



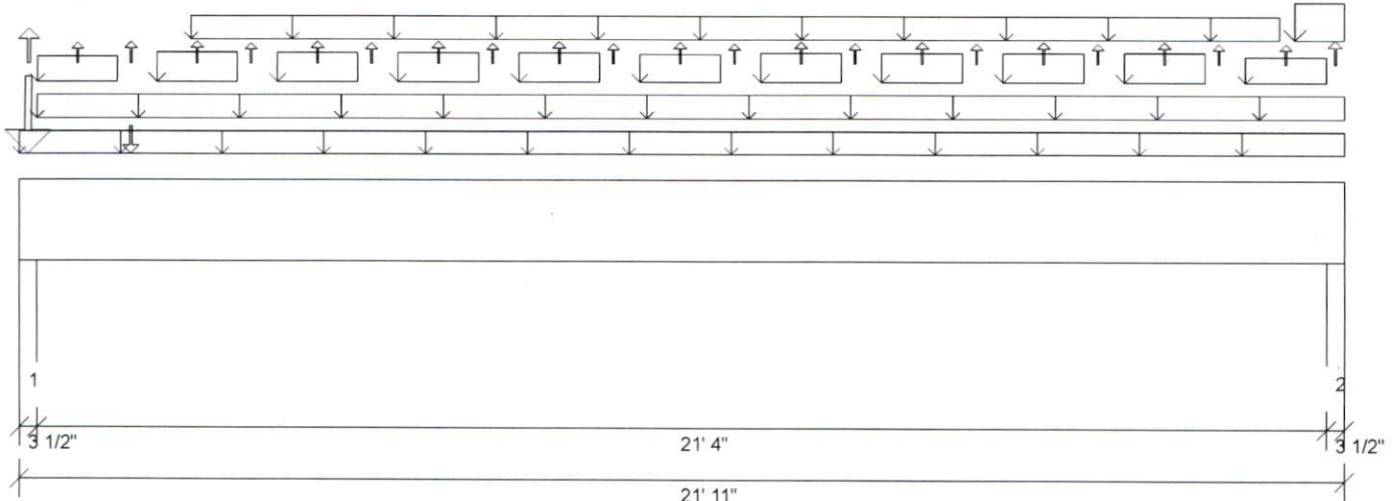
Job: LAYOUT
 Member Type: Beam | Level: 1st Floor
 MiTek SAPPHIRE™ Structure Version 8.2.0.246.Update9
 Designed by Single Member Design Engine

Label: BM5-i72

Page: 1 of 6
 Date: 03/05/2019 15:11:44

Member: 2 - 2.0 RigidLam LVL 1-3/4 x 16

Status: Design Passed



Design Information:

Building Code:	IRC 2012	Floor Dead Load:	10.0 lb/ft ²	Roof Dead Load:	10.0 lb/ft ²	Ground Snow Load:	0.0 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)	10'- 11 11/16"	11945.96 lb ft	37216.21 lb ft	Passed - 32%	1.00	D + L
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Shear	1'- 7 1/2"	1973.31 lb	10826.67 lb	Passed - 18%	1.00	D + L
Live Load Deflection	10'- 11 1/2"	0'- 3/16"	N/A (L/480)	Passed - L/999	-	0.75(L + Lr + 0.6W)
Total Load Deflection	10'- 11 1/2"	0'- 1/2"	N/A (L/240)	Passed - L/487	-	D + 0.75(L + Lr + 0.6W)
Max. Reaction			Supported Mit Supporting Mit			
	0'- 2 1/2"	3881.42 lb	10171.88 lb 5206.26 lb	Passed - 75%	1.25	D + Lr
	21'- 8 1/2"	2284.91 lb	10171.97 lb 5206.31 lb	Passed - 44%	1.00	D + L

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	15 lb/ft	-	-	-
Uniform	-0'	21'- 11"	FC1 Floor Material	11 lb/ft	43 lb/ft	-	-
Uniform	0'- 3 1/2"	21'- 11"	E11(i)19	65 lb/ft	-	-	-
Uniform	0'- 3 1/2"	1'- 7 1/2"	E11(i)19	34 lb/ft	-	54 lb/ft	-
Uniform	2'- 3 1/2"	3'- 7 1/2"	E11(i)19	76 lb/ft	-	68 lb/ft	-
Uniform	2'- 10 1/4"	20'- 10 1/4"	Smoothed Load	26 lb/ft	-	28 lb/ft	-
Uniform	4'- 3 1/2"	5'- 7 1/2"	E11(i)19	71 lb/ft	-	66 lb/ft	-
Uniform	6'- 3 1/2"	7'- 7 1/2"	E11(i)19	72 lb/ft	-	67 lb/ft	-
Uniform	8'- 3 1/2"	9'- 7 1/2"	E11(i)19	72 lb/ft	-	66 lb/ft	-
Uniform	10'- 3 1/2"	11'- 7 1/2"	E11(i)19	65 lb/ft	-	54 lb/ft	-
Uniform	12'- 3 1/2"	13'- 7 1/2"	E11(i)19	72 lb/ft	-	66 lb/ft	-
Uniform	14'- 3 1/2"	15'- 7 1/2"	E11(i)19	72 lb/ft	-	67 lb/ft	-
Uniform	16'- 3 1/2"	17'- 7 1/2"	E11(i)19	71 lb/ft	-	66 lb/ft	-
Uniform	18'- 3 1/2"	19'- 7 1/2"	E11(i)19	76 lb/ft	-	68 lb/ft	-
Uniform	20'- 3 1/2"	21'- 7 1/2"	E11(i)19	37 lb/ft	-	55 lb/ft	-
Uniform	21'- 1 1/4"	21'- 11"	E11(i)19	96 lb/ft	-	154 lb/ft	-
Point	0'- 1 3/4"	0'- 1 3/4"	E12(i)22	697.00 lb	-	651.00/-52.00 lb	-
Point	0'- 11 1/2"	0'- 11 1/2"	E11(i)19	-	-	-40.00 lb	-
Point	1'- 10 1/4"	1'- 10 1/4"	T4(c02)	81.00 lb	-	101.00/-6.00 lb	-
Point	2'- 11 1/2"	2'- 11 1/2"	E11(i)19	-	-	-	-
Point	3'- 10 1/4"	3'- 10 1/4"	T4(c05)	-	-	-8.00 lb	-
Point	4'- 11 1/2"	4'- 11 1/2"	E11(i)19	-	-	-	-
Point	5'- 10 1/4"	5'- 10 1/4"	T4(c03)	-	-	-8.00 lb	-
Point	6'- 11 1/2"	6'- 11 1/2"	E11(i)19	-	-	-	-
Point	7'- 10 1/4"	7'- 10 1/4"	T4(c09)	-	-	-8.00 lb	-
Point	8'- 11 1/2"	8'- 11 1/2"	E11(i)19	-	-	-	-
Point	9'- 10 1/4"	9'- 10 1/4"	T4(c06)	-	-	-8.00 lb	-
Point	10'- 11 1/2"	10'- 11 1/2"	E11(i)19	-	-	-	-
Point	11'- 10 1/4"	11'- 10 1/4"	T4(c01)	-	-	-8.00 lb	-
Point	12'- 11 1/2"	12'- 11 1/2"	E11(i)19	-	-	-	-
Point	13'- 10 1/4"	13'- 10 1/4"	T4(c08)	-	-	-8.00 lb	-
Point	14'- 11 1/2"	14'- 11 1/2"	E11(i)19	-	-	-	-
Point	15'- 10 1/4"	15'- 10 1/4"	T4(c10)	-	-	-8.00 lb	-

- 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: LAYOUT
 Member Type: Beam | Level: 1st Floor
 MiTek SAPPHIRE™ Structure Version 8.2.0.246.Update9
 Designed by Single Member Design Engine

Label: BM5-i72

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Member: 2 - 2.0 RigidLam LVL 1-3/4 x 16

Status: Design Passed

Point	16'- 11 1/2"	16'- 11 1/2"	E11(i19)	-	-	-	-
Point	17'- 10 1/4"	17'- 10 1/4"	T4(c04)	-	-	-8.00 lb	-
Point	18'- 11 1/2"	18'- 11 1/2"	E11(i19)	-	-	-	-
Point	19'- 10 1/4"	19'- 10 1/4"	T4(c07)	-	-	-8.00 lb	-
Point	20'- 11 1/2"	20'- 11 1/2"	E11(i19)	-	-	-34.00 lb	-
Point	21'- 9 1/4"	21'- 9 1/4"	E11(i19)	-	-	-	-

Support Information:

Support	Start	End	Source	Maximum Analysis Reactions			
				Dead	Floor Live	Roof Live	Snow
1	0'	0'- 3 1/2"	E6(i3)	2443.00 lb	474.00 lb	1441.00/-131.00 lb	-
2	21'- 7 1/2"	21'- 11"	E3(i4)	1813.00 lb	472.00 lb	861.00/-73.00 lb	-

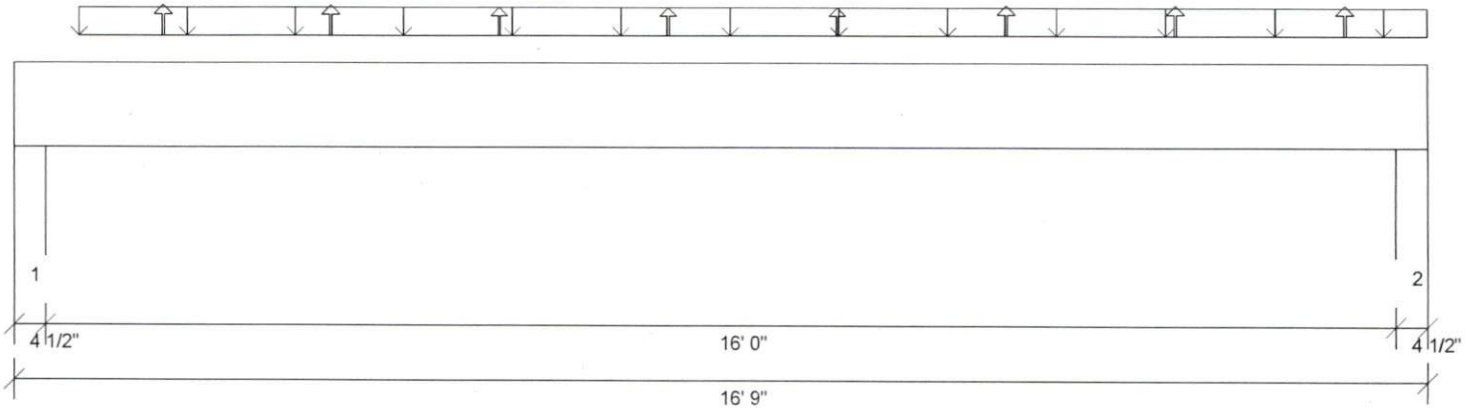
Errors, Warnings & Notes:

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Job: LAYOUT
 Member Type: Beam | Level: 1st Floor
 MiTek SAPPHIRE™ Structure Version 8.2.0.246.Update9
 Designed by Single Member Design Engine
Member: 2 - 2.0 RigidLam LVL 1-3/4 x 11-7/8

Label: BM7-i69
 Page: 3 of 6
 Date: 03/05/2019 15:11:45
Status: Design Passed



Graphical Illustration - Not To Scale
 Member Cut Length - 16'-9"
 Member Pitch - 0/12

Design Information:

Building Code: IRC 2012	Floor Dead Load: 10.0 lb/ft ²	Roof Dead Load: 10.0 lb/ft ²	Ground Snow Load: 0.0 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'	

Design Results:

	Location	Design	Control	Result	LDF	Load Combination
Critical Moment (Pos)	7'- 9 1/4"	3432.49 lb ft	26389.48 lb ft	Passed - 13%	1.25	D + Lr
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Shear	1'- 4 3/8"	788.29 lb	10044.27 lb	Passed - 8%	1.25	D + Lr
Live Load Deflection	8'- 4 1/2"	0'- 1/16"	N/A (L/480)	Passed - L/999	-	Lr
Total Load Deflection	8'- 4 1/2"	0'- 3/16"	N/A (L/240)	Passed - L/999	-	D + Lr
Max. Reaction			<u>Supported Mt</u> <u>Supporting Mt</u>			
	0'- 3 1/2"	803.27 lb	12796.88 lb 11418.75 lb	Passed - 7%	1.25	D + Lr
	16'- 5 1/2"	876.52 lb	12796.99 lb 11418.87 lb	Passed - 8%	1.25	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'	16'- 9"	Self Weight	11 lb/ft	-	-	-
Uniform	0'- 9 1/4"	16'- 9"	Smoothed Load	42 lb/ft	-	52 lb/ft	-
Point	1'- 9 1/4"	1'- 9 1/4"	T4(c05)	-	-	-	-
Point	3'- 9 1/4"	3'- 9 1/4"	T4(c03)	-	-	-	-
Point	5'- 9 1/4"	5'- 9 1/4"	T4(c09)	-	-	-	-
Point	7'- 9 1/4"	7'- 9 1/4"	T4(c06)	-	-	-	-
Point	9'- 9 1/4"	9'- 9 1/4"	T4(c01)	-	-	-	-
Point	11'- 9 1/4"	11'- 9 1/4"	T4(c08)	-	-	-	-
Point	13'- 9 1/4"	13'- 9 1/4"	T4(c10)	-	-	-	-
Point	15'- 9 1/4"	15'- 9 1/4"	T4(c04)	-	-	-	-

Support Information:

Support	Start	End	Source	Maximum Analysis Reactions			
				Dead	Floor Live	Roof Live	Snow
1	0'	0'- 4 1/2"	E5(i65)	408.00 lb	-	396.00 lb	-
2	16'- 4 1/2"	16'- 9"	E4(i5)	440.00 lb	-	436.00 lb	-

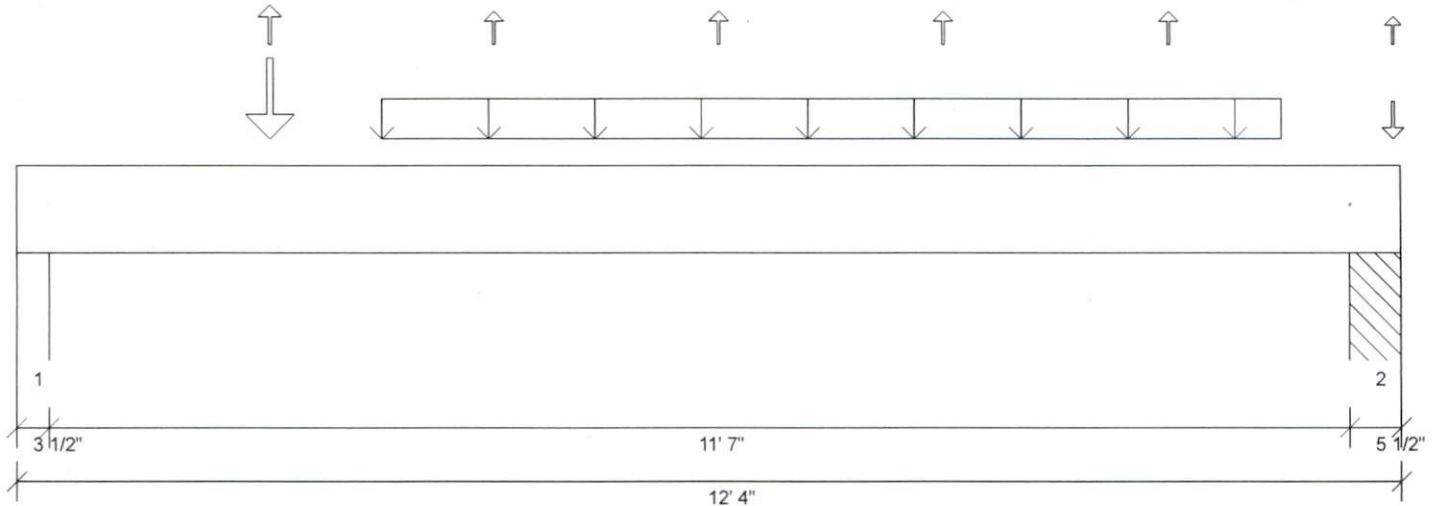
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Job: LAYOUT
 Member Type: Beam | Level: 1st Floor
 MiTek SAPPHIRE™ Structure Version 8.2.0.246.Update9
 Designed by Single Member Design Engine
Member: 2 - 2.0 RigidLam LVL 1-3/4 x 9-1/4

Label: BM8-i75
 Page: 4 of 6
 Date: 03/05/2019 15:11:45
Status: Design Passed



Graphical Illustration - Not To Scale
 Member Cut Length - 12'-4"
 Member Pitch - 0/12

Design Information:

Building Code:	IRC 2012	Floor Dead Load:	10.0 lb/ft ²	Roof Dead Load:	10.0 lb/ft ²	Ground Snow Load:	0.0 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'-11"	Bottom:	11'-9"		

Design Results:

	Location	Design	Control	Result	LDF	Load Combination
Critical Moment (Pos)	6'- 3 1/4"	5093.68 lb ft	16549.96 lb ft	Passed - 31%	1.25	D + Lr
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Shear	1'- 3/4"	1537.43 lb	7823.96 lb	Passed - 20%	1.25	D + Lr
Live Load Deflection	6'- 1/2"	0'- 1/8"	N/A (L/480)	Passed - L/999	-	Lr
Total Load Deflection	6'- 5/8"	0'- 1/4"	N/A (L/240)	Passed - L/498	-	D + Lr
Max. Reaction			Supported Mt Supporting Mt			
	0'- 2 1/2"	1546.51 lb	10171.95 lb 8881.32 lb	Passed - 17%	1.25	D + Lr
	11'- 11 1/2"	1723.91 lb	15421.86 lb 13956.24 lb	Passed - 12%	1.25	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'	12'- 4"	Self Weight	9 lb/ft	-	-	-
Uniform	3'- 3 1/4"	11'- 3 1/4"	Smoothed Load	136 lb/ft	-	140 lb/ft	-
Point	2'- 3 1/4"	2'- 3 1/4"	T5(c02)	344.00 lb	-	409.00 lb	-
Point	4'- 3 1/4"	4'- 3 1/4"	T5(c02)	-	-	-	-
Point	6'- 3 1/4"	6'- 3 1/4"	T5(c02)	-	-	-	-
Point	8'- 3 1/4"	8'- 3 1/4"	T5(c02)	-	-	-	-
Point	10'- 3 1/4"	10'- 3 1/4"	T5(c02)	-	-	-	-
Point	12'- 3 1/4"	12'- 3 1/4"	T5GE(c01)	95.00 lb	-	113.00 lb	-

Support Information:

Support	Start	End	Source	Maximum Analysis Reactions			
				Dead	Floor Live	Roof Live	Snow
1	0'	0'- 3 1/2"	E2(i1)	767.00 lb	-	779.00 lb	-
2	11'- 10 1/2"	12'- 4"	P3(i73)	866.00 lb	-	859.00 lb	-

Errors, Warnings & Notes:

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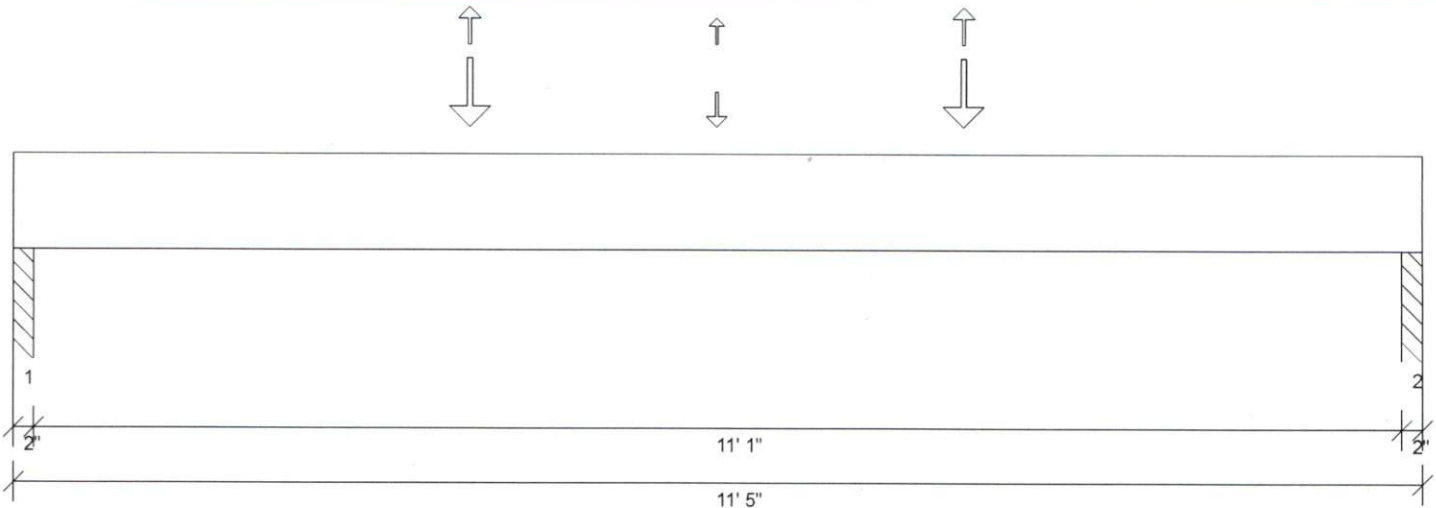
Job: LAYOUT
 Member Type: Beam | Level: 1st Floor
 MiTek SAPPHERE™ Structure Version 8.2.0.246.Update9
 Designed by Single Member Design Engine

Label: BM9-i76

Page: 5 of 6
 Date: 03/05/2019 15:11:45

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

Status: Design Passed



Graphical Illustration - Not To Scale
 Member Cut Length - 11'- 5"
 MemberPitch - 0/12

Design Information:

Building Code: IRC 2012	Floor Dead Load: 10.0 lb/ft ²	Roof Dead Load: 10.0 lb/ft ²	Ground Snow Load: 0.0 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: 11'- 5"	

Design Results:

	Location	Design	Control	Result	LDF	Load Combination
Critical Moment (Pos)	5'- 8 1/2"	1770.70 lb ft	16650.82 lb ft	Passed - 11%	1.25	D + Lr
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Shear	0'- 11 1/4"	460.93 lb	7823.96 lb	Passed - 6%	1.25	D + Lr
Live Load Deflection	5'- 8 1/2"	0'- 1/16"	N/A (L/480)	Passed - L/999	-	Lr
Total Load Deflection	5'- 8 1/2"	0'- 1/16"	N/A (L/240)	Passed - L/999	-	D + Lr
Max. Reaction			Supported Mt Supporting Mt			
	0'- 1"	468.94 lb	5249.90 lb 5074.91 lb	Passed - 9%	1.25	D + Lr
	11'- 4"	468.64 lb	5249.95 lb 5074.95 lb	Passed - 9%	1.25	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'	11'- 5"	Self Weight	9 lb/ft	-	-	-
Point	3'- 8 1/2"	3'- 8 1/2"	T5GE(c01)	180.00 lb	-	184.00 lb	-
Point	5'- 8 1/2"	5'- 8 1/2"	T5GE(c01)	15.00 lb	-	98.00/-31.00 lb	-
Point	7'- 8 1/2"	7'- 8 1/2"	T5GE(c01)	179.00 lb	-	184.00 lb	-

Support Information:

Support	Start	End	Source	Maximum Analysis Reactions			
				Dead	Floor Live	Roof Live	Snow
1	0'	0'- 2"	P3(i73)	236.00 lb	-	233.00/-15.00 lb	-
2	11'- 3"	11'- 5"	P4(i74)	236.00 lb	-	233.00/-16.00 lb	-

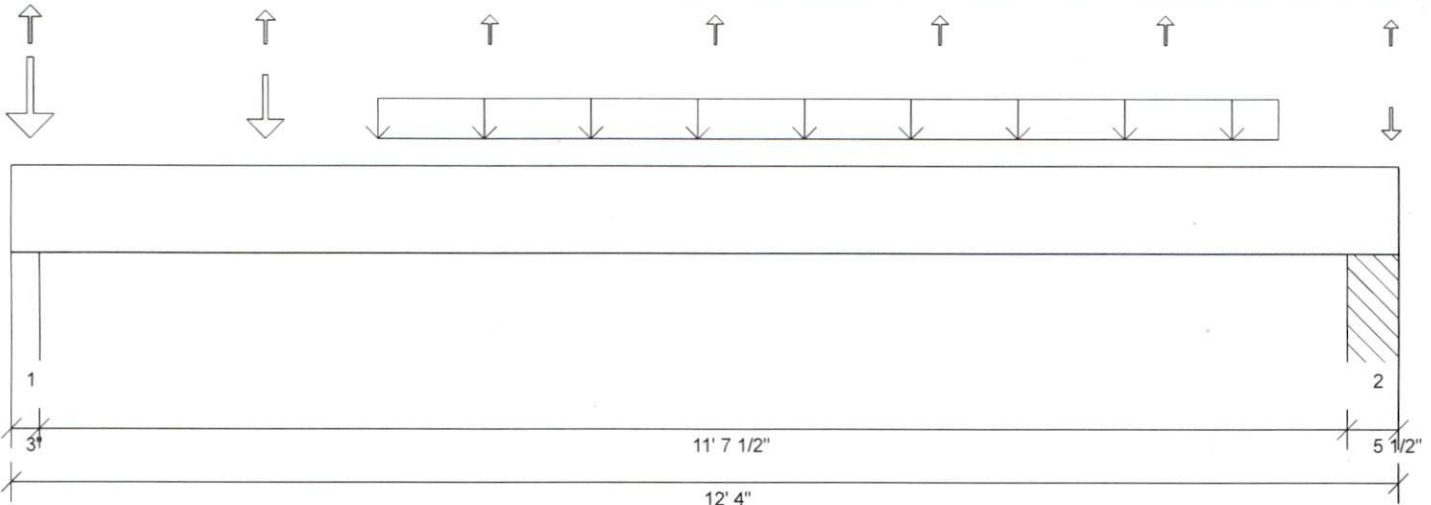
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Job: LAYOUT
 Member Type: Beam | Level: 1st Floor
 MiTek SAPPHIRE™ Structure Version 8.2.0.246.Update9
 Designed by Single Member Design Engine
Member: 2 - 2.0 RigidLam LVL 1-3/4 x 9-1/4

Label: BM10-i77
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 Date: 03/05/2019 15:11:45
Status: Design Passed



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

Design Information:

Building Code:	IRC 2012	Floor Dead Load:	10.0 lb/ft ²	Roof Dead Load:	10.0 lb/ft ²	Ground Snow Load:	0.0 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'- 11 1/2"	Bottom:	11'- 9 1/2"		

Design Results:

	Location	Design	Control	Result	LDF	Load Combination
Critical Moment (Pos)	6'- 3 1/4"	5175.96 lb ft	16547.53 lb ft	Passed - 31%	1.25	D + Lr
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Moment (Neg)		0.00 lb ft	0.00 lb ft			
Critical Shear	1'- 1/4"	1546.60 lb	7823.96 lb	Passed - 20%	1.25	D + Lr
Live Load Deflection	6'- 1/4"	0'- 1/8"	N/A (L/480)	Passed - L/980	-	Lr
Total Load Deflection	6'- 3/8"	0'- 5/16"	N/A (L/240)	Passed - L/489	-	D + Lr
Max. Reaction			Supported Mt Supporting Mt			
	0'- 2"	2604.33 lb	8859.62 lb 7612.73 lb	Passed - 34%	1.25	D + Lr
	11'- 11 1/2"	1752.09 lb	15421.86 lb 13956.24 lb	Passed - 13%	1.25	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'	12'- 4"	Self Weight	9 lb/ft	-	-	-
Uniform	3'- 3 1/4"	11'- 3 1/4"	Smoothed Load	137 lb/ft	-	141 lb/ft	-
Point	0'- 2"	0'- 2"	F2L(c01)	593.00 lb	25.00/-3.00 lb	456.00/-34.00 lb	-
Point	2'- 3 1/4"	2'- 3 1/4"	T5(c02)	346.00 lb	-	412.00 lb	-
Point	4'- 3 1/4"	4'- 3 1/4"	T5(c02)	-	-	-	-
Point	6'- 3 1/4"	6'- 3 1/4"	T5(c02)	-	-	-	-
Point	8'- 3 1/4"	8'- 3 1/4"	T5(c02)	-	-	-	-
Point	10'- 3 1/4"	10'- 3 1/4"	T5(c02)	-	-	-	-
Point	12'- 3 1/4"	12'- 3 1/4"	T5GE(c01)	99.00 lb	-	119.00 lb	-

Support Information:

Support	Start	End	Source	Maximum Analysis Reactions			
				Dead	Floor Live	Roof Live	Snow
1	0'	0'- 3"	E2(i1)	1371.00 lb	25.00/-3.00 lb	1247.00/-34.00 lb	-
2	11'- 10 1/2"	12'- 4"	P4(i74)	869.00 lb	-	870.00 lb	-

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