

## PROFESSIONAL ENGINEERING SERVICES

111 Gold Meadow Dr, Cary, NC 27513  
North Carolina License 021195

CONSULTING.DESIGN  
P (919) 749.5151

ottel@yahoo.com

Monday, April 05, 2021

Ref: Structural Evaluation and Design:  
Removing Wall between Kitchen & Dining

Address: 163 Fairfield Lane  
Lillington, NC 27546

To: Ariana Ganz/Whom it may concern.

On April 01, 2021, I have visited the above listed property for structural evaluation and design for the planned structural alteration in the interior of the house.

Property is detached single family home, two stories, gable roofing, built 1996 with elevated flooring above crawlspace.

Homeowner part of his remodeling project for the kitchen is planning to make structural alteration for the wall between the kitchen and the dining rooms. This wall is load bearing wall carrying the joists from second floor. The alteration will require a beam to replace the wall to create an opening of either 9 feet or 13.5 feet, in both cases the interior column will be directly loaded on the pier below. Either plan left to homeowner to decide.

A new beam is necessary to support the load from the second floor/ceiling joists:

### **Option one, Clear span of 9 feet.**

- **-Use (2) 1.75"x9.5" LVL, E 2.0, maximum clear span of 9 feet, to be supported on each end with (4)2x4 column. Beam size is the clear span plus the support on both sides. Add straps to beam connection with columns.**

### **Option two, Clear span of 13.5 feet.**

- **Use (2) 1.75"x11.875" LVL, E 2.0, maximum clear span of 13.5 feet, to be supported on each end with (4)2x4 column. Beam size is the clear span plus the support on both sides. Add straps to beam connection with columns.**

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**Note: connect the two plies LVL in accordance with the Fig 1.**

Should you have any questions or concerns regarding the information contained in this report, please contact me at: 919-749-5151.

Sincerely,

Kamal Essaid PE



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## MAXIMUM UNIFORM LOAD APPLIED TO EITHER OUTSIDE MEMBER (PLF)

Connector Type	Location	Number of Rows	Connector On-Center Spacing	Fastener Pattern		
				Assembly A <del>X</del>	Assembly B	Assembly F
				<b>3 1/2" 2-Ply</b>	<b>5 1/4" 3-Ply</b>	<b>7" 4-Ply</b>
<del>X</del> 10d (0.128" x 3") Nail <sup>[1]</sup>	As Shown	<del>X</del> 3	12" <del>X</del>	<del>X</del> 555	415	
		4	12"	740	555	
1/2" A307 Through Bolt <sup>[2]</sup>	-	3	24"	760	570	505
			12"	1,520	1,140	1,015
		4	24"	1,015	760	675
			12"	2,030	1,520	1,355
<b>Screw Length</b>				<b>3 1/2"</b>	<b>3 1/2"</b>	<b>6"</b>
SDS	As Shown	3	24"	1,020	<b>765</b>	<b>835</b>
			12"	2,040	<b>1,530</b>	<b>1,670</b>
		4	24"	1,360	<b>1,020</b>	<b>1,110</b>
			12"	2,720	<b>2,040</b>	<b>2,225</b>
USP WS	As Shown	3	24"	955	<b>720</b>	<b>715</b>
			12"	1,915	<b>1,435</b>	<b>1,430</b>
		4	24"	1,275	<b>955</b>	<b>955</b>
			12"	2,550	<b>1,915</b>	<b>1,910</b>
<b>Screw Length</b>				<b>3 3/8"</b>	<b>5"</b>	<b>6 3/4"</b>
TrussLOK <sup>®</sup>	One Side Only	3	24"	870	675	620
			12"	1,740	1,350	1,240
		4	24"	1,160	900	825
			12"	2,320	1,800	1,655

Figure 1