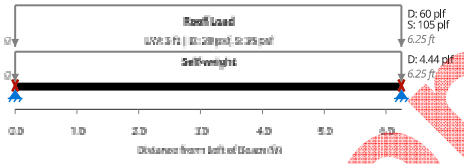
Base Bearing Strength	$F_{c\perp}'/C_b =$	625 psi

Comments

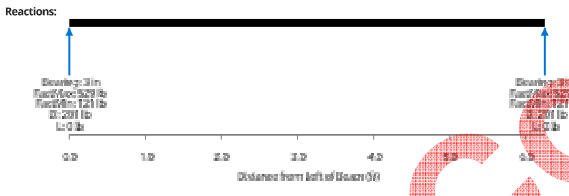
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** 1H7 (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary





	Member		4x6 D.Fir-L No. 2
42%	Moment Utilization	$M/M' =$	827 lb*ft* / 1965 lb*ft*
20%	Shear Utilization	$V/V' =$	529 lb / 2656 lb
8%	Bearing Utilization	$R/R' =$	529 lb / 6562 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.242 in
15%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.0464 in (L/1615)



Key Properties

Beam Plan Length	$L_X =$	6.25 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	19.2 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	48.5 in^4
Section Modulus	$S =$	17.6 in^3
Base Allowable Bending Stress	$F_b =$	900 psi
Base Allowable Shear Stress	$F_v =$	180 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	625 psi
True Modulus of Elasticity	$E_{true} =$	1.60×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.60×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.60×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.60×10^6 psi

Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} =$	1.3
Incising Factor	$C_{i,b} =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	1336 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1047 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	207 psi

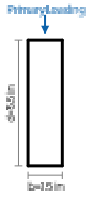
Bearing (NDS 2018 3.10)

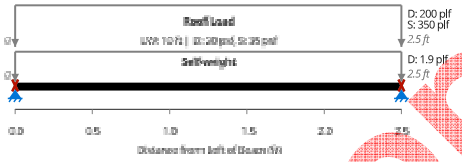
Base Bearing Strength	$F_{c\perp}'/C_b =$	625 psi

Comments

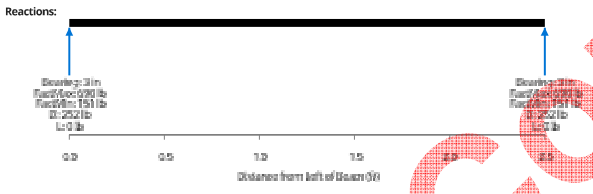
Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** 1H8 (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary





	Member		2x6 D.Fir-L No. 2
52%	Moment Utilization	$M/M' =$	431 lb*ft* / 827 lb*ft*
61%	Shear Utilization	$V/V' =$	690 lb / 1138 lb
25%	Bearing Utilization	$R/R' =$	690 lb / 2812 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.736 in
7%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.00924 in (L/3245)



Key Properties

Beam Plan Length	$L_X =$	2.5 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	8.25 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	20.8 in^4
Section Modulus	$S =$	7.56 in^3
Base Allowable Bending Stress	$F_b =$	900 psi
Base Allowable Shear Stress	$F_v =$	180 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	625 psi
True Modulus of Elasticity	$E_{true} =$	1.60×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.60×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.60×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.60×10^6 psi

Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} =$	1.3
Incising Factor	$C_{i,b} =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	1313 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1034 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	207 psi

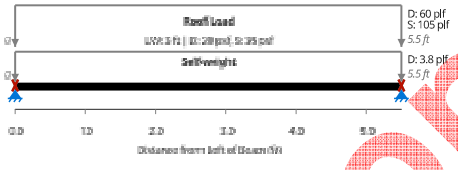
Bearing (NDS 2018 3.10)

Base Bearing Strength	$F_{c\perp}'/C_b =$	625 psi

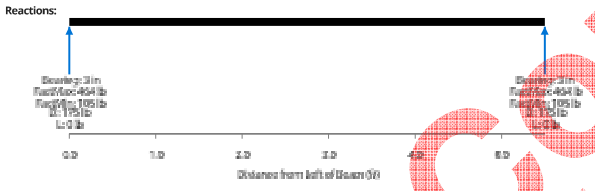
Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** 1H9 (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary



	Member		2 plies - 2x6 D.Fir-L No. 2
38%	Moment Utilization	$M/M' =$	638 lb*ft* / *1681 lbft*
20%	Shear Utilization	$V/V' =$	464 lb / 2277 lb
8%	Bearing Utilization	$R/R' =$	464 lb / 5625 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.248 in
12%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.0325 in (L/2032)



Key Properties

Beam Plan Length	$L_X =$	5.5 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	16.5 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	41.6 in^4
Section Modulus	$S =$	15.1 in^3
Base Allowable Bending Stress	$F_b =$	900 psi
Base Allowable Shear Stress	$F_v =$	180 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	625 psi
True Modulus of Elasticity	$E_{true} =$	1.60×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.60×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.60×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.60×10^6 psi

Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} =$	1.3
Incising Factor	$C_{i,b} =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	1334 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1046 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	207 psi

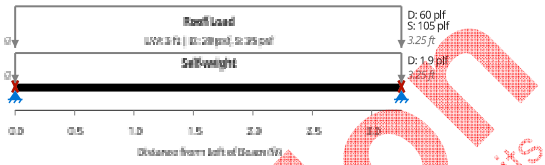
Bearing (NDS 2018 3.10)

Base Bearing Strength	$F_{c\perp}'/C_b =$	625 psi

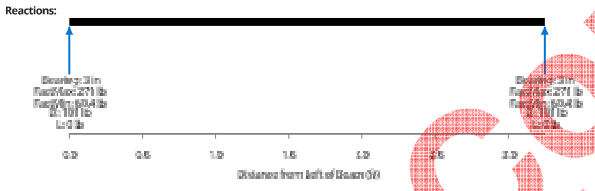
Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **1H10** (1 LEVEL BEAMS) PASS
References: NDS 2018 (ASD)		

Summary



	Member		2x6 D.Fir-L No. 2
27%	Moment Utilization	$M/M' =$	220 lb*ft* / *821 lbft*
24%	Shear Utilization	$V/V' =$	271 lb / 1138 lb
10%	Bearing Utilization	$R/R' =$	271 lb / 2812 lb
	Minimum Bearing Length (End Supports)	$\ell_{b,min,end} =$	0.289 in
5%	Governing Live / Short-Term Deflection	$\delta_{ST} =$	-0.00792 in (L/4924)



Key Properties

Beam Plan Length	$L_X =$	3.25 ft
Continuous Bracing for Lateral Torsional Buckling		No Continuous Bracing

Loads

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Cross-Sectional Area	$A =$	8.25 in^2
Strong Axis Moment of Inertia	$I_{xx} =$	20.8 in^4
Section Modulus	$S =$	7.56 in^3
Base Allowable Bending Stress	$F_b =$	900 psi
Base Allowable Shear Stress	$F_v =$	180 psi
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	625 psi
True Modulus of Elasticity	$E_{true} =$	1.60×10^6 psi
Apparent Modulus of Elasticity	$E_{app} =$	1.60×10^6 psi
Modulus of Elasticity for Deflections	$E =$	1.60×10^6 psi

Elastic Modulus (NDS 2018 2.3)

Adjusted Modulus of Elasticity	$E' =$	1.60×10^6 psi

Section Bending (NDS 2018 2.3)

Size Factor	$C_{F,b} =$	1.3
Incising Factor	$C_{i,b} =$	1

Positive Bending (NDS 2018 2.3)

Adjusted Bending Strength - Positive Bending	$F_b'^{+} =$	1303 psi

Negative Bending (NDS 2018 2.3)

Adjusted Bending Strength - Negative Bending	$F_b'^{-} =$	1030 psi

Shear Design (NDS 2018 3.4)

Adjusted Shear Strength	$F_v' =$	207 psi

Bearing (NDS 2018 3.10)

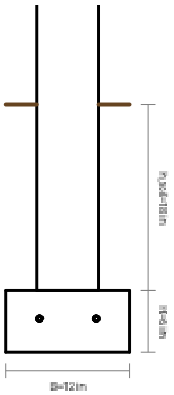
Base Bearing Strength	$F_{c\perp}'/C_b =$	625 psi

Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **1 Story Wall Footings** (WALL FOOTINGS) PASS
References: ACI 318-19		

Summary

	Service Soil Bearing Stress	$q_s =$	$1238\ \text{psf}$
83%	Allowable Gross Soil Bearing Stress	$q_a =$	$1500\ \text{psf}$
13%	Factored Moment Capacity	$\phi M_n =$	$400\ \text{lb} \cdot \text{ft/ft}$
0%	Factored One-Way Shear Capacity	$\phi V_n =$	$1920\ \text{plf}$
	Uplift Safety Factor	$FS_u =$	Uplift has not been found
	Stability	$\text{Status} =$	Footing in Total Compression



Footing Properties

Footing Width	$B =$	$1\ \text{ft}$
Footing Thickness	$H =$	$6\ \text{in}$
Wall Type		Concrete
Wall Width	$b =$	$6\ \text{in}$
Concrete Strength	$f'_c =$	$2500\ \text{psi}$
Volume of Concrete	$V_c =$	$0.0185\ \text{yd}^3/\text{ft}$

Soil Properties

Allowable Soil Gross Bearing Capacity	$q_a =$	$1500\ \text{psf}$
Lateral Sliding Coefficient of Friction	$\mu =$	0.3

Bottom Reinforcement

Concrete Cover	$\text{cover} =$	$3\ \text{in}$
Reinforcement Yield Strength	$f_y =$	$40\,000\ \text{psi}$

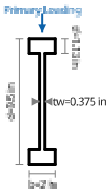
Design Criteria

Design Code for Load Combinations		International Residential Code (IRC) 2021
Sliding and Overturning Minimum Factor of Safety	$FS_{\text{min}} =$	1.5

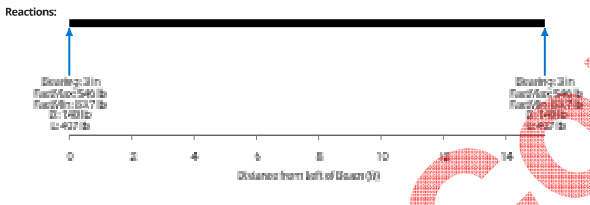
Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **FLOOR JOISTS (BCI)** (RAFTERS AND JOISTS) PASS
References: NDS 2018 (ASD)		

Summary



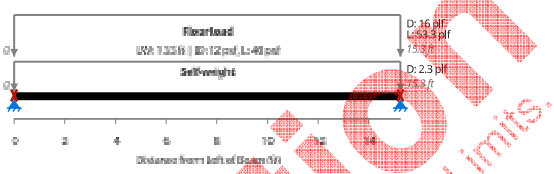
	Member	9-1/2" BCI-5000s1.8
76%	Moment Utilization	$M/M' =$ 2082 lb*ft* / *2725 lb*ft
37%	Shear Utilization	$V/V' =$ 546 lb / 1475 lb
51%	Bearing Utilization	$R/R' =$ 546 lb / 1081 lb
79%	Governing Live / Short-Term Deflection	$\delta_{ST} =$ -0.401 in (L/457)



Key Properties

	Beam Plan Length	$L_X =$ 15.3 ft

Loads



	Center-to-Center Spacing (= tributary width)	$s =$ 16 in

Design Conditions

International Residential Code (IRC) 2021

Member Properties

	Base Allowable Moment	$M_r =$ 2725 lb · ft
	Base Allowable Shear	$V_r =$ 1475 lb
	Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$ 0 psi

Section Bending (NDS 2018 2.3)

	Beam Stability Factor	$C_L =$ 1
	Adjusted Allowable Moment	$M'_r =$ 2725 lb · ft

Shear Design (NDS 2018 3.4)

	Adjusted Allowable Shear	$V'_r =$ 1475 lb

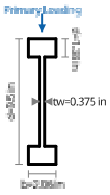
Bearing (NDS 2018 3.10)

	Base Bearing Strength	$F'_{c\perp}/C_b =$ 0 psi

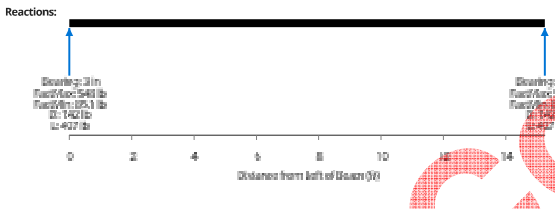
Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **FLOOR JOISTS (TJI)** (RAFTERS AND JOISTS) PASS
References: NDS 2018 (ASD)		

Summary



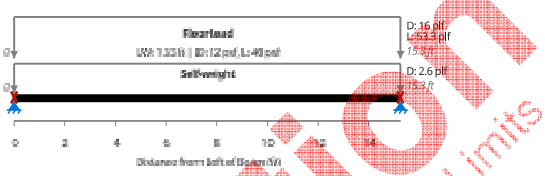
	Member	9-1/2" TJI 210
70%	Moment Utilization	$M/M' =$ 2091 lb*ft* / *3000 lb*ft
41%	Shear Utilization	$V/V' =$ 548 lb / 1330 lb
44%	Bearing Utilization	$R/R' =$ 548 lb / 1237 lb
75%	Governing Live / Short-Term Deflection	$\delta_{ST} =$ -0.384 in (L/477)



Key Properties

Beam Plan Length	$L_X =$ 15.3 ft

Loads



Center-to-Center Spacing (= tributary width)	$s =$ 16 in

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Base Allowable Moment	$M_r =$ 3000 lb · ft
Base Allowable Shear	$V_r =$ 1330 lb
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$ 0 psi

Section Bending (NDS 2018 3.3)

Beam Stability Factor	$C_L =$ 1
Adjusted Allowable Moment	$M'_r =$ 3000 lb · ft

Shear Design (NDS 2018 3.4)

Adjusted Allowable Shear	$V'_r =$ 1330 lb

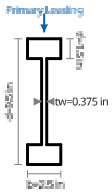
Bearing (NDS 2018 3.10)

Base Bearing Strength	$F'_{c\perp}/C_b =$ 0 psi

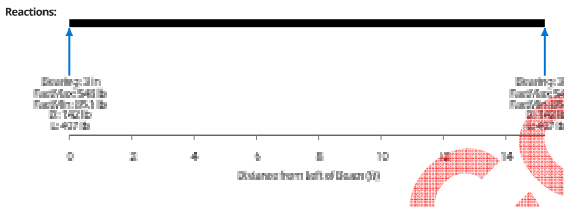
Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **FLOOR JOISTS (LPI)** (RAFTERS AND JOISTS) PASS
References: NDS 2018 (ASD)		

Summary



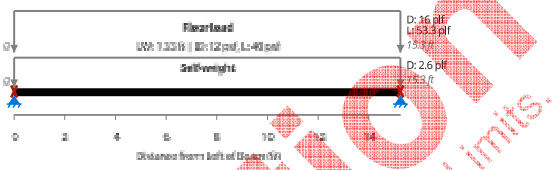
	Member	9-1/2" LPI 20Plus
74%	Moment Utilization	$M/M' =$ 2091 lb*ft* / *2810 lb*ft
44%	Shear Utilization	$V/V' =$ 548 lb / 1260 lb
52%	Bearing Utilization	$R/R' =$ 548 lb / 1054 lb
76%	Governing Live / Short-Term Deflection	$\delta_{ST} =$ -0.385 in (L/475)



Key Properties

Beam Plan Length	$L_X =$ 15.3 ft

Loads



Center-to-Center Spacing (= tributary width)	$s =$ 16 in

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Base Allowable Moment	$M_r =$ 2810 lb · ft
Base Allowable Shear	$V_r =$ 1260 lb
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$ 955 psi

Section Bending (NDS 2018 2.3)

Beam Stability Factor	$C_L =$ 1
Adjusted Allowable Moment	$M'_r =$ 2810 lb · ft

Shear Design (NDS 2018 3.4)

Adjusted Allowable Shear	$V'_r =$ 1260 lb

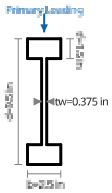
Bearing (NDS 2018 3.10)

Base Bearing Strength	$F'_{c\perp}/C_b =$ 955 psi

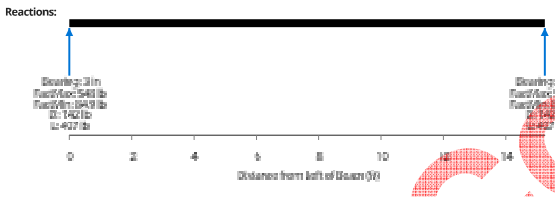
Comments

Client: Sierra James Construction	**Author:** Garrett Banton	**Date:** Dec 1, 2025
Project: Modern Mill ADU		**Job #:**
Address:		**Subject:** **FLOOR JOISTS (RFPI)** (RAFTERS AND JOISTS) PASS
References: NDS 2018 (ASD)		

Summary



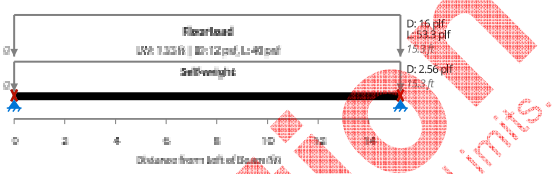
	Member	9-1/2" RFPI 40S
76%	Moment Utilization	$M/M' =$ 2090 lb*ft* / 2735 lb*ft*
49%	Shear Utilization	$V/V' =$ 548 lb / 1120 lb
50%	Bearing Utilization	$R/R' =$ 548 lb / 1102 lb
72%	Governing Live / Short-Term Deflection	$\delta_{ST} =$ -0.366 in (L/499)



Key Properties

Beam Plan Length	$L_X =$	15.3 ft

Loads



Center-to-Center Spacing (= tributary width)	$s =$	16 in

Design Conditions

International Residential Code (IRC) 2021

Member Properties

Base Allowable Moment	$M_r =$	2735 lb · ft
Base Allowable Shear	$V_r =$	1120 lb
Base Perpendicular Compression Allowable Stress	$F_{c\perp} =$	400 psi

Section Bending (NDS 2018 2.3)

Beam Stability Factor	$C_L =$	1
Adjusted Allowable Moment	$M'_r =$	2735 lb · ft

Shear Design (NDS 2018 3.4)

Adjusted Allowable Shear	$V'_r =$	1120 lb

Bearing (NDS 2018 3.10)

Base Bearing Strength	$F'_{c\perp}/C_b =$	400 psi

Comments