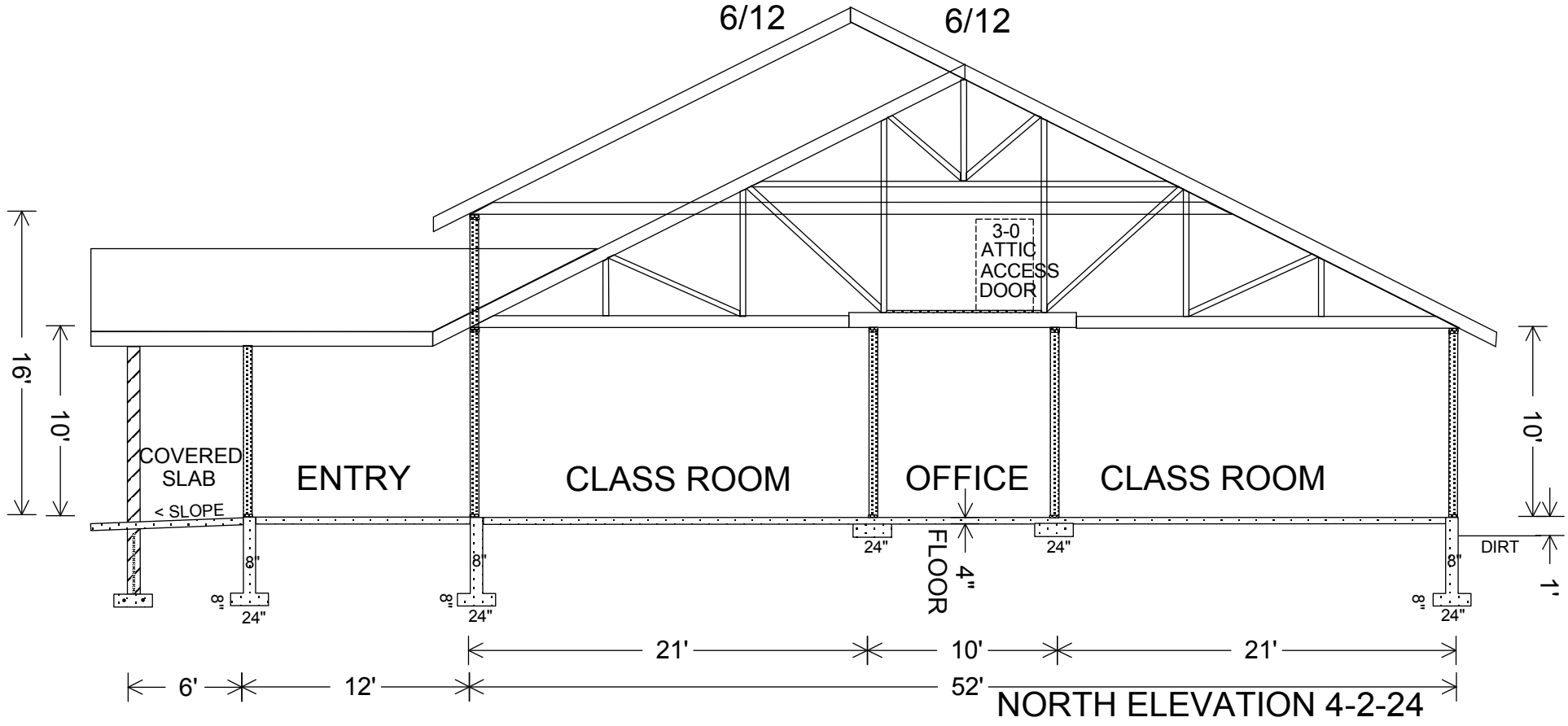
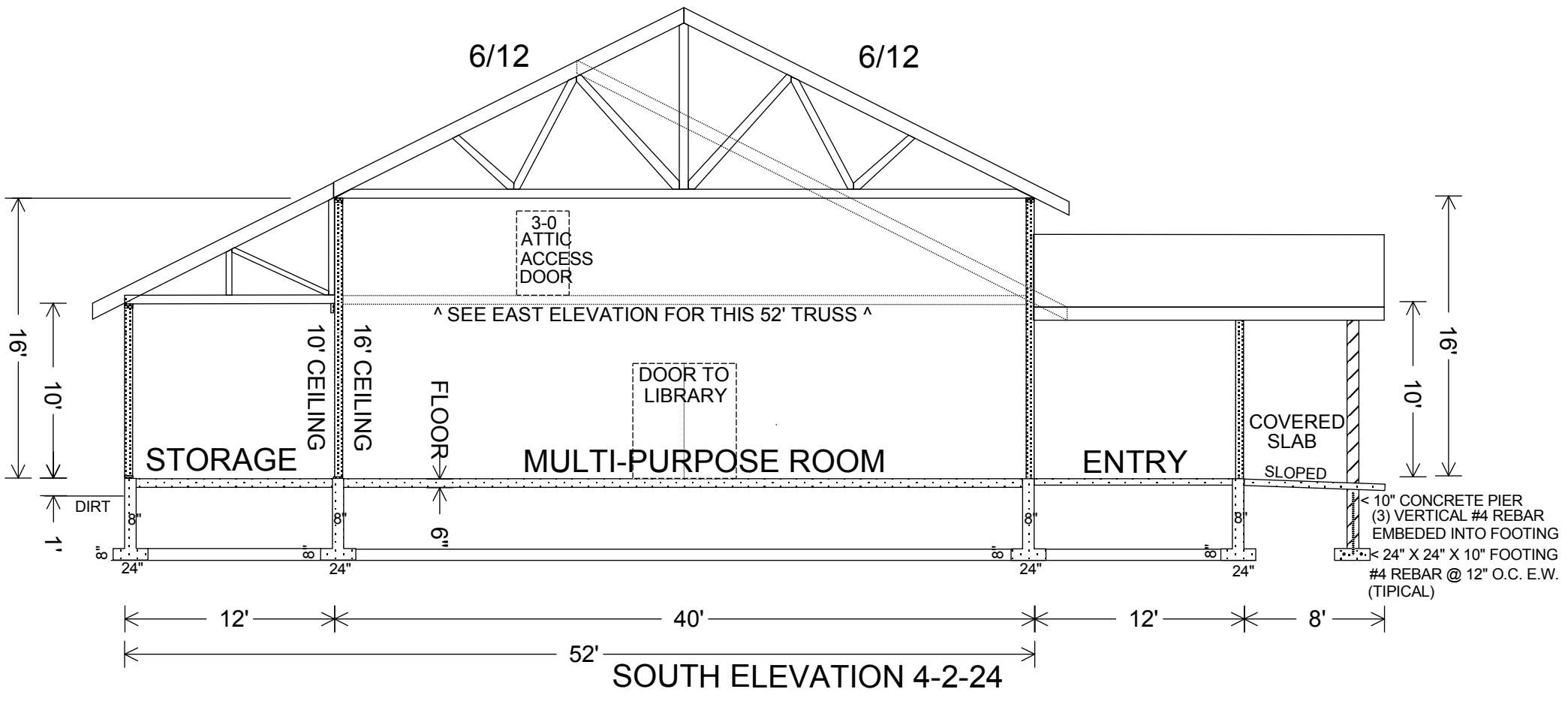
TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874
CROSS SECTIONS
REVISED 4-2-24

OWNER BUILD
1 STORY WITH 3,520 S.F.
2 X 6 FRAME CONSTRUCTION
BUILDING COMMITTEE CHAIRMAN
ANDREW BOKOV (425) 208-5894



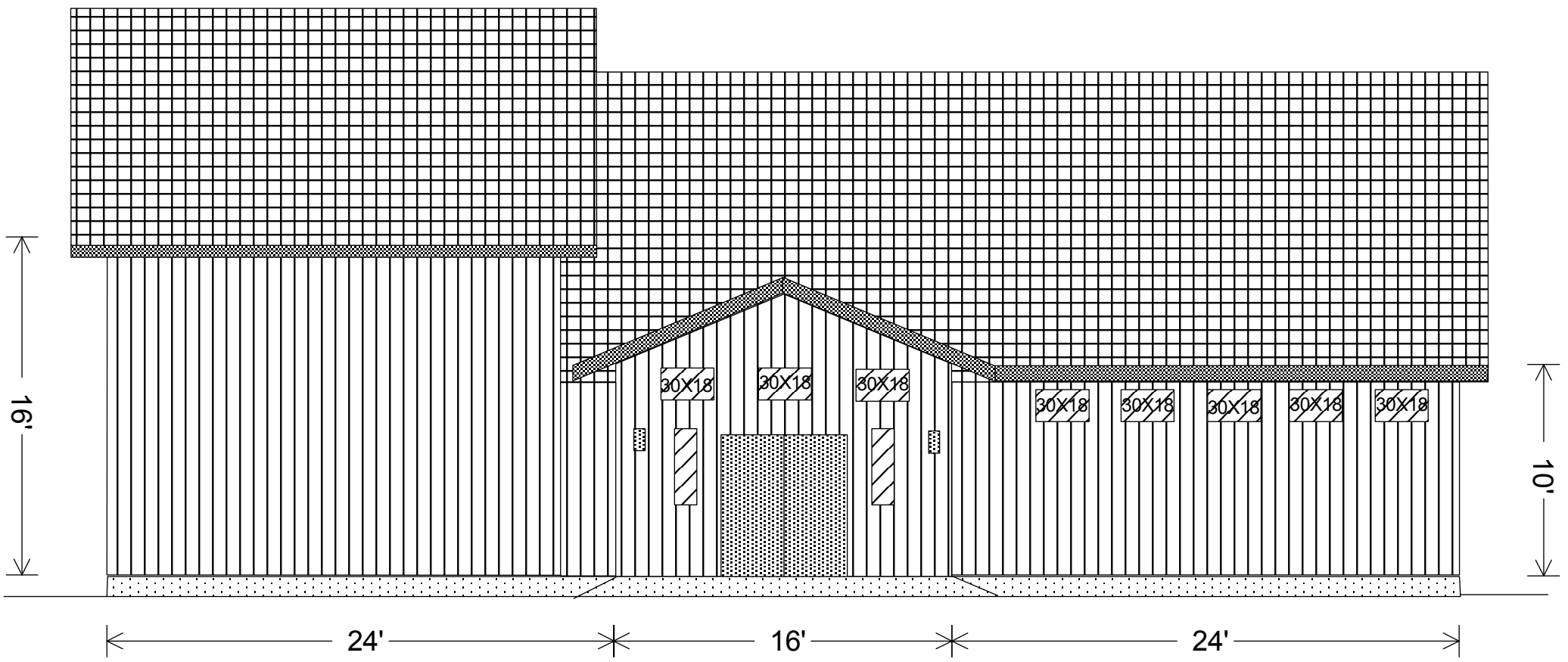
NORTH ELEVATION 4-2-24



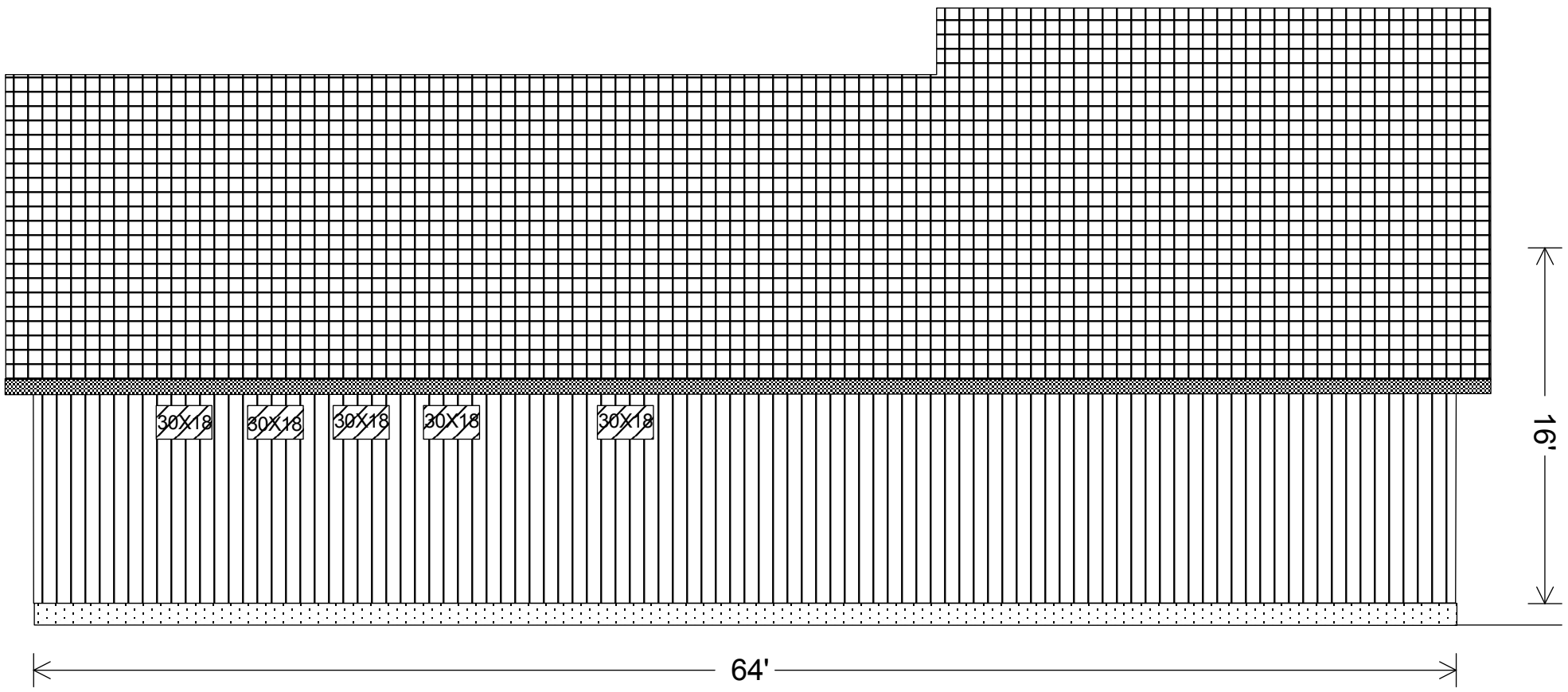
SOUTH ELEVATION 4-2-24

TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874
ELEVATIONS
REVISED 4-2-24

OWNER BUILD
1 STORY WITH 3,520 S.F.
2 X 6 FRAME CONSTRUCTION
BUILDING COMMITTEE CHAIRMAN
ANDREW BOKOV (425) 208-5894



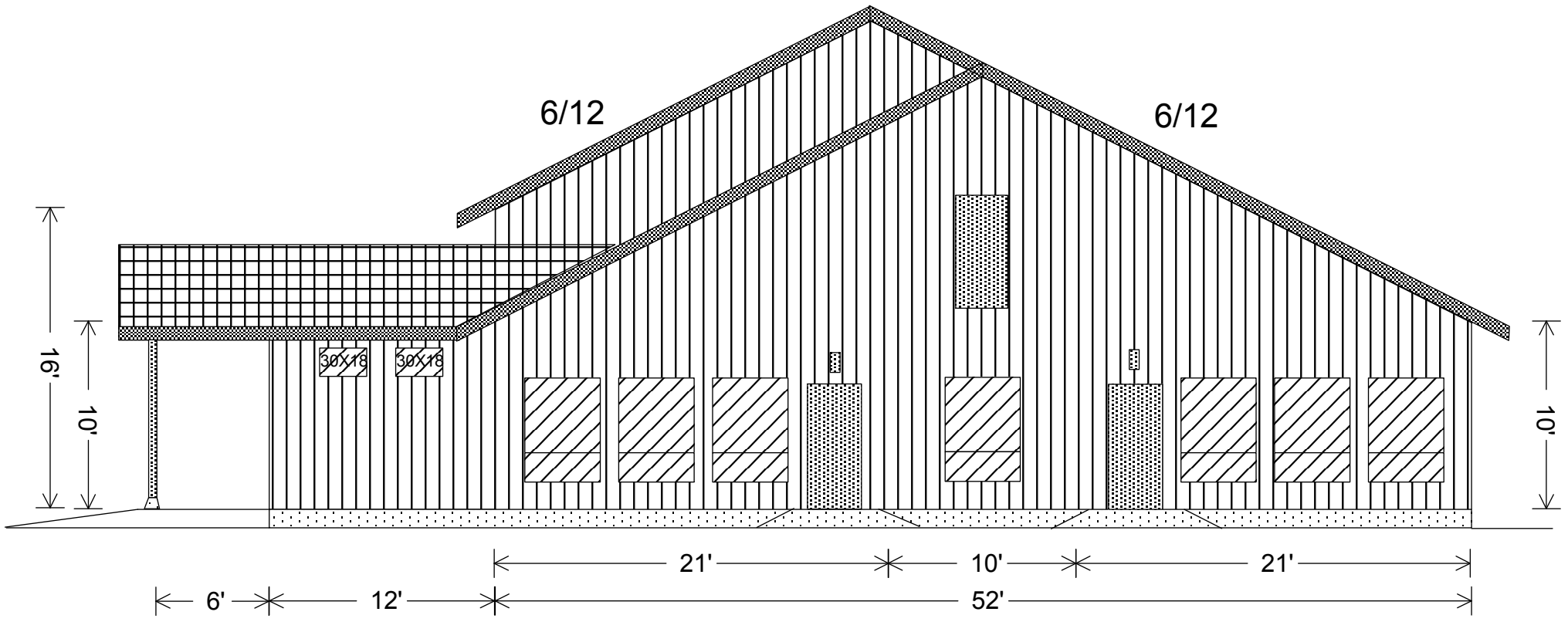
EAST ELEVATION 4-2-24



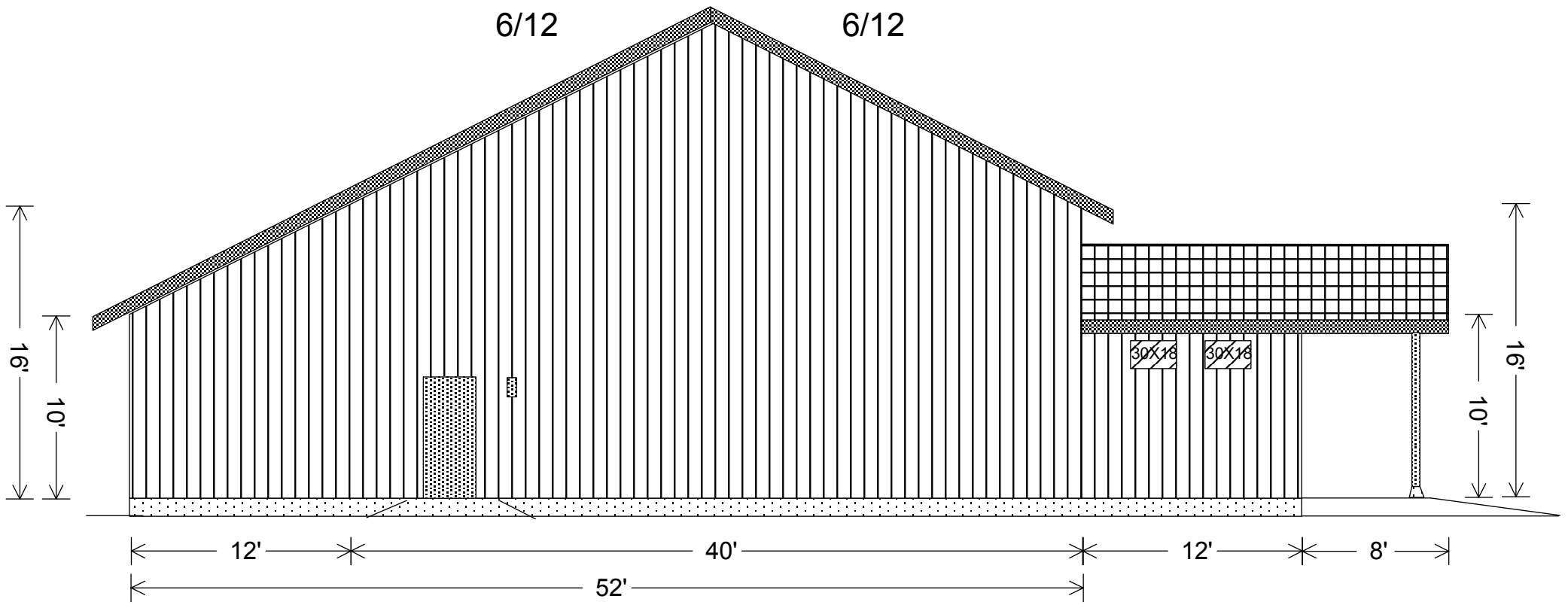
WEST ELEVATION 4-2-24

TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874
ELEVATIONS
REVISED 4-2-24

OWNER BUILD
1 STORY TOTAL 3,520 S.F.
2 X 6 FRAME CONSTRUCTION
BUILDING COMMITTEE CHAIRMAN
ANDREW BOKOV (425) 208-5894



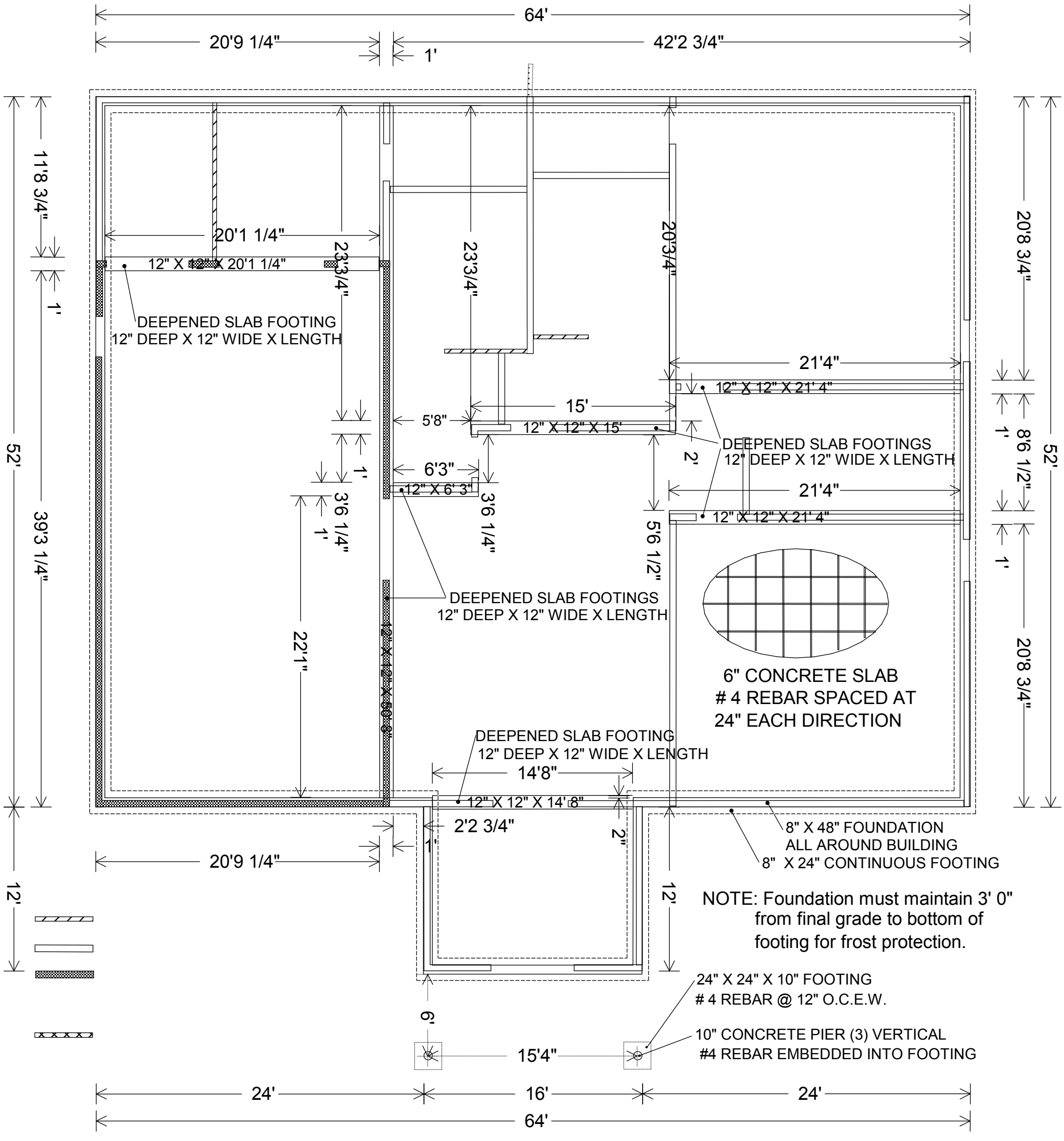
NORTH ELEVATION 4-2-24



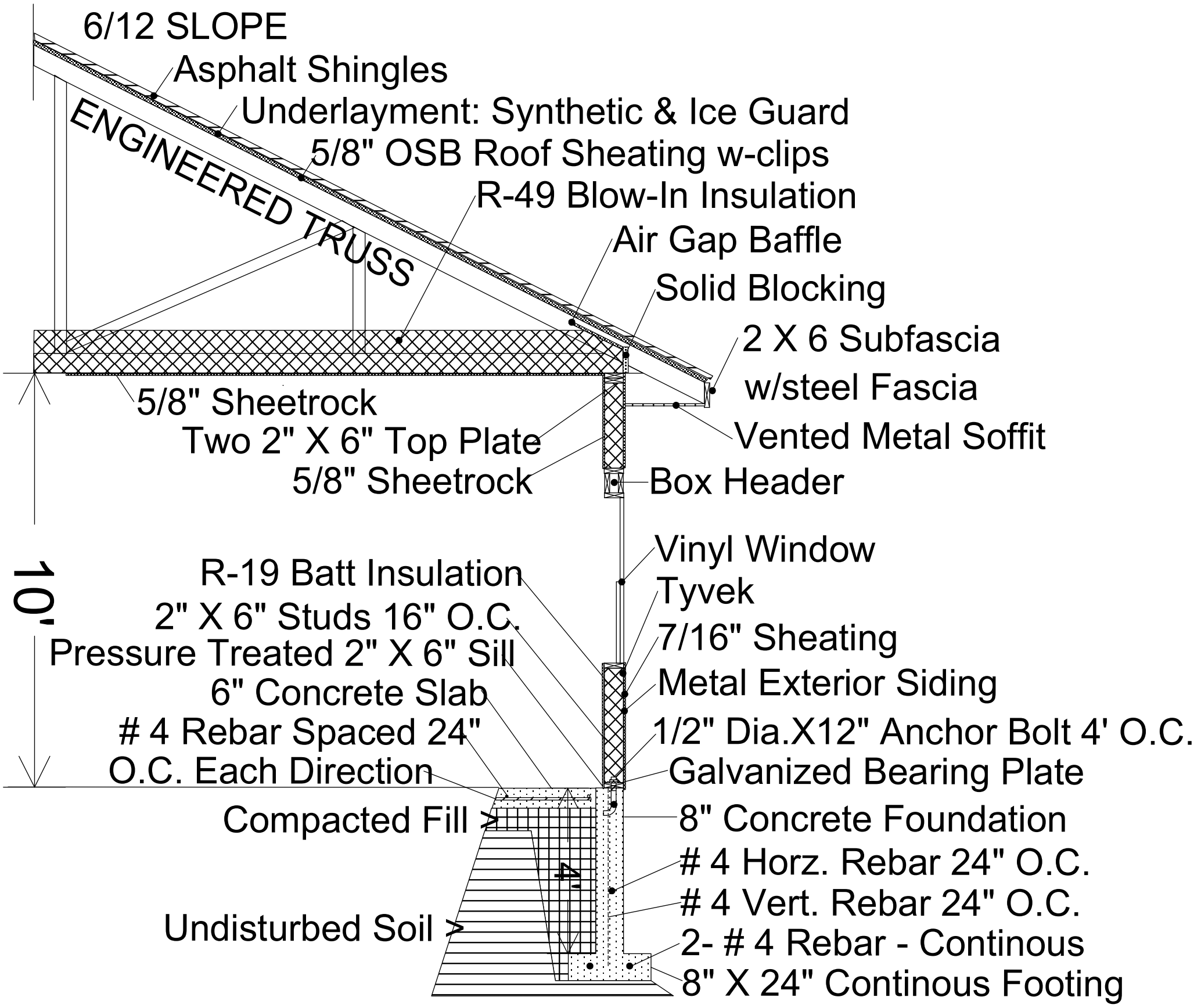
SOUTH ELEVATION 4-2-24

TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874
FOUNDATION PLAN
REVISED 3-28-24

OWNER BUILD
1 STORY WITH 3,520 S.F.
2 X 6 FRAME CONSTRUCTION
BUILDING COMMITTEE CHAIRMAN
ANDREW BOKOV (425) 208-5894

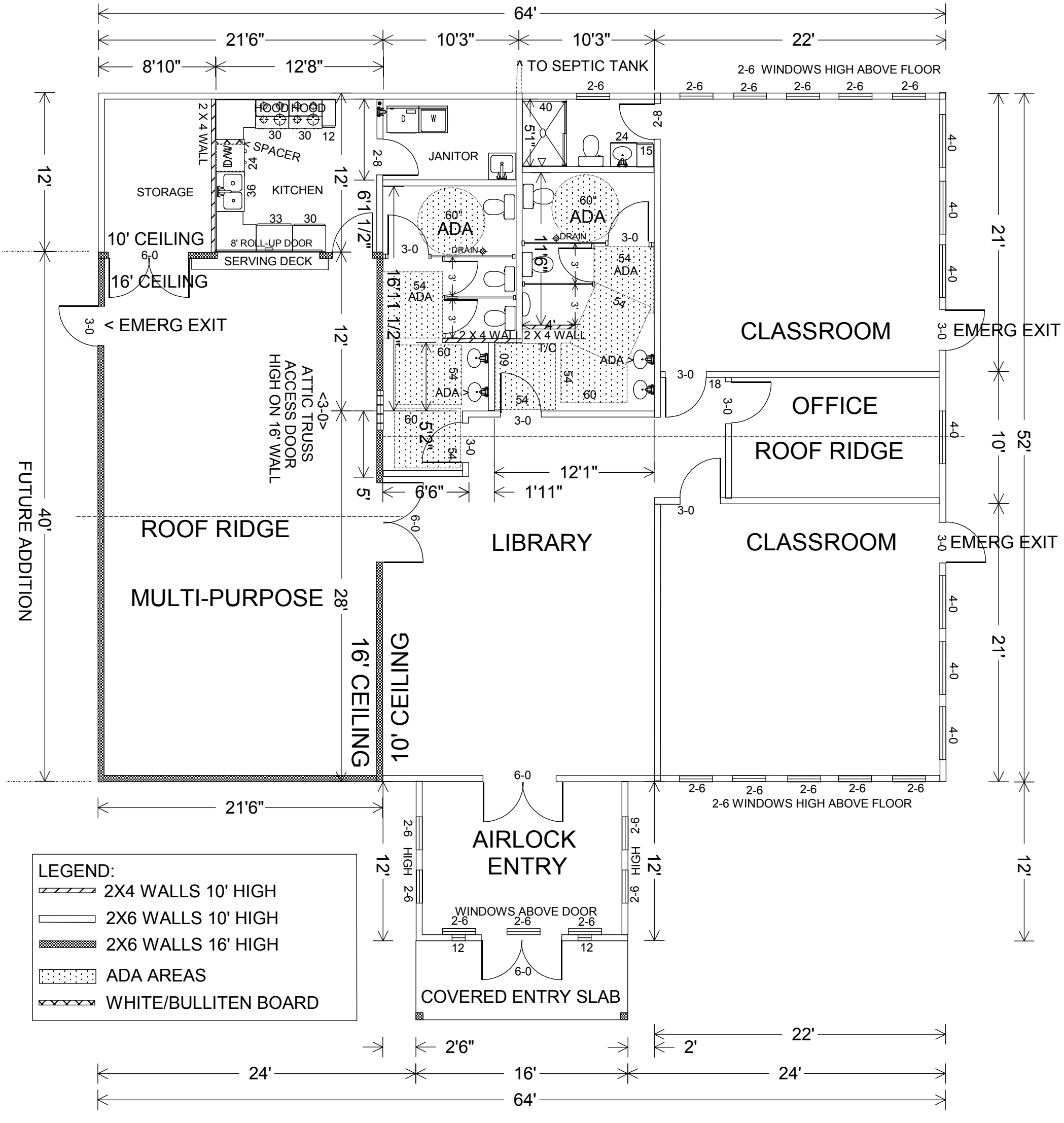


TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874
WALL & FOUNDATION
REVISED 4-3-24



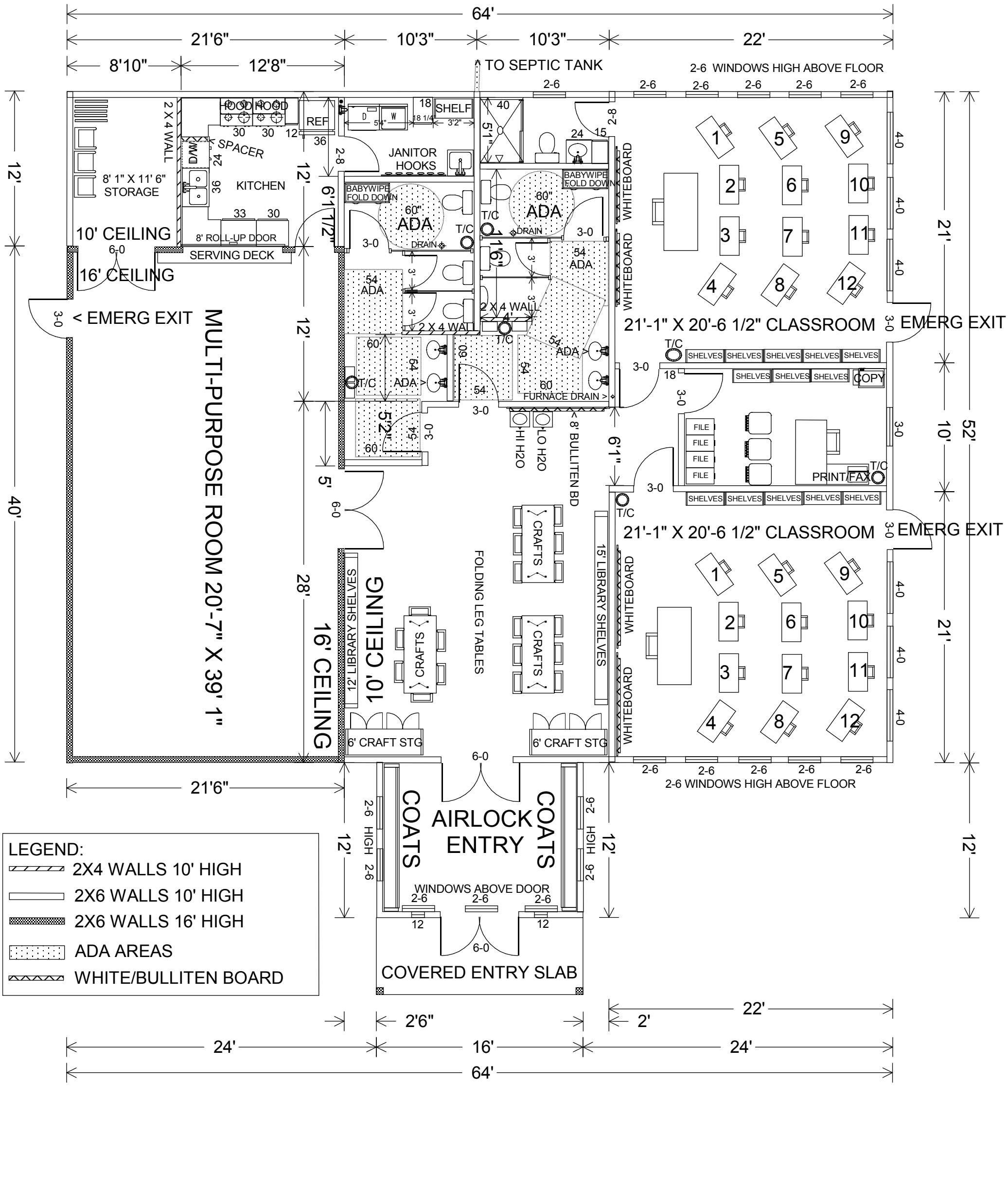
TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874
FLOOR PLAN NOT FURNISHED
REVISED 3-31-24

OWNER BUILD
1 STORY WITH 3,520 S.F.
2 X 6 FRAME CONSTRUCTION
BUILDING COMMITTEE CHAIRMAN
ANDREW BOKOV (425) 208-5894

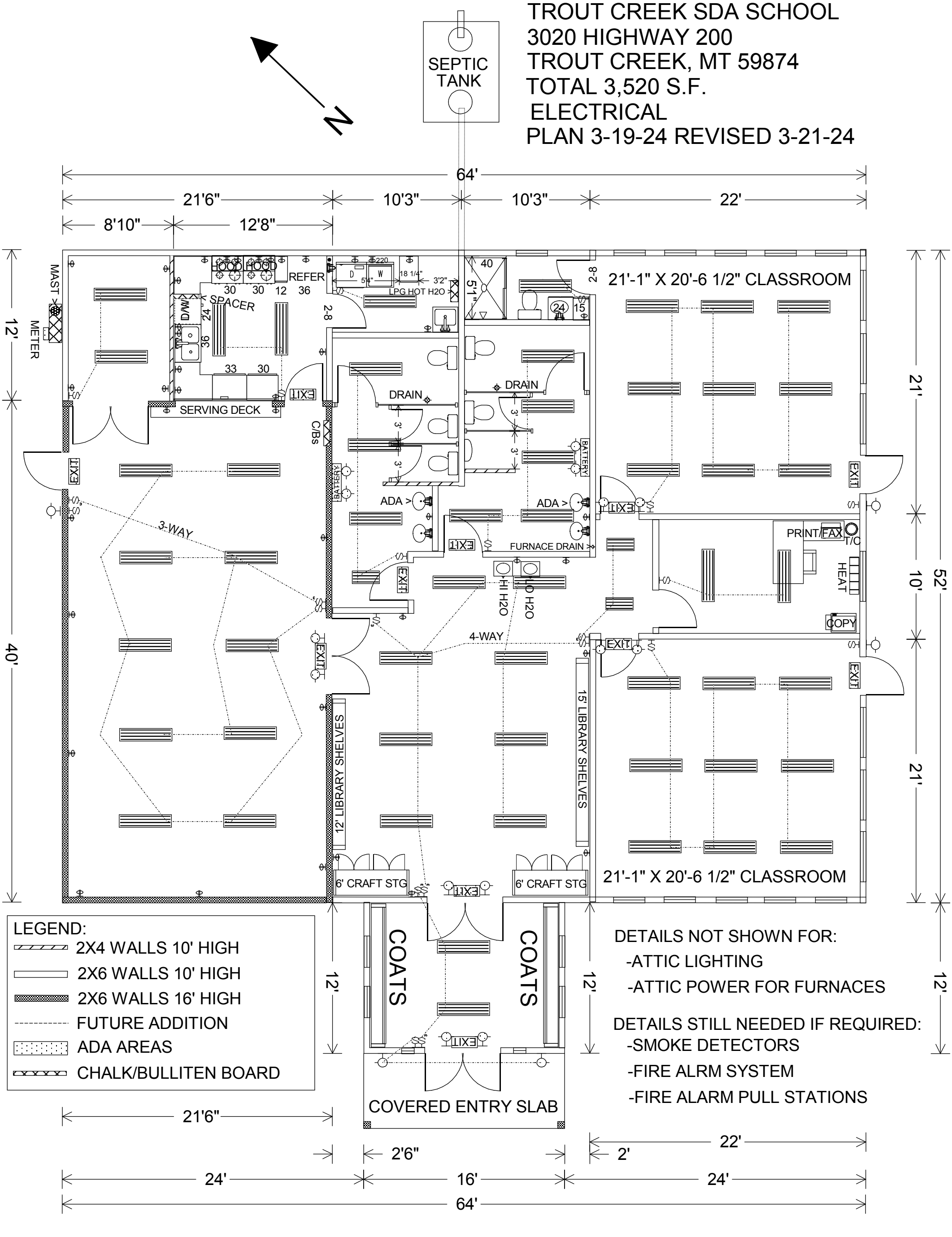


TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874
FLOOR PLAN FURNISHED
REVISED 4-2-24

OWNER BUILD
1 STORY WITH 3,520 S.F.
2 X 6 FRAME CONSTRUCTION
BUILDING COMMITTEE CHAIRMAN
ANDREW BOKOV (425) 208-5894



TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874
TOTAL 3,520 S.F.
ELECTRICAL
PLAN 3-19-24 REVISED 3-21-24



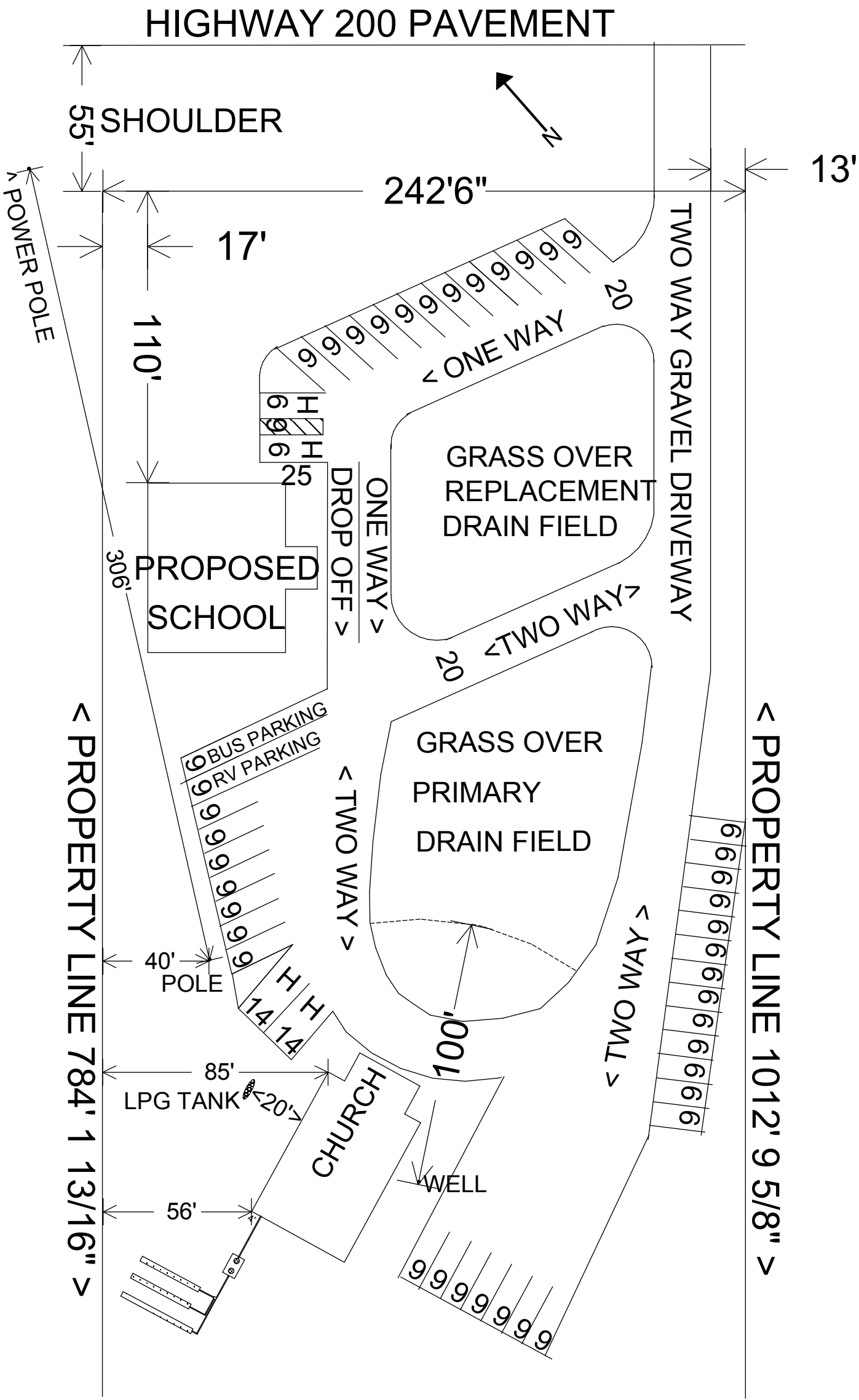
LEGEND:
- 2X4 WALLS 10' HIGH
- 2X6 WALLS 10' HIGH
- 2X6 WALLS 16' HIGH
- FUTURE ADDITION
- ADA AREAS
- CHALK/BULLITEN BOARD

DETAILS NOT SHOWN FOR:
- -ATTIC LIGHTING
- -ATTIC POWER FOR FURNACES

DETAILS STILL NEEDED IF REQUIRED:
- -SMOKE DETECTORS
- -FIRE ALRM SYSTEM
- -FIRE ALARM PULL STATIONS

Montana Conference SDA
3020 MT Highway 200
Trout Creek, MT 59874
Parcel ID: 353457212025
ACRES= 5.00

SITE MAP 4: Revised 5-30-24

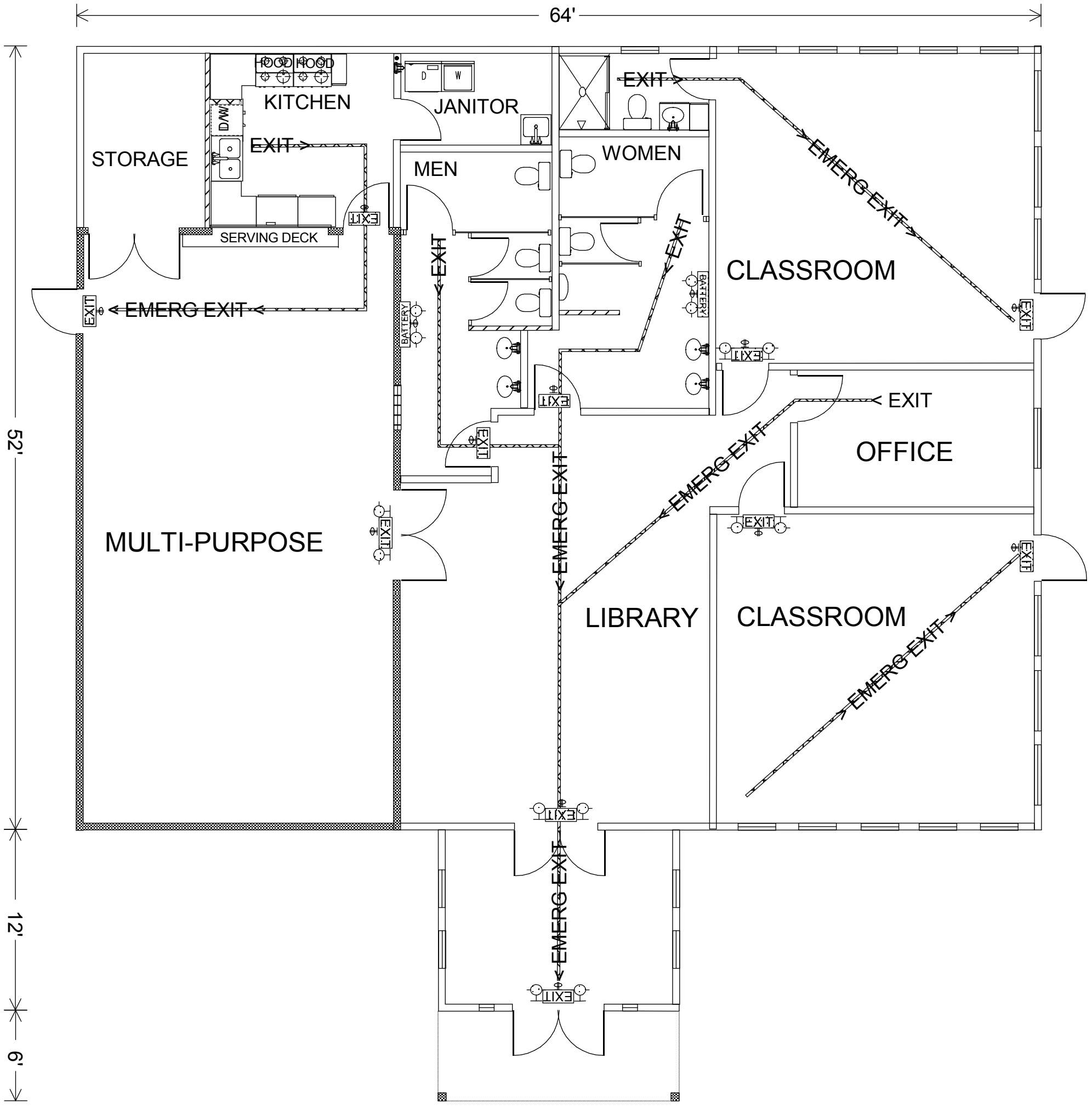


TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874

OWNER BUILD
1 STORY WITH 3,520 S.F.
2 X 6 FRAME CONSTRUCTION
BUILDING COMMITTEE CHAIRMAN
ANDREW BOKOV (425) 208-5894

EVACUATION ROUTES ~~EXIT~~
LIGHTED EXIT SIGNS EXIT
EMERG FLOOD LIGHTS BATTERY
EACH ITEM ABOVE HAS BATTERY BACKUP

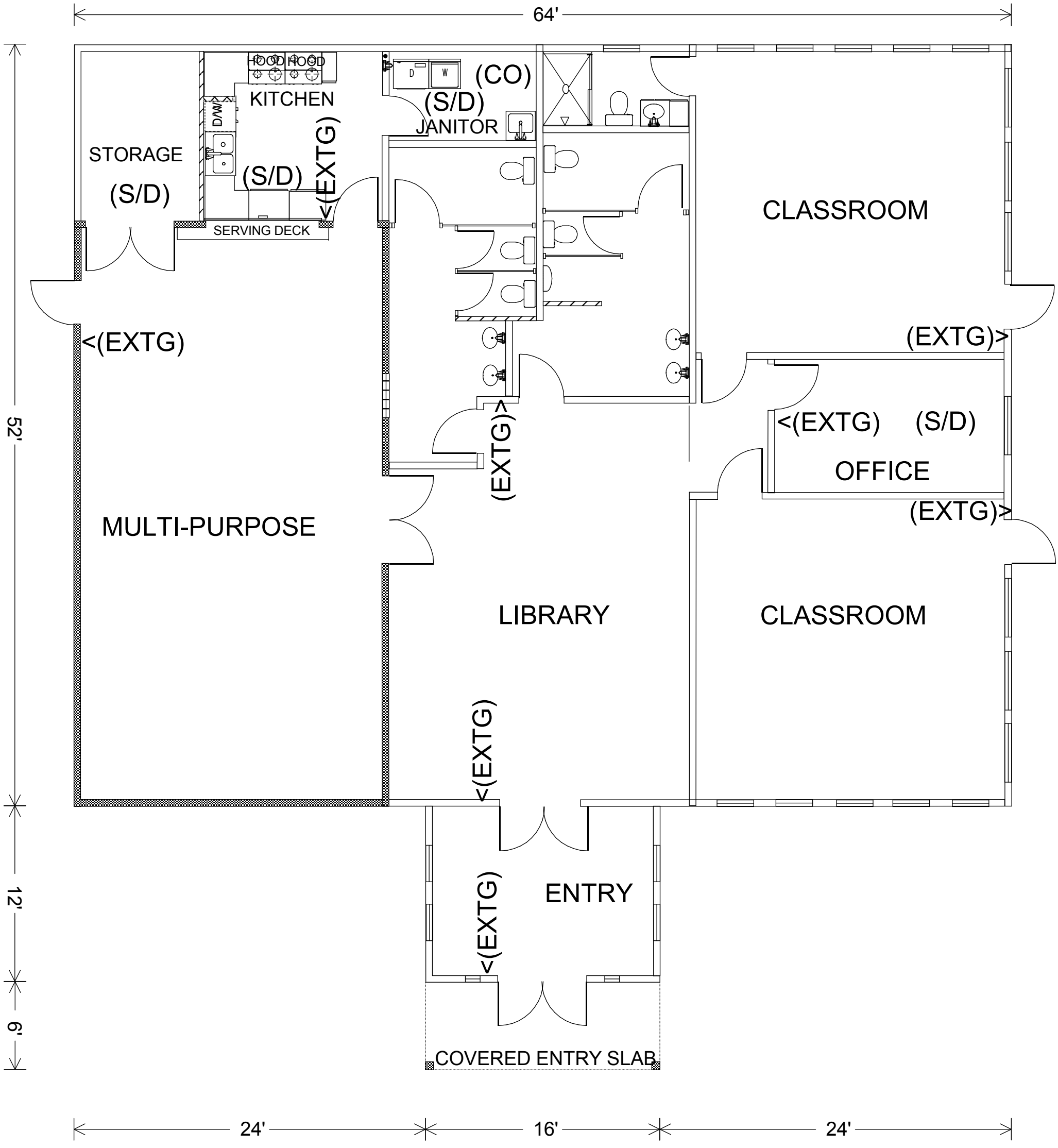
REVISED 5-24-24



ALL PEOPLE EVACUATING THIS BUILDING SHALL MEET ACROSS THE DRIVEWAY
IN THE GRASS AREA 40' IN FRONT OF THIS BUILDING

TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200
TROUT CREEK, MT 59874
FIRE EXTINGUISHERS (EXTG)
SMOKE DETECTORS (S/D)
CARBON MONOXIDE DETECTORS (CO)
REVISED 5-24-24

OWNER BUILD
1 STORY WITH 3,520 S.F.
2 X 6 FRAME CONSTRUCTION
BUILDING COMMITTEE CHAIRMAN
ANDREW BOKOV (425) 208-5894



EAGLE METAL

The truss designs referenced below have been prepared by me or under my direct supervision based on the truss design criteria and requirements ("design criteria") provided by **Trout Creek Truss**.

These truss designs are intended for the fabrication of individual building components that will perform to the design criteria provided. Any variance from the design criteria will render the affected truss designs inapplicable.

Listed below are the truss designs included in this package and covered by this seal.

Job: **DI1955** - 1210769
A1G, A1, B1d, B1G, B1, B2d, B2, B3d, B3G, B3, C1Ga, C1Gb, C1

Any location identification is for file reference only. No determination of the appropriateness of design criteria for any specific project has been made in preparing the truss designs.

Please refer to individual truss designs for specific design criteria.

Arturo A. Hernandez (MT, 17246)
My license expiration date for the state of MT is 06/30/2024.

IMPORTANT NOTE: The responsibility of the engineer sealing this package, as a Truss Engineer, is solely for design of individual trusses as individual building components based upon design criteria provided by others and set forth in the referenced truss drawings. The truss design criteria for the components have not been verified as appropriate for any particular building, project or use. Adequacy and suitability of design criteria and requirements for the truss designs for any specific project are the responsibility of the building designer, not the Truss Engineer, per ANSI/TPI-1, Chapter 2.

DESIGN NOTES

1. The Truss Design Drawing(s) provided with these Design Notes have been prepared under and are subject to ANSI / TPI 1 published by the Truss Plate Institute, www.tpinst.org. Capitalized terms have the meanings provided in ANSI / TPI 1.
2. Copies of each Truss Design Drawing shall be furnished to the installation contractor, Building Designer, Owner and all persons fabricating, handling, installing, bracing, or erecting the trusses.

DESIGN LIMITATIONS

3. The Truss Design Drawing is based upon specifications provided by the Building Designer in accordance with ANS1 / TPI 1. Neither the Truss Designer, Eagle, nor an engineer who seals this design (if any) assumes any responsibility for the adequacy or accuracy of specifications provided by the Building Designer.
4. The Building Designer is solely responsible for the suitability based upon the Truss Design Drawing and shall be responsible for reviewing and verifying that the information shown is in general conformance with the design of the Building.
5. Each Truss Design Drawing is for the individual building component (a truss). A seal on the Truss Design Drawing indicates acceptance of professional engineering responsibility solely for the individual truss.
6. Each Truss Design Drawing assumes trusses will be suitably protected from the environment.

HANDLING, INSTALLING, & BRACING

7. Refer to Building Component Safety Information (BCSI) for handling, installing, restraining and bracing trusses. Copies can be obtained from the Structural Building Components Association, www.sbcindustry.com.
8. Bracing shown on each Truss Design Drawing is for lateral support of individual truss components only to reduce buckling lengths. All temporary and permanent bracing, including lateral load and diagonal or cross bracing, are the responsibility, respectively, of the erector and Building Designer.
9. Eagle is not responsible for improper truss fabrication, handling, erection or bracing.
10. Compression chords shall be laterally braced by the roof or floor sheathing, directly attached, or have purlins provided at spacing shown, unless noted otherwise.
11. Bottom chord required bracing shall be at 1Oft spacing or less, if no structural rated ceiling is installed, unless noted otherwise.
12. Strongbacking shall be installed on all parallel chord trusses, including flooring systems, to limit deflection and reduce vibration. Refer to BCSI-B7.
13. Never exceed the design loading shown. Never stack building or other materials on inadequately braced truss; refer to BCSI.
14. Concentration of construction loads greater than the design loads shall not be applied to the trusses at any time; refer to BCSI.
15. Trusses shall be handled with care prior to erection to avoid damage. Refer to BCSI for recommended truss handling and erection.

MATERIALS & FABRICATION

16. Lumber moisture content shall be 19% or less at the time of fabrication unless noted otherwise.
17. Lumber used shall be of the species and size, and in all respects, equal to or better than that specified.
18. Unless expressly noted, the truss designs are not applicable for use with fire retardant or preservative treated lumber.
19. Plates shall be applied on both faces of truss at each joint and embedded fully. Knots and wane at joint locations shall be regulated in accordance with ANSI / TPI 1.
20. For a specified plate gauge and grade, the specified size is a minimum.
21. Connections not shown are the responsibility of others.
22. Adequate support shall be provided to resist gravity, lateral and uplift loads.
23. For 4X2 truss orientation, locate plates 0 - 1/16" from outside the edge of the truss.
24. Fabrication of truss shall be in accordance with ANSI / TPI 1.

OTHER NOTES

25. Camber is a non-structural consideration and is the responsibility of truss fabricator.
26. Do not cut or alter any truss member or plate without prior approval from a professional engineer.
27. Lumber design values are in accordance with ANSI / TPI 1; lumber design values are by others.
28. Install specified hangers per manufacturer recommendations.

SYMBOLS

PLATE SIZE

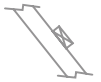
3X4 - The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

-, /, I, Indicates required direction of slots; Reference "Joint Details" for more information.

20 Ga Gr40 connectors required
3X10-20HS - 20 Ga Gr60 connectors required
8X10-18HS - 18 Ga Gr60 connectors required

LATERAL BRACING

When this symbol shown, continuous lateral bracing is required on the member of the truss.



BEARING

Indicates location where bearings (supports) occur.

PLATE LOCATION & ORIENTATION

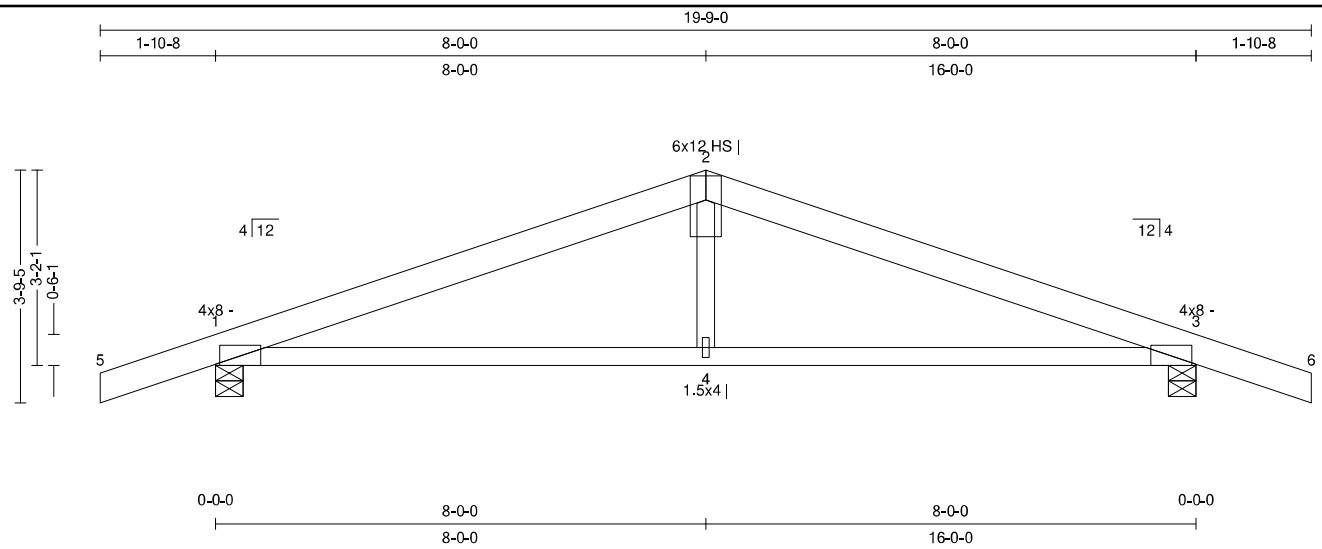
The plate shall be centered on joint and/or placed in accordance with the design drawing/QC full scale details.

REFERENCES

- **ANSI / TPI 1:** National Design Standard for Metal Plate Connected Wood Trusses
- **BCSI:** Building Component & Safety Information - Guide to Good Practice for Handling, Installing, Restraining, & Bracing of Metal Plate Connected Wood Trusses.
- **NDS:** National Design Specification for Wood Construction
- **ESR:** 1082 published by the International Code Council. www.icc-es.org

	Trout Creek Truss 993 Mt Hwy 200 Noxon Mt. 59853 Ph. 406-847-7663 Fax. 406-847-7664	Truss:A1 Job: DI1955 Date: 05/24/24 10:57:47 Page: 1 of 1

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
16-0-0	4/12	9	1-10-8	1-10-8	0-0-0	0-0-0	1	24 in	68 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)	General		CSI		Deflection		L/	(loc)	Allowed
TCLL: 75	Bldg Code:	IRC 2021/	TC:	0.81 (1-2)	Vert TL:	0.33 in	L / 553	(3-4)	L / 180
TCDL: 8		TPI 1-2014	BC:	0.86 (4-1)	Vert LL:	0.23 in	L / 786	(3-4)	L / 240
BCLL: 0	Rep Mbr:	Yes	Web:	0.11 (2-4)	Horz TL:	0.05 in		3	
BCDL: 8	Lumber D.O.L.:	115 %							

Reaction

JT	Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	1	5.5 in	2.57 in	2,408 lbs	·	-129 lbs	-284 lbs	-284 lbs	11 lbs
3	1	5.5 in	2.57 in	2,408 lbs	·	-129 lbs	-284 lbs	-284 lbs	·

05/24/2024

MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL #1 2 x 4
Web: DFL Stud 2 x 4

Bracing

TC: Sheathed or Purlins at 3-6-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads

1) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
2) This truss has been designed to account for the effects of ice dams forming at the eaves.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
4) This truss has been designed for the effects of TC LL= 20 psf.
5) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.806	-2,948 lbs		2-3	0.806	-2,948 lbs				
BC	3-4	0.857	2,644 lbs	(-376 lbs)	4-1	0.857	2,644 lbs	(-376 lbs)			
Web	2-4	0.109	326 lbs								

Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) The fabrication tolerance for this roof truss is 30 % (Cq = 0.70).
3) Brace bottom chord with approved sheathing or purlins per Bracing Summary.
4) A creep factor of 1.50 has been applied for this truss analysis.
5) Listed wind uplift reactions based on MWFRS & C&C loading.

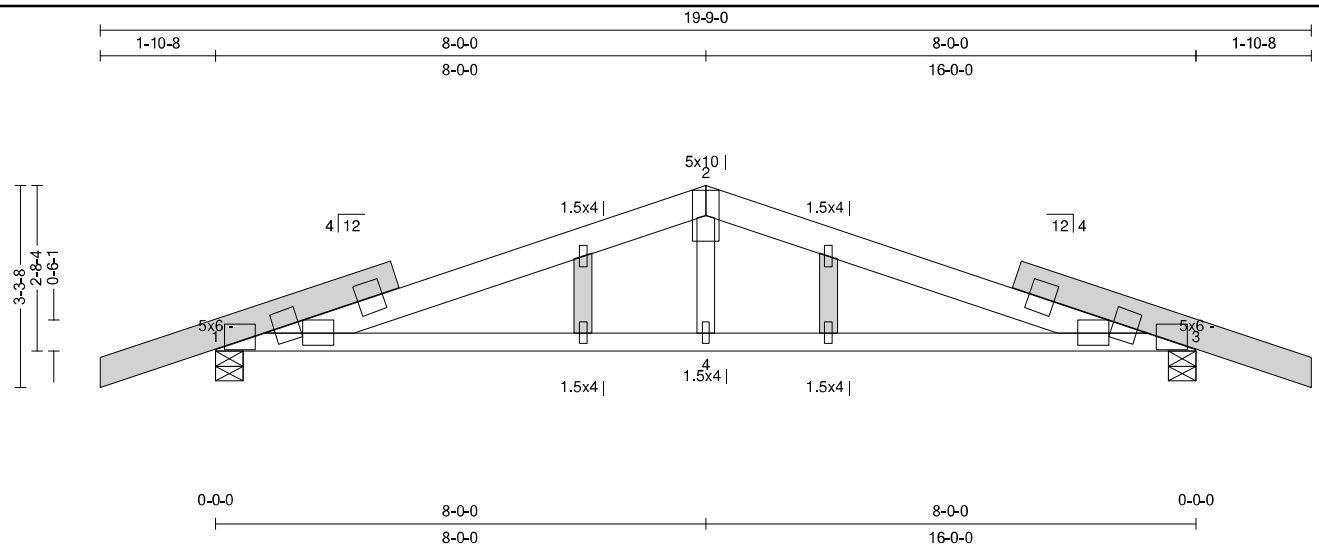
TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

Trout Creek Truss

993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:A1G
Job: DI1955
Date: 05/24/24 10:57:49
Page: 1 of 1

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
16-0-0	4/12	1	1-10-8	1-10-8	0-0-0	0-0-0	1	24 in	83 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)	General		CSI		Deflection		L/	(loc)	Allowed
TCLL: 75	Bldg Code:	IRC 2021/	TC:	0.89 (1-2)	Vert TL:	0.33 in	L / 552	(3-4)	L / 180
TCDL: 8		TPI 1-2014	BC:	0.99 (4-1)	Vert LL:	0.25 in	L / 718	(3-4)	L / 240
BCLL: 0	Rep Mbr:	No	Web:	0.10 (2-4)	Horz TL:	0.06 in		3	
BCDL: 8	Lumber D.O.L.:	115 %							

Reaction

JT	Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	1	5.5 in	2.57 in	2,408 lbs	·	-129 lbs	-284 lbs	-284 lbs	-11 lbs
3	1	5.5 in	2.57 in	2,408 lbs	·	-129 lbs	-284 lbs	-284 lbs	·

05/24/2024

MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL #1 2 x 4
Web: DFL Stud 2 x 4

Bracing

TC: Sheathed or Purlins at 2-10-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads

1) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
2) This truss has been designed to account for the effects of ice dams forming at the eaves.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
4) This truss has been designed for the effects of TC LL= 20 psf.
5) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.889	-3,291 lbs		2-3	0.889	-3,291 lbs					
BC	3-4	0.987	3,093 lbs	(-341 lbs)	4-1	0.987	3,093 lbs	(-341 lbs)				
Web												

Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) Gable webs placed at 24 " OC, U.N.O.
3) Attach structural gable blocks with 5x6 20ga plates, U.N.O.
4) Stitch top chords together with 20Ga plates at 24 in oc maximum, U.N.O.
5) Bracing shown is for in-plane requirements. For out-of-plane requirements, refer to BCSI-B3 published by the SBCA.
6) The fabrication tolerance for this roof truss is 30 % (Cq = 0.70).
7) A creep factor of 1.50 has been applied for this truss analysis.
8) ▭ Indicates non-structural members.
9) Listed wind uplift reactions based on MWFRS & C&C loading.

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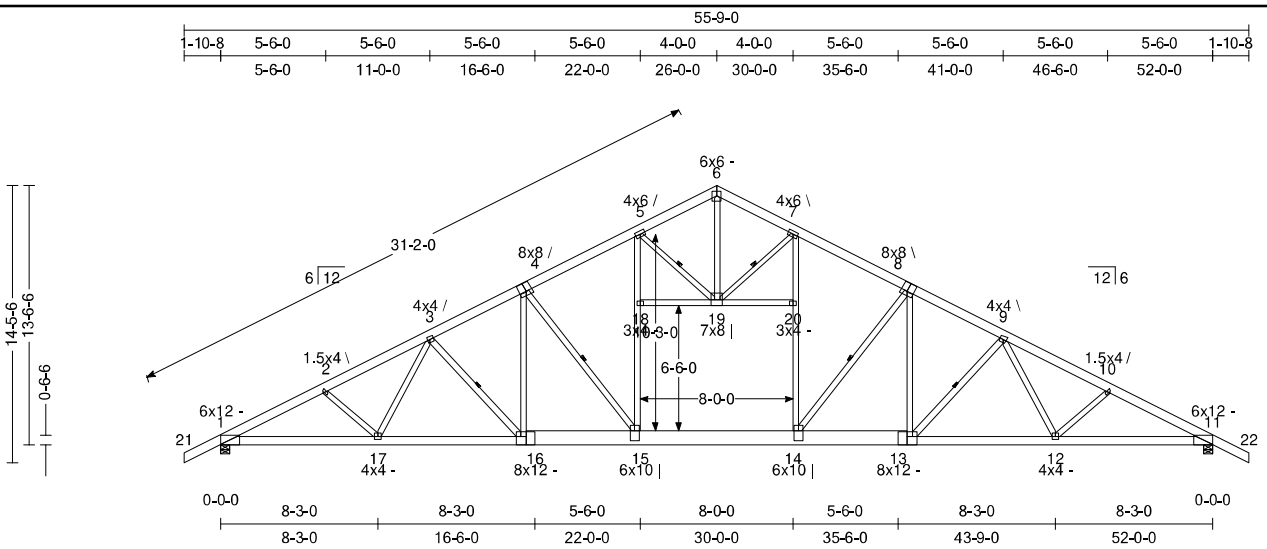
Eagle Metal Products

	Trout Creek Truss 993 Mt Hwy 200 Noxon Mt. 59853 Ph. 406-847-7663 Fax. 406-847-7664	Truss:B1 Job: DI1955 Date: 05/24/24 10:57:52 Page: 1 of 2

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	10	1-10-8	1-10-8	0-0-0	0-0-0	1	24 in	409 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)		**General**		**CSI**		**Deflection**		**L/**	**(loc)**	**Allowed**
TCLL:	75	Bldg Code:	IRC 2021/	TC:	0.87 (1-2)	Vert TL:	1.19 in	L / 516	(13-14)	L / 180
TCDL:	8		TPI 1-2014	BC:	0.91 (17-1)	Vert LL:	0.94 in	L / 655	(13-14)	L / 240
BCLL:	0	Rep Mbr:	Yes	Web:	0.98 (4-15)	Horz TL:	0.33 in		11	
BCDL:	8	Lumber D.O.L.:	115 %							

05/24/2024

Reaction

JT	Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	1	5.5 in	5.70 in	5,340 lbs	·	-308 lbs	·	-308 lbs	-88 lbs
11	1	5.5 in	5.65 in	5,301 lbs	·	-308 lbs	·	-308 lbs	·

Bearing enhancers may be required at the following bearings: See Eagle Metal 'Bearing Enhancer' detail for capacity of specific bearing block(s) and connectors: Brg # 1, 11

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL 1800/1.6 2 x 6 except:
DFL 2250/1.9 2 x 10: 13-16
Web: DFL Stud 2 x 4 except:
DFL #1 2 x 4: 4-15, 5-15, 6-19, 7-14, 8-14

Bracing

TC: Sheathed or Purlins at 2-6-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Web: One Midpoint Row: 3-16, 4-15, 5-19, 7-19, 8-14, 9-13

Loads

1) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
2) This truss has been designed to account for the effects of ice dams forming at the eaves.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
4) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 / 12 and area supported = 111.5 ft^2, DOL = 115 %.
5) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.868	-10,046 lbs		4-5	0.676	-7,012 lbs		7-8	0.667	-7,003 lbs		10-11	0.863	-9,962 lbs	
	2-3	0.571	-9,428 lbs		5-6	0.397	-4,803 lbs		8-9	0.561	-8,168 lbs					
	3-4	0.568	-8,258 lbs		6-7	0.411	-4,809 lbs		9-10	0.564	-9,344 lbs					
BC	11-12	0.901	8,743 lbs	(-405 lbs)	13-14	0.826	7,186 lbs	(-205 lbs)	15-16	0.807	7,269 lbs	(-205 lbs)	17-1	0.909	8,819 lbs	(-405 lbs)
	12-13	0.758	7,938 lbs	(-306 lbs)	14-15	0.826	6,069 lbs	(-92 lbs)	16-17	0.775	8,016 lbs	(-306 lbs)				
Web	2-17	0.240	-773 lbs		5-18	0.715	1,864 lbs	(-56 lbs)	7-20	0.730	1,842 lbs	(-56 lbs)	9-12	0.196	584 lbs	(-6 lbs)
	3-17	0.196	584 lbs	(-6 lbs)	18-15	0.946	1,875 lbs	(-57 lbs)	20-14	0.973	1,851 lbs	(-57 lbs)	10-12	0.240	-773 lbs	
	3-16	0.361	-1,219 lbs		5-19	0.595	-2,592 lbs		8-14	0.950	-2,714 lbs					
	4-16	0.526	1,572 lbs	(-121 lbs)	6-19	0.574	3,508 lbs	(-268 lbs)	8-13	0.499	1,493 lbs	(-138 lbs)				
	4-15	0.978	-2,792 lbs		7-19	0.593	-2,582 lbs		9-13	0.361	-1,219 lbs					

Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) Attic floor area has been designed for storage with a 25 psf floor live and a 5 psf floor dead load.
3) The fabrication tolerance for this roof truss is 0 % (Cq = 1.00).

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:B1
Job: DI1955
Date: 05/24/24 10:57:52

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	10	1-10-8	1-10-8	0-0-0	0-0-0	1	24 in	409 lbs

4) Brace bottom chord with approved sheathing or purlins per Bracing Summary.
5) At least one web of this truss has been designed with a panel point in the web. All panel points on such webs shall be braced laterally perpendicular to the plane of the truss. Lateral braces shall be installed within 6 " of each web panel point.
6) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
7) A creep factor of 1.50 has been applied for this truss analysis.
8) ✉ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
9) Listed wind uplift reactions based on MWFRS & C&C loading.

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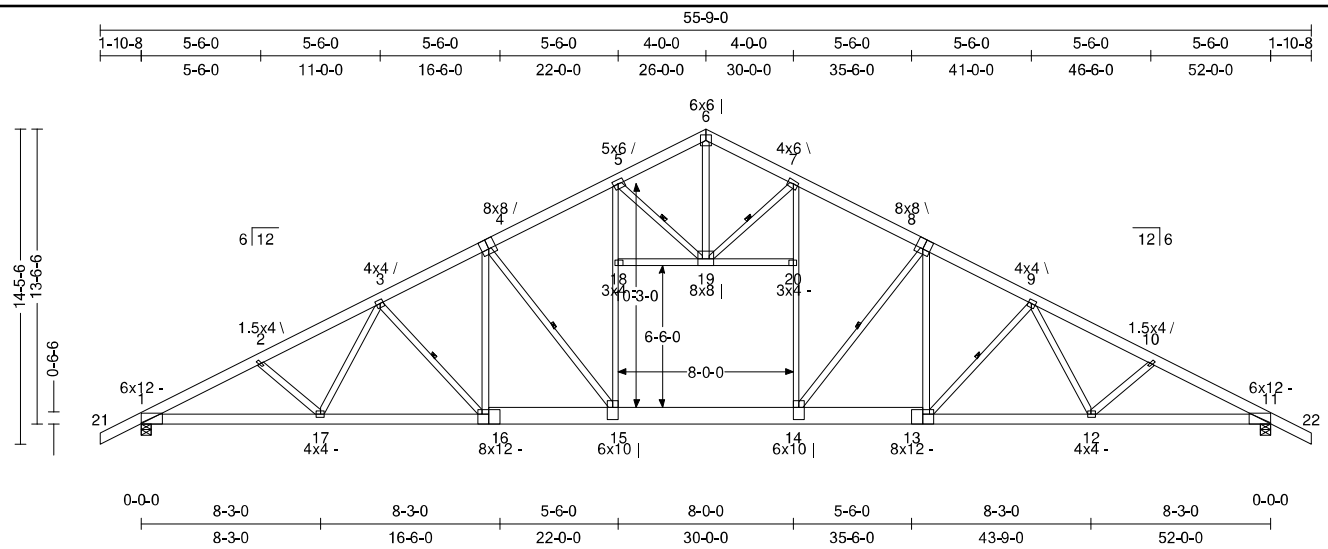
Eagle Metal Products

	Trout Creek Truss 993 Mt Hwy 200 Noxon Mt. 59853 Ph. 406-847-7663 Fax. 406-847-7664	Truss:B1d Job: DI1955 Date: 05/24/24 10:57:59 Page: 1 of 2

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	1	1-10-8	1-10-8	0-0-0	0-0-0	1	24 in	409 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)		General		CSI		Deflection		L/	(loc)	Allowed
TCLL:	75	Bldg Code:	IRC 2021/	TC:	0.87 (1-2)	Vert TL:	1.19 in	L / 516	(13-14)	L / 180
TCDL:	8		TPI 1-2014	BC:	0.91 (17-1)	Vert LL:	0.94 in	L / 655	(13-14)	L / 240
BCLL:	0	Rep Mbr:	Yes	Web:	0.98 (4-15)	Horz TL:	0.33 in		11	
BCDL:	8	Lumber D.O.L.:	115 %							

Reaction

JT	Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	1	5.5 in	5.70 in	5,340 lbs	·	-308 lbs	·	-308 lbs	3,503 lbs
11	1	5.5 in	5.65 in	5,301 lbs	·	-308 lbs	·	-308 lbs	·

Bearing enhancers may be required at the following bearings: See Eagle Metal 'Bearing Enhancer' detail for capacity of specific bearing block(s) and connectors: Brg # 1, 11

05/24/2024

MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL 1800/1.6 2 x 6 except:
DFL 2250/1.9 2 x 10: 13-16
Web: DFL Stud 2 x 4 except:
DFL #1 2 x 4: 4-15, 5-15, 6-19, 7-14, 8-14

Bracing

TC: Sheathed or Purlins at 2-6-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Web: One Midpoint Row: 3-16, 4-15, 5-19, 7-19, 8-14, 9-13

Loads

1) This truss has been designed for the effects due to a 3,500 lbs (56.2 plf) drag load distributed along the TC rake from each direction.
2) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
3) This truss has been designed to account for the effects of ice dams forming at the eaves.
4) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
5) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 111.5 ft^2, DOL = 115 %.
6) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.868	-10,046 lbs		4-5	0.676	-7,012 lbs		7-8	0.667	-7,003 lbs		10-11	0.863	-9,962 lbs	
	2-3	0.571	-9,428 lbs		5-6	0.397	-4,803 lbs		8-9	0.561	-8,168 lbs					
	3-4	0.568	-8,258 lbs		6-7	0.411	-4,809 lbs		9-10	0.564	-9,344 lbs					
BC	11-12	0.901	8,743 lbs	(-405 lbs)	13-14	0.826	7,186 lbs	(-205 lbs)	15-16	0.807	7,269 lbs	(-862 lbs)	17-1	0.909	8,819 lbs	(-1,433 lbs)
	12-13	0.758	7,938 lbs	(-306 lbs)	14-15	0.826	6,069 lbs	(-711 lbs)	16-17	0.775	8,016 lbs	(-863 lbs)				
Web	2-17	0.240	-773 lbs		5-18	0.715	1,864 lbs	(-56 lbs)	7-20	0.730	1,842 lbs	(-56 lbs)	9-12	0.196	584 lbs	(-6 lbs)
	3-17	0.196	584 lbs	(-6 lbs)	18-15	0.946	1,875 lbs	(-57 lbs)	20-14	0.973	1,851 lbs	(-57 lbs)	10-12	0.240	-773 lbs	
	3-16	0.361	-1,219 lbs		5-19	0.595	-2,592 lbs		8-14	0.950	-2,714 lbs					
	4-16	0.526	1,572 lbs	(-121 lbs)	6-19	0.574	3,508 lbs	(-268 lbs)	8-13	0.499	1,493 lbs	(-138 lbs)				
	4-15	0.978	-2,792 lbs		7-19	0.593	-2,582 lbs		9-13	0.361	-1,219 lbs					

Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) Attic floor area has been designed for storage with a 25 psf floor live and a 5 psf floor dead load.
3) The fabrication tolerance for this roof truss is 10 % (Cq = 0.90).

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Eagle Metal Products

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:B1d
Job: DI1955
Date: 05/24/24 10:57:59

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	1	1-10-8	1-10-8	0-0-0	0-0-0	1	24 in	409 lbs

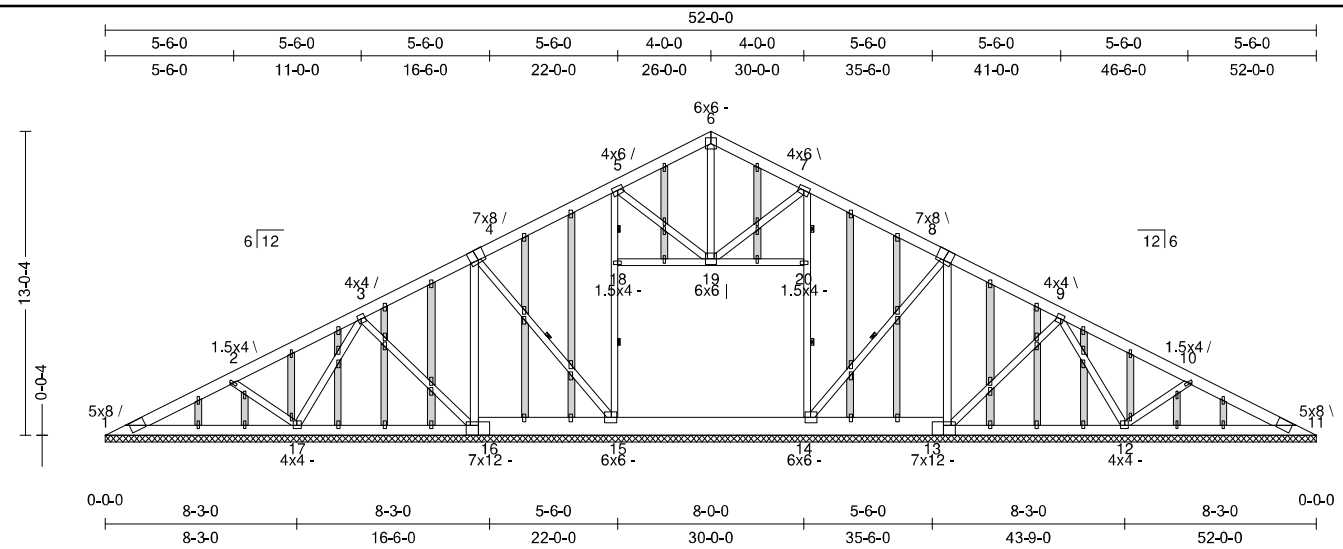
4) Brace bottom chord with approved sheathing or purlins per Bracing Summary.
5) At least one web of this truss has been designed with a panel point in the web. All panel points on such webs shall be braced laterally perpendicular to the plane of the truss. Lateral braces shall be installed within 6 " of each web panel point.
6) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
7) A creep factor of 1.50 has been applied for this truss analysis.
8) ✉ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
9) Listed wind uplift reactions based on MWFRS & C&C loading.

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:B1G
Job: DI1955
Date: 05/24/24 10:57:56
Page: 1 of 2

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	494 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)	General		CSI		Deflection		L/	(loc)	Allowed
TCLL: 75	Bldg Code:	IRC 2021/	TC:	0.64 (4-5)	Vert TL:	0.04 in	L / 999	(14-15)	L / 180
TCDL: 8		TPI 1-2014	BC:	0.12 (14-15)	Vert LL:	0.02 in	L / 999	(14-15)	L / 240
BCLL: 0	Rep Mbr:	No	Web:	0.81 (4-16)	Horz TL:	0 in			
BCDL: 8	Lumber D.O.L.:	115 %							

Reaction

Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	624 in	N/A	1,368 lbs	·	-74 lbs	·	-74 lbs	283 lbs
1	624 in	N/A	1,142 lbs	·	-90 lbs	·	-90 lbs	247 lbs
1	624 in	N/A	2,334 lbs	·	-79 lbs	·	-79 lbs	224 lbs
1	624 in	N/A	2,334 lbs	·	-79 lbs	·	-79 lbs	-224 lbs
1	624 in	N/A	1,197 lbs	·	-90 lbs	·	-90 lbs	-247 lbs
1	624 in	N/A	1,368 lbs	·	-74 lbs	·	-74 lbs	-284 lbs
1	624 in	N/A	109 lbs	-53 lbs	-10 lbs	-2 lbs	-53 lbs	-144 lbs
1	624 in	N/A	109 lbs	-53 lbs	-10 lbs	-2 lbs	-53 lbs	144 lbs
1	624 in	N/A	883 lbs	·	-20 lbs	·	-20 lbs	972 lbs
1	624 in	N/A	46 lbs	-55 lbs	-1 lbs	-3 lbs	-55 lbs	·
1	624 in	N/A	883 lbs	·	-20 lbs	·	-20 lbs	-971 lbs
1	624 in	N/A	46 lbs	-55 lbs	-1 lbs	-3 lbs	-55 lbs	·

05/24/2024
MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL 1800/1.6 2 x 6 except:
DFL 2250/1.9 2 x 10: 13-16
Web: DFL Stud 2 x 4

Bracing

TC: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Web: One Midpoint Row: 4-15, 5-15, 7-14, 8-14

Loads

1) This truss has been designed for the effects due to a 2,000 lbs (34.4 plf) drag load distributed along the TC rake from each direction.
2) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
4) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 104 ft^2, DOL = 115 %.
5) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.291	-1,176 lbs	4-5	0.641	-616 lbs	7-8	0.641	-616 lbs	10-11	0.291	-1,176 lbs
	2-3	0.373	-504 lbs	5-6	0.545	-711 lbs	8-9	0.369	-690 lbs			
	3-4	0.369	-690 lbs	6-7	0.545	-711 lbs	9-10	0.373	-504 lbs			
BC												
Web	2-17	0.236	-842 lbs	5-18	0.329	-1,661 lbs	8-13	0.812	-857 lbs			
	3-17	0.488	-849 lbs	18-15	0.504	-1,665 lbs	9-13	0.279	-332 lbs			
	3-16	0.279	-331 lbs	7-20	0.329	-1,661 lbs	9-12	0.488	-849 lbs			
	4-16	0.812	-857 lbs	20-14	0.504	-1,665 lbs	10-12	0.236	-842 lbs			
	4-15	0.149	-354 lbs	8-14	0.149	-354 lbs						

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Eagle Metal Products

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:B1G
Job: DI1955
Date: 05/24/24 10:57:56

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	494 lbs

Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) Gable webs placed at 24 " OC, U.N.O.
3) Attach structural gable blocks with 1.5x4 20ga plates, U.N.O.
4) Bracing shown is for in-plane requirements. For out-of-plane requirements, refer to BCSI-B3 published by the SBCA.
5) Attic floor area has been designed for storage with a 25 psf floor live and a 5 psf floor dead load.
6) The fabrication tolerance for this roof truss is 10 % (Cq = 0.90).
7) Gable must be sheathed on one side or lateral bracing applied appropriately.
8) At least one web of this truss has been designed with a panel point in the web. All panel points on such webs shall be braced laterally perpendicular to the plane of the truss. Lateral braces shall be installed within 6 " of each web panel point.
9) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
10) A creep factor of 1.50 has been applied for this truss analysis.
11) ⊠ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
12) ▭ Indicates non-structural members.
13) Due to negative reactions in gravity load cases, special connections to the bearing surface at joints 1, 11, 1, 11 may need to be considered.
14) Listed wind uplift reactions based on MWFRS & C&C loading.

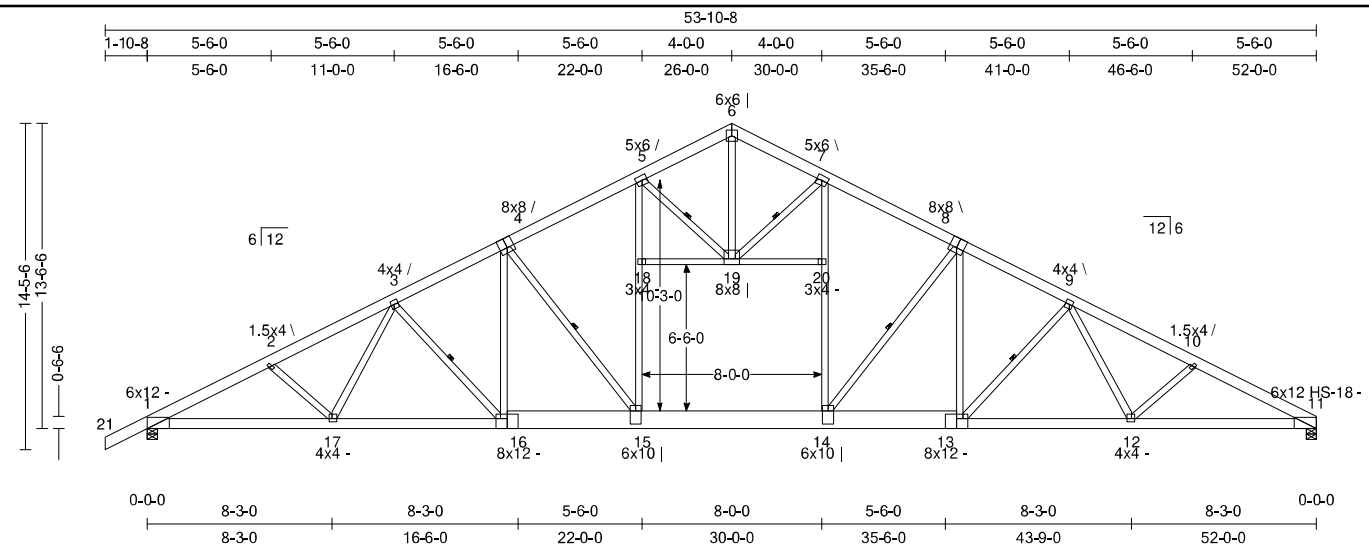
TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

Trout Creek Truss

993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:B2
Job: DI1955
Date: 05/24/24 10:58:02
Page: 1 of 2

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	8	1-10-8	0-0-0	0-0-0	0-0-0	1	24 in	406 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)		General		CSI		Deflection		L/	(loc)	Allowed
TCLL:	75	Bldg Code:	IRC 2021/	TC:	0.87 (1-2)	Vert TL:	1.19 in	L / 514	(13-14)	L / 180
TCDL:	8		TPI 1-2014	BC:	0.95 (11-12)	Vert LL:	0.94 in	L / 651	(13-14)	L / 240
BCLL:	0	Rep Mbr:	Yes	Web:	0.96 (8-14)	Horz TL:	0.33 in		11	
BCDL:	8	Lumber D.O.L.:	115 %							

Reaction

05/24/2024

JT	Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	1	5.5 in	5.68 in	5,328 lbs	·	-309 lbs	·	-309 lbs	114 lbs
11	1	5.5 in	5.32 in	4,984 lbs	·	-268 lbs	·	-268 lbs	·

Bearing enhancers may be required at the following bearings: See Eagle Metal 'Bearing Enhancer' detail for capacity of specific bearing block(s) and connectors:

Brg #
1

MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL 1800/1.6 2 x 6 except:
DFL 2250/1.9 2 x 10: 13-16
Web: DFL Stud 2 x 4 except:
DFL #1 2 x 4: 4-15, 5-15, 6-19, 7-14, 8-14

Bracing

TC: Sheathed or Purlins at 2-6-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Web: One Midpoint Row: 3-16, 4-15, 5-19, 7-19, 8-14, 9-13

Loads

1) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
2) This truss has been designed to account for the effects of ice dams forming at the eaves.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
4) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 107.75 ft^2, DOL = 115 %.
5) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.866	-10,021 lbs		4-5	0.663	-7,027 lbs		7-8	0.669	-7,019 lbs		10-11	0.671	-10,059 lbs	
	2-3	0.563	-9,412 lbs		5-6	0.399	-4,813 lbs		8-9	0.564	-8,194 lbs					
	3-4	0.557	-8,200 lbs		6-7	0.402	-4,818 lbs		9-10	0.559	-9,425 lbs					
BC	11-12	0.950	8,846 lbs	(-451 lbs)	13-14	0.808	7,211 lbs	(-239 lbs)	15-16	0.811	7,186 lbs	(-236 lbs)	17-1	0.907	8,792 lbs	(-435 lbs)
	12-13	0.754	7,981 lbs	(-342 lbs)	14-15	0.811	6,083 lbs	(-123 lbs)	16-17	0.765	8,003 lbs	(-336 lbs)				
Web	2-17	0.241	-775 lbs		5-18	0.718	1,869 lbs	(-57 lbs)	7-20	0.716	1,851 lbs	(-58 lbs)	9-12	0.215	644 lbs	(-16 lbs)
	3-17	0.195	584 lbs	(-6 lbs)	18-15	0.951	1,879 lbs	(-58 lbs)	20-14	0.953	1,860 lbs	(-59 lbs)	10-12	0.255	-820 lbs	
	3-16	0.361	-1,219 lbs		5-19	0.596	-2,598 lbs		8-14	0.957	-2,732 lbs					
	4-16	0.521	1,558 lbs	(-125 lbs)	6-19	0.575	3,517 lbs	(-270 lbs)	8-13	0.505	1,508 lbs	(-118 lbs)				
	4-15	0.955	-2,727 lbs		7-19	0.594	-2,589 lbs		9-13	0.369	-1,246 lbs					

Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) Attic floor area has been designed for storage with a 25 psf floor live and a 5 psf floor dead load.
3) The fabrication tolerance for this roof truss is 10 % (Cq = 0.90).

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:B2
Job: DI1955
Date: 05/24/24 10:58:02

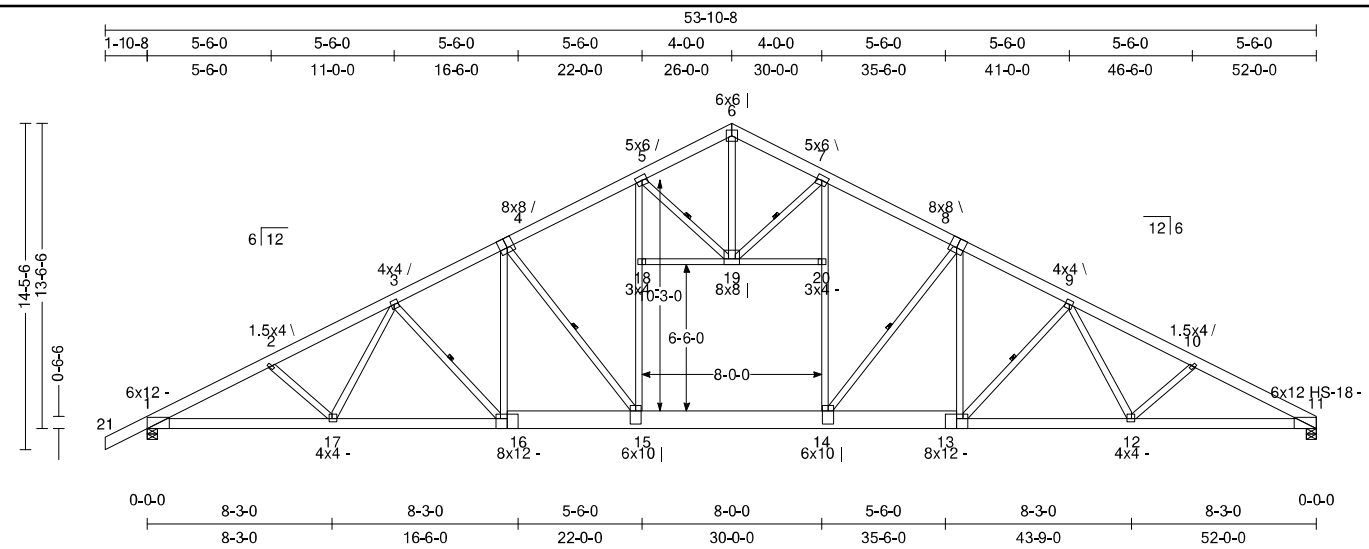
SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	8	1-10-8	0-0-0	0-0-0	0-0-0	1	24 in	406 lbs

4) Brace bottom chord with approved sheathing or purlins per Bracing Summary.
5) At least one web of this truss has been designed with a panel point in the web. All panel points on such webs shall be braced laterally perpendicular to the plane of the truss. Lateral braces shall be installed within 6 " of each web panel point.
6) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
7) A creep factor of 1.50 has been applied for this truss analysis.
8) ✉ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
9) Listed wind uplift reactions based on MWFRS & C&C loading.

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

	Trout Creek Truss 993 Mt Hwy 200 Noxon Mt. 59853 Ph. 406-847-7663 Fax. 406-847-7664	Truss:B2d Job: DI1955 Date: 05/24/24 10:58:05 Page: 1 of 2

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	2	1-10-8	0-0-0	0-0-0	0-0-0	1	24 in	406 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)	General		CSI		Deflection		L/	(loc)	Allowed
TCLL: 75	Bldg Code:	IRC 2021/	TC:	0.87 (1-2)	Vert TL:	1.19 in	L / 514	(13-14)	L / 180
TCDL: 8		TPI 1-2014	BC:	0.95 (11-12)	Vert LL:	0.94 in	L / 651	(13-14)	L / 240
BCLL: 0	Rep Mbr:	Yes	Web:	0.96 (8-14)	Horz TL:	0.33 in		11	
BCDL: 8	Lumber D.O.L.:	115 %							

Reaction

JT	Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	1	5.5 in	5.68 in	5,328 lbs	·	-309 lbs	·	-309 lbs	-1,001 lbs
11	1	5.5 in	5.32 in	4,984 lbs	·	-268 lbs	·	-268 lbs	·

Bearing enhancers may be required at the following bearings: See Eagle Metal 'Bearing Enhancer' detail for capacity of specific bearing block(s) and connectors: Brg # 1

05/24/2024

MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL 1800/1.6 2 x 6 except:
DFL 2250/1.9 2 x 10: 13-16
Web: DFL Stud 2 x 4 except:
DFL #1 2 x 4: 4-15, 5-15, 6-19, 7-14, 8-14

Bracing

TC: Sheathed or Purlins at 2-6-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Web: One Midpoint Row: 3-16, 4-15, 5-19, 7-19, 8-14, 9-13

Loads

1) This truss has been designed for the effects due to a 1,000 lbs (16.6 plf) drag load distributed along the TC rake from each direction.
2) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
3) This truss has been designed to account for the effects of ice dams forming at the eaves.
4) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
5) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 107.75 ft^2, DOL = 115 %.
6) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.866	-10,021 lbs		4-5	0.663	-7,027 lbs		7-8	0.669	-7,019 lbs		10-11	0.671	-10,059 lbs	
	2-3	0.563	-9,412 lbs		5-6	0.399	-4,813 lbs		8-9	0.564	-8,194 lbs					
	3-4	0.557	-8,200 lbs		6-7	0.402	-4,818 lbs		9-10	0.559	-9,425 lbs					
BC	11-12	0.950	8,846 lbs	(-451 lbs)	13-14	0.808	7,211 lbs	(-239 lbs)	15-16	0.811	7,186 lbs	(-236 lbs)	17-1	0.907	8,792 lbs	(-435 lbs)
	12-13	0.754	7,981 lbs	(-342 lbs)	14-15	0.811	6,083 lbs	(-123 lbs)	16-17	0.765	8,003 lbs	(-336 lbs)				
Web	2-17	0.241	-775 lbs		5-18	0.718	1,869 lbs	(-57 lbs)	7-20	0.716	1,851 lbs	(-58 lbs)	9-12	0.215	644 lbs	(-16 lbs)
	3-17	0.195	584 lbs	(-6 lbs)	18-15	0.951	1,879 lbs	(-58 lbs)	20-14	0.953	1,860 lbs	(-59 lbs)	10-12	0.255	-820 lbs	
	3-16	0.361	-1,219 lbs		5-19	0.596	-2,598 lbs		8-14	0.957	-2,732 lbs					
	4-16	0.521	1,558 lbs	(-125 lbs)	6-19	0.575	3,517 lbs	(-270 lbs)	8-13	0.505	1,508 lbs	(-118 lbs)				
	4-15	0.955	-2,727 lbs		7-19	0.594	-2,589 lbs		9-13	0.369	-1,246 lbs					

Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) Attic floor area has been designed for storage with a 25 psf floor live and a 5 psf floor dead load.
3) The fabrication tolerance for this roof truss is 10 % (Cq = 0.90).

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:B2d
Job: DI1955
Date: 05/24/24 10:58:05

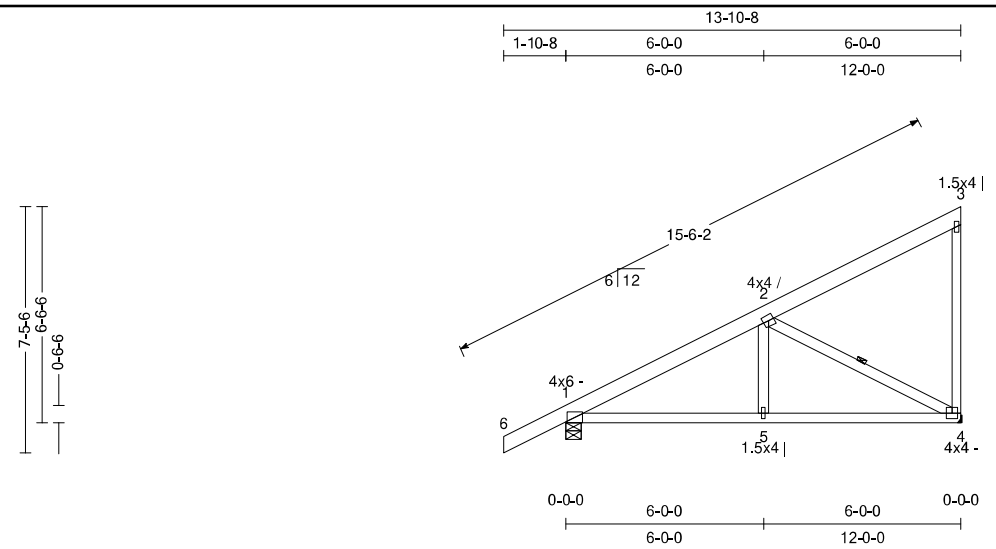
SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
52-0-0	6/12	2	1-10-8	0-0-0	0-0-0	0-0-0	1	24 in	406 lbs

4) Brace bottom chord with approved sheathing or purlins per Bracing Summary.
5) At least one web of this truss has been designed with a panel point in the web. All panel points on such webs shall be braced laterally perpendicular to the plane of the truss. Lateral braces shall be installed within 6 " of each web panel point.
6) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
7) A creep factor of 1.50 has been applied for this truss analysis.
8) ✉ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
9) Listed wind uplift reactions based on MWFRS & C&C loading.

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

	Trout Creek Truss 993 Mt Hwy 200 Noxon Mt. 59853 Ph. 406-847-7663 Fax. 406-847-7664	Truss:B3 Job: DI1955 Date: 05/24/24 10:58:07 Page: 1 of 1

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
12-0-0	6/12	10	1-10-8	0-0-0	0-0-0	0-0-0	1	24 in	66 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)	General		CSI		Deflection		L/	(loc)	Allowed
TCLL : 75	Bldg Code :	IRC 2021/	TC :	0.51 (1-2)	Vert TL:	0.09 in	L / 999	(5-1)	L / 180
TCDL : 8		TPI 1-2014	BC :	0.46 (5-1)	Vert LL:	0.06 in	L / 999	(5-1)	L / 240
BCLL : 0	Rep Mbr :	Yes	Web :	0.56 (3-4)	Horz TL:	0.02 in		4	
BCDL : 8	Lumber D.O.L. :	115 %							

Reaction

JT	Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	1	5.5 in	2.08 in	1,954 lbs	·	-62 lbs	-278 lbs	-278 lbs	241 lbs
4	1	1.5 in	---	1,202 lbs	·	-113 lbs	-182 lbs	-182 lbs	·

05/24/2024

MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL #1 2 x 4
Web: DFL Stud 2 x 4

Bracing

TC: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.
Web: One Midpoint Row: 2-4

Loads

1) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
2) This truss has been designed to account for the effects of ice dams forming at the eaves.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
4) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 27.75 ft^2, DOL = 115 %.
5) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.507	-1,639 lbs								
BC	4-5	0.458	1,305 lbs	(-123 lbs)	5-1	0.458	1,305 lbs	(-335 lbs)			
Web	2-4	0.392	-1,480 lbs		3-4	0.557	-438 lbs				

Notes

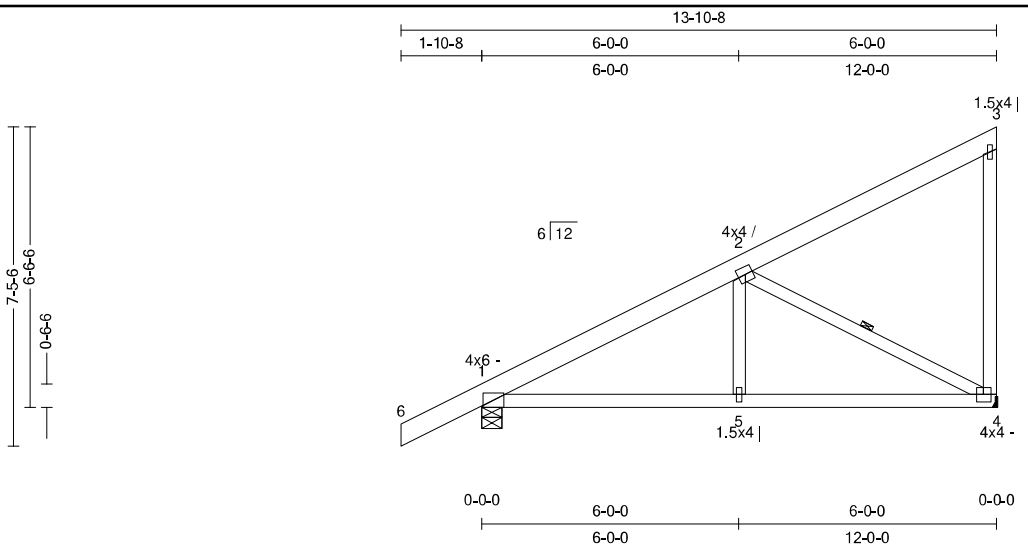
1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) The fabrication tolerance for this roof truss is 30 % (Cq = 0.70).
3) Hanger is for graphical interpretation only. Install hanger per manufacturer's recommendation.
4) Brace bottom chord with approved sheathing or purlins per Bracing Summary.
5) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
6) A creep factor of 1.50 has been applied for this truss analysis.
7) ☒ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
8) Listed wind uplift reactions based on MWFRS & C&C loading.

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:B3d
Job: DI1955
Date: 05/24/24 10:58:11
Page: 1 of 1

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
12-0-0	6/12	1	1-10-8	0-0-0	0-0-0	0-0-0	1	24 in	66 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)		General		CSI		Deflection		L/	(loc)	Allowed
TCLL:	75	Bldg Code:	IRC 2021/	TC:	0.51 (1-2)	Vert TL:	0.09 in	L / 999	(5-1)	L / 180
TCDL:	8		TPI 1-2014	BC:	0.52 (5-1)	Vert LL:	0.06 in	L / 999	(5-1)	L / 240
BCLL:	0	Rep Mbr:	No	Web:	0.56 (3-4)	Horz TL:	0.02 in		4	
BCDL:	8	Lumber D.O.L.:	115 %							

Reaction

JT	Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	1	5.5 in	2.08 in	1,954 lbs	-224 lbs	-62 lbs	-278 lbs	-278 lbs	2,009 lbs
4	1	1.5 in	---	1,202 lbs	-254 lbs	-113 lbs	-182 lbs	-254 lbs	

05/24/2024
MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL #1 2 x 4
Web: DFL Stud 2 x 4

Bracing

TC: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.
Web: One Midpoint Row: 2-4

Loads

1) This truss has been designed for the effects due to a 2,000 lbs (128.9 plf) drag load distributed along the TC rake from each direction.
2) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
3) This truss has been designed to account for the effects of ice dams forming at the eaves.
4) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
5) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 27.75 ft^2, DOL = 115 %.
6) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.507	-1,639 lbs		2-3	0.457	-876 lbs				
BC	4-5	0.518	1,305 lbs	(-306 lbs)	5-1	0.518	1,305 lbs	(-824 lbs)			
Web	2-4	0.392	-1,480 lbs		3-4	0.557	-438 lbs				

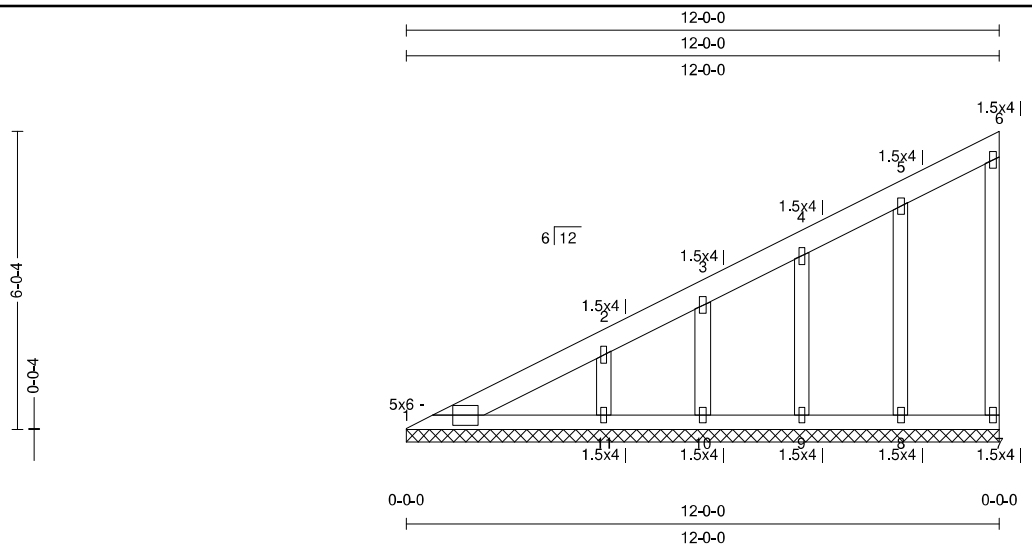
Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) The fabrication tolerance for this roof truss is 30 % (Cq = 0.70).
3) Hanger is for graphical interpretation only. Install hanger per manufacturer's recommendation.
4) Brace bottom chord with approved sheathing or purlins per Bracing Summary.
5) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
6) A creep factor of 1.50 has been applied for this truss analysis.
7) ☒ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
8) Due to negative reactions in gravity load cases, special connections to the bearing surface at joints 1, 4 may need to be considered.
9) Listed wind uplift reactions based on MWFRS & C&C loading.

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

	Trout Creek Truss 993 Mt Hwy 200 Noxon Mt. 59853 Ph. 406-847-7663 Fax. 406-847-7664	Truss:B3G Job: DI1955 Date: 05/24/24 10:58:09 Page: 1 of 1

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
12-0-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	63 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)	General		CSI		Deflection		L/	(loc)	Allowed
TCLL: 75	Bldg Code:	IRC 2021/	TC:	0.29 (1-2)	Vert TL:	0 in	L / 999	(11-1)	L / 180
TCDL: 8		TPI 1-2014	BC:	0.09 (11-1)	Vert LL:	0 in UP	L / 999	7	L / 240
BCLL: 0	Rep Mbr:	No	Web:	0.43 (6-7)	Horz TL:	0 in			
BCDL: 8	Lumber D.O.L.:	115 %							

Reaction

Brg Combo	Brg Width	Max React	Ave React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	-	737 lbs	232 plf	-61 lbs	-52 lbs	-96 lbs	-96 lbs	258 lbs

Material

TC: DFL SS 2 x 6
BC: DFL #1 2 x 4
Web: DFL Stud 2 x 4

Bracing

TC: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.

05/24/2024
MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED
PROFESSIONAL ENGINEER

Loads

1) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
3) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 24 ft^2, DOL = 115 %.

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.293	337 lbs	(-179 lbs)					
BC									
Web	2-11	0.132	-690 lbs		4-9	0.093	-342 lbs		
	3-10	0.074	-348 lbs		5-8	0.131	-336 lbs		

Notes

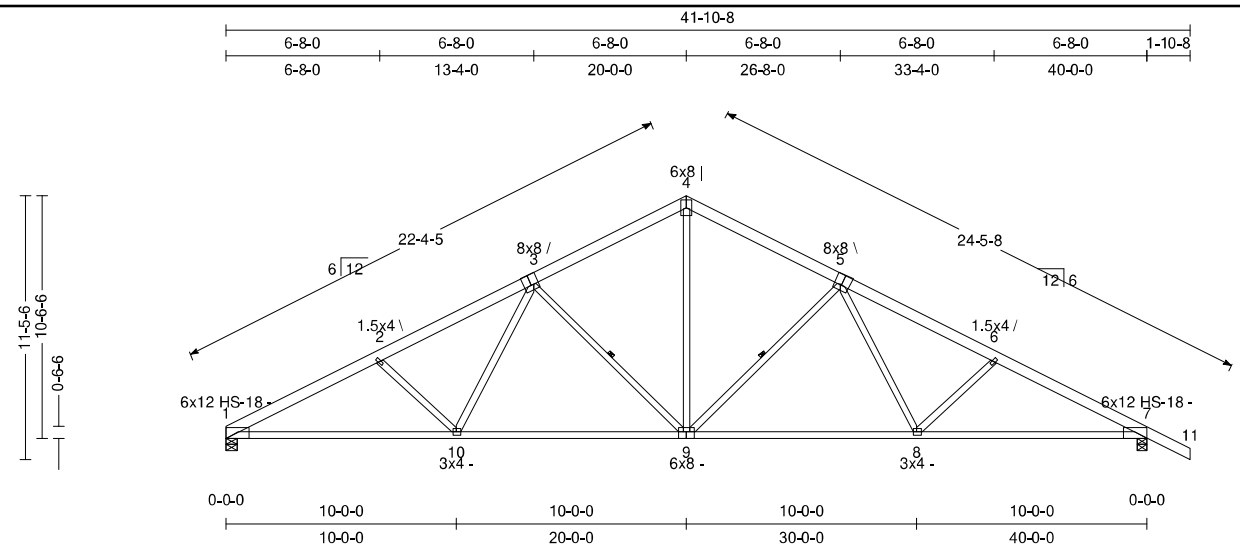
1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) Gable requires continuous bottom chord bearing.
3) Gable webs placed at 24 " OC, U.N.O.
4) Attach gable webs with 1.5x4 20ga plates, U.N.O.
5) Bracing shown is for in-plane requirements. For out-of-plane requirements, refer to BCSI-B3 published by the SBCA.
6) The fabrication tolerance for this roof truss is 30 % (Cq = 0.70).
7) A creep factor of 1.50 has been applied for this truss analysis.
8) Due to negative reactions in gravity load cases, special connections to the bearing surface at joints 1, 1 may need to be considered.
9) Listed wind uplift reactions based on MWFRS & C&C loading.

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:C1
Job: DI1955
Date: 05/24/24 10:58:14
Page: 1 of 1

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
40-0-0	6/12	10	0-0-0	1-10-8	0-0-0	0-0-0	1	24 in	217 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)		General		CSI		Deflection		L/	(loc)	Allowed
TCLL:	75	Bldg Code:	IRC 2021/	TC:	0.76 (4-5)	Vert TL:	0.81 in	L / 582	(8-9)	L / 180
TCDL:	8		TPI 1-2014	BC:	0.86 (8-9)	Vert LL:	0.44 in	L / 999	(8-9)	L / 240
BCLL:	0	Rep Mbr:	Yes	Web:	0.92 (4-9)	Horz TL:	0.26 in		7	
BCDL:	8	Lumber D.O.L.:	115 %							

Reaction

JT	Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	1	5.5 in	3.90 in	3,921 lbs	·	-224 lbs	-249 lbs	-249 lbs	-92 lbs
7	1	5.5 in	4.22 in	4,243 lbs	·	-266 lbs	-349 lbs	-349 lbs	·

05/24/2024
MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Material

TC: DFL 1800/1.6 2 x 6
BC: DFL 2400/2.0 2 x 4
Web: DFL Stud 2 x 4 except:
DFL #1 2 x 4: 3-9, 5-9

Bracing

TC: Sheathed or Purlins at 3-2-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.
Web: One Midpoint Row: 3-9, 5-9

Loads

1) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL= 1.15.
2) This truss has been designed to account for the effects of ice dams forming at the eaves.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
4) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 83.75 ft^2, DOL = 115 %.
5) Concurrent minimum storage attic loading has been applied in accordance with IRC 301.5

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.522	-7,517 lbs		3-4	0.760	-4,616 lbs		5-6	0.714	-6,688 lbs				
	2-3	0.705	-6,742 lbs		4-5	0.762	-4,617 lbs		6-7	0.699	-7,445 lbs				
BC	7-8	0.725	6,430 lbs	(-301 lbs)	8-9	0.860	5,360 lbs	(-180 lbs)	9-10	0.859	5,383 lbs	(-183 lbs)	10-1	0.747	6,512 lbs	(-313 lbs)
Web	2-10	0.430	-985 lbs		3-9	0.835	-2,428 lbs		5-9	0.828	-2,408 lbs		6-8	0.408	-933 lbs	
	3-10	0.340	1,016 lbs	(-23 lbs)	4-9	0.916	2,738 lbs	(-181 lbs)	5-8	0.324	968 lbs	(-15 lbs)				

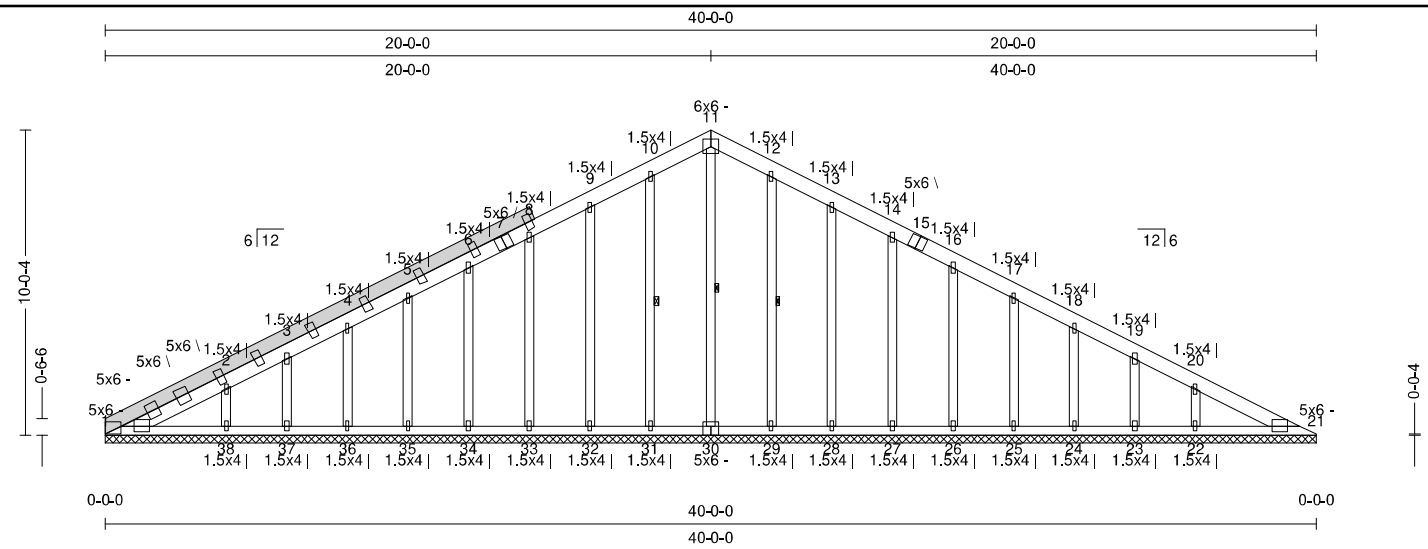
Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) The fabrication tolerance for this roof truss is 10 % (Cq = 0.90).
3) Brace bottom chord with approved sheathing or purlins per Bracing Summary.
4) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
5) A creep factor of 1.50 has been applied for this truss analysis.
6) ⊠ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
7) Listed wind uplift reactions based on MWFRS & C&C loading.

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

	Trout Creek Truss 993 Mt Hwy 200 Noxon Mt. 59853 Ph. 406-847-7663 Fax. 406-847-7664	Truss:C1Ga Job: DI1955 Date: 05/24/24 10:58:17 Page: 1 of 2

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
40-0-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	287 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)		General		CSI		Deflection		L/	(loc)	Allowed
TCLL:	75	Bldg Code:	IRC 2021/	TC:	0.22 (12-13)	Vert TL:	0 in	L / 999	21	L / 180
TCDL:	8		TPI 1-2014	BC:	0.12 (21-22)	Vert LL:	0 in	L / 999	21	L / 240
BCLL:	0	Rep Mbr:	No	Web:	0.56 (13-28)	Horz TL:	0 in			
BCDL:	8	Lumber D.O.L.:	115 %							

05/24/2024

Reaction

Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	480 in	N/A	453 lbs	-61 lbs	-52 lbs	-52 lbs	-61 lbs	·
1	480 in	N/A	344 lbs	·	-35 lbs	-30 lbs	-35 lbs	·
1	480 in	N/A	365 lbs	-12 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	465 lbs	-11 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	575 lbs	-11 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	575 lbs	-11 lbs	-39 lbs	-33 lbs	-39 lbs	·
1	480 in	N/A	584 lbs	-14 lbs	-41 lbs	-40 lbs	-41 lbs	·
1	480 in	N/A	560 lbs	-14 lbs	-19 lbs	-35 lbs	-35 lbs	·
1	480 in	N/A	282 lbs	·	·	·	·	·
1	480 in	N/A	561 lbs	-11 lbs	-19 lbs	-35 lbs	-35 lbs	·
1	480 in	N/A	584 lbs	-14 lbs	-41 lbs	-40 lbs	-41 lbs	·
1	480 in	N/A	575 lbs	-11 lbs	-39 lbs	-33 lbs	-39 lbs	·
1	480 in	N/A	575 lbs	-11 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	465 lbs	-11 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	365 lbs	-14 lbs	-38 lbs	-34 lbs	-38 lbs	·
1	480 in	N/A	354 lbs	·	-36 lbs	-31 lbs	-36 lbs	·
1	480 in	N/A	439 lbs	·	-25 lbs	-27 lbs	-27 lbs	·
1	480 in	N/A	166 lbs	-159 lbs	·	·	-159 lbs	352 lbs
1	480 in	N/A	748 lbs	-739 lbs	·	·	-739 lbs	-1,146 lbs
1	480 in	N/A	497 lbs	-177 lbs	-65 lbs	-88 lbs	-177 lbs	379 lbs
1	480 in	N/A	517 lbs	-357 lbs	·	-21 lbs	-357 lbs	-1,210 lbs
1	480 in	N/A	100 lbs	-90 lbs	·	·	-90 lbs	·

Material

TC: DFL SS 2 x 6
BC: DFL #1 2 x 4
Web: DFL Stud 2 x 4

Bracing

TC: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.
Web: One Midpoint Row: 10-31, 11-30, 12-29

Loads

1) This truss has been designed for the effects due to a 3,000 lbs (67.1 plf) drag load distributed along the TC rake from each direction.
2) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL = 1.15.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
4) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 80 ft^2, DOL = 115 %.

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:C1Ga
Job: DI1955
Date: 05/24/24 10:58:17

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
40-0-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	287 lbs

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.219	-1,487 lbs	6-8	0.214	-663 lbs	14-16	0.214	-683 lbs	20-21	0.190	-1,598 lbs
	2-3	0.137	-1,329 lbs	8-9	0.212	-496 lbs	16-17	0.217	-850 lbs			
	3-4	0.132	-1,167 lbs	9-10	0.222	-327 lbs	17-18	0.137	-1,018 lbs			
	4-5	0.137	-999 lbs	12-13	0.222	-346 lbs	18-19	0.132	-1,186 lbs			
	5-6	0.217	-831 lbs	13-14	0.213	-515 lbs	19-20	0.143	-1,350 lbs			
BC												
Web	2-38	0.077	-399 lbs	8-33	0.415	-543 lbs	14-27	0.415	-543 lbs	20-22	0.079	-410 lbs
	3-37	0.069	-324 lbs	9-32	0.558	-552 lbs	16-26	0.302	-543 lbs			
	4-36	0.091	-332 lbs	10-31	0.198	-529 lbs	17-25	0.169	-433 lbs			
	5-35	0.169	-433 lbs	12-29	0.198	-528 lbs	18-24	0.091	-333 lbs			
	6-34	0.302	-543 lbs	13-28	0.558	-552 lbs	19-23	0.067	-316 lbs			

Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) Upper top chord notching is permitted beyond horizontal dimension of 36.00" from the left heel.
3) Gable requires continuous bottom chord bearing.
4) Gable webs placed at 24 " OC, U.N.O.
5) Attach gable webs with 1.5x4 20ga plates, U.N.O.
6) Bracing shown is for in-plane requirements. For out-of-plane requirements, refer to BCSI-B3 published by the SBCA.
7) The fabrication tolerance for this roof truss is 30 % (Cq = 0.70).
8) Gable must be sheathed on one side or lateral bracing applied appropriately.
9) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
10) A creep factor of 1.50 has been applied for this truss analysis.
11) ⊠ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
12) Due to negative reactions in gravity load cases, special connections to the bearing surface at joints 22, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 21, 1, 1, 21, 21 may need to be considered.
13) Listed wind uplift reactions based on MWFRS & C&C loading.

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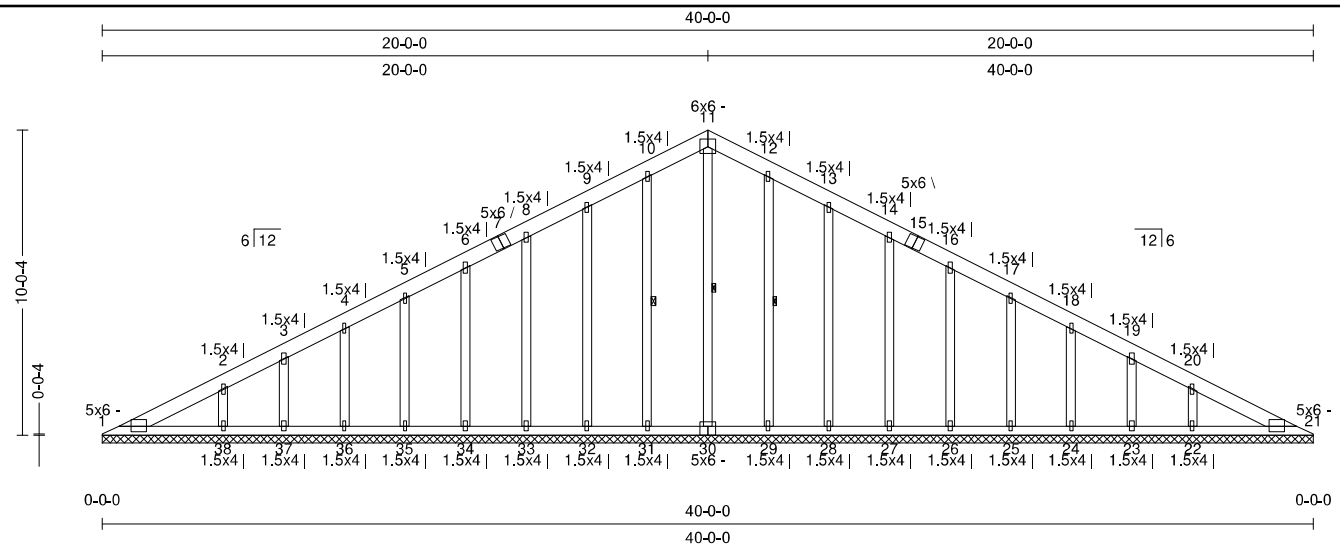
Eagle Metal Products

	Trout Creek Truss 993 Mt Hwy 200 Noxon Mt. 59853 Ph. 406-847-7663 Fax. 406-847-7664	Truss:C1Gb Job: DI1955 Date: 05/24/24 10:58:20 Page: 1 of 2

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
40-0-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	251 lbs



All plates shown to be Eagle 20 unless otherwise noted.

Loading (psf)	**General**	**CSI**	**Deflection**	**L/**	**(loc)**	**Allowed**
TCLL: 75	Bldg Code: IRC 2021/	TC: 0.22 (12-13)	Vert TL: 0 in	L / 999	21	L / 180
TCDL: 8	TPI 1-2014	BC: 0.16 (38-1)	Vert LL: 0 in	L / 999	21	L / 240
BCLL: 0	Rep Mbr: No	Web: 0.56 (9-32)	Horz TL: 0 in			
BCDL: 8	Lumber D.O.L.: 115 %					

05/24/2024

MONTANA
ARTURO A. HERNANDEZ
No. 17246 PE
LICENSED PROFESSIONAL ENGINEER

Reaction

Brg Combo	Brg Width	Rqd Brg Width	Max React	Max Grav Uplift	Max MWFRS Uplift	Max C&C Uplift	Max Uplift	Max Horiz
1	480 in	N/A	453 lbs	-108 lbs	-52 lbs	-52 lbs	-108 lbs	·
1	480 in	N/A	344 lbs	-19 lbs	-35 lbs	-30 lbs	-35 lbs	·
1	480 in	N/A	365 lbs	-37 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	465 lbs	-36 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	575 lbs	-36 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	575 lbs	-36 lbs	-39 lbs	-33 lbs	-39 lbs	·
1	480 in	N/A	584 lbs	-40 lbs	-41 lbs	-40 lbs	-41 lbs	·
1	480 in	N/A	560 lbs	-37 lbs	-19 lbs	-35 lbs	-37 lbs	·
1	480 in	N/A	279 lbs	·	·	·	·	·
1	480 in	N/A	560 lbs	-37 lbs	-19 lbs	-35 lbs	-37 lbs	·
1	480 in	N/A	584 lbs	-40 lbs	-41 lbs	-40 lbs	-41 lbs	·
1	480 in	N/A	575 lbs	-36 lbs	-39 lbs	-33 lbs	-39 lbs	·
1	480 in	N/A	575 lbs	-36 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	465 lbs	-36 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	365 lbs	-37 lbs	-38 lbs	-33 lbs	-38 lbs	·
1	480 in	N/A	344 lbs	-19 lbs	-35 lbs	-30 lbs	-35 lbs	·
1	480 in	N/A	453 lbs	-108 lbs	-52 lbs	-52 lbs	-108 lbs	·
1	480 in	N/A	219 lbs	-212 lbs	·	·	-212 lbs	-459 lbs
1	480 in	N/A	219 lbs	-212 lbs	·	·	-212 lbs	459 lbs
1	480 in	N/A	658 lbs	-498 lbs	·	-21 lbs	-498 lbs	1,592 lbs
1	480 in	N/A	131 lbs	-120 lbs	·	·	-120 lbs	·
1	480 in	N/A	658 lbs	-498 lbs	·	-21 lbs	-498 lbs	-1,592 lbs
1	480 in	N/A	131 lbs	-120 lbs	·	·	-120 lbs	·

Material

TC: DFL SS 2 x 6
BC: DFL #1 2 x 4
Web: DFL Stud 2 x 4

Bracing

TC: Sheathed or Purlins at 5-9-0, Purlin design by Others.
BC: Sheathed or Purlins at 10-0-0, Purlin design by Others.
Web: One Midpoint Row: 10-31, 11-30, 12-29

Loads

1) This truss has been designed for the effects due to a 4,000 lbs (89.4 plf) drag load distributed along the TC rake from each direction.
2) This truss has been designed for the effects of balanced (75 psf) and unbalanced roof snow loads. in accordance with ASCE7 - 16 with the following user defined input: 75 psf Roof (GSL = 107 psf), Terrain C, Exposure (Ce = 1.0), Thermal (Ct = 1.00), DOL = 1.15.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 16 with the following user defined input: 115 mph (Factored), Exposure C, Enclosed, Gable/Hip, Risk Category II, Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, Not End Zone Truss, Both end webs considered. DOL= 1.60
4) This truss has been designed for the effects of a 16 psf live load computed in accordance with IRC 2021 assuming slope = 6 /12 and area supported = 80 ft^2, DOL = 115 %.

TrueBuild® Truss Software v5.6.438.0
Eagle Metal Products

Trout Creek Truss
993 Mt Hwy 200
Noxon Mt. 59853
Ph. 406-847-7663 Fax. 406-847-7664

Truss:C1Gb
Job: DI1955
Date: 05/24/24 10:58:21
Page: 2 of 2

SPAN	PITCH	QTY	OHL	OHR	CANT L	CANT R	PLYS	SPACING	WGT/PLY
40-0-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	251 lbs

Member Forces

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force). Only forces greater than 300lbs are shown in this table.

TC	1-2	0.190	-2,111 lbs	6-8	0.214	-892 lbs	14-16	0.214	-892 lbs	20-21	0.190	-2,111 lbs
	2-3	0.143	-1,781 lbs	8-9	0.213	-668 lbs	16-17	0.217	-1,115 lbs			
	3-4	0.132	-1,563 lbs	9-10	0.222	-443 lbs	17-18	0.137	-1,339 lbs			
	4-5	0.137	-1,339 lbs	12-13	0.222	-443 lbs	18-19	0.132	-1,563 lbs			
	5-6	0.217	-1,115 lbs	13-14	0.213	-668 lbs	19-20	0.143	-1,781 lbs			
BC												
Web	2-38	0.079	-410 lbs	8-33	0.415	-543 lbs	14-27	0.415	-543 lbs	20-22	0.079	-410 lbs
	3-37	0.067	-316 lbs	9-32	0.558	-552 lbs	16-26	0.302	-543 lbs			
	4-36	0.091	-333 lbs	10-31	0.198	-528 lbs	17-25	0.169	-433 lbs			
	5-35	0.169	-433 lbs	12-29	0.198	-528 lbs	18-24	0.091	-333 lbs			
	6-34	0.302	-543 lbs	13-28	0.558	-552 lbs	19-23	0.067	-316 lbs			

Notes

1) Unless noted otherwise, do not cut or alter any truss member or plate without prior approval from a Professional Engineer.
2) Gable requires continuous bottom chord bearing.
3) Gable webs placed at 24 " OC, U.N.O.
4) Attach gable webs with 1.5x4 20ga plates, U.N.O.
5) Bracing shown is for in-plane requirements. For out-of-plane requirements, refer to BCSI-B3 published by the SBCA.
6) The fabrication tolerance for this roof truss is 30 % (Cq = 0.70).
7) Gable must be sheathed on one side or lateral bracing applied appropriately.
8) Lateral bracing shown is for illustration purposes only and may be placed on either edge of truss member.
9) A creep factor of 1.50 has been applied for this truss analysis.
10) ⊠ Indicates lateral bracing required perpendicular to the plane of the truss at either the midpoint (one shown) or third points (two shown), bracing by others. See BCSI-B3 for additional information.
11) Due to negative reactions in gravity load cases, special connections to the bearing surface at joints 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 1, 21, 1, 1, 21, 21 may need to be considered.
12) Listed wind uplift reactions based on MWFRS & C&C loading.

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Eagle Metal Products

Bearing Block(s) Capacity [lbs]										
Species	Rows	Nail	Blocks	Bearing	MIN Spacing	Nail Spacing				
						Min	3"	4"	5"	6"
8d BOX										
Douglans Fir-Larch	2	0.113	1	3.5*	1.375	1,662	795	650	506	361
Douglans Fir-Larch	3	0.113	1	3.5	1.375	2,818	1,301	1,084	867	723
Douglans Fir-Larch	2	0.113	2	3.5*	2.750	1,662	1,590	1,084	795	650
Douglans Fir-Larch	3	0.113	2	3.5*	2.750	2,818	2,529	2,023	1,662	1,373
Douglans Fir-Larch	3	0.113	1	5.5*	1.375	2,818	1,301	1,084	867	723
0.120 DIAMETER GUN										
Douglans Fir-Larch	2	0.120	1	3.5*	1.500	1,793	896	733	570	407
Douglans Fir-Larch	3	0.120	1	3.5	1.500	2,934	1,467	1,222	978	815
Douglans Fir-Larch	2	0.120	2	3.5*	3.000	1,793	1,793	1,222	896	733
Douglans Fir-Larch	3	0.120	2	3.5*	3.000	2,934	2,852	2,282	1,874	1,548
Douglans Fir-Larch	3	0.120	1	5.5*	1.500	2,934	1,467	1,222	978	815
10d OR 12d BOX										
Douglans Fir-Larch	2	0.128	1	3.5*	1.625	1,762	834	556	556	464
Douglans Fir-Larch	3	0.128	1	3.5	1.625	2,967	1,576	1,205	1,113	834
Douglans Fir-Larch	2	0.128	2	3.5*	3.250	1,576	0	1,113	927	834
Douglans Fir-Larch	3	0.128	2	3.5*	3.250	2,967	0	2,411	2,040	1,669
Douglans Fir-Larch	3	0.128	1	5.5*	1.625	2,967	1,576	1,205	1,113	834
8d COMMON OR 0.131 DIAMETER GUN										
Douglans Fir-Larch	2	0.131	1	3.5*	1.625	1,845	874	583	583	486
Douglans Fir-Larch	3	0.131	1	3.5	1.625	3,108	1,651	1,262	1,165	874
Douglans Fir-Larch	2	0.131	2	3.5*	3.250	1,651	0	1,165	971	874
Douglans Fir-Larch	3	0.131	2	3.5*	3.250	3,108	0	2,525	2,137	1,748
Douglans Fir-Larch	3	0.131	1	5.5*	1.625	3,108	1,651	1,262	1,165	874
16d BOX										
Douglans Fir-Larch	2	0.135	1	3.5*	1.625	1,960	928	619	619	516
Douglans Fir-Larch	3	0.135	1	3.5	1.625	3,281	1,753	1,238	1,134	928
Douglans Fir-Larch	2	0.135	2	3.5*	3.250	1,753	0	1,238	1,031	928
Douglans Fir-Larch	3	0.135	2	3.5*	3.250	3,300	0	2,475	2,063	1,856
Douglans Fir-Larch	3	0.135	1	5.5*	1.625	3,300	1,753	1,238	1,134	928
12d COMMON OR 20d BOX										
Douglans Fir-Larch	2	0.148	1	3.5*	1.875	1,764	941	706	588	470
Douglans Fir-Larch	3	0.148	1	3.5	1.875	2,940	1,882	1,411	1,176	1,058
Douglans Fir-Larch	2	0.148	2	3.5*	3.750	1,411	0	1,411	1,058	823
Douglans Fir-Larch	3	0.148	2	3.5*	3.750	2,822	0	2,705	1,999	1,529
Douglans Fir-Larch	3	0.148	1	5.5*	1.875	2,822	1,646	1,411	1,176	941
16d COMMON										
Douglans Fir-Larch	2	0.162	1	3.5*	2.000	1,973	1,127	845	704	564
Douglans Fir-Larch	3	0.162	1	3.5	2.000	3,241	1,973	1,691	1,409	1,127
Douglans Fir-Larch	2	0.162	2	3.5*	4.000	1,691	0	1,691	1,268	986
Douglans Fir-Larch	3	0.162	2	3.5*	4.000	3,100	0	3,100	2,254	1,832
Douglans Fir-Larch	3	0.162	1	5.5*	2.000	3,241	1,973	1,691	1,409	1,127

* = Wider Bearing Does Not Increase Bearing Block Capacity

For Total Capacity, Add (Truss Plies)*(Bearing Width)*625 to Bearing Block(s) Capacity

1=A "2" implicates one bearing enhancer each side of truss

Typical Truss Capacity [lbs]							
Plies x 1.5 = Truss Width		Bearing Width		Fc Perp		Truss Capacity	
(1.5)	(x)	(3.5)	(x)	(625)	(=)	(3,281)	
1.5		3.5		625		3,281	
1.5		5.5		625		5,156	
3		3.5		625		6,563	
3		5.5		625		10,313	
4.5		3.5		625		9,844	
4.5		5.5		625		15,469	
6		3.5		625		13,125	
6		5.5		625		20,625	

Total Reaction = Truss Capacity + Bearing Block(s) Capacity

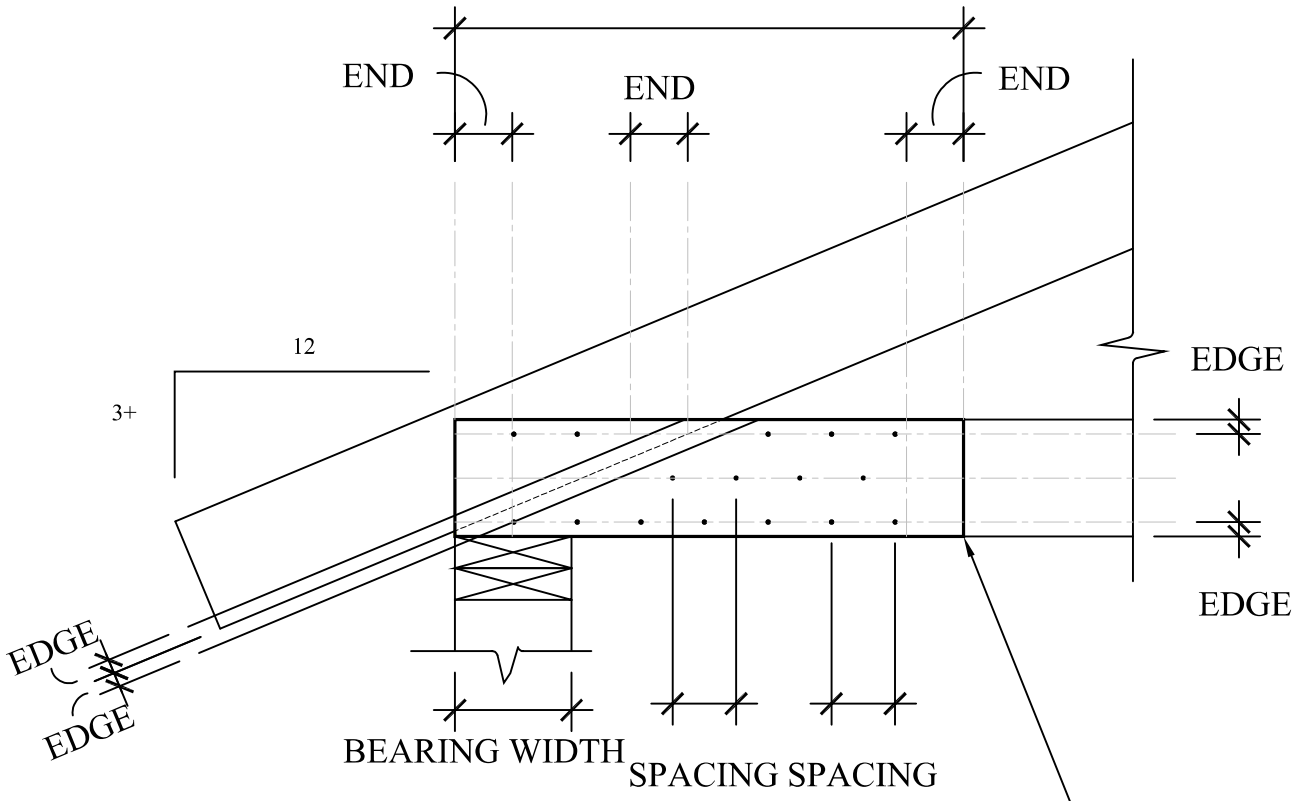
Truss Reaction <= Bearing Block Allowable

EAGLE METAL

BEARING ENHANCERS (DFL)

REV: 2.1	**DRAWING NUMBER**
ENG: MDV	
CAD: RC	**DR-61**
DATE: 03/16/18	

2'-0" BLOCK UNLESS NOTED OTHERWISE



NAIL TYPE	NAIL PROPERTIES		
	EDGE	MIN SPACING	END
8d BOX (0.113Ø"x2.5")	3/4	1 3/8	1 3/4
10d BOX (0.128Ø"x3.0")	7/8	1 5/8	2
12d BOX (0.128Ø"x3.25")	7/8	1 5/8	2
16d BOX (0.135Ø"x3.5")	7/8	1 5/8	2 1/8
20d BOX (0.148Ø"x4")	1	1 7/8	2 1/4
8d COMMON (0.131Ø"x2.5")	7/8	1 5/8	2
10d COMMON (0.148Ø"x3.0")	1	1 7/8	2 1/4
12d COMMON (0.148Ø"x3.25")	1	1 7/8	2 1/4
16d COMMON (0.162Ø"x3.5")	1	2	2 1/2
0.120"x2.5" GUN	3/4	1 1/2	1 7/8
0.131"x2.5" GUN	7/8	1 5/8	2
0.120"x3.0" GUN	3/4	1 1/2	1 7/8
0.131"x3.0" GUN	7/8	1 5/8	2

ATTACH BLOCK TO TRUSS WITH CONSTRUCTION GRADE WATER PROOF GLUE (SUCH AS "PL400") & (2) STAGGERED ROWS OF NAILS FOR 2x4 OR 2x6, OR (3) STAGGERED ROWS FOR 2x8, 2x10, 2x12. SEE ATTACHED TABLES FOR SPECIFIC NAIL TYPES, CAPACITIES, & REQUIRED NAIL SPACING.

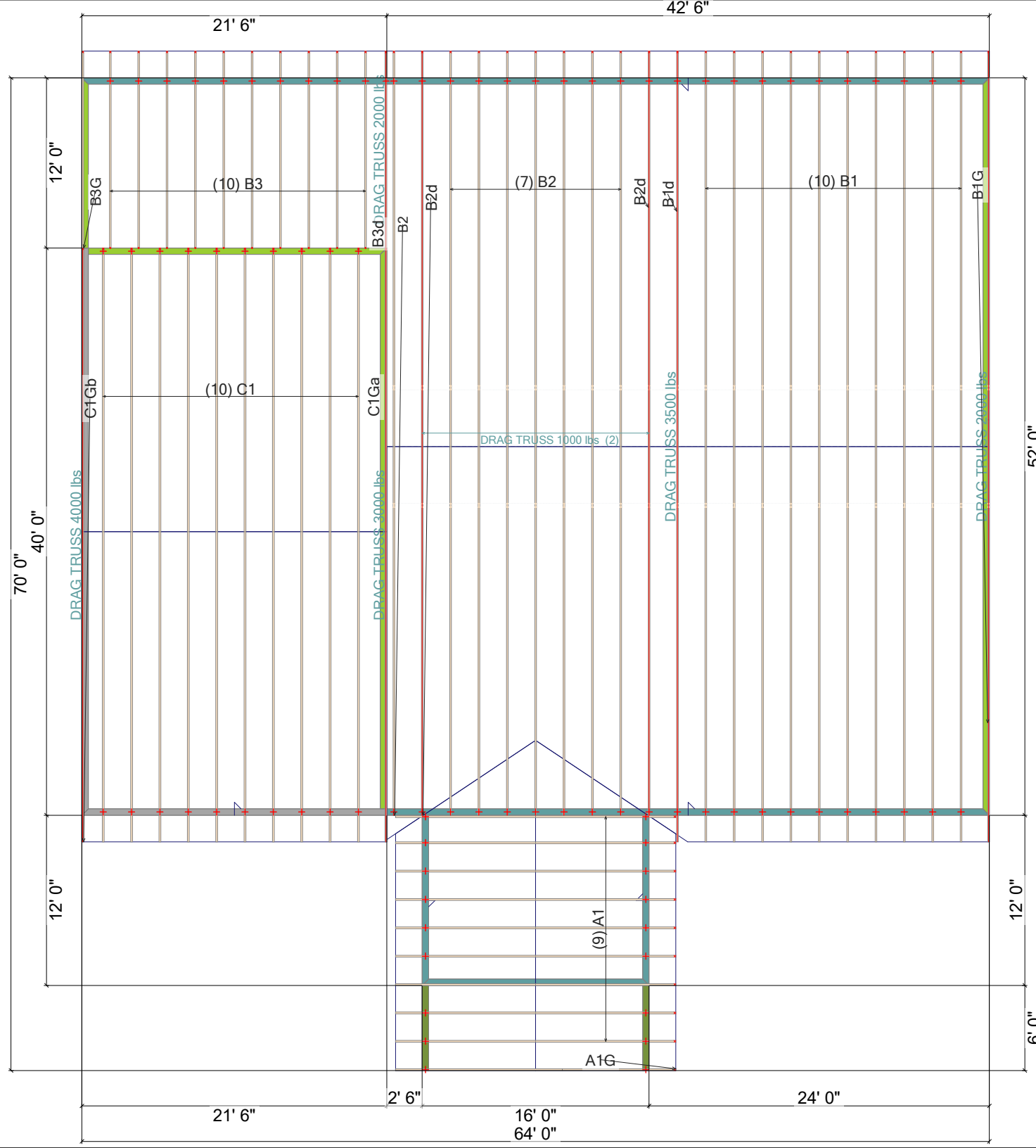
GENERAL NOTES

1. SEE ATTACHED TABLES FOR CAPACITIES FOR 2 AND 3 ROWS OF NAILS. IF MORE THAN 3 ARE REQUIRED, CONSULT OUR ENGINEERING OFFICE FOR ASSISTANCE.
2. MINIMUM EDGE DISTANCE AND SPACING BETWEEN STAGGERED ROWS IS 6d; NAILS MAY NOT BE WITHIN EDGE LINE.
3. MINIMUM SPACING OF NAILS IN A ROW IS 12d.
4. MINIMUM END DISTANCE IS 15d; IN ADDITION TO NOTE #2, NAILS MAY NOT BE WITHIN END DISTANCES FROM END OF THE BOARD.
5. BLOCK & BOTTOM CHORD SHALL BE THE SAME SIZE, GRADE, AND SPECIES.
6. WHEN TWO BLOCKS ARE USED, BLOCKS SHALL BE INSTALLED ON OPPOSITES SIDES OF TRUSS.

EAGLE METAL

BEARING ENHANCERS
(TYPICAL EXTERIOR BEARING)

REV: 2.1	DRAWING NUMBER
ENG: MDV	DR-30
CAD: RC	
DATE: 08/03/12	



TROUT CREEK TRUSS

Trout Creek SDA School
3020 MT-200
Trout Creek, MT

LOADING
TCLL: 20 psf
TCDL: 8 psf
BCLL: 0 psf
BCDL: 8 psf
TOTAL LOAD
36 psf

Truss Placement PLan

Job Id
D11955

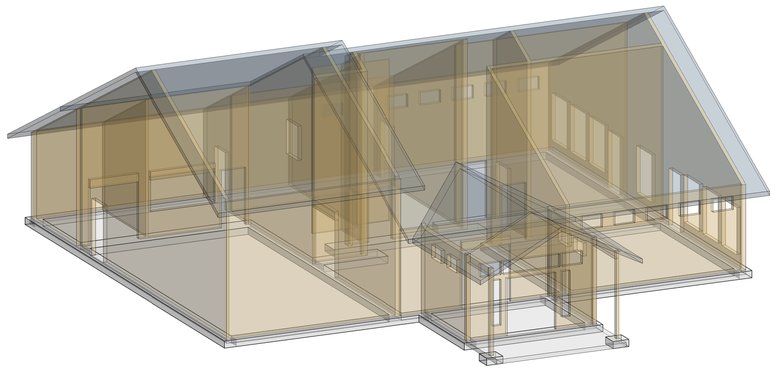
05/20/2024

DESIGNED BY: Dustin Iles

TROUT CREEK SDA SCHOOL

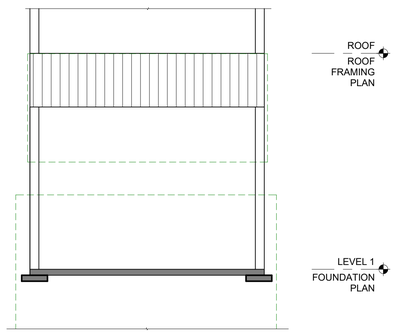
CONSTRUCTION DOCUMENTS - PERMIT SET

04-30-2024



"	INCH	DBA	DEFORMED BAR ANCHOR	HAS	HEADED ANCHOR STUD	OD	OUTSIDE DIAMETER	THK	THICK
#	NUMBER, POUND	DBL	DOUBLE	HC	HOLLOW CORE	OH	OVERHEAD	THRD	THREADED
&	AND	DEFL	DEFLECTION	HCP	HOLLOW CORE PLANK	OPNG	OPENING	TOB	TOP OF BEAM
'	FEET	DEMO	DEMOLITION	HDD	HEADED ANCHOR STUD	OPP	OPPOSITE, OPPOSITE HAND	TOC	TOP OF COLUMN, TOP OF CURB
@	AT	DEPT	DEPARTMENT	HDR	HEADER	OSWJ	OPEN WEB STEEL JOIST	TOF	TOP OF FOOTING
(E)	EXISTING	DETL	DETAIL	HEX	HEXAGONAL			TOJ	TOP OF JOIST
(N)	NEW	DF	DOUG FIR (DOUGLAS FIR)	HM	HOLLOW METAL	P/L	PROPERTY LINE	TOL	TOP OF LINTEL, LANDING
		DIA	DIAMETER	HORIZ	HORIZONTAL	PAF	POWDER ACTUATED FASTENERS	TOL	TOLERANCE
AB	ANCHOR BOLT	DIAG	DIAGONAL	HSS	HOLLOW STRUCTURAL SHAPE	PC	PRECAST	TOP	TOP OF PIER, TOP OF PLATE
ACI	AMERICAN CONCRETE INSTITUTE	DIAPH	DIAPHRAGM	HT	HEIGHT	PCF	POUNDS PER CUBIC FOOT	TOPV	TOP OF PAVEMENT
ADD	ADDENDUM, ADDITION	DIM	DIMENSION	HVAC	HEATING, VENTILATION, AIR CONDITIONING	PERF	PERFORATE, PERFORATED, PERFORMANCE	TOS	TOP OF SLAB, TOP OF STEEL
ADJ	ADJUST, ADJUSTABLE	DKG	DECKING			PERIM	PERIMETER	TOW	TOP OF WALL
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL	DL	DEAD LOAD	IBC	INTERNATIONAL BUILDING CODE	PE	PROFESSIONAL ENGINEER	TRANS	TRANSVERSE
AFF	ABOVE FINISH FLOOR	DWG	DRAWING	ICF	INSULATED CONCRETE FORMS	PERP	PERPENDICULAR	TRANSL	TRANSLUCENT
ALT	ALTERNATE	DWGS	DRAWINGS	ID	INSIDE DIAMETER	PL	PLATE	TYP	TYPICAL
ALUM	ALUMINUM	DWL	DOWEL	IN	INCH, INCHES	PLF	POUNDS PER LINEAL FOOT		
APPROX	APPROXIMATELY			INFO	INFORMATION	PLWD	PLYWOOD	UNO	UNLESS NOTED OTHERWISE
ARCH	ARCHITECTURE	EIFS	EXTERIOR INSULATED FINISH SYSTEM	INSP	INSPECTION	PNL	PANEL	UTIL	UTILITY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	ELEV	ELEVATOR	INSUL	INSULATION	PREFAB	PREFABRICATED		
AVG	AVERAGE	ENGR	ENGINEER	INT	INTERIOR	PREFIN	PREFINISHED	VERT	VERTICAL
AWS	AMERICAN WELDING SOCIETY	EOR	ENGINEER OF RECORD			PSF	POUNDS PER SQUARE FOOT	VFY	VERIFY
		EQ	EQUAL	JST	JOIST	PSI	POUNDS PER SQUARE INCH	VIF	VERIFY IN FIELD
BALC	BALCONY	EQPT	EQUIPMENT	JT	JOINT, JOINTS	PSL	PARALLEL STRAND LUMBER		
BD	BOARD	ES	EACH SIDE			PT	PRESERVATIVE TREATED, POST-TENSIONED	W/	WITH
BEV	BEVEL	EW	EACH WAY	K	KILOPOUND (1000 POUNDS)			W/O	WITHOUT
BKR	BACKER	EXIST	EXISTING	KIP	KILOPOUND (1000 POUNDS)	QTY	QUANTITY	WD	WOOD
BLDG	BUILDING	EXP	EXPANSION					WF	WIDE FLANGE (STRUCTURAL STEEL)
BLK	BLOCK	EXPO	EXPOSED	L	ANGLE, LEFT, LENGTH	RAD	RADIUS	WP	WORK POINT OR WORKING POINT
BLKG	BLOCKING	EXT	EXTERIOR	LAM	LAMINATE, LAMINATED	RCP	REFLECTED CEILING PLAN	WR	WATER RESISTANT, WATER RESISTIVE
BM	BEAM			LAT	LATERAL	RD	ROOF DRAIN	WS	WATERSTOP
BOC	BOTTOM OF CURB	F TO F	FACE TO FACE	LB	POUND	REF	REFERENCE	WT	WEIGHT
BOT/BTM	BOTTOM	FAB	FABRICATIONS / FABRICATED	LF	LINEAL FEET, LINEAR FOOTAGE	REINF	REINFORCED, REINFORCING	WWF	WOVEN WIRE FABRIC
BOW	BOTTOM OF WALL	FB	FLAT BAR	LIN	LINEAR	REQ	REQUIREMENTS		
BP	BASE PLATE	FDTN	FOUNDATION	LIN FT	LINEAL FEET, LINEAR FOOTAGE	REQD	REQUIRED		
BRDG	BRIDGE, BRIDGING	FE	FROELICH ENGINEERS	LL	LIVE LOAD	REV	REVISION		
BRG	BEARING	FF	FINISH FLOOR	LLH	LONG LEG HORIZONTAL	RO	ROUGH OPENING		
BRK	BRICK	FFE	FINISH FLOOR ELEVATION	LLV	LONG LEG VERTICAL				
BSMT	BASEMENT	FIN	FINISH	LNTL	LINTEL	SCHED	SCHEDULE		
BU	BUILT-UP	FLR	FLOOR	LONG	LONGITUDINAL	SE	STRUCTURAL ENGINEER		
		FOC	FACE OF CONCRETE	LSL	LAMINATED STRAND LUMBER	SECT	SECTION		
CEM	CEMENT, CEMENTITIOUS	FOF	FACE OF FINISH	LT WT	LIGHTWEIGHT	SF	SQUARE FEET		
CGS	CENTER OF GRAVITY OF STRAND	FOM	FACE OF MASONRY	LVL	LAMINATED VENEER LUMBER	SGL	SINGLE		
CIP	CAST IN PLACE	FOS	FACE OF STUD			SHT	SHEET		
CJ	CONTROL JOINT	FR	FIRE RATED, FIRE RESISTIVE	MANUF	MANUFACTURER, MANUFACTURED	SHTG	SHEATHING		
CL	CENTER LINE	FRM	FRAMED, FRAMING	MAX	MAXIMUM	SIM	SIMILAR		
CLG	CEILING	FRR	FIRE RESISTANCE RATED	MB	MACHINE BOLT	SIMP	SIMPSON STRONG TIE		
CLR	CLEAR	FRT	FIRE RETARDANT TREATED	MECH	MECHANICAL	SL	SNOW LOAD		
CMU	CONCRETE MASONRY UNIT	FT	FOOT, FEET	MEZZ	MEZZANINE	SOG	SLAB ON GRADE		
COL	COLUMN	FTG	FOOTING	MFR	MANUFACTURER, MANUFACTURED	SPEC	SPECIFICATION, SPECIFICATIONS		
COMP	COMPOSITE, COMPENSATION	FURRG	FURRING	MIN	MINIMUM	SQ	SQUARE		
CONC	CONCRETE	FUT	FUTURE	MISC	MISCELLANEOUS	SS	STAINLESS STEEL		
COND	CONDITION			MTL	METAL	STD	STANDARD		
CONN	CONNECTION	GA	GAUGE	MUL	MULLION	STIFF	STIFFENER		
CONSTR	CONSTRUCTION	GALV	GALVANIZED			STL	STEEL		
CONT	CONTINUOUS	GC	GENERAL CONTRACTOR	N	NORTH	STRUCT	STRUCTURAL		
CORR	CORRIDOR	GEN	GENERAL	NIC	NOT IN CONTRACT	SUSP	SUSPENDED		
CTR	CENTER	GL	GLU-LAMINATED	NO	NUMBER	SYM	SYMMETRICAL		
CTRL	CONTROL	GLB	GLU-LAMINATED BEAM	NOM	NOMINAL				
CTSK	COUNTERSINK	GND	GROUND	NTS	NOT TO SCALE	T AND B	TOP AND BOTTOM		
CU	CUBIC	GR	GRADE			T AND G	TONGUE AND GROOVE		
CUST	CUSTOM	GT	GIRDER TRUSS	OC	ON CENTER	TAN	TANGENT		
		GYP	GYPSUM						
		GYP BD	GYPSUM BOARD						

Sheet Number	Sheet Name
S000	COVER SHEET
S001	GENERAL STRUCTURAL NOTES
S002	GENERAL STRUCTURAL NOTES
S101	FOUNDATION PLAN
S102	ROOF FRAMING PLAN
S500	FOUNDATION DETAILS
S600	TYPICAL FRAMING DETAILS
S700	ROOF FRAMING DETAILS
S800	SHEAR WALL DETAILS



FOUNDATION, PT, REBAR AND FRAMING PLAN CUTS - ELEVATION DIAGRAM

COMPLETE LEGEND

- - INDICATES FOOTING TYPE, REF SCHEDULE
- - INDICATES COLUMN BELOW
- - INDICATES COLUMN ABOVE
- - INDICATES INTERIOR STRUCTURAL STUD/ BEARING WALL
- - INDICATES WOOD SHEATHED SHEAR WALL
- - INDICATES EXTERIOR STRUCT WALL
- - INDICATES INTERIOR ARCH WALL
- W- - INDICATES STUD/ BEARING WALL TYPE
- - INDICATES SHEAR WALL TYPE. REF SHEAR WALL SCHEDULE ON S500 AND DETAIL 1 / S800
- - INDICATES HOLDOWN TYPE. REF HOLDOWN SCHEDULE ON S500, DETAILS 4 / S800 AND 5 / S800
- - | - INDICATES DIFFERENT HOLDOWN TYPES AT EACH END OF SHEAR WALL
- J# AT XX" OC - INDICATES JOIST TYPE AND SPACING, REF PLANS & JOIST FRAMING SCHEDULE
- - INDICATES DIRECTION DECK OR SHEATHING TO SPAN
- - INDICATES ELEVATION
- - INDICATES STEP IN ELEVATION
- XX PSF / XX'-XX" - INDICATES SNOW DRIFT LOAD. JOIST MANUFACTURER SHALL MAKE PROVISION FOR THESE IN THE DESIGN OF THE JOISTS REF PLANS FOR LOAD & EXTENT.
- - INDICATES ROOF OVERFRAMING. REF DETAIL 1 / S700

FROELICH ENGINEERS
CIVIL · STRUCTURAL
Portland, OR | Bend, OR | Denver, CO
froelich-engineers.com | FE# 24-B101

MONTANA
TIM R. FROELICH
No. 15004PE
LICENSED PROFESSIONAL ENGINEER

TROUT CREEK SDA SCHOOL

3020 HIGHWAY 200
TROUT CREEK, MT
59874

TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200, TROUT CREEK, MT 59874, USA

PERMIT SET

NO	DATE	DESCRIPTION

PROJECT MANAGER:	BL
DESIGNER:	BL
DRAWN BY:	KR
PROJECT NO:	24-B101
DATE:	04-30-2024
SCALE:	AS SHOWN

SHEET TITLE:

COVER SHEET

SHEET NUMBER:

S000

5/1/2024 2:31:49 PM

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PROJECT DESCRIPTION:

- NEW 1-STORY SCHOOL BUILDING
- CONVENTIONAL SPREAD AND STRIP CONCRETE FOUNDATIONS
- CONCRETE SLAB-ON-GRADE
- WOOD 2X STUD WALLS SHEATHED WITH WOOD SHEATHED PANELS
- PRE-MANUFACTURED WOOD TRUSS SYSTEM

GENERAL:

1. THE STRUCTURAL DRAWINGS ARE A PORTION OF THE CONTRACT DOCUMENTS AND ARE INTENDED TO BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, CIVIL, MECHANICAL, AND ELECTRICAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE REQUIREMENTS FROM THE ENTIRE SET OF CONTRACT DOCUMENTS (INCLUDING THE PROJECT SPECIFICATIONS) INTO THEIR WORK.
2. NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS PROVIDED ON STRUCTURAL DRAWINGS WITH ALL DISCIPLINES INCLUDING, BUT NOT LIMITED TO ARCHITECTURAL, GEOTECHNICAL ENGINEER, AND CIVIL ENGINEER PRIOR TO CONSTRUCTION.
4. DETAILS ON THESE PLANS ARE INTENDED TO DEPICT THE GENERAL CONSTRUCTION METHODS FOR THIS STRUCTURE. CONNECTIONS, DETAILS AND CONDITIONS NOT SPECIFICALLY SHOWN THAT ARE SIMILAR TO THOSE THAT ARE SPECIFIED SHALL BE ASSUMED ONE AND THE SAME. IF QUESTIONS REGARDING THE APPLICATION OF DETAILS ARE ENCOUNTERED, NOTIFY THE ARCHITECT/ENGINEER FOR CLARIFICATION IN A TIMELY MANNER PRIOR TO BID OPENING.

CODE REQUIREMENTS:

1. CONFORM TO THE 2021 INTERNATIONAL BUILDING CODE (IBC).
2. ALL REFERENCE TO OTHER CODES AND STANDARDS (ACI, AISC, AWS, NDS, ASTM, ETC.) SHALL BE FOR THE EDITIONS NOTED IN CHAPTER 35 OF THE IBC/OSCC.

TEMPORARY CONDITIONS:

1. THE STRUCTURE HAS BEEN DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL TEMPORARY BRACING AND / OR SUPPORT REQUIRED AS A RESULT OF THE CONTRACTOR'S CONSTRUCTION METHODS AND / OR SEQUENCES.
2. CONTRACTOR'S CONSTRUCTION METHODS AND / OR SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.

DESIGN CRITERIA:

1. DESIGN WAS BASED ON THE STRENGTH AND DEFLECTION CRITERIA OF THE IBC. IN ADDITION TO THE DEAD LOADS, THE FOLLOWING LOADS AND ALLOWANCES WERE USED FOR DESIGN IN ACCORDANCE WITH THE IBC:

DESIGN CRITERIA		
GEOTECHNICAL CRITERIA		
ALLOWABLE SOIL BEARING PRESSURE	1,500 PSF (INCREASE 33 PERCENT FOR LOAD COMBINATIONS INCLUDING WIND AND SEISMIC)	
BUILDING RISK CATEGORY		
RISK CATEGORY	II	
LIVE LOAD CRITERIA		
FLOOR LIVE LOADS	UNIFORM LOAD (PSF)	CONCENTRATED LOAD (LBS)
CLASSROOMS	40	1000
CORRIDORS	100	1000
ROOF CRITERIA		
ROOF LIVE LOAD	20 PSF	
SNOW CRITERIA		
DESIGN ROOF SNOW LOAD	70 PSF MINIMUM IN ACCORDANCE WITH THE IBC	
SNOW DRIFT	PER IBC AS SHOWN ON PLANS (IN ADDITION TO DESIGN ROOF SNOW LOAD)	
GROUND SNOW LOAD	P_g = 90 PSF IN ACCORDANCE WITH MONTANA GROUND SNOW LOAD FINDER	
FLAT ROOF SNOW LOAD	P_f = 70 PSF	
SNOW EXPOSURE FACTOR	C_e = 1.0	
SNOW LOAD IMPORTANCE FACTOR	I_s = 1.0	
THERMAL FACTOR	C_t = 1.1	
WIND CRITERIA		
MAIN WIND FORCE RESISTING SYSTEM	105 MPH BASIC WIND SPEED	
COMPONENTS AND CLADDING	105 MPH BASIC WIND SPEED	
EXPOSURE CATEGORY	B	
GUST/INTERNAL PRESSURE	GC_{pi} = +/- 0.18	
SEISMIC CRITERIA		
SITE CLASS	D - Default	
IMPORTANCE FACTOR	I_e = 1.0	
SEISMIC DESIGN CATEGORY	D	
MCE SPECTRAL ACCELERATIONS	S_s = 0.424	S_1 = 0.136
SITE COEFFICIENTS	F_a = 1.461	F_V = 2.327
DESIGN SPECTRAL ACCELERATIONS	S_{DS} = 0.413	S_{D1} = 0.212
ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE, REF ASCE 7-16 SECTION 12.8	
	NORTH-SOUTH DIRECTION	EAST-WEST DIRECTION
SEISMIC LOAD RESISTING SYSTEM	LIGHT FRAMED WOOD SHEAR WALLS	LIGHT FRAMED WOOD SHEAR WALLS
RESPONSE MODIFICATION FACTOR	R = 6.5	R = 6.5
SEISMIC RESPONSE COEFFICIENT	C_s = 0.064	C_s = 0.064
DESIGN BASE SHEAR	V = 15 KIPS	V = 15 KIPS
REDUNDANCY FACTOR	rho = 1.3	rho = 1.3

SUBMITTALS:

1. REVIEW OF THE SUBMITTALS IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED BY THE STRUCTURAL ENGINEER FOR CORRECTNESS, DIMENSIONS OR DETAILS CONTAINED WITHIN THE SUBMITTALS. THE CONTRACTOR IS SOLEY RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS; SELECTING FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION; COORDINATING THEIR WORK WITH THAT OF ALL OTHER TRADES; AND PERFORMING THEIR WORK IN A SAFE AND SATISFACTORY MANNER.
2. REVIEW OF THE SUBMITTALS DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF CONTRACT DOCUMENTS AND SPECIFICATIONS. THE REVIEW OF A SUBMITTAL SHALL NOT BE CONSIDERED A WAIVER OF THE REQUIREMENT OF STRICT COMPLIANCE WITH THE CONTRACT DOCUMENTS AND INTENT OF THE PROJECT. ALL MINIMUM CONDITIONS AND REQUIREMENTS SPECIFIED ON THE STRUCTURAL DRAWINGS, GOVERNING BUILDING CODES, AND REFERENCED STANDARDS SHALL BE MET REGARDLESS OF THE INFORMATION INDICATED ON THE SUBMITTALS.
3. SUBMITTALS AND DRAWINGS SHALL BE GENERATED BY AND ORIGINATE FROM THE CONTRACTOR. STRUCTURAL AUTOCAD/REVIT BACKGROUNDS WILL NOT BE RELEASED BY FE AND MAY NOT BE USED FOR THE GENERATION OF SUBMITTALS AND DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO GENERATE THEIR SUBMITTALS AND DRAWINGS.
4. SUBMITTALS SHALL BE REVIEWED FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS AND STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION TO THE DESIGN TEAM. SUBMITTALS THAT ARE NOT REVIEWED AND STAMPED BY THE GENERAL CONTRACTOR WILL BE RETURNED WITHOUT REVIEW.
5. SUBMITTALS SHALL BE SUBMITTED TO THE DESIGN TEAM PRIOR TO THE FABRICATION AND CONSTRUCTION OF ALL STRUCTURAL ITEMS INCLUDING THE FOLLOWING:

SUBMITTALS			
ITEM	SUBMITTAL	DEFERRED SUBMITTAL	COMMENTS
PREMANUFACTURED WOOD TRUSSES	-	X	SEE NOTE A

A. DESIGN DRAWINGS, SHOP DRAWINGS, AND CALCULATIONS FOR THE DESIGN AND FABRICATION OF ITEMS THAT ARE DESIGNED BY OTHERS SHALL BEAR THE SEAL AND SIGNATURE OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. CALCULATIONS SHALL BE INCLUDED FOR ALL CONNECTIONS TO THE STRUCTURE CONSIDERING LOCALIZED EFFECTS ON STRUCTURAL ELEMENTS INDUCED BY THE CONNECTION LOADS. DESIGN SHALL BE BASED UPON THE REQUIREMENTS OF THE IBC/OSSC AND AS NOTED UNDER "DESIGN CRITERIA."

FOUNDATIONS:

1. FOUNDATION SIZES ARE BASED UPON AN ASSUMED MAXIMUM TOTAL LOAD BEARING SOIL PRESSURE = 1,500 PSF FOR BEARING ON NATIVE SOILS/COMPACTED FILL.
2. ALL FOOTINGS SHALL BE FOUNDED ON FIRM UNDISTURBED ORIGINAL SOIL FREE OF ORGANIC MATTER OR ENGINEERED FILL.
3. ALL FOOTINGS SHALL BE A MINIMUM OF 36" BELOW FINAL GRADES.
4. ALL DISTURBED SOIL SHALL BE REMOVED BY HAND OPERATION FROM FOOTING EXCAVATIONS TO NEAT LINES AND REPLACED WITH ENGINEERED FILL IF NECESSARY.
5. ENGINEERED FILL SHOULD BE COMPACTED IN HORIZONTAL LIFTS NOT EXCEEDING 12 INCHES. ENGINEERED FILL SHALL CONSIST OF 3/4" MINUS CLEAN, WELL-GRADED SAND, SAND AND GRAVEL, OR CRUSHED ROCK. ENGINEERED FILL SHALL BE COMPACTED TO 95 PERCENT MAXIMUM DRY DENSITY AS OBTAINED BY ASTM D698 STANDARD PROCTOR.
6. BOTTOM OF FOOTINGS SHALL BE STEPPED FROM ELEVATION TO ELEVATION AT 2'-0" HORIZONTAL TO 1'-0" VERTICAL STEPS.
7. GROUND ADJACENT TO THE FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT LEAST 5 PERCENT SLOPE FOR A MINIMUM DISTANCE OF 10 FEET FROM THE BUILDING. NOTIFY EOR IF CONDITIONS VARY.

CONCRETE:

1. ALL CONCRETE WORK SHALL CONFORM TO "ACI 318--BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" AND CHAPTER 19 OF THE IBC/OSSC.
2. CONCRETE STRENGTHS SHALL BE VERIFIED BY STANDARD 28-DAY CYLINDER TESTS PER ASTM C39, UNLESS NOTED OTHERWISE, AND SHALL BE AS FOLLOWS:

CONCRETE STRENGTHS				
DESCRIPTION	f'c (PSI)	WATER - CEMENT RATIO BY WEIGHT	ENTRAINED AIR (PERCENT)	OTHER
FOOTINGS, STEMWALLS	3,000	0.53	2 +/- 1.5	
INTERIOR SLAB-ON-GRADE	4,000	0.48		SEE NOTE D

NOTES:

A. VERIFY WATER/CEMENT RATIO WITH FLOOR COVERING MANUFACTURER FOR CONCRETE FLOORS WITH MOISTURE SENSITIVE FLOOR COVERINGS.
B. CONCRETE MIXES SHALL BE NORMAL WEIGHT AND CONTAIN PORTLAND CEMENT CONFORMING TO ASTM C150 FOR TYPE I, OR TYPE II.
C. AIR ENTRAINING AGENT SHALL CONFORM TO ASTM C260.
D. SHRINKAGE RATE, AS DETERMINED BY ASTM C157, OF CONCRETE SHALL NOT EXCEED 0.045 PERCENT AT 28 DAYS. USE A SHRINKAGE REDUCING ADMIXTURE TO ACHIEVE THIS VALUE, IF REQUIRED.
E. MAXIMUM AGGREGATE SIZE SHALL BE 3/4" AND NOT MORE THAN ONE-QUARTER OF THE REINFORCEMENT CLEAR SPACING.

3. MINIMUM CEMENT CONTENT PER CUBIC YARD SHALL BE AS FOLLOWS:

MINIMUM CEMENT CONTENT	
f'c (PSI)	MINIMUM CEMENT CONTENT PER CUBIC YARD
3,000	470 LBS.
4,000	550 LBS.
5,000	630 LBS.

NOTES:

A. FLYASH CONFORMING TO ASTM C618 "TYPE F," OR "TYPE C" MAY BE USED TO REPLACE UP TO 20 PERCENT OF THE CEMENT CONTENT, PROVIDED THAT THE MIX STRENGTH IS SUBSTANTIATED BY TEST DATA.

4. NO WATER MAY BE ADDED TO CONCRETE IN THE FIELD UNLESS REQUESTED BY CONCRETE SUPPLIER AND APPROVED IN WRITING BY THE ENGINEER OF RECORD.
5. CONCRETE SHALL BE PLACED IN ONE CONTINUOUS OPERATION WHEREVER PRACTICAL. CONSTRUCTION JOINTS IN BEAMS, JOISTS, AND SLABS SHALL BE LOCATED AT MID-SPAN WITH REINFORCING CONTINUING THROUGH AS IF THE JOINT DID NOT OCCUR. VERTICAL CONSTRUCTION JOINTS IN WALLS SHALL BE LOCATED MIDWAY BETWEEN COLUMNS OR PILASTERS.
6. THE CONTRACTOR SHALL LAYOUT OF CONSTRUCTION AND CONTROL JOINTS FOR CONCRETE SLABS-ON-GRADE. THE JOINTS SHALL BE LOCATED AT MAXIMUM 12'-0" ON-CENTER EACH WAY FORMING RECTANGLES WITH A LENGTH TO WIDTH RATIO NOT EXCEEDING 1.5 IN ANY DIRECTION. CONTROL JOINTS SHALL INTERSECT AT COLUMN BLOCKOUTS, AT ENDS OF BEARING WALLS, AND AT ALL RE-ENTRANT CORNERS IN THE SLAB.
7. ALL BOLTS AND/OR ANCHOR RODS EMBEDDED INTO CONCRETE SHALL CONFORM TO ASTM SPECIFICATION F1554 GRADE 36 UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.
8. ANCHOR RODS ARE TO BE LOCATED BY MEANS OF TEMPLATE. ANCHOR RODS SHALL NOT BE HAND SET, OR WET SET.
9. PREPARATION, CONSTRUCTION AND PROTECTION OF CONCRETE DURING COLD WEATHER OR HOT WEATHER SHALL CONFORM TO ACI 318 26.5.4, 26.5.5 AND ACI 306R AND 305R.

REINFORCING STEEL:

1. REINFORCING STEEL SHALL BE DETAILED, FABRICATED, AND PLACED IN ACCORDANCE TO "ACI 318—BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" AND "ACI 315—MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES."
2. ALL REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS AND GRADES UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS:

REINFORCING SPECIFICATIONS AND GRADES	
USE	ASTM SPECIFICATION AND GRADE
SMOOTH WELDED WIRE FABRIC	ASTM A1064
FOUNDATION REINFORCEMENT	ASTM A615, GRADE 60

3. REINFORCING STEEL SHALL BE SECURELY TIED IN-PLACE WITH #16 ANNEALED IRON WIRE. BARS IN BEAMS, SLABS, AND FOUNDATIONS SHALL BE SUPPORTED ON WELL-CURED CONCRETE BLOCKS, OR APPROVED METAL CHAIRS, AS SPECIFIED BY THE "CRSI MANUAL OF STANDARD PRACTICE," MSP-1.
4. ALL REINFORCEMENT SHALL BE FREE OF LOOSE MILL AND RUST SCALE, OIL, DIRT, OR COATINGS OF ANY KIND THAT REDUCE THE BOND STRENGTH TO THE CONCRETE.
5. REINFORCEMENT STEEL SHALL NOT BE DISPLACED OR ALTERED FOR THE CONVENIENCE OF OTHER TRADES UNLESS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.
6. "WET SETTING" OF REINFORCING STEEL, ANCHOR RODS, EMBEDDED PLATES AND INSERTS IS NOT PERMITTED.
7. ALL REINFORCEMENT SHALL BE CONTINUOUS WITH ADEQUATE LAP LENGTHS AT SPLICE LOCATIONS.
8. MINIMUM LAP OF WELDED WIRE FABRIC SHALL BE 12".
9. THE FOLLOWING MINIMUM LAP SPLICE LENGTHS SHALL BE PROVIDED FOR ALL REINFORCING STEEL:

TYPICAL LAP SPLICE SCHEDULE (IN)						
BAR SIZE	3,000 PSI		4,000 PSI		5,000 PSI	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	28	22	24	19	22	17
#4	37	29	32	25	29	22
#5	47	36	40	31	36	28
#6	56	43	48	37	43	33

NOTES:

A. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BAR.
B. VALUES ARE FOR UNCOATED BARS.

10. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR ALL REINFORCING STEEL:

MINIMUM CONCRETE COVER (CAST-IN-PLACE)	
USE	COVER
SLAB BARS	1"
EXTERIOR WALL FACES (EXPOSED TO EARTH, OR WEATHER)	1-1/2" (#5 AND SMALLER)
	2" (#6 AND LARGER)
CONCRETE CAST AGAINST EARTH	3"

11. PROVIDE "CORNER" BAR AT CORNERS AND INTERSECTIONS FOR WALLS AND FOUNDATIONS EQUAL IN SIZE, NUMBER AND SPACING TO HORIZONTAL REINFORCING. SIZE CORNER BAR TO PROVIDE A FULL LAP WITH HORIZONTAL REINFORCEMENT ON EACH LEG.

CONCRETE ACCESSORIES:

1. APPROVED POST-INSTALLED ANCHORS ARE AS FOLLOWS:

APPROVED POST-INSTALLED CONCRETE ANCHORS		
TYPE	ANCHOR	ICC REPORT
CONCRETE SCREWS	SIMPSON TITEN HD	ICC ESR-2713
	DEWALT SCREW-BOLT+	ICC ESR-3889
	HILTI KWIK HUS-EZ	ICC ESR-3027
EPOXY ADHESIVE	SIMPSON SET-3G	ICC ESR-4057
	DEWALT PURE110+	ICC ESR-3298
	DEWALT PURE220+	ICC ESR-5144
	HILTI HIT-RE 500V3	ICC ESR-3814
ACRYLIC ADHESIVE	SIMPSON AT-XP	IAPMO UES ER-263
	DEWALT AC200+	ICC ESR-4027
	HILTI HY 200	ICC ESR-3187
EXPANSION ANCHORS	SIMPSON STRONG-BOLT II	ICC ESR-3037
	DEWALT POWER STUD + SD2	ICC ESR-2502
	HILTI KWIK BOLT-TZ	ICC ESR-1917

NOTES:

A. ANCHOR LOCATIONS AND REQUIREMENTS SHALL CONFORM TO THOSE NOTED SPECIFICALLY ON THE STRUCTURAL DRAWINGS. ALL OTHER LOCATIONS REQUIRE PRIOR APPROVAL.
B. ALL ANCHORS SHALL BE INSTALLED IN STRICT CONFORMANCE TO THE APPLICABLE ICC REPORT AND MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
C. REINFORCEMENT SHALL NOT BE CUT IN NEW, OR EXISTING CONCRETE DURING INSTALLATION OF POST-INSTALLED ANCHORS. CONTRACTOR SHALL LOCATE AND AVOID ALL REINFORCEMENT.
D. ANCHORS THAT ARE LEFT EXPOSED TO WEATHER SHALL BE STAINLESS STEEL, OR HOT-DIPPED GALVANIZED.
E. ANCHORS SHALL BE INSTALLED ONLY INTO CONCRETE THAT HAS ATTAINED FULL CONCRETE DESIGN STRENGTH, f'c.

2. ADHESIVE ANCHORS SHALL BE INSTALLED ONLY IN DRY, HAMMER-DRILLED HOLES.
3. INSTALLATION OF ADHESIVE ANCHORS SHALL BE PERFORMED ONLY BY ACI/CRSI CERTIFIED ADHESIVE ANCHOR INSTALLERS.
4. ADHESIVE ANCHOR INSTALLATIONS EXCEEDING 10" EMBEDMENT IN DOWNWARD INCLINED, AND DOWNWARD ORIENTATIONS SHALL UTILIZE ADHESIVE MANUFACTURER'S PISTON PLUG AND TUBING DELIVERY SYSTEM.

SAWN FRAMING LUMBER:

1. SAWN LUMBER SHALL CONFORM TO THE WEST COAST LUMBER INSPECTION BUREAU (WCLIB) OR THE WESTERN WOODS PRODUCTS ASSOCIATION (WWPA) GRADING RULES.
2. ALL LUMBER SHALL BE THE SPECIES AND GRADES AS FOLLOWS:

SAWN LUMBER		
USE	SPECIES/GRADE	Fb (PSI)--BASE VALUE
LUMBER 2" TO 4" THICK	DOUGLAS FIR-LARCH NO.2	900
BEAMS 5"x5" AND GREATER	DOUGLAS FIR-LARCH NO.1	1350
POSTS	DOUGLAS FIR-LARCH NO.1	1200

3. ALL DIMENSIONAL LUMBER AND TIMBERS SHALL BE KILN DRIED AND CERTIFIED IN WRITING BY THE SUPPLIER TO BE LESS THAN 19 PERCENT MOISTURE CONTENT.
4. ALL LUMBER IN CONTACT WITH CONCRETE OR CMU SHALL BE PRESERVATIVE TREATED (PT) IN ACCORDANCE WITH THE AMERICAN WOOD PRESERVERS BUREAU (AWPB) UNLESS AN APPROVED MOISTURE BARRIER IS PROVIDED. ALL PT LUMBER SHALL BEAR THE AWPB QUALITY MARK.

GLUED LAMINATED MEMBERS:

1. GLUED LAMINATED MEMBERS SHALL BE FABRICATED IN CONFORMANCE WITH THE "AMERICAN NATIONAL STANDARD FOR STRUCTURAL GLUED LAMINATED TIMBER" (ANSI/AITC A190.1), OR OTHER CODE-APPROVED DESIGN, MANUFACTURING AND QUALITY ASSURANCE PROCEDURES.
2. ADHESIVE SHALL BE WET-USE EXTERIOR WATERPROOF GLUE.
3. EACH MEMBER SHALL BEAR AN AITC OR APA-EWS IDENTIFICATION MARK OR BE ACCOMPANIED BY A CERTIFICATE OF CONFORMANCE.
4. ONE COAT OF END SEALER SHALL BE APPLIED IMMEDIATELY AFTER TRIMMING IN EITHER THE SHOP OR FIELD.
5. NOTCHING AND/OR BORING OF GLUED LAMINATED MEMBERS (EITHER IN THE SHOP, OR FIELD) IS STRICTLY PROHIBITED UNLESS AS SPECIFICALLY DETAILED IN THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.
6. GLUED LAMINATED TIMBER BEAMS SHALL BE WESTERN SPECIES WITH THE FOLLOWING STRENGTH PROPERTIES, UNLESS OTHERWISE NOTED ON PLANS:

GLUED LAMINATED MEMBERS				
COMBINATION SYMBOL (SPECIES)	USE	MODULUS OF ELASTICITY (PSI)	FLEXURAL STRESS (PSI)	HORIZONTAL SHEAR STRESS (PSI)
24F-V4 (DF/DF)	SIMPLE SPAN	1,800,000	2,400	265
24F-V8 (DF/DF)	CANTILEVERED OR CONTINUOUS	1,800,000	2,400	265

7. GLULAM MEMBERS SHALL BE OF THE FOLLOWING APPEARANCE GRADE(S), UNLESS OTHERWISE NOTED ON PLANS: FRAMING OR INDUSTRIAL.

ENGINEERED COMPOSITE LUMBER:

1. ENGINEERED COMPOSITE WOOD PRODUCTS SUCH AS LAMINATED VENEER LUMBER (MICROLAM), PARALLEL STRAND LUMBER (PARALAM), AND LAMINATED STRAND LUMBER (TIMBERSTRAND) SHALL BE OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS, MANUFACTURED BY TRUS-JOIST OR AN APPROVED EQUAL.
2. MEMBERS SHALL HAVE THE FOLLOWING MINIMUM DESIGN PROPERTIES:

ENGINEERED COMPOSITE LUMBER		
COMPOSITE LUMBER TYPE	MODULUS OF ELASTICITY (PSI)	ALLOWABLE FLEXURAL STRESS (PSI)
LSL	1,500,000	2,350
LVL	1,900,000	2,600

NOTE: FLEXURAL STRESSES NOTED ABOVE ARE FOR 12" DEEP MEMBERS. DEEPER MEMBERS SHALL BE DESIGNED FOR REDUCED STRESSES IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.

WOOD STRUCTURAL PANEL SHEATHING:

1. WOOD STRUCTURAL ROOF AND FLOOR PANELS SHALL CONFORM TO THE REQUIREMENTS OF THE "U.S. PRODUCT STANDARD PS 1 FOR CONSTRUCTION AND INDUSTRIAL PLYWOOD," THE "U.S. PRODUCT STANDARD PS 2 PERFORMANCE STANDARD FOR WOOD-BASED STRUCTURAL USE PANELS," OR THE "APA PRP-108 PERFORMANCE STANDARDS."
2. WOOD STRUCTURAL WALL PANELS SHALL CONFORM TO THE REQUIREMENTS OF THE "U.S. PRODUCT STANDARD PS 2 PERFORMANCE STANDARD FOR WOOD-BASED STRUCTURAL USE PANELS," OR THE "APA PRP-108 PERFORMANCE STANDARDS."
3. UNLESS NOTED OTHERWISE ON THE DRAWINGS, ALL PANELS SHALL BE APA RATED SHEATHING, EXPOSURE 1, OF THE THICKNESS AND SPAN RATING AS FOLLOWS:

WOOD STRUCTURAL PANEL SHEATHING	
USE	THICKNESS/RATING
ROOF SHEATHING	19/32"-INDEX 40/20
WALL SHEATHING	1/2"-INDEX 32/16 OSB

4. ALL FLOOR AND ROOF SHEATHING SHALL BE INSTALLED WITH FACE GRAIN PERPENDICULAR TO SUPPORTS AND WITH END JOINTS STAGGERED.
5. ALL FLOOR AND ROOF SHEATHING JOINTS SHALL BE INSTALLED WITH A 1/8" GAP AS REOCMMENDED BY APA UNLESS NOTED OTHERWISE BY THE SHEATHING MANUFACTURER.
6. ROOF SHEATHING SHALL BE BLOCKED, OR HAVE EDGES SUPPORTED BY PLYCLIPS.
7. SHEAR WALL SHEATHING SHALL BE PLYWOOD OR OSB PANELS CONFORMING TO THE REQUIREMENTS FOR ITS TYPE SPECIFIED IN DOC PS1 OR PS2.
8. SHEAR WALL SHEATHING SHALL BE INSTALLED EITHER HORIZONTALLY OR VERTICALLY AND BE BLOCKED AT ALL PANEL EDGES. SHEET SIZES SHALL BE 4'X8' UNLESS AT BOUNDARIES OR FRAMING CHANGES. DO NOT PIECE TOGETHER AROUND OPENINGS - INSTALL FULL SHEETS AND CUT OUT FOR OPENINGS. REFERENCE PLANS FOR ADDITIONAL REQUIREMENTS.
9. AT WALL SHEATHING, ADJUST LAYOUT TO ELIMINATE SHEATHING PIECES LESS THAN 16" WIDE.
10. AT ROOF SHEATHING, ADJUST LAYOUT TO ELIMINATE SHEATHING PIECES LESS THAN 24" WIDE. AT OVERHANGS AND EAVES AT THE ROOF, PIECES SHALL BE NO LESS THAN 48" WIDE AND SHALL BE SUPPORTED BY AT LEAST 2 ROOF MEMBERS (ROOF JOISTS OR TRUSSES).
11. SHEATHING SHALL BE PROTECTED FROM MOISTURE DURING CONSTRUCTIONS PER THE RECOMMENDATIONS AND/OR REQUIREMETNS OF APA UNLESS DIRECTED OTHERWISE BY THE SHEATHING MANUFACTURER.

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PERMIT SET

NO	DATE	DESCRIPTION

PROJECT MANAGER:	BL
DESIGNER:	BL
DRAWN BY:	KR
PROJECT NO:	24-B101
DATE:	04-30-2024
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SHEET TITLE:

GENERAL STRUCTURAL NOTES

SHEET NUMBER:

S001

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PREMANUFACTURED WOOD TRUSSES:

1. DESIGN OF THE PREMANUFACTURED WOOD ROOF TRUSS SYSTEM SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
2. DESIGN SHALL CONFORM TO THE PROFILES SHOWN ON THE DRAWINGS AND THE REQUIREMENTS OF OSSC/IBC SECTION 2303.4 AND THE "DESIGN SPECIFICATIONS FOR LIGHT METAL PLATE CONNECTED WOOD TRUSSES", TPI-24 AS PUBLISHED BY THE TRUSS PLATE INSTITUTE.
3. THE MANUFACTURER SHALL PROVIDE SHOP DRAWINGS SHOWING LAYOUT AND ANY DETAILING NECESSARY FOR DETERMINING FIT AND PLACEMENT IN THE STRUCTURE.
4. METAL PLATE CONNECTED TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING MINIMUM LOADS AND ANY SNOW DRIFTING/SLIDING SNOW INDICATED ON DRAWINGS:

TRUSS LOADING	
LOADING TYPE	UNIFORMLY DISTRIBUTED LOAD (PSF)
ROOF LIVE LOAD	20
ROOF SNOW LOAD	70
	EAVES: 70
ROOF DEAD LOAD	TOP CHORD: 12
	BOTTOM CHORD: 8
NET WIND UPLIFT	15

IN ADDITION TO THE LOADS NOTED, ALL TRUSSES SHALL BE DESIGNED TO SUPPORT A CONCENTRATED LOAD OF 100# AT ANY LOCATION ALONG THE TOP OR BOTTOM CHORDS.

5. CONTRACTOR TO VERIFY ALL WEIGHTS AND LOCATIONS OF CONCENTRATED LOADS DUE TO ROOF TOP MECHANICAL UNITS, MECHANICAL PIPING, ELECTRICAL UNITS, FOLDING PARTITIONS AND OTHER CONCENTRATED LOADS PRIOR TO TRUSS FABRICATION. TRUSS MANUFACTURER SHALL DESIGN ALL DRAG TRUSSES AND DRAG STRUTS FOR THE FOLLOWING:
   A. SHEAR LOADS AS INDICATED ON THE PLANS AND NOTES
   B. DRAG TRUSSES TO COLLECT LOAD ALONG THE TOP CHORD AND TRANSFER TO THE BOTTOM CHORD THROUGH WEB MEMBERS
   C. ALL TOP AND BOTTOM CHORDS TO HAVE CAPACITY OF TRANSFERRING SHEAR LOADS THROUGH SPLICES.
6. THE TRUSS MANUFACTURER SHALL SUBMIT DESIGNS, SHOP DRAWINGS AND CALCULATIONS BEARING THE STAMP OF A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED FOR REVIEW AND APPROVAL.
7. DEFLECTION OF MEMBERS DUE TO DESIGN LOADS SHALL NOT EXCEED LIVE LOAD - 1/240 OF SPAN AND TOTAL LOAD - 1/240 OF SPAN
8. DESIGN, SHOP DRAWINGS AND CALCULATIONS SHALL INCLUDE THE FOLLOWING INFORMATION:
   A. DEFLECTION DESIGN CRITERIA
   B. LIVE, SNOW, DEAD, WIND, SEISMIC AND MECHANICAL DESIGN LOADS
   C. ERECTION AND PLACEMENT CRITERIA
   D. DETAILS OF ALL BRIDGING, BRACING, STIFFENERS, BLOCKING AND CONNECTIONS
   E. LOCATION AND FRAMING FOR ALL EQUIPMENT LOADS OVER 500 LBS
   F. LOCATION AND FRAMING FOR ALL SUSPENDED WALLS AND EQUIPMENT
   G. LOCATION AND FRAMING FOR ALL ROOF TIEOFFS (COORDINATE WITH TIEOFF ENGINEER AND MANUFACTURER)
9. DO NOT NOTCH OR DRILL TRUSS MEMBERS WITH OUT APPROVAL OF THE TRUSS MANUFACTURER AND THEIR ENGINEER.
10. TRUSS SUPPLIER SHALL PROVIDE BRIDGING, HANGERS, BLOCKING, CUSTOM FABRICATED HANGERS AND OTHER ACCESSORIES NECESSARY FOR THE PROPER ERECTION AND PERFORMANCE OF THEIR PRODUCT. THESE SHALL BE CLEARLY CALLED OUT AND DETAILED ON THE SHOP DRAWINGS.

NAILING AND FASTENERS:

1. ALL FRAMING NAILS SHALL BE OF THE SIZE AND NUMBER INDICATED ON THE DRAWINGS AND CONFORM TO THE "STANDARD SPECIFICATION OF DRIVEN FASTENERS: NAILS, SPIKES, AND STAPLES" (ASTM F1667) AND "POWER-DRIVEN STAPLES AND NAILS FOR USE IN ALL TYPES OF BUILDING CONSTRUCTION" (NER 272).
2. NAILING NOT SHOWN SHALL BE AS INDICATED ON IBC/OSSC TABLE 2304.9.1, OR NER-272.
3. NAILS SHALL BE IDENTIFIED BY LABELS ATTACHED TO THEIR CONTAINERS, THAT SHOW THE MANUFACTURER'S NAME, NAIL SHANK DIAMETER, AND LENGTH.
4. NAIL SIZES SHALL BE AS FOLLOWS:

FRAMING NAILS		
NAIL TYPE	SHANK DIAMETER (IN)	MINIMUM PENETRATION INTO FRAMING MEMBER (IN)
6d	0.113	1.250
8d	0.131	1.375
10d	0.148	1.500
16d	0.162	1.625

5. UNLESS OTHERWISE NOTED ON PLANS, PLYWOOD SHEATHING SHALL BE ATTACHED TO THE FRAMING SUPPORTS AS FOLLOWS:

SHEATHING NAILING		
USE	PANEL EDGES	INTERMEDIATE FRAMING MEMBERS
ROOF SHEATHING	0.131" DIA AT 6" OC	0.131" DIA AT 12" OC
FLOOR SHEATHING	0.148" DIA AT 6" OC	0.148" DIA AT 12" OC
WALL SHEATHING	0.131" DIA AT 6" OC	0.131" DIA AT 12" OC

NOTES:
   A. ALL NAILS SHALL BE COMMON NAILS EXCEPT RING SHANKS SHALL BE USED FOR FASTENING ROOF SHEATHING.

6. BOLTS AND LAG SCREWS SHALL CONFORM TO ANSI/ASME STANDARD B18.2.1-1981. ALL BOLTS AND LAG SCREWS SHALL BE INSTALLED WITH STANDARD CUT WASHERS. ALL A307 BOLTS SHALL HAVE CUT THREADS.
7. PRE-DRILL HOLES FOR LAG BOLTS. SOAP THREADS OF LAGS IMMEDIATELY PRIOR TO INSTALLATION.
8. JOIST HANGERS, HOLDOWNS, AND OTHER FRAMING ACCESSORIES SHALL BE MANUFACTURED BY SIMPSON STRONG TIE (OR AN APPROVED EQUAL) AND BE OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS. HARDWARE FASTENERS SHALL BE INSTALLED IN STRICT CONFORMANCE TO THE MANUFACTURER'S REQUIREMENTS. ANY PRODUCT SUBSTITUTIONS TO SIMPSON SHALL MEET OR EXCEED SIMPSON'S PUBLISHED DESIGN CAPACITIES AND MUST HAVE A CURRENT ICC EVALUATION REPORT FOR THE APPLICABLE CODES.
9. HANGERS NOT SHOWN SHALL BE SIMPSON U-TYPE, OR B-TYPE OF THE SIZE RECOMMENDED FOR THE SPECIFIC FRAMING MEMBER SHOWN ON PLAN.
10. FASTENERS (NAILS, BOLTS, SCREWS, LAG SCREWS, ETC) IN CONTACT WITH PT LUMBER AND SHEATHING SHALL BE HOT DIPPED ZINC-COATED GALVANIZED STEEL. OTHER FASTENERS AND HARDWARE IN CONTACT WITH PT LUMBER AND SHEATHING SHALL BE OF MECHANICALLY DEPOSITED ZINC-COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH ASTM B695, CLASS 55 MINIMUM. CONNECTORS IN CONTACT WITH EXTERIOR APPLICATIONS OF PT LUMBER AND SHEATHING SHALL HAVE BE ZINC-COATED GALVANIZED STEEL IN ACCORDANCE WITH ASTMA653, TYPE G185. ADDITIONALLY, FASTENER TYPE AND COATINGS SHALL COMPLY WITH THE WRITTEN REQUIREMENTS OF THE MANUFACTURER. NO SUBSTITUTIONS PERMITTED.
11. FASTENERS (NAILS, BOLTS, SCREWS, LAG SCREWS, ETC) IN CONTACT WITH FRT LUMBER AND SHEATHING SHALL BE HOT DIPPED ZINC-COATED GALVANIZED STEEL. OTHER FASTENERS AND HARDWARE IN CONTACT WITH FRT LUMBER AND SHEATHING SHALL BE OF MECHANICALLY DEPOSITED ZINC-COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH ASTM B695, CLASS 55 MINIMUM. ADDITIONALLY, FASTENER TYPE AND COATINGS SHALL COMPLY WITH THE WRITTEN REQUIREMENTS OF THE MANUFACTURER.
12. SILLS AT WALLS SHALL BE BOLTED TO CONCRETE WITH 5/8" DIAMETER x 7" EMBED ANCHOR BOLTS AT 4'-0" OC MAXIMUM AND WITHIN 1'-0" OF SILL PLATE ENDS, CORNERS OR SPLICES, UNLESS DETAILED OTHERWISE. WASHERS TO BE MINIMUM 1/4"x3"x3", IN ACCORDANCE WITH IBC 2305.3.11.
13. ALL SILL PLATES AND LEDGERS SHALL BE ANCHORED WITH A MINIMUM OF THREE FASTENERS PER PIECE.
14. ANCHOR BOLTS, INCLUDING NUTS AND WASHERS, FROM SILL PLATES TO CONCRETE FOUNDATION OR SLAB SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A653 TYPE G185 OR APPROVED EQUAL.

ANCHOR BOLTS:

1. ANCHOR BOLTS, INCLUDING NUTS AND WASHERS, FROM SILL PLATES TO CONCRETE FOUNDATION OR SLAB SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A653 TYPE G185 OR APPROVED EQUAL.
2. ANCHOR BOLTS SHALL HAVE A GALVANIZED STEEL PLATE WASHER BETWEEN THE SILL PL AND NUT. REF SHEAR WALL DETAILS FOR PLACEMENT REQUIREMENTS OF BOLT AND WASHERS.
3. ANCHOR BOLTS SHALL BE PLACED SO THAT PLATE WASHER EDGE IS PARALLEL TO AND LOCATED WITHIN 1/2" OF WALL SHEATHING. REF SHEAR WALL DETAILS FOR PLACEMENT REQUIREMENTS OF BOLT AND WASHERS.
4. ANCHOR BOLTS SHALL BE LOCATED IN THE FORMS AND TIED SUFFICIENTLY TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT. DO NOT HAND SET OR WET SET.
5. SILLS AT WALL SHALL BE BOLTED TO CONCRETE WITH 5/8" DIAMETER x 7" EMBED ANCHOR BOLTS AT 4'-0" OC MAXIMUM AND WITHIN 1'-0" OF SILL PLATE ENDS, CORNERS OR SPLICES, UNLESS NOTED OTHERWISE ON SHEAR WALL SCHEDULE. HOLDOWN BOLTS DO NOT TAKE THE PLACE OF ANCHOR BOLT AT THE END OF THE SHEAR WALL.
6. ALL SILL PLATES SHALL BE ANCHORED WITH A MINIMUM OF THREE FASTENERS PER PIECE. HOLDOWN BOLTS DO NOT TAKE THE PLACE OF ANCHOR BOLT AT THE END OF THE SHEAR WALL.
7. ANCHOR BOLTS SHALL BE ASTM F1554 GRADE 36 STEEL.

HOLDOWN BOLTS:

1. HOLDOWN BOLTS, INCLUDING NUTS AND WASHERS, EMBEDDED INTO FOUNDATION OR SLAB SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A653 TYPE G185 OR APPROVED EQUAL.
2. HOLDOWN BOLTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. HOLDOWN BOLTS SHALL BE PLACED A MINIMUM OF 5" FROM THE END OF CONCRETE STEMWALLS. ADD ADDITIONAL 2x STUD AS REQUIRED.
4. REFERENCE PLANS, HOLDOWN SCHEDULE AND DETAILS FOR TYPICAL HOLDOWN INSTALLATION REQUIREMENTS.
5. HOLDOWN BOLTS SHALL BE LOCATED IN THE FORMS AND TIED SUFFICIENTLY TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT. DO NOT HAND SET OR WET SET.
6. HOLDOWN BOLTS SHALL BE ASTM F1554 GRADE 36 STEEL, THREADED ON BOTH ENDS UNLESS NOTED OTHERWISE.
7. THE CONTRACTOR SHALL TIGHTEN ALL HOLDOWN BOLTS TO FOUNDATION WITHIN FIVE DAYS PRIOR TO ENCLOSING THE WALLS.

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PERMIT SET

NO	DATE	DESCRIPTION

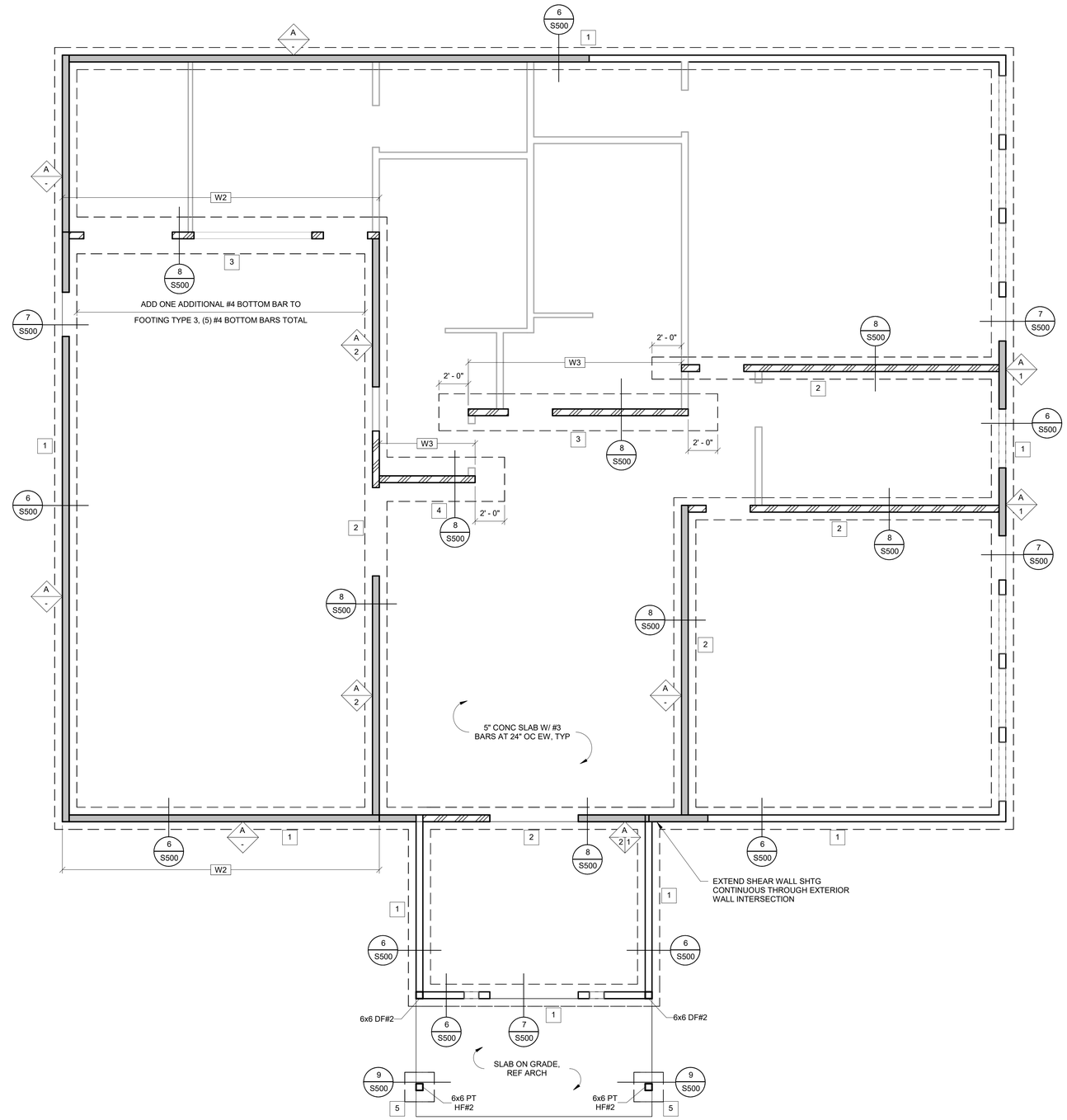
PROJECT MANAGER:	BL
DESIGNER:	BL
DRAWN BY:	KR
PROJECT NO:	24-B101
DATE:	04-30-2024
SCALE:	AS SHOWN

SHEET TITLE:

GENERAL STRUCTURAL NOTES

SHEET NUMBER:

S002



1 S101 FOUNDATION PLAN
1/4" = 1'-0"

SHEAR WALL SCHEDULE

TYPE	APA RATED SHEATHING	PANEL NAILING	FRAMING THICKNESS AT ADJOINING PANEL EDGES	MUD SILL AND ANCHOR BOLTS (REF NOTE 1, 5)	COMMENTS
A	15/32" SHTH (1) SIDE	0.131" DIA x 2 1/2" NAILS AT 6" OC FOR PANEL EDGES, 12" OC FIELD	2x	2x SILL PL W/ 5/8" DIA AB AT 48" OC (EMBEDMENT = 7")	

SHEAR WALL GENERAL NOTES (APPLICABLE TO ALL SHEAR WALL TYPES):

1. IF ANCHOR BOLT SPACING IS GREATER THAN SHEAR WALL LENGTH INSTALL (1) ANCHOR WITHIN 12" OF EACH END.
2. SHEAR WALLS ARE TO BE BLOCKED AT ALL PANEL EDGES UNLESS NOTED OR DETAILED OTHERWISE.
3. GALVANIZED NAILS SHALL BE USED FOR THE NAILS INTO PT OR FRT LUMBER.
4. ANCHOR BOLTS SHALL BE GALVANIZED AND SHALL HAVE A GALVANIZED PLATE WASHER (PLATE WASHER EDGE PARALLEL TO AND LOCATED WITHIN 1/2" OF WALL SHEATHING) BETWEEN THE SILL PL AND NUT. REFERENCE SHEAR WALL DETAILS1/S800 AND 3/S800 FOR PLACEMENT REQUIREMENTS OF AB AND PL WASHER.
5. PENETRATIONS – NO BLOCKING REQUIRED AT 4 ½" x 4 ½" MAXIMUM OPENINGS PROVIDED OPENINGS ARE SEPARATED BY 8" MINIMUM, HOLE IS CIRCULAR OR SQUARE CUT WITH RADIUS CORNERS, NO OVERCUTTING, HOLES ARE NOT WITHIN LAST 16" OF SHEARWALL LENGTH, AND ACCUMULATED LENGTH OF THE OPENINGS IN THE SHEARWALL DOES NOT EXCEED THE LESSER OF 20% OF THE WALL LENGTH AND 18". OPENINGS BEYOND THESE PARAMETERS REQUIRE APPROVAL BY THE ENGINEER OF RECORD PRIOR TO CUTTING AND DRILLING.
6. PENETRATIONS – BLOCKING REQUIRED AT 9" x 9" MAXIMUM OPENINGS PROVIDED OPENINGS ARE SEPARATED BY 16" MINIMUM, HOLE IS CIRCULAR OR SQUARE CUT WITH RADIUS CORNERS, NO OVERCUTTING, HOLES ARE NOT WITHIN LAST 16" OF SHEARWALL LENGTH, AND ACCUMULATED LENGTH OF THE OPENINGS IN THE SHEARWALL DOES NOT EXCEED THE LESSER OF 20% OF THE WALL LENGTH AND 18". 2x BLOCKING SHALL BE PROVIDED ABOVE AND BELOW THE OPENING, FOR THE WIDTH OF THE STUD BAY. SHEAR WALL SHEATHING SHALL BE EDGE NAILED TO THIS BLOCKING. OPENINGS BEYOND THESE PARAMETERS REQUIRE APPROVAL BY THE ENGINEER OF RECORD PRIOR TO CUTTING AND DRILLING.
8. REFERENCE THE HOLDOWN SCHEDULE FOR END POST REQUIREMENTS AT EACH END OF SHEAR WALLS AND ANCHOR TYPE.

HOLDOWN SCHEDULE

MARK	HOLDOWN TYPE	HOLDOWN POST	HOLDOWN ATTACHMENT TO POST	ANCHOR ROD	ANCHOR ROD EMBEDMENT DEPTH, Le
1	HDU4-SDS2.5	(2) 2x STUDS	(10) SDS 1/4" x 2-1/2"	USE SIMPSON SSTB16L INTO STEM WALL	PER MANU. REQ. REF. DETAIL 4/S800
2	HDU4-SDS2.5	(2) 2x STUDS	(10) SDS 1/4" x 2-1/2"	USE A 5/8" DIA THREADED ROD EMBEDDED INTO FTG WITH A 1/2"x1 3/4"x1 3/4" PLATE WASHER (PAB5)	0'-7" DEEP REF. DETAIL 5/S800

NOTES:
1. ANCHOR RODS SHALL BE ASTM F1554 GRADE 36 OR AS SPECIFIED BY MANUFACTURE.
2. ALL HOLDOWNS AND HOLDOWN ANCHORS SHALL BE INSTALLED IN STRICT CONFORMANCE TO MANUFACTURER'S REQUIREMENTS.
3. BUILT UP HOLDOWN POSTS SHALL BE LAMINATED IN ACCORDANCE WITH THE STANDARD BUILT-UP WOOD POST DETAIL 4/S600.
4. NUTS FOR ANCHOR RODS SHALL BE STANDARD HEX NUTS TYPE ASTM A563-A.
5. HOLDOWNS SHALL OCCUR AT EACH END OF SHEAR WALLS. TYPICAL UNLESS NOTED OTHERWISE.

FOOTING SCHEDULE

TYPE	SIZE	REINFORCING	NOTES
1	1'-6" WIDE x 10" DEEP x CONT	LONG: (2) #4 EQ SPACED - BOT TRANSV: #4 AT 24" OC BOT	
2	1'-6" WIDE x 10" DEEP x CONT	LONG: (2) #4 EQ SPACED - BOT TRANSV: #4 AT 24" OC BOT	THICKENED SLAB FOOTING
3	2'-6" WIDE x 10" DEEP x CONT	LONG: (4) #4 EQ SPACED - T&B TRANSV: #4 AT 12" OC BOT	THICKENED SLAB FOOTING
4	3'-0" WIDE x 10" DEEP x CONT	LONG: (4) #4 EQ SPACED - T&B TRANSV: #4 AT 12" OC BOT	THICKENED SLAB FOOTING
5	2'-0" x 2'-0" x 10"	(3) #4 EACH WAY - EQ. SPACED AT BOT	

NOTES:
1. FOOTINGS SHALL BE CENTERED UNDER COLUMNS AND WALLS UNLESS NOTED OTHERWISE.

BEARING WALL SCHEDULE

MARK	STUD SIZE AND GRADE	NOTES
W1	2x6 DF#2 AT 16" OC	TYPICAL CONDITION
W2	2x6 DF#2 AT 12" OC	ALIGN EVERY-OTHER STUD WITH TRUSS
W3	(2) 2x6 DF#2 AT 24" OC	ALIGN DOUBLE STUD WITH EACH TRUSS

NOTES:
1. FRAME ALL WALLS TO THE TRUSS BOTTOM CHORD UNLESS DETAILED OTHERWISE.
2. REFERENCE DETAIL 4/S600 FOR BUILT-UP STUD LAMINATION.

FOUNDATION PLAN NOTES

A FOR A COMPLETE LEGEND OF ALL CALLOUTS AND SYMBOLS SEE COVER SHEET AND SCHEDULES.
B ALL SLAB ON GRADE FINISHES SHALL BE PER ARCHITECT.
C REFERENCE ARCHITECT FOR ALL EDGE OF SLAB DIMENSIONS.
D REFERENCE MECHANICAL / PLUMBING DRAWINGS FOR LOCATIONS OF FLOOR DRAINS AND OTHER PENETRATIONS.
E WALLS SHALL REACH DESIGN STRENGTH PRIOR TO BACK FILLING WALLS.
F MONITOR WALLS FOR SIGNS OF SWELLING OR DISTRESS DURING BACK FILLING AND COMPACTION. PROVIDE SHORING AS REQUIRED.
G FOR TYPICAL BAR DOWELS AND HOOKS REF DETAIL 1/S500.
H STEP FOOTING FROM ELEVATION TO ELEVATION AS REQUIRED, REF DETAIL 2/S500.
I CONTRACTOR TO LAYOUT CONTROL JOINTS PER THE CRITERIA IN STRUCTURAL NOTES AND DETAIL 3/S500 AND SUBMIT TO THE DESIGN TEAM FOR REVIEW AND APPROVAL.
J FOR STEM WALL AND FOOTING BLOCKOUTS AT PLUMBING AND CONDUIT REF DETAILS 4/S500 AND 5/S500.
K REFERENCE WALL TYPE W1 FOR TYPICAL BEARING WALL CONSTRUCTION, UNLESS NOTED OTHERWISE ON PLAN.
L FOR ALL HEADERS, REF DETAIL 1/S600 FOR SILL, TRIMMERS AND KINGS ASSIGNED TO EACH HEADER TYPE. HEADERS SHALL BE SINGLE SPAN.
M FOR ALLOWABLE HOLES AND NOCHES IN WOOD FRAMING (EXCLUDING COLUMNS AND TRUSSES) REF DETAIL 2/S600.
N FOR TYPICAL WALL CORNER AND INTERSECTIONS REF DETAIL 3/S600.
O FOR BUILT-UP WOOD POSTS, KINGS, TRIMMERS AND SUTDS REF DETAIL 4/S600 FOR FASTENERS.
P REFERENCE DETAIL 5/S600 FOR TYPICAL DOUBLE TOP PL SPLICE CONNECTION. IF BOTH PLYS BREAK PROVIDE SIMPSN MSTA24 STRAP CENTERED ON BREAK.
Q AT ALL NON-BEARING PARTITION WALLS REF DETAIL 7/S600 OR DECLECTION GAP AND FASTENING.
R FOR TYPICAL SHEAR WALL CONSTRUCTION REF DETAIL 1/S800.

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MONTANA
TIM R. FROELICH
No. 15004PE
LICENSED PROFESSIONAL ENGINEER

TROUT CREEK SDA SCHOOL

3020 HIGHWAY 200
TROUT CREEK, MT
59874

PERMIT SET

NO	DATE	DESCRIPTION

PROJECT MANAGER:	BL
DESIGNER:	BL
DRAWN BY:	KR
PROJECT NO:	24-B101
DATE:	04-30-2024
SCALE:	AS SHOWN

SHEET TITLE:

FOUNDATION PLAN

SHEET NUMBER:

S101

TROUT CREEK SDA SCHOOL
3020 HIGHWAY 200. TROUT CREEK, MT 59874, USA

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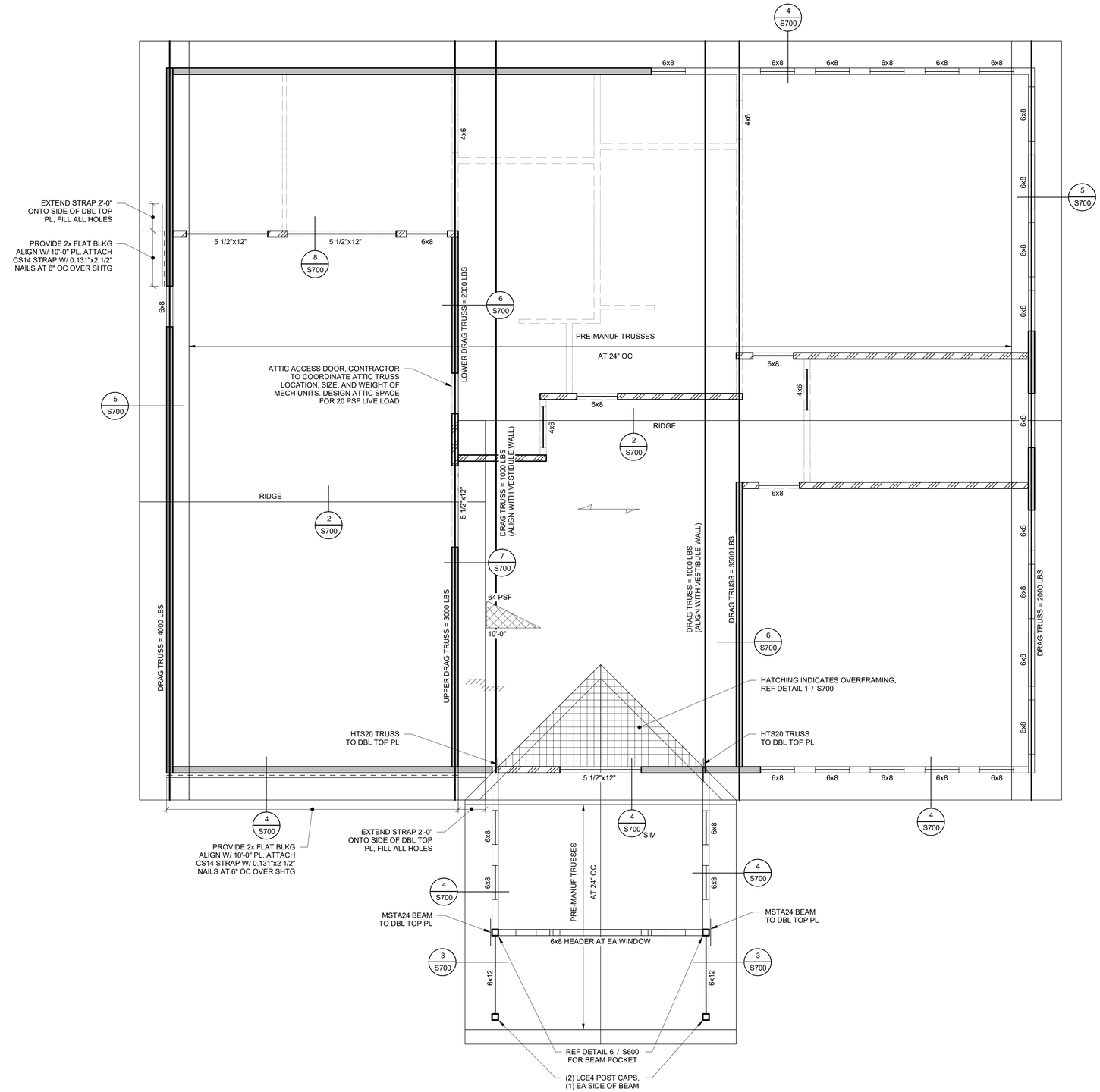

1 S102 ROOF FRAMING PLAN
1/4" = 1'-0"

ROOF FRAMING PLAN NOTES

A FOR A COMPLETE LEGEND OF ALL CALLOUTS AND SYMBOLS SEE COVER SHEET AND SCHEDULES.
B VERIFY SIZE AND LOCATION OF ALL MECHANICAL AND WALL PENETRATIONS.
C TRUSS MANUFACTURER TO REVIEW ALL DETAILS AND PLANS TO ACCOUNT FOR SPECIFIC CONDITIONS.
D REFERENCE WALL TYPE W1 FOR TYPICAL BEARING WALL CONSTRUCTION, UNLESS NOTED OTHERWISE ON PLAN.
E FOR ALL HEADERS, REF DETAIL 1/S600 FOR SILL, TRIMMERS AND KINGS ASSIGNED TO EACH HEADER TYPE. HEADERS SHALL BE SINGLE SPAN.
F FOR ALLOWABLE HOLES AND NOCHES IN WOOD FRAMING (EXCLUDING COLUMNS AND TRUSSES) REF DETAIL 2/S600.
G FOR TYPICAL WALL CORNER AND INTERSECTIONS REF DETAIL 3/S600.
H FOR BUILT-UP WOOD POSTS, KINGS, TRIMMERS AND SUTDS REF DETAIL 4/S600 FOR FASTENERS.
I REFERENCE DETAIL 5/S600 FOR TYPICAL DOUBLE TOP PL SPLICE CONNECTION. IF BOTH PLYS BREAK PROVIDE SIMPSN MSTA24 STRAP CENTERED ON BREAK.
J AT ALL NON-BEARING PARTITION WALLS REF DETAIL 7/S600 OR DECLECTION GAP AND FASTENING.
K FOR TYPICAL ROOF DIAPHRAGM CONSTRUCTION REF DETAIL 9/S700.
L FOR TYPICAL SHEAR WALL CONSTRUCTION REF DETAIL 1/S800.

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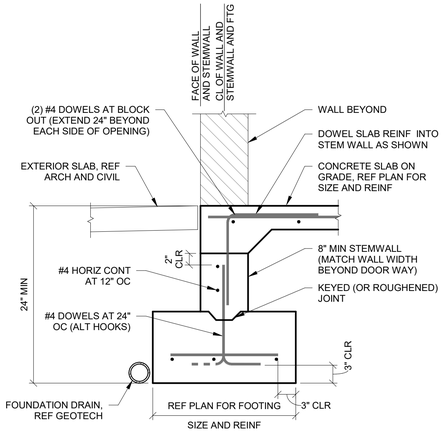
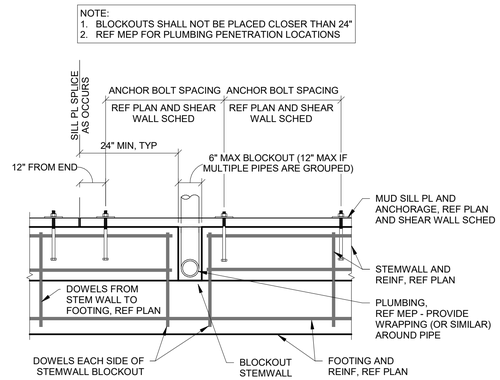
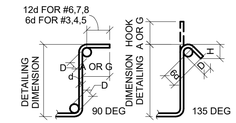


7 S500 EXTERIOR WALL AT STEM WALL - DOOR WAY'
1" = 1'-0"



4 S500 STEM WALL BLOCKOUT AT PLUMBING PENETRATIONS
1" = 1'-0"

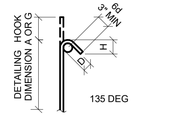
90 DEG AND 135 DEG STIRRUP AND TIE HOOKS



STIRRUP (TIES SIMILAR) STIRRUP AND TIE HOOK DIMENSIONS
ALL GRADES OF STEEL

BAR SIZE	D (IN)	90 DEG HOOK (IN)	135 DEG HOOK (IN)	
		A OR G	A OR G	H (APPROX.)
#3	1 1/2	0-4	4 1/4	3
#4	2	0-4 1/2	4 1/2	3
#5	2 1/2	0-6	5 1/2	3 3/4

135 DEG SEISMIC STIRRUP / TIE HOOKS

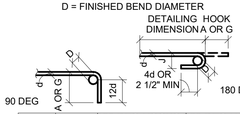


135 DEG SEISMIC STIRRUP / TIE HOOKS
ALL GRADES OF STEEL

BAR SIZE	D (IN)	135 DEG HOOK (IN)	
		A OR G	H (APPROX)
#3	1 1/2	4 1/4	3
#4	2	4 1/2	3
#5	2 1/2	5 1/2	3 3/4

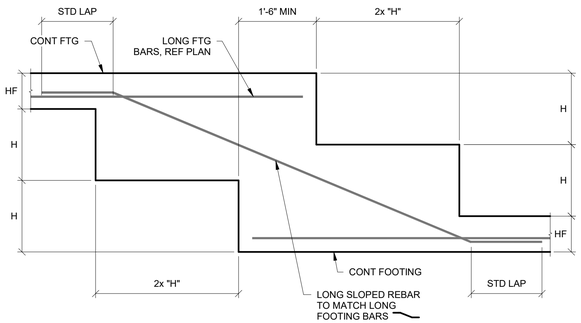
RECOMMENDED END HOOKS

ALL GRADES OF STEEL
D = FINISHED BEND DIAMETER



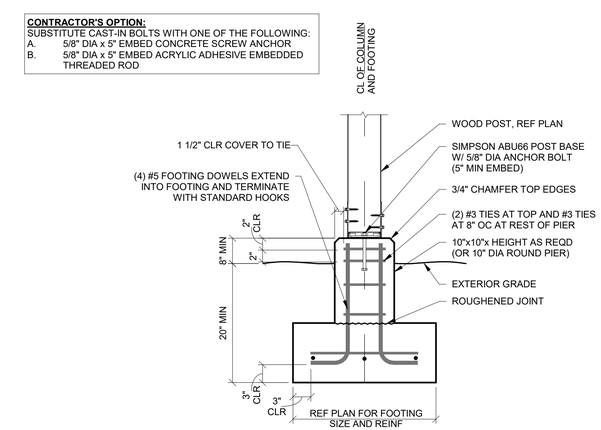
BAR SIZE	D (IN)	180 DEG HOOKS, FT - IN.		90 DEG HOOKS, FT - IN.
		A OR G	J	A OR G
#3	2 1/4	0-5	0-3	0-6
#4	3	0-6	0-4	0-8
#5	3 3/4	0-7	0-5	0-10
#6	4 1/2	0-8	0-6	1-0
#7	5 1/4	0-10	0-7	1-2
#8	6	0-11	0-8	1-4
#9	9 1/2	1-3	0-11 3/4	1-7
#10	10 3/4	1-5	1-1 1/4	1-10
#11	12	1-7	1-2 3/4	2-0
#12	18 1/4	2-3	1-9 3/4	2-7

1 S500 REBAR HOOK DETAILS
3/8" = 1'-0"

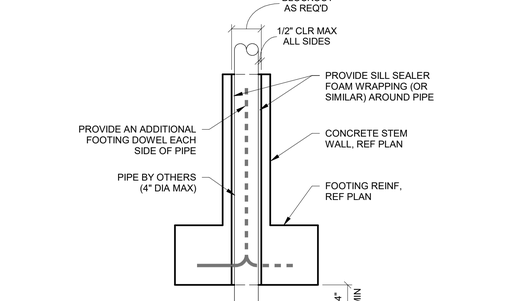


NOTE:
DO NOT SLOPE FOOTINGS UNDER ANY CONDITIONS.

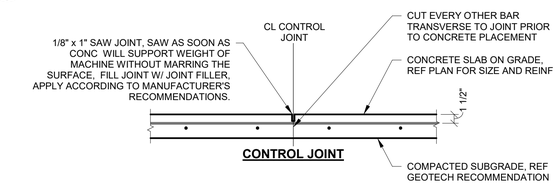
2 S500 STEPPED FOOTING
1/2" = 1'-0"



8 S500 INTERIOR BEARING WALL TO THICKENED SLAB
1" = 1'-0"



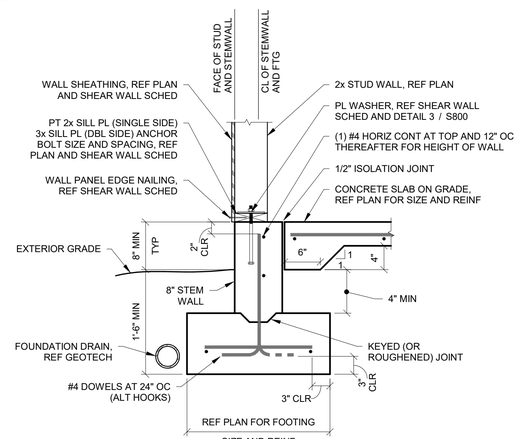
5 S500 FOOTING BLOCKOUT AT PLUMBING PENETRATION
1" = 1'-0"



NOTES:
CONTRACTOR MAY USE EITHER CONTROL JOINTS OR CONSTRUCTION JOINTS AT LOCATIONS INDICATED ON PLANS.

3 S500 SLAB JOINTS
1" = 1'-0"

9 S500 EXTERIOR WOOD POST AT FOUNDATION
1" = 1'-0"



6 S500 EXTERIOR WALL TO FOUNDATION
1" = 1'-0"

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PROJECT NO:	24-B101
DATE:	04-30-2024
SCALE:	AS SHOWN

SHEET TITLE:

FOUNDATION DETAILS

SHEET NUMBER:

S500

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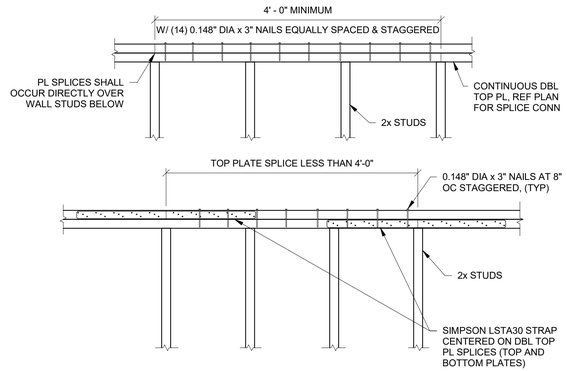
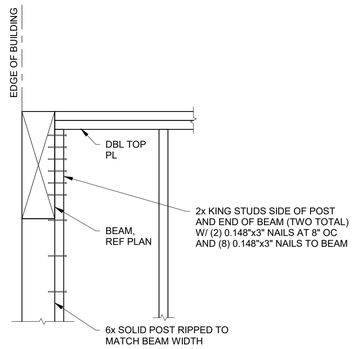
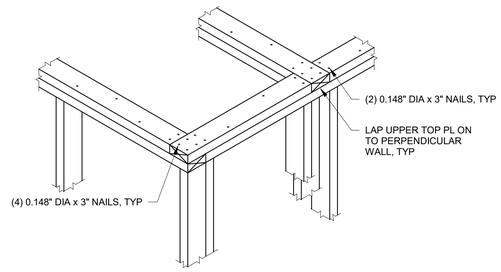


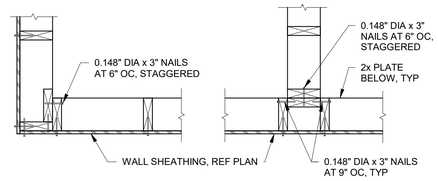
5 S600 TOP PLATE SPLICE DETAIL
1" = 1'-0"



6 S600 BEAM POCKET IN WALL
1" = 1'-0"

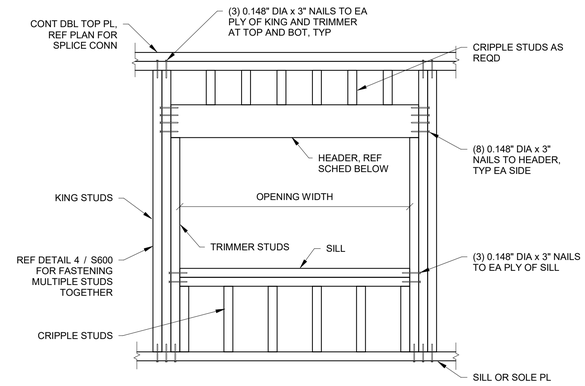


ISOMETRIC VIEW



CORNER - PLAN VIEW **INTERSECTION - PLAN VIEW**

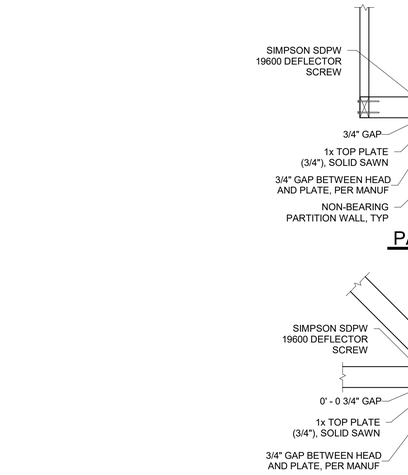
3 S600 WALL FRAMING AT CORNERS AND INTERSECTIONS
1" = 1'-0"



LOAD BEARING WALLS			
HEADER	SILL	TRIMMER	KING STUD
6x8	(2) 2x	(2) 2x	(1) 2x
5 1/2x12	(2) 2x	(3) 2x	(2) 2x
REF PLAN			

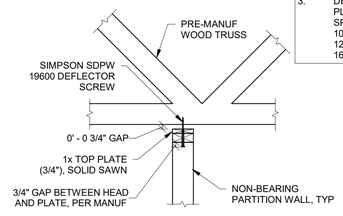
NON-LOAD BEARING WALLS			
HEADER	SILL	TRIMMER	KING STUD
4x6	(2) 2x	(1) 2x	(1) 2x

1 S600 WINDOW/DOOR HEADER DETAIL AND SCHEDULE
1" = 1'-0"



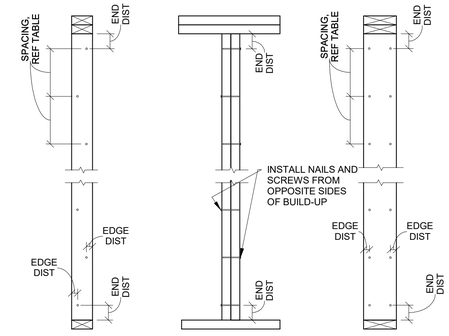
PARALLEL

NOTES:
1. DEFLECTOR SCREWS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
2. MAX WALL HEIGHT = 14FT, CONTACT EOR IF CONDITIONS VARY.
3. DEFLECTOR SCREWS SHALL BE PLACED AT THE FOLLOWING SPACINGS:
   10' TALL WALL (MAX) = 48" OC, MAX
   12' TALL WALL (MAX) = 48" OC, MAX
   16' TALL WALL (MAX) = 24" OC, MAX



PERPENDICULAR

7 S600 NON-BEARING PARTITION WALLS AT ROOF
1" = 1'-0"

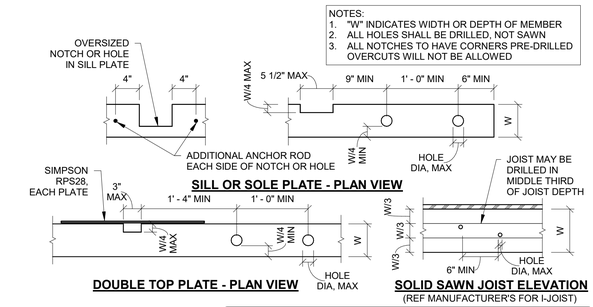


2x4 BUILD-UP **FASTENER PLACEMENT** **2x6, 2x8 BUILD-UP**

BUILT-UP MEMBER	FASTENER SIZE	MAX FASTENER SPACING	FASTENER END DIST	FASTENER EDGE DIST	ROWS OF FASTENERS
(2) 2x4	0.148" DIA x 3" NAIL	6"	2.5"	1"-1.5"	1 - STAGGER
(3) 2x4	SIMPSON SDW 0.220" DIA x 4 3/8" SCREWS	8"	2.5"	1.5"	1 - STAGGER
(4) OR MORE 2x4	1/2" DIA BOLT	8"	4"	1.5"	1 - STAGGER
(2) 2x6, (2) 2x8	0.148" x 3" NAIL	8"	2.5"	1"-1.5"	2
(3) 2x6, (3) 2x8	SIMPSON SDW 0.220" DIA x 4 3/8" SCREWS	9"	3.5"	1.5"	2
(4) 2x6, (4) 2x8	SIMPSON SDW 0.220" DIA x 6" SCREWS	7"	3.5"	1.5"	2
(5) OR MORE 2x6, 2x8	1/2" DIA BOLT	8"	4"	2"	2

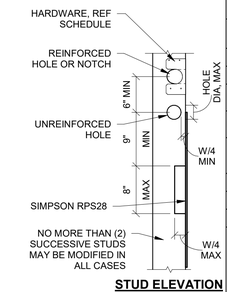
NOTES:
1. WALL SHEATHING OR GYP BOARD FASTENERS SHALL BE STAGGERED TO EACH STUD IN BUILT-UP MEMBER.
2. ADJACENT NAILS AND SCREWS SHALL BE INSTALLED FROM OPPOSITE FACES OF THE BUILT-UP MEMBER.
3. BOLTS SHALL HAVE STANDARD CUT WASHERS BETWEEN WOOD AND BOLT HEAD AND NUT HEAD.
4. FASTENERS SHALL BE SUFFICIENTLY DRIVEN (OR TIGHTENED) TO ENSURE ALL WOOD LAMINATIONS ARE IN FULL CONTACT.

4 S600 BUILT-UP WOOD POSTS
1" = 1'-0"



SILL OR SOLE PLATE - PLAN VIEW

DOUBLE TOP PLATE - PLAN VIEW **SOLID SAWN JOIST ELEVATION**
(REF MANUFACTURER'S FOR I-JOIST)



STUD ELEVATION

ALLOWABLE SIZES OF DRILLED HOLES IN FRAMING MEMBERS			
MEMBER	UNREINFORCED	DOUBLED MEMBER	REINFORCED
INTERIOR STUD - 2x4	3/4"	1 1/4"	1 1/2" - SIMP SS1.5
INTERIOR STUD - 2x6	1 1/4"	2"	2 1/4" - SIMP SS1.5
EXTERIOR STUD - 2x6	1"	1 1/2"	1 3/4" - SIMP CTS218 EACH SIDE
EXTERIOR STUD - 2x8	1 3/8"	2 1/4"	2 1/2" - SIMP CTS218 EACH SIDE
SOLE PL, SILL PL, DOUBLE TOP PLATE	W/3	NA	W/2 - SIMP CS18x30" EACH SIDE OF EACH 2x (UNO)
SOLID SAWN JOIST	W/8	W/6	NA
WOOD BEAM	W/8	NA	NA
WOOD POST	W(SMALLEST SIDE)/8	NA	NA

NOTES:
1. HOLES IN BEAMS AND JOIST SHALL OCCUR IN MIDDLE THIRD OF THE SPAN LENGTH AND MIDDLE THIRD OF THE DEPTH.
2. ALL OTHER CONDITIONS SHALL BE APPROVED BY ENGINEER OF RECORD, PRIOR TO DRILLING OR CUTTING.
3. A "DOUBLED MEMBER" IS DEFINED AS UPSIZING A SPECIFIED SINGLE MEMBER TO A DOUBLED MEMBER OR A SPECIFIED DOUBLED MEMBER TO A (4)-PLY MEMBER, ETC.

2 S600 ALLOWABLE HOLES AND NOTCHES IN WOOD FRAMING
1" = 1'-0"

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TYPICAL FRAMING DETAILS

SHEET NUMBER:

S600

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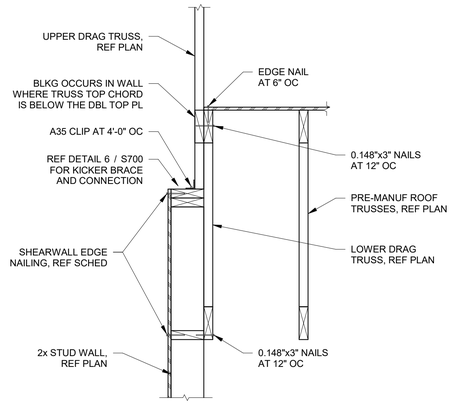
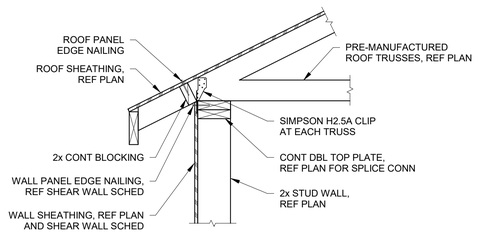
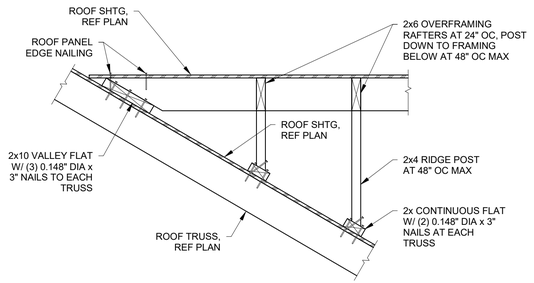


7 / S700 ROOF STEP - PARALLEL TRUSSES
1" = 1'-0"

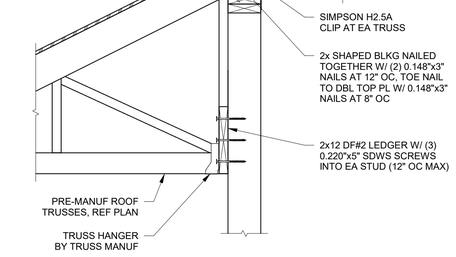


4 / S700 ROOF TRUSS AT EXTERIOR WALL
1" = 1'-0"

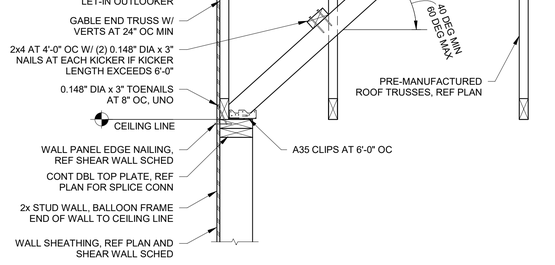
ALTERNATE:
TRUSS MANUFACTURER TO PROVIDE TRUSSED OVERFRAMING AT 24" CLIPPED DIRECTLY TO MAIN ROOF TRUSSES W/ SIMPSON VTCR AT 48" OC IN LIEU OF 2x6 OVERFRAMING, POST AND 2x FLAT



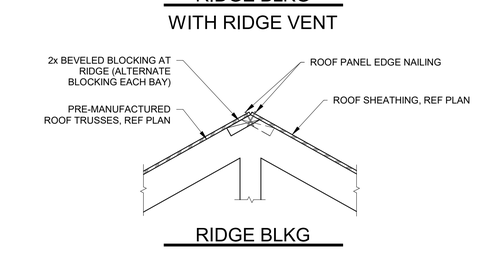
1 / S700 TRUSS OVERFRAMING
1" = 1'-0"



8 / S700 LOWER ROOF LEDGER
1" = 1'-0"

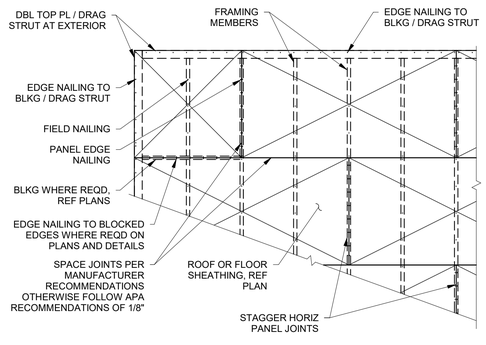


5 / S700 ROOF TRUSS TO GABLE END WALL
1" = 1'-0"



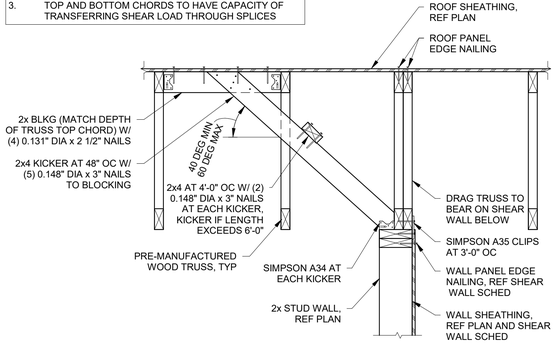
2 / S700 RIDGE BLOCKING AT ROOF TRUSSES
1" = 1'-0"

NOTES:
1. USE EDGE NAILING AT ALL INTERIOR SHEAR WALLS AND DRAG STRUTS, UNO
2. PROVIDE PANEL EDGE JOINT SPACING PER SHEATHING MANUFACTURER RECOMMENDATIONS OTHERWISE FOLLOW APA RECOMMENDATIONS OF 1/8" SPACE AT ALL PANEL JOINTS

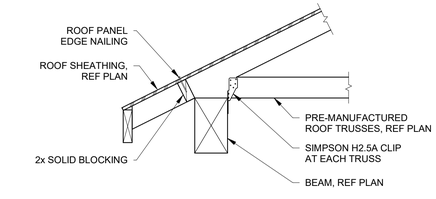


9 / S700 SHEATHED ROOF DIAPHRAGM
3/8" = 1'-0"

TRUSS DESIGNER TO DESIGN ALL DRAG TRUSSES FOR THE FOLLOWING:
1. SHEAR AND GRAVITY LOADS AS INDICATED ON PLANS
2. TRUSS TO COLLECT SHEAR LOADS AND TRANSFER TO BOTTOM CHORD THROUGH WEB MEMBERS
3. TOP AND BOTTOM CHORDS TO HAVE CAPACITY OF TRANSFERRING SHEAR LOAD THROUGH SPLICES



6 / S700 DRAG TRUSS CONNECTION TO SHEAR WALL
1" = 1'-0"



3 / S700 ROOF TRUSS TO EXTERIOR BEAM
1" = 1'-0"

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MONTANA
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No. 15004PE
LICENSED PROFESSIONAL ENGINEER

TROUT CREEK SDA SCHOOL

3020 HIGHWAY 200
TROUT CREEK, MT
59874

TROUT CREEK SDA SCHOOL

3020 HIGHWAY 200. TROUT CREEK, MT 59874, USA

PERMIT SET

NO	DATE	DESCRIPTION

PROJECT MANAGER:	BL
DESIGNER:	BL
DRAWN BY:	KR
PROJECT NO:	24-B101
DATE:	04-30-2024
SCALE:	AS SHOWN

SHEET TITLE:

ROOF FRAMING DETAILS

SHEET NUMBER:

S700

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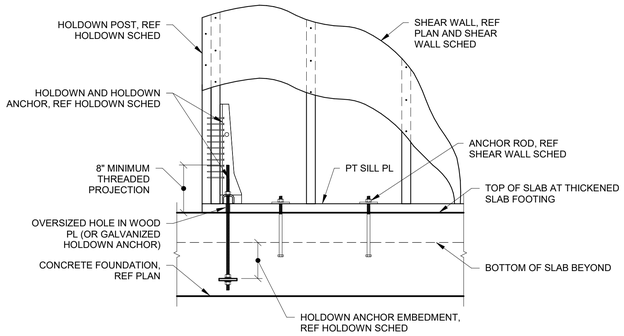
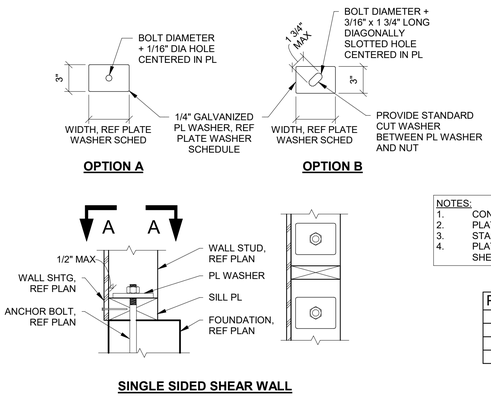


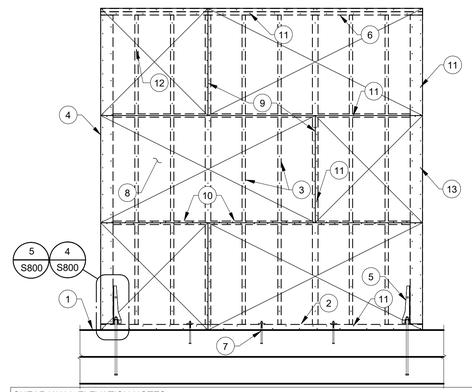
5 S800 TYPICAL SHEAR WALL HOLDOWN AT THICKENED SLAB FOUNDATION
1" = 1'-0"



NOTES:
1. CONTRACTOR MAY USE PLATE WASHER OPTION A OR B
2. PLATE WASHER MUST BE HOT DIPPED GALVANIZED
3. STANDARD CUT WASHER REQUIRED AT ALL CONDITIONS
4. PLATE WASHER ONLY REQD AT SHEAR WALLS. AT NON-SHEAR WALLS PROVIDE STANDARD CUT WASHER

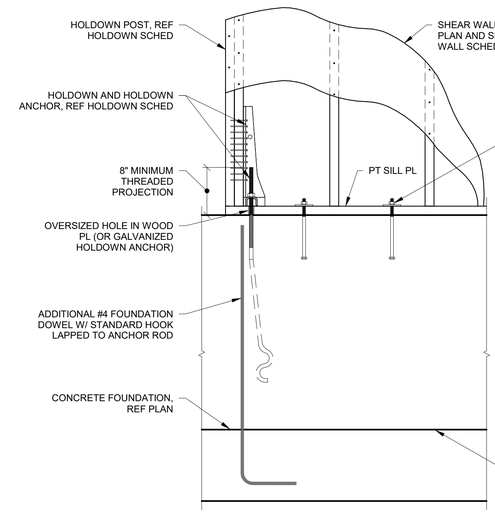
PLATE WASHER SCHEDULE	
WALL SIZE	PLATE WASHER SIZE
2x4	3"x3"
2x6	3"x4 1/2"
2x8	3"x6 1/2"

3 S800 STANDARD PLATE WASHER (2x4, 2x6, AND 2x8 STUD WALLS)
1 1/2" = 1'-0"

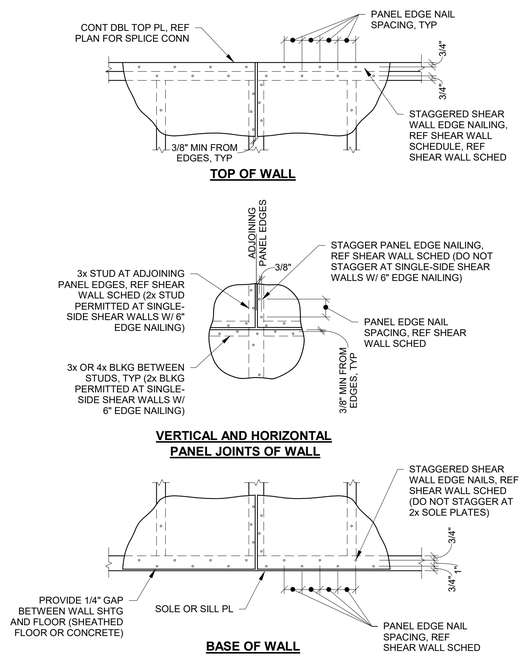


SHEAR WALL ELEVATION NOTES:
1. FOUNDATION, REF PLAN.
2. PRESERVATIVE TREATED SILL PLATE, REF SHEAR WALL SCHEDULE AND DETAIL 3 / S800 FOR SILL ANCHOR PLACEMENT.
3. WALL STUDS, REF PLAN.
4. HOLDOWN POST, REF HOLDOWN SCHEDULE. WHERE HOLDOWN POST CONSISTS OF BUILT UP MEMBERS, PROVIDE STAGGERED NAILING TO EACH PLY OF POST. REF 4 / S600 FOR BUILT-UP POST LAMINATION.
5. HOLDOWN ANCHOR. REFERENCE PLANS AND HOLDOWN SCHEDULE FOR HOLDOWN ATTACHMENT AND ANCHORAGE TO FOUNDATION.
6. DOUBLE TOP PLATE. REF PLAN FOR SPLICE DETAIL.
7. ANCHOR BOLTS W/ STEEL PLATE WASHERS. THERE SHALL BE A MINIMUM OF TWO ANCHORS FOR EACH SILL PIECE (ANY MODIFICATION TO SILL REMOVING MORE THAN 25% CROSS SECTION SHALL BE CONSIDERED BREAKING PLATE) W/ ONE ANCHOR LOCATED NOT LESS THAN 4 1/2" NOR MORE THAN 12" FROM THE END OF EACH PIECE.
8. WOOD STRUCTURAL PANEL SHEATHING. ORIENTATION MAY BE EITHER HORIZONTAL OR VERTICAL AT CONTRACTOR'S OPTION. MINIMUM DIMENSION OF AN INDIVIDUAL PANEL SHALL BE 24" IN EITHER DIRECTION. REF SHEAR WALL SCHEDULE FOR ADDITIONAL REQUIREMENTS.
9. STAGGER ALL VERTICAL PANEL JOINTS WHERE POSSIBLE.
10. ALL SHEATHING EDGES ARE TO BE BLOCKED. REF SHEAR WALL SCHEDULE FOR FRAMING THICKNESS AT ADJOINING PANEL EDGES.
11. PANEL EDGE NAILING, REFERENCE SHEAR WALL SCHEDULE AND 2 / S800.
12. PANEL FIELD NAILING TO INTERMEDIATE SUPPORT MEMBERS AT 12" OC.
13. PROVIDE PANEL EDGE FASTENING TO EACH PLY OF HOLDOWN POST.
14. REFERENCE SHEAR WALL SCHEDULE FOR ADDITIONAL REQUIREMENTS AND FOR INFORMATION NOT SHOWN.

1 S800 SINGLE STORY TYPICAL SHEAR WALL ELEVATION
3/8" = 1'-0"



4 S800 TYPICAL SHEAR WALL HOLDOWN AT FOUNDATION
1" = 1'-0"



2 S800 SHEAR WALL PANEL EDGE NAILING
1" = 1'-0"

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TROUT CREEK SDA SCHOOL 3020 HIGHWAY 200, TROUT CREEK, MT 59874, USA

PERMIT SET

NO	DATE	DESCRIPTION

PROJECT MANAGER:	BL
DESIGNER:	BL
DRAWN BY:	KR
PROJECT NO:	24-B101
DATE:	04-30-2024
SCALE:	AS SHOWN

SHEET TITLE:

SHEAR WALL DETAILS

SHEET NUMBER:

S800

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Structural Calculations

for the

Trout Creek SDA School

3020 HIGHWAY 200
Trout Creek, MT 59874
for
Trout Creek SDA School

April 30, 2024
FE Job Number – 24-B101

These Calculations Are Void If Seal And Signature Are Not Original

FROELICH
ENGINEERS

*** * * LIMITATIONS * * ***
ENGINEERING DESIGN IS BASED UPON INFORMATION PROVIDED BY THE CLIENT, WHO IS SOLELY RESPONSIBLE FOR ACCURACY OF SAME. NO RESPONSIBILITY AND / OR LIABILITY IS ASSUMED BY, OR IS TO BE ASSIGNED TO THE ENGINEER FOR ITEMS BEYOND THAT SHOWN ON THESE SHEETS.

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PORTLAND (HQ) 503.624.7005 **BEND** 541.383.1828 **DENVER** 720.799.1001

FROELICH ENGINEERS

SCOPE OF WORK

Client's Name:	Trout Creek SDA School
Project Name:	Trout Creek SDA School
Project Number:	24-B101
Current Date:	4-22-24
By:	BL

SCOPE OF WORK

Froelich Engineers, Inc. (FE) has provided full structural lateral and gravity design of the project per the 2021 International Building Code (IBC).

Froelich Engineers, Inc. has provided details only to the areas pertaining to our design. Froelich Engineers, Inc. did not design or review the details for the entire project.

PROJECT DESCRIPTION

New single-story wood framed school building with slab on grade. Pre-manufactured wood press plate trusses with stud framed bearing walls/ shear walls and conventional foundations.

FROELICH ENGINEERS

Client: Trout Creek SDA
Project: Trout Creek SDA School
Proj. #: 24-B101
Date: 4/22/2024
By: BL

Project Design Criteria

Project Description

New School
Pre-Manufactured Wood Trusses
2x Stud Bearing Walls and Shear Walls
Slab on Grade
Conventional Foundations

Project Location

3020 Highway 200 Trout Creek, MT 59874
45° 32' 53" N (45.548°)
122° 32' 20" W (122.539°)
Average Elevation = 200 ft (approximate)

General

Building Department:	State Of Montana
Building Code(s):	2021 International Building Code (IBC)
	ASCE7-16

Roof Live Load:

Ground Snow Load =	90	psf (Montana Ground Snow Load Finder)
Minimum Roof Snow Load =	70	psf
Snow Importance Factor (I_S) =	1.00	(ASCE7-16 Table 1.5-2)
Deflection Criteria =	L/240	

Floor Live Loads:

School Classrooms =	40	psf (IBC Table 1607.1)
School First-Floor Corridors =	100	psf (IBC Table 1607.1)

Wind Load:

Basic Wind Speed =	105	mph (OSSC Figure 1609)
Exposure =	B	
Wind Importance Factor (I_W) =	1.00	(ASCE7-16 Table 1.5-2)

Seismic Load:

Occupancy Category =	II	(IBC Table 1604.5)
Seismic Importance Factor (I_E) =	1.00	(ASCE7-16 Table 1.5-2)
Site Class =	D	D - Default
Mapped Spectral Acceleration Values (S_S) =	0.424	g
Mapped Spectral Acceleration Values (S_1) =	0.136	g
Design Spectral Response Parameter (S_{DS}) =	0.413	g
Design Spectral Response Parameter (S_{D1}) =	0.212	g
Seismic Design Category =	D	
Response Modification Coefficient (R) =	6.5	Light-framed walls sheathed with wood panels Shear Walls (Bearing Wall System)

Soils Data:

Allowable Bearing Pressure =	1500	psf
Exterior Footing Depth =	36	inches

FROELICH ENGINEERS

Client:	Trout Creek SDA
Project:	Trout Creek SDA School
Proj. #:	24-B101
Date:	4/22/2024
By:	BL

Dead Load Calculations

Roof Dead Load

Top Chord of Truss

Component Weights	Actual (psf)	Comments
Roofing (Asphalt Shingles)	3.0	
Framing	6.0	Roof Trusses
Roof sheathing	2.0	5/8" shth
Misc.	1.0	
Total =	12.0	psf

Bottom Chord of Truss

Component Weights	Actual (psf)	Comments
Mechanical	1.5	
Sprinklers	1.0	
Blown-in Fiberglass Insulation	1.5	R49 = 16.25" thick ~ 0.75 psf
Ceiling	2.8	(1) 5/8" gyp
Misc.	1.2	
Total =	8.0	psf
Total Roof Dead Load =	**20.0**	**psf**

Exterior Wall Dead Load

Component Weights	Actual (psf)	Comments
Siding	2.3	Wood
Sheathing	1.7	1/2" shth
Framing	3	2x6 Studs
Insulation	0.6	Assume Fiberglass Owens Corning R-21 Roll is 40 lbs, coverage = 67.8 ft2
Interior Gyp Finish	2.8	5/8" gyp
Misc.	1.6	
Total =	12.0	psf

Interior Wall /Partition Wall Dead Load

Component Weights	Actual (psf)	Comments
Interior Gyp Finish	5.6	5/8" gyp each side
Framing	1.7	2x6 at 16" oc
Insulation	0.6	Assume Fiberglass Owens Corning R-21 Roll is 40 lbs, coverage = 67.8 ft2
Misc.	0.1	
Total =	8.0	psf

FROELICH ENGINEERS

Client: Trout Creek SDA
Project: Trout Creek SDA School
Proj. #: 24-B101
Date: 4/22/2024
By: BL

Flat Roof Snow Load Calculation:

Based on the following Codes:
2021 IBC
ASCE 7-16

				ASCE Page Refs by Printing 2nd Printing	3rd Printing
Ground Snow Load (p_g) =	90	psf			
Terrian Category =	B (Partial Exposed)		per ASCE 7-16 Section 26.7		page 266
Snow Exposure Factor (C_e) =	1.0		per ASCE 7-16 Table 7.3-1		page 58
Thermal Factor (C_t) =	1.1		per ASCE 7-16 Table 7.3-2		page 58
Importance Factor (I_s) =	1.00		per ASCE 7-16 Table 1.5-2		page 5
Flat Roof Snow Load (p_f) =	69.30	psf	$p_f = 0.7*C_e*C_t*I_s*p_g$		page 51
Where $p_g \le 20$ psf (p_f Min) =	69.30	psf	$p_{fmin} = I*p_g$		page 53
Where $p_g > 20$ psf (p_f Min) =	20	psf	$p_{fmin} = I*20$		page 53
Controlling Flat Roof Snow (p_f) =	69.3	psf			

Sloped Roof Snow Load Calculation:

Roof Slope Rise ($^x/_{12}$) =	6				
Roof Slope Degrees =	27				
Minimum Sloped Roof Snow Load (p_m) =	N/A	psf	$p_m = I_s*p_g$ Use Max p_g of 20psf		page 53
Thermal Factor (C_t) =	1.1	cold roof			
Roof Thermal Resistance (R) =					
Surface Type =	All other Surface				
Sloped Roof Factor (C_s) =	1.0		see ASCE 7-16 Figure 7.4-1		page 59
Sloped Roof Snow Load (p_s) =	69.30	psf	$p_s = C_s*p_f$		page 54

Rain on Snow Load Calculation:

Roof Slope Degrees =	26.6			
Roof Width, W =	28	ft		
Rain on snow Surcharge Required:	**Not Required**		ASCE 7.10	page 62
Rain on snow Surcharge:	**0**			

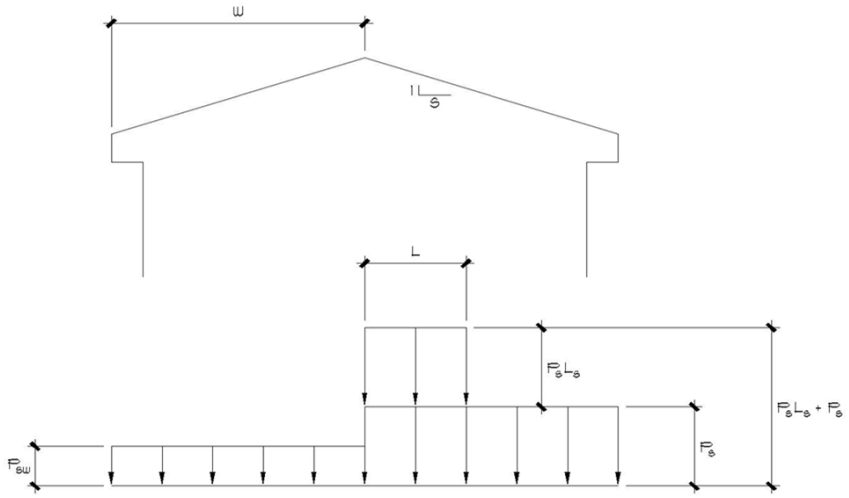
Controlling Roof Snow Load(s):

Controlling Flat Roof Snow (p_f) =	69.3	psf
Sloped Roof Snow Load (p_s) =	69.3	psf
Rain on Sloped Roof Snow =	N/A	psf
Local Jurisdiction Minimum =	70	psf
Controlling Snow Load =	70	psf
Design Roof Snow Load =	**70**	**psf**

Unbalanced Roof Snow Load (as required):

Ref Figure 7.6-2 — page 61

				For W≤20'	For W>20'	
Roof length from Ridge to Eave (W) =	28	ft				
Windward Roof Snow Load (p_{sW}) =	**20.79**	psf	p_{sW} =	0	$0.3*p_s$	page 57
Leeward Roof Surcharge Load (p_{sLs}) =	**47.8**	psf	p_{sLs} =	$I*p_g$	$p_s + h_d*\gamma/S^{1/2}$	page 58
Leeward Surcharge Extent (L) =	**9.91**	ft	L =	$8/3*h_d*S^{1/2}$		page 58
Leeward Roof Snow Load (p_{sL}) =	**117.08**	psf	$p_{sL} = p_{sLs} + p_s$			page 58
Height of Snow Drift (h_d) =	2.63	ft	$h_d = 0.43*l_u^{1/3}*(p_g+10)^{1/4}-1.5$			page 61
(with l_u = W)						
Snow Density (γ) =	25.7	pcf	$\gamma = 0.13p_g + 14$, 30pcf max			page 59
Roof Slope run for a rise of one (S) =	2.000					



Client: Trout Creek SDA
Project: Trout Creek SDA School
Project #: 24-B101
Date: 4/22/2024
By: BL

Snow Drift Loads at Lower Roofs and Canopies

ASCE 7-16 Section 7.7 (pg 59)

Drift: Lower Roof

Drift Height

Leeward Length of Upper Roof, l_u:	25.0	ft	
Windward Length of Lower Roof, l_u:	43.5	ft	
Ground Snow Load, p_g:	90.0	psf	
Leeward Drift Height, h_d:	2.48	ft	Controls
Windward Drift Height, h_d:	2.46	ft	

Density

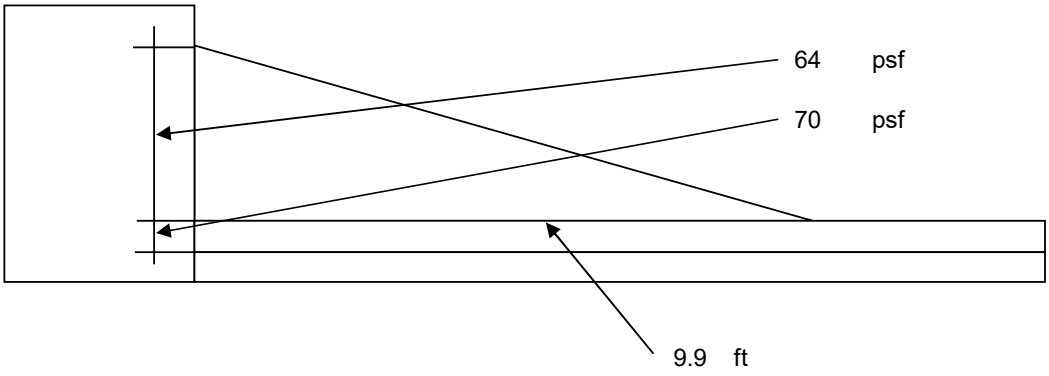
γ:	25.70		
Density, γ:	25.70	pcf	Eq. 7.7-1 (pg 59)

Width of Drift

Height of Projection, h_r:	6.0	ft
Roof Snow Load, p_f:	70.0	psf
Depth of Roof Snow, h_b:	2.72	ft
Proj. above Roof Snow, h_c:	3.28	ft
h_c/h_b	1.20 > 0.2, Drift Calc. Req.	
$4*h_d$:	9.9	ft
$4*h_d^2/h_c$	7.5	ft
Width of Drift, w:	9.9	ft
Max width of Drift, $8*h_c$:	26	ft

Maximum Drift Intensity

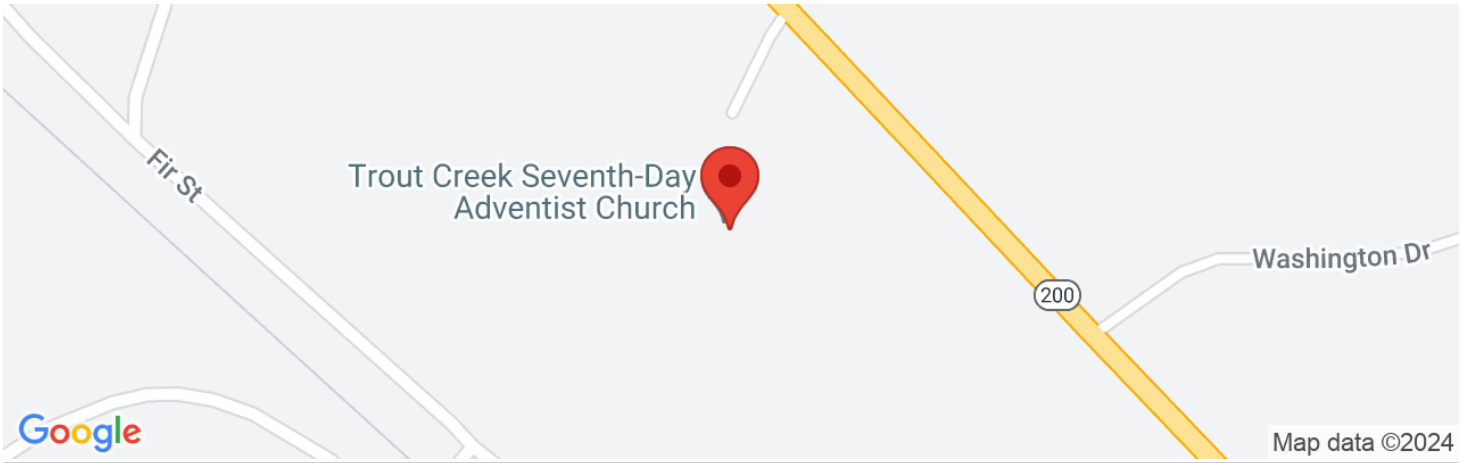
Drift Intensity, p_d:	64	psf



USGS web services were down for some period of time and as a result this tool wasn't operational, resulting in *timeout* error.
USGS web services are now operational so this tool should work as expected.

3020 MT-200, Trout Creek, MT 59874, USA

Latitude, Longitude: 47.8300171, -115.5826599



Date	4/22/2024, 4:30:21 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	0.424	MCE_R ground motion. (for 0.2 second period)
S_1	0.136	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.619	Site-modified spectral acceleration value
S_{M1}	0.318	Site-modified spectral acceleration value
S_{DS}	0.413	Numeric seismic design value at 0.2 second SA
S_{D1}	0.212	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1.461	Site amplification factor at 0.2 second
F_v	2.327	Site amplification factor at 1.0 second
PGA	0.188	MCE_G peak ground acceleration
F_{PGA}	1.424	Site amplification factor at PGA
PGA_M	0.268	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	0.424	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.47	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.136	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.149	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.188	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.902	Mapped value of the risk coefficient at short periods
C_{R1}	0.916	Mapped value of the risk coefficient at a period of 1 s
C_V	0.983	Vertical coefficient

DISCLAIMER

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FROELICH ENGINEERS

Client: Trout Dale SDA
Project: Trout Dale SDA School
Project #: 24-B101
Date: 4/29/2024
By: HNI

WIND FORCE CALCULATION - C&C Walls

ASCE 7-16 SECTION 30.6, 30.7

Design Wind Loads on Components and Cladding - Walls

Basic Wind Speeds	**Input**		
3 Second Gust V_{3s} =	105	mph	
Exposure Category =	B		
Wind Directionality Factor K_d =	0.85		Table 26.6-1 (page 266)
Mean Height of Roof, h =	19.67	ft	
Ground Elevation, z_g =	200	ft	Ground elevation above sea level (ft)

Topographic Effects	**Input**		
Hill Height H =	0	ft	Table 26.8-1 (page 267)
Length of 1/2 hill height L_h =	1000	ft	Table 26.8-1 (page 267)
Dist. From Crest to Bldg. x =	100	ft	Table 26.8-1 (page 267)
Height Above Local Grade z =	15	ft	Table 26.8-1 (page 267)
Horizontal Attenuation Factor m =	1.5		Table 26.8-1 (page 267)
Height Attenuation Factor g =	3		Table 26.8-1 (page 267)
Shape Factor K1/(H/Lh) =	1.3		Table 26.8-1 (page 267)

Output - Topographic Multipliers K_1 =	0.00	
K_2 =	0.93	
K_3 =	0.96	
Topographic Factor K_{zt} =	1.00	

Ground Elevation Factor

Ground Elevation Factor, K_e =	0.99	Table 26.9-1 (page 268)

Terrain Exposure Constants

nominal height of boundary z_g =	1200	Table 26.11-1 (page 269)
3-s gust exponent α =	7.00	Table 26.11-1 (page 269)

Pressure Coefficients **Input**

Velocity Pressure Exposure Coefficients K_h (see below) Table 26.10-1 (page 268)

	Height (ft)	K_h	q_h (psf)	Velocity
	15	0.70	16.7	Pressure
	20	0.70	16.7	Output q_z
	25	0.70	16.7	
	30	0.70	16.7	
	40	0.76	18.1	
	50	0.81	19.3	
	60	0.85	20.3	
	70	0.89	21.3	
	80	0.93	22.1	
	90	0.96	22.8	
	100	0.99	23.5	
	120	1.04	24.8	
h =	19.67	0.70	16.7	q_h

External Pressure Coefficients (GC_p) - Use Figure 30.3-1 for h <60 ft, 30.6-1 for h>60 ft

GC_{pi} = +/- 0.18 Table 26.13-1 (page 271)

Pressure Coefficients on Exterior Surfaces of Walls

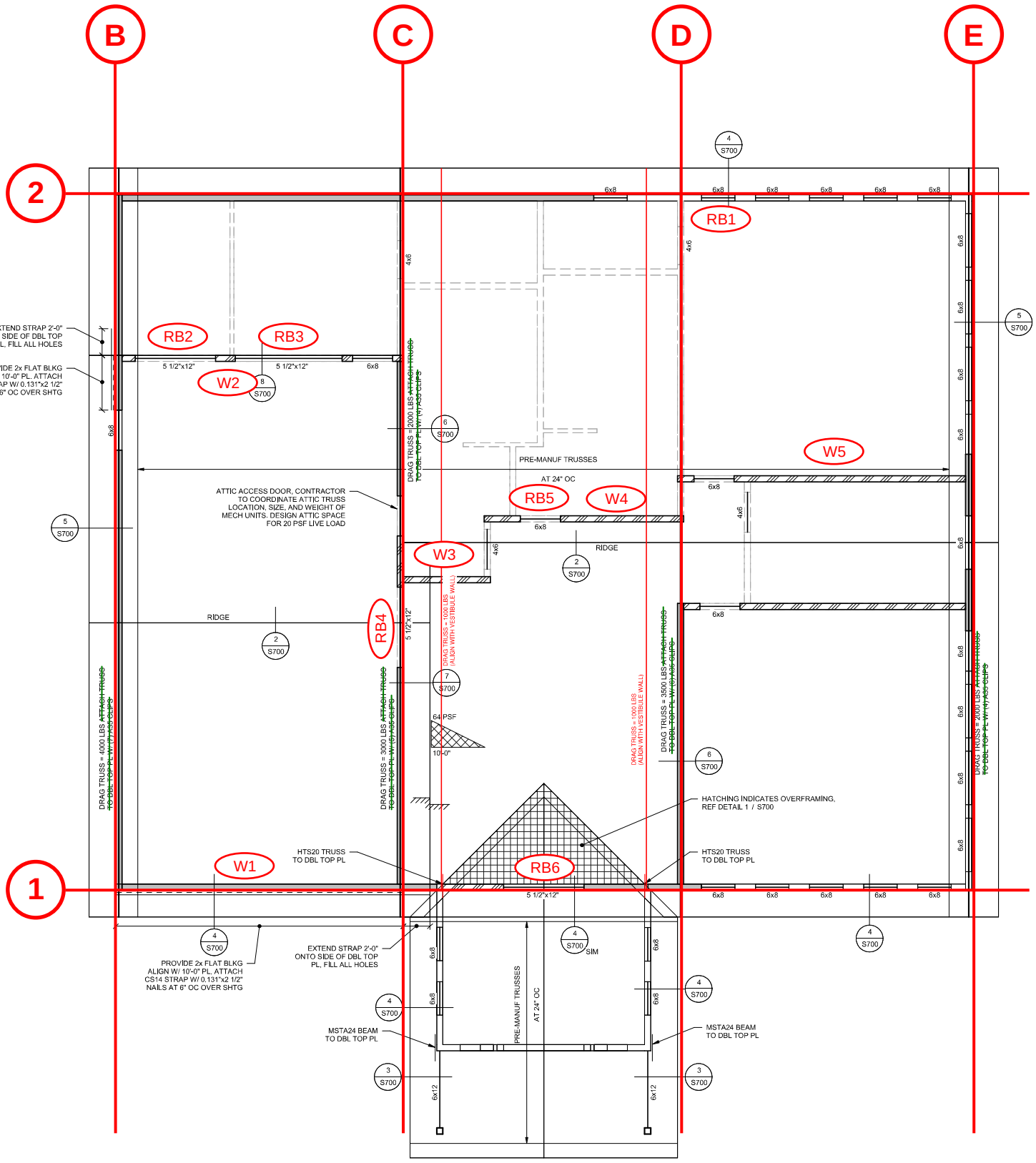
Zone	GC_p
Zone 4 (+)	0.90
Zone 5 (+)	0.90
Zone 4 (-)	-1.00
Zone 5 (-)	-1.21

Figure 30.3-1 for h<=60 (page 335)
Figure 30.5-1 for h>60 (page 363)

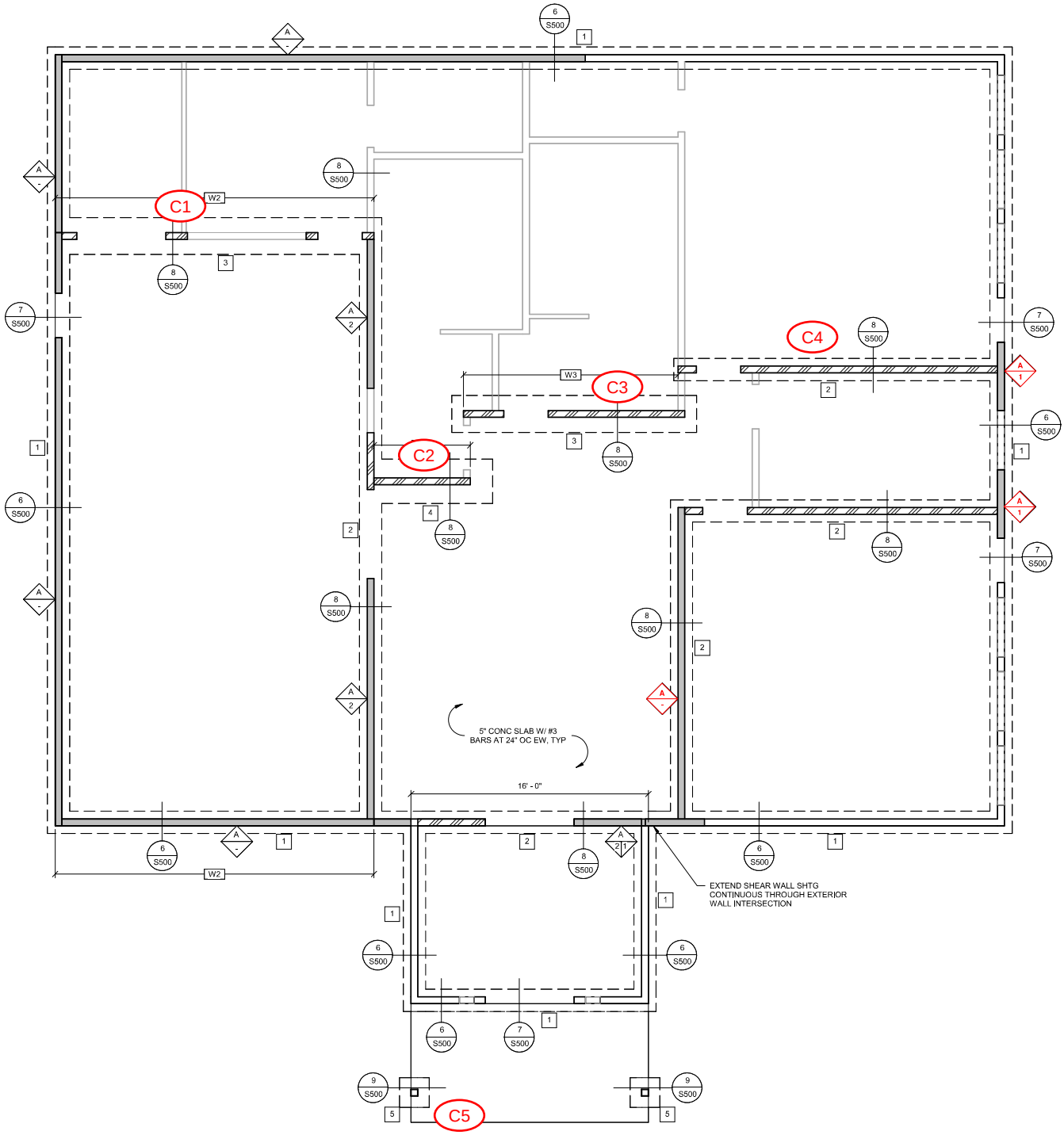
Calculate Wind Pressure, p, per Equation 30.3-1 or 30.5-1 (page 334), using q_h

Exterior Face of Surface

Zone	p (psf)	
Zone 4 (+)	18.02	with Positive Internal Pressure
Zone 5 (+)	18.02	with Positive Internal Pressure
Zone 4 (-)	-19.69	with Negative Internal Pressure
Zone 5 (-)	-23.11	with Negative Internal Pressure



MAIN FLOOR AND LATERAL LAYOUT
REFERENCE ONLY



LOWER FLOOR LAYOUT FOR REFERENCE ONLY

FROELICH CONSULTING ENGINEERS

client: Trout Creek SDA
project: Trout Creek SDA School
job number: 24-B101
date: 4/25/2024
by: HNI

ROOF BEAMS

Roof Beam RB1	Location: Classroom Span: 2'-6" (clr) Loads: Loading / Trib. Roof DL: 20 psf x 13.00 ft = 260 plf SL: 70 psf x 13.00 ft = 910 plf UB SL: 80 plf	6x8 DF#2
Roof Beam RB2	Location: DBL Doors @ Storage Span: 6'-0" (clr.) Loads: Loading / Trib. Roof DL: 20 psf x 32.50 ft = 650 plf SL: 70 psf x 32.50 ft = 2275 plf	5-1/2"x12" 24F-V4 GL
Roof Beam RB3	Location: Serving Deck Span: 7'-9" (clr.) Loads: Loading / Trib. Roof DL: 20 psf x 32.50 ft = 650 plf SL: 70 psf x 32.50 ft = 2275 plf	5-1/2"x12" 24F-V4 GL
Roof Beam RB4	Location: Library DBL Door Span: 6'-0" (clr.) Loads: Loading / Trib. Roof DL: 20 psf x 4.00 ft = 80 plf SL: 70 psf x 4.00 ft = 280 plf	5-1/2"x12" 24F-V4 GL
Roof Beam RB5	Location: Library Door Span: 3'-0" (clr.) Loads: Loading / Trib. Roof DL: 20 psf x 32.50 ft = 650 plf SL: 70 psf x 32.50 ft = 2275 plf	6x8 DF#2
Roof Beam RB6	Location: Library Entry DBL Door Span: 5'-6" (clr) Loads: Loading / Trib. Roof DL: 20 psf x 16.00 ft = 320 plf SL: 70 psf x 16.00 ft = 1120 plf UB SL: 80 plf	5-1/2"x12" 24F-V4 GL
Roof Beam RB7	Location: Covered Entry Span: 5'-5" (clr.) Loads: Loading / Trib. Roof DL: 20 psf x 10.00 ft = 200 plf SL: 70 psf x 10.00 ft = 700 plf	6x8 DF#2

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Apr. 25, 2024 10:50	RB1

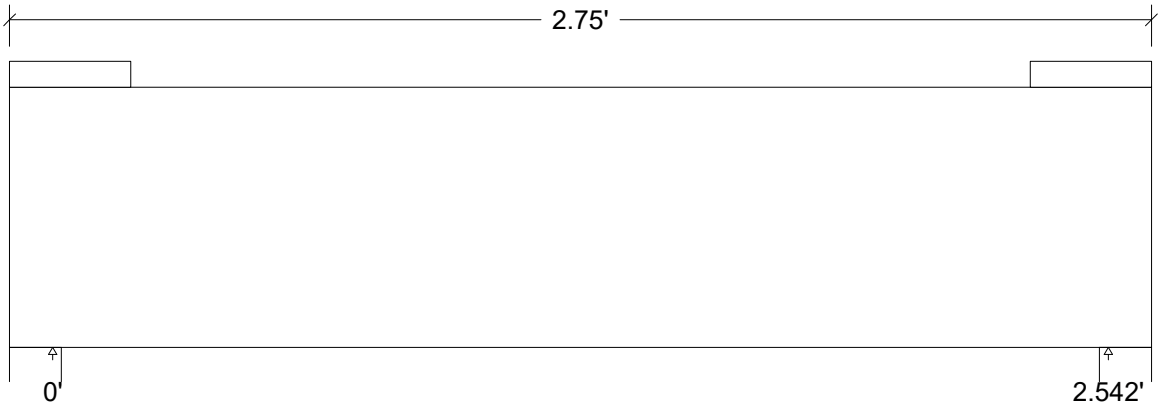
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 4)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full UDL				260.0		plf
Load2	Snow	Full UDL				910.0		plf
Load3	Snow	Full UDL				80.0		plf
Self-weight	Dead	Full UDL				9.8		plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	370		370
Snow	1361		1361
Factored:			
Total	1731		1731
Bearing:			
Length	1.50		1.50
Min req'd	0.50		0.50

Timber-soft, D.Fir-L, No.2, 6x8 (5-1/2"x7-1/2")

Supports: All - Lumber n-ply Column, D.Fir-L Stud

Total length: 2.75'; Clear span: 2.5'; Volume = 0.8 cu.ft.; Post or timber

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 29	Fv' = 195	psi	fv/Fv' = 0.15
Bending(+)	fb = 237	Fb' = 862	psi	fb/Fb' = 0.27
Dead Defl'n	0.00 = < L/999			
Live Defl'n	0.00 = < L/999	0.08 = L/360	in	0.04
Total Defl'n	0.01 = < L/999	0.13 = L/240	in	0.04

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2018) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN		
	Apr. 25, 2024 13:41	RB2

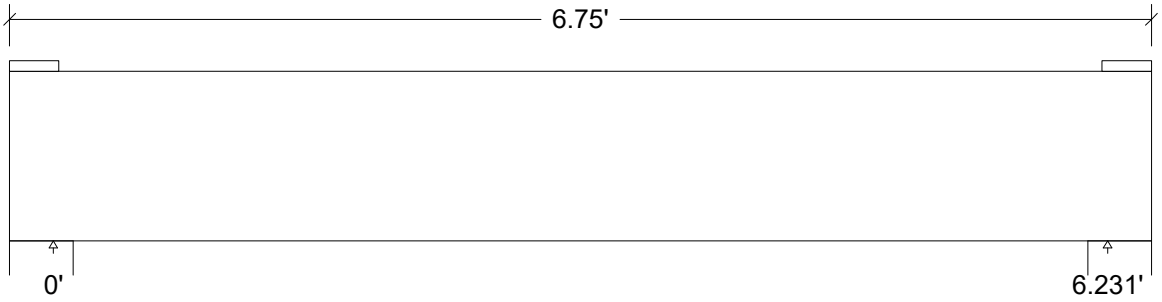
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full UDL				650.0		plf
Load2	Snow	Full UDL				2275.0		plf
Self-weight	Dead	Full UDL				15.2		plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	2241		2241
Snow	7678		7678
Factored:			
Total	9919		9919
Bearing:			
Length	4.50		4.50
Min req'd	2.77		2.77

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x12"

Supports: All - Lumber n-ply Column, D.Fir-L Stud

Total length: 6.75'; Clear span: 6'; Volume = 3.1 cu.ft.; 8 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 134	Fv' = 305	psi	fv/Fv' = 0.44
Bending(+)	fb = 1297	Fb' = 2733	psi	fb/Fb' = 0.47
Dead Defl'n	0.02 = < L/999			
Live Defl'n	0.05 = < L/999	0.21 = L/360	in	0.26
Total Defl'n	0.08 = L/960	0.31 = L/240	in	0.25

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Apr. 25, 2024 10:57	RB3

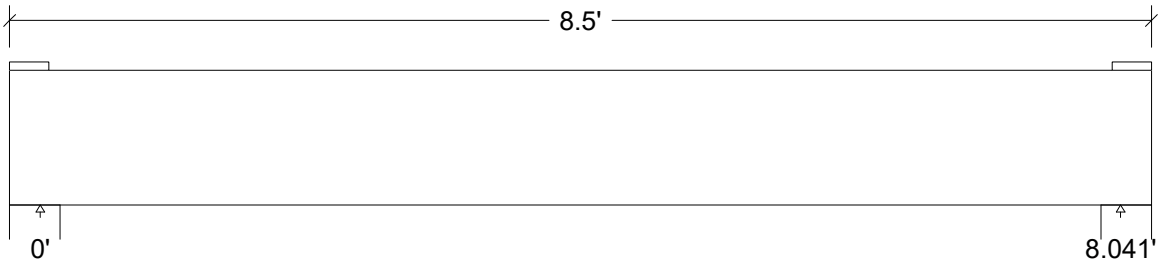
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full UDL				650.0		plf
Load2	Snow	Full UDL				2275.0		plf
Self-weight	Dead	Full UDL				15.2		plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	2824		2824
Snow	9669		9669
Factored:			
Total	12492		12492
Bearing:			
Length	4.50		4.50
Min req'd	3.49		3.49

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x12"

Supports: All - Lumber n-ply Column, D.Fir-L Stud

Total length: 8.5'; Clear span: 7.75'; Volume = 3.9 cu.ft.; 8 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 192	Fv' = 305	psi	fv/Fv' = 0.63
Bending(+)	fb = 2160	Fb' = 2725	psi	fb/Fb' = 0.79
Dead Defl'n	0.04 = < L/999			
Live Defl'n	0.15 = L/642	0.27 = L/360	in	0.56
Total Defl'n	0.22 = L/446	0.40 = L/240	in	0.54

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Apr. 25, 2024 13:43	RB4

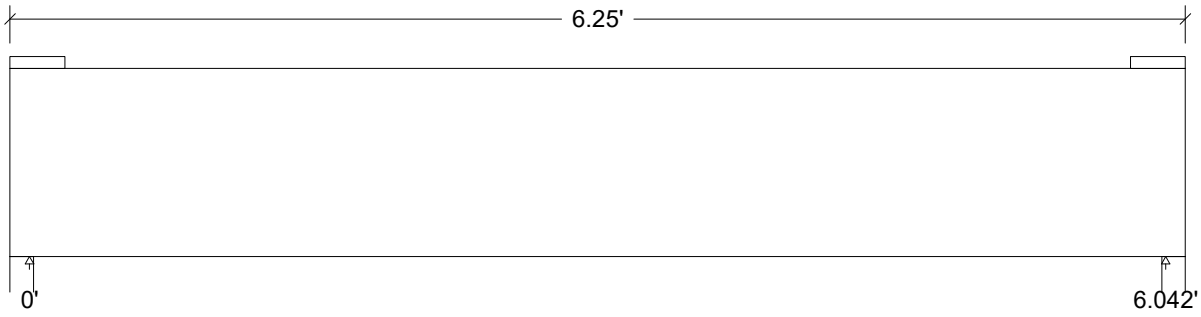
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full UDL				80.0		plf
Load2	Snow	Full UDL				280.0		plf
Self-weight	Dead	Full UDL				15.2		plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	296		296
Snow	875		875
Factored:			
Total	1171		1171
Bearing:			
Length	1.50		1.50
Min req'd	0.50*		0.50*

*Minimum bearing length setting used: 1/2" for end supports

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x12"

Supports: All - Lumber n-ply Column, D.Fir-L Stud

Total length: 6.25'; Clear span: 6'; Volume = 2.9 cu.ft.; 8 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 17	Fv' = 305	psi	fv/Fv' = 0.06
Bending(+)	fb = 156	Fb' = 2734	psi	fb/Fb' = 0.06
Dead Defl'n	0.00 = < L/999			
Live Defl'n	0.01 = < L/999	0.20 = L/360	in	0.03
Total Defl'n	0.01 = < L/999	0.30 = L/240	in	0.03

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Apr. 25, 2024 11:49	RB5

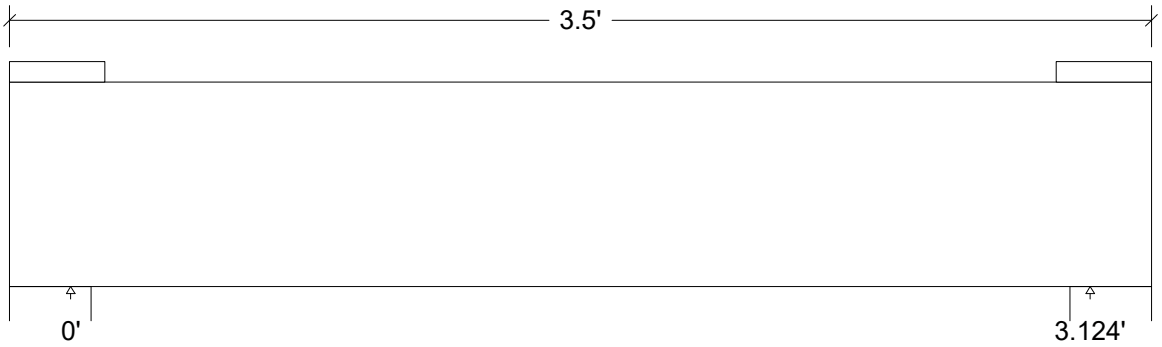
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full UDL				650.0		plf
Load2	Snow	Full UDL				2275.0		plf
Self-weight	Dead	Full UDL				9.8		plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	1153		1153
Snow	3981		3981
Factored:			
Total	5134		5134
Bearing:			
Length	3.00		3.00
Min req'd	1.49		1.49

Timber-soft, D.Fir-L, No.2, 6x8 (5-1/2"x7-1/2")

Supports: All - Lumber n-ply Column, D.Fir-L Stud

Total length: 3.5'; Clear span: 3.0'; Volume = 1.0 cu.ft.; Post or timber

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 93	Fv' = 195	psi	fv/Fv' = 0.48
Bending(+)	fb = 833	Fb' = 862	psi	fb/Fb' = 0.97
Dead Defl'n	0.01 = < L/999			
Live Defl'n	0.02 = < L/999	0.10 = L/360	in	0.19
Total Defl'n	0.03 = < L/999	0.16 = L/240	in	0.18

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN	Apr. 25, 2024 13:44	RB6

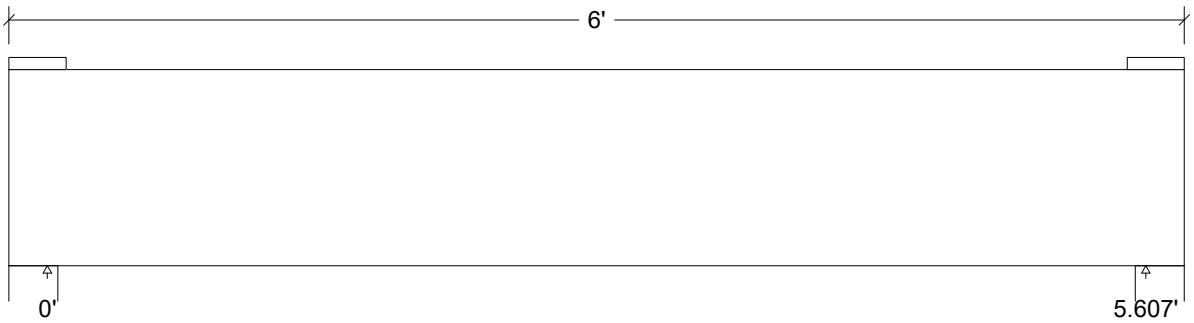
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Full UDL				320.0		plf
Load2	Snow	Full UDL				1120.0		plf
Load3	Snow	Full UDL				80.0		plf
Self-weight	Dead	Full UDL				15.2		plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	1003		1003
Snow	3600		3600
Factored:			
Total	4603		4603
Bearing:			
Length	3.00		3.00
Min req'd	1.29		1.29

Glulam-Unbalan., West Species, 24F-V4 DF, 5-1/2"x12"

Supports: All - Lumber n-ply Column, D.Fir-L Stud

Total length: 6.0'; Clear span: 5.5'; Volume = 2.8 cu.ft.; 8 laminations, 5-1/2" maximum width,

Lateral support: top = at supports, bottom = at supports;

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 61	Fv' = 305	psi	fv/Fv' = 0.20
Bending(+)	fb = 549	Fb' = 2736	psi	fb/Fb' = 0.20
Dead Defl'n	0.01 = < L/999			
Live Defl'n	0.02 = < L/999	0.19 = L/360	in	0.10
Total Defl'n	0.03 = < L/999	0.28 = L/240	in	0.09

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Glulam design values are for materials conforming to ANSI 117-2015 and manufactured in accordance with ANSI A190.1-2012
4. GLULAM: bxd = actual breadth x actual depth.
5. Glulam Beams shall be laterally supported according to the provisions of NDS Clause 3.3.3.
6. GLULAM: bearing length based on smaller of Fcp(tension), Fcp(comp'n).

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Apr. 25, 2024 17:07	RB7

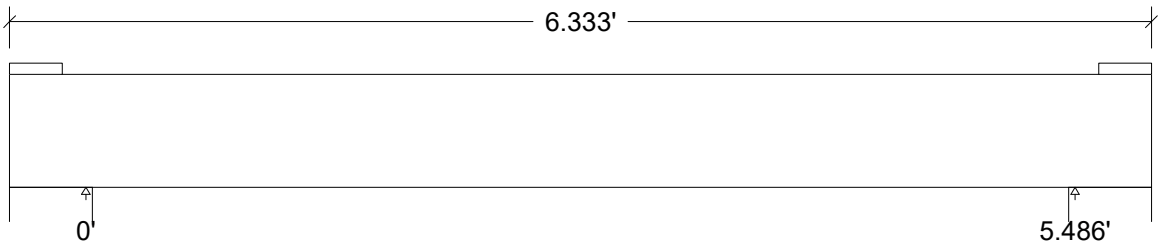
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
2	Dead	Full UDL				200.0		plf
Load2	Snow	Full UDL				700.0		plf
Self-weight	Dead	Full UDL				9.8		plf

Maximum Reactions (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	660		660
Snow	2217		2217
Factored:			
Total	2877		2877
Bearing:			
Length	5.50		5.50
Min req'd	0.84		0.84

Timber-soft, D.Fir-L, No.2, 6x8 (5-1/2"x7-1/2")

Supports: 1 - Lumber Post Column, Hem-Fir No.2; 2 - Lumber n-ply Column, D.Fir-L Stud;
Total length: 6.31'; Clear span: 5.438'; Volume = 1.8 cu.ft.; Post or timber
Lateral support: top = at supports, bottom = at supports;
This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 69	Fv' = 195	psi	fv/Fv' = 0.35
Bending(+)	fb = 797	Fb' = 862	psi	fb/Fb' = 0.92
Dead Defl'n	0.02 = < L/999			
Live Defl'n	0.06 = < L/999	0.18 = L/360	in	0.31
Total Defl'n	0.08 = L/799	0.27 = L/240	in	0.30

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.

FROELICH CONSULTING ENGINEERS
client: Trout Creek SDA
project: Trout Creek SDA School
job number: 24-B101
date: 4/29/2024
by: HNI

WALLS

Wall W1

Location: Multi-Purpose
Height: 16'-0"
Loads:

	Loading			Trib.					
Roof DL:	20	psf	x	22.00	ft	=	440	plf	
Roof SL:	70	psf	x	22.00	ft	=	1540	plf	
UB SL :	80	plf							

Out of Plane Wall Loading

OOP WL:	20	psf	Controls	= 20 psf	Wind Controls
OOP LL:	5	psf			

2x6 DF#2 at 12" OC

Wall W2

Location: Kitchen
Height: 16'-0"
Loads:

	Loading			Trib.					
Roof DL:	20	psf	x	26.00	ft	=	520	plf	
Roof SL:	70	psf	x	26.00	ft	=	1820	plf	

Out of Plane Wall Loading

OOP WL:	0	psf		= 5 psf	Live Controls
OOP LL:	5	psf	Controls		

2x6 DF#2 at 12" OC

Wall W3

Location: Library
Height: 10'-0"
Loads:

	Loading			Trib.					
Roof DL:	20	psf	x	32.50	ft	=	650	plf	
Roof SL:	70	psf	x	32.50	ft	=	2275	plf	
Drift SL :	64	psf	x	11.75		=	752	plf	

Out of Plane Wall Loading

OOP WL:	0	psf		= 5 psf	Live Controls
OOP LL:	5	psf	Controls		

(2) 2x6 DF#2 at 24" OC

Wall W4

Location: Library
Height: 10'-0"
Loads:

	Loading			Trib.					
Roof DL:	20	psf	x	32.50	ft	=	650	plf	
Roof SL:	70	psf	x	32.50	ft	=	2275	plf	

Out of Plane Wall Loading

OOP WL:	0	psf		= 5 psf	Live Controls
OOP LL:	5	psf	Controls		

(2) 2x6 DF#2 at 24" OC

Wall W5

Location: Classroom - Office
Height: 10'-0"
Loads:

	Loading			Trib.					
Roof DL:	20	psf	x	19.38	ft	=	388	plf	
Roof SL:	70	psf	x	19.38	ft	=	1356	plf	

Out of Plane Wall Loading

OOP WL:	0	psf		= 5 psf	Live Controls
OOP LL:	5	psf	Controls		

2x6 DF#2 at 12" OC

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Apr. 25, 2024 15:29	W1

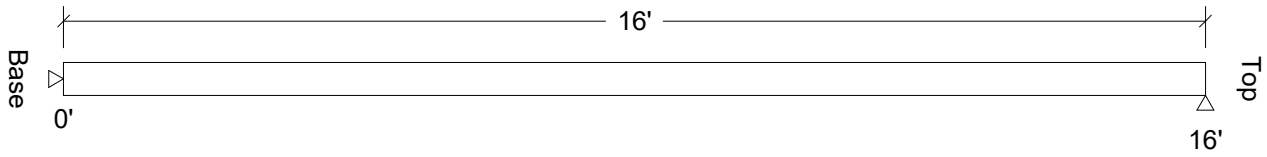
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Axial UDL	(Ecc. = 0.01")		440		plf
Load2	Snow	Axial UDL	(Ecc. = 0.01")		1540		plf
Load3	Snow	Axial UDL	(Ecc. = 0.01")		80		plf
Load4	Wind C&C	Full Area			20.00(12.0")		psf
Self-weight	Dead	Axial UDL			31		plf

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	0		-0
Snow	0		-0
Wind	160		160
Axial:			
Dead	471		471
Snow	1620		1620
Factored:			
R->L			-0
Load comb			#2
L->R	96		96

Lumber n-ply, D.Fir-L, No.2, 2x6, 1-ply (1-1/2"x5-1/2")

Support: None

Spaced at 12.0" c/c; Total length: 16.0'; Volume = 0.9 cu.ft.

Pinned base; Load face = width(b); Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 16.0 = 16.0 ft; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 17	Fv' = 288	psi	fv/Fv' = 0.06
Bending(+)	fb = 609	Fb' = 2153	psi	fb/Fb' = 0.28
Axial	fc = 253	Fc' = 371	psi	fc/Fc' = 0.68
Combined	(axial + eccentric + side load bending)			Eq.15.4-1 = 0.74
Axial Bearing	fc = 253	Fc* = 1708	psi	fc/Fc* = 0.15
Dead Defl'n	negligible			
Live Defl'n	0.37 = L/515	1.60 = L/120	in	0.23
Total Defl'n	0.37 = L/515	1.60 = L/120	in	0.23

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN		
	Apr. 25, 2024 15:48	W2

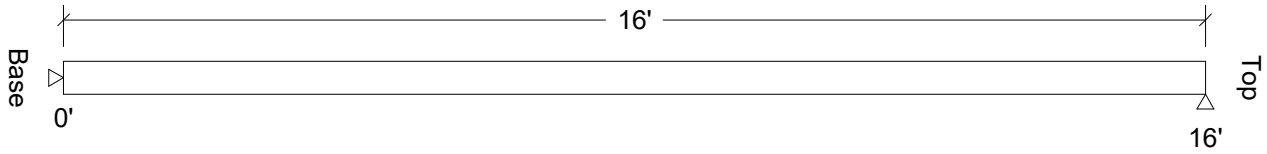
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Axial UDL	(Ecc. = 0.01")		520		plf
Load2	Snow	Axial UDL	(Ecc. = 0.01")		1820		plf
Load3	Live	Full Area			5.00(12.0")		psf
Self-weight	Dead	Axial UDL			31		plf

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	0		-0
Live	40		40
Snow	0		-0
Axial:			
Dead	551		551
Snow	1820		1820
Factored:			
R->L			-0
Load comb			#4
L->R	40		40

Lumber n-ply, D.Fir-L, No.2, 2x6, 1-ply (1-1/2"x5-1/2")

Support: None

Spaced at 12.0" c/c; Total length: 16.0'; Volume = 0.9 cu.ft.

Pinned base; Load face = width(b); Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 16.0 = 16.0 ft; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 7	Fv' = 180	psi	fv/Fv' = 0.04
Bending(+)	fb = 254	Fb' = 1345	psi	fb/Fb' = 0.19
Axial	fc = 287	Fc' = 371	psi	fc/Fc' = 0.78
Combined	(axial + eccentric + side load bending)			Eq.15.4-1 = 0.70
Axial Bearing	fc = 287	Fc* = 1708	psi	fc/Fc* = 0.17
Dead Defl'n	negligible			
Live Defl'n	0.22 = L/866	1.60 = L/120	in	0.14
Total Defl'n	0.22 = L/865	1.60 = L/120	in	0.14

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN		
	Apr. 25, 2024 15:33	W3

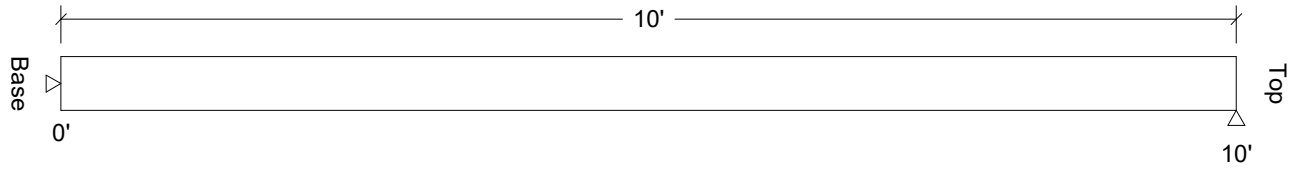
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Axial UDL	(Ecc. = 0.01")		650		plf
Load2	Snow	Axial UDL	(Ecc. = 0.01")		2275		plf
Load3	Live	Full Area			5.00(16.0")		psf
Load4	Snow	Axial UDL	(Ecc. = 0.01")		752		plf
Self-weight	Dead	Axial UDL			15		plf

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	0		-0
Live	33		33
Snow	0		-0
Axial:			
Dead	886		886
Snow	4036		4036
Factored:			
R->L			-0
Load comb			#4
L->R	33		33

Lumber n-ply, D.Fir-L, No.2, 2x6, 1-ply (1-1/2"x5-1/2")

Support: None

Spaced at 16.0" c/c; Total length: 10.0'; Volume = 0.6 cu.ft.

Pinned base; Load face = width(b); Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 10.0 = 10.0 ft; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 6	Fv' = 180	psi	fv/Fv' = 0.03
Bending(+)	fb = 133	Fb' = 1345	psi	fb/Fb' = 0.10
Axial	fc = 597	Fc' = 839	psi	fc/Fc' = 0.71
Combined	(axial + eccentric moment)			Eq.15.4-3 = 0.51
Axial Bearing	fc = 597	Fc* = 1708	psi	fc/Fc* = 0.35
Dead Defl'n	negligible			
Live Defl'n	0.05 = < L/999	1.00 = L/120	in	0.05
Total Defl'n	0.05 = < L/999	1.00 = L/120	in	0.05

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN		
	Apr. 25, 2024 15:35	W4

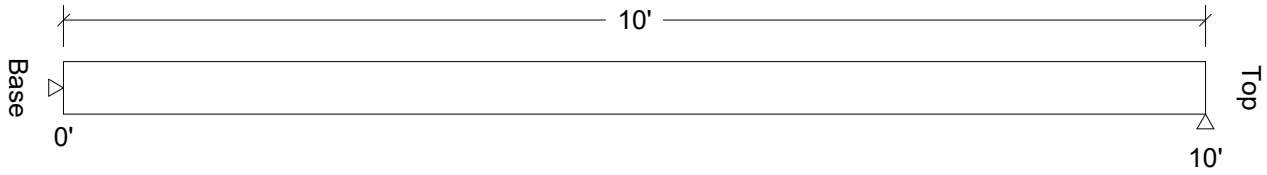
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Axial UDL	(Ecc. = 0.01")		650		plf
Load2	Snow	Axial UDL	(Ecc. = 0.01")		2275		plf
Load3	Live	Full Area			5.00(16.0")		psf
Self-weight	Dead	Axial UDL			15		plf

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	0		-0
Live	33		33
Snow	0		-0
Axial:			
Dead	886		886
Snow	3033		3033
Factored:			
R->L			-0
Load comb			#4
L->R	33		33

Lumber n-ply, D.Fir-L, No.2, 2x6, 1-ply (1-1/2"x5-1/2")

Support: None

Spaced at 16.0" c/c; Total length: 10.0'; Volume = 0.6 cu.ft.

Pinned base; Load face = width(b); Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 10.0 = 10.0 ft; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 6	Fv' = 180	psi	fv/Fv' = 0.03
Bending(+)	fb = 133	Fb' = 1345	psi	fb/Fb' = 0.10
Axial	fc = 475	Fc' = 839	psi	fc/Fc' = 0.57
Combined	(axial + eccentric moment)			Eq.15.4-3 = 0.32
Axial Bearing	fc = 475	Fc* = 1708	psi	fc/Fc* = 0.28
Dead Defl'n	negligible			
Live Defl'n	0.05 = < L/999	1.00 = L/120	in	0.05
Total Defl'n	0.05 = < L/999	1.00 = L/120	in	0.05

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Apr. 25, 2024 15:36	W5

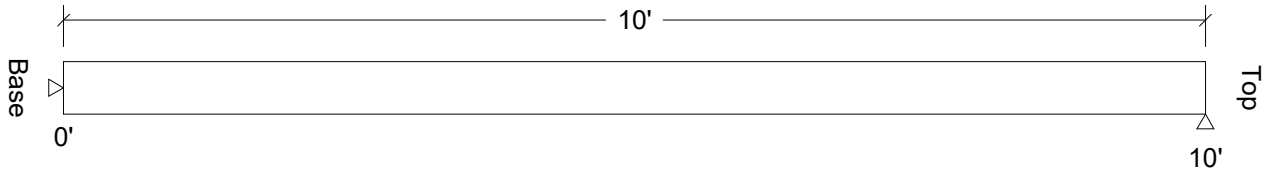
Design Check Calculation Sheet

WoodWorks Sizer 2023

Loads:

Load	Type	Distribution	Location [ft] Start	End	Magnitude Start	End	Unit
Load1	Dead	Axial UDL	(Ecc. = 0.01")		388		plf
Load2	Snow	Axial UDL	(Ecc. = 0.01")		1356		plf
Load3	Live	Full Area			5.00(16.0")		psf
Self-weight	Dead	Axial UDL			15		plf

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	0		-0
Live	33		33
Snow	0		-0
Axial:			
Dead	537		537
Snow	1808		1808
Factored:			
R->L			-0
Load comb			#4
L->R	33		33

Lumber n-ply, D.Fir-L, No.2, 2x6, 1-ply (1-1/2"x5-1/2")

Support: None

Spaced at 16.0" c/c; Total length: 10.0'; Volume = 0.6 cu.ft.

Pinned base; Load face = width(b); Ke x Lb: 1.0 x 0.0 = 0.0 ft; Ke x Ld: 1.0 x 10.0 = 10.0 ft; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 6	Fv' = 180	psi	fv/Fv' = 0.03
Bending(+)	fb = 132	Fb' = 1345	psi	fb/Fb' = 0.10
Axial	fc = 284	Fc' = 839	psi	fc/Fc' = 0.34
Combined	(axial + eccentric + side load bending)			Eq.15.4-1 = 0.16
Axial Bearing	fc = 284	Fc* = 1708	psi	fc/Fc* = 0.17
Dead Defl'n	negligible			
Live Defl'n	0.05 = < L/999	1.00 = L/120	in	0.05
Total Defl'n	0.05 = < L/999	1.00 = L/120	in	0.05

Design Notes:

1. Analysis and design are in accordance with the ICC International Building Code (IBC 2021) and the National Design Specification (NDS 2018), using Allowable Stress Design (ASD). Design values are from the NDS Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.

FROELICH CONSULTING ENGINEERS

client: Trout Creek SDA
project: Trout Creek SDA School
job number: 24-B101
date: 5/1/2024
by: HNI

Columns & Footings

NOTE:
Reference column and footing tables on the following pages for all columns not specifically calculated in this calculation package.

Strip FTG C1

Location: Under W2
Height: 2'-0"
Loads:

	Loading			Trib.				
Roof DL:	20	psf	x	26.00	ft	=	520	plf
Roof SL:	70	psf	x	26.00	ft	=	1820	plf
Wall DL :	8	psf	x	16.00	ft	=	128	plf
Floor DL :	10	psf	x	0.00	ft	=	0	plf
Floor LL :	40	psf	x	0.00	ft	=	0	plf

30 in/12in x 10 in/12in x 150 psf = 313 plf
Controling Load Case: DL+SL = 2781 plf

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
1500	1112	0.74

Support:
2x6 DF#2 @ 12" oc

Strip Footing:
30"x10"x Cont FTG w/ (4) #4 Bar Cont

Strip FTG C2

Location: Under W3
Height: 2'-0"
Loads:

	Loading			Trib.					
Roof DL:	20	psf	x	32.50	ft	=	650	plf	
Roof SL:	70	psf	x	32.50	ft	=	3027	plf	(with drift)
Wall DL :	8	psf	x	10.00	ft	=	80	plf	
Floor DL :	10	psf	x	0.00	ft	=	0	plf	
Floor LL :	40	psf	x	0.00	ft	=	0	plf	

36 in/12in x 10 in/12in x 150 psf = 375 plf
Controling Load Case: DL+SL = 4132 plf

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
1500	1377	0.92

Support:
(2) 2x6 DF#2 @ 24" oc

Strip Footing:
36"x10"x Cont FTG w/ (4) #4 Bar Cont

Strip FTG C3

Location: Under W4
Height: 2'-0"
Loads:

	Loading			Trib.				
Roof DL:	20	psf	x	32.50	ft	=	650	plf
Roof SL:	70	psf	x	32.50	ft	=	2275	plf
Wall DL :	8	psf	x	10.00	ft	=	80	plf
Floor DL :	10	psf	x	0.00	ft	=	0	plf
Floor LL :	40	psf	x	0.00	ft	=	0	plf

30	in/12in x	10	in/12in x	150	psf	=	313 plf
			Controling Load Case: DL+SL			=	3318 plf

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
1500	1327	0.88

Support:
2x6 DF#2 @ 24" oc

Strip Footing:
30"x10"x Cont FTG w/ (4) #4 Bar Cont

Strip FTG C4

Location: Under W5
Height: 2'-0"
Loads:

	Loading			Trib.				
Roof DL:	20	psf	x	19.38	ft	=	388	plf
Roof SL:	70	psf	x	19.38	ft	=	1357	plf
Wall DL :	8	psf	x	10.00	ft	=	80	plf
Floor DL :	10	psf	x	0.00	ft	=	0	plf
Floor LL :	40	psf	x	0.00	ft	=	0	plf

18	in/12in x	10	in/12in x	150	psf	=	188 plf
			Controling Load Case: DL+SL			=	2012 plf

Bearing Capacity:

Allowable Bearing	Actual Bearing	DCR
1500	1341	0.89

Support:
2x6 DF#2 @ 12" oc

Strip Footing:
18"x10"x Cont FTG w/ (2) #4 Bar Cont

Column C5

Location: Covered Entry
Height: 10'-0"
Loads:

	Loading			Load Ratio			
RB7 DL:	660	lbs	x	1	=	660	lbs
LL:	0	lbs	x	1	=	0	lbs
SL:	2217	lbs	x	1	=	2217	lbs
				Controling Load Case: DL+SL	=	2877	lbs

Column:
6x6 HF#2

Footing:
24"x24"x10" Conc FTG w/ (3) #4 Bars EW

Combined Footing

Project File: Kitchen Slab.ec6

LIC# : KW-06014743, Build:20.23.05.25 FROELICH CONSULTING ENGINEERS

DESCRIPTION: Kitchen Thickened Slab

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2021

General Information

Material Properties

f'c : Concrete 28 day strength	2.50	ksi
fy : Rebar Yield	60.0	ksi
Ec : Concrete Elastic Modulus	3,122.0	ksi
Concrete Density	145.0	pcf
ϕ : Phi Values Flexure :	0.90	
Shear :	0.750	

Analysis/Design Settings

Calculate footing weight as dead load ?	Yes
Calculate Pedestal weight as dead load ?	No
Min Steel % Bending Reinf (based on 'd')	
Min Allow % Temp Reinf (based on thick)	0.00180
Min. Overturning Safety Factor	1.0: 1
Min. Sliding Safety Factor	1.0: 1

Soil Information

Allowable Soil Bearing	1.50	ksf
Increase Bearing By Footing Weight	No	
Soil Passive Sliding Resistance	250.0	pcf
(Uses entry for "Footing base depth below soil surface" for force)		
Coefficient of Soil/Concrete Friction	0.30	

Soil Bearing Increase

Footing base depth below soil surface	ft
Increases based on footing Depth	
Allowable pressure increase per foot	ksf
when base of footing is below	ft
Increases based on footing Width . . .	
Allowable pressure increase per foot	ksf
when maximum length or width is greater tha	ft
Maximum Allowed Bearing Pressure	10.0 ksf
(A value of zero implies no limit)	
Adjusted Allowable Soil Bearing	1.50 ksf
(Allowable Soil Bearing adjusted for footing weight and depth & width increases as specified by user.)	

Dimensions & Reinforcing

Distance Left of Column #1	=	3.250 ft
Between Columns	=	2.0 ft
Distance Right of Column #2	=	4.250 ft
Total Footing Length	=	9.50 ft
Footing Width	=	2.50 ft
Footing Thickness	=	10.0 in

Pedestal dimensions...

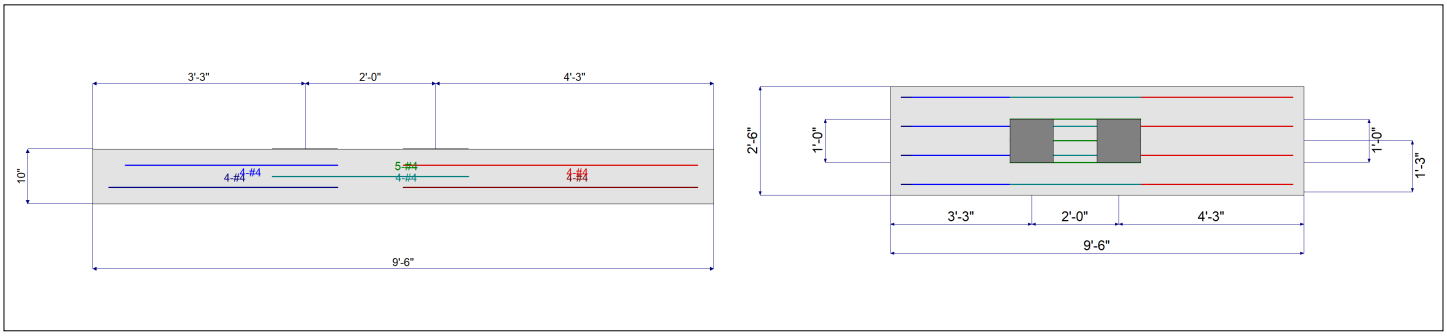
	Col #1	Col #2	
Sq. Dim.	= 12.0	12.0	in
Height	=		in

Rebar Center to Concrete Edge @ Top	=	3.0	in	
Rebar Center to Concrete Edge @ Bottom	=	3.0	in	

Bars left of Col #1	Count	Size #	As Provided	As Req'd
Bottom Bars	4.0	4	0.80	0.540 in^2
Top Bars	4.0	4	0.80	0.0 in^2
Bars Btwn Cols				
Bottom Bars	5.0	4	1.0	0.8138 in^2
Top Bars	4.0	4	0.80	0.0 in^2
Bars Right of Col #2				
Bottom Bars	4.0	4	0.80	0.70 in^2
Top Bars	4.0	4	0.80	0.0 in^2

Applied Loads

Applied @ Left Column		D	Lr	L	S	W	E	H	
Axial Load Downward	=	2.241			7.678				k
Moment (+CW)	=								k-ft
Shear (+X)	=								k
Applied @ Right Column									
Axial Load Downward	=	2.824			9.669				k
Moment (+CW)	=								k-ft
Shear (+X)	=								k
Overburden	=								



Combined Footing

Project File: Kitchen Slab.ec6

DESCRIPTION: Kitchen Thickened Slab

DESIGN SUMMARY

Design OK

Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS No OTM	Overturning	0.0 k-ft	0.0 k-ft	No OTM
PASS No Sliding	Sliding	0.0 k	2.380 k	No Sliding
PASS No Uplift	Uplift	0.0 k	0.0 k	No Uplift

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS 0.8623	Soil Bearing	1.293 ksf	1.50 ksf	+D+S
PASS 0.5804	1-way Shear - Col #1	43.531 psi	75.0 psi	+1.20D+1.60S
PASS 0.5981	1-way Shear - Col #2	44.857 psi	75.0 psi	+1.20D+1.60S
PASS 0.1404	2-way Punching - Col #1	21.057 psi	150.0 psi	+1.20D+1.60S
PASS 0.1449	2-way Punching - Col #2	21.731 psi	150.0 psi	+1.20D+1.60S
PASS No Bending	Flexure - Left of Col #1 - Top	0.0 k-ft	0.0 k-ft	N/A
PASS 0.6666	Flexure - Left of Col #1 - Bottom	15.896 k-ft	23.845 k-ft	+1.20D+1.60S
PASS No Bending	Flexure - Between Cols - Top	0.0 k-ft	0.0 k-ft	N/A
PASS 0.8247	Flexure - Between Cols - Bottom	24.232 k-ft	29.382 k-ft	+1.20D+1.60S
PASS No Bending	Flexure - Right of Col #2 - Top	0.0 k-ft	0.0 k-ft	N/A
PASS 0.8518	Flexure - Right of Col #2 - Bottom	20.311 k-ft	23.845 k-ft	+1.20D+1.60S

Soil Bearing

Load Combination...	Total Bearing	Eccentricity from Ftg CL	Actual Soil Bearing Stress @ Left Edge	@ Right Edge	Allowable	Actual / Allow Ratio
D Only	7.93 k	-0.246 ft	0.39 ksf	0.28 ksf	1.50 ksf	0.257
+D+S	25.28 k	-0.341 ft	1.29 ksf	0.84 ksf	1.50 ksf	0.862
+D+0.750S	20.95 k	-0.332 ft	1.07 ksf	0.70 ksf	1.50 ksf	0.711
+0.60D	4.76 k	-0.246 ft	0.23 ksf	0.17 ksf	1.50 ksf	0.154

Overturning Stability

Load Combination...	Moments about Left Edge k-ft Overturning	Resisting	Ratio	Moments about Right Edg k-ft Overturning	Resisting	Ratio
D Only	0.00	0.00	999.000	0.00	0.00	999.000
+D+S	0.00	0.00	999.000	0.00	0.00	999.000
+D+0.750S	0.00	0.00	999.000	0.00	0.00	999.000
+0.60D	0.00	0.00	999.000	0.00	0.00	999.000

Sliding Stability

Load Combination...	Sliding Force	Resisting Force	Sliding Safety Ratio
D Only	0.00 k	2.38 k	999
+D+S	0.00 k	7.58 k	999
+D+0.750S	0.00 k	6.28 k	999
+0.60D	0.00 k	1.43 k	999

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.60D	0.000	0.000	0	0.000	0	0.000	0.000	0.000
+0.60D	0.000	0.024	0	0.000	0	0.000	0.000	0.000
+0.60D	0.000	0.048	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S	0.011	0.071	Bottom	0.540	Min Temp %	0.800	23.845	0.000
+1.20D+1.60S	0.020	0.095	Bottom	0.540	Min Temp %	0.800	23.845	0.001
+1.20D+1.60S	0.031	0.119	Bottom	0.540	Min Temp %	0.800	23.845	0.001
+1.20D+1.60S	0.045	0.143	Bottom	0.540	Min Temp %	0.800	23.845	0.002
+1.20D+1.60S	0.061	0.166	Bottom	0.540	Min Temp %	0.800	23.845	0.003
+1.20D+1.60S	0.080	0.190	Bottom	0.540	Min Temp %	0.800	23.845	0.003
+1.20D+1.60S	0.101	0.214	Bottom	0.540	Min Temp %	0.800	23.845	0.004
+1.20D+1.60S	0.124	0.238	Bottom	0.540	Min Temp %	0.800	23.845	0.005
+1.20D+1.60S	0.151	0.261	Bottom	0.540	Min Temp %	0.800	23.845	0.006
+1.20D+1.60S	0.179	0.285	Bottom	0.540	Min Temp %	0.800	23.845	0.008
+1.20D+1.60S	0.210	0.309	Bottom	0.540	Min Temp %	0.800	23.845	0.009
+1.20D+1.60S	0.244	0.333	Bottom	0.540	Min Temp %	0.800	23.845	0.010

Combined Footing

DESCRIPTION: Kitchen Thickened Slab

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S	0.280	0.356	Bottom	0.540	Min Temp %	0.800	23.845	0.012
+1.20D+1.60S	0.318	0.380	Bottom	0.540	Min Temp %	0.800	23.845	0.013
+1.20D+1.60S	0.359	0.404	Bottom	0.540	Min Temp %	0.800	23.845	0.015
+1.20D+1.60S	0.402	0.428	Bottom	0.540	Min Temp %	0.800	23.845	0.017
+1.20D+1.60S	0.448	0.451	Bottom	0.540	Min Temp %	0.800	23.845	0.019
+1.20D+1.60S	0.496	0.475	Bottom	0.540	Min Temp %	0.800	23.845	0.021
+1.20D+1.60S	0.547	0.499	Bottom	0.540	Min Temp %	0.800	23.845	0.023
+1.20D+1.60S	0.600	0.523	Bottom	0.540	Min Temp %	0.800	23.845	0.025
+1.20D+1.60S	0.656	0.546	Bottom	0.540	Min Temp %	0.800	23.845	0.027
+1.20D+1.60S	0.714	0.570	Bottom	0.540	Min Temp %	0.800	23.845	0.030
+1.20D+1.60S	0.774	0.594	Bottom	0.540	Min Temp %	0.800	23.845	0.032
+1.20D+1.60S	0.837	0.618	Bottom	0.540	Min Temp %	0.800	23.845	0.035
+1.20D+1.60S	0.902	0.641	Bottom	0.540	Min Temp %	0.800	23.845	0.038
+1.20D+1.60S	0.970	0.665	Bottom	0.540	Min Temp %	0.800	23.845	0.041
+1.20D+1.60S	1.040	0.689	Bottom	0.540	Min Temp %	0.800	23.845	0.044
+1.20D+1.60S	1.113	0.713	Bottom	0.540	Min Temp %	0.800	23.845	0.047
+1.20D+1.60S	1.188	0.736	Bottom	0.540	Min Temp %	0.800	23.845	0.050
+1.20D+1.60S	1.265	0.760	Bottom	0.540	Min Temp %	0.800	23.845	0.053
+1.20D+1.60S	1.345	0.784	Bottom	0.540	Min Temp %	0.800	23.845	0.056
+1.20D+1.60S	1.428	0.808	Bottom	0.540	Min Temp %	0.800	23.845	0.060
+1.20D+1.60S	1.512	0.831	Bottom	0.540	Min Temp %	0.800	23.845	0.063
+1.20D+1.60S	1.599	0.855	Bottom	0.540	Min Temp %	0.800	23.845	0.067
+1.20D+1.60S	1.689	0.879	Bottom	0.540	Min Temp %	0.800	23.845	0.071
+1.20D+1.60S	1.781	0.903	Bottom	0.540	Min Temp %	0.800	23.845	0.075
+1.20D+1.60S	1.875	0.926	Bottom	0.540	Min Temp %	0.800	23.845	0.079
+1.20D+1.60S	1.972	0.950	Bottom	0.540	Min Temp %	0.800	23.845	0.083
+1.20D+1.60S	2.071	0.974	Bottom	0.540	Min Temp %	0.800	23.845	0.087
+1.20D+1.60S	2.173	0.998	Bottom	0.540	Min Temp %	0.800	23.845	0.091
+1.20D+1.60S	2.277	1.021	Bottom	0.540	Min Temp %	0.800	23.845	0.095
+1.20D+1.60S	2.383	1.045	Bottom	0.540	Min Temp %	0.800	23.845	0.100
+1.20D+1.60S	2.492	1.069	Bottom	0.540	Min Temp %	0.800	23.845	0.104
+1.20D+1.60S	2.603	1.093	Bottom	0.540	Min Temp %	0.800	23.845	0.109
+1.20D+1.60S	2.716	1.116	Bottom	0.540	Min Temp %	0.800	23.845	0.114
+1.20D+1.60S	2.832	1.140	Bottom	0.540	Min Temp %	0.800	23.845	0.119
+1.20D+1.60S	2.950	1.164	Bottom	0.540	Min Temp %	0.800	23.845	0.124
+1.20D+1.60S	3.071	1.188	Bottom	0.540	Min Temp %	0.800	23.845	0.129
+1.20D+1.60S	3.194	1.211	Bottom	0.540	Min Temp %	0.800	23.845	0.134
+1.20D+1.60S	3.319	1.235	Bottom	0.540	Min Temp %	0.800	23.845	0.139
+1.20D+1.60S	3.447	1.259	Bottom	0.540	Min Temp %	0.800	23.845	0.145
+1.20D+1.60S	3.577	1.283	Bottom	0.540	Min Temp %	0.800	23.845	0.150
+1.20D+1.60S	3.710	1.306	Bottom	0.540	Min Temp %	0.800	23.845	0.156
+1.20D+1.60S	3.845	1.330	Bottom	0.540	Min Temp %	0.800	23.845	0.161
+1.20D+1.60S	3.982	1.354	Bottom	0.540	Min Temp %	0.800	23.845	0.167
+1.20D+1.60S	4.121	1.378	Bottom	0.540	Min Temp %	0.800	23.845	0.173
+1.20D+1.60S	4.263	1.401	Bottom	0.540	Min Temp %	0.800	23.845	0.179
+1.20D+1.60S	4.408	1.425	Bottom	0.540	Min Temp %	0.800	23.845	0.185
+1.20D+1.60S	4.554	1.449	Bottom	0.540	Min Temp %	0.800	23.845	0.191
+1.20D+1.60S	4.703	1.473	Bottom	0.540	Min Temp %	0.800	23.845	0.197
+1.20D+1.60S	4.855	1.496	Bottom	0.540	Min Temp %	0.800	23.845	0.204
+1.20D+1.60S	5.008	1.520	Bottom	0.540	Min Temp %	0.800	23.845	0.210
+1.20D+1.60S	5.164	1.544	Bottom	0.540	Min Temp %	0.800	23.845	0.217
+1.20D+1.60S	5.323	1.568	Bottom	0.540	Min Temp %	0.800	23.845	0.223
+1.20D+1.60S	5.483	1.591	Bottom	0.540	Min Temp %	0.800	23.845	0.230
+1.20D+1.60S	5.646	1.615	Bottom	0.540	Min Temp %	0.800	23.845	0.237
+1.20D+1.60S	5.812	1.639	Bottom	0.540	Min Temp %	0.800	23.845	0.244
+1.20D+1.60S	5.979	1.663	Bottom	0.540	Min Temp %	0.800	23.845	0.251
+1.20D+1.60S	6.149	1.686	Bottom	0.540	Min Temp %	0.800	23.845	0.258
+1.20D+1.60S	6.322	1.710	Bottom	0.540	Min Temp %	0.800	23.845	0.265
+1.20D+1.60S	6.496	1.734	Bottom	0.540	Min Temp %	0.800	23.845	0.272
+1.20D+1.60S	6.673	1.758	Bottom	0.540	Min Temp %	0.800	23.845	0.280
+1.20D+1.60S	6.852	1.781	Bottom	0.540	Min Temp %	0.800	23.845	0.287
+1.20D+1.60S	7.034	1.805	Bottom	0.540	Min Temp %	0.800	23.845	0.295
+1.20D+1.60S	7.218	1.829	Bottom	0.540	Min Temp %	0.800	23.845	0.303

Combined Footing

DESCRIPTION: Kitchen Thickened Slab

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S	7.404	1.853	Bottom	0.540	Min Temp %	0.800	23.845	0.311
+1.20D+1.60S	7.593	1.876	Bottom	0.540	Min Temp %	0.800	23.845	0.318
+1.20D+1.60S	7.784	1.900	Bottom	0.540	Min Temp %	0.800	23.845	0.326
+1.20D+1.60S	7.977	1.924	Bottom	0.540	Min Temp %	0.800	23.845	0.335
+1.20D+1.60S	8.172	1.948	Bottom	0.540	Min Temp %	0.800	23.845	0.343
+1.20D+1.60S	8.370	1.971	Bottom	0.540	Min Temp %	0.800	23.845	0.351
+1.20D+1.60S	8.570	1.995	Bottom	0.540	Min Temp %	0.800	23.845	0.359
+1.20D+1.60S	8.772	2.019	Bottom	0.540	Min Temp %	0.800	23.845	0.368
+1.20D+1.60S	8.977	2.043	Bottom	0.540	Min Temp %	0.800	23.845	0.376
+1.20D+1.60S	9.184	2.066	Bottom	0.540	Min Temp %	0.800	23.845	0.385
+1.20D+1.60S	9.393	2.090	Bottom	0.540	Min Temp %	0.800	23.845	0.394
+1.20D+1.60S	9.604	2.114	Bottom	0.540	Min Temp %	0.800	23.845	0.403
+1.20D+1.60S	9.818	2.138	Bottom	0.540	Min Temp %	0.800	23.845	0.412
+1.20D+1.60S	10.034	2.161	Bottom	0.540	Min Temp %	0.800	23.845	0.421
+1.20D+1.60S	10.252	2.185	Bottom	0.540	Min Temp %	0.800	23.845	0.430
+1.20D+1.60S	10.473	2.209	Bottom	0.540	Min Temp %	0.800	23.845	0.439
+1.20D+1.60S	10.696	2.233	Bottom	0.540	Min Temp %	0.800	23.845	0.449
+1.20D+1.60S	10.921	2.256	Bottom	0.540	Min Temp %	0.800	23.845	0.458
+1.20D+1.60S	11.148	2.280	Bottom	0.540	Min Temp %	0.800	23.845	0.468
+1.20D+1.60S	11.378	2.304	Bottom	0.540	Min Temp %	0.800	23.845	0.477
+1.20D+1.60S	11.610	2.328	Bottom	0.540	Min Temp %	0.800	23.845	0.487
+1.20D+1.60S	11.844	2.351	Bottom	0.540	Min Temp %	0.800	23.845	0.497
+1.20D+1.60S	12.080	2.375	Bottom	0.540	Min Temp %	0.800	23.845	0.507
+1.20D+1.60S	12.319	2.399	Bottom	0.540	Min Temp %	0.800	23.845	0.517
+1.20D+1.60S	12.560	2.423	Bottom	0.547	Min ACI 10.5	0.800	23.845	0.527
+1.20D+1.60S	12.803	2.446	Bottom	0.558	Min ACI 10.5	0.800	23.845	0.537
+1.20D+1.60S	13.049	2.470	Bottom	0.569	Min ACI 10.5	0.800	23.845	0.547
+1.20D+1.60S	13.296	2.494	Bottom	0.580	Min ACI 10.5	0.800	23.845	0.558
+1.20D+1.60S	13.546	2.518	Bottom	0.591	Min ACI 10.5	0.800	23.845	0.568
+1.20D+1.60S	13.798	2.541	Bottom	0.602	Min ACI 10.5	0.800	23.845	0.579
+1.20D+1.60S	14.053	2.565	Bottom	0.614	Min ACI 10.5	0.800	23.845	0.589
+1.20D+1.60S	14.309	2.589	Bottom	0.625	Min ACI 10.5	0.800	23.845	0.600
+1.20D+1.60S	14.568	2.613	Bottom	0.637	Min ACI 10.5	0.800	23.845	0.611
+1.20D+1.60S	14.829	2.636	Bottom	0.649	Min ACI 10.5	0.800	23.845	0.622
+1.20D+1.60S	15.092	2.660	Bottom	0.661	Min ACI 10.5	0.800	23.845	0.633
+1.20D+1.60S	15.358	2.684	Bottom	0.673	Min ACI 10.5	0.800	23.845	0.644
+1.20D+1.60S	15.626	2.708	Bottom	0.685	Min ACI 10.5	0.800	23.845	0.655
+1.20D+1.60S	15.896	2.731	Bottom	0.697	Min ACI 10.5	0.800	23.845	0.667
+1.20D+1.60S	16.168	2.755	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.678
+1.20D+1.60S	16.436	2.779	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.689
+1.20D+1.60S	16.698	2.803	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.700
+1.20D+1.60S	16.954	2.826	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.711
+1.20D+1.60S	17.204	2.850	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.721
+1.20D+1.60S	17.447	2.874	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.732
+1.20D+1.60S	17.684	2.898	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.742
+1.20D+1.60S	17.915	2.921	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.751
+1.20D+1.60S	18.140	2.945	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.761
+1.20D+1.60S	18.358	2.969	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.770
+1.20D+1.60S	18.570	2.993	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.779
+1.20D+1.60S	18.776	3.016	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.787
+1.20D+1.60S	18.976	3.040	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.796
+1.20D+1.60S	19.169	3.064	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.804
+1.20D+1.60S	19.357	3.088	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.812
+1.20D+1.60S	19.537	3.111	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.819
+1.20D+1.60S	19.712	3.135	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.827
+1.20D+1.60S	19.880	3.159	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.834
+1.20D+1.60S	20.042	3.183	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.841
+1.20D+1.60S	20.198	3.206	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.847
+1.20D+1.60S	20.348	3.230	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.853
+1.20D+1.60S	20.491	3.254	Bottom	0.700	Min ACI 10.5	1.000	29.382	0.697
+1.20D+1.60S	20.628	3.277	Bottom	0.700	Min ACI 10.5	1.000	29.382	0.702
+1.20D+1.60S	20.759	3.301	Bottom	0.700	Min ACI 10.5	1.000	29.382	0.706
+1.20D+1.60S	20.883	3.325	Bottom	0.700	Min ACI 10.5	1.000	29.382	0.711

Combined Footing

Project File: Kitchen Slab.ec6

DESCRIPTION: Kitchen Thickened Slab

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S	21.001	3.349	Bottom	0.700	Min ACI 10.5	1.000	29.382	0.715
+1.20D+1.60S	21.113	3.372	Bottom	0.704	Min ACI 10.5	1.000	29.382	0.719
+1.20D+1.60S	21.218	3.396	Bottom	0.707	Min ACI 10.5	1.000	29.382	0.722
+1.20D+1.60S	21.317	3.420	Bottom	0.711	Min for Bending	1.000	29.382	0.726
+1.20D+1.60S	21.410	3.444	Bottom	0.714	Min ACI 10.5	1.000	29.382	0.729
+1.20D+1.60S	21.497	3.467	Bottom	0.717	Min ACI 10.5	1.000	29.382	0.732
+1.20D+1.60S	21.577	3.491	Bottom	0.720	Min ACI 10.5	1.000	29.382	0.734
+1.20D+1.60S	21.651	3.515	Bottom	0.722	Min ACI 10.5	1.000	29.382	0.737
+1.20D+1.60S	21.719	3.539	Bottom	0.725	Min ACI 10.5	1.000	29.382	0.739
+1.20D+1.60S	21.780	3.562	Bottom	0.727	Min ACI 10.5	1.000	29.382	0.741
+1.20D+1.60S	21.835	3.586	Bottom	0.729	Min ACI 10.5	1.000	29.382	0.743
+1.20D+1.60S	21.884	3.610	Bottom	0.731	Min ACI 10.5	1.000	29.382	0.745
+1.20D+1.60S	21.926	3.634	Bottom	0.732	Min for Bending	1.000	29.382	0.746
+1.20D+1.60S	21.962	3.657	Bottom	0.733	Min ACI 10.5	1.000	29.382	0.747
+1.20D+1.60S	21.992	3.681	Bottom	0.734	Min ACI 10.5	1.000	29.382	0.748
+1.20D+1.60S	22.016	3.705	Bottom	0.735	Min ACI 10.5	1.000	29.382	0.749
+1.20D+1.60S	22.033	3.729	Bottom	0.736	Min ACI 10.5	1.000	29.382	0.750
+1.20D+1.60S	22.043	3.752	Bottom	0.736	Min ACI 10.5	1.000	29.382	0.750
+1.20D+1.60S	22.053	3.776	Bottom	0.737	Min ACI 10.5	1.000	29.382	0.751
+1.20D+1.60S	22.065	3.800	Bottom	0.737	Min ACI 10.5	1.000	29.382	0.751
+1.20D+1.60S	22.078	3.824	Bottom	0.737	Min ACI 10.5	1.000	29.382	0.751
+1.20D+1.60S	22.094	3.847	Bottom	0.738	Min ACI 10.5	1.000	29.382	0.752
+1.20D+1.60S	22.112	3.871	Bottom	0.739	Min ACI 10.5	1.000	29.382	0.753
+1.20D+1.60S	22.132	3.895	Bottom	0.739	Min ACI 10.5	1.000	29.382	0.753
+1.20D+1.60S	22.154	3.919	Bottom	0.740	Min ACI 10.5	1.000	29.382	0.754
+1.20D+1.60S	22.179	3.942	Bottom	0.741	Min ACI 10.5	1.000	29.382	0.755
+1.20D+1.60S	22.205	3.966	Bottom	0.742	Min ACI 10.5	1.000	29.382	0.756
+1.20D+1.60S	22.233	3.990	Bottom	0.743	Min ACI 10.5	1.000	29.382	0.757
+1.20D+1.60S	22.264	4.014	Bottom	0.744	Min ACI 10.5	1.000	29.382	0.758
+1.20D+1.60S	22.296	4.037	Bottom	0.745	Min ACI 10.5	1.000	29.382	0.759
+1.20D+1.60S	22.331	4.061	Bottom	0.746	Min ACI 10.5	1.000	29.382	0.760
+1.20D+1.60S	22.368	4.085	Bottom	0.748	Min ACI 10.5	1.000	29.382	0.761
+1.20D+1.60S	22.407	4.109	Bottom	0.749	Min ACI 10.5	1.000	29.382	0.763
+1.20D+1.60S	22.448	4.132	Bottom	0.750	Min ACI 10.5	1.000	29.382	0.764
+1.20D+1.60S	22.491	4.156	Bottom	0.752	Min ACI 10.5	1.000	29.382	0.765
+1.20D+1.60S	22.536	4.180	Bottom	0.754	Min ACI 10.5	1.000	29.382	0.767
+1.20D+1.60S	22.583	4.204	Bottom	0.755	Min ACI 10.5	1.000	29.382	0.769
+1.20D+1.60S	22.632	4.227	Bottom	0.757	Min ACI 10.5	1.000	29.382	0.770
+1.20D+1.60S	22.683	4.251	Bottom	0.759	Min ACI 10.5	1.000	29.382	0.772
+1.20D+1.60S	22.737	4.275	Bottom	0.761	Min ACI 10.5	1.000	29.382	0.774
+1.20D+1.60S	22.792	4.299	Bottom	0.763	Min ACI 10.5	1.000	29.382	0.776
+1.20D+1.60S	22.849	4.322	Bottom	0.765	Min ACI 10.5	1.000	29.382	0.778
+1.20D+1.60S	22.909	4.346	Bottom	0.767	Min ACI 10.5	1.000	29.382	0.780
+1.20D+1.60S	22.970	4.370	Bottom	0.769	Min ACI 10.5	1.000	29.382	0.782
+1.20D+1.60S	23.034	4.394	Bottom	0.771	Min ACI 10.5	1.000	29.382	0.784
+1.20D+1.60S	23.100	4.417	Bottom	0.774	Min ACI 10.5	1.000	29.382	0.786
+1.20D+1.60S	23.167	4.441	Bottom	0.776	Min for Bending	1.000	29.382	0.788
+1.20D+1.60S	23.237	4.465	Bottom	0.778	Min ACI 10.5	1.000	29.382	0.791
+1.20D+1.60S	23.309	4.489	Bottom	0.781	Min ACI 10.5	1.000	29.382	0.793
+1.20D+1.60S	23.382	4.512	Bottom	0.784	Min ACI 10.5	1.000	29.382	0.796
+1.20D+1.60S	23.458	4.536	Bottom	0.786	Min ACI 10.5	1.000	29.382	0.798
+1.20D+1.60S	23.536	4.560	Bottom	0.789	Min ACI 10.5	1.000	29.382	0.801
+1.20D+1.60S	23.616	4.584	Bottom	0.792	Min ACI 10.5	1.000	29.382	0.804
+1.20D+1.60S	23.698	4.607	Bottom	0.795	Min ACI 10.5	1.000	29.382	0.807
+1.20D+1.60S	23.782	4.631	Bottom	0.798	Min ACI 10.5	1.000	29.382	0.809
+1.20D+1.60S	23.868	4.655	Bottom	0.801	Min ACI 10.5	1.000	29.382	0.812
+1.20D+1.60S	23.956	4.679	Bottom	0.804	Min ACI 10.5	1.000	29.382	0.815
+1.20D+1.60S	24.046	4.702	Bottom	0.807	Min ACI 10.5	1.000	29.382	0.818
+1.20D+1.60S	24.138	4.726	Bottom	0.810	Min ACI 10.5	1.000	29.382	0.822
+1.20D+1.60S	24.232	4.750	Bottom	0.814	Min ACI 10.5	1.000	29.382	0.825
+1.20D+1.60S	24.322	4.774	Bottom	0.817	Min ACI 10.5	1.000	29.382	0.828
+1.20D+1.60S	24.404	4.797	Bottom	0.820	Min ACI 10.5	1.000	29.382	0.831
+1.20D+1.60S	24.478	4.821	Bottom	0.823	Min ACI 10.5	1.000	29.382	0.833

Combined Footing

DESCRIPTION: Kitchen Thickened Slab

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S	24.543	4.845	Bottom	0.825	Min ACI 10.5	1.000	29.382	0.835
+1.20D+1.60S	24.599	4.869	Bottom	0.827	Min ACI 10.5	1.000	29.382	0.837
+1.20D+1.60S	24.646	4.892	Bottom	0.829	Min ACI 10.5	1.000	29.382	0.839
+1.20D+1.60S	24.685	4.916	Bottom	0.830	Min ACI 10.5	1.000	29.382	0.840
+1.20D+1.60S	24.715	4.940	Bottom	0.831	Min ACI 10.5	1.000	29.382	0.841
+1.20D+1.60S	24.737	4.964	Bottom	0.832	Min ACI 10.5	1.000	29.382	0.842
+1.20D+1.60S	24.750	4.987	Bottom	0.832	Min ACI 10.5	1.000	29.382	0.842
+1.20D+1.60S	24.754	5.011	Bottom	0.832	Min ACI 10.5	1.000	29.382	0.842
+1.20D+1.60S	24.750	5.035	Bottom	0.832	Min ACI 10.5	1.000	29.382	0.842
+1.20D+1.60S	24.737	5.059	Bottom	0.832	Min ACI 10.5	1.000	29.382	0.842
+1.20D+1.60S	24.715	5.082	Bottom	0.831	Min ACI 10.5	1.000	29.382	0.841
+1.20D+1.60S	24.685	5.106	Bottom	0.830	Min ACI 10.5	1.000	29.382	0.840
+1.20D+1.60S	24.646	5.130	Bottom	0.829	Min for Bending	1.000	29.382	0.839
+1.20D+1.60S	24.598	5.154	Bottom	0.827	Min ACI 10.5	1.000	29.382	0.837
+1.20D+1.60S	24.541	5.177	Bottom	0.825	Min ACI 10.5	1.000	29.382	0.835
+1.20D+1.60S	24.476	5.201	Bottom	0.823	Min ACI 10.5	1.000	29.382	0.833
+1.20D+1.60S	24.403	5.225	Bottom	0.820	Min for Bending	1.000	29.382	0.831
+1.20D+1.60S	24.320	5.249	Bottom	0.817	Min ACI 10.5	1.000	29.382	0.828
+1.20D+1.60S	24.229	5.272	Bottom	0.814	Min ACI 10.5	0.800	23.845	1.016
+1.20D+1.60S	24.129	5.296	Bottom	0.810	Min ACI 10.5	0.800	23.845	1.012
+1.20D+1.60S	24.021	5.320	Bottom	0.806	Min for Bending	0.800	23.845	1.007
+1.20D+1.60S	23.904	5.344	Bottom	0.802	Min ACI 10.5	0.800	23.845	1.002
+1.20D+1.60S	23.778	5.367	Bottom	0.798	Min ACI 10.5	0.800	23.845	0.997
+1.20D+1.60S	23.643	5.391	Bottom	0.793	Min for Bending	0.800	23.845	0.992
+1.20D+1.60S	23.500	5.415	Bottom	0.788	Min ACI 10.5	0.800	23.845	0.986
+1.20D+1.60S	23.348	5.439	Bottom	0.782	Min ACI 10.5	0.800	23.845	0.979
+1.20D+1.60S	23.188	5.462	Bottom	0.777	Min ACI 10.5	0.800	23.845	0.972
+1.20D+1.60S	23.018	5.486	Bottom	0.771	Min ACI 10.5	0.800	23.845	0.965
+1.20D+1.60S	22.840	5.510	Bottom	0.764	Min ACI 10.5	0.800	23.845	0.958
+1.20D+1.60S	22.654	5.534	Bottom	0.758	Min ACI 10.5	0.800	23.845	0.950
+1.20D+1.60S	22.458	5.557	Bottom	0.751	Min ACI 10.5	0.800	23.845	0.942
+1.20D+1.60S	22.254	5.581	Bottom	0.744	Min ACI 10.5	0.800	23.845	0.933
+1.20D+1.60S	22.041	5.605	Bottom	0.736	Min for Bending	0.800	23.845	0.924
+1.20D+1.60S	21.820	5.629	Bottom	0.728	Min ACI 10.5	0.800	23.845	0.915
+1.20D+1.60S	21.589	5.652	Bottom	0.720	Min for Bending	0.800	23.845	0.905
+1.20D+1.60S	21.350	5.676	Bottom	0.712	Min for Bending	0.800	23.845	0.895
+1.20D+1.60S	21.103	5.700	Bottom	0.703	Min for Bending	0.800	23.845	0.885
+1.20D+1.60S	20.846	5.724	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.874
+1.20D+1.60S	20.581	5.747	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.863
+1.20D+1.60S	20.311	5.771	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.852
+1.20D+1.60S	20.043	5.795	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.841
+1.20D+1.60S	19.778	5.819	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.829
+1.20D+1.60S	19.513	5.842	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.818
+1.20D+1.60S	19.251	5.866	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.807
+1.20D+1.60S	18.991	5.890	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.796
+1.20D+1.60S	18.733	5.914	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.786
+1.20D+1.60S	18.476	5.937	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.775
+1.20D+1.60S	18.222	5.961	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.764
+1.20D+1.60S	17.969	5.985	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.754
+1.20D+1.60S	17.718	6.009	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.743
+1.20D+1.60S	17.469	6.032	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.733
+1.20D+1.60S	17.222	6.056	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.722
+1.20D+1.60S	16.977	6.080	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.712
+1.20D+1.60S	16.734	6.104	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.702
+1.20D+1.60S	16.492	6.127	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.692
+1.20D+1.60S	16.253	6.151	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.682
+1.20D+1.60S	16.015	6.175	Bottom	0.700	Min ACI 10.5	0.800	23.845	0.672
+1.20D+1.60S	15.779	6.199	Bottom	0.692	Min ACI 10.5	0.800	23.845	0.662
+1.20D+1.60S	15.545	6.222	Bottom	0.681	Min ACI 10.5	0.800	23.845	0.652
+1.20D+1.60S	15.313	6.246	Bottom	0.671	Min ACI 10.5	0.800	23.845	0.642
+1.20D+1.60S	15.083	6.270	Bottom	0.660	Min ACI 10.5	0.800	23.845	0.633
+1.20D+1.60S	14.854	6.294	Bottom	0.650	Min ACI 10.5	0.800	23.845	0.623
+1.20D+1.60S	14.628	6.317	Bottom	0.640	Min ACI 10.5	0.800	23.845	0.613

Combined Footing

DESCRIPTION: Kitchen Thickened Slab

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S	14.403	6.341	Bottom	0.630	Min ACI 10.5	0.800	23.845	0.604
+1.20D+1.60S	14.180	6.365	Bottom	0.620	Min ACI 10.5	0.800	23.845	0.595
+1.20D+1.60S	13.959	6.389	Bottom	0.610	Min ACI 10.5	0.800	23.845	0.585
+1.20D+1.60S	13.740	6.412	Bottom	0.600	Min ACI 10.5	0.800	23.845	0.576
+1.20D+1.60S	13.523	6.436	Bottom	0.590	Min ACI 10.5	0.800	23.845	0.567
+1.20D+1.60S	13.307	6.460	Bottom	0.580	Min ACI 10.5	0.800	23.845	0.558
+1.20D+1.60S	13.094	6.484	Bottom	0.571	Min ACI 10.5	0.800	23.845	0.549
+1.20D+1.60S	12.882	6.507	Bottom	0.561	Min ACI 10.5	0.800	23.845	0.540
+1.20D+1.60S	12.672	6.531	Bottom	0.552	Min ACI 10.5	0.800	23.845	0.531
+1.20D+1.60S	12.463	6.555	Bottom	0.542	Min ACI 10.5	0.800	23.845	0.523
+1.20D+1.60S	12.257	6.579	Bottom	0.540	Min Temp %	0.800	23.845	0.514
+1.20D+1.60S	12.053	6.602	Bottom	0.540	Min Temp %	0.800	23.845	0.505
+1.20D+1.60S	11.850	6.626	Bottom	0.540	Min Temp %	0.800	23.845	0.497
+1.20D+1.60S	11.649	6.650	Bottom	0.540	Min Temp %	0.800	23.845	0.489
+1.20D+1.60S	11.450	6.674	Bottom	0.540	Min Temp %	0.800	23.845	0.480
+1.20D+1.60S	11.253	6.697	Bottom	0.540	Min Temp %	0.800	23.845	0.472
+1.20D+1.60S	11.057	6.721	Bottom	0.540	Min Temp %	0.800	23.845	0.464
+1.20D+1.60S	10.863	6.745	Bottom	0.540	Min Temp %	0.800	23.845	0.456
+1.20D+1.60S	10.671	6.769	Bottom	0.540	Min Temp %	0.800	23.845	0.448
+1.20D+1.60S	10.481	6.792	Bottom	0.540	Min Temp %	0.800	23.845	0.440
+1.20D+1.60S	10.293	6.816	Bottom	0.540	Min Temp %	0.800	23.845	0.432
+1.20D+1.60S	10.107	6.840	Bottom	0.540	Min Temp %	0.800	23.845	0.424
+1.20D+1.60S	9.922	6.864	Bottom	0.540	Min Temp %	0.800	23.845	0.416
+1.20D+1.60S	9.739	6.887	Bottom	0.540	Min Temp %	0.800	23.845	0.408
+1.20D+1.60S	9.558	6.911	Bottom	0.540	Min Temp %	0.800	23.845	0.401
+1.20D+1.60S	9.379	6.935	Bottom	0.540	Min Temp %	0.800	23.845	0.393
+1.20D+1.60S	9.201	6.959	Bottom	0.540	Min Temp %	0.800	23.845	0.386
+1.20D+1.60S	9.025	6.982	Bottom	0.540	Min Temp %	0.800	23.845	0.379
+1.20D+1.60S	8.851	7.006	Bottom	0.540	Min Temp %	0.800	23.845	0.371
+1.20D+1.60S	8.679	7.030	Bottom	0.540	Min Temp %	0.800	23.845	0.364
+1.20D+1.60S	8.509	7.054	Bottom	0.540	Min Temp %	0.800	23.845	0.357
+1.20D+1.60S	8.340	7.077	Bottom	0.540	Min Temp %	0.800	23.845	0.350
+1.20D+1.60S	8.173	7.101	Bottom	0.540	Min Temp %	0.800	23.845	0.343
+1.20D+1.60S	8.008	7.125	Bottom	0.540	Min Temp %	0.800	23.845	0.336
+1.20D+1.60S	7.845	7.149	Bottom	0.540	Min Temp %	0.800	23.845	0.329
+1.20D+1.60S	7.683	7.172	Bottom	0.540	Min Temp %	0.800	23.845	0.322
+1.20D+1.60S	7.523	7.196	Bottom	0.540	Min Temp %	0.800	23.845	0.316
+1.20D+1.60S	7.365	7.220	Bottom	0.540	Min Temp %	0.800	23.845	0.309
+1.20D+1.60S	7.209	7.244	Bottom	0.540	Min Temp %	0.800	23.845	0.302
+1.20D+1.60S	7.054	7.267	Bottom	0.540	Min Temp %	0.800	23.845	0.296
+1.20D+1.60S	6.902	7.291	Bottom	0.540	Min Temp %	0.800	23.845	0.289
+1.20D+1.60S	6.750	7.315	Bottom	0.540	Min Temp %	0.800	23.845	0.283
+1.20D+1.60S	6.601	7.339	Bottom	0.540	Min Temp %	0.800	23.845	0.277
+1.20D+1.60S	6.454	7.362	Bottom	0.540	Min Temp %	0.800	23.845	0.271
+1.20D+1.60S	6.308	7.386	Bottom	0.540	Min Temp %	0.800	23.845	0.265
+1.20D+1.60S	6.164	7.410	Bottom	0.540	Min Temp %	0.800	23.845	0.258
+1.20D+1.60S	6.021	7.434	Bottom	0.540	Min Temp %	0.800	23.845	0.253
+1.20D+1.60S	5.881	7.457	Bottom	0.540	Min Temp %	0.800	23.845	0.247
+1.20D+1.60S	5.742	7.481	Bottom	0.540	Min Temp %	0.800	23.845	0.241
+1.20D+1.60S	5.605	7.505	Bottom	0.540	Min Temp %	0.800	23.845	0.235
+1.20D+1.60S	5.469	7.529	Bottom	0.540	Min Temp %	0.800	23.845	0.229
+1.20D+1.60S	5.335	7.552	Bottom	0.540	Min Temp %	0.800	23.845	0.224
+1.20D+1.60S	5.203	7.576	Bottom	0.540	Min Temp %	0.800	23.845	0.218
+1.20D+1.60S	5.073	7.600	Bottom	0.540	Min Temp %	0.800	23.845	0.213
+1.20D+1.60S	4.944	7.624	Bottom	0.540	Min Temp %	0.800	23.845	0.207
+1.20D+1.60S	4.818	7.647	Bottom	0.540	Min Temp %	0.800	23.845	0.202
+1.20D+1.60S	4.692	7.671	Bottom	0.540	Min Temp %	0.800	23.845	0.197
+1.20D+1.60S	4.569	7.695	Bottom	0.540	Min Temp %	0.800	23.845	0.192
+1.20D+1.60S	4.447	7.719	Bottom	0.540	Min Temp %	0.800	23.845	0.187
+1.20D+1.60S	4.327	7.742	Bottom	0.540	Min Temp %	0.800	23.845	0.181
+1.20D+1.60S	4.209	7.766	Bottom	0.540	Min Temp %	0.800	23.845	0.177
+1.20D+1.60S	4.092	7.790	Bottom	0.540	Min Temp %	0.800	23.845	0.172
+1.20D+1.60S	3.977	7.814	Bottom	0.540	Min Temp %	0.800	23.845	0.167

Combined Footing

Project File: Kitchen Slab.ec6

DESCRIPTION: Kitchen Thickened Slab

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S	3.864	7.837	Bottom	0.540	Min Temp %	0.800	23.845	0.162
+1.20D+1.60S	3.753	7.861	Bottom	0.540	Min Temp %	0.800	23.845	0.157
+1.20D+1.60S	3.643	7.885	Bottom	0.540	Min Temp %	0.800	23.845	0.153
+1.20D+1.60S	3.534	7.909	Bottom	0.540	Min Temp %	0.800	23.845	0.148
+1.20D+1.60S	3.428	7.932	Bottom	0.540	Min Temp %	0.800	23.845	0.144
+1.20D+1.60S	3.323	7.956	Bottom	0.540	Min Temp %	0.800	23.845	0.139
+1.20D+1.60S	3.220	7.980	Bottom	0.540	Min Temp %	0.800	23.845	0.135
+1.20D+1.60S	3.119	8.004	Bottom	0.540	Min Temp %	0.800	23.845	0.131
+1.20D+1.60S	3.019	8.027	Bottom	0.540	Min Temp %	0.800	23.845	0.127
+1.20D+1.60S	2.921	8.051	Bottom	0.540	Min Temp %	0.800	23.845	0.122
+1.20D+1.60S	2.824	8.075	Bottom	0.540	Min Temp %	0.800	23.845	0.118
+1.20D+1.60S	2.729	8.099	Bottom	0.540	Min Temp %	0.800	23.845	0.114
+1.20D+1.60S	2.636	8.122	Bottom	0.540	Min Temp %	0.800	23.845	0.111
+1.20D+1.60S	2.545	8.146	Bottom	0.540	Min Temp %	0.800	23.845	0.107
+1.20D+1.60S	2.455	8.170	Bottom	0.540	Min Temp %	0.800	23.845	0.103
+1.20D+1.60S	2.367	8.194	Bottom	0.540	Min Temp %	0.800	23.845	0.099
+1.20D+1.60S	2.281	8.217	Bottom	0.540	Min Temp %	0.800	23.845	0.096
+1.20D+1.60S	2.196	8.241	Bottom	0.540	Min Temp %	0.800	23.845	0.092
+1.20D+1.60S	2.113	8.265	Bottom	0.540	Min Temp %	0.800	23.845	0.089
+1.20D+1.60S	2.031	8.289	Bottom	0.540	Min Temp %	0.800	23.845	0.085
+1.20D+1.60S	1.951	8.312	Bottom	0.540	Min Temp %	0.800	23.845	0.082
+1.20D+1.60S	1.873	8.336	Bottom	0.540	Min Temp %	0.800	23.845	0.079
+1.20D+1.60S	1.796	8.360	Bottom	0.540	Min Temp %	0.800	23.845	0.075
+1.20D+1.60S	1.721	8.384	Bottom	0.540	Min Temp %	0.800	23.845	0.072
+1.20D+1.60S	1.648	8.407	Bottom	0.540	Min Temp %	0.800	23.845	0.069
+1.20D+1.60S	1.576	8.431	Bottom	0.540	Min Temp %	0.800	23.845	0.066
+1.20D+1.60S	1.506	8.455	Bottom	0.540	Min Temp %	0.800	23.845	0.063
+1.20D+1.60S	1.438	8.479	Bottom	0.540	Min Temp %	0.800	23.845	0.060
+1.20D+1.60S	1.371	8.502	Bottom	0.540	Min Temp %	0.800	23.845	0.057
+1.20D+1.60S	1.306	8.526	Bottom	0.540	Min Temp %	0.800	23.845	0.055
+1.20D+1.60S	1.242	8.550	Bottom	0.540	Min Temp %	0.800	23.845	0.052
+1.20D+1.60S	1.180	8.574	Bottom	0.540	Min Temp %	0.800	23.845	0.049
+1.20D+1.60S	1.120	8.597	Bottom	0.540	Min Temp %	0.800	23.845	0.047
+1.20D+1.60S	1.061	8.621	Bottom	0.540	Min Temp %	0.800	23.845	0.045
+1.20D+1.60S	1.004	8.645	Bottom	0.540	Min Temp %	0.800	23.845	0.042
+1.20D+1.60S	0.949	8.669	Bottom	0.540	Min Temp %	0.800	23.845	0.040
+1.20D+1.60S	0.895	8.692	Bottom	0.540	Min Temp %	0.800	23.845	0.038
+1.20D+1.60S	0.842	8.716	Bottom	0.540	Min Temp %	0.800	23.845	0.035
+1.20D+1.60S	0.792	8.740	Bottom	0.540	Min Temp %	0.800	23.845	0.033
+1.20D+1.60S	0.743	8.764	Bottom	0.540	Min Temp %	0.800	23.845	0.031
+1.20D+1.60S	0.695	8.787	Bottom	0.540	Min Temp %	0.800	23.845	0.029
+1.20D+1.60S	0.649	8.811	Bottom	0.540	Min Temp %	0.800	23.845	0.027
+1.20D+1.60S	0.605	8.835	Bottom	0.540	Min Temp %	0.800	23.845	0.025
+1.20D+1.60S	0.562	8.859	Bottom	0.540	Min Temp %	0.800	23.845	0.024
+1.20D+1.60S	0.521	8.882	Bottom	0.540	Min Temp %	0.800	23.845	0.022
+1.20D+1.60S	0.481	8.906	Bottom	0.540	Min Temp %	0.800	23.845	0.020
+1.20D+1.60S	0.443	8.930	Bottom	0.540	Min Temp %	0.800	23.845	0.019
+1.20D+1.60S	0.407	8.954	Bottom	0.540	Min Temp %	0.800	23.845	0.017
+1.20D+1.60S	0.372	8.977	Bottom	0.540	Min Temp %	0.800	23.845	0.016
+1.20D+1.60S	0.339	9.001	Bottom	0.540	Min Temp %	0.800	23.845	0.014
+1.20D+1.60S	0.307	9.025	Bottom	0.540	Min Temp %	0.800	23.845	0.013
+1.20D+1.60S	0.277	9.049	Bottom	0.540	Min Temp %	0.800	23.845	0.012
+1.20D+1.60S	0.249	9.072	Bottom	0.540	Min Temp %	0.800	23.845	0.010
+1.20D+1.60S	0.222	9.096	Bottom	0.540	Min Temp %	0.800	23.845	0.009
+1.20D+1.60S	0.196	9.120	Bottom	0.540	Min Temp %	0.800	23.845	0.008
+1.20D+1.60S	0.172	9.144	Bottom	0.540	Min Temp %	0.800	23.845	0.007
+1.20D+1.60S	0.150	9.167	Bottom	0.540	Min Temp %	0.800	23.845	0.006
+1.20D+1.60S	0.129	9.191	Bottom	0.540	Min Temp %	0.800	23.845	0.005
+1.20D+1.60S	0.110	9.215	Bottom	0.540	Min Temp %	0.800	23.845	0.005
+1.20D+1.60S	0.093	9.239	Bottom	0.540	Min Temp %	0.800	23.845	0.004
+1.20D+1.60S	0.076	9.262	Bottom	0.540	Min Temp %	0.800	23.845	0.003
+1.20D+1.60S	0.062	9.286	Bottom	0.540	Min Temp %	0.800	23.845	0.003
+1.20D+1.60S	0.049	9.310	Bottom	0.540	Min Temp %	0.800	23.845	0.002

Combined Footing

Project File: Kitchen Slab.ec6

DESCRIPTION: Kitchen Thickened Slab

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+1.20D+1.60S	0.037	9.334	Bottom	0.540	Min Temp %	0.800	23.845	0.002
+1.20D+1.60S	0.027	9.357	Bottom	0.540	Min Temp %	0.800	23.845	0.001
+1.20D+1.60S	0.019	9.381	Bottom	0.540	Min Temp %	0.800	23.845	0.001
+1.20D+1.60S	0.012	9.405	Bottom	0.540	Min Temp %	0.800	23.845	0.001
+1.20D+1.60S	0.000	9.429	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S	0.000	9.452	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S	0.000	9.476	0	0.000	0	0.000	0.000	0.000
+1.20D+1.60S	0.000	9.500	0	0.000	0	0.000	0.000	0.000

One Way Shear

Punching Shear

Load Combination...	Phi Vn	vu @ Col #1	vu @ Col #2	Phi Vn	vu @ Col #1	vu @ Col #2
+1.40D	75.00 psi	9.11 psi	9.39 psi	150.00 psi	4.42 psi	4.56 psi
+1.20D	75.00 psi	7.81 psi	8.05 psi	150.00 psi	3.79 psi	3.91 psi
+1.20D+0.50S	75.00 psi	18.97 psi	19.55 psi	150.00 psi	9.19 psi	9.48 psi
+1.20D+1.60S	75.00 psi	43.53 psi	44.86 psi	150.00 psi	21.06 psi	21.73 psi
+1.20D+0.70S	75.00 psi	23.44 psi	24.15 psi	150.00 psi	11.35 psi	11.71 psi
+0.90D	75.00 psi	5.86 psi	6.04 psi	150.00 psi	2.84 psi	2.93 psi

FROELICH ENGINEERS

Client:	Trout Creek SDA
Project:	Trout Creek SDA School
Project #:	24-B101
Date:	4/29/2024
By:	HNI

WIND FORCE CALCULATION - MWFRS

ASCE 7-16 SECTION 27.2
DIRECTIONAL PROCEDURE

Basic Wind Speeds

3 Second Gust V_{3s} =	105	mph	
Wind Directionality Factor K_d =	0.85		Table 26.6-1 (page 266)
Wind Exposure Category =	B		Section 26.7.3 page 266

Building Parameters

Horizontal Dimension of Bldg =	96	ft	Long Dimension of Building
Horizontal Dimension of Bldg =	64	ft	Short Dimension of Building
Mean Roof Height h =	19.67	ft	Ref. Figure 27.3-1 (page 275)
Highest Roof Level h_n =	27.83	ft	
Ground Elevation, z_g =	200	ft	Ground elevation above sea level (ft)
Approximate Fundamental Period T_a =	0.24	sec	Eq. 12.8-7 (page 102)

Fundamental Frequency f = 4.1 Hz > 1 Hz Therefore Rigid

Topographic Effects

Hill Height H =	0	ft	Figure 26.8-1 (page 267)
Length of 1/2 hill height L_h =	1000	ft	Figure 26.8-1 (page 267)
Dist. From Crest to Bldg. x =	100	ft	Figure 26.8-1 (page 267)
Height Above Local Grade z =	15	ft	Figure 26.8-1 (page 267)
Horizontal Attenuation Factor m =	1.5		Figure 26.8-1 (page 267)
Height Attenuation Factor g =	3		Figure 26.8-1 (page 267)
Shape Factor K1/(H/Lh) =	1.3		Figure 26.8-1 (page 267)

Output - Topographic Multipliers K_1 = 0.00
K_2 = 0.93
K_3 = 0.96
Topographic Factor K_{zt} = 1.00

Gust Effects

Integral Length Scale Factor ℓ =	320 ft		Table 26.11-1 (page 269)

Integral Length Scale

nominal height of boundary z_g =	1200		Table 26.11-1 (page 269)
3-s gust exponent α =	7.00		Table 26.11-1 (page 269)
Turbulence Intensity Factor c =	0.30		Table 26.11-1 (page 269)
Power Law Exponent ϵ =	0.33		Table 26.11-1 (page 269)
Minimum Height z_{min} =	30 ft		Table 26.11-1 (page 269)
Integral Length Scale of Turbulence L_z =		310	ft

Output - Background Response Factor Q =	0.86	
Intensity of Turbulence I_z =	0.30	
Gust Effect Factor G =	0.84	- Gust Effect Factor need not exceed 0.85
		(ASCE7-16 26.11.1) page 269

Ground Elevation Factor

Ground Elevation Factor, K_e =	0.99	Table 26.9-1 (page 268)

Velocity Pressure

$$q_z = 0.00256 K_z K_{zt} K_d K_e V^2 \quad (lb/ft^2)$$

Pressure Coefficients

Length to Width Ratio L/B =		0.67	(Worst Case L/B)
Height to Length Ratio h/L =		0.20	(h/L Worst case roof ratio)
Roof Pitch =	6 : 12	= 26.57	deg
Velocity Pressure Exposure Coefficients K_h	(see below)		Table 26.10-1 (page 268)
External Pressure Coefficients C_p	(see below)		Figure 27.3-1 (page 275)

Direction	C_p
Windward	0.80
Leeward	-0.50
Roof Windward	0.30
Roof Leeward	-0.60

Height (ft)	K_h	q_z (psf)	Velocity
15	0.57	13.7	Pressure
20	0.62	14.9	Output q_z
25	0.67	15.8	
30	0.70	16.7	
40	0.76	18.1	
50	0.81	19.3	
60	0.85	20.3	
70	0.89	21.3	
80	0.93	22.1	
90	0.96	22.8	
100	0.99	23.5	
120	1.04	24.8	
h = 19.67	0.62	14.8	q_h
$h_{parapet}$ = 0	0.57	13.7	q_h

UNFACTORED WIND PRESSURE 16 psf min per Section 27.1.5 (Walls)

Design Wind Pressures p (psf) - GC_{pi} = (-) 8 psf min per Section 27.1.5 (Roof)

Internal Pressure Coefficient GC_{pi} = -0.18 Table 26.13-1 (page 271) **Wall** **Roof Horiz**

		Roof Effects (normal to Roof Surface)					
	Direction -	Windward	Leeward	Roof WW	Roof LW	WW+LW	RWW+RLW
Height	15	11.9	-3.6			16.0	
ft	20	12.7	-3.6			16.3	
	25	13.4	-3.6			17.0	
	30	13.9	-3.6			17.5	
	40	14.9	-3.6			18.5	
	50	15.7	-3.6			19.3	
	60	16.4	-3.6			20.0	
	70	17.0	-3.6			20.6	
	80	17.6	-3.6			21.2	
	90	18.1	-3.6			21.7	
	100	18.6	-3.6			22.2	
	120	19.4	-3.6			23.0	
	19.67	12.7	-3.6	6.4	-4.8	16.2	11.25
Parapet	0	20.5	-13.7			34.2	

Design Load Case 1 Controls - By Inspection Figure 27.3-8 (page 283)

Parapet Loading Section 27.3.4 (page 274)

UNFACTORED WIND PRESSURE 16 psf min per Section 27.1.5 (Walls)

Design Wind Pressures p (psf) - GC_{pi} = (+) 8 psf min per Section 27.1.5 (Roof)

Internal Pressure Coefficient GC_{pi} = 0.18 Table 26.13-1 (page 271) **Wall** **Roof Horiz**

		Roof Effects (normal to Roof Surface)					
	Direction -	Windward	Leeward	Roof WW	Roof LW	WW+LW	RWW+RLW
Height	15	6.6	-8.9			16.0	
ft	20	7.4	-8.9			16.3	
	25	8.0	-8.9			17.0	
	30	8.6	-8.9			17.5	
	40	9.6	-8.9			18.5	
	50	10.4	-8.9			19.3	
	60	11.1	-8.9			20.0	
	70	11.7	-8.9			20.6	
	80	12.3	-8.9			21.2	
	90	12.8	-8.9			21.7	
	100	13.2	-8.9			22.2	
	120	14.1	-8.9			23.0	
	19.67	7.3	-8.9	1.1	-10.2	16.2	11.25
Parapet	0	20.5	-13.7			34.2	

Design Load Case 1 Controls - By Inspection Figure 27.3-8 (page 283)

Parapet Loading Section 27.3.4 (page 274)

FROELICH CONSULTING ENGINEERS, INC.

client: Trout Creek SDA
project: Trout Creek SDA School
job number: 24-B101
date: 4/29/2024
by: HNI

SEISMIC WEIGHTS:

Roof:

Roof Area:										5950	ft^2
			pf > 30psf								
Snow (20% Flat roof):	5950	ft^2	x	70	psf	x	20	%	=	83300	lbs
	Area			DL							
Roof Weight:	5950	ft^2	x	20	psf				=	119000	lbs
Interior Wall DL:	5950	ft^2	x	2.5	psf				=	14875	lbs
	Length			Height			# of lines				
Exterior Wall Area:	64.0	ft	x	5	ft	x	2		=	640	ft^2
	96.0	ft	x	5	ft	x	2		=	960	ft^2
							Total Wall Area		=	1600	ft^2
	Area			Wall DL							
Exterior Wall Weight:	1600	ft^2	x	12	psf				=	19200	lbs
							Total Roof Weight		=	236375	lbs

FROELICH CONSULTING ENGINEERS, INC.

client: Trout Creek SDA
project: Trout Creek SDA School
job number: 24-B101
date: 4/29/2024
by: HNI

SEISMIC FORCE CALCULATION (ASCE7-16)

Building Parameters:

Risk Category =	II	
Importance I =	1.00	
Soil Site Class =	D	Default ASCE7-16 11.4.3
Response Modification Coefficient, R =	6.50	
Height of Structure, h_n =	27.83	ft

Spectral Acceleration Parameters:

Site Class B Short-Period Spectral Response Acceleration, S_S =	0.424	g	(OSHPD Maps)
Site Class B 1-Second Spectral Response Acceleration, S_1 =	0.136	g	(OSHPD Maps)
Short-Period Sidte Coefficient, F_a =	1.461		(OSHPD Maps)
Minimum Short-Period Site Coefficient Site Class D (Default), F_a =	1.200		ASCE7-16 11.4.4
Long-Period Site Coefficent, F_v =	2.327		
($S_{MS}=F_a*S_S$) Long-Peiod, Calculated S_{MS} to Determine SDC, S_{MS} =	0.619	g	
($S_{MS} \geq S_{M1}$) Therefore Controlling, S_{MS} =	0.619	g	Section 1613.2.3
($S_{M1}=F_v*S_1$) Short-Period, S_{M1} =	0.316	g	
($S_{DS}=(2/3)S_{MS}$) Design Spectral Acceleration Short-Period, S_{DS} =	0.413	g	
($S_{D1}=(2/3)S_{M1}$) Design Spectral Acceleration Long-Period, S_{D1} =	0.211	g	
Seismic Design Category =	D	(Controlling From Table 11.6-1&2)	

Approximate Fundamental Period & Building Periods:

Approximate Fundamental Period Parameters, C_t =	0.02	
Approximate Fundamental Period Parameters, x =	0.75	
($T_a = C_t \times h_n^x$) Approximate Period, T_a =	0.242	sec
Coefficeient for upper limit on calculated period, C_u =	1.489	
($T = T_a*C_u$) Upper Limit Period, T =	0.361	sec
Fundamental Period, T =	0.242	sec
($T_S = S_{D1}/S_{DS}$) T_s =	0.511	sec
Long-Period Transition Periods, T_L =	16	sec

Verify Exception(s) SDC D-F Only:

1. Structures on Site Class E, $S_S \geq 1.0$:	NA			
2. Table values are applicable for, $T \leq 1.5T_S$:	0.242	<	0.766	Use Eq. 12.8-2 For Cs
3. Structures on Site Class E, S1 ≥ 0.2:	NA			

Seismic Response Coefficient, Cs:

($C_S = S_{DS}/(R/Ie)$) Seismic Response Coefficient, C_S =	0.064	($T \leq 1.5T_S$)	Eq. 12.8-2
($C_S = S_{D1}/(T*(R/Ie))$) Upper Limit, C_S =	0.134	($T \leq T_L$)	
($C_S = 0.0044S_{DS}I_e \geq 0.01$) Lower Limit C_S =	0.018	≥ 0.01	

Base Shear, V:

Weight, W =	236375	lbs
($V = C_S*W$) Unfactored Seismic Base Shear, V =	**15018**	lbs

Vertical Distribution of Seismic Force:

level x	hx	Wx	hxWx	hxWx/∑hxWx	Fx
Roof	10.00	236375	2363750	1.000	15018
Totals:		236375	2363750		15018

FROELICH CONSULTING ENGINEERS, INC.

client: Trout Creek SDA
project: Trout Creek SDA School
job number: 24-B101
date: 4/29/2024
by: HNI

Upper Wall Line 1

	Pressure			Length			Height			
Wind on Wall:	16.2	psf	x	26	ft	x	8	ft	=	3370 lbs
Wind on Wall:	16.2	psf	x	12	ft	x	5	ft	=	972 lbs
	Pressure			Area						
Wind on Roof:	11.25	psf	x	78.5	sf	=				883
Wind on Gable End:	16.2	psf	x	168	sf	=				2722 lbs
						Wind Force =				7946 lbs

	Force			Trib.			Total			
Seismic Force:	15018	lbs	x	3162	sf	/	5960	sf	=	7968 lbs

Upper Wall Line 2

	Pressure			Length			Height			
Wind on Wall:	16.2	psf	x	14	ft	x	8	ft	=	1814 lbs
Wind on Wall:	16.2	psf	x	12	ft	x	5	ft	=	972 lbs
	Pressure			Area						
Wind on Roof:	11.25	psf	x	0	sf	=				0
Wind on Gable End:	16.2	psf	x	109	sf	=				1766 lbs
						Wind Force =				4552 lbs

	Force			Trib.			Total			
Seismic Force:	15018	lbs	x	2798	sf	/	5960	sf	=	7050 lbs

Upper Wall Line B

	Pressure			Length			Height			
Wind on Wall:	16.2	psf	x	26.42	ft	x	8	ft	=	3424 lbs
	Pressure			Area						
Wind on Roof:	11.25	psf	x	287.5	sf	=				3234
Wind on Gable End:	16.2	psf	x	0	sf	=				0 lbs
						Wind Force =				6658 lbs

	Force			Trib.			Total			
Seismic Force:	15018	lbs	x	1482	sf	/	5960	sf	=	3734 lbs

Upper Wall Line C

	Pressure			Length			Height				
Wind on Wall:	16.2	psf	x	11	ft	x	8	ft	=	1426	lbs
Wind on Wall:	16.2	psf	x	10	ft	x	5	ft	=	810	lbs
	Pressure			Area							
Wind on Roof:	11.25	psf	x	263	sf	=				2959	
Wind on Gable End:	16.2	psf	x	18.5	sf	=				300	lbs
						Wind Force =				5494	lbs

	Force			Trib.			Total			
Seismic Force:	15018	lbs	x	1346	sf	/	5960	sf	=	3392	lbs

Upper Wall Line D

	Pressure			Length			Height				
Wind on Wall:	16.2	psf	x	21.5	ft	x	5	ft	=	1742	lbs
	Pressure			Area							
Wind on Roof:	11.25	psf	x	286	sf	=				3218	
Wind on Gable End:	16.2	psf	x	23	sf	=				373	lbs
						Wind Force =				5332	lbs

	Force			Trib.			Total			
Seismic Force:	15018	lbs	x	1398	sf	/	5960	sf	=	3523	lbs

Upper Wall Line E

	Pressure			Length			Height			
Wind on Wall:	16.2	psf	x	11	ft	x	5	ft	=	891 lbs
	Pressure			Area						
Wind on Roof:	11.25	psf	x	171	sf	=				1924
Wind on Gable End:	16.2	psf	x	0	sf	=				0 lbs
						Wind Force =				2815 lbs

	Force			Trib.			Total			
Seismic Force:	15018	lbs	x	728	sf	/	5960	sf	=	1834 lbs

Roof Level

Client: Trout Creek SDA
Project: Trout Creek SDA School
Proj. #: 24-B101
Date: 4/29/24
By: HNI

Resisting Dead load		
Roof DL:	20	psf
Wall DL:	8	psf
Floor DL:	0	psf

Wind Overturning Load Combinations	
Unfactored w/o DL:	W
ASD:	0.6D + 0.6W
LRFD:	0.9D + W

*Reference ASCE7-16 Table 12.2-1 for value of the overstrength factor, Ω. **Footnote b: Where the tabulated value of the overstrength factor, Ω, is greater than or equal to 2.5, Ω is permitted to be reduced by subtracting the value of 0.5 for structures with flexible diaphragms.

Seismic Overturning Load Combinations	
Unfactored w/ ρ - no DL:	ρE
Unfactored w/ Ω - no DL:	ΩE
ASD w/o Ω :	(0.6 - 0.14SDS)D + 0.7ρE
ASD w/ Ω :	(0.6 - 0.14SDS)D + 0.7ΩE
ASD w/ Ω/0.75 :	((0.6 - 0.14SDS)D + 0.7ΩE)/0.75
LRFD w/o Ω :	(0.9 - 0.2SDS)D + 1.0ρE
LRFD w/ Ω :	(0.9 - 0.2SDS)D + 1.0ΩE
S_{DS} :	0.413 g

Segment Geometry					Loading		DL Trib. Length				Wind Design Output					Seismic Design Output					Redundancy Factor	
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	ρ : 1.3	**Ω : 2.5
					(Unfactored w/o ρ)		*(Unfactored)*				(Ref Load Comb.)	*(ASD)*		*(ASD)*		(Ref Load Comb.)	*(ASD w/ ρ)*		*(ASD)*		Hardware Used	
																					Hold Downs	Nailing
Wall Line 1																						
24.00	33.25	16.00	0.7	1.00	7946	7968	22.0	16.0	0.0	0.00	(Unfactored w/o DL)	3824	**-1795**	143	**143**	(Unfactored w/ ρ - no DL)	4984	**-206**	218	**218**	**HDs Not Req'd**	**6/12**
9.25	33.25	10.00	1.1	1.00	7946	7968	16.0	10.0	0.0	0.00	(Unfactored w/o DL)	2390	**324**	143	**143**	(Unfactored w/ ρ - no DL)	3115	**1178**	218	**218**	**HDU4 w/ PAB5**	**6/12**

Segment Geometry					Loading		DL Trib. Length				Wind Design Output					Seismic Design Output					Redundancy Factor	
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	ρ : 1.3	**Ω : 2.5
					(Unfactored w/o ρ)		*(Unfactored)*				(Ref Load Comb.)	*(ASD)*		*(ASD)*		(Ref Load Comb.)	*(ASD w/ ρ)*		*(ASD)*		Hardware Used	
																					Hold Downs	Nailing
Wall Line 2																						
36.00	36.00	10.00	0.3	1.00	4552	7050	11.0	10.0	0.0	0.00	(Unfactored w/o DL)	1264	**-2481**	76	**76**	(Unfactored w/ ρ - no DL)	2546	**-1146**	178	**178**	**HDs Not Req'd**	**6/12**

Segment Geometry					Loading		DL Trib. Length				Wind Design Output					Seismic Design Output					Redundancy Factor	
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	ρ : 1.3	**Ω : 2.5
					(Unfactored w/o ρ)		*(Unfactored)*				(Ref Load Comb.)	*(ASD)*		*(ASD)*		(Ref Load Comb.)	*(ASD w/ ρ)*		*(ASD)*		Hardware Used	
																					Hold Downs	Nailing
Wall Line B																						
33.00	49.00	16.00	0.5	1.00	6558	3734	6.0	16.0	0.0	0.00	(Unfactored w/o DL)	2141	**-1170**	80	**80**	(Unfactored w/ ρ - no DL)	1585	**-1109**	69	**69**	**HDs Not Req'd**	**6/12**
16.00	49.00	10.00	0.6	1.00	6558	3734	6.0	10.0	0.0	0.00	(Unfactored w/o DL)	1338	**-157**	80	**80**	(Unfactored w/ ρ - no DL)	991	**-174**	69	**69**	**HDs Not Req'd**	**6/12**

Segment Geometry					Loading		DL Trib. Length				Wind Design Output					Seismic Design Output					Redundancy Factor	
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	ρ : 1.3	**Ω : 2.5
					(Unfactored w/o ρ)		*(Unfactored)*				(Ref Load Comb.)	*(ASD)*		*(ASD)*		(Ref Load Comb.)	*(ASD w/ ρ)*		*(ASD)*		Hardware Used	
																					Hold Downs	Nailing
Wall Line C																						
16.00	27.50	16.00	1.0	1.00	5494	3392	6.0	16.0	0.0	6.00	(Unfactored w/o DL)	3300	**751**	120	**120**	(Unfactored w/ ρ - no DL)	2648	**743**	112	**112**	**HDU4 w/ PAB5**	**6/12**
11.50	27.50	16.00	1.4	1.00	5494	3392	6.0	16.0	0.0	6.00	(Unfactored w/o DL)	3342	**1111**	120	**120**	(Unfactored w/ ρ - no DL)	2682	**1069**	112	**112**	**HDU4 w/ PAB5**	**6/12**

Segment Geometry					Loading		DL Trib. Length				Wind Design Output					Seismic Design Output					Redundancy Factor	
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	ρ : 1.3	**Ω : 2.5
					(Unfactored w/o ρ)		*(Unfactored)*				(Ref Load Comb.)	*(ASD)*		*(ASD)*		(Ref Load Comb.)	*(ASD w/ ρ)*		*(ASD)*		Hardware Used	
																					Hold Downs	Nailing
Wall Line D																						
20.50	20.50	10.00	0.5	1.00	5332	3523	6.0	10.0	0.0	0.00	(Unfactored w/o DL)	2601	**331**	156	**156**	(Unfactored w/ ρ - no DL)	2234	**452**	156	**156**	**HDs Not Req'd**	**6/12**

Segment Geometry					Loading		DL Trib. Length				Wind Design Output					Seismic Design Output					Redundancy Factor	
L (ft)	Lt (ft)	hu (ft)	h/L	Ratio Factor (2L/h)	Wind (lbs)	Seismic (lbs)	Rtrib (ft)	Wtrib (ft)	Ftrib (ft)	Lo (in)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	Load Combination	Uplift (lbs)	ASD Uplift (lbs)	Unit Load (plf)	Sheathing Design (plf)	ρ : 1.3	**Ω : 2.5
					(Unfactored w/o ρ)		*(Unfactored)*				(Ref Load Comb.)	*(ASD)*		*(ASD)*		(Ref Load Comb.)	*(ASD w/ ρ)*		*(ASD)*		Hardware Used	
																					Hold Downs	Nailing
Wall Line E																						
4.42	9.00	10.00	2.3	0.88	2815	1834	6.0	10.0	0.0	6.00	(Unfactored w/o DL)	3527	**1817**	188	**212**	(Unfactored w/ ρ - no DL)	2987	**1821**	185	**210**	**HDU4 w/ SSTB16L**	**6/12**
4.58	9.00	10.00	2.2	0.92	2815	1834	6.0	10.0	0.0	6.00	(Unfactored w/o DL)	3511	**1798**	188	**205**	(Unfactored w/ ρ - no DL)	2974	**1803**	185	**202**	**HDU4 w/ SSTB16L**	**6/12**

FROELICH CONSULTING ENGINEERS, INC.

client: Trout Creek SDA
project: Trout Creek SDA School
job number: 24-B101
date: 4/29/2024
by: HNI

Diaphragm Loading Wind/Seismic:

Diaphragm Design Forces (ASCE7-16 Sec. 12.10.1.1 Eq. 12.10-1):

Level	w_{px} (lbs)	V_i (lbs)	$\sum V_i$ (lbs)	$\sum w_i$ (lbs)	$F_{px} = ((\sum V_i) / (\sum w_i)) * w_{px}$		Force Ratio
Roof	236375	15018	15018	236375	F_{roof} =	**15018**	1.30

w_{px} : Seismic weight tributary to the diaphragm at level "x".
V_i : The design force applied to level "i", as determined for the main force resisting system (unfactored).
Force Ratio: Ratio of diaphragm design force to MFRS design force, but not less than 1.0

Min & Max Diaphragm Loads:

S_{DS} =	0.413
Importance Factor (I_e) =	1.0
$F_{p\,min}$ =	$0.2*S_{DS}*I_e*w_{px}$ (Eq. 12.10-2)
$F_{p\,max}$ =	$0.4*S_{DS}*I_e*w_{px}$ (Eq. 12.10-3)

Level	$F_{p\,min}$	$F_{p\,max}$	Diaphragm Shear (Unfactored)	Diaphragm Shear (Factored)
Roof	19525	39049	F_{roof} = 19525 lbs	F_{roof} = **13667** lbs

Roof Wall Line Shear Loads & Roof Diaphragm Unit shear:

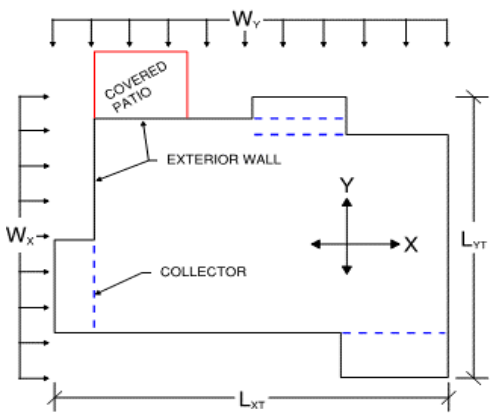
Shear Wall Lines 1-*n* & Diaphragm Unit Shear — ρ = 1.3

	Shear Wall Loads (1-n)	Wind Shear In Wall Line (lbs)	Seismic Shear In Wall Line (lbs)	Wind Shear In Wall Line (lbs)	Seismic MFRS Shear (lbs)	Seismic Diaphram Shear (lbs)	Diaphragm Connection Length, L_{1-n} (ft)	Wind Unit Shear (plf)	Seismic Unit Shear (plf)
		Unfactored		*Factored (ASD)*				*Factored (ASD)*	
Shear Walls Supporting Uniform Load (W_X)	1	7946	7968	4768	7251	7251	64	74	113
	2	4552	7050	2731	6416	6416	64	43	100
	3								
	4								
	5								
	6								

Shear Wall Lines A-*n* & Diaphragm Unit Shear — ρ = 1.3

	Shear Wall Loads (A-n)	Wind Shear In Wall Line (lbs)	Seismic Shear In Wall Line (lbs)	Wind Shear In Wall Line (lbs)	Seismic MFRS Shear (lbs)	Seismic Diaphram Shear Dist. (lb)	Diaphragm Connection Length, L_{A-n} (ft)	Wind Unit Shear (plf)	Seismic Unit Shear (plf)
		Unfactored		*Factored (ASD)*				*Factored (ASD)*	
Shear Walls Supporting Uniform Load (W_Y)	B	6558	3734	3934.8	3397.94	3398	52	76	65
	C	5494	3392	3296.4	3086.72	3087	52	63	59
	D	5332	3523	3199.2	3205.93	3206	52	62	62
	E	2815	1834	1689	1668.94	1669	52	32	32

Average Uniform Diaphragm Loads (W_X & W_Y):



Overall Projected Wall Width (L_{XT} & L_{YT}):

Length (L_{XT}) =	64	ft
Length (L_{YT}) =	52	ft

Factored Uniform Distributed Diaphragm Design Loads:

Uniform Wind (W_X) =	144	plf	
Uniform Seismic (W_X) =	263	plf	*Force Ratio Controls*
Uniform Wind (W_Y) =	189	plf	
Uniform Seismic (W_Y) =	178	plf	*Force Ratio Controls*

Double Top Plate Splice Capacity & Unit Shear Capacity:

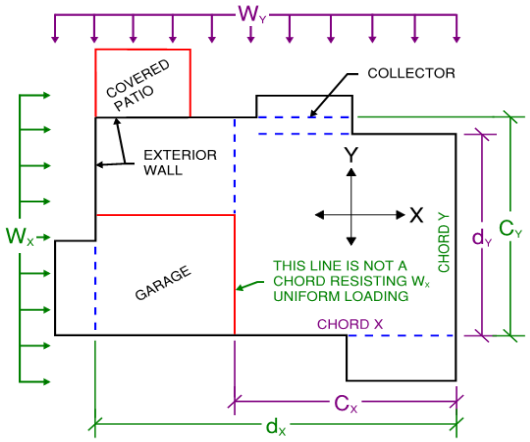
Double Top Plate Splice Capacity:

(2) - 2x6 DF with min over lap 4 feet total w/ (12) - 0.131"x3" face nails each side of splice
0.131"x3" nail into 1.5" side plate 97 lbs, Per NDS 2018 Table 12N
Over Strength Factor, Ω = 1.0 (Sec. 12.10.1.1 Exception for single family residential)
Double top plate splice = 118lbs(1.6)(14nails) = 2643 lbs

Double Top Plate Splice Capacity:

Unblocked wood structrual panel diaphragm, 7/16 sheathing, 0.131"x2.5" nails, wind = 475plf, Seismic = 340plf, SDPWS 2021 T4.2c
Max Unblocked Diaphragm Shear, Wind = 475plf/2 = 238 plf
Max Unblocked Diaphragm Shear, Seismic = 340plf/2 = 170 plf

Diaphragm Design:



Worst Case (Chord X From W_Y Loading)

Chord Length, (C_X) =	22	ft
Diaphragm Depth, (d_Y) =	52	ft

Worst Case (Chord Y From W_X Loading)

Diaphragm Depth, (d_X) =	52	ft
Chord Length, (C_Y) =	64	ft

Worst Chord force (X) =	220	lbs	<	2643	lbs
Worst Chord force (Y) =	2588	lbs	<	2643	lbs
Max Unit Shear (Wind) =	76	plf	<	238	plf
Max Unit Shear (Eq) =	113	plf	<	170	plf
Max Aspect Ratio =	1.23		<	3	Unblocked

Diaphragm Chord & Drag Forces at Locations of Interest:

Symbols & Equations		Uniform Diaphragm Loads *(Factored ASD)*		
(V) Wall Line Load (unfactored)	(A_d) Location of Interest (Drag)	Uniform Wind (W_X) =	144	plf
(L_w) Total Length of Wall Line	(W) Uniform Diaphragm Load	Uniform Seismic (W_X) =	263	plf
(L_{sw}) Total length of Shear wall	(L_c) Length of Chord	Uniform Wind (W_Y) =	189	plf
(v) Shear Wall PLF	(d_d) Depth of Diaphragm	Uniform Seismic (W_Y) =	178	plf
(L_v) Length of Shear Wall up to Said Location	(A_c) Location of Interest (Chord)			
$Drag\ Load = \left(\frac{V}{L_w}\right) x_d - vxd$	$Chord\ Force = \left(\frac{Wx_c}{(2dc)}\right) * (L_c - xc)$	Note: Uniform seismic loads include ρ or ratio factor only if diaphragm distribution forces are smaller than MFRS times ρ.		

Wall Line 1

ρ = 1.3
Force Ratio = 1.30
Max (ρ, Force Ratio) = 1.30

Wall Line Loading and Dimensions:

V_{wind} (*unfactored*):	7946	lbs	v_w:	143	plf (*Factored*)	L_w:	64.00	ft	Chord:	X	(X or Y)
$V_{Seismic}$ (*unfactored*):	7968	lbs	v_s:	168	plf (*Factored*)	L_{sw}:	33.25	ft	W_w:	189	plf
									W_{EQ}:	178	plf

Location:	A_d (ft)	L_v (ft)	A_c (ft)	L_c (ft)	d_d (ft)	*Factored SW above*	Drag (lbs)	W/S	Total Drag (lb)	Chord (lbs)	W/S
PL Step	21.50	21.50				0	2253	S	2253	NA	W

Diaphragm Boundary and Shear wall Connection *(Factored loads)*:

Sheathing Conn. length:	52	ft	Unit Shear (w):	92	plf	<	238 plf	Unblocked
Factored SW Above, W:	0	lbs	Unit Shear (s):	139	plf	<	170 plf	Unblocked
Factored SW Above, E:	0	lbs						

Design Notes:

PL Step	CS14 Coil Strap w/ 2x flat blk'g from lower 10' Pl

Wall Line B

ρ = 1.3
Force Ratio = 1.30
Max (ρ, Force Ratio) = 1.30

Wall Line Loading and Dimensions:

V_{wind} (*unfactored*):	6558	lbs	v_w:	80	plf (*Factored*)	L_w:	52.00	ft	Chord:	Y	(X or Y)
$V_{Seismic}$ (*unfactored*):	3734	lbs	v_s:	53	plf (*Factored*)	L_{sw}:	49	ft	W_w:	144	plf
									W_{EQ}:	263	plf

Location:	A_d (ft)	L_v (ft)	A_c (ft)	L_c (ft)	d_d (ft)	*Factored SW above*	Drag (lbs)	W/S	Total Drag (lb)	Chord (lbs)	W/S
Multi-Purpose Ext.	52.00					0	3935	W	3935	NA	S
PL Step	40.00	37.00				0	56	W	56	NA	S

Diaphragm Boundary and Shear wall Connection *(Factored loads)*:

Sheathing Conn. length:	52	ft	Unit Shear (w):	76	plf	<	238 plf	Unblocked
Factored SW Above, W:	0	lbs	Unit Shear (s):	65	plf	<	170 plf	Unblocked
Factored SW Above, E:	0	lbs						

Design Notes:

Multi-Purpose Ext.	Drag Truss = 4000 lbs, (7) A35 Clips Truss to Dbl Top Pl
PL Step	CS14 Coil Strap w/ 2x flat blk'g from lower 10' Pl

Wall Line C

ρ = 1.3
Force Ratio = 1.30
Max (ρ, Force Ratio) = 1.30

Wall Line Loading and Dimensions:

V_{wind} (*unfactored*):	5494	lbs	v_w:	120	plf (*Factored*)	L_w:	52.00	ft	Chord:	Y	(X or Y)
$V_{Seismic}$ (*unfactored*):	3392	lbs	v_s:	86	plf (*Factored*)	L_{sw}:	27.5	ft	W_w:	144	plf
									W_{EQ}:	263	plf

Location:	A_d (ft)	L_v (ft)	A_c (ft)	L_c (ft)	d_d (ft)	*Factored SW above*	Drag (lbs)	W/S	Total Drag (lb)	Chord (lbs)	W/S
Upper Truss	26.00					0	1648	W	1648	NA	S
Lower Truss	26.00					0	1648	W	1648	NA	S

Diaphragm Boundary and Shear wall Connection *(Factored loads)*:

Sheathing Conn. length:	52	ft	Unit Shear (w):	63	plf	<	238 plf	Unblocked
Factored SW Above, W:	0	lbs	Unit Shear (s):	59	plf	<	170 plf	Unblocked
Factored SW Above, E:	0	lbs						

Design Notes:

Upper Truss	Drag Truss = 3000 lbs, (5) A35 Clips Truss to Dbl Top Pl
Lower Truss	Drag Truss = 2000 lbs, (4) A35 Clips Truss to Dbl Top Pl

Wall Line D

ρ = 1.3
Force Ratio = 1.30
Max (ρ, Force Ratio) = 1.30

Wall Line Loading and Dimensions:

V_{wind} (*unfactored*):	5332	lbs	v_w:	156	plf *(Factored)*	L_w:	52.00	ft	Chord:	Y	(X or Y)
$V_{Seismic}$ (*unfactored*):	3523	lbs	v_s:	120	plf *(Factored)*	L_{sw}:	20.5	ft	W_w:	144	plf
									W_{EQ}:	263	plf

Location:	A_d (ft)	L_v (ft)	A_c (ft)	L_c (ft)	d_d (ft)	*Factored SW above*	Drag (lbs)	W/S	Total Drag (lb)	Chord (lbs)	W/S
Library - Classroom	52.00					0	3206	S	3206	NA	S

Diaphragm Boundary and Shear wall Connection *(Factored loads)*:

Sheathing Conn. length:	52	ft	Unit Shear (w):	62	plf	<	238 plf	Unblocked
Factored SW Above, W:	0	lbs	Unit Shear (s):	62	plf	<	170 plf	Unblocked
Factored SW Above, E:	0	lbs						

Design Notes:

Library - Classroom	Drag Truss = 3500 lbs, (6) A35 Clips Truss to Dbl Top Pl

Wall Line E

ρ = 1.3
Force Ratio = 1.30
Max (ρ, Force Ratio) = 1.30

Wall Line Loading and Dimensions:

V_{wind} (*unfactored*):	2815	lbs	v_w:	188	plf *(Factored)*	L_w:	52.00	ft	Chord:	Y	(X or Y)
$V_{Seismic}$ (*unfactored*):	1834	lbs	v_s:	143	plf *(Factored)*	L_{sw}:	9	ft	W_w:	144	plf
									W_{EQ}:	263	plf

Location:	A_d (ft)	L_v (ft)	A_c (ft)	L_c (ft)	d_d (ft)	*Factored SW above*	Drag (lbs)	W/S	Total Drag (lb)	Chord (lbs)	W/S
Classroom Ext.	52.00					0	1689	W	1689	NA	S

Diaphragm Boundary and Shear wall Connection *(Factored loads)*:

Sheathing Conn. length:	52	ft	Unit Shear (w):	32	plf	<	238 plf	Unblocked
Factored SW Above, W:	0	lbs	Unit Shear (s):	32	plf	<	170 plf	Unblocked
Factored SW Above, E:	0	lbs						

Design Notes:

Classroom Ext.	Drag Truss = 2000 lbs, (4) A35 Clips Truss to Dbl Top Pl

Professional Consultants Inc.
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December 31, 2024

Angela Pugh, P.E.
Montana Department of Environmental Quality
Public Water and Subdivision Section
Engineering Bureau

Re: EQ#24-2665 Seventh Day Adventist Subdivision Review
EQ#24-2506 Seventh Day Adventist Public Wastewater Review
EQ#24-2444 Seventh Day Adventist Public Water System Review

Dear Angela,

This letter is in response to your review letter for the subdivision, public wastewater, and public water review. Below you will find individual responses to each of your presented deficiencies. Attached you can find supporting materials with the requested updates.

General

1. Please provide a legible copy of the COS with the date clearly shown, ARM 17.36.103(1).

   - *The attached COS shows the survey date as December 1974 and the purpose is to create a five-acre tract as an "occasional sale."*

2. Consider changing Note (c) on site layout that says, "no known sources of contamination within 500'of the proposed water source." The proposed drainfield is currently shown 200' upgradient of the proposed public well.

   - *Note has been changed stating all known sources are shown.*

3. Please show the following on the Lot Layout, ARM 17.36.104 Table1
   a) Percent and direction of slope across the drainfield.
   b) Location sizes and design details of existing and proposed stormwater facilities.

   - *See updates on attached layout.*

4. ARM 17.36.323, Table 2, Setbacks. The sewer service does not meet the 100' setback to public drainfield see footnote (1), "components addressed in chapters 4 and 5 in Department Circular DEQ-4," and therefore a waiver to setbacks is required. Will Sanders County require a variance? If so, this must be submitted before a waiver to these facilities is considered. This waiver is in addition to the DEQ-3, deviation requests. We will waive the waiver fee. Please remove note B on the lot layout as all setbacks in ARM 17.36.323 are not met.

- *The adjusted drainfield location and proposed public well location no longer require these waivers.*

Stormwater

5. The 2-year, 24-hour storm for Trout Creek via NOAA is 1.72 inches and the DEQ IDF curve shows 1.79 inches. The submitted Appendix G sheet lists 1.2 inches. With your impervious surfaces and 1.72 inches for the 2-year, 24-hour storm I calculate 2501 ft3 of storage is required.

   - *The NOAA sheet is provided that shows a 2-year, 24-hour storm of 1.74 inches and a 100-year, 24-hour storm of 3.34 inches. Impervious surface area was recalculated.*

6. Please indicate the direction of surface runoff flow across the property with either topography or stormwater runoff arrows. DEQ-8, Standard 2.2.C.1. As currently shown, I cannot determine if the stormwater swale will retain the stormwater runoff.

   - *See attached Site Layout 2 that shows specific stormwater details.*

7. As noted in 3.b), please include the design details of the stormwater facilities on the lot layout.
   a) Trapezoidal swale (depth, width, side slopes and base). How does the channel retain the stormwater onsite, rather than letting it flow offsite? Please include a swale detail that retains the stormwater or check dams.
   b) Lawn and landscape is a stormwater facility and the location and square footage must be labeled on the lot layout.

*There may be additional stormwater comments pending the direction of stormwater flow onsite.

- *There is no longer landscaping proposed. The existing and proposed impervious areas are graded toward the conveyance swale that will direct stormwater to a single retention pond. See updated report, calculation sheets, and details.*

Public Subsurface Wastewater System & Non-degradation: Updates have been made to primary treatment. The existing 1,000 gallon tank that was installed within the last year and will serve the church (daily flow of 200 gpd) and a new 1,500 septic tank will serve the school (daily flow of 525 gpd). This will allow for short raw sewage lines and easier maintenance.

8. DEQ-4, Standard 4.1.1.7 requires Schedule 40 PVC sewer pipe leading into and out of the septic tank.

   - *See updated details that show the proposed and existing septic tanks. The existing tank was installed in 2023 and is a pre-cast concrete tank from Montana Precast.*

9. Please add a note to the plans showing the sewer service connection must be placed at a minimum slope of ¼ inch per foot toward the point of discharge, DEQ-4, Standard 4.1.2.1.

    - *The notes have been added for both septic tanks. The existing tank already meets this requirement.*

10. Please add notes to the distribution box detail to meet the requirements of DEQ-4, Standard 4.3.3.1.

    - *Note has been added.*

11. Per DEQ-4, Appendix D, Operation and Maintenance Manual please add items meeting Owner's Manual D, "The name and telephone number of a service representative, pumpers, and the local health department to be contacted in the event that the system experiences a problem."

    - *See updated manual.*

Public Water System : A new well is proposed to ensure public health and safety. This will also avoid the required deviations.

4. If fire flow is provided, please provide documentation as required in DEQ-3, Standard 1.1.5.b. Comment: The letter from the fire marshal states fire protection is covered by Sanders County Subdivision Regulations. How are Sanders County requirements bung met? Is the public water well providing fire protection for the church and school?

    - *Section VII-P "Fire Protection" does not apply to this project because Sanders County Subdivision Regulations only apply to divisions of land and buildings for lease or rent. However, the regulations are being met per the section because of proximity to the fire department and access to all structures. The Trout Creek Fire Station is 4 minutes away (3 miles).*
    - *The public water well is not proposed to provide any fire suppression assistance.*

6. Please show the elevations and designations of geologic formations on the typical well profile, DEQ-3, Standard 1.2.2.b

    - *The well profile has been updated to show what is expected of the new well.*

7. There are no stormwater facilities shown on the public water site layout sheet 1, DEQ - 3, Standard 1.1.6.d, Standard 1.2.2.d.

    - *See updated stormwater details.*

8. The following deviations are required:
    a. Well Location

b. Continued Protection
c. General Construction

- *The existing well is proposed to only be used as irrigation. A new well will be drilled to serve the public water system.*

12. PWS-6 has been reviewed and the SWPP recommends approval with some recommendations.

    - *The PWS-6 Report has been updated for the proposed well and with the recommendations.*

I hope that the items addressed are found to be complete and satisfactory as per your requirements for the Trout Creek Seventh Day Adventist Church Subdivision and Public Water/Sewer Reviews. If you have any questions, or require additional information, please feel free to contact me.

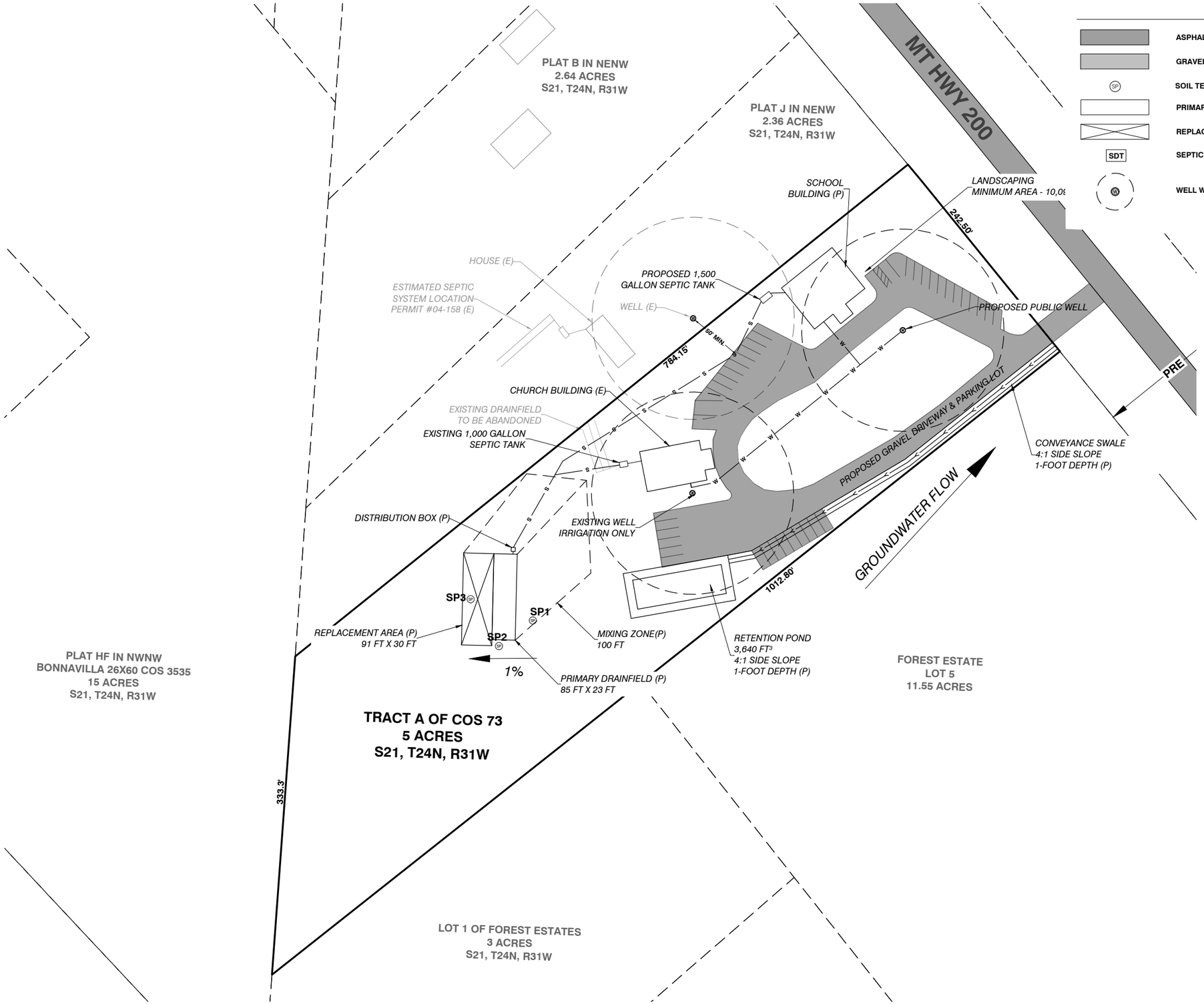
Sincerely,

Kane Leithead, EIT
kane@lmcwyoming.com
(307)461-3858

GENERAL

COS

SITE LAYOUT



LEGEND

- ASPHALT ROAD
- GRAVEL DRIVEWAY AND PARKING AREA
- SOIL TEST PIT
- PRIMARY DRAINFIELD (85 FT X 23 FT)
- REPLACEMENT AREA (91 FT X 30 FT)
- SEPTIC TANK
- WELL WITH 100-FT RADIUS ISOLATION ZONE
- (P) PROPOSED FACILITIES
- (E) EXISTING FACILITIES
- PRE PUBLIC ROAD EASEMENT
- BUILDING FOOTPRINT
- 100 SOURCE SPECIFIC MIXING ZONE

MDEQ LOT LAYOUT NOTES:

(A) KNOWN EXISTING, PREVIOUSLY APPROVED, OR PROPOSED WELLS, WASTEWATER SYSTEMS AND MIXING ZONES ON OR WITHIN 100' OF THE SUBDIVISION HAVE BEEN SHOWN ON THIS LOT LAYOUT.

(B) ALL SETBACKS PURSUANT TO ARM 17.36.323 ARE MET.

(C) ALL KNOWN SOURCES OF CONTAMINATION WITHIN 500' OF THE PROPOSED WATER SOURCE ARE SHOWN.

(D) LAKES, STREAMS, IRRIGATION DITCHES, WETLANDS AND SPRINGS PRESENT WITHIN 100' OF THE SUBDIVISION PERIMETER ARE SHOWN ON THIS LOT LAYOUT.

(E) ARM 17.30.518 SOURCE SPECIFIC MIXING ZONES OF 100 FT ARE REQUESTED FOR PROPOSED WASTEWATER TREATMENT SYSTEM ON THIS LOT LAYOUT.

MONTANA ANDY MEFFORD No. 16206PE LICENSED PROFESSIONAL ENGINEER

PROJECT #: 9522-24
DRAWN: DIANA ALLEN
CHECKED: ANDY MEFFORD, PE
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:

7TH DAY ADVENTIST CHURCH
PUBLIC WASTEWATER SYSTEM
S21, T24N, R31W TROUT CREEK, SANDERS CO., MT

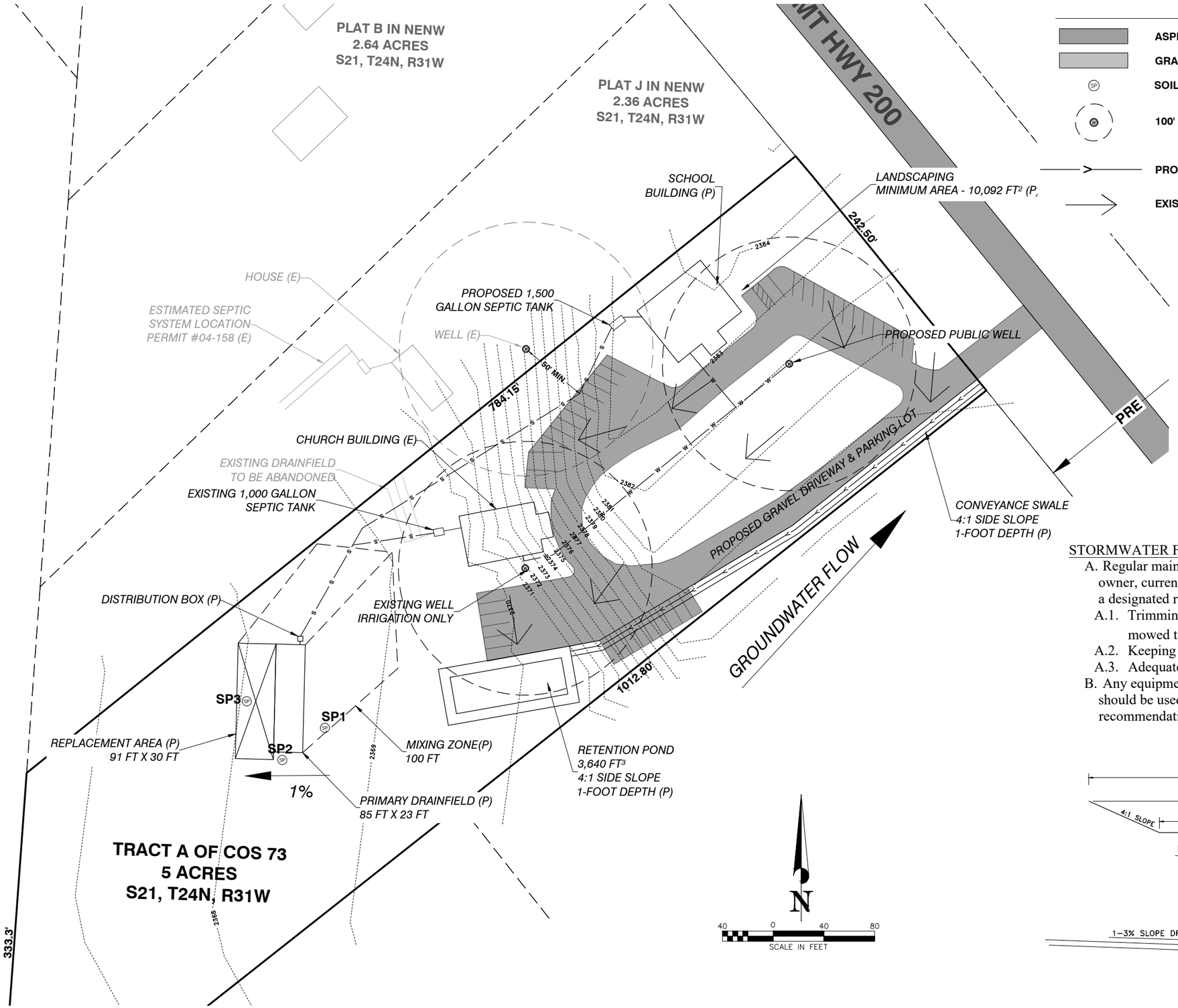
Professional Consultants Inc.
Engineers, Surveyors, Planners, Mappers
3115 RUSSELL ST PO BOX 1750
MISSOULA, MONTANA 59801
PHONE (406) 728-4611
EMAIL PCI@PCIMONTANA.COM

DEC. 31, 2024

SITE LAYOUT

1

F:\2024\9522-24 Trout Creek 7th Day Adventist\Drafting & GIS\9522-24 DESIGN.dwg, 12/31/24



LEGEND

- ASPHALT ROAD
- GRAVEL AREA
- SOIL TEST PIT
- 100' WELL ISOLATION ZONE
- (P) PROPOSED FACILITIES
- (E) EXISTING FACILITIES
- PRE PUBLIC ROAD EASEMENT
- BUILDING FOOTPRINT
- PROPOSED CONVEYANCE (4:1 SLOPE, 12" DEPTH)
- EXISTING/PROPOSED GRADING ~2%

MDEQ LOT LAYOUT NOTES:

(A) KNOWN EXISTING, PREVIOUSLY APPROVED, OR PROPOSED WELLS, WASTEWATER SYSTEMS AND MIXING ZONES ON OR WITHIN 100' OF THE SUBDIVISION HAVE BEEN SHOWN ON THIS LOT LAYOUT.

(B) ALL SETBACKS PURSUANT TO ARM 17.36.323 ARE MET.

(C) NO KNOWN SOURCES OF CONTAMINATION WITHIN 500' OF THE PROPOSED WATER SOURCE.

(D) LAKES, STREAMS, IRRIGATION DITCHES, WETLANDS AND SPRINGS PRESENT WITHIN 100' OF THE SUBDIVISION PERIMETER ARE SHOWN ON THIS LOT LAYOUT.

(E) ARM 17.30.518 SOURCE SPECIFIC MIXING ZONES OF 100 FT ARE REQUESTED FOR PROPOSED WASTEWATER TREATMENT SYSTEM ON THIS LOT LAYOUT.

STORMWATER FACILITIES' OPERATIONS AND MAINTANENCE:

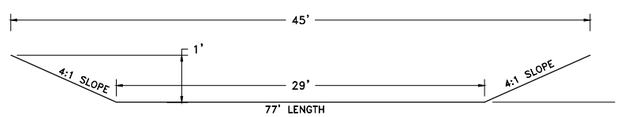
A. Regular maintenance will be the responsibility of the property owner, currently the Trout Creek Seventh-Day Adventist Church, or a designated representative. This will require:

A.1. Trimming of vegetation, as needed - Grass should be regularly mowed to a height of 2"-2 ½"

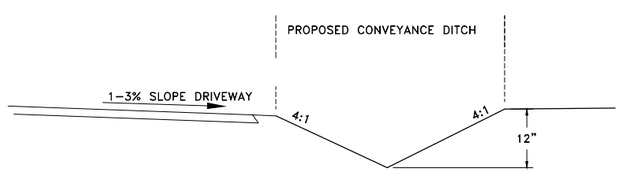
A.2. Keeping the facilities free of debris

A.3. Adequate watering and sun exposure for vegetative growth

B. Any equipment required for maintenance of the stormwater facilities should be used in accordance with the equipment manufacturer's recommendations.



UPPER RETENTION BASIN SECTION



SWALE DETAIL

MONTANA ANDY MEFFORD No. 16206PE LICENSED PROFESSIONAL ENGINEER

PROJECT #: 9522-24
DRAWN: OLIVIA ALLEN
CHECKED: ANDY MEFFORD, PE
REVISION: REVISION: REVISION: REVISION: REVISION:

7TH DAY ADVENTIST CHURCH
PUBLIC WASTEWATER SYSTEM
S21, T24N, R31W TROUT CREEK, SANDERS CO., MT

Professional Consultants Inc.
Engineers, Surveyors, Planners, Mappers
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MISSOULA, MONTANA 59801
PHONE (406) 728-3880 FAX (406) 728-3882
EMAIL PCI@PCIMONTANA.COM

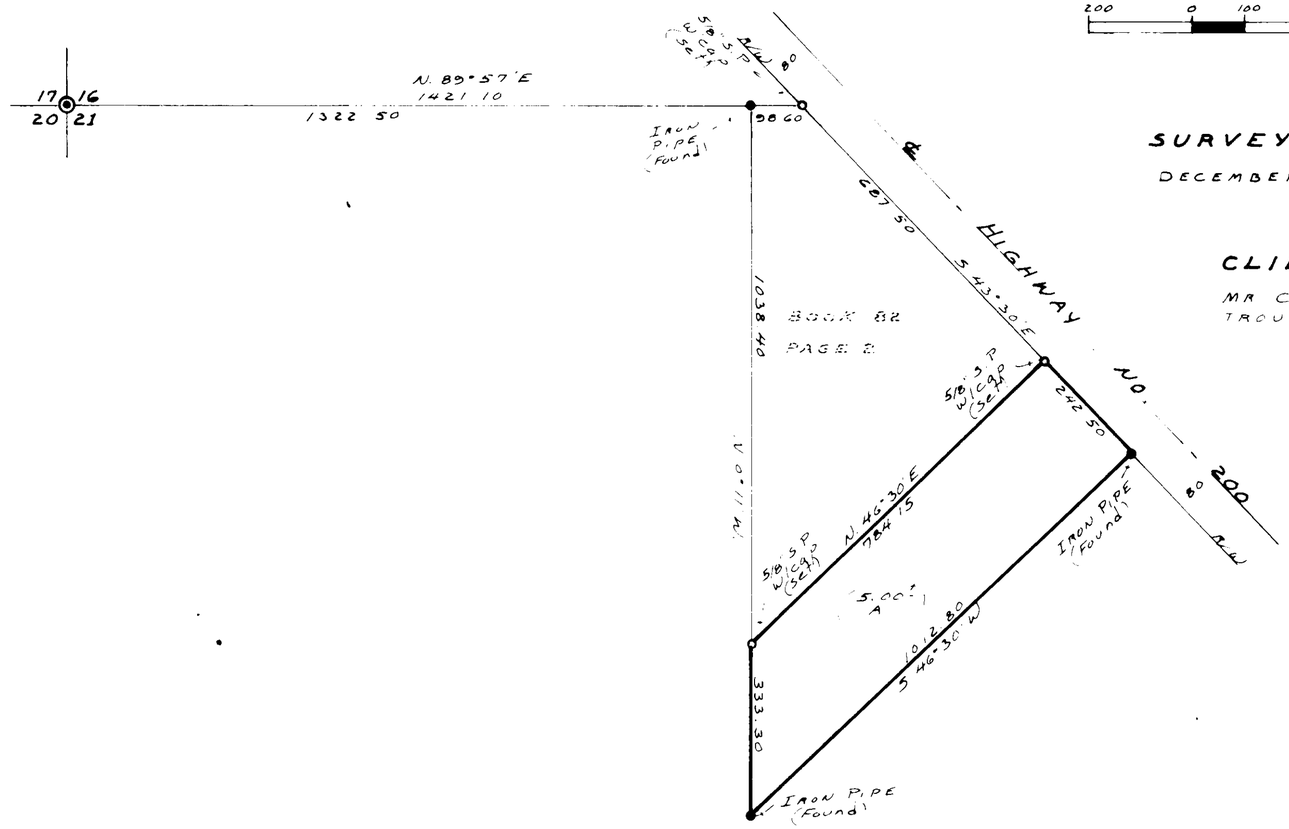
DEC. 31, 2024

SITE LAYOUT

2

CERTIFICATE OF SURVEY NO. #73

NW¼, SECTION 21, T. 24N., R. 31 W., M. P. M.
COUNTY OF SANDERS, MONTANA



N

SCALE

200 0 100 200 400 600

SURVEYED

DECEMBER, 1974

CLIENT

MR CLAYTON SMITH
TROUT CREEK, MONTANA

PURPOSE OF SURVEY

To create a five acre tract that the ownership will be transfered as an "occasional sale", pursuant to Section 11-3862 R.C.M. Revised.

DESCRIPTION

A portion of the NW¼, Section 21, T. 24N, R. 31 W., M. P. M., SANDERS Co., MONTANA Beginning at a point that bears N. 89°-57' E 1421.10 feet and S. 43°-30' E. 687.50 feet from the NW. Corner of said Section 21, Thence S. 43°-30' E. 242.50 feet, thence S. 46°-30' W. 1012.80 feet, thence N. 0°-11' W. 333.30 feet, thence N. 46°-30' E. 784.15 feet to the point of beginning.

SURVEYOR'S CERTIFICATION

I, HARRY P. MEDLAND, Montana R.L.S. No. 2229S do hereby certify this plat which is a true representation of a survey made by me and the information shown hereon is true and correct to the best of my knowledge and belief.

Harry P. Medland
REGISTERED LAND SURVEYOR

HARRY P. MEDLAND
Box 663
POLSON, MONT.

APPROVED

_____, 1975

EXAMINING MONT. R.L.S. NO. _____

1/4 1/4	1/4	SEC.	T-N.	R-W.
NE	NW	21	24	31
SE	"	"	"	"

CERTIFICATE OF SURVEY NO. #73

P 3rd January 75 1:36
Dupee Taught
#2.00

STORMWATER

Professional Consultants, Inc.
3115 S Russell St, Missoula, MT 59801 (406) 728-1880

GRADING AND DRAINAGE REPORT

SITE INFORMATION

Slopes on the site are relatively flat (~1% - 3%) with forestland vegetation of large trees, grasses, and light underbrush. Hydrologic patterns are observed as shallow woodland flows with sheet flows across the short grassed. There are low points on the property that act as natural swales and retention facilities. The surrounding land is sparse residential and commercial area.

INITIAL STORM WATER FACILITY

There are no pre-development impervious areas considered. Post development facilities include the gravel driveway, school, and church. All impervious areas were calculated using the survey data, aerial imagining and conservative estimate from Civil 3D. Total post-development impervious area for the lot is 40,770 ft^2, making almost exactly 19% of the lot impervious area, a professional engineered design and as-builts are not required. Initial Stormwater Facility must thusly be sized:

$$V[ft^3] = 0.5" \text{ X } 40{,}770 \text{ } ft^2 / 12 = \mathbf{1699 \text{ } ft^3}$$

Runoff calculations are made using the rational method. See attached spreadsheet for more details. The change in post-development volume runoff for the 2yr-24hr storm, per DEQ8 Section 3.3, is about **3,640 ft^3**. This is more than the initial stormwater facility, a facility that can retain **3,640 ft^3** of water will satisfy the requirements.

STORM WATER FACILITIES

The natural grading of the upper bench area, nearest the highway, is to the southeast and south. Whereas closer to the church and behind the church it is more southwest draining. This natural grading will allow the proposed gravel roads to be built to drain toward a single conveyance swale that flows to a retention pond.

The proposed swale has 4:1 slopes and a depth of 1 ft. It will run along the southeast property boundary to capture the runoff and convey it to the proposed pond. This will allow 4 cubic feet per linear foot of conveyance which will handle the 100yr-24hr storm per the standard plan sheet.

The swale will lead to a retention pond that is proposed to be 3,640 ft^3 to meet requirements. It will have 4:1 slopes and be 1 ft deep. Basal dimensions are 29' x 89' and upper dimensions are 45' x 105'.

During the 10-year storm event, the gravel driveways grading and sheetflows will not allow roadways to be overtopped.

The buildings or drainfield will not be inundated by the 100-year storm because the low flows and lack of distinct shallow flows or natural flow paths through the draifnield. In the case of the

100 year storm, the retention swale may fill up but will over flow onto shallow graded woodland area.

The maintenance of the native grasses will promote stabilization. The proposed drainfield, pond, and conveyance structures should be seeded to re-establish vegetation.

The stormwater facilities are located in loose, gravelly sandy loam soils with a conservatively estimated percolation rate of 10 minutes per inch. With a wide and shallow pond as proposed, stormwater can infiltrate within one hour of storm end and will infiltrate sooner than 72 hours.

Prepared by:
Landmark Consulting LLC.

Kane Leithead, EIT

Date: 12/27/2024

NOAA Atlas 14, Volume 12, Version 2 TROUT CREEK RS
Station ID: 24-8380
Location name: Trout Creek, Montana, USA*
Latitude: 47.8669°, Longitude: -115.6278°
Elevation:
Elevation (station metadata): 2356 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Carl Trypaluk, Dale Unruh, Michael St.Laurent, Austin Jordan, Rama Sesha Sridhar Mantripragada, Sandra Pavlovic, Greg Fall, Fernando Salas

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.107 (0.092-0.123)	0.162 (0.140-0.190)	0.248 (0.211-0.299)	0.317 (0.264-0.390)	0.406 (0.321-0.515)	0.472 (0.356-0.611)	0.534 (0.376-0.710)	0.594 (0.394-0.820)	0.668 (0.415-0.977)	0.720 (0.435-1.10)
10-min	0.148 (0.128-0.171)	0.224 (0.195-0.263)	0.344 (0.293-0.415)	0.439 (0.366-0.541)	0.563 (0.445-0.715)	0.654 (0.493-0.847)	0.741 (0.521-0.985)	0.824 (0.547-1.14)	0.926 (0.575-1.36)	0.998 (0.603-1.53)
15-min	0.172 (0.148-0.198)	0.260 (0.226-0.306)	0.400 (0.340-0.482)	0.510 (0.425-0.628)	0.655 (0.518-0.830)	0.760 (0.573-0.984)	0.861 (0.605-1.14)	0.957 (0.635-1.32)	1.08 (0.668-1.57)	1.16 (0.701-1.78)
30-min	0.209 (0.181-0.242)	0.317 (0.276-0.373)	0.487 (0.414-0.587)	0.622 (0.518-0.766)	0.798 (0.631-1.01)	0.926 (0.699-1.20)	1.05 (0.738-1.40)	1.17 (0.774-1.61)	1.31 (0.814-1.92)	1.41 (0.854-2.17)
60-min	0.252 (0.218-0.292)	0.380 (0.331-0.447)	0.582 (0.495-0.701)	0.741 (0.617-0.913)	0.950 (0.751-1.20)	1.10 (0.832-1.43)	1.25 (0.878-1.66)	1.39 (0.921-1.92)	1.56 (0.969-2.28)	1.68 (1.02-2.58)
2-hr	0.383 (0.338-0.434)	0.519 (0.460-0.599)	0.733 (0.636-0.867)	0.904 (0.767-1.09)	1.13 (0.915-1.40)	1.30 (1.00-1.64)	1.45 (1.07-1.89)	1.61 (1.12-2.18)	1.80 (1.18-2.59)	1.94 (1.24-2.92)
3-hr	0.505 (0.454-0.567)	0.640 (0.575-0.728)	0.854 (0.749-0.991)	1.02 (0.881-1.21)	1.25 (1.03-1.52)	1.42 (1.13-1.77)	1.59 (1.20-2.03)	1.75 (1.26-2.33)	1.95 (1.33-2.76)	2.10 (1.39-3.12)
6-hr	0.761 (0.692-0.839)	0.897 (0.813-0.997)	1.12 (0.993-1.26)	1.29 (1.13-1.48)	1.54 (1.30-1.80)	1.72 (1.42-2.06)	1.90 (1.51-2.35)	2.08 (1.60-2.68)	2.31 (1.70-3.17)	2.48 (1.78-3.58)
12-hr	1.11 (1.02-1.21)	1.27 (1.16-1.38)	1.52 (1.38-1.68)	1.74 (1.56-1.94)	2.04 (1.79-2.31)	2.27 (1.95-2.61)	2.50 (2.11-2.96)	2.73 (2.26-3.36)	3.04 (2.44-3.97)	3.28 (2.57-4.49)
24-hr	1.54 (1.42-1.67)	1.74 (1.60-1.89)	2.06 (1.89-2.26)	2.34 (2.12-2.57)	2.73 (2.44-3.03)	3.04 (2.69-3.41)	3.34 (2.92-3.84)	3.66 (3.15-4.36)	4.10 (3.44-5.14)	4.43 (3.66-5.82)
2-day	1.97 (1.82-2.15)	2.23 (2.05-2.43)	2.66 (2.42-2.92)	3.02 (2.72-3.34)	3.53 (3.14-3.94)	3.92 (3.45-4.44)	4.32 (3.75-5.00)	4.74 (4.04-5.67)	5.30 (4.41-6.70)	5.73 (4.68-7.59)
3-day	2.27 (2.08-2.48)	2.57 (2.35-2.82)	3.07 (2.78-3.39)	3.49 (3.14-3.88)	4.08 (3.61-4.59)	4.54 (3.96-5.17)	5.00 (4.31-5.83)	5.47 (4.64-6.61)	6.11 (5.05-7.82)	6.60 (5.35-8.84)
4-day	2.52 (2.31-2.76)	2.86 (2.61-3.13)	3.42 (3.09-3.77)	3.88 (3.48-4.32)	4.53 (4.00-5.11)	5.03 (4.39-5.75)	5.54 (4.76-6.48)	6.05 (5.12-7.34)	6.74 (5.57-8.65)	7.27 (5.90-9.77)
7-day	3.18 (2.92-3.48)	3.60 (3.29-3.95)	4.28 (3.87-4.72)	4.83 (4.33-5.36)	5.59 (4.96-6.30)	6.18 (5.42-7.06)	6.75 (5.86-7.91)	7.33 (6.29-8.90)	8.09 (6.82-10.4)	8.66 (7.20-11.6)
10-day	3.75 (3.44-4.10)	4.24 (3.87-4.64)	5.01 (4.53-5.52)	5.65 (5.06-6.25)	6.50 (5.76-7.30)	7.15 (6.28-8.16)	7.79 (6.78-9.11)	8.42 (7.26-10.2)	9.24 (7.85-11.8)	9.84 (8.28-13.1)
20-day	5.32 (4.87-5.85)	6.00 (5.46-6.60)	7.08 (6.36-7.82)	7.96 (7.09-8.84)	9.13 (8.05-10.3)	10.0 (8.76-11.5)	10.9 (9.42-12.8)	11.7 (10.1-14.2)	12.8 (10.8-16.4)	13.6 (11.4-18.2)
30-day	6.58 (6.01-7.24)	7.40 (6.71-8.15)	8.71 (7.80-9.62)	9.76 (8.67-10.8)	11.2 (9.81-12.6)	12.2 (10.6-14.0)	13.2 (11.4-15.5)	14.2 (12.2-17.2)	15.4 (13.1-19.8)	16.3 (13.8-21.9)
45-day	8.35 (7.61-9.19)	9.32 (8.44-10.2)	10.9 (9.72-12.0)	12.1 (10.7-13.4)	13.7 (12.1-15.4)	14.8 (13.0-17.0)	16.0 (13.9-18.7)	17.0 (14.8-20.7)	18.4 (15.8-23.5)	19.3 (16.6-25.9)
60-day	9.90 (9.03-10.9)	11.0 (9.95-12.1)	12.7 (11.4-14.0)	14.0 (12.5-15.5)	15.8 (14.0-17.7)	17.0 (15.0-19.5)	18.2 (16.0-21.3)	19.3 (16.9-23.4)	20.7 (18.1-26.4)	21.7 (19.0-28.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

Appendix G: Standard Storm Drainage Plan

DEQ Montana Department of Environmental Quali

Sudivision Name	7th Day Adventist Church
EQ#	24-2444
County	Sanders County
Location	Trout Creek
Lot/Area No.	CS 73 Parcel A

Rational Method Co-Efficients (C)	
0.9	Paved/hard surfaces
0.8	Gravel surfaces
0.1	Lawn/landscaping
0.2	Unimproved areas

Q=C*i*A

Intensity Values

2-year, T_c	0.91	inches/hour
2-year, 24-hour	1.74	inches
10-year, T_c	1.52	inches/hour
100-year, T_c	2.4	inches/hour
100-year, 24-hour	3.34	inches

Total Area/Lot Size 5 acres = 217800 ft^2

Initial Stormwater Facility Volume (0.5" x Impervious Area) = 1698.8 ft^3

Pre-Development Characteristics			**2-year, T_c (flow rate)**	**2-year, 24-hour (volume)**	**10-year, T_c (flow rate)**	**100-year, T_c (flow rate)**
Paved/House Area	0 acres	0 ft^2	Q= 0.000 ft^3/sec	V= 0.000 ft^3	Q= 0.000 ft^3/sec	Q= 0.000 ft^3/sec
Gravel Area	0 acres	0 ft^2	Q= 0.000 ft^3/sec	V= 0.000 ft^3	Q= 0.000 ft^3/sec	Q= 0.000 ft^3/sec
Lawn/Landscaping	0 acres	0 ft^2	Q= 0.000 ft^3/sec	V= 0.000 ft^3	Q= 0.000 ft^3/sec	Q= 0.000 ft^3/sec
Unimproved Area	5 acres	217800 ft^2	Q= 0.918 ft^3/sec	V= 6316.200 ft^3	Q= 1.533 ft^3/sec	Q= 2.420 ft^3/sec
Total	5 acres	217800 ft^2	Q_{Total}= **0.918** ft^3/sec	V_{Total}= **6316.200** ft^3	Q_{Total}= **1.533** ft^3/sec	Q_{Total}= **2.420** ft^3/sec

Post-Development Characteristics			**2-year, T_c (flow rate)**	**2-year, 24-hour volume)**	**10-year, T_c (flow rate)**	**100-year, T_c (flow rate)**
Paved/House Area	0.140725436 acres	6130 ft^2	Q= 0.116 ft^3/sec	V= 799.965 ft^3	Q= 0.194 ft^3/sec	Q= 0.307 ft^3/sec
Gravel Area	0.795224977 acres	34640 ft^2	Q= 0.584 ft^3/sec	V= 4018.240 ft^3	Q= 0.975 ft^3/sec	Q= 1.540 ft^3/sec
Lawn/Landscaping	0 acres	0 ft^2	Q= 0.000 ft^3/sec	V= 0.000 ft^3	Q= 0.000 ft^3/sec	Q= 0.000 ft^3/sec
Unimproved Area	4.064049587 acres	177030 ft^2	Q= 0.746 ft^3/sec	V= 5133.870 ft^3	Q= 1.246 ft^3/sec	Q= 1.967 ft^3/sec
Total	5 acres	217800 ft^2	Q_{Total}= **1.446** ft^3/sec	V_{Total}= **9952.075** ft^3	Q_{Total}= **2.415** ft^3/sec	Q_{Total}= **3.813** ft^3/sec
Runoff Flow/Volume Change			ΔQ= **0.528** ft^3/sec	ΔV= **3635.875** ft^3	ΔQ= **0.882** ft^3/sec	ΔQ= **1.393** ft^3/sec

Required Minimum Facility Volume: **3635.9** ft^3

= input field

Summary - DEQ 8

1. Enter Intensity Data

Click here to enter data

Location Data	OK
Pre-development data	OK
Post-development data	OK

1. Enter Flow Data

Click here to enter data

Drainage area	OK
Pre-development data	OK
Post-development data	OK

Summary of Results

Closest Meteorological Station	TROUT CREEK 2 W
Total 2 year storm event, 24 hour rainfall (inches)	1.74
Post Development Time of Concentration (min)	17.34
2 year event Change in Q (cfs)	0.83

	2 year	10 year	100 year
Post - Pre Volume (cf)	2971.38	4975.22	7842.06

Initial Stormwater Facility Size (cf)	1,698.75
DEQ 8 Final Minimum Pond Size (cf)	2971.38
Exempt Storm Water Plan Minimum Pond Size (cf)	7789.21

Return to Summary

Rainfall Intensity for DEQ 8

1. Location Data:

Latitude:	47.8302778
Longitude:	-115.5819444
Distance to closest station (km)	3.85
Closest meteorological station	TROUT CREEK 2 W
2-hour, 24-hour precipitation (in)	1.74

2. Pre-development Hydraulic Path:

Flow Type	Surface Description	Flow Length (ft)	Land Slope (ft/ft)	Culvert Diameter (in)	Depth of Flow in Channel (in) or Culvert (in)	Channel - Top Width (ft.)	Channel - Bottom Width (ft.)	Cross Sectional Flow Area (ft^2)	Wetted Perimeter (ft)	n	Average Velocity (ft/s)	Tt (hr)	Tt (min)
Sheet	Short Grass Prairie	300	0.02							0.15	n/a	0.53	32.00
Shallow	Woodlands	150	0.02							0.101	0.69	0.06	3.64

Appendix F: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044171.pdf

3. Post-development Hydraulic Path:

Flow Type	Surface Description	Flow Length (ft)	Land Slope (ft/ft)	Culvert Diameter (in)	Depth of Flow in Channel (in) or Culvert (in)	Channel - Top Width (ft.)	Channel - Bottom Width (ft.)	Cross Sectional Flow Area (ft^2)	Wetted Perimeter (ft)	n	Average Velocity (ft/s)	Tt (hr)	Tt (min)
Sheet	Short Grass Prairie	50	0.02							0.15	n/a	0.13	7.63
Shallow	Unpaved	160	0.02							0.025	2.77	0.02	0.96
Sheet	Dense Grasses	20	0.02							0.24	n/a	0.09	5.34
Channel_Triangular	Vegetation	200	0.02		12	8		4.00	16.12	0.085	0.98	0.06	3.41

Appendix F: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044171.pdf

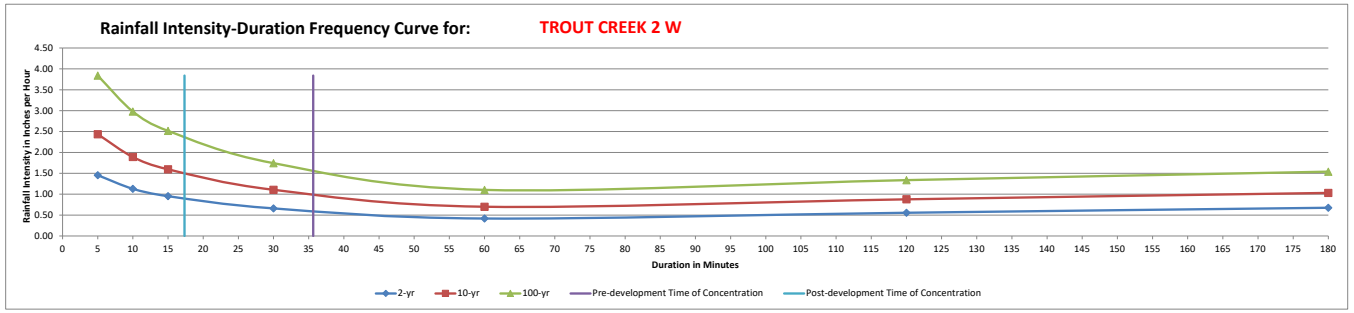
4. Time of Concentration and Rainfall Intensity (24-hour storm event):

Pre-development Path

Total Time of Concentration (min)	35.64
Rainfall Intensity (in/hr), 2 Year	0.61
Rainfall Intensity (in/hr), 10 Year	1.02
Rainfall Intensity (in/hr), 100 Year	1.61

Post-development Path

Total Time of Concentration (min)	17.34
Rainfall Intensity (in/hr), 2 Year	0.91
Rainfall Intensity (in/hr), 10 Year	1.52
Rainfall Intensity (in/hr), 100 Year	2.40



Flow Data for DEQ 8

1. Total Drainage Area Size

Drainage Area Size (sq. ft.)	217,800.00

2. Pre-development Drainage Area Characteristics:

Surface Type	Square Footage	Acres
Paved Areas	0.00	0.00
Structures	0.00	0.00
Graveled Area	0.00	0.00
Landscape	0.00	0.00
Unimproved	217,800.00	5.00
Total lot size	217,800.00	5.00

3. Post-development Drainage Area Characteristics:

Surface Type	Square Footage	Acres
Paved Areas	0.00	0.00
Structures	6,130.00	0.14
Graveled Area	34,640.00	0.80
Landscape	0.00	0.00
Unimproved	177,030.00	4.06
Total lot size	217,800.00	5.00

4. Required Initial Stormwater Facility Volume (Retained on Site)

	Cubic Feet	Acre-Feet
Retained First 0.5 inch runoff volume	1,698.75	0.04

5. Weighted Coefficient

Surface Type	Pre-Development	Post-Development
Paved Areas	0.00	0.00
Structures	0.00	0.13
Graveled Area	0.00	0.64
Landscape	0.00	0.00
Unimproved	1.00	0.81
Total Weighted Coef.	1.00	1.58
Cw	0.20	0.315

6. Flow Calculation (cfs)

Frequency of Storm Event	Pre-Development	Post-Development	Change (Post-Pre)
2-year	0.61	1.43	0.83
10-year	1.02	2.40	
100-year	1.61	3.79	

7. Volume Calculation (cf)

Frequency of Storm Event	Pre-Development	Post-Development	Change (Post-Pre)
2-year	2,193.90	5,165.29	2,971.38
10-year	3,673.43	8,648.65	4,975.22
100-year	5,790.14	13,632.21	7,842.06

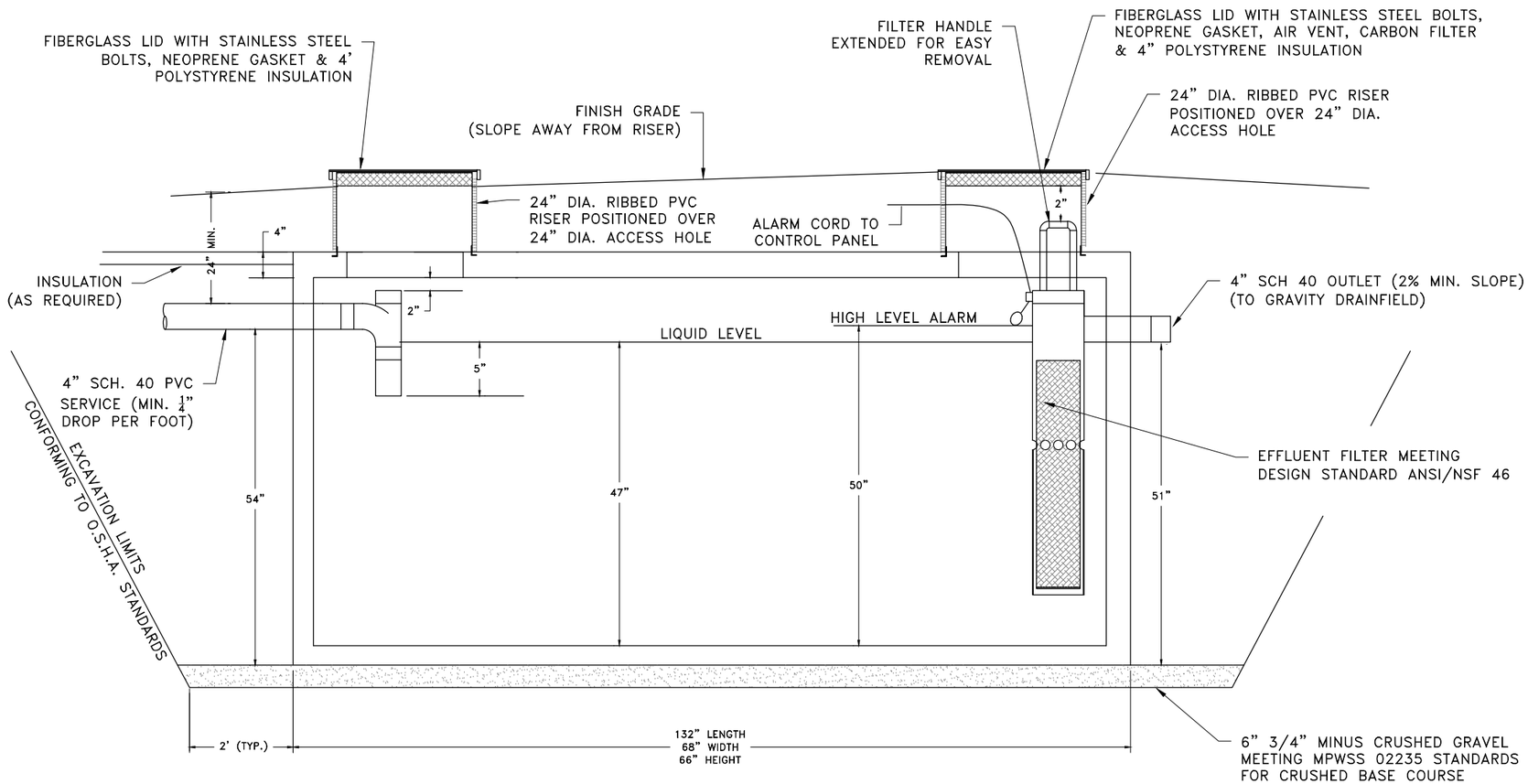
8. Final Required Volume

DEQ 8 Final Minimum Pond Size (cf)	2,971.38
Simplified Storm Water Plan Minimum Pond Size (cf)	7,789.21

PUBLIC WASTEWATER

UPDATED PLANS

O&M MANUAL



1500 GALLON SEPTIC TANK

BASED ON HUNTON PRE-CAST CONCRETE PRODUCT NO. 103

CONSTRUCTION NOTES:

1. SYSTEM DESIGNED FOR COMPONENT LOCATION(S) AS SHOWN ON SITE LAYOUT DRAWING. MOVEMENT OF SYSTEM COMPONENTS OR SUBSTITUTIONS MAY REQUIRE THE DESIGN TO BE ALTERED. CONTACT QUALIFIED INDIVIDUAL FOR MODIFICATIONS TO THE SYSTEM.
2. LATERALS SHALL BE INSTALLED WITH FIRST AND LAST ORIFICES AND 1 ORIFICE EVERY 24 FEET FACING DOWNWARD. ALL OTHER ORIFICES ARE TO BE FACING UPWARD.
3. INSULATION REQUIREMENTS ARE AS FOLLOWS: IF LINE IS 6' OR DEEPER NO INSULATION IS REQUIRED; IF THE SEWER LINE IS >4' BUT <6' INSULATION IS REQUIRED; IF BUILDING SEWER IS LESS THAN 4' INSULATION IS REQUIRED. WHEN INSULATION IS REQUIRED IT SHALL BE 2" CLOSED CELL INSULATION BOARD MEETING AASHTO M230-70 SPECIFICATIONS.
4. GRADE DRAINFIELD AREA TO PREVENT PONDING. SEED OR SOD AREA AS DESIRED BY OWNER. VEHICULAR ACCESS TO AREA IS PROHIBITED.
5. NATIVE BACKFILL SHALL BE FREE DRAINING MATERIAL 3" MINUS IN SIZE. MATERIAL SHALL BE FREE OF CINDERS, ASH, REFUSE, ORGANIC OR FROZEN MATERIAL.
6. ALL ELECTRICAL COMPONENTS SHALL MEET ALL APPLICABLE ELECTRICAL CODES AT THE LOCAL, STATE AND NATIONAL LEVELS.
7. CONTROLS AND WIRING MUST BE CORROSION-RESISTANT AND LISTED BY UNDERWRITERS LABORATORIES, CANADIAN STANDARDS ASSOCIATION, OR OTHER APPROVED TESTING AND/OR ACCREDITING AGENCY AS MEETING THE REQUIREMENTS FOR NATIONAL ELECTRIC CODE (NEC) CLASS I DIVISION 2 LOCATIONS.
8. ALL PLUMBING SHALL BE IN ACCORDANCE TO THE MOST CURRENT UNIFORM PLUMBING CODE.
9. SEPTIC TANK AND ASSOCIATED APPURTENANCES MUST BE TRAFFIC BEARING WITH CAST IRON RING AND COVER IF LOCATED IN DRIVEWAY OR OTHER AREA WITH VEHICULAR TRAFFIC.

INSPECTIONS FOR SYSTEM

1. CONTACT PROFESSIONAL CONSULTANTS, INC (406) 728-1880 AT LEAST 48 HOURS IN ADVANCE FOR INSPECTIONS.
2. TANKS MUST BE LEAK TESTED USING ONE OF THE FOLLOWING METHODS:
A. VACUUM TESTING: SEAL THE EMPTY TANK AND APPLY A VACUUM TO 4 INCHES (100 MM) MERCURY. THE TANK IS APPROVED IF 90 PERCENT OF VACUUM IS HELD FOR 2 MINUTES; OR
B. WATER PRESSURE TESTING: SEAL THE TANK, FILL WITH WATER, AND LET STAND FOR AT LEAST 24 HOURS. REFILL THE TANK. THE TANK IS APPROVABLE IF IT HOLDS WATER.
4. THE INSTALLATION OF THE SYSTEM SHALL BE INSPECTED BY PROFESSIONAL CONSULTANTS, INC.

CONTROL PANEL (RECOMMENDED)

TO BE LOCATED WITH OWNER INPUT, HOWEVER, CONTROL PANEL MUST BE READILY ACCESSIBLE AND ALARM MUST BE ACKNOWLEDGEABLE. PANEL SHOULD BE EQUIPPED TO HANDLE THE FOLLOWING FLOAT:
SEPTIC CHAMBER - ONE (1) REMOTE HIGH WATER LEVEL ALARM.
ALARM LIGHTS ARE TO BE LOCATED IN A VISIBLE LOCATION WITH AN AUDIBLE ALARM.

MONTANA ANDY MEFFORD No. 16208PE LICENSED PROFESSIONAL ENGINEER

PROJECT #: 9522-24
DRAWN: DA | CHECKED: JM
REVISION: | REVISION: | REVISION: | REVISION: | REVISION:

7TH DAY ADVENTIST CHURCH
PUBLIC WASTEWATER SYSTEM
S21, T24N, R31W TROUT CREEK, SANDERS CO.

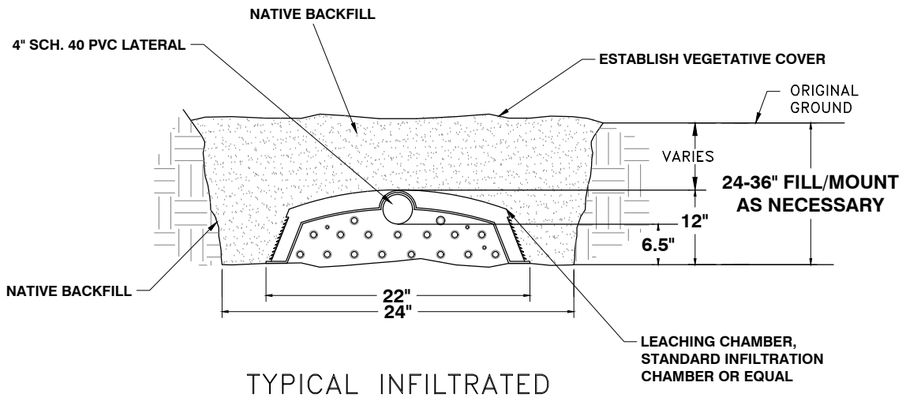
Professional Consultants Inc.
Engineers, Surveyors, Planners, Mappers
315 RUSSELL ST. PO BOX 1750
MISSOULA, MONTANA 59801
PHONE (406) 728-1880
EMAIL PCI@PCIMONTANA.COM

DEC. 31, 2024

SEPTIC DETAILS

3

DEQ SUBMITTAL

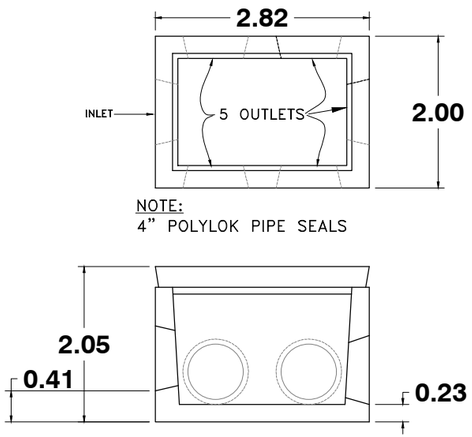


TYPICAL INFILTRATED TRENCH DETAIL

NOT TO SCALE

DISTRIBUTION BOX MUST:

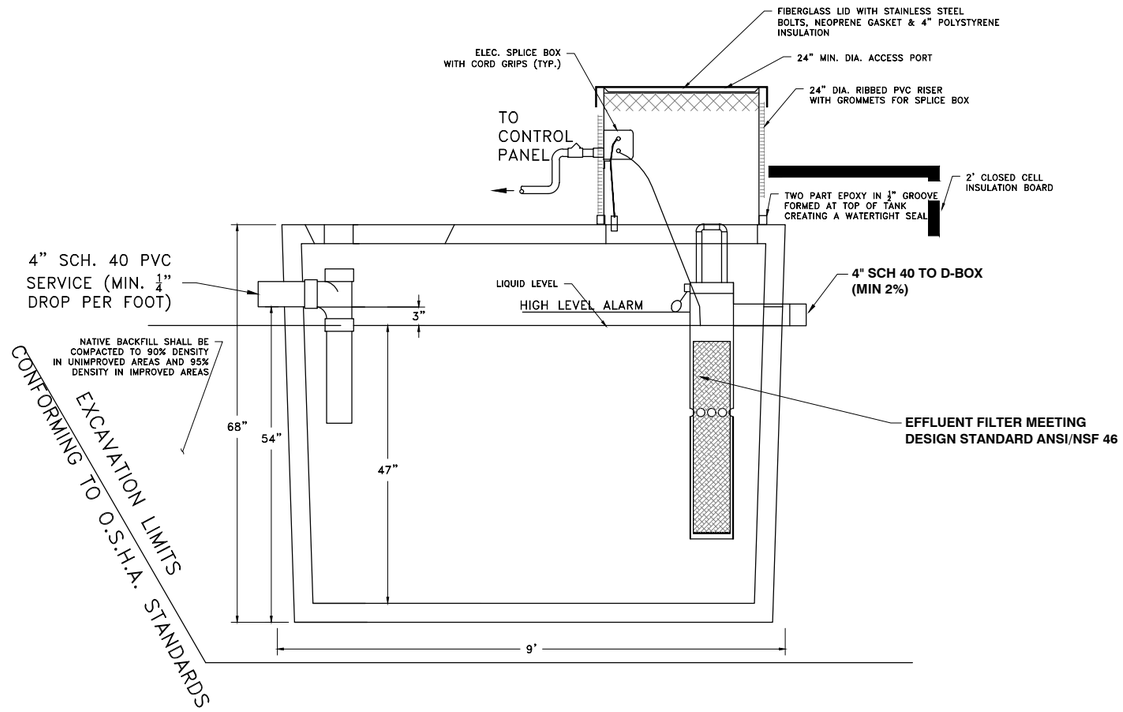
1) BE SET LEVEL AND BEDDED
2) USE FLOW CONTROL OR BAFFLING DEVICES TO ENSURE EQUAL DISTRIBUTION
3) BE WATER TESTED FOR EQUAL DISTRIBUTION
4) HAVE EACH OUTLET SERVE AN EQUAL LENGTH OF ABSORPTION TRENCH
5) IF CONCRETE, MEET SAME REQUIREMENTS AS SEPTIC TANKS AND HAVE MINIMUM 2-INCH WALL THICKNESS
6) HAVE AN ACCESS FOR INSPECTION



NOTE:
4" POLYLOK PIPE SEALS

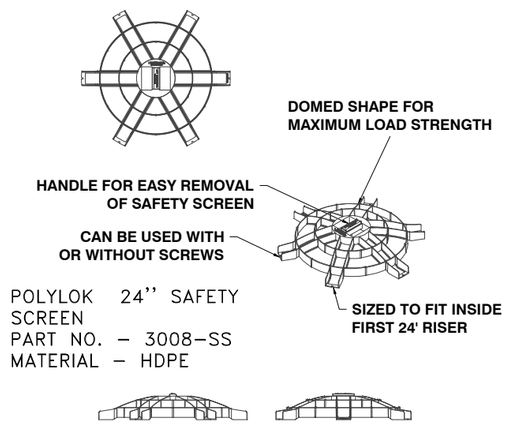
DISTRIBUTION BOX DETAIL

NOT TO SCALE



EXISTING 1,000 SEPTIC TANK

INSTALLED IN 2023



CHILD CATCHER BASKET DETAIL

NOT TO SCALE

ANDY MEFFORD
No. 16208PE
LICENSED PROFESSIONAL ENGINEER
MONTANA

PROJECT #: 9522-24
DRAWN: KANE L. CHECKED: JM
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:

7TH DAY ADVENTIST CHURCH
PUBLIC WASTEWATER SYSTEM
S21, T24N, R31W TROUT CREEK, SANDERS CO.

Professional Consultants Inc.
Engineers, Surveyors, Planners, Mappers
315 RUSSELL ST. PO BOX 1750
MISSOULA, MONTANA 59801
PHONE (406) 728-4611
EMAIL PCI@PCINMT.COM

DEC. 31, 2024

SEPTIC DETAILS

4

DEQ SUBMITTAL

Operation and Maintenance Manual

Seventh Day Adventist Church
Located near Trout Creek, Sanders County, Montana
May 2024

Introduction

This wastewater treatment system is to be operated and maintained in accordance with the manufacturer's instructions, unless otherwise outlined in this document.

The property owner of Tract A of COS 73, Seventh Day Adventist Church, is responsible for the maintenance and operation of the system's components (septic tank, sewer service lines, etc) or retain qualified person(s) to conduct all necessary maintenance and operation of the system.

For more information refer to the documentation below:

Contact Information

Service Representative: Andrey Bokav (425) 208-5894
Septic Tank Pumper: Sorlie Septic Services (406) 827-0888
Local Sanitarian: Jeremy Leavitt (406) 827-6909

System Summary

The system will have a 1,000 gallon and a 1,500 gallon septic tank to serve the individual buildings primary treatment needs. The effluent outfalls from these tanks will Y together before flowing to a distribution box. The drainfield will be gravity-fed; therefore, there will be a distribution box to distribute effluent throughout the entire drainfield area.

For a detailed summary of the system, refer to ENGINEERING DESIGN REPORT.

Operation and Maintenance

Maintenance Schedule

Monthly

- Visually inspect drainfield and tank for problems
- Inspect high water level float and alarm settings and operation

Annually

- Effluent filters should be inspected and replaced as recommended by a manufacturer

Every three to five years

- Inspect and pump septic tank
- The cleanouts on the drainfield laterals should be exposed, inspected and flushed

Maintenance Guide

Refer to “A Montana Homeowner’s Guide to Septic Systems” by the Montana Department of Environmental Quality, Solid Waste Section, Septic Tank Pumper Program and manufacturer’s instructions for operation and maintenance procedures.

Owner’s Manual and O&M Manual

- Routine maintenance responsibilities will include the following:
    - The tank must be inspected every year and be pumped every four years at a minimum.
    - Effluent filters must be cleaned according to the manufacturer’s specifications.
- Intermittent use and extended periods of no-use are not anticipated. In the event of non-use, the routine maintenance must be completed before continuing the use of the system.
- Visual inspections of the absorption field are recommended regularly.
- Safety concerns can be found in the manufacturer’s documents attached.

Installation Manual

- The attached manufacturers installation manuals include the following:
  - Standard system components
  - Specifications for the systems' components
  - Schematics
  - Sequential installation instructions that identify and explain each installed component.
  - Instructions to call the service provider to go through the start up with them. This procedure is outlined in the attached O&M Manual

As-built Plans

- The contractor or owner must call Professional Consultants, Inc within 48 hours of construction completion to conduct inspections of the facilities. PCI will provide As-Built plans to Montana Department of Environmental Quality to be added to this document.

PUBLIC WATER

DEQ 1 REPORT

PWS-5/PWS-6

DETAILS

Non-Transient Non-Community Water Supply Well Engineering Design Report

For

Trout Creek 7th Day Adventist Church

Sanders County, Montana

Prepared by:

Professional Consultants Inc.
Unmatched Experience. Uncompromising Standards.

3115 Russell St/ P.O. Box 1750
Missoula, MT 59806
(406) 728-1880

December 2024

PCI Project No. 9522-24

TABLE OF CONTENTS

Contents

INTRODUCTION

The Seventh Day Adventist Church owns the property legally described as Plat 7A in NENW which is approximately a mile southeast of Trout Creek, MT. The property is in the NE ¼ NW ¼ of Section 21, Township 24 North, Range 31 West, Sanders County, Montana. The lot is approximately 5 acres in size. Currently, there is a church with a septic system, a functioning well and a driveway. The client wishes to add a school that will serve 20-30 students plus 1-3 faculty.

The current well does not meet construction requirements, a new one is proposed that will serve the school and church. The well will be classified as a Non-Transient Non-Community (NTNC) public water system because it will serve twenty-five (25) or more people at least sixty (60) days per year.

DEQ 3 – STANDARDS FOR WATER WORKS

Chapter 1 – Submission of Plans

1.1 Engineer's Report

1.1.1 General Information

a. Existing Water Works and Sewer Facilities

There is one existing, public water supply that serves the church. The well log shows that the well was completed on 9/1/1977. It was drilled to a total depth of 104 feet. The well showed static water level at 36 feet with a sustained yield of 50 gpm for 2 hours. This well will be used only for irrigation.

There is an existing wastewater treatment system that serves the church. The system consists of a septic tank and a subsurface drainfield. The existing septic system does not meet requirements and is proposed to be abandoned and replaced by the new wastewater treatment system that will serve both the school and the church.

b. Identification of the area to be served.

The NTNC public well is proposed to serve the church and school which will have 30-40 people attending church once a week and 20-30 students with 1-3 faculty four days per week. The school is anticipated to have (6) toilets, (1) urinal, (1) dishwashers, (5) sinks, (1) utility sink, (2) water fountains and (1) kitchen sink. The church has (5) toilets, (1) urinal on the wall, (1) shower with single head, (4) sinks, (1) kitchen sink and (1) ½" hose connection.

c. Name and address of the owner, developer, and official custodian.

Owner: Montana Conference Seventh Day Adventist
175 Canyon View Road
Bozeman, MT 59715

The Trout Creek 7th Day Adventist Church will be the property owner. The developer for this project will be the church building committee. The owner intends to fund and operate the system and will adhere to the operation and maintenance procedures.

1.1.2 Extent of water system

a. Description and Nature of the extent of the area to be served.

The water system will provide water for the church and the proposed school both including bathrooms and a kitchen. The church has approximately 30-40 people who attend service once a week. The school is proposed to have 20-30 students with 1-3 faculty members. The school is anticipated to have (6) toilets, (1) urinal, (1) dishwashers, (5) sinks, (1) utility sink, (2) water fountains and (1) kitchen sink. The church has (5) toilets, (1) urinal on the wall, (1) shower with single head, (4) sinks, (1) kitchen sink and (1) ½" hose connection.

b. Provisions for extending the water works system to include additional areas.

No extensions are planned for this proposed water supply system.

c. Appraisal of the future requirements for service, including existing and potential water supply needs.

Possible future expansion plans include a gymnasium for the school with no locker rooms.

1.1.3 Alternate plans

The wells in this area are the only available water supply.

1.1.4 Water Use Data

a. The estimated Population which will be served by the proposed water supply or expanded system.

At capacity, the system will serve approximately 75 people. There will be a maximum of 40 people attending church, 30 students and 5 faculty. The people that will be attending church only do so once a week. School will be in session 4 days a week for 9-10 months out of the year.

b. Present water consumption and the projected average and maximum daily demands or peak instant demand, where appropriate, used as the basis of design.

The basis of design is estimated from DNRC Planning Guide for Water Use for persons at a school and attending church. The system will have a projected future average daily demand of 1.36 gpm or 2.19 acre-feet per year with a maximum daily demand of 2.72 gpm or 4.39 acre-feet/year.

To determine the peak instant demand, the water supply fixture count was used from the AWWA M22. For the system, it is determined that the peak instantaneous water demand is estimated to be 37.7 gpm.

c. Present and/or estimated yield of the sources of supply.

The existing onsite well has a yield of 50 GPM. The proposed well is expected to have a yield of around 35 GPM. This is be verified with a pump test.

1.1.6 Groundwater sources of supply

a. Sites considered

The proposed well location is in the preferred location for the church so they may utilize a gravity drainfield.

b. Advantages of the site selected.

The site meets all the minimum setbacks required for a public well. It is in a location that does not have shallow surface water flows. It is in good proximity to the church and school to allow easy maintenance observation. This is the furthest location from the active train tracks that run neat the southwest corner of the property.

c. Elevations with respect to surroundings.

The well site is located on high, flat terrain.

d. Sources of possible contamination

There are very few sources of possible contamination near the well. The primary one is the proposed public drainfield that is about 440 feet southwest. The proposed well is slightly removed from a direct down gradient flow path to the proposed drainfield. Highway 200 is approximately 180 feet northeast of the well. The Noxon Reservoir is the nearest surface water, which at its closest distance is approximately 1,670 feet northeast of the well.

1.1.7 Sewage system available

There is an existing system that currently serves the church. It includes a septic tank and gravity-fed drainfield. Due to the existing septic systems non-compliance the system is proposed to be abandoned. The proposed sewage system will serve the school and the church. The sewage system will consist of a gravity-fed drainfield.

Chapter 3 – Source Development

3.2.3.1 Well Location

The proposed public well location is at least 100 feet from structures used to convey or retain industrial, storm or sanitary waste and state and federal highway rights of way. There is one existing septic system within the property's boundaries. The well is at least over 50 feet from all proposed septic tanks and sewer lines. Highway 200 is the closest federal Right of Way which is approximately 110 feet northeast**.**

3.2.3.2 Continued Protection

As a public well, a 100 ft isolation zone will be established around the exterior of the well. The well isolation zone remains entirely within the property's boundaries. Continued protection of the well site from potential sources of contamination will be provided through ownership.

Water Demand Estimate Using Fixture Values

(Based on AWWA M22 Manual, Second Edition)

Facility Name	7th Day Adventist Church
Building address or number	3020 MT Highway 200, Trout Creek, MT
Residential or Non-Residential	Non-Residential
Minimum Pressure (psi)	35

** this is typically 35 psi

Fixture or Appliance	Fixture Value (at 60 psi)	Number of Fixtures	Subtotal Fixture Value
Toilet (tank)	4	11	44
Toilet (flush valve)	35		0
Urinal (wall or stall)	16	2	32
Urinal (flush valve)	35		0
Bidet	2		0
Shower (single head)	2.5	1	2.5
Sink (lavatory)	1.5	9	13.5
Kitchen Sink	2.2	2	4.4
Utility Sink	4	1	4
Dishwasher	2	1	2
Bathtub	8		0
Clothes Washer	6		0
Hose connections (with 50 ft of hose)			
1/2 in.	5	1	5
5/8 in.	9		0
3/4 in.	12		0
Miscellaneous			
Bedpan washers	10		0
Drinking fountains	2	2	4
Dental units	2		0
Combined Fixture Value			111.4
Demand (gpm)			51
Pressure Adjustment Factor			0.74
Total Adjusted demand (gpm)			**37.7**

WELL SPECIFICATIONS DETAILS

NON-COMMUNITY PUBLIC WATER SUPPLY - TC 7TH DAY ADVENTIST CHURCH

LOCATED IN SECTION 21, T.24N., R.31W., P.M.M.,
SANDERS COUNTY, MONTANA

WELL CONSTRUCTION NOTES & SPECIFICATIONS

1. DEQ 3.2 - WELL SHALL BE CONSTRUCTED BY A WATER WELL CONTRACTOR LICENSED IN THE STATE OF MONTANA, WELL SHALL BE CONSTRUCTED IN ACCORDANCE WITH TITLE 37, CHAPTER 43, MCA AND TITLE 36, CHAPTER 21, ARM.

2. DEQ 3.2.2.1 - THE WELL SHALL BE DISINFECTED IN ACCORDANCE WITH ARM 36.21.662(1) PRIOR TO AND AFTER PLACEMENT OF PERMANENT PUMPING EQUIPMENT. MORE THAN 72 HOURS AFTER DISINFECTION, TWO OR MORE WATER SAMPLES MUST BE SUBMITTED TO A LABORATORY CERTIFIED BY THE DEPT OF PUBLIC HEALTH AND HUMAN SERVICES FOR MICROBIOLOGICAL ANALYSIS WITH SATISFACTORY RESULTS REPORTED TO MDEQ PRIOR TO PLACING THE WELL INTO SERVICE.

3. DEQ 3.2.2.2 - THE WELL SHALL BE EXAMINED FOR APPLICABLE PHYSICAL AND CHEMICAL CHARACTERISTICS BY TESTS OF A REPRESENTATIVE SAMPLE IN A LABORATORY CERTIFIED BY THE DEPT OF PUBLIC HEALTH AND HUMAN SERVICES FOR MICROBIOLOGICAL ANALYSIS WITH SATISFACTORY RESULTS REPORTED TO MDEQ. SAMPLES MUST BE COLLECTED AT THE CONCLUSION OF THE TEST PUMPING PROCEDURE PRIOR TO DISINFECTION AND EXAMINED AS SOON AS PRACTICAL. SAMPLE RESULTS FOR CONSTITUENTS OF ARM 17.38.216, INCLUDING NITRATE/NITRATE AND TDS OR CONDUCTIVITY SAMPLING, MUST BE SUBMITTED TO MDEQ FOR REVIEW AND APPROVAL TO DEMONSTRATE COMPLIANCE WITH TITLE 17, CHAPTER 38, SUB-CHAPTER 2, ARM, PRIOR TO PLACING THE WELL INTO SERVICE. FIELD DETERMINATIONS OF PHYSICAL AND CHEMICAL CONSTITUENTS OR SPECIAL SAMPLING PROCEDURES MAY BE REQUIRED BY MDEQ.

4. DEQ 3.2.4.1 - YIELD AND DRAWDOWN TESTS MUST BE PERFORMED ON THE WELL AFTER CONSTRUCTION OR SUBSEQUENT TREATMENT AND PRIOR TO PLACEMENT OF THE PERMANENT PUMP. TEST PUMP CAPACITY AT MAXIMUM ANTICIPATED DRAWDOWN, MUST BE AT LEAST 1.5 TIMES THE QUANTITY ANTICIPATED AND PROVIDE A CONTINUOUS CONSTANT RATE OF PUMPING 1.5 TIMES THE DESIGN PUMP CAPACITY FOR AT LEAST 24 HOURS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN HE IS READY TO PROCEED WITH TESTING, AND SHALL FURNISH AND INSTALL ALL NECESSARY EQUIPMENT CAPABLE OF PUMPING THE WELL AND MEASURING THE PUMP RATE AT A MINIMUM FLOW RATE TO BE SPECIFIED BY THE ENGINEER (1.5 X DESIGN RATE) FOR A PERIOD OF 24 HOURS, OR UNTIL A STABILIZED DRAWDOWN HAS BEEN MAINTAINED FOR AT LEAST SIX (6) HOURS. PUMP TEST PERIOD MAY NEED TO BE AS LONG AS 72 HOURS, AS REQUIRED BE DNRC. DATA OF THE FOLLOWING AT ONE-HOUR INTERVALS OR LESS AS MAY BE REQUIRED BY MDEQ: PUMPING RATE, PUMPING WATER LEVELS, STATIC WATER LEVEL, WATER RECOVERY RATE AND LEVELS, AND TIME OF STARTING AND ENDING EACH TEST CYCLE. CONSULT ENGINEER PRIOR TO BIDDING. DATA COLLECTION MUST BEGIN AT TIME ZERO. THE TEST MAY BE TERMINATED IF STABILIZED DRAWDOWN OCCURS FOR AT LEAST EIGHT HOURS DURING THE TEST. STABILIZED DRAWDOWN IS DEFINED AS A WATER LEVEL THAT DOES NOT FLUCTUATE PLUS OR MINUS 0.5 FEET FOR EVERY 100 FEET OF DRAWDOWN AT THE DESIGN PUMPING RATE. WHEN SUFFICIENT HISTORICAL INFORMATION IS AVAILABLE, A STEP DRAWDOWN TEST MAY BE APPROVED BY MDEQ.

5. DEQ 3.2.4.2 - TEST RESULTS WILL BE SUBMITTED TO MDEQ. IN ADDITION, THE AQUIFER PUMP TESTING RESULTS SHALL BE SUBMITTED TO THE MONTANA BUREAU OF MINES AND GEOLOGY (MBMG) ON THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION FORM 633 AS CAN BE FOUND ON THE DNRC WEBSITE.

6. DEQ 3.2.4.3 - GEOLOGICAL DATA MUST BE DETERMINED IN ACCORDANCE WITH ARM 36.21.667. SAMPLES MUST BE TAKEN AT 5 INTERVALS AND AS SPECIFIED IN THE ARM. DRILLER SHALL COORDINATE SAMPLING WITH THE ENGINEER. UPON COMPLETION, A COPY OF THE WELL LOG MUST BE SUBMITTED TO THE ENGINEER AND MDEQ., AS APPLICABLE, AND BE SUPPLEMENTED WITH A DRILLER'S LOG, AND ACCURATE GEOLOGICAL LOCATION SUCH AS LATITUDE AND LONGITUDE OR GIS COORDINATES AS DETERMINED BY GPS TO AN ACCURACY OF +/- 25 FEET.

7. DEQ 3.2.5.2 - THE MINIMUM PROTECTED DEPTHS OF DRILLED WELLS MUST PROVIDE WATERTIGHT CONSTRUCTION TO SUCH DEPTH AS MAY BE REQUIRED BY MDEQ, TO EXCLUDE CONTAMINATION AND SEAL OFF FORMATIONS THAT ARE OR MAY BE CONTAMINATED OR YIELD UNDESIRABLE WATER. WELLS SHALL HAVE UNPERFORATED CASING TO A MINIMUM DEPTH OF 25 FEET OR CONTINUOUS DISINFECTION MUST BE PROVIDED. IF THE WELL IS DETERMINED TO BE DRAWING FROM A WATER TABLE AQUIFER WITHIN 25 FEET OF THE GROUND SURFACE, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY.

8. DEQ 3.2.5.3 - PERMANENT STEEL CASING SHALL BE IN ACCORDANCE WITH ARM 36.21.640 EQUIPPED WITH A DRIVE SHOE IN ACCORDANCE WITH ARM 36.21.644 WHEN DRIVEN, AND HAVE WELDED JOINTS IN ACCORDANCE WITH ARM 36.21.642.

9. DEQ 3.2.5.4 - PLASTIC WELL CASING MUST BE IN ACCORDANCE WITH ARM 36.21.645 AND ARM 36.21.646.

10. 3.2.5.5 - PACKERS MUST BE OF MATERIAL THAT WILL NOT IMPART TASTE, ODOR, TOXIC SUBSTANCE OR BACTERIAL CONTAMINATION TO THE WELL WATER. PACKERS SHALL NOT BE USED ON ANY WELL UNLESS APPROVED BY THE ENGINEER.

11. DEQ 3.2.5.7 - THE PERMANENT WELL CASING SHALL BE SEALED IN ACCORDANCE WITH ARM 36.21.654 THOUGH 36.21.660 TO A DEPTH OF 25 FEET WITH HEAVY BENTONITE WATER SLURRY OR CEMENT GROUT TO PREVENT SURFACE CONTAMINATION. THE HEAVY BENTONITE WATER SLURRY METHOD IS PREFERRED. THE CASING SHALL BE PROVIDED WITH CENTRALIZERS IN ACCORDANCE WITH ARM 36.21.648. THE TEMPORARY CASING SHALL BE WITHDRAWN AS GROUT IS APPLIED.

12. DEQ 3.2.5.8 - THE UPPER TERMINAL PERMANENT WELL CASING SHALL BE IN ACCORDANCE WITH ARM 36.21.647. THE WELL MUST NOT BE CONSTRUCTED IN AN AREA SUBJECT TO FLOODING. PROVISIONS SHALL BE MADE TO PREVENT DAMAGE OR TAMPERING TO THE WELL. TO PREVENT TAMPERING, SECURE THE WELL CAP WITH A CHAIN AND PAD LOCK. TO PREVENT DAMAGE, INSTALL 4" STEEL BOLLARDS FILLED WITH CONCRETE AND PLACE WITHIN 6' CONCRETE CURBED TRAFFIC ISLAND.

13. DEQ 3.2.5.9 - THE WELL SHALL BE DEVELOPED IN ACCORDANCE WITH ARM 36.21.653.

14. DEQ 3.2.5.10 - TEMPORARY CAPPING REQUIREMENTS MUST BE IN ACCORDANCE WITH ARM 36.21.661.

15. DEQ 3.2.6.1 - IN DRILLED WELLS THAT PENETRATE AN AQUIFER EITHER WITHIN A CONSOLIDATED OR CONFINING FORMATION, SEALING OF THE CASING MUST CONFORM WITH ONE OF THE PROCEDURES DESCRIBED IN DEQ CIRCULAR 3 SECTION 3.2.6.1.

16. DEQ 3.2.6.2 - FLOWING WELLS. WHEN FLOWING WATER IS ENCOUNTERED IN THE WELL, AN UNPERFORATED WELL CASING MUST EXTEND INTO THE CONFINING STRATUM OVERLYING THE ARTESIAN ZONE. THE CASING MUST BE ADEQUATELY SEALED INTO THE CONFINING STRATUM SO AS TO PREVENT SURFACE AND SUBSURFACE LEAKAGE FROM THE ARTESIAN ZONE. IF THE WELL FLOWS AT LAND SURFACE, IT MUST BE EQUIPPED WITH A CONTROL VALVE SO THAT THE FLOW CAN BE COMPLETELY STOPPED. THE WELL MUST BE COMPLETED WITH PACKERS OR APPROPROATE SEALING MATERIAL THAT WILL ELIMINATE LEAKAGE AROUND THE WELL CASING.

17. DEQ 3.2.6.5 - GRAVEL PACK WELLS. GRAVEL PACK MUST BE WELL ROUNDED PARTICLES, 95 PERCENT SILICEOUS MATERIAL, THAT ARE SMOOTH AND UNIFORM, FREE OF FOREIGN MATERIAL, PROPERLY SIZED, WASHED AND THEN DISINFECTED IMMEDIATELY PRIOR TO OR DURING PLACEMENT. GRAVEL PACK MUST BE PLACED IN ON UNIFORM CONTINUOUS OPERATION, AND PROTECTION FROM LEAKAGE OF GROUT INTO THE GRAVEL PACK OR SCREEN MUST BE PROVIDED. PERMANENT INNER AND OUTER CASINGS MUST MEET REQUIREMENTS OF SECTION 3.2.5.3 AND 3.2.5.4.

ADDITIONAL WELL CONSTRUCTION NOTES & SPECIFICATIONS

1. SCREENS MUST BE CONSTRUCTED OF MATERIALS RESISTANT TO DAMAGE BY CHEMICAL ACTION OF GROUNDWATER OR CLEANING OPERATIONS, HAVE SIZE OF OPENINGS BASED ON SIEVE ANALYSIS OF FORMATION AND/OR GRAVEL PACK MATERIALS, HAVE SUFFICIENT LENGTH AND DIAMETER TO PROVIDE ADEQUATE SPECIFIC CAPACITY AND LOW APERTURE ENTRANCE VELOCITY WHICH MAY NOT EXCEED 0.1 FEET PER SECOND. SCREENS MUST ALSO BE INSTALLED SO THAT THE PUMPING WATER LEVEL REMAINS ABOVE THE SCREEN UNDER ALL OPERATING CONDITIONS. WHERE APPLICABLE, SCREENS MUST BE DESIGNED AND INSTALLED TO PERMIT REMOVAL OR REPLACEMENT WITHOUT ADVERSELY AFFECTING WATER-TIGHT CONSTRUCTION OF THE WELL, AND MUST BE PROVIDED WITH A BOTTOM PLATE OR WASHDOWN BOTTOM FITTING OF THE SAME MATERIAL AS THE SCREEN.

2. HEAVY BENTONITE WATER SLURRY SHALL BE A MIXTURE OF 1/2 POUND BENTONITE PER GALLON OF CLEAR WATER, CEMENT GROUT SHALL BE A MIXTURE OF ONE BAG OF CEMENT CONFORMING TO ASTM C-150 (94 LBS) AND 5-6 GALLONS OF WATER. IF CEMENT GROUT IS USED, A HOLE PLUG SHALL BE USED. HOLE PLUG METHOD SHALL BE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO USE ON-SITE. THE MIXTURE, METHOD OF MIXING AND CONSISTENCY OF GROUT SHALL BE APPROVED BY THE ENGINEER.

3. A SUITABLE RETAINER, PACKER OR PLUG SHALL BE PROVIDED AT THE BOTTOM OF THE GROUTED SECTION SO THAT GROUT WILL NOT LEAK THROUGH INTO THE BOTTOM OF THE WELL. THE GROUTING SHALL BE DONE CONTINUOUSLY AND IN SUCH A MANNER AS WILL ENSURE THE ENTIRE FILLING OF THE ANNULAR SPACE IN ONE OPERATION. THE CASING MUST BE PROVIDED WITH SUFFICIENT GUIDES WELDED TO THE CASING TO PERMIT UNOBSTRUCTED FLOW AND UNIFORM THICKNESS OF GROUT.

4. THE CONTRACTOR SHALL TAKE PRECAUTIONS AS ARE NECESSARY OR AS MAY BE REQUIRED PERMANENTLY TO PREVENT CONTAMINATED WATER OR WATER HAVING UNDESIRABLE PHYSICAL OR CHEMICAL CHARACTERISTICS FROM ENTERING THROUGH THE OPENING MADE BY THE CONTRACTOR IN DRILLING THE WELL OR THROUGH THE STRATUM FROM WHICH THE WELL IS TO DRAW ITS SUPPLY. HE SHALL ALSO TAKE ALL NECESSARY PRECAUTIONS DURING THE CONSTRUCTION PERIOD TO PREVENT CONTAMINATED WATER, GASOLINE, ETC., FROM ENTERING THE WELL EITHER THROUGH THE OPENING OR BY SEEPAGE THROUGH THE GROUND SURFACE. IN THE EVENT THAT THE WELL BECOMES CONTAMINATED OR THAT WATER HAVING UNDESIRABLE PHYSICAL OR CHEMICAL CHARACTERISTICS ENTERS THE WELL HE SHALL, AT HIS EXPENSE, PERFORM SUCH WORK OR SUPPLY SUCH CASINGS, SEALS, STERILIZING AGENTS OR OTHER MATERIAL AS MAY BE NECESSARY TO ELIMINATE THE CONTAMINATION OR SHUT OFF THE UNDESIRABLE WATER.

5. SLOPE GROUND AWAY FROM WELL HEAD TO PREVENT PONDING AND POSSIBLE CONTAMINATION.

6. CLEAN POTABLE WATER SHALL BE USED IN ALL DRILLING FLUIDS AND ADDITIVES USED IN DRILLING OPERATIONS SHALL BE APPROVED BY THE NATIONAL SANITATION FOUNDATION (NSF) OR A SIMILAR ANSI ACCREDITED LABORATORY/ORGINIZATION.

7. UPON COMPLETION OF THE WELL, BEFORE CONDUCTING THE YIELD AND DRAWDOWN TESTS, THE CONTRACTOR SHALL DEVELOP THE WELL BY SUCH METHODS AS WILL EFFECTIVELY EXTRACT FROM THE WATER-BEARING FORMATION THE MAXIMUM PRACTICAL QUANTITY OF SAND, DRILLING MUD AND OTHER FINE MATERIALS IN ORDER TO BRING THE WELL TO MAXIMUM YIELD PER FOOT OF DRAWDOWN AND TO A SAND-FREE CONDITION. COMPRESSED AIR, SURGE PLUNGERS, HIGH-VELOCITY JETTING EQUIPMENT AND PUMPS MAY BE USED FOR THE DEVELOPMENT WORK. THIS WORK MUST BE DONE IN SUCH A MANNER THAT DOES NOT CAUSE UNDUE SETTLEMENT AND DISTURBANCE OF THE STRATA ABOVE THE WATER-BEARING FORMATION NOR DISTURB THE SEAL AROUND THE WELL CASING AND THEREBY REDUCE THE SANITARY PROTECTION OTHERWISE AFFORDED BY SUCH SEAL. DEVELOPMENT OF THE WELL SHALL BE CONTINUED UNTIL WATER PUMPED FROM THE WELL AT THE MAXIMUM TEST PUMPING RATE IS CLEAR AND FREE OF SAND. THE WATER SHALL BE CONSIDERED SAND-FREE WHEN NO SAMPLES CONTAIN MORE THAN 2 PPM OF SAND BY WEIGHT.

8. IN DRILLED WELLS THAT PENETRATE AN AQUIFER OVERLAIN BY UNCONSOLIDATED FORMATIONS SUCH AS SAND AND GRAVEL WITHOUT SIGNIFICANT CLAY BEDS, AN UNPERFORATED WELL CASING MUST EXTEND TO AT LEAST THREE INCHES GREATER THAN THE NOMINAL SIZE OF THE PERMANENT CASING MUST EXCEED TO AT LEAST 25 FEET BELOW LAND SURFACE. THE ANNULAR SPACE BETWEEN THE UPPER DRILL HOLE AND THE WELL CASING MUST BE KEPT AT LEAST ONE-HALF FULL WITH BENTONITE SLURRY THROUGHOUT THE DRIVING OF THE PERMANENT CASING INTO THE AQUIFER. AFTER THE PERMANENT CASING IS SET IN ITS FINAL POSITION, THE REMAINING ANNULAR SPACE MUST BE FILLED TO LAND SURFACE WITH APPROPIATE SEALING MATERIAL. IF THE OVERSIZED DRILL HOLE IS EXTENDED TO THE SAME DEPTH AS THE PERMANENT CASING, A SUITABLE BRIDGE MUST BE INSTALLED BETWEEN CASING AND THE DRILL HOLE AT A POSITION DIRECTLY ABOVE THE PRODUCTION QUIFER. THE REMAINING ANNULAR SPACE MUST BE COMPLETELY FILLED AND SEALED TO LAND SURFACE WITH APPROPRIATE SEALING MATERIAL. IF TEMPORARY CASING IS USED TO MAINTAIN THE OVERSIZED DRILL HOLE, THE ANNULAR SPACE MUST BE KEPT FULL WITH APPROPRIATE SEALING MATERIAL AS THE TEMPORARY CASING IS BEING WITHDRAWN.

9. IN DRILLED WELLS THAT PENETRATE AN AQUIFER OVERLAIN BY CLAY OR OTHER UNCONSOLIDATED DEPOSITS SUCH AS SAND AND GRAVEL IN WHICH SIGNIFICANT (AT LEAST 6 FEET THICK) INTERBEDS OF CLAY ARE PRESENT, THE WELL CASING MUST BE TERMINATED IN SUCH CLAY STRATA, PROVIDED THAT THE CASING BE SEALED IN SUBSTANTIALLY THE SAME MANNER AS IS REQUIRED IN THE CASE OF CONSOLIDATED FORMATIONS.

GENERAL NOTES

1. THE WORK TO BE DONE INCLUDES THE FURNISHING OF ALL LABOR, MATERIAL, TRANSPORTATION, TOOLS, SUPPLIES, EQUIPMENT AND APPURTENANCES, UNLESS SPECIFICALLY EXCEPTED, NECESSARY FOR THE COMPLETE AND SATISFACTORY CONSTRUCTION, SANITARY PROTECTION, AND TESTING OF THE PROPOSED WELL.

2. THE OWNER HAS DESIGNATED PCI AS HIS REPRESENTATIVE. THE ENGINEER MAY DESIGNATE A SUB-CONSULTANT, TO BE IDENTIFIED AT THE START OF CONSTRUCTION.

3. DURING CONSTRUCTION IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ACQUIRE NECESSARY UTILITY LOCATES TWO BUSINESS DAYS PRIOR TO CONSTRUCTION AND PROTECT EXISTING UNDERGROUND AND OVERHEAD UTILITY LINES.

4. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY CONFLICTS EXIST BETWEEN THE PLANS AND WHAT IS FOUND IN THE FIELD.

5. THE CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS, AT HIS EXPENSE, TO COMPLETE THE PROPOSED WORK AND SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

6. CONTRACTOR SHALL PROTECT ALL ADJACENT IMPROVEMENTS (SIGNS, DRAINFIELDS, ROADWAYS, PARKING LOTS, UTILITIES, ETC) FROM DAMAGE AND EROSION. ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.

7. ALL COMPONENTS OF THIS WATER SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDED INSTALLATION PROCEDURES, UNLESS OTHERWISE SPECIFIED IN THESE PLANS OR BY THE ENGINEER.

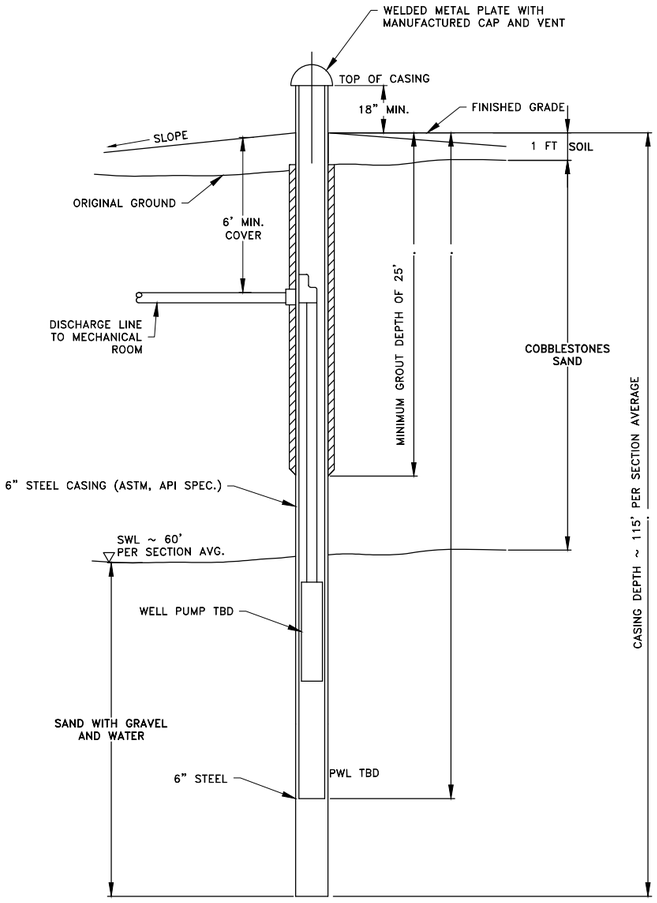
8. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, MATERIAL CERTIFICATIONS, O&M AND WARRANTY DOCUMENTS TO THE OWNERS FOR ALL PARTS INSTALLED.

WELL TESTING & RECORD REQUIREMENTS

1. THE WELL CONTRACTOR SHALL PROVIDE THE FOLLOWING: TEST PUMP, POWER SOURCE, FUEL, FLOW MEASURING METER, PUMP CAPACITY-HEAD CHARACTERISTICS, AND DEPTH OF TEST PUMP SETTING. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE SMOOTH OPERATION OF PUMP THROUGHOUT ALL TESTING.

2. THE ENGINEER SHALL PROVIDE AN ELECTRONIC WATER LEVEL MEASURING DEVICE, AND SHALL BE RESPONSIBLE FOR COLLECTING DATA AS FOLLOWS: STATIC WATER LEVEL, WATER RECOVERY RATE AND LEVEL AND STARTING AND ENDING TIME OF EACH TEST CYCLE. WATER LEVEL MEASUREMENTS SHALL BE TAKEN SO AS TO PROVIDE TEN EVENLY SPACED DATA POINTS PER LOG CYCLE OF TIME, BUT IN NO CASE SHALL IT BE LESS THAN ONE-HOUR INTERVALS. DATA COLLECTION MUST BEGIN AT TIME ZERO. THE TEST MAY BE TERMINATED IF STABILIZED DRAWDOWN OCCURS FOR AT LEAST EIGHT HOURS DURING THE TEST. AS STEP DOWN TEST SHALL NOT BE SUED UNLESS SPECIALLY APPROVED BY DESIGN ENGINEER.

3. TEST RESULTS MUST BE REPORTED TO MDEQ.



TYPICAL WELL PROFILE

NO SCALE

MONTANA
ANDY MEFFORD
No. 16206PE
LICENSED PROFESSIONAL ENGINEER

PROJECT #: 9522-24
DRAWN: OLIVIA ALLEN
CHECKED: ANDY MEFFORD, PE
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:

7TH DAY ADVENTIST CHURCH
PUBLIC WATER SYSTEM
S21, T24N, R31W TROUT CREEK, SANDERS CO., MT

Professional Consultants Inc.
Engineers, Surveyors, Planners, Mappers
315 RUSSELL ST. PO BOX 1750
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DEC. 13, 2024

WELL SPECS

3

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Table of Preliminary Assessment Questions, Responses and Scores

Question	Responses	Score (points)
1. Type of subsurface water source.	**Well**	**0**
	Horizontal Well †	**40**
	Spring	**40**
† For purposes of the PA, "horizontal wells" includes infiltrations galleries.		
2. History or suspected outbreak of *Giardia* or other pathogenic organisms associated with surface water with the current system configuration.	**No**	**0**
	Yes	**40**
3. Number of *E. coli*-positive distribution samples in the last three years.	**None**	**0**
	One	**5**
	Two or more	**10**
4. Number of *E. coli*-positive source samples in the last three years	**None**	**0**
	One	**20**
	Two or more	**30**
5. Number of DEQ-verified complaints about turbidity.	**None**	**0**
	One or more	**5**
6. Hydrogeological Features: horizontal distance between source and the closest surface water.	**>250 feet**	**0**
	175-250 feet	**10**
	100-174 feet	**20**
	<100 feet	**40**
7. Does the well construction meet all three criteria? The well is (1) cased to at least top of the water bearing unit; (2) annular seal extends from ground level to a minimum of 25 feet in depth; and (3) the borehole diameter is at least three inches greater than the casing outside diameter from ground level to 25 feet depth.	**Yes**	**0**
	No	**15**
	Unknown	**15**
8. Well intake construction: depth below ground surface to the top of the well screen or open bottom casing.	**>100 feet**	**0**
	50-100 feet	**5**
	25-49 feet	**10**
	0-24 feet	**15**
	Unknown	**15**
9. Static water level depth below ground surface.	**>100 feet**	**0**
	50-100 feet	**5**
	25-49 feet	**10**
	0-24 feet	**15**
	Unknown	**15**

Total = 15

Public Water Supply System
PWS-6 Report
Source Water Delineation

Non-Community Non-Transient Public Water Supply

For

7th Day Adventist Church
Water System

Trout Creek, Sanders County, Montana

Prepared by:

Professional Consultants Inc.
Unmatched Experience. Uncompromising Standards.

3115 Russell Street/P.O Box 1750
Missoula, MT 59806
(406) 728-1880

December 2024

PCI Project No. 9522-24

TABLE OF CONTENTS

TABLE OF APPENDICES

INTRODUCTION

Delineation and assessment of Source Water Protection (SWP) areas is defined in the 1996 Federal Safe Drinking Water Act Amendments. This delineation and assessment report is intended to meet the technical requirements of the Montana Source Water Protection Program (DEQ 1999) and the Federal Safe Drinking Water Act (SDWA) Amendments of 1996 (P.L. 104-182). This Source Water Protection Delineation report has been prepared in support of permitting the non-transient non-community public water supply (PWS) system supplied by groundwater. The property is located off Highway 200, in Sanders County, Montana, and is owned by Montana Conference of Seventh Day Adventist.

Water system owner:

Trout Creek 7th Day Adventist Church
3020 MT Highway 200
Trout Creek, MT 59874

The report author and contact person:

Kane Leithead
Landmark Consulting LLC
PO Box 7233
Sheridan, Wy, 82801
307-461-3858

1.0 PURPOSE

The purpose of this delineation and assessment report is to assess potential threats to the water supply for Trout Creek's Seventh Day Adventist Church using information obtained from published reports of nearby existing site conditions. Source water protection areas are areas that contribute water to the aquifer through recharge which are delineated or identified on a map. Assessment involves identifying locations or regions in source water protection areas where contaminants may be generated, stored, or transported and then determining the potential for contamination of drinking water by these sources.

2.0 BACKGROUND INFORMATION

2.1 The Community

The church is off Highway 200 in Trout Creek. The property is in Section 21, Township 24 North, Range 31 West, Sanders County, Montana. The parcel is owned by Montana Conference of Seventh Day Adventist.

The property has an existing church that has 30-40 attendees once a week. A school is proposed to have 20-30 students and 1-3 faculty members that will attend school four days a week. There is currently a septic system and well that serves the church which is proposed to be abandoned due to its noncompliance. A new well and public sewer system is proposed that will serve both the school and church.

2.2 Geographic Setting

The property is located approximately 1,850 feet southwest of Noxon Reservior. The USGS Hydrologic Units code for the surface water sources near the property is 17010213; however, the well will be groundwater sourced. The neighboring single-family homes and commercial buildings in the area are on their own water and septic systems.

The land cover in the area consists primarily of residential and commercial development with coniferous trees. Based on the NRCS soil report, the property consists primarily of Bonnash gravelly ashy silt loam. Annual precipitation in Trout Creek, MT is approximately 26.8 inches per year, most of which falls as snowfall.

The location of the proposed public water supply well is in the front of the property.

2.3 Public Water Supply

This assessment is for the proposed public water supply well that has not obtained official approval from DEQ. The population served is estimated at a maximum of 75 individuals based on the church and school's occupancy. The system will serve the church and proposed school which both include restrooms and a kitchen. There will be a total of 2 service connections. It is assumed that a 35-gpm source will be adequate since the maximum daily demand was calculated to be 2.08 gpm for the system. The existing well was drilled to a total depth of 104 feet, static water level of 36 feet, pump water level of 41 feet, and yield of 50 gpm. This allows for an accurate estimation of the proposed wells characteristics.

2.4 Water Quality

There have been multiple water samples collected at the existing well. The well (GWIC ID 78745) resulted in a background nitrate/nitrite concentration of 0.68 mg/L. Water quality samples include chemical and bacterial analysis. The proposed well will be tested once complete.

3.0 DELINEATION OF GROUND WATER SOURCES

3.1 Hydrogeologic Conditions

The public water supply well is assumed to be in an unconfined or semi-confined aquifer if completed above the limiting bedrock layer. Most of the well logs in the area show water bearing sand and clay at depths greater than 50 feet. Based on MBMG Ground-Water Assessment Map, ground water in the shallow aquifers is under unconfined conditions and is characterized by local flow systems where ground water moves from local drainage divides toward adjacent valley bottoms. The well is located within the shallow basin in the Quaternary sediments (alluvium, outwash, and alluvial fan sediments). These aquifers are highly permeable and reportedly have high yield ranging between 5 to 100 gpm. Infiltration of irrigation and precipitation and losses from streams along the base of the Cabinet Mountain Range are significant sources of recharge to the shallow aquifers. Furthermore, the source water for the well is classified as High Source Water Sensitivity based on Table 2: Source Water (Aquifer) Sensitivity Table criteria. See attached soil map in **Appendix B**.

3.2 Conceptual Model & Assumptions

Groundwater flow in this area is to the northeast running perpendicular with Noxon Reservoir and down from the higher elevations to the southwest. It is assumed that the reservoir is a gaining waterway in this area due to the surrounding creeks on both sides of the river upgradient from the property. Therefore, the well will not be hydraulically connected to surface water. The following methods will be used to delineate the different regions:

Control Zone – A 100-foot radius control zone is delineated around the wellhead. See attached Site Layout – **Appendix A**.

Inventory Region – The inventory region is generally the area that is expected to contribute to the water supply over three years; this is sometimes referred to as a three-year capture zone. The inventory region for the PWS was delineated based on a one-mile radius. See attached Inventory Region Map – **Appendix B**.

3.3 Well Information

Final well information will be reports. The existing well was dug to a total depth of 104 feet, static water level of 36 feet, pump water level of 41 feet, and yield of 50 gpm for 2 hours.

3.4 Aquifer Properties

Due to the small number of wells in the area little is known about the aquifer properties in the area. The well will be pump tested after completion to determine aquifer properties. The static water level from the source aquifer is greater than 25 feet of the surface per the existing well log; therefore, the water source should not require full-time disinfection.

4.0 INVENTORY

Montana Natural Resource Information System Digital Atlas of Montana was used to determine inventory and potential sources of contamination.

4.1 Control Zone

The well location can be seen in **Appendix A.** The 100-foot control zone for the public water supply well contains part of the school building and the parking area. The new septic system will be located outside of the control zone closer toward the back of the property. This drainfield will be upgradient but not directly upgradient of the proposed well. The area is contained within the property boundary. The area immediately outside the property is a residential development with single-family houses served by individual wells and septic systems. No contamination is foreseen. This control zone will be owned by Trout Creek Seventh Day Adventist Church.

4.2 Inventory Region

The 1-mile radius is shown in **Appendix A.** The 1-mile inventory region contains much of the landscape that is within the control zone. In **Appendix B**, NRIS data shows a mix of land use surrounding the property that includes evergreen forest, open grassland, mixed forest, and a residential and commercial development. Highway 200 with local roadways run through this region. NRIS did not identify any other major sources of contamination such as abandoned mine sites, remediation response sites, landfills, federal superfund sites, crude oil pipelines, or RV dump sites.

4.3 Recharge Region

The recharge region includes all area upstream of the property in the Belgian Gulch-Noxon Reservoir. The area includes about 8.4 square miles of mostly agriculture, forested and residential land with little development and low risk of contamination.

5.0 SUSCEPTIBILITY

Susceptibility is the degree of likelihood for a public water supply to be impacted by inventoried contaminant sources. Susceptibility is determined in accordance with the *Instructions for Completing a PWS-6 Report for Community or Non-Community Non-Transient Public Water Supplies* (DEQ, 2007). Susceptibility is determined by considering the *hazard* that a significant potential contaminant source presents to the PWS source water, relative to any *barriers* to the contaminant. Hazard is determined by the proximity or density of significant potential contaminant sources. Barriers to contamination are anything that decreases the likelihood of contaminants reaching a water source.

Table 1 – Significant Potential Contaminant Sources for New Well

Potential Contaminant Source	Potential Contaminants	Hazard	Hazard Rating	Barriers	Susceptibility
Septic Systems	Nitrate, Pathogens	Leakage of sewage into groundwater	**Moderate (50-300 per sq. mile)**	Well construction; well pump and intake placement; proper maintenance of facilities;	**Low**
On-Site Septic Systems	Nitrate, Pathogens	Leakage of Sewage into groundwater	**High (currently within control zone)**	Well construction; well pump and intake placement; abandoned existing system; proposed location downgradient of well	**Low**
Land use – Agricultural/irrigated land	Pesticides, fertilizer being applied to surrounding land	Routine application of fertilizer and pesticides, storm water runoff. Infiltration to groundwater	**Low (less than 20 percent of the region)**	Well construction; well pump and intake placement; emergency response plan; proper application rates	**Low**
Active USTs	VOCs, petroleum hydrocarbons	Contaminants leaching into groundwater	**High**	Compliance with 1998 upgrades, spill prevention, groundwater monitoring, down gradient of PWS	**Moderate**

These ratings are derived from the procedures established by the *Instructions for Completing a PWS-6 Report for Community or Non-Community Non-Transient Public Water Supplies* (DEQ,

2007). In general, the hazard posed by the septic systems in the area is moderate (50-300 septic systems/restroom facilities per square mile). The hazard posed by on-site septic system is high due to existing septic system being in the control zone. The hazard posed by agricultural land use is low (less than 20% of land use within the inventory region). The hazard posed by active USTs is moderate after barriers are implemented. An average rating of "low susceptibility" is given for the new well.

6.0 LIMITATIONS

This Source Water Delineation and Assessment Report is intended to meet the technical requirements for delineation and assessment of the proposed well field as required by the Montana Department of Environmental Quality and the federal Safe Drinking Water Act (SDWA) Amendments of 1996 [U.S. Code Title 42, Chapter 6A, Subchapter XII, Part E, § 300j-13-(a) Source Water Assessment]. The following limitations should be noted:

- Not every potential or existing source contamination in the proposed area has been identified. Consideration was limited to potential sources of contamination that are within the inventory region and of a type determined by the DEQ to be significant.

- Potential sources of contamination were identified using online databases and available overhead and map imagery. Field surveys and inspections of the inventory region were not conducted.

- Delineation of the recharge region is considered a first-order approximation, and may not be accurate. In order to accurately delineate a truly representative recharge region, a detailed field study would be required. Such a study is beyond the scope of this report.

- The potential contaminant sources described in the inventory are identified from readily available information. Consequently, unregulated activities or unreported contaminant releases may have been overlooked. Multiple data sources are used to increase the likelihood that major threats to the source water are identified. The inventory is not exhaustive. Absence of a potential contaminant in the inventory or susceptibility assessment of this report does not mean that the potential for contamination does not exist, or that there is no threat.

- This report is not, and should not be construed as, a guarantee, warranty or certification that the PWS (well field) will not be impacted by potential contaminant sources given a low susceptibility.

7.0 REFERENCES

1. Montana Department of Environmental Quality. (2022, June 02). Instructions for Completing a PWS-6 Report For Transient Public Water Supplies.

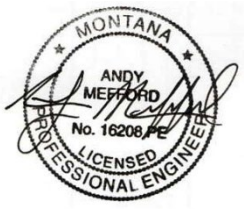
2. Montana Department of Environmental Quality. (1999). *PWS 6 - Source Water Protection Delineation.*

3. Montana State Library Natural Resources Information System. https://nris.msl.mt.gov/

Prepared by:
Landmark Consulting LLC

Kane Leithead, EIT

Checked by:

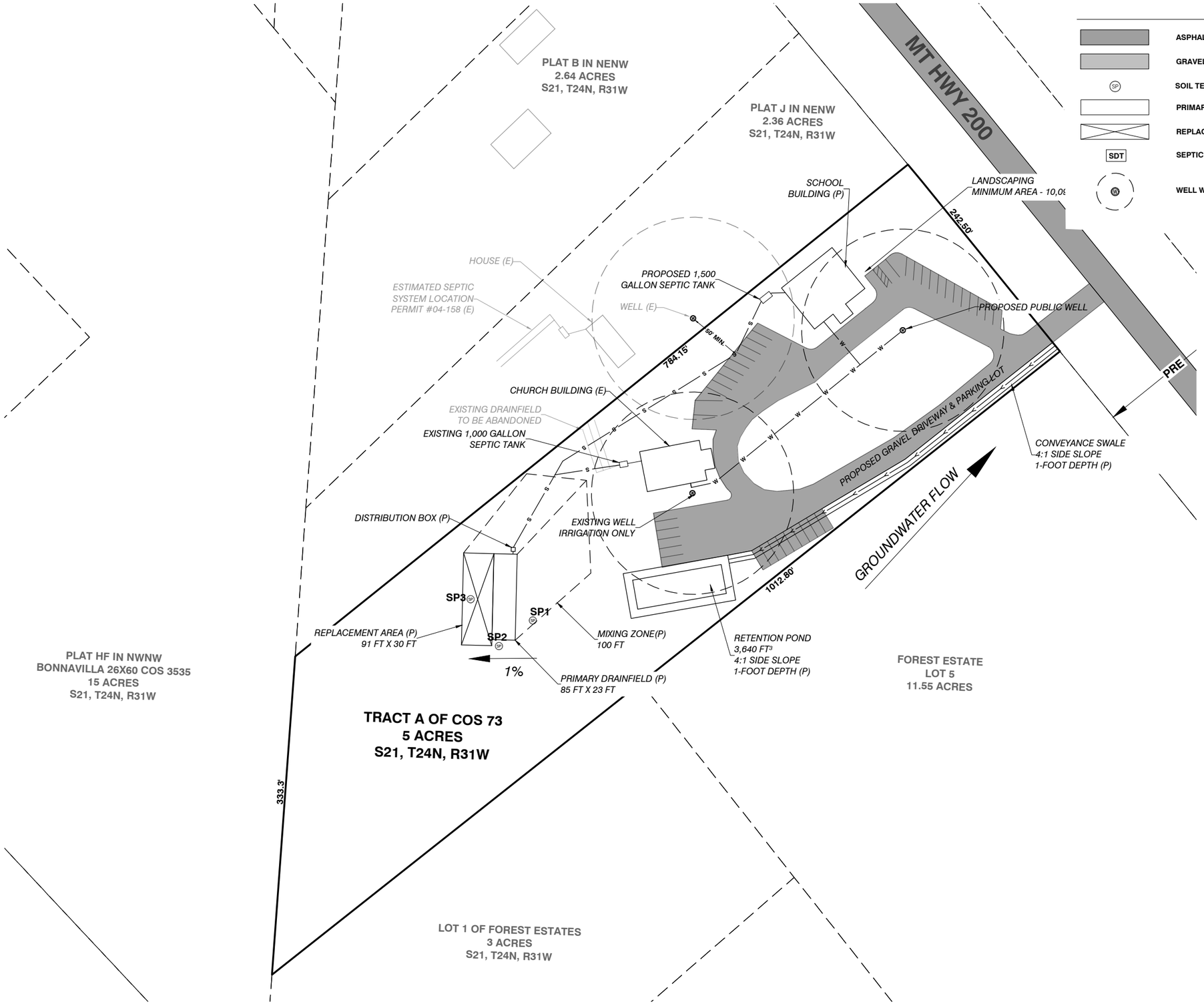


Andy Mefford, PE

Date 12/31/2024

APPENDIX A:

Site Layout – Well Location, Control Region



LEGEND

- ASPHALT ROAD
- GRAVEL DRIVEWAY AND PARKING AREA
- SOIL TEST PIT
- PRIMARY DRAINFIELD (85 FT X 23 FT)
- REPLACEMENT AREA (91 FT X 30 FT)
- SEPTIC TANK
- WELL WITH 100-FT RADIUS ISOLATION ZONE
- (P) PROPOSED FACILITIES
- (E) EXISTING FACILITIES
- PRE PUBLIC ROAD EASEMENT
- BUILDING FOOTPRINT
- 100 SOURCE SPECIFIC MIXING ZONE

MDEQ LOT LAYOUT NOTES:

(A) KNOWN EXISTING, PREVIOUSLY APPROVED, OR PROPOSED WELLS, WASTEWATER SYSTEMS AND MIXING ZONES ON OR WITHIN 100' OF THE SUBDIVISION HAVE BEEN SHOWN ON THIS LOT LAYOUT.

(B) ALL SETBACKS PURSUANT TO ARM 17.36.323 ARE MET.

(C) ALL KNOWN SOURCES OF CONTAMINATION WITHIN 500' OF THE PROPOSED WATER SOURCE ARE SHOWN.

(D) LAKES, STREAMS, IRRIGATION DITCHES, WETLANDS AND SPRINGS PRESENT WITHIN 100' OF THE SUBDIVISION PERIMETER ARE SHOWN ON THIS LOT LAYOUT.

(E) ARM 17.30.518 SOURCE SPECIFIC MIXING ZONES OF 100 FT ARE REQUESTED FOR PROPOSED WASTEWATER TREATMENT SYSTEM ON THIS LOT LAYOUT.

MONTANA ANDY MEFFORD No. 16206PE LICENSED PROFESSIONAL ENGINEER

PROJECT #: 9522-24
DRAWN: DIANA ALLEN
CHECKED: ANDY MEFFORD, PE
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:

7TH DAY ADVENTIST CHURCH
PUBLIC WASTEWATER SYSTEM
S21, T24N, R31W TROUT CREEK, SANDERS CO., MT

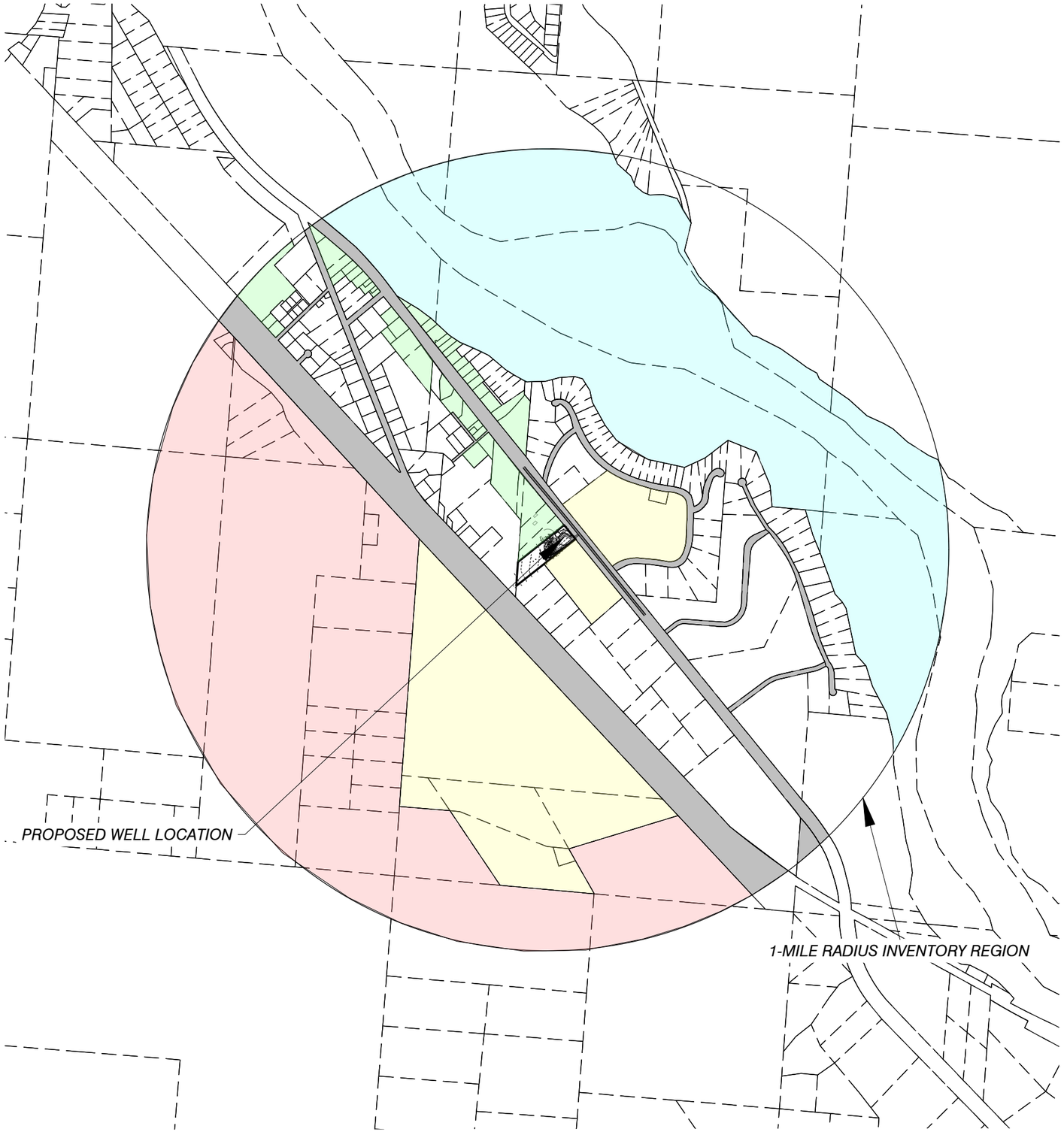
Professional Consultants Inc.
Engineers, Surveyors, Planners, Mappers
3115 RUSSELL ST PO BOX 1750
MISSOULA, MONTANA 59801
PHONE (406) 728-4611
EMAIL PCI@PCIMONTANA.COM

DEC. 31, 2024

SITE LAYOUT

1

F:\2024\9522-24 Trout Creek 7th Day Adventist\Drafting & GIS\9522-24 DESIGN.dwg, 12/31/24



LEGEND

- RRW & HRW (ROADWAYS AND RAILROAD)
- STATE SURFACE WATER (NOXON RESERVOIR)
- F (FOREST AREA)
- ADP & SR MIXTURE (AGRICULTURAL DRYLAND PASTURE AND SEWERED RESIDENTIAL)
- SC (SEWERED COMMERCIAL)

UNSHADED - SR (SEWERED RESIDENTIAL)

N

750 0 750 1500

SCALE IN FEET

MONTANA ANDY MEFFORD No. 15206PE LICENSED PROFESSIONAL ENGINEER

PROJECT #: 9522-24

DRAWN: OLIVIA ALLEN
CHECKED: ANDY MEFFORD
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:

7TH DAY ADVENTIST CHURCH
PWS 6 - INVENTORY MAP

S21, T24N, R31W TROUT CREEK, SANDERS CO., MT

Professional Consultants Inc.
Engineers, Surveyors, Planners, Mappers
3115 RUSSELL ST PO BOX 7750
MISSOULA, MONTANA 59807
PHONE (406) 728-4611
EMAIL PCI@PCIMONTANA.COM

DEC. 31, 2024

INVENT. MAP

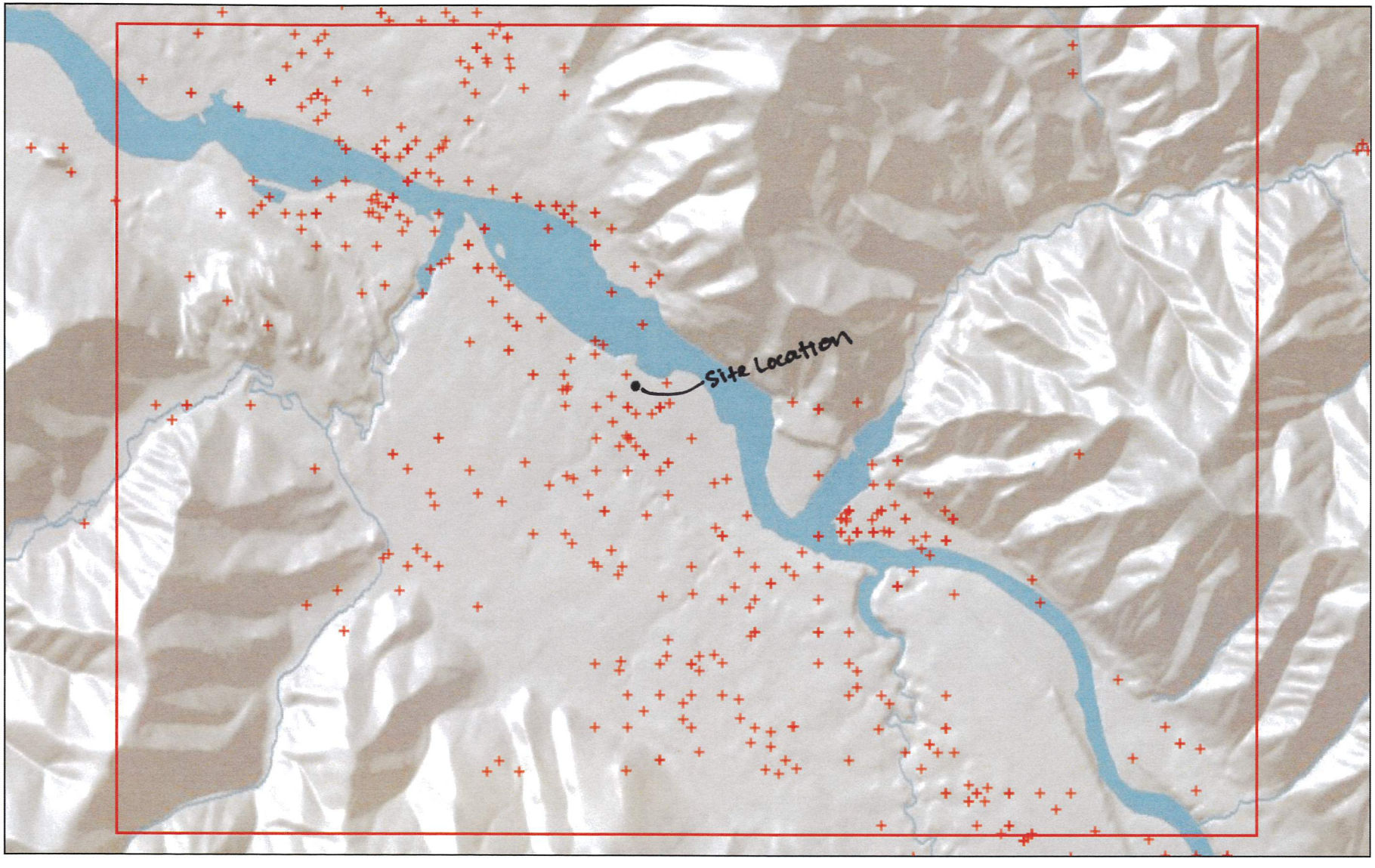
2

F:\2024\9522-24 Trout Creek 7th Day Adventist\Drafting & GIS\9522-24 DESIGN.dwg 12/31/24

APPENDIX B:

Natural Resource Information System – Inventory Region

GWIC Well Location Map

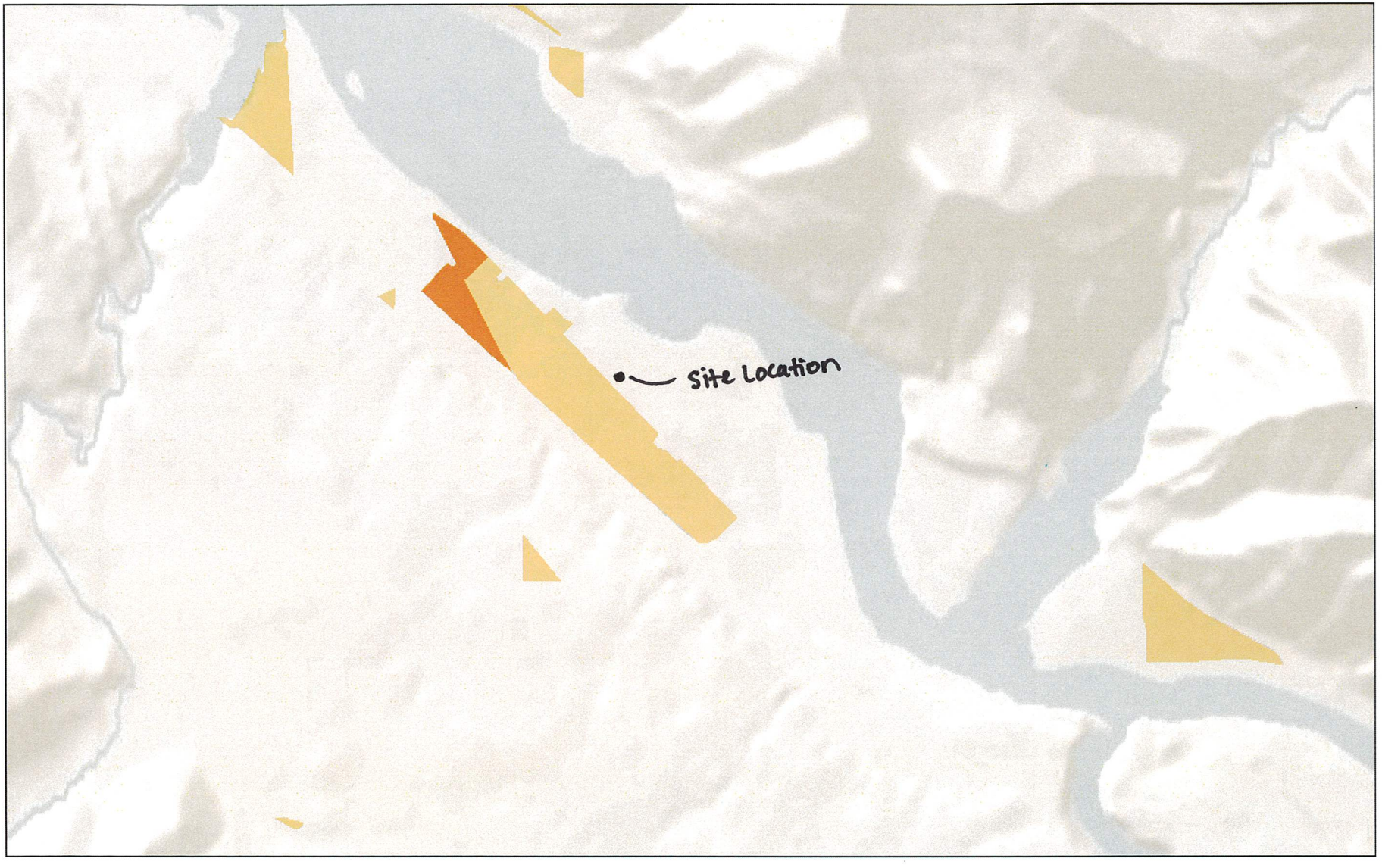


+ GWWELLS

Map created using the Digtal Atlas May 6, 2024
http://msl.mt.gov/GIS/Atlas

Montana State Libary - Digital Library
(406) 444-5354 | geoinfo@mt.gov | http://msl.mt.gov

Septic System Density Map



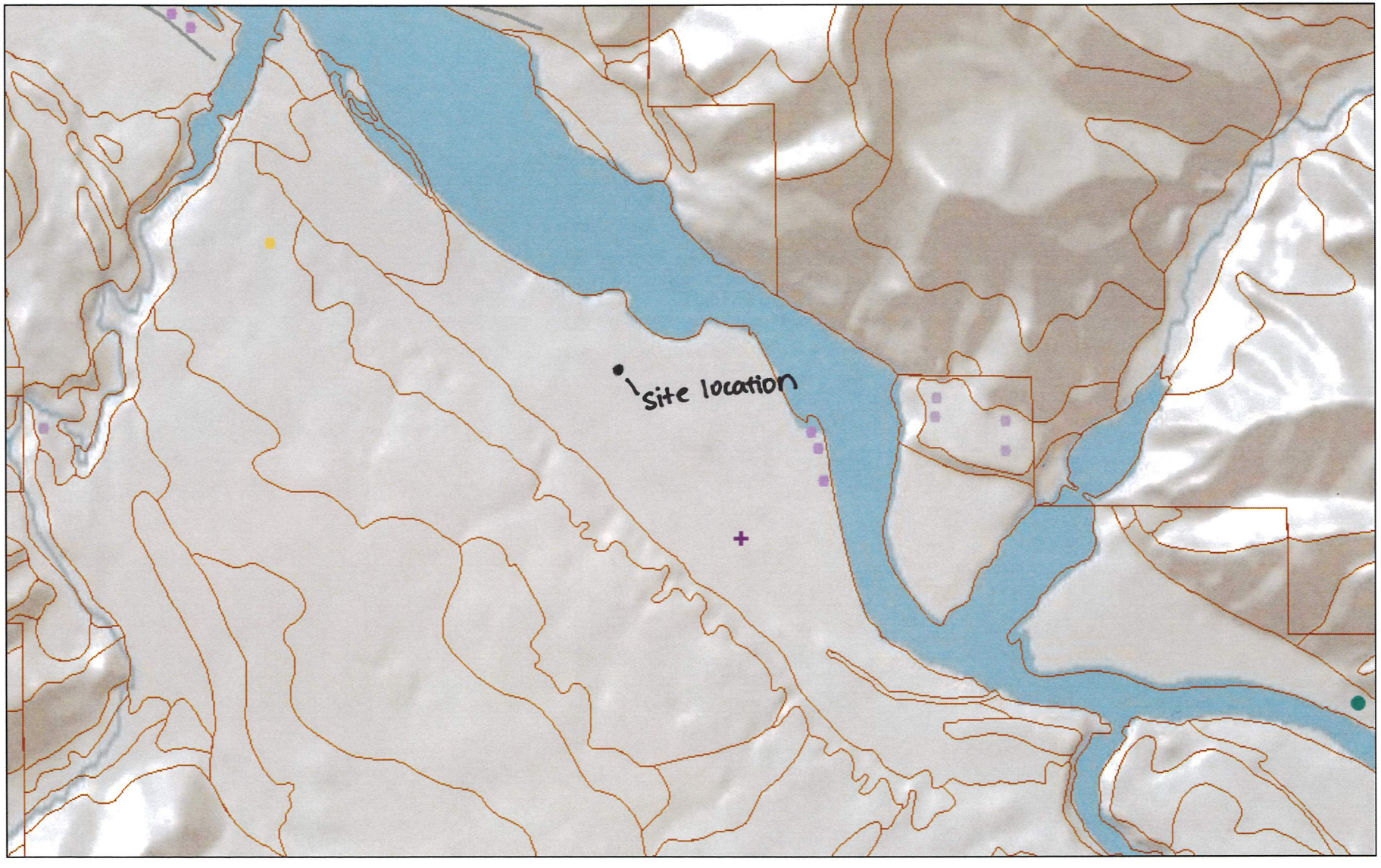
SEPDENS2010

- High
- Medium
- Low

Map created using the Digtal Atlas May 6, 2024
http://msl.mt.gov/GIS/Atlas

Montana State Libary - Digital Library
(406) 444-5354 | geoinfo@mt.gov | http://msl.mt.gov

SSURGO Soils Map



Soils MU
SSURGO_POINT
Stony
Gravelly
Sandy
Gravel Pit
Marsh
SOIL_LINE
Escarpment

Map created using the Digtal Atlas May 6, 2024
http://msl.mt.gov/GIS/Atlas

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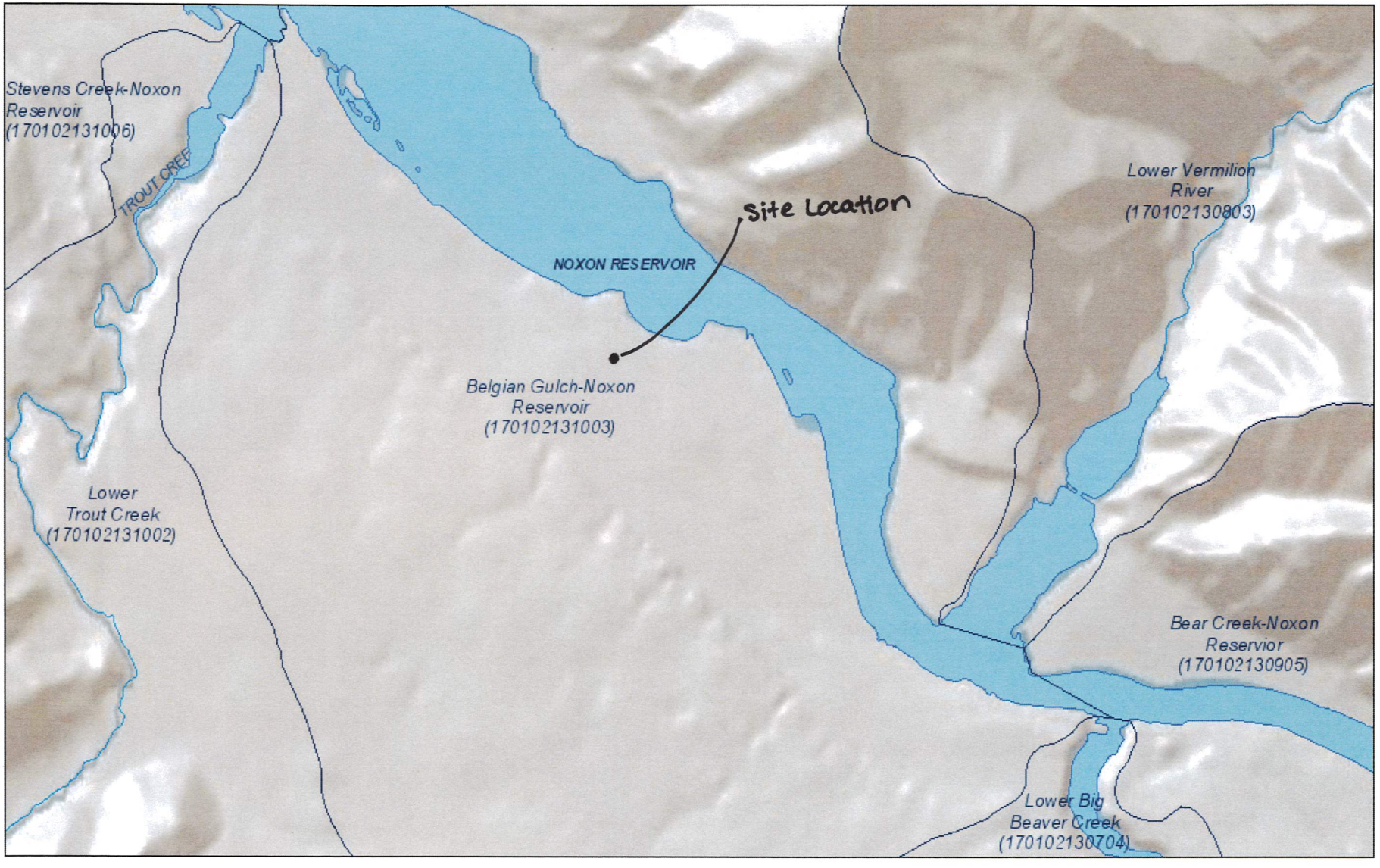
(406) 444-5354 | geoinfo@mt.gov | http://msl.mt.gov

Watershed Map



Subwatershed (WBD_HU12)
Watershed (WBD_HU10)
Subbasin (WBD_HU8)
Lakes24K_NamedOnly
Streams24K_NamedOnly

Map created using the Digtal Atlas May 6, 2024
http://msl.mt.gov/GIS/Atlas

Montana State Libary - Digital Library
(406) 444-5354 | geoinfo@mt.gov | http://msl.mt.gov

Montana Digital At

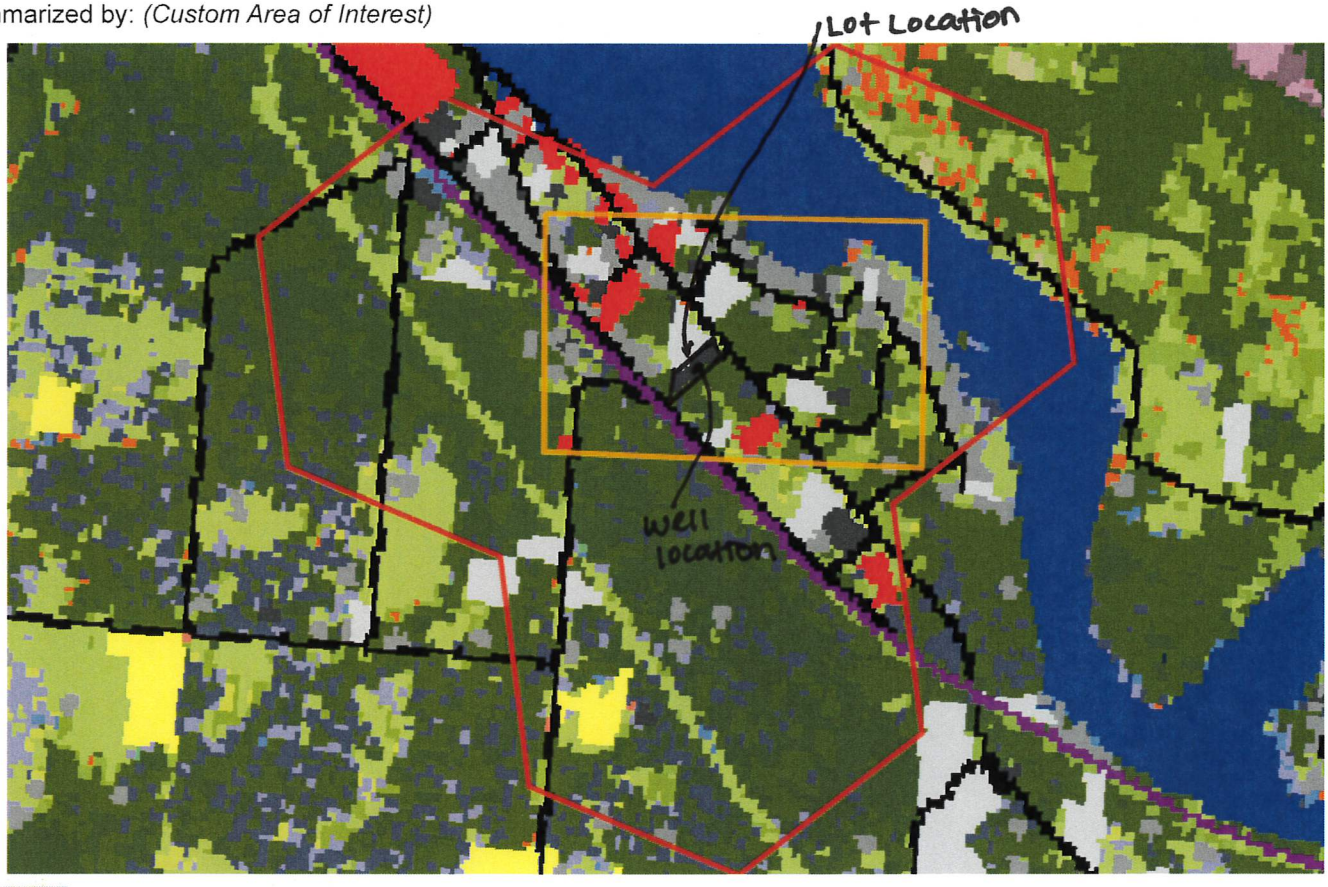
MONTANA STATE LIBRARY
NATURAL HERITAGE PROGRAM
A program of the Montana State Library's
Natural Resource Information System

Land Cover Map

Latitude Longitude
47.80868 -115.56243
47.84346 -115.60570

Land Cover

Summarized by: *(Custom Area of Interest)*



23% (*433 Acres*)

Forest and Woodland Systems
Conifer-dominated forest and woodland (xeric-mesic)

Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest

This ecological system, composed of highly variable montane conifer forests, is found throughout Montana. It is associated with a submesic climate regime with annual precipitation ranging from 250 to 1,000 millimeters (10-39 inches), with most precipitation occurring during winter, and April through June. Winter snowpacks typically melt off in early spring at lower elevations. Elevations range from valley bottoms to 1,676 meters (5,500 feet) in northwestern Montana and up to 2,286 meters (7,500 feet) on warm aspects in southern Montana. In northwestern and west-central Montana, this ecosystem forms a forest belt on warm, dry to slightly moist sites. It generally occurs on gravelly soils with good aeration and drainage and a neutral to slightly acidic pH. In the western part of the state, it is seen mostly on well drained mountain slopes and valleys from lower treeline to up to 1,676 meters (5,500 feet). Immediately east of the Continental Divide, in north-central Montana, it occurs at montane elevations. Douglas-fir (*Pseudotsuga menziesii*) is the dominant conifer both as a seral and climax species. West of the Continental Divide, occurrences can be dominated by any combination of Douglas-fir and long-lived, seral western larch (*Larix occidentalis*), grand fir (*Abies grandis*), ponderosa pine (*Pinus ponderosa*) and lodgepole pine (*Pinus contorta*). Aspen (*Populus tremuloides*) and western white pine (*Pinus monticola*) have a minor status, with western white pine only in extreme western Montana. East of the Continental Divide, larch is absent and lodgepole pine is the co-dominant. Engelmann spruce (*Picea engelmannii*), white spruce, (*Picea glauca*)or their hybrid, become increasingly common towards the eastern edge of the Douglas-fir forest belt.

21% (*399 Acres*)

Forest and Woodland Systems
Conifer-dominated forest and woodland (mesic-wet)

Rocky Mountain Mesic Montane Mixed Conifer Forest

These forests are generally dominated by western hemlock (*Tsuga heterophylla*), western red cedar (*Thuja plicata*), and grand fir (*Abies grandis*). They are found in areas influenced by incursions of mild, wet, Pacific maritime air masses west of the Continental Divide in Montana. Occurrences are found on all slopes and aspects but grow best on sites with high soil moisture, such as toeslopes and bottomlands. At the periphery of its distribution, this system is confined to moist canyons and cooler, moister aspects. Generally, these are moist, non-flooded or upland forest sites that are not saturated yearlong. In northwestern Montana, western hemlock and western red cedarforests occur on bottomland and northerly exposures between 609-1,585 meters (2,000-5,200 feet) on sites with an average annual precipitation of 635 millimeters (25 inches). These forests are common in extreme northwestern Montana, and extend eastward to the Continental Divide in the Lake McDonald drainage of Glacier National Park. Isolated stands of western hemlock occur in the Swan Valley, but are found most commonly in the Libby and Thompson Falls vicinities, west to the Idaho border. Western red cedaroccurs extensively in the Mission Mountain ranges south to Missoula, and on lower flanks of the Swan Range north of Lion Creek. It is confined to the riparian zone of major streams on the east face of the Bitterroot Mountain Range. Grand fir, being less moisture dependent, occurs in more southerly and easterly sites than western red cedar and western hemlock. This system is similar to Rocky Mountain Dry-Mesic Mixed Montane Conifer Forest, which can be described as a seral phase of this system on appropriate sites west of the Continental Divide.

11% (213 Acres)

Wetland and Riparian Systems
Open Water

Open Water

All areas of open water, generally with less than 25% cover of vegetation or soil

9% (164 Acres)

Grassland Systems
Montane Grassland

Rocky Mountain Lower Montane, Foothill, and Valley Grassland

This grassland system of the northern Rocky Mountains is found at lower montane to foothill elevations in mountains and valleys throughout Montana. These grasslands are floristically similar to Big Sagebrush Steppe but are defined by shorter summers, colder winters, and young soils derived from recent glacial and alluvial material. They are found at elevations from 548 - 1,650 meters (1,800-5,413 feet). In the lower montane zone, they range from small meadows to large open parks surrounded by conifers; below the lower treeline, they occur as extensive foothill and valley grasslands. Soils are relatively deep, fine-textured, often with coarse fragments, and non-saline. Microphytic crust may be present in high-quality occurrences. This system is typified by cool-season perennial bunch grasses and forbs (>25%) cover, with a sparse shrub cover (<10%). Rough fescue (*Festuca campestris*) is dominant in the northwestern portion of the state and Idaho fescue (*Festuca idahoensis*) is dominant or co-dominant throughout the range of the system. Bluebunch wheatgrass (*Pseudoroegneria spicata*) occurs as a co-dominant throughout the range as well, especially on xeric sites. Western wheatgrass (*Pascopyrum smithii*) is consistently present, often with appreciable coverage (>10%) in lower elevation occurrences in western Montana and virtually always present, with relatively high coverages (>25%), on the edge of the Northwestern Great Plains region. Species diversity ranges from a high of more than 50 per 400 square meter plot on mesic sites to 15 (or fewer) on xeric and disturbed sites. Most occurrences have at least 25 vascular species present. Farmland conversion, noxious species invasion, fire suppression, heavy grazing and oil and gas development are major threats to this system.

No Image

6% (117 Acres)

Human Land Use
Developed

Other Roads

County, city and or rural roads generally open to motor vehicles.

6% (117 Acres)

Human Land Use
Developed

Low Intensity Residential

Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-50% of total cover. These areas most commonly include single-family housing units in rural and suburban areas. Paved roadways may be classified into this category.

5% (87 Acres)

Wetland and Riparian Systems
Floodplain and Riparian

Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland

This ecological system is found throughout the Rocky Mountain and Colorado Plateau regions. In Montana, sites occur at elevations of 609-1,219 meters (2,000-4,000 feet) west of the Continental Divide. East of the Continental Divide, this system ranges up to 1,676 meters (5,500 feet). It generally comprises a mosaic of multiple communities that are tree-dominated with a diverse shrub component. It is dependent on a natural hydrologic regime with annual to episodic flooding, so it is usually found within the flood zone of rivers, on islands, sand or cobble bars, and along streambanks. It can form large, wide occurrences on mid-channel islands in larger rivers, or narrow bands on small, rocky canyon tributaries and well-drained benches. It is also typically found in backwater channels and other perennially wet but less scoured sites, such as floodplains, swales and irrigation ditches. In some locations, occurrences extend into moderately high intermountain basins where the adjacent vegetation is sage steppe. Black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) is the key indicator species. Other dominant trees may include boxelder maple (*Acer negundo*), narrowleaf cottonwood (*Populus angustifolia*), eastern cottonwood (*Populus deltoides*), Douglas-fir (*Pseudotsuga menziesii*), peachleaf willow (*Salix amygdaloides*), or Rocky Mountain juniper (*Juniperus scopulorum*). Dominant shrubs include Rocky Mountain maple (*Acer glabrum*), thinleaf alder (*Alnus incana*), river birch (*Betula occidentalis*), redoiser dogwood (*Cornus sericea*), hawthorne (*Crataegus* species), chokecherry (*Prunus virginiana*), skunkbush sumac (*Rhus trilobata*), willows (*Salix* species), rose (*Rosa* species), silver buffaloberry (*Shepherdia argentea*), or snowberry (*Symphoricarpos* species).

4% (76 Acres)

Forest and Woodland Systems
Conifer-dominated forest and woodland (xeric-mesic)

Rocky Mountain Ponderosa Pine Woodland and Savanna

This system occurs on warm, dry, exposed sites in the foothills of the Rocky Mountains in west-central and central Montana, at the ecotone between grasslands or shrublands and more mesic coniferous forests. Elevations range from 1,066 to 1,676 meters (3,500-5,500 feet), with higher elevation examples mostly confined to central Montana. Occurrences are found on all slopes and aspects; however, moderately steep to very steep slopes or ridgetops are most common. True savanna types are infrequent; the system is more characteristically an open forest with a grassy understory. In the western part of the state, this system is seen mostly on dry slopes in the rainshadow of the Bitterroot Mountains. East of the Continental Divide, it is most widespread around Helena and Lewistown, although it occurs throughout mountain ranges as far east as the Little Rocky and Bearpaw Mountains. Ponderosa pine (*Pinus ponderosa*) is the dominant conifer. Douglas-fir (*Pseudotsuga menziesii*) and western larch (*Larix occidentalis*) may be present in the tree canopy in the more western areas, but are usually absent. In central Montana, limber pine (*Pinus flexilis*) and horizontal juniper (*Juniperus horizontalis*) are frequently components. Although the understory of ponderosa pine forests is often shrubby in other states, in Montana, habitats are mostly dominated by graminoids, although bitterbrush (*Purshia tridentata*), white snowberry (*Symphoricarpos albus*), and skunkrush (*Rhus trilobata*) occur in forests on benchlands and rocky slopes in the central portion of the state. Understory vegetation is more typically grasses and forbs that resprout following low to moderate intensity surface fires. Prolonged drought, beetle kill and exotic invasion are rapidly changing the dynamics of this system.

4% (69 Acres)

Human Land Use
Developed

Developed, Open Space

Vegetation (primarily grasses) planted in developed settings for recreation, erosion control, or aesthetic purposes. Impervious surfaces account for less than 20% of total cover. This category often includes highway and railway rights of way and graveled rural roads.

No Image

2% (39 Acres)

Human Land Use
Developed

Commercial / Industrial

Businesses, industrial parks, hospitals, airports; utilities in commercial/industrial areas.

No Image

2% (*39 Acres*)

Human Land Use
Developed

Major Roads

U.S. and State Highways that are not part of the National Highway System (NHS) Interstate network. This category includes entrance and exit ramps to NHS Interstate highways.

2% (*35 Acres*)

Human Land Use
Developed

High Intensity Residential

Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-80% of the total cover. These areas most commonly include single-family housing units in urban areas. Paved roadways, parking lots, and other large impervious surfaces may be classified into this category.

No Image

2% (*33 Acres*)

Human Land Use
Developed

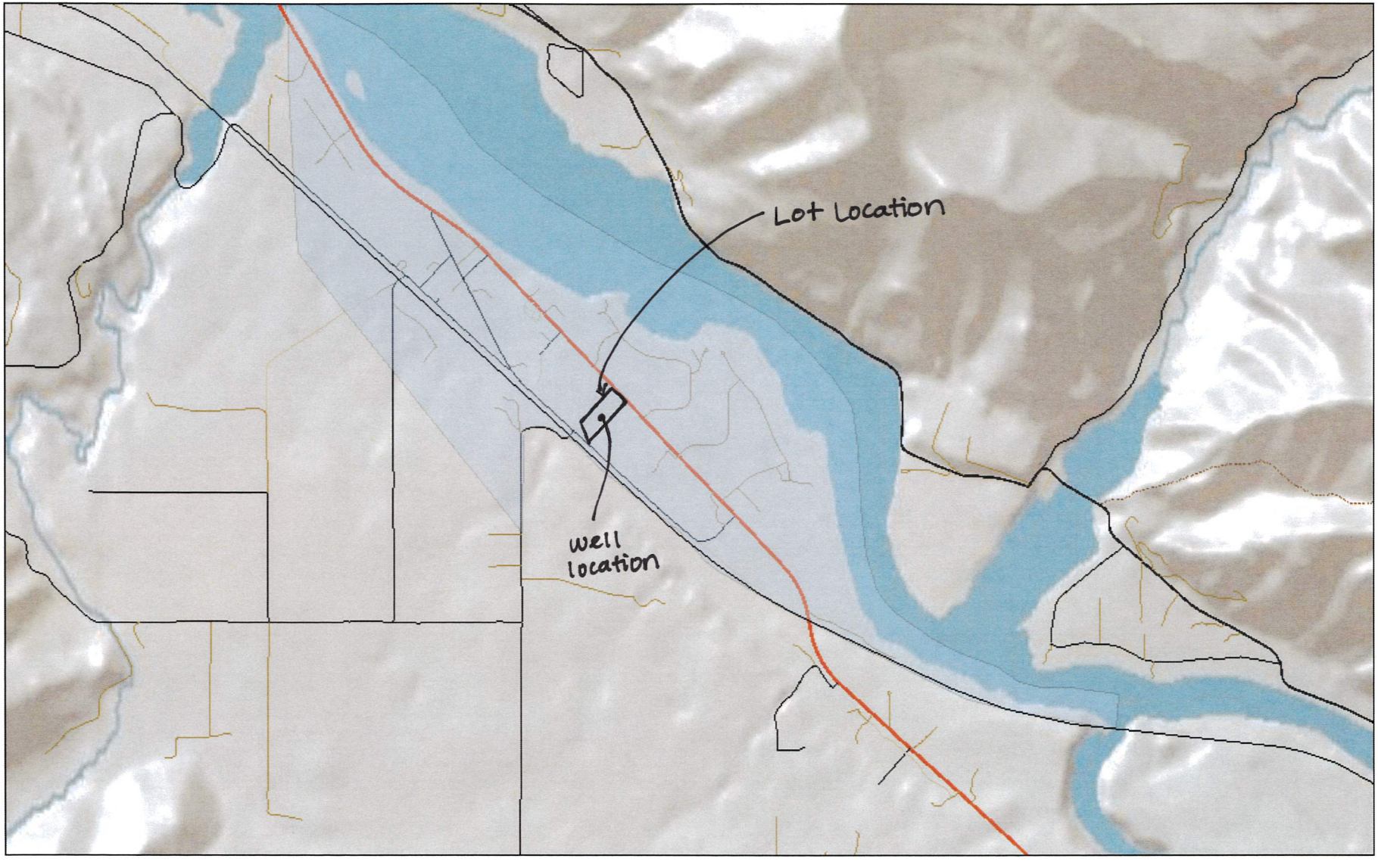
Railroad

Railroad tracks and railroad berms/rights of way, currently in use or capable of use

Additional Limited Land Cover

1% (*27 Acres*) Rocky Mountain Montane-Foothill Deciduous Shrubland
1% (*23 Acres*) Alpine-Montane Wet Meadow
1% (*20 Acres*) Insect-Killed Forest
1% (*15 Acres*) Pasture/Hay
<1% (*5 Acres*) Rocky Mountain Subalpine-Montane Mesic Meadow
<1% (*4 Acres*) Emergent Marsh
<1% (*2 Acres*) Rocky Mountain Cliff, Canyon and Massive Bedrock
<1% (*1 Acres*) Introduced Upland Vegetation - Annual and Biennial Forbland
<1% (*1 Acres*) Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland
<1% (*0 Acres*) Rocky Mountain Subalpine-Montane Fen

Population and Roadway Map



TRAILS
RAILROADS
TOWNAREAS
Census Designated Place

Other Roads
Agency Road
Access Road

Public Roads
Public Road

Highways
NHS Interstate
NHS Primary
Primary
Secondary

Map created using the Digtal Atlas May 6, 2024
http://msl.mt.gov/GIS/Atlas

Montana State Libary - Digital Library
(406) 444-5354 | geoinfo@mt.gov | http://msl.mt.gov

M

APPENDIX C:

Existing Well Documents
Water Quality Sample Test

MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/16/2009 1:11:20 PM)

Site Name: 7TH DAY ADV CHR
GWIC Id: 78745
DNRC Water Right: 19812

Section 1: Well Owner(s)

1) 7TH DAY ADVENT CHURCH (MAIL)
N/A
TROUT CREEK MT 59874 [09/01/1977]

Section 2: Location

Township	Range	Section	Quarter Sections
24N	31W	21	NW¼

County SANDERS

Geocode

Latitude	Longitude	Geomethod	Datum
47.828752	-115.584602	TRS-SEC	NAD83

Ground Surface Altitude **Ground Surface Method** **Datum** **Date**

Addition **Block** **Lot**

Section 3: Proposed Use of Water

PUBLIC WATER SUPPLY (1)

Section 4: Type of Work

Drilling Method: FORWARD ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Thursday, September 1, 1977

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	104	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1	104	6	0.25			STEEL

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
104	104	6			OPEN BOTTOM

Annular Space (Seal/Grout/Packer)

There are no annular space records assigned to this well.

Section 7: Well Test Data

Total Depth: 104
Static Water Level: 36
Water Temperature:

Air Test *

50 gpm with drill stem set at _ feet for 2 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level 41 feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

From	To	Description
0	1	SOIL
1	36	COBBLESTONES SAND
36	104	SAND GRAVEL WATER

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: EUGENE KANE
Company: KANE WELL DRILLING & PUMP SERVICE
License No: WWC-23
Date Completed: 9/1/1977

(1) Proj#9522-24

State of Montana and EPA certified drinking water analysis laboratory

RD Water Lab, LLC

Colilert test:

3700 S. Russell St. 120 - #1 Missoula, MT 59801
Phone: (406) 721-8179

P.O. Box 5064
Missoula, MT 59806

Bacteriological Analysis of Drinking Water

Name of business: TC 7th Day Adventist Church
City: Trout Creek PWSID #:
Date collected: 4/29/2024 Time: 2:30pm
Sample collector: Terri Stoltz Cert #:
Type of water supply: Upstairs Bathroom Sink faucet
Chlorine residual:

Person to receive report: Email: oliviaa@pcimontana.com
Name: PCI
Address: P.O. Box 1750
City: Missoula St.: MT Zip: 59806
Phone: ☐ Phone results
Email

1050
Received: 4-30-24
Reported: 5-1-24
Analyst: LG

☒ Satisfactory at this time.
☐ Contaminated: Water supply should be disinfected and retested before being used as drinking or household water.

Test Type	Lab #	ENTER SAMPLE SITE	
P/A	2404-374	upstairs bathroom Sink faucet	☒ Coliform Absent ☐ Coliform present E. coli ☒ Absent ☐ Present
			☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present
		Coliform Absent	☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present
			☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present
			☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present

1100
1100

B

M

SAMPLES MUST ARRIVE WITHIN 30 HOURS OF COLLECTION! Keep Sample Cool, NOT frozen
Samples may be dropped off in the office Monday - Friday 9am - 4pm,
or mailed Monday - Thursday *ONLY* to P.O. Box 5064 • Missoula, MT 59806

(2) Proj #9522-24

State of Montana and EPA certified drinking water analysis laboratory

RD Water Lab, LLC

Colilert test:

3700 S. Russell St. 120 - #1, Missoula, MT 59801
Phone: (406) 721-5179

P.O. Box 5064
Missoula, MT 59806

Bacteriological Analysis of Drinking Water

Name of business: TC 7th Day Adventist Church
City: Trout Creek
PWSID #:
Date collected: 4/29/2024
Time: 2:35pm
Sample collector: Terri Stoltz
Cert #:
Type of water supply: Kitchen faucet
Chlorine residual:

Person to receive report: Email: oliviaa@pcimontana.com
Name: PCI
Address: P.O. Box 1750
City: Missoula St.: MT Zip: 59806
Phone: ☐ Phone results
Email

1050

Test Type	Lab #	ENTER SAMPLE SITE	
P/A	2404-375	Kitchen faucet	☒ Coliform Absent ☐ Coliform present E. coli ☒ Absent ☐ Present
		Coliform Absent	☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present
			☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present
			☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present
			☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present

1100/1100

Received: 4-30-24
Reported: 5-1-24
Analyst: UG

☒ Satisfactory at this time.
☐ Contaminated: Water supply should be disinfected and retested before being used as drinking or household water.

B

SAMPLES MUST ARRIVE WITHIN 30 HOURS OF COLLECTION! Keep Sample Cool, NOT frozen M
Samples may be dropped off in the office Monday - Friday 9am - 4pm,
or mailed Monday - Thursday ONLY to P.O. Box 5064 • Missoula, MT 59806

(3)

Proj #9522-24

State of Montana and EPA certified drinking water analysis laboratory

RD Water Lab, LLC

Colilert test:

3700 S. Russell St. 120 - #1 Missoula, MT 59801
Phone: (406) 721-8179

P.O. Box 5964
Missoula, MT 59806

Bacteriological Analysis of Drinking Water

Name of business: TC 7th Day Adventist Church Person to receive report: Email: oliviaa@pcimontana.com
City: Trout Creek PWSID #: _____ Name: PCI
Date collected: 4/29/2024 Time: 2:40pm Address: P.O. Box 1750
Sample collector: Terri Stoltz Cert #: _____ City: Missoula St: MT Zip: 59806
Type of water supply: outside spigot (west side) Phone: _____ ☐ Phone results
Chlorine residual: _____ Email

1100
1100

1050
Received: 4-30-24
Reported: 5-1-24
Analyst: LG

Test Type	Lab #	ENTER SAMPLE SITE	
	2404-376	outside spigot west side	X Coliform Absent ☐ Coliform present E. coli X Absent ☐ Present
			☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present
		Coliform Absent	☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present
			☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present
			☐ Coliform Absent ☐ Coliform present E. coli ☐ Absent ☐ Present

X Satisfactory at this time.
☐ Contaminated: Water supply should be disinfected and retested before being used as drinking or household water.

B

SAMPLES MUST ARRIVE WITHIN 30 HOURS OF COLLECTION! Keep Sample Cool, NOT frozen M
Samples may be dropped off in the office Monday - Friday 9am - 4pm,
or mailed Monday - Thursday ONLY to P.O. Box 5064 • Missoula, MT 59806

ANALYTICAL REPORT

Montana Environmental Laboratory LLC
1170 N. Meridian Rd., P.O. Box 8900, Kalispell, MT 59904-1900
Phone: 406-755-2131 Fax: 406-257-5359 www.melab.us

Professional Consultants
Professional Consultants
P.O. Box 1750
Missoula, MT 59806

PWS ID:
Project: 3020 MT Hwy 200, Trout Creek

Client Sample ID: Frost Free Spigot
Matrix: DRINKING WATER **Collected:** 04/11/2024 11:30

Lab ID: 2403345-01
Received: 04/15/2024 9:00

Analyses	Result	Units	RL	MCL	Method	Prepared	Analyzed	Analyst
Arsenic	**ND**	mg/L	0.001	0.010	E200.8		04/19/2024 16:07	BLW
Calcium	**44**	mg/L	1	1000	3500CA-B		04/19/2024 16:38	BLW
Chloride	**1.5**	mg/L	0.1	250	E300		04/16/2024 11:22	BLW
Conductivity	**396**	umho/cm	0.1		SM2510B		04/16/2024 14:45	BLW
Hardness	**220**	mg/L	1		SM2340C		04/17/2024 13:18	BLW
Iron	**ND**	mg/L	0.01	0.3	E200.8		04/19/2024 16:07	BLW
Magnesium	**26.7**	mg/L	0.1	500	E200.8		04/19/2024 16:07	BLW
Manganese	**ND**	mg/L	0.001	0.05	E200.8		04/19/2024 16:07	BLW
Nitrate + Nitrite, Total	**0.68**	mg/L	0.01	10	E353.2		04/16/2024 11:22	BLW
pH	**7.94**	pH	0.1		E150.1	04/15/2024	04/16/2024 14:43	BLW
Sodium	**2.4**	mg/L	0.1	20	E200.8		04/19/2024 16:07	BLW
Sulfate	**6.3**	mg/L	0.1	500	E300.0		04/16/2024 11:22	BLW

MCL = Maximum Contaminant Limit ND = Not Detected
RL = Reporting Limit

MEL REVIEW: _____

Seventh-day Adventist Church
MONTANA CONFERENCE

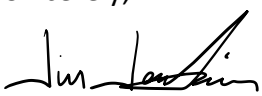
June 11, 2024

To Whom It May Concern

I, Jim Jenkins, Vice President for Administration for the Montana Conference of Seventh-day Adventist Inc, hereby authorize Maurita Crew, Teaching Principal at Trout Creek Adventist School, to sign documents specific to the construction of the new building for Trout Creek Adventist School, on behalf of the Montana Conference of Seventh-day Adventist Inc.

Should you have any questions or require further clarification, please do not hesitate to contact me at 406-414-9893 or jimjenkins@montanaadventist.org

Sincerely,



Jim Jenkins
Vice President for Administration
Montana Conference of Seventh-day Adventist Inc

175 Canyon View Rd.
Bozeman, MT
59715, USA
www.montanaadventist.org

CASCADE WINDOWS

Cascade Windows
10507 E. Montgomery Dr.
Spokane Valley, WA 99206
Phone: (800) 442-8544
Fax: (866) 530-8937

QUOTE #3214406 -00

Order Date:	6/04/24	Ship Date:	6/04/24
Date Printed:	6/06/24	Del Date:	6 /06/24
Carrier:	COMMON CARRIER		
Terms:	01 - 10TH PROX		
Territory Manager:	JUD CIRIGNANO		
Inside Sales:			

SOLD
Sold To: 1391
GLEN'S AUTO GLASS
5458 HWY 200
THOMPSON FALLS MT 59873

Phone: 406-827-4227 Fax: 999-999-9999
PO:

SHIP
Ship To: 1391 POOL#
GLEN'S AUTO GLASS
5458 HWY 200
THOMPSON FALLS MT 59873

Phone: 406-827-4227 Fax: 406-827-4228
PO: 7TH DAY CHURCH QT

Item #	Qty	Product Number	Description	Net Each	Net Extended
			{{{CUSTOMER TO VERIFY ALL SPECS BEFORE ORDERING}}}		
1.0	1.0	TYP	TYPICAL OPTIONS FOR ORDER WINPRO SERIES, WHT, DS EC LOWE, XO, ARGON, BOX SCREEN, * 3 1/4" NAIL FIN, SUPER SPACER,	$.00	$.00
2.0	18.0	9011	PICTURE UNIT WINPRO SERIES, 2616 (30" x 18" RO), WHT, DS EC LOWE, ARGON, * 3 1/4" NAIL FIN, SUPER SPACER, *U-VALUE: .26, **SHGC-VALUE: .33 *VLT-VALUE: .61, *STC-VALUE: 00.,	$80.59	$1,450.62
3.0	7.0	9400P	CASCADE AWNING BELOW PIC COMBO 4050 (48" x 60" RO), WHT, DS EC LOWE, ARGON, 18" NOM. VENT, BOX SCREEN, SUPER SPACER, *U-VALUE: .26, **SHGC-VALUE: .25 *VLT-VALUE: .46, *STC-VALUE: 27.,	$457.79	$3,204.53
4.0	2.0	9011	PICTURE UNIT WINPRO SERIES, 1030 (12" x 36" RO), WHT, EC LOWE TEMP, ARGON, * 3 1/4" NAIL FIN, SUPER SPACER, *U-VALUE: .26, **SHGC-VALUE: .33 *VLT-VALUE: .61, *STC-VALUE: 27.,	$98.43	$196.86
5.0	1.0	BOXCSMTSCRN	BOX SHIP CSMT/AWNING SCREENS	$.00	$.00
6.0	1.0	JSDELLU	JOBSITE DELIVERY LIVE UNLOAD	$380.00	$380.00