

Graphical Illustration - Not To Scale
 Member Cut Length - 23'- 11"
 MemberPitch - 0/12

Design Information:

| | | | | | | | |
|---------------------|---------|------------------|-------------|-----------------|-------------|-------------------|------------|
| Building Code: | IRC2015 | Floor Dead Load: | 10.0 lb/ft² | Roof Dead Load: | 10.0 lb/ft² | Ground Snow Load: | 0.0 lb/ft² |
| Design Methodology: | ASD | Floor Live Load: | 40.0 lb/ft² | Roof Live Load: | 20.0 lb/ft² | | |
| | | Unbraced Length | Top: 0' | Bottom: | 16' | | |

Design Results:

| | Location | Design | Control | Result | LDF | Load Combination |
|-----------------------|--------------|----------------|------------------------------|----------------|------|------------------|
| Critical Moment (Pos) | 11'- 11 1/2" | 1501.88 lb ft | 22884.96 lb ft | Passed - 7% | 1.15 | D + Lr |
| Critical Moment (Neg) | 20'- 1" | -2097.04 lb ft | 22884.96 lb ft | Passed - 9% | 1.15 | D + Lr |
| Critical Shear | 4'- 11 3/8" | 772.79 lb | 9081.41 lb | Passed - 9% | 1.15 | D + Lr |
| Live Load Deflection | 11'- 11 1/2" | 0' | 0'- 3/4" (L/360) | Passed - L/999 | - | 0.6W |
| Total Load Deflection | 11'- 11 1/2" | 0'- 1/16" | 0'- 1" (L/240) | Passed - L/999 | - | D + Lr |
| Max. Reaction | | | Supported Mt Supporting Mt | | | |
| | 0'- 1 1/2" | 45.78 lb | 18375.00 lb 17762.50 lb | Passed - 0% | 1.15 | D + Lr |
| | 0'- 1 1/2" | -393.93 lb | 18375.00 lb - | Passed - 2% | 1.15 | D + Lr |
| | 3'- 10" | 1678.53 lb | 18375.00 lb 17762.50 lb | Passed - 9% | 1.15 | D + Lr |
| | 3'- 10" | -219.15 lb | 25565.22 lb - | Passed - 1% | 1.60 | 0.6D + 0.6W |
| | 20'- 1" | 1681.68 lb | 18375.00 lb 17762.50 lb | Passed - 9% | 1.15 | D + Lr |
| | 20'- 1" | -219.13 lb | 25565.22 lb - | Passed - 1% | 1.60 | 0.6D + 0.6W |
| | 23'- 9 1/2" | 45.74 lb | 18375.00 lb 17762.50 lb | Passed - 0% | 1.15 | D + Lr |
| | 23'- 9 1/2" | -393.97 lb | 18375.00 lb - | Passed - 2% | 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' | 23'- 11" | Self Weight | 12 lb/ft | - | - | - |
| Point | 0'- 1/4" | 0'- 1/4" | B02(c01) | 92.00 lb | - | 127.00 lb | - |
| Point | 1'- 11 1/2" | 1'- 11 1/2" | B02(c01) | 97.00 lb | - | 114.00 lb | - |
| Point | 3'- 11 1/2" | 3'- 11 1/2" | B02(c01) | 98.00 lb | - | 112.00 lb | - |
| Point | 5'- 11 1/2" | 5'- 11 1/2" | B02(c01) | 98.00 lb | - | 105.00 lb | - |
| Point | 7'- 11 1/2" | 7'- 11 1/2" | B02(c01) | 98.00 lb | - | 104.00 lb | - |
| Point | 9'- 11 1/2" | 9'- 11 1/2" | B02(c01) | 97.00 lb | - | 103.00 lb | - |
| Point | 11'- 11 1/2" | 11'- 11 1/2" | B02(c01) | 85.00 lb | - | 81.00 lb | - |
| Point | 13'- 11 1/2" | 13'- 11 1/2" | B02(c01) | 97.00 lb | - | 103.00 lb | - |
| Point | 15'- 11 1/2" | 15'- 11 1/2" | B02(c01) | 98.00 lb | - | 104.00 lb | - |
| Point | 17'- 11 1/2" | 17'- 11 1/2" | B02(c01) | 98.00 lb | - | 105.00 lb | - |
| Point | 19'- 11 1/2" | 19'- 11 1/2" | B02(c01) | 98.00 lb | - | 112.00 lb | - |
| Point | 21'- 11 1/2" | 21'- 11 1/2" | B02(c01) | 97.00 lb | - | 114.00 lb | - |
| Point | 23'- 10 3/4" | 23'- 10 3/4" | B02(c01) | 92.00 lb | - | 127.00 lb | - |

Support Information:

| Support | Start | End | Source | Maximum Analysis Reactions | | | |
|---------|--------------|-------------|----------|----------------------------|------------|-------------------|------|
| | | | | Dead | Floor Live | Roof Live | Snow |
| 1 | 0' | 3'- 11 1/2" | E10(i18) | 901.00/-136.00 lb | - | 960.00/-251.00 lb | - |
| ==> | 0'- 1 1/2" | 0'- 1 1/2" | E10(i18) | -136.00 lb | - | 187.00/-251.00 lb | - |
| ==> | 3'- 10" | 3'- 10" | E10(i18) | 901.00 lb | - | 773.00 lb | - |
| 2 | 19'- 11 1/2" | 23'- 11" | E9(i7) | 905.00/-140.00 lb | - | 960.00/-251.00 lb | - |
| ==> | 20'- 1" | 20'- 1" | E9(i7) | 905.00 lb | - | 778.00 lb | - |
| ==> | 23'- 9 1/2" | 23'- 9 1/2" | E9(i7) | -140.00 lb | - | 182.00/-251.00 lb | - |

Errors, Warnings & Notes:

* The dead loads used in the design of this member were applied to the structure as sloped dead loads.

- 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: 191203RT1
Member Type: Beam | Level: 1st Floor
MiTek SAPPHIRE™ Structure Version 8.2.4.272.Update3
Designed by Single Member Design Engine

Member: 2 - 1-3/4X11-7/8 LP-LVL 2900Fb-2.0E

Label: BM1-i19

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Date: 10/22/2019 16:33:41

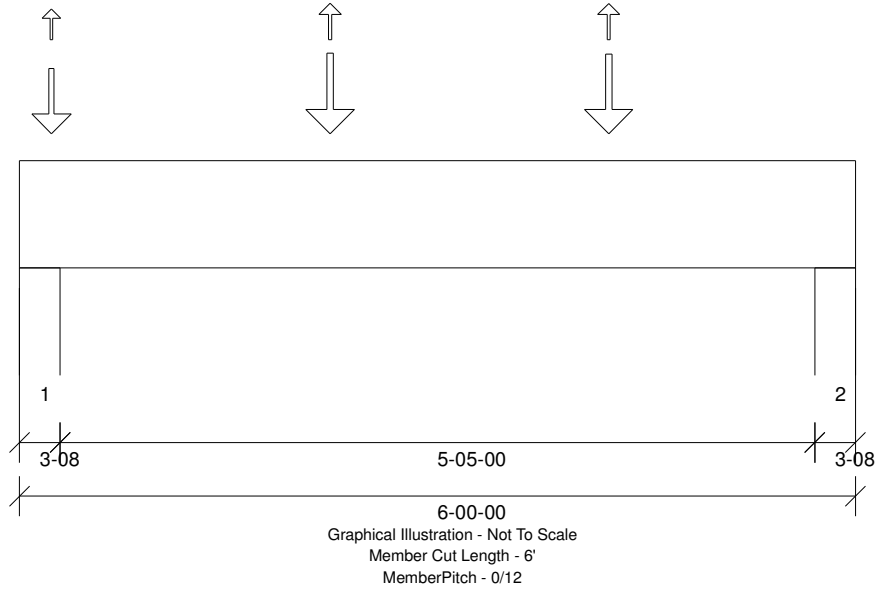
Status: Design Passed

* The member graphic, dimensions, and locations shown on this report are based on the centerline of the member.

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

- 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.



Design Information:

| | | | |
|-------------------------|----------------------------------|-----------------------------|------------------------------|
| Building Code: IRC2015 | Floor Dead Load: 10.0 lb/ft² | Roof Dead Load: 10.0 lb/ft² | Ground Snow Load: 0.0 lb/ft² |
| Design Methodology: ASD | Floor Live Load: 40.0 lb/ft² | Roof Live Load: 20.0 lb/ft² | |
| | Unbraced Length Top: 1'- 10 1/2" | Bottom: 5'- 5" | |

Design Results:

| | Location | Design | Control | Result | LDF | Load Combination |
|-----------------------|-------------|---------------|--|----------------|------|-------------------------|
| Critical Moment (Pos) | 2'- 2 3/4" | 3456.86 lb ft | 14277.88 lb ft | Passed - 24% | 1.15 | D + Lr |
| Critical Shear | 4'- 11 1/4" | 2000.18 lb | 7073.94 lb | Passed - 28% | 1.15 | D + Lr |
| Live Load Deflection | 3'- 1/8" | 0' | 0'- 3/4" (L/360) | Passed - L/999 | - | 0.75(L + Lr + 0.6W) |
| Total Load Deflection | 3'- 1/8" | 0'- 1/16" | 0'- 1" (L/240) | Passed - L/999 | - | D + 0.75(L + Lr + 0.6W) |
| Max. Reaction | | | <u>Supported Mt</u> <u>Supporting Mt</u> | | | |
| | 0'- 2 1/2" | 3107.56 lb | 9187.52 lb 16206.79 lb | Passed - 34% | 1.15 | D + Lr |
| | 5'- 9 1/2" | 2010.02 lb | 9187.52 lb 16206.79 lb | Passed - 22% | 1.15 | D + Lr |

Design Notes:

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

Loading:

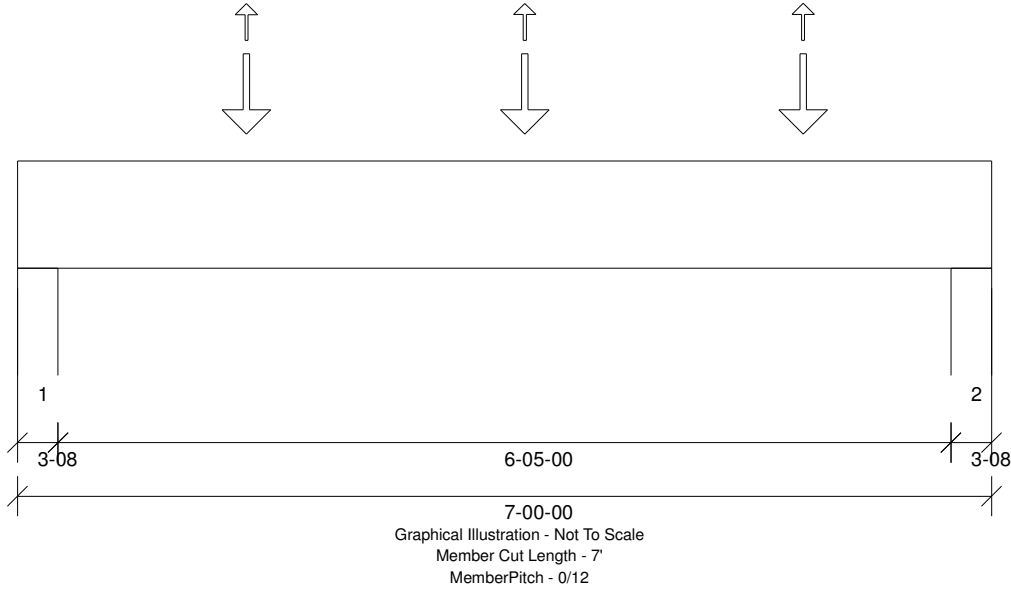
| Type | Start | End | Source | Dead | Maximum Load Magnitudes | | |
|-------------|------------|------------|-------------|-----------|-------------------------|-----------------|------|
| | | | | | Floor Live | Roof Live | Snow |
| Self Weight | 0' | 6' | Self Weight | 9 lb/ft | - | - | - |
| Point | 0'- 2 3/4" | 0'- 2 3/4" | A03(c01) | 776.00 lb | - | 624.00/-1.00 lb | - |
| Point | 2'- 2 3/4" | 2'- 2 3/4" | A04(c01) | 938.00 lb | - | 905.00 lb | - |
| Point | 4'- 2 3/4" | 4'- 2 3/4" | A04(c02) | 929.00 lb | - | 890.00 lb | - |

Support Information:

| Support | Start | End | Source | Dead | Maximum Analysis Reactions | | |
|---------|------------|------------|----------|------------|----------------------------|------------------|------|
| | | | | | Floor Live | Roof Live | Snow |
| 1 | 0' | 0'- 3 1/2" | E14(i22) | 1691.00 lb | - | 1474.00/-1.00 lb | - |
| 2 | 5'- 8 1/2" | 6' | E13(i25) | 1007.00 lb | - | 945.00 lb | - |

Errors, Warnings & Notes:

- * The dead loads used in the design of this member were applied to the structure as sloped dead loads.
- * The member graphic, dimensions, and locations shown on this report are based on the centerline of the member.
- * 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/ft² | Roof Dead Load: | 10.0 lb/ft² | Ground Snow Load: | 0.0 lb/ft² |
| Design Methodology: | ASD | Floor Live Load: | 40.0 lb/ft² | Roof Live Load: | 20.0 lb/ft² | | |
| | | Unbraced Length | Top: 1'- 10 1/2" | Bottom: | 6'- 5" | | |

Design Results:

| | Location | Design | Control | Result | LDF | Load Combination |
|-----------------------|-------------|---------------|-------------------------------------|----------------|------|-------------------------|
| Critical Moment (Pos) | 3'- 7 3/4" | 5374.91 lb ft | 14277.88 lb ft | Passed - 38% | 1.15 | D + Lr |
| Critical Shear | 5'- 11 1/4" | 2871.74 lb | 7073.94 lb | Passed - 41% | 1.15 | D + Lr |
| Live Load Deflection | 3'- 6 1/8" | 0'- 1/16" | 0'- 3/4" (L/360) | Passed - L/999 | - | 0.75(L + Lr + 0.6W) |
| Total Load Deflection | 3'- 6 1/8" | 0'- 1/16" | 0'- 1" (L/240) | Passed - L/851 | - | D + 0.75(L + Lr + 0.6W) |
| Max. Reaction | 0'- 2 1/2" | 2639.25 lb | <u>Supported Mt</u> 9187.47 lb | Passed - 29% | 1.15 | D + Lr |
| | 6'- 9 1/2" | 2881.58 lb | <u>Supporting Mt</u> 16206.79 lb | Passed - 31% | 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 | Dead | Maximum Load Magnitudes | | |
|-------------|------------|------------|-------------|-----------|-------------------------|-----------|------|
| | | | | | Floor Live | Roof Live | Snow |
| Self Weight | 0' | 7' | Self Weight | 9 lb/ft | - | - | - |
| Point | 1'- 7 3/4" | 1'- 7 3/4" | A04(c06) | 929.00 lb | - | 889.00 lb | - |
| Point | 3'- 7 3/4" | 3'- 7 3/4" | A04(c07) | 929.00 lb | - | 890.00 lb | - |
| Point | 5'- 7 3/4" | 5'- 7 3/4" | A04(c08) | 929.00 lb | - | 890.00 lb | - |

Support Information:

| Support | Start | End | Source | Dead | Maximum Analysis Reactions | | |
|---------|------------|------------|----------|------------|----------------------------|------------|------|
| | | | | | Floor Live | Roof Live | Snow |
| 1 | 0' | 0'- 3 1/2" | E13(i25) | 1364.00 lb | - | 1275.00 lb | - |
| 2 | 6'- 8 1/2" | 7' | E12(i4) | 1488.00 lb | - | 1394.00 lb | - |

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