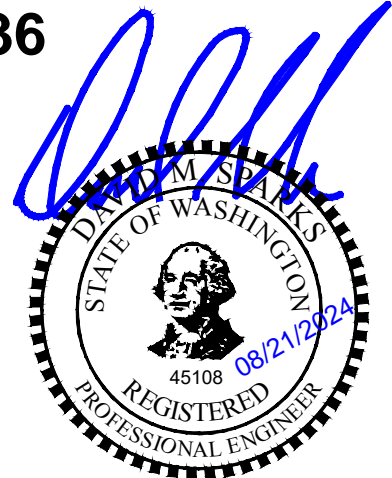


Studio Shed

1500 Cherry Street
Louisville, Colorado 80027

Do Residence - 24x36



EXPIRES: 10/25/2025

INDEX TO STRUCTURAL CALCULATIONS

Design Criteria	SHEETS 1-2
Vertical Analysis	SHEETS 3-20
Lateral Analysis	SHEETS L1-L8

OWNERSHIP OF DOCUMENTS: CALCULATIONS, DRAWINGS AND SPECIFICATIONS AS INSTRUMENTS OF SERVICE ARE, AND SHALL REMAIN THE PROPERTY OF THE ENGINEER. THEY ARE NOT TO BE USED ON OTHER PROJECTS OR EXTENSIONS OF THIS PROJECT EXCEPT BY AGREEMENT IN WRITING WITH THE APPROPRIATE COMPENSATION TO FELTEN GROUP, INC.

CO-FE24-008262
125899

CLIENT:	STUDIO SHED	SHEET	1	OF	
PROJECT:	DO RESIDENCE	BY DMS			

GOVERNING CODE AND LATERAL LOAD CRITERIA:

MUNICIPALITY:	MERCER ISLAND, WA	SEISMIC SITE CLASSIFICATION:	D
BUILDING CODE:	2018 IBC/IRC	EXPOSURE AT MWFRS:	C
3 SEC GUST (MPH):	100	EXPOSURE AT C & C:	C
RISK CATEGORY:	II		
MCE SHORT PERIOD, S_s :	1.439	MCE 1 SECOND PERIOD, S_1 :	0.500

ROOF LOADS:

ROOF FRAMING DEAD LOAD	
	TOTAL ROOF DL (PSF) = 15.00
ROOF FRAMING LIVE LOAD	
	4:12 SLOPE AND GREATER TOTAL ROOF LL (PSF) = 20.00
SNOW LOAD	
	TOTAL GROUND SNOW LOAD (PSF) = 16.00
	TOTAL FLAT (SEE SHEET 2) ROOF SNOW LOAD (PSF) = 16.00

FLOOR LOADS:

FLOOR FRAMING DEAD LOAD	
	TOTAL FLOOR DL (PSF) = 15.00
FLOOR FRAMING LIVE LOAD	
	TOTAL FLOOR LL (PSF) = 40.00

WALL DEAD LOADS:

EXTERIOR WALL DEAD LOAD	INTERIOR WALL DEAD LOAD
TOTAL WALL DL (PSF) = 10.00	TOTAL WALL DL (PSF) = 7.00

ROOF SNOW LOADS PER ASCE 7-10 CHAPTER 7

$$p_f = 0.7C_e C_t I_s p_g$$

C_e

C_t

C_s

I_s

p_g

$$p_s = C_s p_f$$

$$p_m = I_s p_g$$

RISK CATEGORY = II PER TABLE 1.5-1

TERRAIN CATEGORY = C PER SECTION 26.7

EXPOSURE OF ROOF = PARTIALLY PER FOOTNOTE a OF TABLE 7-2

PITCH OF ROOF = 2.000 /12 THETA (θ) = 9.46 DEGREES

TYPE OF ROOF SURFACE = OTHER

$C_e = 1.000$ TABLE 7-2

$C_t = 1.100$ TABLE 7-3

$C_s = 1.000$ FIGURE 7-2

$I_s = 1.000$ TABLE 1.5-2

$p_s = 16.000$ psf, DEFINED BY THE JURISDICTION

$p_f = 16.000$ psf, $p_f = p_s / C_s$ (EQN 7.4-1)

$p_g = 20.779$ psf, $p_g = p_f / (0.7 * C_e * C_t * I_s)$ (EQN 7.3-1)

$p_m = 20.000$ psf, SECTION 7.3.4

$W = 28.000$ ft ($W = L_u$ FOR DRIFT)

$S = 6.000$

$h_d = 1.576$ PER FIGURE 7-9

$\gamma = 16.701$ pcf, $\gamma = 0.13 p_g + 14 \leq 30$ pcf (EQN 7.7-1)

$$\frac{8}{3} h_d \sqrt{S} = 10.291 \text{ ft}$$

$$h_d \gamma / \sqrt{S} = 10.742 \text{ psf}$$

FLAT ROOF SNOW LOAD PER EQUATION 7.3-1

EXPOSURE FACTOR PER TABLE 7-2

THERMAL FACTOR PER TABLE 7-3

SLOPE FACTOR PER FIGURE 7-2

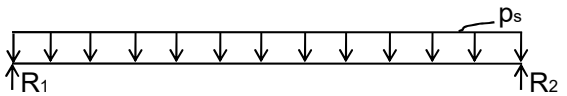
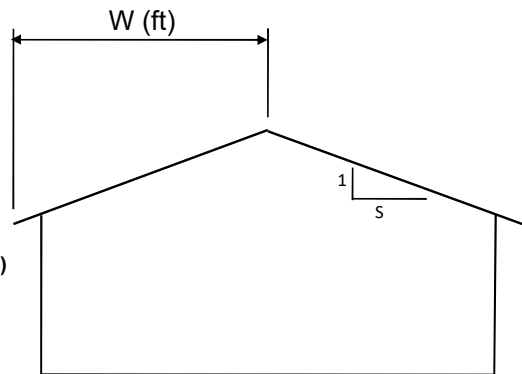
IMPORTANCE FACTOR PER TABLE 1.5-2

GROUND SNOW LOAD PER SECTION 7.2 AND/OR FIGURE 7-1

SLOPED ROOF SNOW LOAD PER EQUATION 7.4-1

MINIMUM SNOW LOAD FOR LOW SLOPE ROOFS PER SECTION 7.3.4

FIGURE 7-5



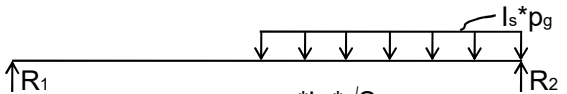
$$p_s = 16.00 \text{ psf} *$$

BALANCED

* 5 psf RAIN-ON-SNOW SURCHARGE OMITTED PER SECTION 7.10

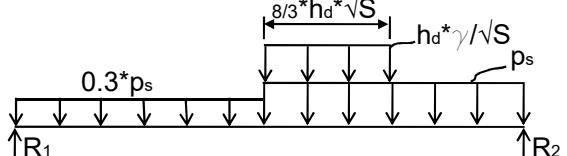
$$\text{EQUIVALENT } p_s = 15.58 \text{ psf}$$

UNBALANCED
 $W \leq 20\text{ft}$



$$\text{EQUIVALENT } p_s = 15.54 \text{ psf}$$

UNBALANCED
 $W > 20\text{ft}$



THEREFORE, THE BALANCED SNOW LOAD OF 16.00psf SHOULD BE USED FOR $W \leq 20$ AND $W > 20$

CLIENT: STUDIO SHED

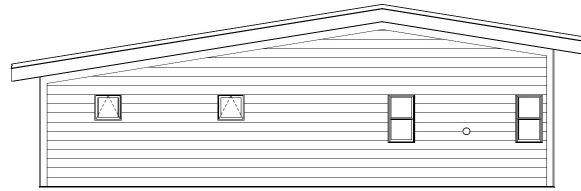
SHEET 3 OF

PROJECT: DO RESIDENCE

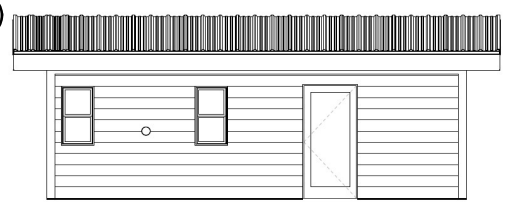
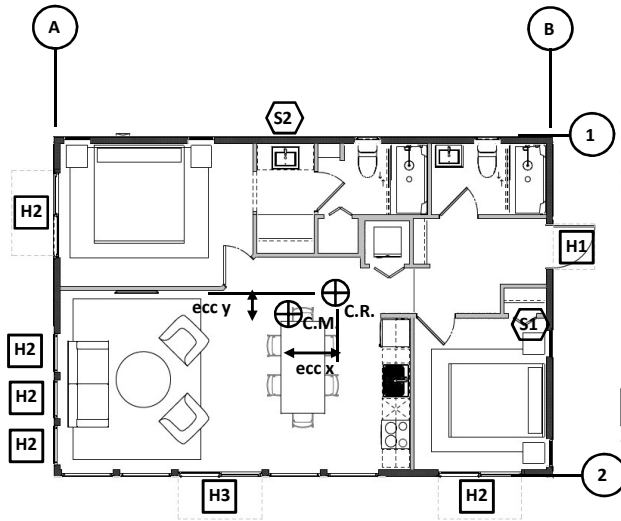
BY DMS

- H = HEADER
- S = STUD
- # = SHEAR LINE
- R = RAFTER

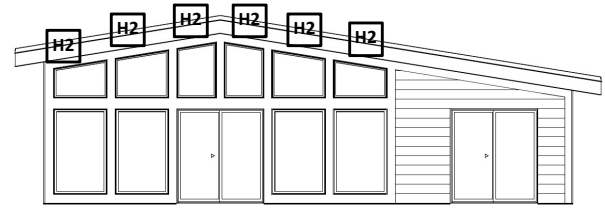
DIAPHRAGM ASPECT RATIO	
L =	24.000 ft
B =	36.000 ft
RIGHT SIDE O.H. =	2.000 ft
LEFT SIDE O.H. =	2.000 ft
REAR O.H. =	2.000 ft
FRONT O.H. =	2.000 ft



FRONT - BACK



SIDE-SIDE



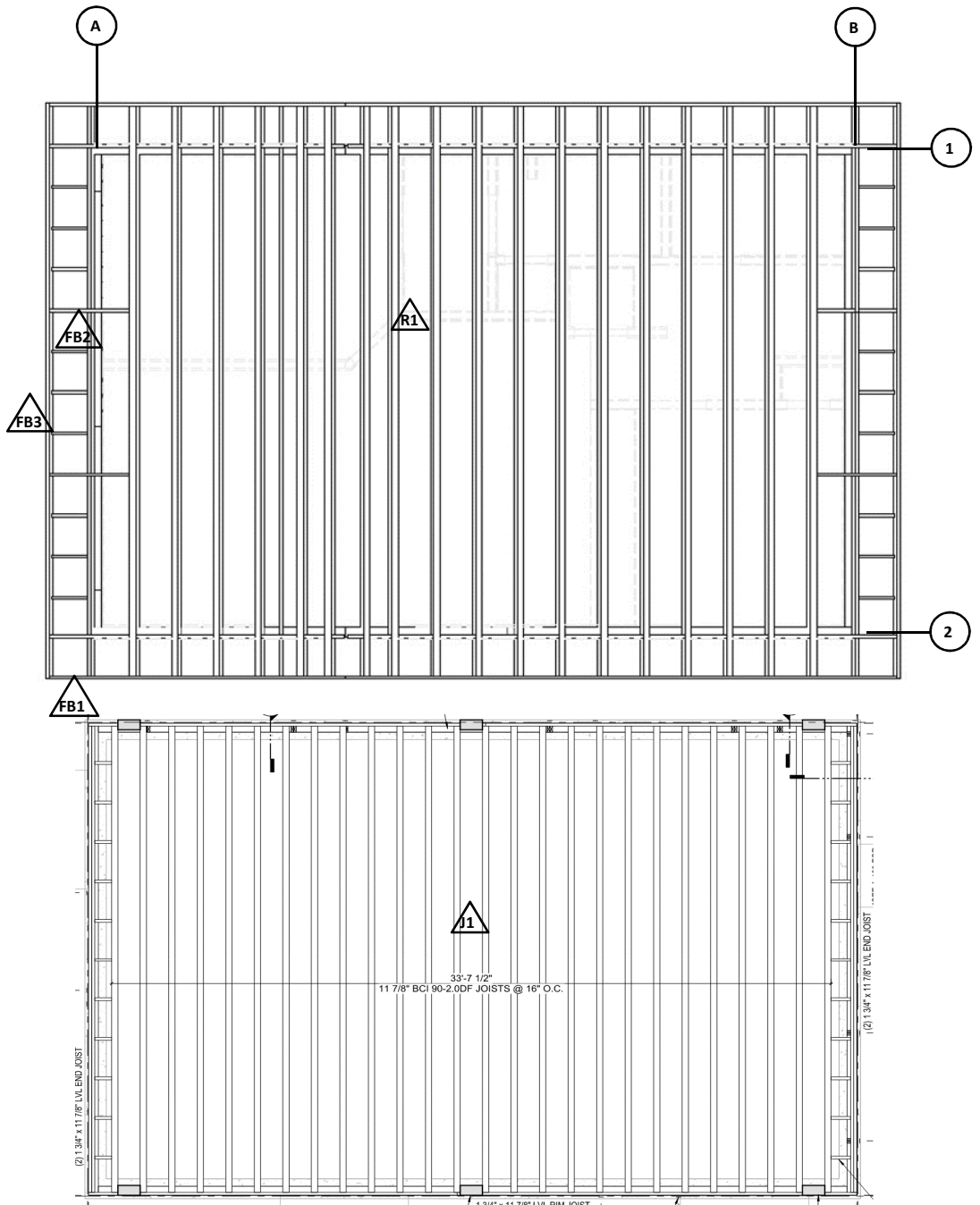
CLIENT: STUDIO SHED

SHEET 4 OF

PROJECT: DO RESIDENCE

BY DMS

- H = HEADER
- S = STUD
- # = SHEAR LINE
- R = RAFTER



CLIENT: STUDIO SHED

SHEET 5 OF

PROJECT: DO RESIDENCE

BY DMS

Id	Header/Beam Loading						Unbraced Lengths	Deflection Data		Results	Load Combo	Actual Stress	Allowable Stress			
	Point Loads		Uniform Loads					TL (L/x)	DL Creep Factor					V _{max} (lb)		
Span 1 (ft)	Load Type	P (lb)	x (ft)	W _{start} (plf)	W _{stop} (plf)	X _{start} (ft)	X _{stop} (ft)	L _{ub,top} (ft)	LL (L/x)	M ₊ ^{max} (lb-ft)	M+	fv (psi)	F ^v (psi)			
Span 2 (ft)								L _{ub,bot} (ft)	LL (L/x)					M ₋ ^{max} (lb-ft)	M-	fb- (psi)
Span 3 (ft)								NDS Factors		Cantilever Data		Deflections				
Span 4 (ft)								C _r	Left	Δ _{TL} Limit	C _M	Right	Δ _{LL} Limit	C _T	Δ _{max} (in)	Δ _{TL}
								C _i	Scarf Cut Data						Δ _{cant} (in)	Δ _{TL}
								C _{L,top}	Left	d _n (in)	Δ _{max} (in)	Δ _{LL}				
								C _{L,bot}	Right	d _n (in)	Δ _{cant} (in)	Δ _{LL}				
								C _F /C _{v,top}	Material Type			Member Size				
								C _F /C _{v,bot}								
Header/Beam Support Design								Max/Min Reaction R1 (lb)	Load Combo	Max/Min Reaction R2 (lb)	Load Combo	Max/Min Reaction R3 (lb)	Load Combo	Max/Min Reaction R4 (lb)	Load Combo	Max/Min Reaction R5 (lb)
	Bearing Length (in)/Hanger		Bearing Length (in)/Hanger		Bearing Length (in)/Hanger		Bearing Length (in)/Hanger		Bearing Length (in)/Hanger							
	Trimmer or Post Height		Trimmer or Post Height		Trimmer or Post Height		Trimmer or Post Height		Trimmer or Post Height							
	King Stud Height		King Stud Height		King Stud Height		King Stud Height		King Stud Height							
	Support Material Type		Support Material Type		Support Material Type		Support Material Type		Support Material Type							
	Trimmers / Hanger		Trimmers / Hanger		Trimmers / Hanger		Trimmers / Hanger		Trimmers / Hanger							
Foundation Support Design	King Studs		King Studs		King Studs		King Studs		King Studs							
	Support Condition		Support Condition		Support Condition		Support Condition		Support Condition							
	Support Location		Support Location		Support Location		Support Location		Support Location							
	Slab Thickness (in)		Slab Thickness (in)		Slab Thickness (in)		Slab Thickness (in)		Slab Thickness (in)							
	Bearing Pressure (psf)		Bearing Pressure (psf)		Bearing Pressure (psf)		Bearing Pressure (psf)		Bearing Pressure (psf)							
	Support Width (in)		Support Width (in)		Support Width (in)		Support Width (in)		Support Width (in)							
	Support Depth (in)		Support Depth (in)		Support Depth (in)		Support Depth (in)		Support Depth (in)							
	Point Load at Support (lb)		Point Load at Support (lb)		Point Load at Support (lb)		Point Load at Support (lb)		Point Load at Support (lb)							
Uniform Load at Support (plf)		Uniform Load at Support (plf)		Uniform Load at Support (plf)		Uniform Load at Support (plf)		Uniform Load at Support (plf)								
Support Size		Support Size		Support Size		Support Size		Support Size								
Beam/Header Diagram																

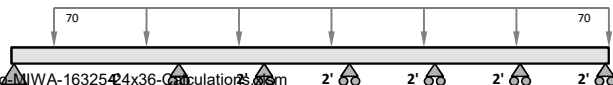
CLIENT:

SHEET 6 OF

PROJECT:

BY

FB1	D			30	30	1.000	14.000	0.000	240	1.000	95	D + Lr	7	356	
	Lr			40	40	1.000	14.000	360	360		85	D + Lr	25	3255	
4.000									Factors	Cantilever Data					
									No						
2.000									1.000	No		-102	D + Lr	30	3052
									No			Deflections			
2.000									MC<=19%			0.000	D + Lr		
									T<=100			0.000	D + Lr		
2.000									1.000	Scarf Cut Data		0.000			
									0.938	No		0.000	Lr	14.000	
2.000									1.001	No		0.000			
									1.001	Micro-Lam 2.0E		1 3/4" x 11 7/8" LVL			
2.000									Select Material						
2.000															
Header/Beam Support Design	65	D + Lr		293	D + Lr		90	D + Lr		170	D + Lr		142	D + Lr	
	34	D		140	D		42	D		81	D		67	D	
		Hanger		Hanger		Hanger		Hanger		Hanger		Hanger			
		LUS210Z		ITS3.56/11.88		A23		A23		A23		A23			
		To Hanger		To Hanger		To Hanger		To Hanger		To Hanger		To Hanger			
		To Hanger		To Hanger		To Hanger		To Hanger		To Hanger		To Hanger			
		To Hanger		To Hanger		To Hanger		To Hanger		To Hanger		To Hanger			
Header/Beam Support Design	174	D + Lr		60	D + Lr										
	82	D		28	D										
		Hanger		Hanger											
		A23		A23											
		To Hanger		To Hanger											
		To Hanger		To Hanger											
		To Hanger		To Hanger											



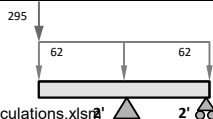
CLIENT:

SHEET **7** OF

PROJECT:

BY

FB2	D	169	0.000	30	30	0.000	4.000	0.000	240	1.000	428	D + S	31	328	
	S	126	0.000	32	32	0.000	4.000	360	360		0	D	0	2340	
2.000									Factors		Cantilever Data				
									No		0	D	0	2340	
2.000									1.000	Yes	120	-726	D + S	212	2868
									No	No	180	Deflections			
									MC<=19%			0.001	D + S		
									T<=100			-0.007	D + S		
									1.000	Scarf Cut Data		0.000	S	4.000	
									0.958	No		-0.003	S		
									1.000	No					
									1.001	Micro-Lam 2.0E		1 3/4" x 11 7/8" LVL			
									Select Material						
Header/Beam Support Design				862	D + S	-169	D								
				482	D	-295	D + S								
				3.125		Hanger									
						BA1.81/11.88									
Foundation Support Design				To Framing Below		To Hanger									
				To Framing Below		To Hanger									
				To Framing Below		To Hanger									
				To Framing Below		To Hanger									
Header/Beam Support Design															
Foundation Support Design															





Single 11-7/8" BCI® 90s-2.0

R01 (Rafter)

 BC CALC® Engineering Report
 Build 8892

Dry | 3 spans | L & R cant. | 24" OCS | Non-Repetitive | 0/12

August 20, 2024 14:39:12

Factored Product Data

	End Reaction (lbs)			Intermediate Reaction (lbs)		
	Length	No WS	With WS	Length	No WS	With WS
E = 2.00 x 10 ⁶ psi						
K = 7.00 x 10 ⁶ lbs						
EI = 675.00 x 10 ⁶ lb-in ²	1-1/2"	1425	1850	3"	3196	3529
EI _c = 0.00 x 10 ⁶ lb-in ²	3-1/2"	1800	1950	5-1/2"	4000	4300
Shear = 2150 lbs				5-1/4"	4000	4300
Moment = 9550 ft-lbs	Reactions between min. and max. bearing lengths shown are interpolated					
Vibration limited span = 0						

Modification Factors

Factor	Moment	Neg. Moment	Shear	End Reaction	Int. Reaction	Bearing
Load Duration	115%	125%	115%		115%	115%
Moisture Content	1.00	1.00	1.00		1.00	1.00
Lateral Stability						
Unbraced Length	00-00-00	00-00-00				
Repetitive Member						

Maximum Values

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-312	5374	-312	0
Shear (lbs) 0		253	-336	926	-60
Shear Red. (lbs) 0		0	0	0	0
Reaction (lbs)		1123		1123	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.861"		0"
Live Defl. (in)	0.015"		0.54"		0.015"
Neg. Defl. (in)	-0.235"		0"		-0.235"
Live Neg. Defl. (in)	-0.149"		-0.022"		-0.149"

Load cases

Loadcase #0: (1.00D)

1.00 Dead Load

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-75	2004	-75	0
Shear (lbs) 0		60	-346	346	-60
Shear Red. (lbs) 0		0	0	0	0
Reaction (lbs)		420		420	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.321"		0"
Neg. Defl. (in)	-0.087"		0"		-0.087"

Loadcase #1: (1.00D+1.00LP_1)

1.00 Dead Load + 1.00 Live Point Load at center of span #1

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Construction Load	00-00-00	02-00-00	96.54 lb/ft	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----



Single 11-7/8" BCI® 90s-2.0

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	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-312	1887	-75	0
Shear (lbs) 0	253	-356	336	-60	0
Shear Red. (lbs) 0	0	0	0	0	0
Reaction (lbs)		623		410	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.3"		0"
Neg. Defl. (in)	-0.072"		0"		-0.082"

Loadcase #2: (1.00D+1.00LP_2)

1.00 Dead Load + 1.00 Live Point Load on left side of span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----
Uniform Linear Load	Construction Load	02-05-08	04-11-00	96.54 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-75	2181	-75	0
Shear (lbs) 0	60	-569	361	-60	0
Shear Red. (lbs) 0	0	0	0	0	0
Reaction (lbs)		643		435	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.354"		0"
Neg. Defl. (in)	-0.101"		0"		-0.095"

Loadcase #3: (1.00D+1.00LP_3)

1.00 Dead Load + 1.00 Live Point Load at center of span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----
Uniform Linear Load	Construction Load	12-09-04	15-02-12	96.54 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-75	3329	-75	0
Shear (lbs) 0	60	-465	465	-60	0
Shear Red. (lbs) 0	0	0	0	0	0
Reaction (lbs)		539		539	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.502"		0"
Neg. Defl. (in)	-0.134"		0"		-0.134"

Loadcase #4: (1.00D+1.00LP_4)

1.00 Dead Load + 1.00 Live Point Load on right side of span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----
Uniform Linear Load	Construction Load	23-01-00	25-06-08	96.54 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-75	2180	-75	0
Shear (lbs) 0	60	-361	569	-60	0
Shear Red. (lbs) 0	0	0	0	0	0
Reaction (lbs)		435		643	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.354"		0"
Neg. Defl. (in)	-0.095"		0"		-0.101"



Single 11-7/8" BCI® 90s-2.0

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August 20, 2024 14:39:12

Loadcase #5: (1.00D+1.00LP_5)

1.00 Dead Load + 1.00 Live Point Load at center of span #3

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----
Uniform Linear Load	Construction Load	26-00-00	28-00-00	96.54 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-75	1887	-312	0
Shear (lbs) 0		60	-336	356	-253
Shear Red. (lbs) 0		0	0	0	0
Reaction (lbs)		410		623	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.3"		0"
Neg. Defl. (in)	-0.082"		0"		-0.072"

Loadcase #6: (1.00D+1.00SLeft full)

1.00 Dead Load + 1.00 Snow Load on span #1 + 0.50 Snow Load on span #3 + 0.50 Snow Load on span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-199	3642	-137	0
Shear (lbs) 0		160	-637	632	-110
Shear Red. (lbs) 0		0	0	0	0
Reaction (lbs)		828		767	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.583"		0"
Neg. Defl. (in)	-0.155"		0"		-0.158"

Loadcase #7: (1.00D+1.00SRight full)

1.00 Dead Load + 0.50 Snow Load on span #1 + 1.00 Snow Load on span #3 + 0.50 Snow Load on span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-137	3642	-199	0
Shear (lbs) 0		110	-632	637	-160
Shear Red. (lbs) 0		0	0	0	0
Reaction (lbs)		767		828	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.583"		0"
Neg. Defl. (in)	-0.158"		0"		-0.155"

Loadcase #8: (1.00D+1.00SLeft half)

1.00 Dead Load + 0.50 Snow Load on span #1 + 1.00 Snow Load on span #3 + 1.00 Snow Load on span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----



Single 11-7/8" BCI® 90s-2.0

R01 (Rafter)

 BC CALC® Engineering Report
 Build 8892

Dry | 3 spans | L & R cant. | 24" OCS | Non-Repetitive | 0/12

August 20, 2024 14:39:12

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-137	5374	-199	0
Shear (lbs)	0	110	-921	926	-160
Shear Red. (lbs)	0	0	0	0	0
Reaction (lbs)		1062		1123	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.861"		0"
Neg. Defl. (in)	-0.235"		0"		-0.233"

Loadcase #9: (1.00D+1.00SRight half)

1.00 Dead Load + 1.00 Snow Load on span #1 + 0.50 Snow Load on span #3 + 1.00 Snow Load on span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-199	5374	-137	0
Shear (lbs)	0	160	-926	921	-110
Shear Red. (lbs)	0	0	0	0	0
Reaction (lbs)		1123		1062	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.861"		0"
Neg. Defl. (in)	-0.233"		0"		-0.235"

Loadcase #10: (1.00D+1.00S)

1.00 Dead Load + 1.00 Snow Load on span #1 + 1.00 Snow Load on span #2 + 1.00 Snow Load on span #3

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	28-00-00	----	0.00 lbs	----
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Dead Load	00-00-00	28-00-00	30.00 lb/ft	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Moment (ft-lbs)	0	-199	5343	-199	0
Shear (lbs)	0	160	-923	923	-160
Shear Red. (lbs)	0	0	0	0	0
Reaction (lbs)		1120		1120	
Uplift (lbs)		0		0	
Total Defl. (in)	0"		0.856"		0"
Neg. Defl. (in)	-0.232"		0"		-0.232"

Loadcase #11: (1.00SLeft full)

1.00 Snow Load on span #1 + 0.50 Snow Load on span #3 + 0.50 Snow Load on span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0"		0.262"		0"
Live Neg. Defl. (in)	-0.069"		0"		-0.071"

Loadcase #12: (1.00SRight full)

0.50 Snow Load on span #1 + 1.00 Snow Load on span #3 + 0.50 Snow Load on span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----



Single 11-7/8" BCI® 90s-2.0

R01 (Rafter)

 BC CALC® Engineering Report
 Build 8892

Dry | 3 spans | L & R cant. | 24" OCS | Non-Repetitive | 0/12

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	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0"		0.262"		0"
Live Neg. Defl. (in)	-0.071"		0"		-0.069"

Loadcase #13: (1.00SLeft half)

0.50 Snow Load on span #1 + 1.00 Snow Load on span #3 + 1.00 Snow Load on span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0"		0.54"		0"
Live Neg. Defl. (in)	-0.149"		0"		-0.146"

Loadcase #14: (1.00SRight half)

1.00 Snow Load on span #1 + 0.50 Snow Load on span #3 + 1.00 Snow Load on span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0"		0.54"		0"
Live Neg. Defl. (in)	-0.146"		0"		-0.149"

Loadcase #15: (1.00S)

1.00 Snow Load on span #1 + 1.00 Snow Load on span #2 + 1.00 Snow Load on span #3

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Snow Load	28-00-00	----	0.00 lbs	----
Uniform Linear Load	Snow Load	00-00-00	28-00-00	50.00 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0"		0.535"		0"
Live Neg. Defl. (in)	-0.145"		0"		-0.145"

Loadcase #16: (1.00LP_1)

1.00 Live Point Load at center of span #1

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Uniform Linear Load	Construction Load	00-00-00	02-00-00	96.54 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0.015"		0"		0.005"
Live Neg. Defl. (in)	0"		-0.022"		0"

Loadcase #17: (1.00LP_2)

1.00 Live Point Load on left side of span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Uniform Linear Load	Construction Load	02-05-08	04-11-00	96.54 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0"		0.034"		0"
Live Neg. Defl. (in)	-0.014"		0"		-0.008"

Loadcase #18: (1.00LP_3)

1.00 Live Point Load at center of span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Uniform Linear Load	Construction Load	12-09-04	15-02-12	96.54 lb/ft	----



Single 11-7/8" BCI® 90s-2.0

R01 (Rafter)

 BC CALC® Engineering Report
 Build 8892

Dry | 3 spans | L & R cant. | 24" OCS | Non-Repetitive | 0/12

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	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0"		0.182"		0"
Live Neg. Defl. (in)	-0.047"		0"		-0.047"

Loadcase #19: (1.00LP_4)

1.00 Live Point Load on right side of span #2

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Uniform Linear Load	Construction Load	23-01-00	25-06-08	96.54 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0"		0.034"		0"
Live Neg. Defl. (in)	-0.008"		0"		-0.014"

Loadcase #20: (1.00LP_5)

1.00 Live Point Load at center of span #3

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Uniform Linear Load	Construction Load	26-00-00	28-00-00	96.54 lb/ft	----

	02-02-12	Δ	23-06-08	Δ	02-02-12
Live Defl. (in)	0.005"		0"		0.015"
Live Neg. Defl. (in)	0"		-0.022"		0"



Single 11-7/8" BCI® 90s-2.0

40 Floor (Joist)

 BC CALC® Engineering Report
 Build 8892

Dry | 1 span | No cant. | 16" OCS | Repetitive | Glued & nailed

August 20, 2024 14:41:20

Factored Product Data

	End Reaction (lbs)			Intermediate Reaction (lbs)		
	Length	No WS	With WS	Length	No WS	With WS
E = 2.00 x 10 ⁶ psi						
K = 7.00 x 10 ⁶ lbs						
EI = 675.00 x 10 ⁶ lb-in ²	1-1/2"	1425	1850	3"	3196	3529
EI _c = 768.87 x 10 ⁶ lb-in ²	3-1/2"	1800	1950	5-1/4"	4000	4300
Shear = 2150 lbs	Reactions between min. and max. bearing lengths shown are interpolated					
Moment = 9550 ft-lbs						
Vibration limited span = 0						

Modification Factors

Factor	Moment	Neg. Moment	Shear	End Reaction	Int. Reaction	Bearing
Load Duration	100%		100%	100%		100%
Moisture Content	1.00		1.00	1.00		1.00
Lateral Stability						
Unbraced Length	00-00-00					
Repetitive Member	1.00					
Notch/Bevel			1.00			

Maximum Values

	Δ	23-02-00	Δ
Moment (ft-lbs)	0	4472	0
Shear (lbs)	-154		768
Shear Red. (lbs)	0		0
Reaction (lbs)	788		788
Uplift (lbs)	0		0
Total Defl. (in)		0.62"	
Live Defl. (in)		0.496"	
Neg. Defl. (in)		0"	
Live Neg. Defl. (in)		0"	

Load cases

Loadcase #0: (1.00D)

1.00 Dead Load

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Dead Load	00-00-00	----	3.06 lbs	----
Point Load	Dead Load	23-07-08	----	3.06 lbs	----
Uniform Linear Load	Dead Load	00-02-12	23-04-12	13.33 lb/ft	----

	Δ	23-02-00	Δ
Moment (ft-lbs)	0	894	0
Shear (lbs)	-154		154
Shear Red. (lbs)	0		0
Reaction (lbs)	158		158
Uplift (lbs)	0		0
Total Defl. (in)		0.124"	
Neg. Defl. (in)		0"	

Loadcase #1: (1.00D+1.00L)

1.00 Dead Load + 1.00 Live Load on span #1

Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Live Load	00-00-00	----	12.22 lbs	----
Point Load	Dead Load	00-00-00	----	3.06 lbs	----
Point Load	Live Load	23-07-08	----	12.22 lbs	----



Single 11-7/8" BCI® 90s-2.0

40 Floor (Joist)

BC CALC® Engineering Report
Build 8892

Dry | 1 span | No cant. | 16" OCS | Repetitive | Glued & nailed

August 20, 2024 14:41:20

Point Load	Dead Load	23-07-08	----	3.06 lbs	----
Uniform Linear Load	Live Load	00-02-12	23-04-12	53.33 lb/ft	----
Uniform Linear Load	Dead Load	00-02-12	23-04-12	13.33 lb/ft	----
	Δ	23-02-00	Δ		
Moment (ft-lbs)	0	4472	0		
Shear (lbs)	-768		768		
Shear Red. (lbs)	0		0		
Reaction (lbs)	788		788		
Uplift (lbs)	0		0		
Total Defl. (in)		0.62"			
Neg. Defl. (in)		0"			

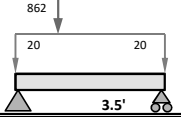
Loadcase #2: (1.00L)

1.00 Live Load on span #1

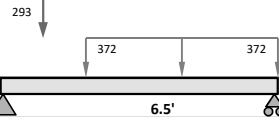
Load Type	Component	Start Pos	End Pos	Start Value	End Value
Point Load	Live Load	00-00-00	----	12.22 lbs	----
Point Load	Live Load	23-07-08	----	12.22 lbs	----
Uniform Linear Load	Live Load	00-02-12	23-04-12	53.33 lb/ft	----
	Δ	23-02-00	Δ		
Live Defl. (in)		0.496"			
Live Neg. Defl. (in)		0"			

CLIENT: STUDIO SHED SHEET 17 OF
 PROJECT: DO RESIDENCE BY DMS

H1	D	482	1.000	20	20	0.000	3.500		240	1.500	649	D + S	79	328	
	S	380	1.000					360			644	D + S	1082	3165	
	3.500								Factors	Cantilever Data		0	D	0	2160
									No	No					
									1.000	No					
									No	No					
									MC<=19%		Deflections				
									T<=100		-0.067	D + S			
									1.000	Scarf Cut Data		0.000			
									1.000	No		-0.021	S		3.500
								1.147	No		0.000				
								1.000							
									Versa-Lam 1.7E		3 1/2" x 3 1/2" LVL				
Header/ Beam Support Design	655	D + S		286	D + S										
	384	D		177	D										
		5.5		5.5											
		7.5		7.5											
		8		8											
		SPF Stud (2" to 4" wide)		SPF Stud (2" to 4" wide)											
		(1) 2x6 TRIMMERS		(1) 2x6 TRIMMERS											
	(1) 2x6 KING STUDS		(1) 2x6 KING STUDS												
Foundation Support Design	To Framing Below		To Framing Below												
		To Framing Below		To Framing Below											

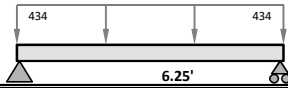


H2	D	140	1.000	180	180	2.000	6.500		240	1.500	999	D + S	52	328	
	S	154	1.000	192	192	2.000	6.500		360			1790	D + S	812	3445
	6.500								Factors	Cantilever Data		0	D	0	2434
									No	No					
									1.040	No					
									No	No					
									MC<=19%		Deflections				
									T<=100		-0.115	D + S			
									0.996	Scarf Cut Data		0.000			
									1.000	No		-0.046	S		6.500
								1.112	No		0.000				
								1.000							
									Micro-Lam 2.0E		(3) 1 3/4" x 5 1/2" LVL				
Header/ Beam Support Design	855	D + S		1167	D + S										
	426	D		578	D										
		5.5		5.5											
		11.5		11.5											
		12		12											
		SPF Stud (2" to 4" wide)		SPF Stud (2" to 4" wide)											
		(1) 2x6 TRIMMERS		(1) 2x6 TRIMMERS											
	(1) 2x6 KING STUDS		(1) 2x6 KING STUDS												
Foundation Support Design	To Framing Below		To Framing Below												
		To Framing Below		To Framing Below											

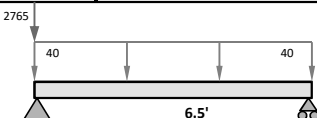


CLIENT: STUDIO SHED SHEET 18 OF
 PROJECT: DO RESIDENCE BY DMS

H2	D		210	210	0.000	6.250		240		1.500	1180	D + S	61	328
	S		224	224	0.000	6.250		360			2160	D + S	979	3445
	6.250							Factors	Cantilever Data					
								No	No					
								1.040	No		0	D	0	2434
								No	No		Deflections			
								MC<=19%			-0.130	D + S		
								T<=100			0.000	Scarf Cut Data		
								0.996	No		-0.053	S		
								1.000	No		0.000		6.250	
							1.112	No						
							1.000							
								Micro-Lam 2.0E		(3) 1 3/4" x 5 1/2" LVL				
Header/ Beam Support Design	1382	D + S	1382	D + S										
	682	D	682	D										
		5.5		5.5										
		6.75		6.75										
		9.75		9.75										
		SPF Stud (2" to 4" wide)		SPF Stud (2" to 4" wide)										
Foundation Support Design		(1) 2x6 TRIMMERS		(1) 2x6 TRIMMERS										
		(1) 2x6 KING STUDS		(1) 2x6 KING STUDS										
		To Framing Below		To Framing Below										
		To Framing Below		To Framing Below										



H3	D	1365		40	40	0.000	6.500		240		1.500	135	D	5	257
	S	1400							360			270	D	70	2596
	6.500								Factors	Cantilever Data					
									No	No					
									1.040	No		0	D	0	2434
									No	No		Deflections			
									MC<=19%			-0.009	D		
									T<=100			0.000	Scarf Cut Data		
								0.996	No		0.000				
								1.000	No		0.000		6.500		
							1.071	No		0.000					
							1.000								
								Micro-Lam 2.0E		(3) 1 3/4" x 7 1/4" LVL					
Header/ Beam Support Design	166	D	166	D											
	166	D	166	D											
		5.5		5.5											
		7		7											
		8.5		8.5											
		SPF Stud (2" to 4" wide)		SPF Stud (2" to 4" wide)											
Foundation Support Design		(1) 2x6 TRIMMERS		(1) 2x6 TRIMMERS											
		(1) 2x6 KING STUDS		(1) 2x6 KING STUDS											
		Conventional		Conventional											
		Edge		Edge											
		NO FTNG. REQUIRED		NO FTNG. REQUIRED											



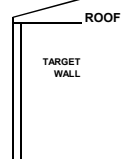
CLIENT: STUDIO SHED

SHEET 19 OF

PROJECT: DO RESIDENCE

BY DMS

WALL NUMBER: S1		STUD LOCATION: 1 (1 = ROOF, 2 = FIRST FLOOR BELOW ROOF, 3 = SECOND FLOOR BELOW ROOF)	
TOP PLATE THICKNESS (IN)	3.00	WALL HAS CONTINUOUS SHEATHING ON ONE SIDE	YES
SOLE PLATE THICKNESS (IN)	1.50		
ROOF SPAN (FT)		ROOF LOADS (PSF)	SUPPORTING WALL
TYPE:	SIMPLE	D 15.00	HEIGHT (FT) 10.00
MAIN SPAN	12.00	L _R 20.00	WEIGHT (PSF) 10.00
OVERHANG	2.00	S 16.00	
TOTAL TRIB.	10.00	R	
SIMPLE		0.6*W _{UPLIFT}	10.47



TARGET WALL			
0.6*C&C (PSF)	17.51	HEIGHT (FT)	10.00
0.6*W (PSF)	9.53	WEIGHT (PSF)	10.00
0.7*E (PSF)	5.00	PARTIAL LOADING (WIND)	
		STOP (FT)	9.63
WALL WIDTH (IN)	5.50	START (FT)	0.00

STUD MATERIAL					
SPECIES	SPF #2 (2" to 4" wide)	TITLE	2x6 SPF #2 GRADE STUDS		
SCANT	NO	C _{FB}	1.30	b (IN)	1.50
F _B (PSI)	875	C _{FC}	1.10	d (IN)	5.50
F _C (PSI)	1150	C _R	1.15	A (IN ²)	8.250
E _{MIN} (PSI)	510000	c	0.80	S _x (IN ³)	7.563
E _x (PSI)	1400000				20.797

C & C LOADING

BENDING (NDS Section 3.3)

Le = 10.00ft - (3.00in + 1.50in)(1ft/12in) = 9.63ft
M = 405.56#-ft
F'b = Fb(Cd)(Cr)(Cfb) = 875(1.60)(1.15)(1.30) = 2093.00psi
fb = (12in/1ft)(405.56#-ft)/7.56in^3 = 643.54psi

DEFLECTION (NDS Section 3.5.1)

DELTA = 0.16in

BENDING AND DEFLECTION CAPACITY CHECK

643.54psi/2093.00psi = 0.307 < 1.000 O.K.
0.16in < 0.64in O.K.

THEREFORE, USE 2x6 SPF #2 GRADE STUDS AT 24in O.C.

ASCE7 LOAD COMBINATIONS	C _D			
D	0.90	407.58	" o.c.	
D + L	1.00	428.14	" o.c.	
D + L _R	1.25	232.99	" o.c.	
D + S	1.15	251.56	" o.c.	
D + R	1.25	465.97	" o.c.	
D + 0.75L + 0.75L _R	1.25	266.27	" o.c.	
D + 0.75L + 0.75S	1.15	283.00	" o.c.	
D + 0.75L + 0.75R	1.25	465.97	" o.c.	
D + 0.6W	1.60	131.64	" o.c.	
D + 0.7E	1.60	173.28	" o.c.	
D + 0.75(0.6W) + 0.75L + 0.75L _R	1.60	123.96	" o.c.	
D + 0.75(0.6W) + 0.75L + 0.75S	1.60	129.84	" o.c.	
D + 0.75(0.6W) + 0.75L + 0.75R	1.60	159.60	" o.c.	
D + 0.75(0.7E) + 0.75L + 0.75L _R	1.60	147.96	" o.c.	
D + 0.75(0.7E) + 0.75L + 0.75S	1.60	156.24	" o.c.	
D + 0.75(0.7E) + 0.75L + 0.75R	1.60	202.44	" o.c.	
0.6C&C	1.60	81.96	" o.c.	GOVERNS

D + L (NON-CONCURRENT)	1.00		" o.c.	
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DESIRED SPACING FOR CALCULATIONS:	24	" o.c.
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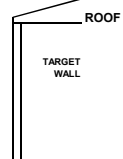
CLIENT: STUDIO SHED

SHEET 20 OF

PROJECT: DO RESIDENCE

BY DMS

WALL NUMBER: S2		STUD LOCATION: 1		(1 = ROOF, 2 = FIRST FLOOR BELOW ROOF, 3 = SECOND FLOOR BELOW ROOF)			
TOP PLATE THICKNESS (IN)	3.00	WALL HAS CONTINUOUS SHEATHING ON ONE SIDE	YES	ROOF ASSEMBLY TYPE	C&C _{WIND} DEFLECTION, L/ 180	GYP COMP.	NO
SOLE PLATE THICKNESS (IN)	1.50			PRE-FAB TRUSSES	C&C _{WIND} FACTOR = 0.7	GYP + WOOD COMP.	NO
ROOF SPAN (FT)		ROOF LOADS (PSF)		SUPPORTING WALL			
TYPE:	SIMPLE	D	15.00	HEIGHT (FT)	12.00		
MAIN SPAN	12.00	L _R	20.00	WEIGHT (PSF)	10.00		
OVERHANG	2.00	S	16.00				
TOTAL TRIB.	10.00	R					
SIMPLE		0.6*W _{UPLIFT}	10.47				



TARGET WALL			
0.6*C&C (PSF)	17.51	HEIGHT (FT)	12.00
0.6*W (PSF)	9.53	WEIGHT (PSF)	10.00
0.7*E (PSF)	5.00	PARTIAL LOADING (WIND)	
			STOP (FT)
			11.63
WALL WIDTH (IN)	5.50	START (FT)	0.00

STUD MATERIAL					
SPECIES	SPF #2 (2" to 4" wide)	TITLE	2x6 SPF #2 GRADE STUDS		
SCANT	NO	C _{FB}	1.30	b (IN)	1.50
F _B (PSI)	875	C _{FC}	1.10	d (IN)	5.50
F _C (PSI)	1150	C _R	1.15	A (IN ²)	8.250
E _{MIN} (PSI)	510000	c	0.80	S _x (IN ³)	7.563
E _x (PSI)	1400000				20.797

C & C LOADING

BENDING (NDS Section 3.3)

Le = 12.00ft - (3.00in + 1.50in)(1ft/12in) = 11.63ft
M = 591.62#-ft
F'b = Fb(Cd)(Cr)(Cfb) = 875(1.60)(1.15)(1.30) = 2093.00psi
fb = (12in/1ft)(591.62#-ft)/7.56in^3 = 938.77psi

DEFLECTION (NDS Section 3.5.1)

DELTA = 0.35in

BENDING AND DEFLECTION CAPACITY CHECK

938.77psi/2093.00psi = 0.449 < 1.000 O.K.
0.35in < 0.78in O.K.

THEREFORE, USE 2x6 SPF #2 GRADE STUDS AT 24in O.C.

ASCE7 LOAD COMBINATIONS	C _D			
D	0.90	308.93	" o.c.	
D + L	1.00	318.16	" o.c.	
D + L _R	1.25	171.13	" o.c.	
D + S	1.15	186.55	" o.c.	
D + R	1.25	334.12	" o.c.	
D + 0.75L + 0.75L _R	1.25	194.90	" o.c.	
D + 0.75L + 0.75S	1.15	209.16	" o.c.	
D + 0.75L + 0.75R	1.25	334.12	" o.c.	
D + 0.6W	1.60	89.28	" o.c.	
D + 0.7E	1.60	117.60	" o.c.	
D + 0.75(0.6W) + 0.75L + 0.75L _R	1.60	84.60	" o.c.	
D + 0.75(0.6W) + 0.75L + 0.75S	1.60	88.44	" o.c.	
D + 0.75(0.6W) + 0.75L + 0.75R	1.60	108.00	" o.c.	
D + 0.75(0.7E) + 0.75L + 0.75L _R	1.60	101.52	" o.c.	
D + 0.75(0.7E) + 0.75L + 0.75S	1.60	107.04	" o.c.	
D + 0.75(0.7E) + 0.75L + 0.75R	1.60	137.28	" o.c.	
0.6C&C	1.60	56.18	" o.c.	GOVERNS

D + L (NON-CONCURRENT)	1.00		" o.c.	
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DESIRED SPACING FOR CALCULATIONS:	24	" o.c.
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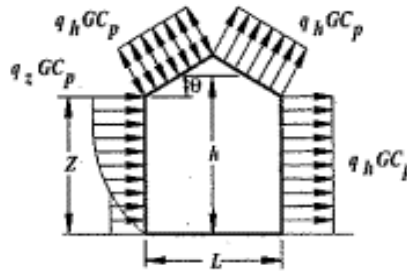
SHEET L1 OF

PROJECT: DO RESIDENCE

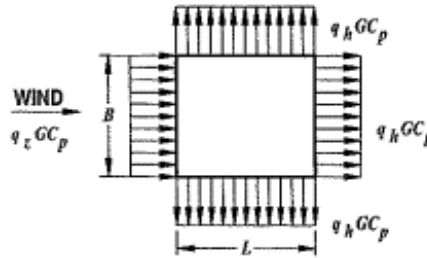
BY DMS

WIND LOAD CALCULATIONS PER ASCE 7-16
MWFRS (SECTION 27.3 - ALL HEIGHTS)

PLATE = 10.000 ft
 PITCH = 2.000 / 12
 ROOF THICKNES, t = 0.990 ft
 L = 36.000 ft
 B = 24.000 ft
 L/B = 0.000
 O.H. = 2.000 ft
 $\Theta = 9.462$ deg
 Z = 10.990 ft
 RIDGE = 12.990 ft
 h = 11.990 ft
 h / L = 0.333
 EXPOSURE = C
 RISK CATEGORY = II
 3 SEC GUST (Vult) = 100.00 mph
 GUST-EFFECT (G) = 0.850 (26.11)
 $K_d = 0.850$ (26.6)
 $K_{zt} = 1.000$ (26.8)
 Elevation Above MSL (ft) = 0
 $K_e = 1.000$ (26.9)
 $K_2 = 0.849$ (Table 26.10-1)
 $K_h = 0.849$ (Table 26.10-1)
 $q_z = 18.472$ psf (Eq 27.3-1)
 $q_h = 18.472$ psf (Eq 27.3-1)
 $GC_{pi} = 0.180$



ELEVATION



PLAN

MWFRS: WALLS

		GC _{pi} = +0.18	GC _{pi} = -0.18
Windward Wall	C _{p, WW} = 0.800	P _{WW} = 9.236 psf (27.3-1)	15.886 psf (27.3-1)
Leeward Wall	C _{p, LW} = -0.500	P _{LW} = -11.175 psf (27.3-1)	-4.526 psf (27.3-1)
Side Wall	C _{p, SW} = -0.700	P _{SW} = -14.316 psf (27.3-1)	-7.666 psf (27.3-1)

MWFRS: ROOFS

NORMAL TO RIDGE $\Theta \geq 10^\circ$

		GC _{pi} = +0.18	GC _{pi} = -0.18
Windward -	C _{p, R} = 0.000	P _{WW-} = 0.000 psf (27.3-1)	0.000 psf (27.3-1)
Windward +	C _{p, R} = 0.000	P _{WW+} = 0.000 psf (27.3-1)	0.000 psf (27.3-1)
Leeward	C _{p, R} = 0.000	P _{LW} = 0.000 psf (27.3-1)	0.000 psf (27.3-1)

NORMAL TO RIDGE $\Theta < 10^\circ$ and PARALLEL TO RIDGE ALL Θ

		GC _{pi} = +0.18	GC _{pi} = -0.18
	C _{p, R} = -0.900 (Table 27.3-1) for 0 to 5.99ft	P = -17.456 psf (27.3-1)	-10.806 psf (27.3-1)
	C _{p, R} = -0.900 (Table 27.3-1) for 5.99 to 11.99ft	P = -17.456 psf (27.3-1)	-10.806 psf (27.3-1)
	C _{p, R} = -0.500 (Table 27.3-1) for 11.99 to 23.98ft	P = -11.175 psf (27.3-1)	-4.526 psf (27.3-1)
	C _{p, R} = -0.300 (Table 27.3-1) greater than 23.98ft	P = -8.035 psf (27.3-1)	-1.385 psf (27.3-1)

WINDWARD ROOF OVERHANG (27.3.3)

		GC _{pi} = +0.18	GC _{pi} = -0.18
	C _p = 0.800	P = -26.692	

C & C (SECTION 30.3 - LOW RISE MONOSLOPE)

C & C: WALLS (EQN & FIG 30.3-1)

a = 3.000 ft

④	GC _{p, +} = 1.000	P _{WW} = 21.797 psf	
	GC _{p, -} = -1.100	P _{LW} = -23.644 psf	
⑤	GC _{p, +} = 1.000	P _{WW} = 21.797 psf	
	GC _{p, -} = -1.400	P _{LW} = -29.185 psf	

C & C: ROOF (EQN 30.3-1 & FIG 30.3-5A)

a = 3.000 ft

③	GC _{p, -} = -2.600	P ₃ = -51.351 psf	OVERHANGS	-62.804 psf
②	GC _{p, -} = -1.700	P ₂ = -34.727 psf		-46.179 psf
①	GC _{p, -} = -0.900	P ₁ = -19.949 psf		
ALL	GC _{p, +} = 0.500	P _{+ ALL} = 12.561 psf		

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SHEET **L2** OF

PROJECT: DO RESIDENCE

BY DMS

SEISMIC LOAD CALCULATIONS PER ASCE 7-16

USING BASIC LOAD COMBINATIONS PER SECTION 2.4.1

ALL LOAD COMBINATIONS USE: 0.7*E

$E = E_h + E_v$ (EQN 12.4-1 and EQN 12.4-3)
 $E_h = \rho Q_E$ (EQN 12.4-3)
 #REF! (SECTION 12.3.4.2.a)
 $Q_E = V$ (SECTION 12.4.2.1)
 $E_v = 0.2S_{DS}D$ ($E_v = 0$ IF $S_{DS} \leq 0.125$) (EQN 12.4-4)

RISK CATEGORY = **II** (TABLE 1.5-1)
 SITE CLASS = **D** (PER PROJECT SOILS REPORT OR TABLE 20.3-1) **DEFAULT**
 h_n (ft) = **11.990** (MEAN ROOF HEIGHT OF STRUCTURE)
 $S_s = 1.439$ (MAPPED MCE SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS)
 $S_1 = 0.500$ (MAPPED MCE SPECTRAL RESPONSE ACCELERATION AT A PERIOD OF 1 s)
 $F_a = 1.200$ (TABLE 11.4-1)
 $F_v = 1.800$ (TABLE 11.4-2)
 $S_{MS} = F_a S_s = 1.727$ (EQN 11.4-1)
 $S_{M1} = F_v S_1 = 0.900$ (EQN 11.4-2)
 $S_{DS} = \sqrt[2]{\frac{1}{3} S_{MS}} = 1.151$ (EQN 11.4-3)
 $S_{D1} = \sqrt[2]{\frac{1}{3} S_{M1}} = 0.600$ (EQN 11.4-4)
 $I_E = 1.000$ (TABLE 1.5-2)
 $T_s = 0.521$ (SECTION 11.4.5)
 SDC BASED ON $S_{DS} = D$ (TABLE 11.6-1) ****EXCEPTION IN SECTION 11.6 CAN BE CHECKED $S_1 < 0.75$ AND $T_a < 0.8T_s$**
 SDC BASED ON $S_{D1} = N/A$ (TABLE 11.6-2) ****USE TABLE 11.6-1 ALONE IF RIGID DIAPHRAGM AND $T < T_s$ OR WHEN USING BRACING TABLES FOR IRC DESIGN**
 DESIGN SDC = **D** (SECTION 11.6)
 Front-Back R = **6.500** Side-Side R = **6.500** (TABLE 12.2-1 (A.15))
 $C_t = 0.020$ (TABLE 12.8-2)
 $x = 0.750$ (TABLE 12.8-2)
 $T_a = C_t h_n^x = 0.129$ (EQN 12.8-7)
 $T_L = 12.000$ (TABLE 22-12)

$V = C_s W$ (EQN 12.8-1)
 $C_s =$ SEISMIC RESPONSE COEFFICIENT (SECTION 12.8.1.1)
 $W =$ EFFECTIVE SEISMIC WEIGHT (SECTION 12.7.2)

FRONT-BACK

SIDE-SIDE

	$C_s = S_{DS}/(R/I_E) = 0.177$			$C_s = S_{DS}/(R/I_E) = 0.177$			(EQN 12.8-2)
GOVERNS	$C_{s,max} = S_{D1}/(T(R/I_E)) = 0.716$	}	0.716	$C_{s,max} = S_{D1}/(T(R/I_E)) = 0.716$	}	0.716	(EQN 12.8-3)
	$C_{s,max} = S_{D1} T_L / (T^2 (R/I_E)) = 66.70$			$C_{s,max} = S_{D1} T_L / (T^2 (R/I_E)) = 66.70$			(EQN 12.8-4)
GOVERNS	$C_{s,min} = 0.044 * S_{DS} * I_E \geq 0.01$ 0.051	}	0.051	$C_{s,min} = 0.044 * S_{DS} * I_E \geq 0.01$ 0.051	}	0.051	(EQN 12.8-5)
	$C_{s,min} = 0.5 S_1 / (R/I_E) = 0.038$			$C_{s,min} = 0.5 S_1 / (R/I_E) = 0.038$			(EQN 12.8-6)

EQN 12.8-2 GOVERNS AND $Q_E = V = 0.177 * W$			
$S_{DS} > 0.125$, THEREFORE			
$E_v = 0.230 * D$	$0.7 * E_v =$	$0.161 * D$	

EQN 12.8-2 GOVERNS AND $Q_E = V = 0.177 * W$			
$S_{DS} > 0.125$, THEREFORE			
$E_v = 0.230 * D$	$0.7 * E_v =$	$0.161 * D$	

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CLIENT: STUDIO SHED

SHEET L3 OF

PROJECT: DO RESIDENCE

Mass Calculations

TOTAL MASS											
Level	Plate Height (ft)	Diaphragm			Exterior Walls			Interior Walls			Total Weight (lb)
		Area (ft ²)	Load (psf)	Weight (lb)	Total Length (ft)	Load (psf)	Weight (lb)	Total Length (ft)	Load (psf)	Weight (lb)	
Roof	10	1124	15.00	16860	120	10.00	6000	110	7.00	3850	26710
				16860			6000			3850	26710

Redundancy	Base Shear	ASD	Vertical Distribution of Seismic Forces for Front-Back Direction						
			Level	w _x (lb)	h _x (ft)	w _x h _x (lb-ft)	$\frac{w_x h_x^k}{\sum w_i h_i^k}$ (%)	F _{x F-B} (lb)	$\frac{F_{x F-B}}{A_x}$ (psf)
ρ _{F-B}	E _{hF-B} (lb)	E _{hF-B} * 0.7 (lb)	Roof	26710	10.0	267100	1.000	4305	3.83
				26710		267100		4305	

CLIENT: **STUDIO SHED** SHEET **L4** OF

PROJECT: **DO RESIDENCE** BY DMS

WIND LOAD CALCULATIONS (MWFRS) FIGURE 27.4-8 & 27.4.6 EXCEPTION CASES 1 & 3

CASE 1: FRONT-BACK (INTO GABLE)

$V_{FB} = (15.89\text{psf} - -4.53\text{psf}) * (0.5 * (11\text{ft}/2 + 13\text{ft}/2) * 36\text{ft}) = 4409 \# \text{ (ULT)}$
 $\textcircled{A} = 1160 \# \text{ (ULT)}$
 $\textcircled{B} = 3249 \# \text{ (ULT)}$

CASE 1: SIDE-SIDE (INTO RIDGE)

$V_{SS} = (15.89\text{psf} - -4.53\text{psf}) * ((10\text{ft}/2 + 3\text{ft}) * 24\text{ft}) = 3674 \# \text{ (ULT)}$
 $\textcircled{1} = 3360 \# \text{ (ULT)}$
 $\textcircled{2} = 314 \# \text{ (ULT)}$

SEISMIC LOAD CALCULATIONS EQUIVALENT LATERAL FORCE (ELF) 12.8

FRONT-BACK

$V_{FB} = 1.30 * 26710\# * (0.177) = 6150 \# \text{ (ULT)}$

SIDE-SIDE

$V_{SS} = 1.30 * 26710\# * (0.177) = 6150 \# \text{ (ULT)}$

WALL STIFFNESSES (SDPWS EQ 4.3-1)

FRONT-BACK

$K_{FB A} = 3862 \#/\text{in}$	Relative Rigidity = 3.458	ORIGIN - LOWER LEFT	X= 0.000	Y= 0.000
$\#/\text{in}$	Relative Rigidity = 0.000	CENTER OF MASS	X= 18.000	Y= 12.000
$K_{FB B} = 5596 \#/\text{in}$	Relative Rigidity = 5.011	CENTER OF RIGIDITY	X= 26.420	Y= 21.760
$5222 \#/\text{in}$	Relative Rigidity = 4.676			

SIDE-SIDE

$K_{SS 1} = 3364 \#/\text{in}$	Relative Rigidity = 3.012
$5472 \#/\text{in}$	Relative Rigidity = 4.899
$3123 \#/\text{in}$	Relative Rigidity = 2.796
$K_{SS 2} = 1117 \#/\text{in}$	Relative Rigidity = 1.000
$\#/\text{in}$	Relative Rigidity = 0.000

SEISMIC DISTRIBUTION

WALL	X _{START} ft	Y _{START} ft	X _{STOP} ft	Y _{STOP} ft	L ft	X _{CENTER} ft	Y _{CENTER} ft	R _{FB}	R _{SS}	X _{eECC} ft	Y _{eECC} ft	X _{eACC} ft	Y _{eACC} ft
\textcircled{A}	0.229	10.188	0.229	15.417	5.229	0.229	12.802	3.458	0.000	8.420	9.760	1.800	1.200
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
\textcircled{B}	35.771	2.583	35.771	8.292	5.708	35.771	5.438	5.011	0.000				
	35.771	18.000	35.771	23.458	5.458	35.771	20.729	4.676	0.000				
$\textcircled{1}$	2.583	23.771	9.667	23.771	7.083	6.125	23.771	0.000	3.012				
	11.833	23.771	21.646	23.771	9.813	16.740	23.771	0.000	4.899				
	23.521	23.771	30.271	23.771	6.750	26.896	23.771	0.000	2.796				
$\textcircled{2}$	23.917	0.229	27.667	0.229	3.750	25.792	0.229	0.000	1.000				
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000				
								13.145	11.707				

WALL	R _{FB} *X ft	R _{SS} *Y ft	X _B ft	Y _B ft	R _{FB} *X _B ² ft	R _{SS} *Y _B ² ft	V _{DIRECT} FB (#)	V _{ECC} FB (#)	V _{ACC} FB (#)	V _{DIRECT} SS (#)	V _{ECC} SS (#)	V _{ACC} SS (#)	V _{TOTAL} FB (#)	V _{TOTAL} SS (#)
\textcircled{A}	0.793	0.000	-26.191	8.958	2372.22	0.000	1133	881	188	0	1021	126	2014	1021
	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	0	0	0
\textcircled{B}	179.233	0.000	9.351	16.322	438.097	0.000	1641	456	97	0	528	65	2097	528
	167.257	0.000	9.351	1.031	408.824	0.000	1531	425	91	0	493	61	1957	493
$\textcircled{1}$	0.000	71.592	-20.295	-2.011	0.000	12.178	0	0	0	1107	68	8	0	1176
	0.000	116.456	-9.681	-2.011	0.000	19.810	0	0	0	1801	111	14	0	1913
	0.000	66.471	0.476	-2.011	0.000	11.307	0	0	0	1028	63	8	0	1092
$\textcircled{2}$	0.000	0.229	-0.629	21.531	0.000	463.575	0	0	0	368	243	30	0	610
	0.000	0.000	0.000	0.000	0.000	0.000	0	0	0	0	0	0	0	0
	347.283	254.748		J =	3726.015									

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CLIENT: STUDIO SHED

SHEET L5 OF

PROJECT: DO RESIDENCE

BY DMS

SHEAR WALL ANALYSES

<input checked="" type="checkbox"/> FRONT-BACK <input type="checkbox"/> SIDE-SIDE <input type="checkbox"/> BASEMENT <input checked="" type="checkbox"/> 1st FLOOR <input type="checkbox"/> 2nd FLOOR <input type="checkbox"/> 3rd FLOOR 28.99786462																					
$V = \text{PER WIND LOAD CALCULATIONS} * 0.6$																		=		696 #	
WALL n	Wall Type	Studs (in o.c.)	2 SIDED	L_n (ft)	h_n (ft)	Wall Width	Chord E_n (psi)	G_{a_n} (k/in)	Δa_n (in)	Δ (in)	V_{design} (#)	C_{WSP}	V_{design} (plf)	V_{allow} (plf)	$A_{TRIB.}$ (ft)	W_{WALL} (psf)	DL (psf)	$0.6W_{UPLIFT}$ (psf)			
1	5	24		5.23	10.00	2x6	1.4E+06	17.00	0.035	0.152	701	1.000	134	609	2.00	10.00	15.00	5.24			
2																					
											$V_{TOTAL} (\#) =$		701								
LEFT END										RIGHT END											
WALL n	$\sum M_{OT}$ (#-ft)	$\sum M_R$ (#-ft)	WOOD/ CONC	LOCATION OR NAME	POSITION	$W_{INT.WALL}$ (#)	$T_{2nd FLOOR}$ (#)	T_{DESIGN} (#)	HOLDOWN	Δa_n (in)	WOOD/ CONC	LOCATION OR NAME	POSITION	$W_{INT.WALL}$ (#)	$T_{2nd FLOOR}$ (#)	T_{DESIGN} (#)	HOLDOWN	Δa_n (in)			
1	7153	1777	CONC	EXT	MIDWALL			1164	F	0.164	CONC	EXT	MIDWALL			1164	F	0.164			
2																					
<input checked="" type="checkbox"/> FRONT-BACK <input type="checkbox"/> SIDE-SIDE <input type="checkbox"/> BASEMENT <input checked="" type="checkbox"/> 1st FLOOR <input type="checkbox"/> 2nd FLOOR <input type="checkbox"/> 3rd FLOOR 81.22288354																					
$V = \text{PER WIND LOAD CALCULATIONS} * 0.6$																		=		1949 #	
WALL n	Wall Type	Studs (in o.c.)	2 SIDED	L_n (ft)	h_n (ft)	Wall Width	Chord E_n (psi)	G_{a_n} (k/in)	Δa_n (in)	Δ (in)	V_{design} (#)	C_{WSP}	V_{design} (plf)	V_{allow} (plf)	$A_{TRIB.}$ (ft)	W_{WALL} (psf)	DL (psf)	$0.6W_{UPLIFT}$ (psf)			
1	5	24		5.71	8.00	2x6	1.4E+06	17.00	0.038	0.140	1010	1.000	177	609	2.00	10.00	15.00	5.24			
2	5	24		5.46	8.00	2x6	1.4E+06	17.00	0.037		944	1.000	173	609	2.00	10.00	15.00	5.24			
											$V_{TOTAL} (\#) =$		1954								
LEFT END										RIGHT END											
WALL n	$\sum M_{OT}$ (#-ft)	$\sum M_R$ (#-ft)	WOOD/ CONC	LOCATION OR NAME	POSITION	$W_{INT.WALL}$ (#)	$T_{2nd FLOOR}$ (#)	T_{DESIGN} (#)	HOLDOWN	Δa_n (in)	WOOD/ CONC	LOCATION OR NAME	POSITION	$W_{INT.WALL}$ (#)	$T_{2nd FLOOR}$ (#)	T_{DESIGN} (#)	HOLDOWN	Δa_n (in)			
1	8251	1792	CONC	EXT	MIDWALL			1257	F	0.164	CONC	EXT	MIDWALL			1257	F	0.164			
2	7708	1639	CONC	EXT	MIDWALL			1232	F	0.164	CONC	EXT	CORNER			1232	F	0.164			

CLIENT: STUDIO SHED

SHEET L6 OF

PROJECT: DO RESIDENCE

BY DMS

SHEAR WALL ANALYSES

1	<input type="checkbox"/> FRONT-BACK <input checked="" type="checkbox"/> SIDE-SIDE <input type="checkbox"/> BASEMENT <input checked="" type="checkbox"/> 1st FLOOR <input type="checkbox"/> 2nd FLOOR <input type="checkbox"/> 3rd FLOOR 56.00330841																	
$v = \text{PER WIND LOAD CALCULATIONS} * 0.6 = 2016 \#$																		
WALL n	Wall Type	Studs (in o.c.)	2 SIDED	L _n (ft)	h _n (ft)	Wall Width	Chord E _n (psi)	G _{a_n} (k/in)	Δ _{a_n} (in)	Δ (in)	V _{design} (#)	C _{WSP}	V _{design} (plf)	V _{allow} (plf)	A _{TRIB.} (ft)	W _{WALL} (psf)	DL (psf)	0.6W _{UPLIFT} (psf)
1	3	24		7.08	10.81	2x6	1.4E+06	11.00	0.013	0.100	545	1.000	77	324	12.00	10.00	15.00	5.24
2	3	24		9.81	10.81	2x6	1.4E+06	11.00	0.005		913	1.000	93	324	12.00	10.00	15.00	
3	3	24		6.75	10.81	2x6	1.4E+06	11.00	0.009		560	1.000	83	324	12.00	10.00	15.00	
V_{TOTAL} (#) =											2018							
LEFT END										RIGHT END								
WALL n	ΣM _{OT} (#-ft)	ΣM _R (#-ft)	WOOD/ CONC	LOCATION OR NAME	POSITION	W _{INT.WALL} (#)	T _{2nd FLOOR} (#)	T _{DESIGN} (#)	HOLDOWN	Δ _{a_n} (in)	WOOD/ CONC	LOCATION OR NAME	POSITION	W _{INT.WALL} (#)	T _{2nd FLOOR} (#)	T _{DESIGN} (#)	HOLDOWN	Δ _{a_n} (in)
1	7466	7226	CONC	EXT	MIDWALL			442	F	0.164	CONC	EXT	MIDWALL			442	F	0.164
2	9865	13868	CONC	EXT	MIDWALL			157	F	0.164	CONC	EXT	MIDWALL			157	F	0.164
3	6051	6562	CONC	EXT	MIDWALL			313	F	0.164	CONC	EXT	MIDWALL			313	F	0.164
2	<input type="checkbox"/> FRONT-BACK <input type="checkbox"/> SIDE-SIDE <input type="checkbox"/> BASEMENT <input type="checkbox"/> 1st FLOOR <input type="checkbox"/> 2nd FLOOR <input type="checkbox"/> 3rd FLOOR 5.230440571																	
$v = \text{PER WIND LOAD CALCULATIONS} * 0.6 = 188 \#$																		
WALL n	Wall Type	Studs (in o.c.)	2 SIDED	L _n (ft)	h _n (ft)	Wall Width	Chord E _n (psi)	G _{a_n} (k/in)	Δ _{a_n} (in)	Δ (in)	V _{design} (#)	C _{WSP}	V _{design} (plf)	V _{allow} (plf)	A _{TRIB.} (ft)	W _{WALL} (psf)	DL (psf)	0.6W _{UPLIFT} (psf)
1	3	24		3.75	10.81	2x6	1.4E+06	11.00	0.010	0.082	188	0.890	50	288	12.00	10.00	15.00	5.24
2																		
V_{TOTAL} (#) =											188							
LEFT END										RIGHT END								
WALL n	ΣM _{OT} (#-ft)	ΣM _R (#-ft)	WOOD/ CONC	LOCATION OR NAME	POSITION	W _{INT.WALL} (#)	T _{2nd FLOOR} (#)	T _{DESIGN} (#)	HOLDOWN	Δ _{a_n} (in)	WOOD/ CONC	LOCATION OR NAME	POSITION	W _{INT.WALL} (#)	T _{2nd FLOOR} (#)	T _{DESIGN} (#)	HOLDOWN	Δ _{a_n} (in)
1	2473	2025	CONC	EXT	MIDWALL			335	F	0.164	CONC	EXT	MIDWALL			335	F	0.164
2																		

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SHEET L7 OF

PROJECT: DO RESIDENCE

BY DMS

SHEAR WALL ANALYSES

(A) FRONT-BACK SIDE-SIDE
 BASEMENT 1st FLOOR 2nd FLOOR 3rd FLOOR 83.90259067

v = PER SEISMIC DISTRIBUTION CALCULATIONS = 2014 #

WALL n	Wall Type	Studs (in o.c.)	L_n (ft)	h_n (ft)	Wall Width	Chord E_n (psi)	G_{a_n} (k/in)	Δa_n (in)	Δ (in)	V_{design} (#)	C_{WSP}	V_{design} (plf)	V_{allow} (plf)	$A_{TRIB.}$ (ft)	W_{WALL} (psf)	DL (psf)	$0.7^* 0.2^* S_{DS}$
1	5	24	5.23	10.00	2x6	1.4E+06	17.00	0.157	0.543	2018	1.000	386	435	2.00	10.00	15.00	0.16
2																	
										V_{TOTAL} (#) =	2018						

LEFT END										RIGHT END								
WALL n	$\sum M_{OT}$ (#-ft)	$\sum M_R$ (#-ft)	WOOD/ CONC	LOCATION	POSITION	$W_{INT.WALL}$ (#)	$T_{2ND FLOOR}$ (#)	T_{DESIGN} (#)	HOLDOWN	Δa_n (in)	WOOD/ CONC	LOCATION	POSITION	$W_{INT.WALL}$ (#)	$T_{2ND FLOOR}$ (#)	T_{DESIGN} (#)	HOLDOWN	Δa_n (in)
1	20180	1777	CONC	EXT	MIDWALL			3710	F	0.164	CONC	EXT	MIDWALL			3710	F	0.164
2																		

(B) FRONT-BACK SIDE-SIDE
 BASEMENT 1st FLOOR 2nd FLOOR 3rd FLOOR

v = PER SEISMIC DISTRIBUTION CALCULATIONS = 4053 #

WALL n	Wall Type	Studs (in o.c.)	L_n (ft)	h_n (ft)	Wall Width	Chord E_n (psi)	G_{a_n} (k/in)	Δa_n (in)	Δ (in)	V_{design} (#)	C_{WSP}	V_{design} (plf)	V_{allow} (plf)	$A_{TRIB.}$ (ft)	W_{WALL} (psf)	DL (psf)	$0.7^* 0.2^* S_{DS}$
1	5	24	5.71	8.00	2x6	1.4E+06	17.00	0.118	0.346	2095	1.000	367	435	2.00	10.00	15.00	0.16
2	5	24	5.46	8.00	2x6	1.4E+06	17.00	0.116		1960	1.000	359	435	2.00	10.00	15.00	0.16
										V_{TOTAL} (#) =	4055						

LEFT END										RIGHT END								
WALL n	$\sum M_{OT}$ (#-ft)	$\sum M_R$ (#-ft)	WOOD/ CONC	LOCATION	POSITION	$W_{INT.WALL}$ (#)	$T_{2ND FLOOR}$ (#)	T_{DESIGN} (#)	HOLDOWN	Δa_n (in)	WOOD/ CONC	LOCATION	POSITION	$W_{INT.WALL}$ (#)	$T_{2ND FLOOR}$ (#)	T_{DESIGN} (#)	HOLDOWN	Δa_n (in)
1	16765	1792	CONC	EXT	MIDWALL			2799	F	0.164	CONC	EXT	MIDWALL			2799	F	0.164
2	15685	1639	CONC	EXT	MIDWALL			2742	F	0.164	CONC	EXT	CORNER			2742	F	0.164

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SHEET L8 OF

PROJECT: DO RESIDENCE

BY DMS

SHEAR WALL ANALYSES

1 <input type="checkbox"/> FRONT-BACK <input checked="" type="checkbox"/> SIDE-SIDE <input type="checkbox"/> BASEMENT <input checked="" type="checkbox"/> 1st FLOOR <input type="checkbox"/> 2nd FLOOR <input type="checkbox"/> 3rd FLOOR																			
V = PER SEISMIC DISTRIBUTION CALCULATIONS															=			4180 #	
WALL n	Wall Type	Studs (in o.c.)	L _n (ft)	h _n (ft)	Wall Width	Chord E _n (psi)	G _{a_n} (k/in)	Δ _{a_n} (in)	Δ (in)	V _{design} (#)	C _{WSP}	V _{design} (plf)	V _{allow} (plf)	A _{TRIB.} (ft)	W _{WALL} (psf)	DL (psf)	0.7* 0.2*S _{DS}		
1	3	24	7.08	10.81	2x6	1.4E+06	11.00	0.058	0.261	1197	1.000	169	231	12.00	10.00	15.00	0.16		
2	3	24	9.81	10.81	2x6	1.4E+06	11.00	0.061		1874	1.000	191	231	12.00	10.00	15.00	0.16		
3	3	24	6.75	10.81	2x6	1.4E+06	11.00	0.058		1114	1.000	165	231	12.00	10.00	15.00	0.16		
V _{TOTAL} (#) =										4185									
LEFT END										RIGHT END									
WALL n	ΣM _{OT} (#-ft)	ΣM _R (#-ft)	WOOD/ CONC	LOCATION	POSITION	W _{INT.WALL} (#)	T _{2ND FLOOR} (#)	T _{DESIGN} (#)	HOLDOWN	Δ _{a_n} (in)	WOOD/ CONC	LOCATION	POSITION	W _{INT.WALL} (#)	T _{2ND FLOOR} (#)	T _{DESIGN} (#)	HOLDOWN	Δ _{a_n} (in)	
1	12934	7226	CONC	EXT	MIDWALL			1378	F	0.164	CONC	EXT	MIDWALL			1378	F	0.164	
2	20343	13868	CONC	EXT	MIDWALL			1453	F	0.164	CONC	EXT	MIDWALL			1453	F	0.164	
3	12081	6562	CONC	EXT	MIDWALL			1363	F	0.164	CONC	EXT	MIDWALL			1363	F	0.164	
2																			
V = PER SEISMIC DISTRIBUTION CALCULATIONS															=			610 #	
WALL n	Wall Type	Studs (in o.c.)	L _n (ft)	h _n (ft)	Wall Width	Chord E _n (psi)	G _{a_n} (k/in)	Δ _{a_n} (in)	Δ (in)	V _{design} (#)	C _{WSP}	V _{design} (plf)	V _{allow} (plf)	A _{TRIB.} (ft)	W _{WALL} (psf)	DL (psf)	0.7* 0.2*S _{DS}		
1	3	24	3.75	10.81	2x6	1.4E+06	11.00	0.065	0.357	611	0.890	163	206	12.00	10.00	15.00	0.16		
2																			
V _{TOTAL} (#) =										611									
LEFT END										RIGHT END									
WALL n	ΣM _{OT} (#-ft)	ΣM _R (#-ft)	WOOD/ CONC	LOCATION	POSITION	W _{INT.WALL} (#)	T _{2ND FLOOR} (#)	T _{DESIGN} (#)	HOLDOWN	Δ _{a_n} (in)	WOOD/ CONC	LOCATION	POSITION	W _{INT.WALL} (#)	T _{2ND FLOOR} (#)	T _{DESIGN} (#)	HOLDOWN	Δ _{a_n} (in)	
1	6616	2025	CONC	EXT	MIDWALL			1527	F	0.164	CONC	EXT	MIDWALL			1527	F	0.164	
2																			