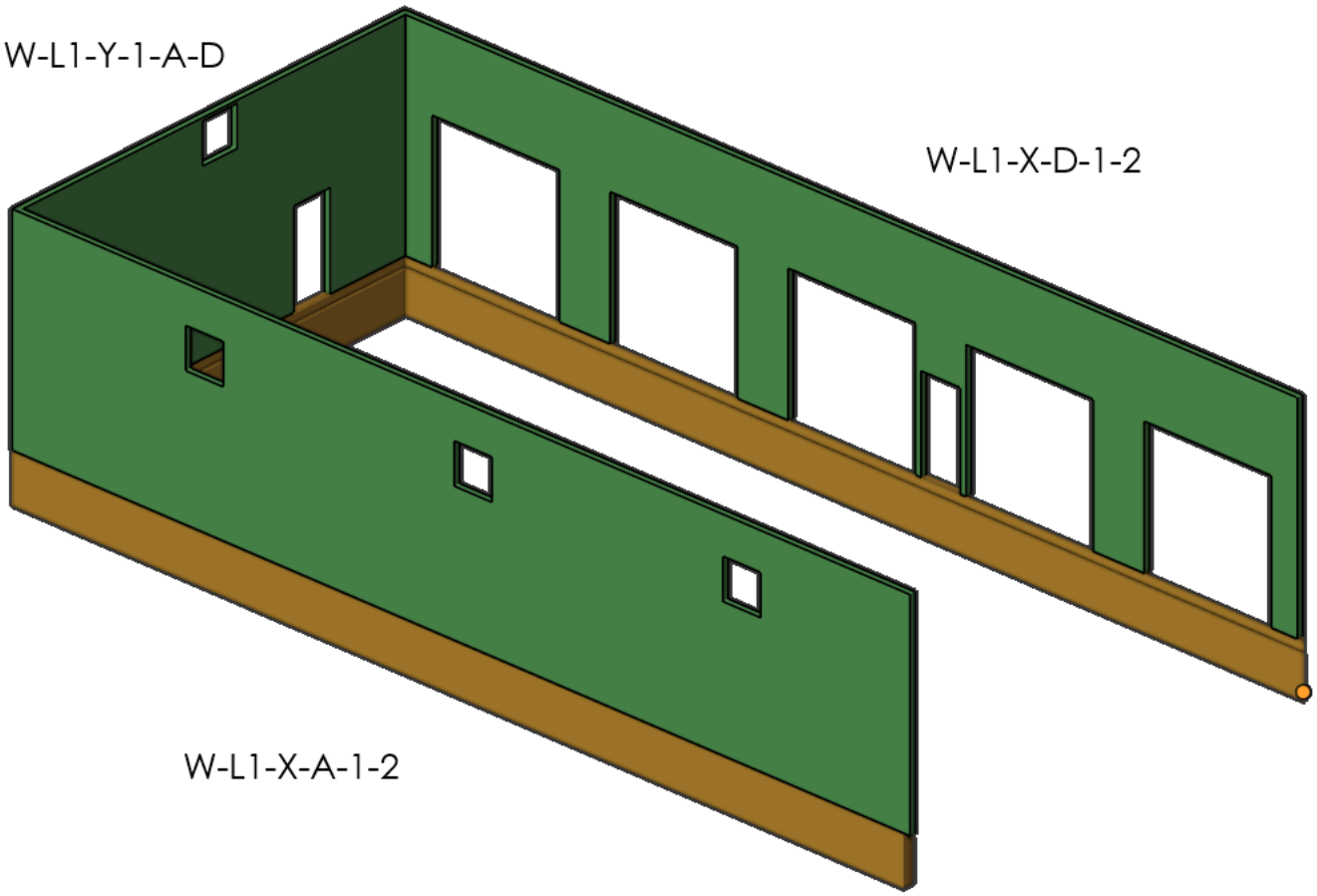
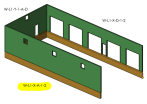
Wall Framing Design - Service Area

First Storey Walls:



Wall Framing Design: W-L1-X-A-1-2



Components

Wall - Dimensions (L x H): 71.6 ft x 16 ft

Window Opening - Dimensions (L x H_{top}): 3 ft x 13.2 ft

Component	Section	Product / Species	Grade
Studs	2x6 @ 16 in O.C.	Spruce-Pine-Fir	No.1/No.2
Top plate	(2) 2x6	Spruce-Pine-Fir	No.1/No.2
Sill plate	2x6 Pressure Treated	Spruce-Pine-Fir	No.1/No.2
Window Opening - Posts	(1) 2x6	Spruce-Pine-Fir	No.1/No.2
Window Opening - Lintel	(3) 2x6	Spruce-Pine-Fir	No.1/No.2

Loads

Source	Dead	Live	Snow	Wind	Width
Self-weight and wind	10 psf	-	-	20 psf	-
Roof - Service area	20 psf	-	30 psf	-	20.1 ft

Analysis and Design Results

Studs

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 1.45 kip , f_c: 175.4 psi	F_c: 320 psi , C_P: 0.22	0.55	✔
D + 0.6 W	Buckling + Bending	P: 0.64 kip , f_c: 77.9 psi M: 0.51 kip-ft , f_b: 812.4 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.48	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 1.25 kip , f_c: 151 psi M: 0.38 kip-ft , f_b: 609.3 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.67	✔
D + 0.6 W	Shear	V: 0.13 kip , f_v: 23.3 psi	F_v: 216 psi	0.11	✔
D + 0.75 S + 0.45 W	Shear	V: 0.096 kip , f_v: 17.5 psi	F_v: 216 psi	0.08	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.43 in	d_U: 0.53 in (L / 360)	0.80	✔

Top plate

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 0.24 kip-ft , f_b: 701.4 psi	F_b: 1501 psi	0.47	✔
D + S	Shear	V: 0.72 kip , f_v: 65.8 psi	F_v: 155.2 psi	0.42	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.011 in	d_U: 0.044 in (L / 360)	0.25	✔
1.5 D + S	Deflection	d: 0.025 in	d_U: 0.067 in (L / 240)	0.37	✔

Window Opening - Posts

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 1.63 kip , f_c: 197.3 psi	F_c: 320 psi , C_P: 0.22	0.62	✔
D + 0.6 W	Buckling + Bending	P: 0.72 kip , f_c: 87.6 psi M: 0.58 kip-ft , f_b: 914 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.57	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 1.4 kip , f_c: 169.9 psi M: 0.43 kip-ft , f_b: 685.5 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.82	✔
D + 0.6 W	Shear	V: 0.14 kip , f_v: 26.2 psi	F_v: 216 psi	0.12	✔
D + 0.75 S + 0.45 W	Shear	V: 0.11 kip , f_v: 19.6 psi	F_v: 216 psi	0.09	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.48 in	d_U: 0.53 in (L / 360)	0.90	✔

Window Opening - Lintel

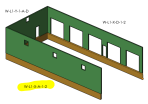
Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 1.22 kip-ft , f_b: 645.6 psi	F_b: 1305.2 psi	0.49	✔
D + S	Shear	V: 1.63 kip , f_v: 98.6 psi	F_v: 155.2 psi	0.64	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.017 in	d_U: 0.1 in (L / 360)	0.17	✔
1.5 D + S	Deflection	d: 0.038 in	d_U: 0.15 in (L / 240)	0.25	✔

Wall Framing Design: W-L1-X-A-1-2 with snow drift



why (2) scenerios? why not just design for worst case?

I just don't see the contractor dialing into these subtleties.

Same with W-L1-X-D-1-2

Components

Wall - Dimensions (L x H): 71.6 ft x 16 ft

Component	Section	Product / Species	Grade
Studs	2x6 @ 16 in O.C.	Spruce-Pine-Fir	Select Structural
Top plate	(2) 2x6	Spruce-Pine-Fir	No.1/No.2
Sill plate	2x6 Pressure Treated	Spruce-Pine-Fir	No.1/No.2

Loads

Source	Dead	Live	Snow (balanced + drift)	Wind	Width
Self-weight and wind	10 psf	-	-	20 psf	-
Roof - Service area	20 psf	-	30 + 35.3 psf *	-	20.1 ft

* Snow drift load value interpolated at a distance of 1.33 ft from edge; p_d = 41.2 psf and w = 9.2 ft

Can we narrow this down to just 'No.2'? All throughout documentation?

generally let's not use select structural' if we can.
I just don't see the contractor catching this.
If we can, let's just stick with No1/No.2... ideally No. 2 everywhere, if possible.

Analysis and Design Results

Studs

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 2.39 kip , f_c: 290 psi	F_c: 354.2 psi , C_P: 0.2	0.82	✔
D + 0.6 W	Buckling + Bending	P: 0.64 kip , f_c: 77.9 psi M: 0.51 kip-ft , f_b: 812.4 psi	F_c: 369.6 psi , C_P: 0.15 F_b: 3510 psi	0.34	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 1.96 kip , f_c: 237 psi M: 0.38 kip-ft , f_b: 609.3 psi	F_c: 369.6 psi , C_P: 0.15 F_b: 3510 psi	0.88	✔
D + 0.6 W	Shear	V: 0.13 kip , f_v: 23.3 psi	F_v: 216 psi	0.11	✔
D + 0.75 S + 0.45 W	Shear	V: 0.096 kip , f_v: 17.5 psi	F_v: 216 psi	0.08	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.4 in	d_u: 0.53 in (L / 360)	0.74	✔

Top plate

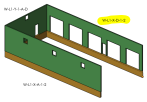
Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 0.4 kip-ft , f_b: 1160.1 psi	F_b: 1501 psi	0.77	✔
D + S	Shear	V: 1.2 kip , f_v: 108.8 psi	F_v: 155.2 psi	0.70	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.024 in	d_u: 0.044 in (L / 360)	0.55	✔
1.5 D + S	Deflection	d: 0.038 in	d_u: 0.067 in (L / 240)	0.57	✔

Wall Framing Design: W-L1-X-D-1-2



Components

Wall - Dimensions (L x H): 71.6 ft x 16 ft

Garage Door - Dimensions (L x H_{top}): 10.2 ft x 10.1 ft

Main Door - Dimensions (L x H_{top}): 3.2 ft x 7.1 ft

conventionally, LVL's and LSL's are called out with exact sizes--not nominal sizes

is this (2)1.75"x11.25" LVL?

Component	Section	Product / Species	Grade
Studs	2x6 @ 16 in O.C.	Spruce-Pine-Fir	No.1/No.2
Top plate	(2) 2x6	Spruce-Pine-Fir	No.1/No.2
Sill plate	2x6 Pressure Treated	Spruce-Pine-Fir	No.1/No.2
Garage Door - Posts	(4) 2x6	Spruce-Pine-Fir	No.1/No.2
Garage Door - Lintel	(2) LVL-2x11	LVL	2.0E
Main Door - Posts	(1) 2x6	Spruce-Pine-Fir	No.1/No.2
Main Door - Lintel	(3) 2x6	Spruce-Pine-Fir	No.1/No.2

Loads

Source	Dead	Live	Snow	Wind	Width
Self-weight and wind	10 psf	-	-	20 psf	-
Roof - Service area	20 psf	-	30 psf	-	20.1 ft

Analysis and Design Results

Studs

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 1.45 kip , f_c: 175.4 psi	F_c: 320 psi , C_P: 0.22	0.55	✔
D + 0.6 W	Buckling + Bending	P: 0.64 kip , f_c: 77.9 psi M: 0.51 kip-ft , f_b: 812.4 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.48	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 1.25 kip , f_c: 151 psi M: 0.38 kip-ft , f_b: 609.3 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.67	✔
D + 0.6 W	Shear	V: 0.13 kip , f_v: 23.3 psi	F_v: 216 psi	0.11	✔
D + 0.75 S + 0.45 W	Shear	V: 0.096 kip , f_v: 17.5 psi	F_v: 216 psi	0.08	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.43 in	d_u: 0.53 in (L / 360)	0.80	✔

Top plate

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 0.24 kip-ft , f_b: 701.4 psi	F_b: 1501 psi	0.47	✔

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Shear	V: 0.72 kip , f_v: 65.8 psi	F_v: 155.2 psi	0.42	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.011 in	d_u: 0.044 in (L / 360)	0.25	✔
1.5 D + S	Deflection	d: 0.025 in	d_u: 0.067 in (L / 240)	0.37	✔

Garage Door - Posts

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 5.53 kip , f_c: 167.7 psi	F_c: 320 psi , C_p: 0.22	0.52	✔
D + 0.6 W	Buckling + Bending	P: 2.46 kip , f_c: 74.5 psi M: 1.96 kip-ft , f_b: 776.9 psi	F_c: 323.8 psi , C_p: 0.16 F_b: 2451.6 psi	0.46	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 4.76 kip , f_c: 144.4 psi M: 1.47 kip-ft , f_b: 582.7 psi	F_c: 323.8 psi , C_p: 0.16 F_b: 2451.6 psi	0.62	✔
D + 0.6 W	Shear	V: 0.49 kip , f_v: 22.3 psi	F_v: 216 psi	0.10	✔
D + 0.75 S + 0.45 W	Shear	V: 0.37 kip , f_v: 16.7 psi	F_v: 216 psi	0.08	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.41 in	d_u: 0.53 in (L / 360)	0.76	✔

Garage Door - Lintel

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 14.1 kip-ft , f_b: 2293.5 psi	M_u: 18.6 kip-ft	0.76	✔
D + S	Shear	V: 5.53 kip , f_v: 210.8 psi	V_u: 8.6 kip	0.64	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.2 in	d_u: 0.34 in (L / 360)	0.59	✔
1.5 D + S	Deflection	d: 0.44 in	d_u: 0.51 in (L / 240)	0.86	✔

Main Door - Posts

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 1.74 kip , f_c: 210.4 psi	F_c: 320 psi , C_p: 0.22	0.66	✔
D + 0.6 W	Buckling + Bending	P: 0.77 kip , f_c: 93.5 psi M: 0.61 kip-ft , f_b: 974.9 psi	F_c: 323.8 psi , C_p: 0.16 F_b: 2451.6 psi	0.63	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 1.49 kip , f_c: 181.2 psi M: 0.46 kip-ft , f_b: 731.2 psi	F_c: 323.8 psi , C_p: 0.16 F_b: 2451.6 psi	0.95	✔
D + 0.6 W	Shear	V: 0.15 kip , f_v: 27.9 psi	F_v: 216 psi	0.13	✔
D + 0.75 S + 0.45 W	Shear	V: 0.12 kip , f_v: 20.9 psi	F_v: 216 psi	0.10	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.51 in	d_u: 0.53 in (L / 360)	0.96	✔

Main Door - Lintel

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 1.39 kip-ft , f_b: 734.6 psi	F_b: 1305.2 psi	0.56	✔
D + S	Shear	V: 1.74 kip , f_v: 105.2 psi	F_v: 155.2 psi	0.68	✔

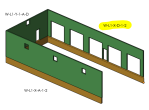
Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.021 in	d_u: 0.11 in (L / 360)	0.20	✔
1.5 D + S	Deflection	d: 0.047 in	d_u: 0.16 in (L / 240)	0.29	✔

Wall Framing Design: W-L1-X-D-1-2 with snow drift 1

Components

why include 'snow drift 1' and 'snow drift 2'?
why not include the worse case scenerio?



Wall - Dimensions (L x H): 71.6 ft x 16 ft

Component	Section	Product / Species	Grade
Studs	2x6 @ 12 in O.C.	Spruce-Pine-Fir	No.1/No.2
Top plate	(2) 2x6	Spruce-Pine-Fir	No.1/No.2

Component	Section	Product / Species	Grade
Sill plate	2x6 Pressure Treated	Spruce-Pine-Fir	No.1/No.2

Loads

Source	Dead	Live	Snow (balanced + drift)	Wind	Width
Self-weight and wind	10 psf	-	-	20 psf	-
Roof - Service area	20 psf	-	30 + 36.7 psf *	-	20.1 ft

* Snow drift load value interpolated at a distance of 1 ft from edge; p_d = 41.2 psf and w = 9.2 ft

Analysis and Design Results

Studs

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 1.82 kip , f_c: 220.9 psi	F_c: 320 psi , C_P: 0.22	0.69	✔
D + 0.6 W	Buckling + Bending	P: 0.48 kip , f_c: 58.4 psi M: 0.38 kip-ft , f_b: 609.3 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.33	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 1.49 kip , f_c: 180.3 psi M: 0.29 kip-ft , f_b: 457 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.71	✔
D + 0.6 W	Shear	V: 0.096 kip , f_v: 17.5 psi	F_v: 216 psi	0.08	✔
D + 0.75 S + 0.45 W	Shear	V: 0.072 kip , f_v: 13.1 psi	F_v: 216 psi	0.06	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.32 in	d_u: 0.53 in (L / 360)	0.60	✔

Top plate

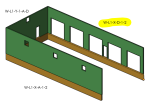
Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 0.23 kip-ft , f_b: 662.8 psi	F_b: 1501 psi	0.44	✔
D + S	Shear	V: 0.91 kip , f_v: 82.8 psi	F_v: 155.2 psi	0.53	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.009 in	d_u: 0.033 in (L / 360)	0.26	✔
1.5 D + S	Deflection	d: 0.013 in	d_u: 0.05 in (L / 240)	0.27	✔

Wall Framing Design: W-L1-X-D-1-2 with snow drift 2



Components

Garage Door - Dimensions (L x H_{top}): 10.2 ft x 10.1 ft

Component	Section	Product / Species	Grade
Garage Door - Posts	(4) 2x6	Spruce-Pine-Fir	Select Structural
Garage Door - Lintel	(3) LVL 2x11	LVL	2.0E

would it be possible to call out the number of jack studs and the number of king studs, throughout all the docs?

Loads

Source	Dead	Live	Snow (balanced + drift)	Wind	Width
Self-weight and wind	10 psf	-	-	20 psf	-
Roof - Service area	20 psf	-	30 + 32.3 psf *	-	20.1 ft

* Snow drift load value interpolated at a distance of 2 ft from edge; p_d = 41.2 psf and w = 9.2 ft

Analysis and Design Results

Garage Door - Posts

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 8.84 kip , f_c: 268 psi	F_c: 354.2 psi , C_P: 0.2	0.76	✔
D + 0.6 W	Buckling + Bending	P: 2.46 kip , f_c: 74.5 psi M: 1.96 kip-ft , f_b: 776.9 psi	F_c: 369.6 psi , C_P: 0.15 F_b: 3510 psi	0.32	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 7.25 kip , f_c: 219.6 psi M: 1.47 kip-ft , f_b: 582.7 psi	F_c: 369.6 psi , C_P: 0.15 F_b: 3510 psi	0.76	✔
D + 0.6 W	Shear	V: 0.49 kip , f_v: 22.3 psi	F_v: 216 psi	0.10	✔
D + 0.75 S + 0.45 W	Shear	V: 0.37 kip , f_v: 16.7 psi	F_v: 216 psi	0.08	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.38 in	d_U: 0.53 in (L / 360)	0.71	✔

Garage Door - Lintel

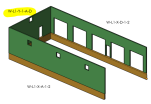
Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 22.6 kip-ft , f_b: 2443.9 psi	M_U: 27.8 kip-ft	0.81	✔
D + S	Shear	V: 8.84 kip , f_v: 224.6 psi	V_U: 12.9 kip	0.69	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.28 in	d_U: 0.34 in (L / 360)	0.81	✔
1.5 D + S	Deflection	d: 0.44 in	d_U: 0.51 in (L / 240)	0.86	✔

Wall Framing Design: W-L1-Y-1-A-D



Components

Wall - Dimensions (L x H): 33.1 ft x 16 ft

Main Door - Dimensions (L x H_{top}): 3.2 ft x 7.1 ft

Window Opening - Dimensions (L x H_{top}): 3 ft x 15.8 ft

Component	Section	Product / Species	Grade
Studs	2x6 @ 16 in O.C.	Spruce-Pine-Fir	No.1/No.2
Top plate	(2) 2x6	Spruce-Pine-Fir	No.1/No.2
Sill plate	2x6 Pressure Treated	Spruce-Pine-Fir	No.1/No.2
Main Door - Posts	(1) 2x6	Spruce-Pine-Fir	No.1/No.2
Main Door - Lintel	(3) 2x4	Spruce-Pine-Fir	No.1/No.2
Window Opening - Posts	(1) 2x6	Spruce-Pine-Fir	No.1/No.2
Window Opening - Lintel	(1) 2x4	Spruce-Pine-Fir	No.1/No.2

Loads

Source	Dead	Live	Snow	Wind	Width
Self-weight and wind	10 psf	-	-	20 psf	-
Roof - Service area	20 psf	-	30 psf	-	2.3 ft

Analysis and Design Results

Studs

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 0.26 kip , f_c: 31.5 psi	F_c: 320 psi , C_P: 0.22	0.10	✔
D + 0.6 W	Buckling + Bending	P: 0.17 kip , f_c: 20.4 psi M: 0.51 kip-ft , f_b: 812.4 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.35	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 0.24 kip , f_c: 28.7 psi M: 0.38 kip-ft , f_b: 609.3 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.28	✔
D + 0.6 W	Shear	V: 0.13 kip , f_v: 23.3 psi	F_v: 216 psi	0.11	✔
D + 0.75 S + 0.45 W	Shear	V: 0.096 kip , f_v: 17.5 psi	F_v: 216 psi	0.08	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.43 in	d_U: 0.53 in (L / 360)	0.80	✔

Top plate

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 0.043 kip-ft , f_b: 126.1 psi	F_b: 1501 psi	0.08	✔
D + S	Shear	V: 0.13 kip , f_v: 11.8 psi	F_v: 155.2 psi	0.08	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.001 in	d_U: 0.044 in (L / 360)	0.03	✔
1.5 D + S	Deflection	d: 0.005 in	d_U: 0.067 in (L / 240)	0.07	✔

Main Door - Posts

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 0.31 kip , f_c: 37.8 psi	F_c: 320 psi , C_P: 0.22	0.12	✔

Combination	Check Type	Action	Resistance	Ratio	Check
D + 0.6 W	Buckling + Bending	P: 0.2 kip , f_c: 24.4 psi M: 0.61 kip-ft , f_b: 974.9 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.44	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 0.28 kip , f_c: 34.5 psi M: 0.46 kip-ft , f_b: 731.2 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.35	✔
D + 0.6 W	Shear	V: 0.15 kip , f_v: 27.9 psi	F_v: 216 psi	0.13	✔
D + 0.75 S + 0.45 W	Shear	V: 0.12 kip , f_v: 20.9 psi	F_v: 216 psi	0.10	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.51 in	d_u: 0.53 in (L / 360)	0.96	✔

Main Door - Lintel

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 0.25 kip-ft , f_b: 326 psi	F_b: 1506.5 psi	0.22	✔
D + S	Shear	V: 0.31 kip , f_v: 29.7 psi	F_v: 155.2 psi	0.19	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.008 in	d_u: 0.11 in (L / 360)	0.08	✔
1.5 D + S	Deflection	d: 0.03 in	d_u: 0.16 in (L / 240)	0.19	✔

Window Opening - Posts

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Buckling	P: 0.29 kip , f_c: 35.5 psi	F_c: 320 psi , C_P: 0.22	0.11	✔
D + 0.6 W	Buckling + Bending	P: 0.19 kip , f_c: 22.9 psi M: 0.58 kip-ft , f_b: 914 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.40	✔
D + 0.75 S + 0.45 W	Buckling + Bending	P: 0.27 kip , f_c: 32.3 psi M: 0.43 kip-ft , f_b: 685.5 psi	F_c: 323.8 psi , C_P: 0.16 F_b: 2451.6 psi	0.32	✔
D + 0.6 W	Shear	V: 0.14 kip , f_v: 26.2 psi	F_v: 216 psi	0.12	✔
D + 0.75 S + 0.45 W	Shear	V: 0.11 kip , f_v: 19.6 psi	F_v: 216 psi	0.09	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
0.42 W	Deflection	d: 0.48 in	d_u: 0.53 in (L / 360)	0.90	✔

Window Opening - Lintel

Strength Checks (ASD)

Combination	Check Type	Action	Resistance	Ratio	Check
D + S	Bending	M: 0.22 kip-ft , f_b: 859.6 psi	F_b: 1506.5 psi	0.57	✔
D + S	Shear	V: 0.29 kip , f_v: 83.6 psi	F_v: 155.2 psi	0.54	✔

Serviceability Checks

Combination	Check Type	Action	Limit	Ratio	Check
S	Deflection	d: 0.019 in	d_u: 0.1 in (L / 360)	0.19	✔
1.5 D + S	Deflection	d: 0.072 in	d_u: 0.15 in (L / 240)	0.48	✔