

21-04-00
 Graphical Illustration - Not To Scale
 Member Cut Length - 21'- 4"
 MemberPitch - 0/12

Design Information:

Building Code:	IRC2015	Floor Dead Load:	10.0 lb/ft ²	Roof Dead Load:	10.0 lb/ft ²	Ground Snow Load:	20.0 lb/ft ²
Design Methodology:	ASD	Floor Live Load:	40.0 lb/ft ²	Roof Live Load:	20.0 lb/ft ²		
		Unbraced Length	Top: 1'- 10 1/2"	Bottom:	16'- 1"		

Design Results:

	Location	Design	Control	Result	LDF	Load Combination
Critical Moment (Pos)	11'- 6 3/4"	2056.85 lb ft	24295.56 lb ft	Passed - 8%	1.15	D + Lr
Critical Moment (Neg)	18'- 10"	-3242.16 lb ft	20317.83 lb ft	Passed - 16%	1.15	D + Lr
Critical Shear	17'- 8 5/8"	1246.10 lb	9240.73 lb	Passed - 13%	1.15	D + Lr
Live Load Deflection	10'- 8 3/8"	0'- 1/16"	0'- 3/4" (L/360)	Passed - L/999	-	0.75(L + Lr + 0.6W)
Total Load Deflection	10'- 8 5/16"	0'- 1/16"	0'- 1" (L/240)	Passed - L/999	-	D + 0.75(L + Lr + 0.6W)
Max. Reaction			Supported Mt Supporting Mt			
	0'- 1 1/2"	125.26 lb	25565.22 lb 17762.50 lb	Passed - 1%	1.60	0.6D + 0.6W
	0'- 1 1/2"	-1255.47 lb	18375.00 lb -	Passed - 7%	1.15	D + Lr
	2'- 6"	2861.01 lb	18375.00 lb 17762.50 lb	Passed - 16%	1.15	D + Lr
	2'- 6"	-325.81 lb	25565.22 lb -	Passed - 2%	1.60	0.6D + 0.6W
	18'- 10"	2842.25 lb	18375.00 lb 17762.50 lb	Passed - 16%	1.15	D + Lr
	18'- 10"	-461.89 lb	25565.22 lb -	Passed - 3%	1.60	0.6D + 0.6W
	21'- 2 1/2"	181.07 lb	25565.22 lb 17762.50 lb	Passed - 1%	1.60	0.6D + 0.6W
	21'- 2 1/2"	-1304.09 lb	18375.00 lb -	Passed - 7%	1.15	D + Lr

Design Notes:

* Member design assumed proper ply to ply connection. Verify connection between plies according to code specification

Loading:

Type	Start	End	Source	Maximum Load Magnitudes			
				Dead	Floor Live	Roof Live	Snow
Self Weight	0'	21'- 4"	Self Weight	11 lb/ft	-	-	-
Uniform	2'- 6 3/4"	8'- 6 3/4"	Smoothed Load	65 lb/ft	-	73 lb/ft	40 lb/ft
Uniform	10'- 6 3/4"	20'- 6 3/4"	Smoothed Load	68 lb/ft	-	80 lb/ft	44 lb/ft
Point	1'- 6 3/4"	1'- 6 3/4"	D03(c01)	180.00 lb	-	245.00 lb	134.00 lb
Point	3'- 6 3/4"	3'- 6 3/4"	D03(c02)	-	-	-	-
Point	5'- 6 3/4"	5'- 6 3/4"	D03(c03)	-	-	-	-
Point	7'- 6 3/4"	7'- 6 3/4"	D03(c04)	-	-	-	-
Point	9'- 6 3/4"	9'- 6 3/4"	D02(c01)	140.00 lb	-	166.00 lb	91.00 lb
Point	11'- 6 3/4"	11'- 6 3/4"	D02(c06)	-	-	-	-
Point	13'- 6 3/4"	13'- 6 3/4"	D02(c02)	-	-	-	-
Point	15'- 6 3/4"	15'- 6 3/4"	D02(c03)	-	-	-	-
Point	17'- 6 3/4"	17'- 6 3/4"	D02(c04)	-	-	-	-
Point	19'- 6 3/4"	19'- 6 3/4"	D02(c05)	-	-	-	-

Support Information:

Support	Start	End	Source	Maximum Analysis Reactions			
				Dead	Floor Live	Roof Live	Snow
1	0'	2'- 7 1/2"	E9(i24)	841.00 lb	-	967.00 lb	475.00 lb
==>	0'- 1 1/2"	0'- 1 1/2"	E9(i24)	-	-	91.00 lb	-
==>	2'- 6"	2'- 6"	E9(i24)	841.00 lb	-	876.00 lb	475.00 lb
2	18'- 8 1/2"	21'- 4"	E8(i3)	788.00 lb	-	842.00 lb	425.00 lb
==>	18'- 10"	18'- 10"	E8(i3)	788.00 lb	-	794.00 lb	425.00 lb
==>	21'- 2 1/2"	21'- 2 1/2"	E8(i3)	-	-	48.00 lb	-

Errors, Warnings & Notes:

- * The dead loads used in the design of this member were applied to the structure as projected dead loads.
- * The member graphic, dimensions, and locations shown on this report are based on the centerline of the member.

- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.

- This report is based on modeled conditions input by the user. Actual field conditions may differ from those shown. These results should be reviewed by a qualified design professional.



Job: 19110027

Member Type: Beam | Level: 1st Floor
MiTek SAPPHIRE™ Structure Version 8.3.1.215.Update3
Designed by Single Member Design Engine

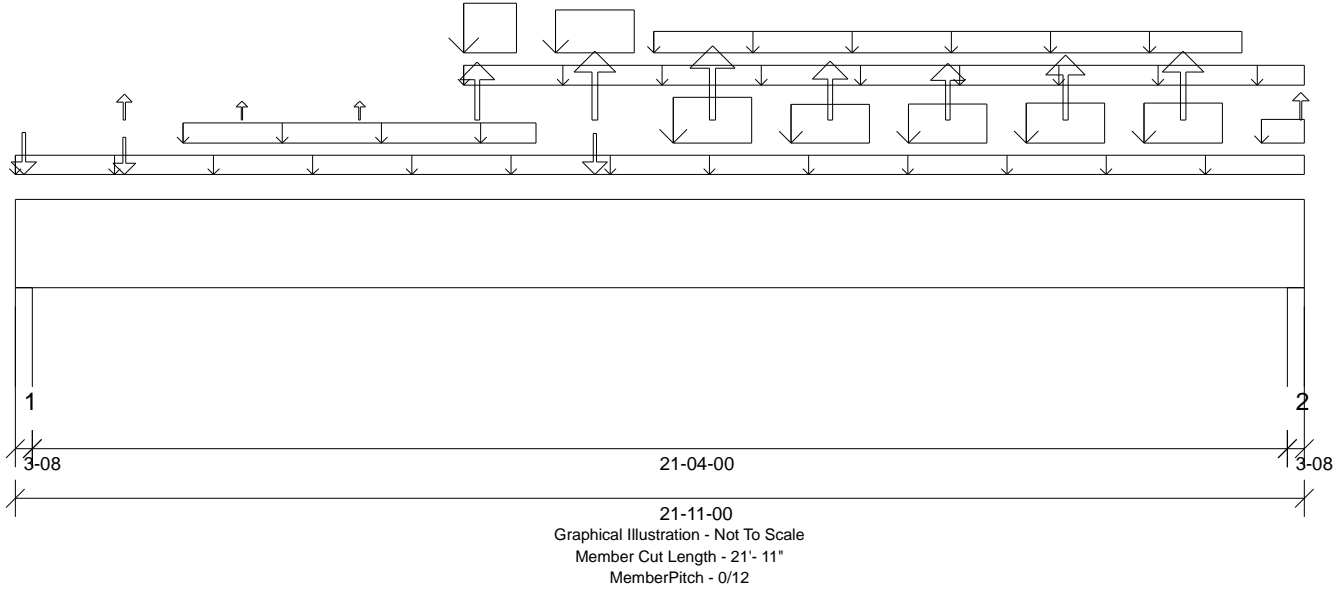
Member: 2 - 2.0 RigidLam LVL 1-3/4 x 11-7/8

Label: GDH-i25

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Date: 11/20/2019 08:40:09

Status: Design Passed

* Analysis and Design has been performed using precision loading from actual modeled conditions. Some loads may have been modified to simplify reporting.



Design Information:

Building Code:	IRC2015	Floor Dead Load:	10.0 lb/ft ²	Roof Dead Load:	10.0 lb/ft ²	Ground Snow Load:	20.0 lb/ft ²
Design Methodology:	ASD	Floor Live Load:	40.0 lb/ft ²	Roof Live Load:	20.0 lb/ft ²		
		Unbraced Length Top:	0'	Bottom:	1'- 10 1/2"		

Design Results:

	Location	Design	Control	Result	LDF	Load Combination	
Critical Moment (Pos)	11'- 10 1/4"	41035.05 lb ft	106750.64 lb ft	Passed - 38%	1.15	D + Lr	
Critical Moment (Neg)	11'- 10 1/4"	-971.41 lb ft	148522.63 lb ft	Passed - 1%	1.60	0.6D + 0.6W	
Critical Shear	20'- 1 1/2"	7028.41 lb	28014.00 lb	Passed - 25%	1.15	D + Lr	
Live Load Deflection	11'- 3 1/16"	0'- 1/4"	0'- 3/4" (L/360)	Passed - L/999	-	Lr	
Total Load Deflection	11'- 2 7/8"	0'- 1/2"	0'- 1" (L/240)	Passed - L/516	-	D + Lr	
Max. Reaction			Supported Mt	Supporting Mt			
	0'- 2 1/2"	5200.83 lb	18374.98 lb	32413.46 lb	Passed - 28%	1.15	D + Lr
	21'- 8 1/2"	7762.97 lb	18375.20 lb	32413.85 lb	Passed - 42%	1.15	D + Lr
	21'- 8 1/2"	-153.27 lb	25565.50 lb	-	Passed - 1%	1.60	0.6D + 0.6W

Design Notes:

* Member design assumed proper ply to ply connection. Verify connection between plies according to code specification

Loading:

Type	Start	End	Source	Maximum Load Magnitudes			
				Dead	Floor Live	Roof Live	Snow
Self Weight	0'	21'- 11"	Self Weight	33 lb/ft	-	-	-
Uniform	-0'	21'- 11"	FC1 Floor Material	7 lb/ft	30 lb/ft	-	-
Uniform	2'- 10 1/4"	8'- 10 1/4"	Smoothed Load	40 lb/ft	-	24 lb/ft	12 lb/ft
Uniform	7'- 7 1/2"	21'- 11"	E16(i18)	65 lb/ft	-	-	-
Uniform	7'- 7 1/2"	8'- 6 1/4"	E16(i18)	634 lb/ft	-	664 lb/ft	327 lb/ft
Uniform	9'- 2 1/4"	10'- 6 1/4"	E16(i18)	473 lb/ft	-	532 lb/ft	267 lb/ft
Uniform	10'- 10 1/4"	20'- 10 1/4"	Smoothed Load	56 lb/ft	-	58 lb/ft	30 lb/ft
Uniform	11'- 2 1/4"	12'- 6 1/4"	E16(i18)	506 lb/ft	-	600 lb/ft	299 lb/ft
Uniform	13'- 2 1/4"	14'- 6 1/4"	E16(i18)	415 lb/ft	-	430 lb/ft	208 lb/ft
Uniform	15'- 2 1/4"	16'- 6 1/4"	E16(i18)	424 lb/ft	-	434 lb/ft	218 lb/ft
Uniform	17'- 2 1/4"	18'- 6 1/4"	E16(i18)	434 lb/ft	-	455 lb/ft	228 lb/ft
Uniform	19'- 2 1/4"	20'- 6 1/4"	E16(i18)	434 lb/ft	-	454 lb/ft	227 lb/ft
Uniform	21'- 2 1/4"	21'- 11"	E16(i18)	97 lb/ft	-	108 lb/ft	54 lb/ft
Point	1'- 10 1/4"	1'- 10 1/4"	D03(c01)	112.00 lb	-	115.00/-4.00 lb	61.00 lb
Point	3'- 10 1/4"	3'- 10 1/4"	D03(c02)	-	-	-4.00 lb	-
Point	5'- 10 1/4"	5'- 10 1/4"	D03(c03)	-	-	-4.00 lb	-
Point	7'- 10 1/4"	7'- 10 1/4"	-	-	-	-9.00 lb	-
Point	9'- 10 1/4"	9'- 10 1/4"	-	127.00 lb	-	144.00/-4.00 lb	77.00 lb
Point	11'- 10 1/4"	11'- 10 1/4"	-	-	-	-4.00 lb	-
Point	13'- 10 1/4"	13'- 10 1/4"	-	-	-	-6.00 lb	-
Point	15'- 10 1/4"	15'- 10 1/4"	-	-	-	-4.00 lb	-
Point	17'- 10 1/4"	17'- 10 1/4"	-	-	-	-26.00 lb	-
Point	19'- 10 1/4"	19'- 10 1/4"	-	-	-	-10.00 lb	-
Point	0'- 1 3/4"	0'- 1 3/4"	E20(i14)	166.00 lb	-	148.00 lb	74.00 lb
Point	21'- 10 1/4"	21'- 10 1/4"	E16(i18)	-	-	-	-

Support Information:

Support	Start	End	Source	Maximum Analysis Reactions			
				Dead	Floor Live	Roof Live	Snow
1	0'	0'- 3 1/2"	-	2942.00 lb	324.00 lb	2262.00/-28.00 lb	1136.00 lb
+++	0'- 7/8"	0'- 7/8"	3(i21)	1471.00 lb	162.00 lb	1131.00/-14.00 lb	568.00 lb
+++	0'- 7/8"	0'- 7/8"	E11(i6)	1471.00 lb	162.00 lb	1131.00/-14.00 lb	568.00 lb

- Transfer reactions may differ from design results as allowed per building codes and standard load distribution practices.

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Job: 19110027
Member Type: Beam | Level: 1st Floor
MiTek SAPPHIRE™ Structure Version 8.3.1.215.Update3
Designed by Single Member Design Engine

Label: BM1-i26

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Date: 11/20/2019 08:40:10

Member: 4 - 2.0 RigidLam LVL 1-3/4 x 18

Status: Design Passed

2	21'- 7 1/2"	21'- 11"	E7(8)	4347.00 lb	324.00 lb	3412.00/-46.00 lb	1715.00 lb
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Errors, Warnings & Notes:

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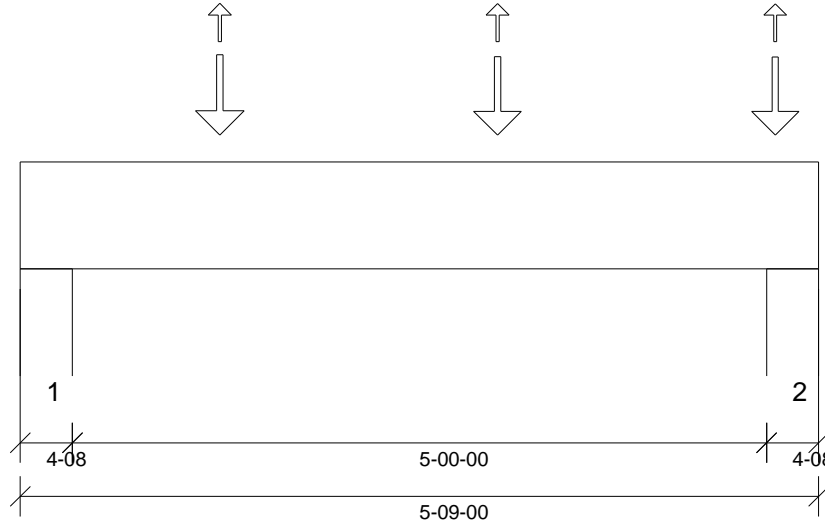
Job: 19110027
 Member Type: Beam | Level: 1st Floor
 MiTek SAPPiRE™ Structure Version 8.3.1.215.Update3
 Designed by Single Member Design Engine

Label: BM2-i32

Page: 5 of 5
 Date: 11/20/2019 08:40:11

Member: 2 - 2.0 RigidLam LVL 1-3/4 x 9-1/4

Status: Design Passed



Graphical Illustration - Not To Scale
 Member Cut Length - 5'- 9"
 MemberPitch - 0/12

Design Information:

Building Code:	IRC2015	Floor Dead Load:	10.0 lb/ft ²	Roof Dead Load:	10.0 lb/ft ²	Ground Snow Load:	20.0 lb/ft ²
Design Methodology:	ASD	Floor Live Load:	40.0 lb/ft ²	Roof Live Load:	20.0 lb/ft ²		
		Unbraced Length	Top: 1'- 8 1/2"	Bottom:	5'		

Design Results:

	Location	Design	Control	Result	LDF	Load Combination
Critical Moment (Pos)	3'- 5 1/4"	3046.70 lb ft	15318.75 lb ft	Passed - 20%	1.15	D + 0.75(L + Lr)
Critical Moment (Neg)	3'- 5 1/4"	-31.62 lb ft	21313.05 lb ft	Passed - 0%	1.60	0.6D + 0.6W
Critical Shear	1'- 1 3/4"	2130.55 lb	7198.04 lb	Passed - 30%	1.15	D + 0.75(L + Lr)
Live Load Deflection	2'- 10 1/4"	0'	0'- 3/4" (L/360)	Passed - L/999	-	0.75(L + Lr + 0.6W)
Total Load Deflection	2'- 10 1/4"	0'- 1/16"	0'- 1" (L/240)	Passed - L/999	-	D + 0.75(L + Lr + 0.6W)
Max. Reaction			Supported Mt Supporting Mt			
	0'- 3 1/2"	2140.35 lb	11812.55 lb 20837.34 lb	Passed - 18%	1.15	D + 0.75(L + Lr)
	0'- 3 1/2"	-11.10 lb	16434.85 lb -	Passed - 0%	1.60	0.6D + 0.6W
	5'- 5 1/2"	3262.05 lb	11812.54 lb 20837.33 lb	Passed - 28%	1.15	D + 0.75(L + Lr)
	5'- 5 1/2"	-32.61 lb	16434.85 lb -	Passed - 0%	1.60	0.6D + 0.6W

Design Notes:

* Member design assumed proper ply to ply connection. Verify connection between plies according to code specification

Loading:

Type	Start	End	Source	Maximum Load Magnitudes			
				Dead	Floor Live	Roof Live	Snow
Self Weight	0'	5'- 9"	Self Weight	9 lb/ft	-	-	-
Point	1'- 5 1/4"	1'- 5 1/4"	F03(c07)	936.00 lb	558.00 lb	618.00/-1.00 lb	311.00 lb
Point	3'- 5 1/4"	3'- 5 1/4"	F03(c01)	910.00 lb	558.00 lb	594.00/-1.00 lb	298.00 lb
Point	5'- 5 1/4"	5'- 5 1/4"	F03(c05)	904.00 lb	558.00 lb	585.00/-1.00 lb	293.00 lb

Support Information:

Support	Start	End	Source	Maximum Analysis Reactions			
				Dead	Floor Live	Roof Live	Snow
1	0'	0'- 4 1/2"	1(i19)	1109.00 lb	653.00 lb	713.00/-1.00 lb	359.00 lb
2	5'- 4 1/2"	5'- 9"	2(i31)	1690.00 lb	1021.00 lb	1084.00/-2.00 lb	543.00 lb

Errors, Warnings & Notes:

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