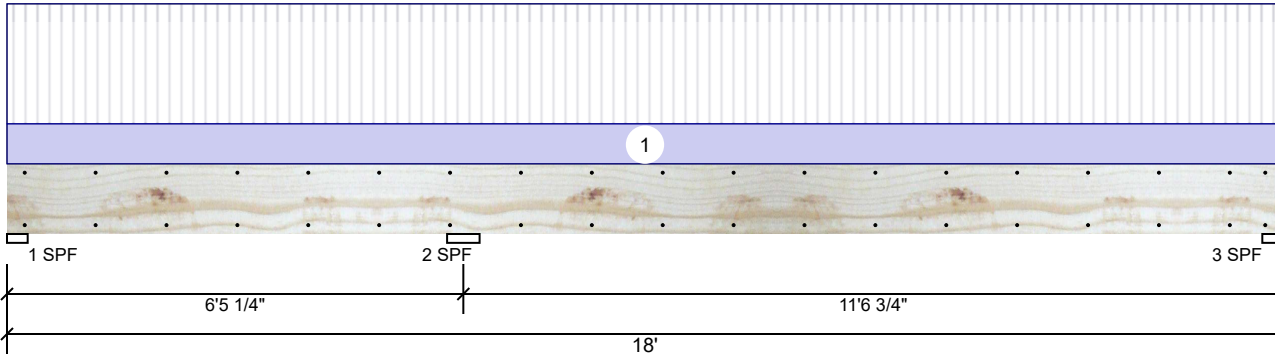


BM1 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Level



Member Information

| | | | |
|---------------------|---------------|----------------|-------------|
| Type: | Girder | Application: | Roof |
| Plies: | 3 | Slope: | 0/12 |
| Moisture Condition: | Dry | Design Method: | ASD |
| Deflection LL: | 480 | Building Code: | IBC 2012 |
| Deflection TL: | 360 | Load Sharing: | Yes |
| Importance: | Normal - II | Deck: | Not Checked |
| Temperature: | Temp <= 100°F | | |

Reactions UNPATTERNED lb (Uplift)

| Brg | Direction | Live | Dead | Snow | Wind | Const |
|-----|-----------|------|------|------|------|-------|
| 1 | Vertical | 1162 | 409 | 0 | 0 | 0 |
| 2 | Vertical | 8927 | 3140 | 0 | 0 | 0 |
| 3 | Vertical | 3771 | 1326 | 0 | 0 | 0 |

Bearings

| Bearing | Length | Dir. | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---------|--------|------|------|--------------|----------------|----------|-----------|
| 1 - SPF | 3.500" | Vert | 35% | 376 / 2355 | 2731 (-734) | L_ | D+L(D+L) |
| 2 - SPF | 5.500" | Vert | 100% | 3191 / 9072 | 12263 | LL | D+L |
| 3 - SPF | 3.500" | Vert | 66% | 1308 / 3835 | 5143 | _L | D+L |

Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|--------------|---------------|-------------|---------------|--------------|-------|------|
| Neg Moment | -12572 ft-lb | 6'5 1/4" | 31060 ft-lb | 0.405 (40%) | D+L | LL |
| Unbraced | -12572 ft-lb | 6'5 1/4" | 12575 ft-lb | 1.000 (100%) | D+L | LL |
| Pos Moment | 11556 ft-lb | 13' 11/16" | 31060 ft-lb | 0.372 (37%) | D+L | _L |
| Unbraced | 11556 ft-lb | 13' 11/16" | 11563 ft-lb | 0.999 (100%) | D+L | _L |
| Shear | 5753 lb | 7'7 7/8" | 13300 lb | 0.433 (43%) | D+L | LL |
| LL Defl inch | 0.148 (L/920) | 12'5 1/2" | 0.283 (L/480) | 0.522 (52%) | L | _L |
| TL Defl inch | 0.196 (L/695) | 12'5 13/16" | 0.378 (L/360) | 0.518 (52%) | D+L | _L |

Design Notes

- Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- Refer to last page of calculations for fasteners required for specified loads.
- Girders are designed to be supported on the bottom edge only.
- Top loads must be supported equally by all plies.
- Tie-down connection required at bearing 1 for uplift 734 lb (Combination D+L, Load Case _L).
- Top must be laterally braced at a maximum of 12'7 5/16" o.c.
- Bottom must be laterally braced at a maximum of 11'4 11/16" o.c.
- Lateral slenderness ratio based on single ply width.

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

- Dry service conditions, unless noted otherwise
- LVL not to be treated with fire retardant or corrosive chemicals

chemicals

Handling & Installation

- LVL beams must not be cut or drilled
- Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
- Damaged Beams must not be used
- Design assumes top edge is laterally restrained
- Provide lateral support at bearing points to avoid lateral displacement and rotation

- For flat roofs provide proper drainage to prevent ponding

Manufacturer Info

Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

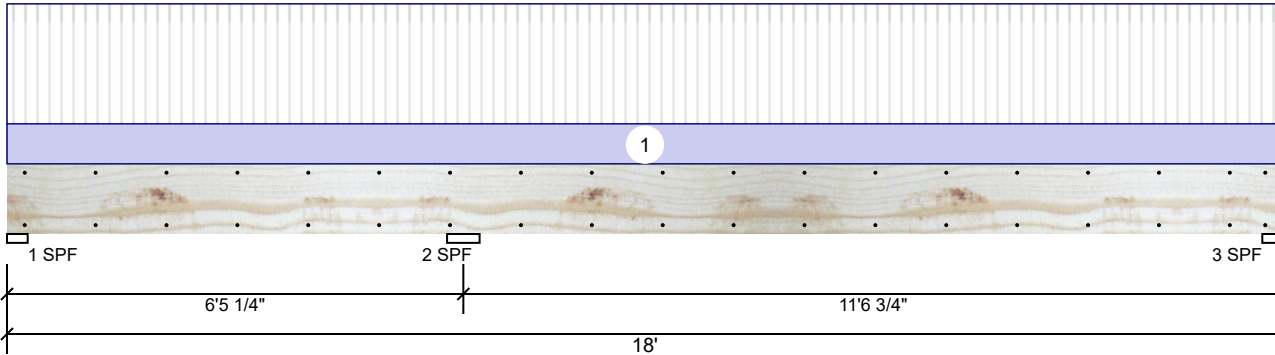
Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



This design is valid until 11/3/2024

BM1 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Level



| ID | Load Type | Location | Trib Width | Side | Dead 0.9 | Live 1 | Snow 1.15 | Wind 1.6 | Const. 1.25 | Comments |
|----|-------------|----------|------------|------|----------|---------|-----------|----------|-------------|----------|
| 1 | Uniform | | | Top | 257 PLF | 770 PLF | 0 PLF | 0 PLF | 0 PLF | F04 |
| | Self Weight | | | | 14 PLF | | | | | |

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

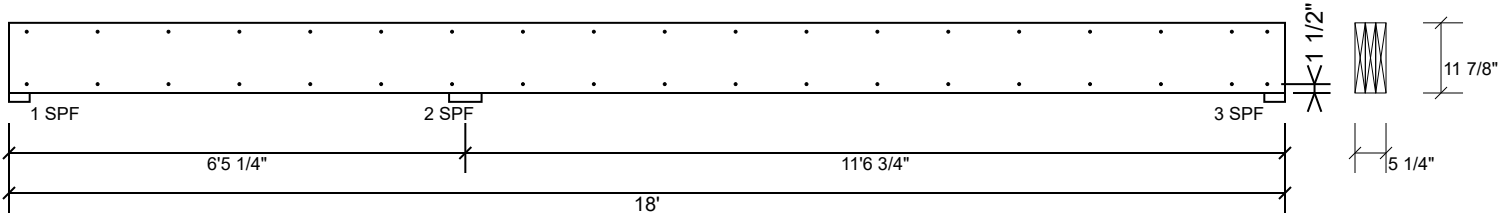
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



BM1 Kerto-S LVL 1.750" X 11.875" 3-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Nail from both sides. Maximum end distance not to exceed 6".

| | |
|--------------------------|-----------|
| Capacity | 0.0 % |
| Load | 0.0 PLF |
| Yield Limit per Foot | 163.7 PLF |
| Yield Limit per Fastener | 81.9 lb. |
| Yield Mode | IV |
| Edge Distance | 1 1/2" |
| Min. End Distance | 3" |
| Load Combination | |
| Duration Factor | 1.00 |

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

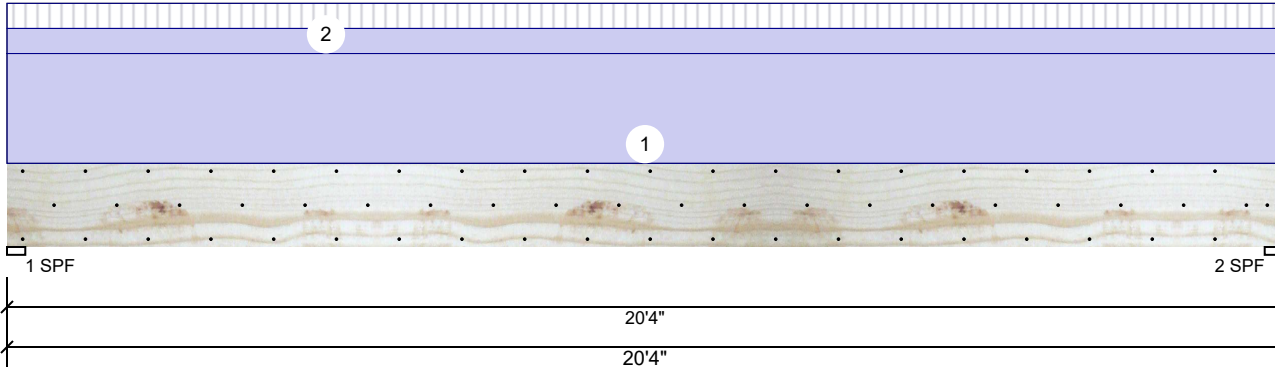
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



BM3 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Member Information

| | |
|---------------------|---------------|
| Type: | Girder |
| Plies: | 2 |
| Moisture Condition: | Dry |
| Deflection LL: | 480 |
| Deflection TL: | 360 |
| Importance: | Normal - II |
| Temperature: | Temp <= 100°F |

| | |
|----------------|-------------|
| Application: | Roof |
| Slope: | 0/12 |
| Design Method: | ASD |
| Building Code: | IBC 2012 |
| Load Sharing: | No |
| Deck: | Not Checked |

Reactions UNPATTERNED lb (Uplift)

| Brg | Direction | Live | Dead | Snow | Wind | Const |
|-----|-----------|------|------|------|------|-------|
| 1 | Vertical | 407 | 2312 | 0 | 0 | 0 |
| 2 | Vertical | 407 | 2312 | 0 | 0 | 0 |

Bearings

| Bearing | Length | Dir. | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---------|--------|------|------|--------------|-------|----------|-----------|
| 1 - SPF | 3.500" | Vert | 52% | 2312 / 407 | 2719 | L | D+L |
| 2 - SPF | 3.500" | Vert | 52% | 2312 / 407 | 2719 | L | D+L |

Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|--------------|----------------|------------|---------------|--------------|-------|------|
| Moment | 13233 ft-lb | 10'2" | 34565 ft-lb | 0.383 (38%) | D+L | L |
| Unbraced | 13233 ft-lb | 10'2" | 13276 ft-lb | 0.997 (100%) | D+L | L |
| Shear | 2301 lb | 1'7 1/2" | 11947 lb | 0.193 (19%) | D+L | L |
| LL Defl inch | 0.063 (L/3784) | 10'2 1/16" | 0.497 (L/480) | 0.127 (13%) | L | L |
| TL Defl inch | 0.422 (L/566) | 10'2 1/16" | 0.663 (L/360) | 0.636 (64%) | D+L | L |

Design Notes

- Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- Refer to last page of calculations for fasteners required for specified loads.
- Girders are designed to be supported on the bottom edge only.
- Top loads must be supported equally by all plies.
- Top must be laterally braced at a maximum of 8'11 1/4" o.c.
- Bottom must be laterally braced at end bearings.
- Lateral slenderness ratio based on single ply width.

| ID | Load Type | Location | Trib Width | Side | Dead 0.9 | Live 1 | Snow 1.15 | Wind 1.6 | Const. 1.25 | Comments |
|----|-------------|----------|------------|------|----------|--------|-----------|----------|-------------|----------|
| 1 | Uniform | | | Top | 175 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | WALL |
| 2 | Uniform | | | Top | 40 PLF | 40 PLF | 0 PLF | 0 PLF | 0 PLF | ROOF |
| | Self Weight | | | | 12 PLF | | | | | |

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

- Dry service conditions, unless noted otherwise
- LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation

- LVL beams must not be cut or drilled
- Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
- Damaged Beams must not be used
- Design assumes top edge is laterally restrained
- Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

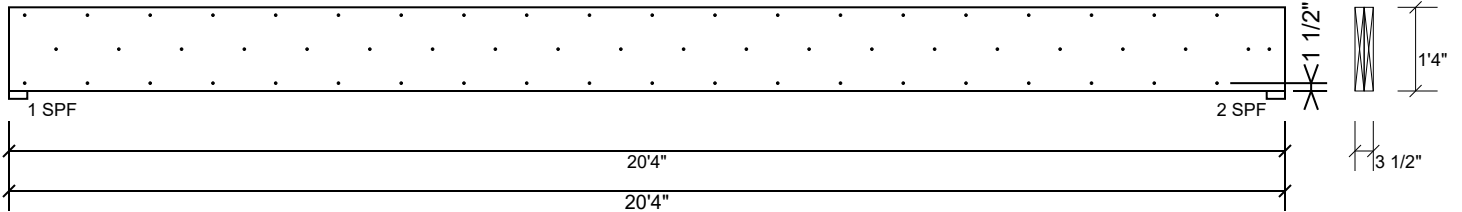
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



BM3 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

| | |
|--------------------------|-----------|
| Capacity | 0.0 % |
| Load | 0.0 PLF |
| Yield Limit per Foot | 245.6 PLF |
| Yield Limit per Fastener | 81.9 lb. |
| Yield Mode | IV |
| Edge Distance | 1 1/2" |
| Min. End Distance | 3" |
| Load Combination | |
| Duration Factor | 1.00 |

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

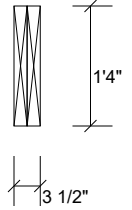
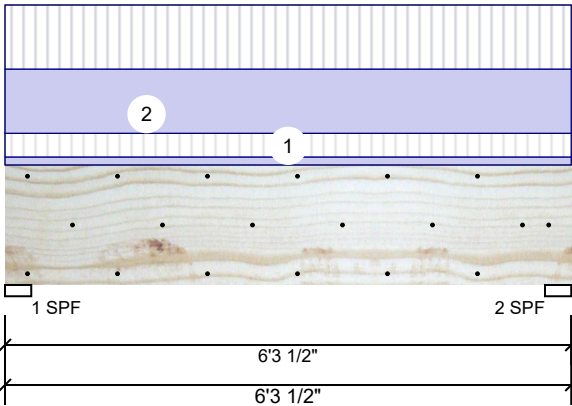
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



BM4 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Member Information

| | |
|---------------------|---------------|
| Type: | Girder |
| Plies: | 2 |
| Moisture Condition: | Dry |
| Deflection LL: | 480 |
| Deflection TL: | 360 |
| Importance: | Normal - II |
| Temperature: | Temp <= 100°F |

| | |
|----------------|-------------|
| Application: | Roof |
| Slope: | 0/12 |
| Design Method: | ASD |
| Building Code: | IBC 2012 |
| Load Sharing: | No |
| Deck: | Not Checked |

Reactions UNPATTERNED lb (Uplift)

| Brg | Direction | Live | Dead | Snow | Wind | Const |
|-----|-----------|------|------|------|------|-------|
| 1 | Vertical | 1746 | 1471 | 0 | 0 | 0 |
| 2 | Vertical | 1746 | 1471 | 0 | 0 | 0 |

Bearings

| Bearing | Length | Dir. | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---------|--------|------|------|--------------|-------|----------|-----------|
| 1 - SPF | 3.500" | Vert | 62% | 1471 / 1746 | 3216 | L | D+L |
| 2 - SPF | 3.500" | Vert | 62% | 1471 / 1746 | 3216 | L | D+L |

Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|--------------|----------------|----------|---------------|-------------|-------|------|
| Moment | 4380 ft-lb | 3'1 3/4" | 34565 ft-lb | 0.127 (13%) | D+L | L |
| Unbraced | 4380 ft-lb | 3'1 3/4" | 19678 ft-lb | 0.223 (22%) | D+L | L |
| Shear | 1572 lb | 1'7 1/2" | 11947 lb | 0.132 (13%) | D+L | L |
| LL Defl inch | 0.011 (L/6369) | 3'1 3/4" | 0.146 (L/480) | 0.075 (8%) | L | L |
| TL Defl inch | 0.020 (L/3457) | 3'1 3/4" | 0.195 (L/360) | 0.104 (10%) | D+L | L |

Design Notes

- 1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- 2 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 3 Refer to last page of calculations for fasteners required for specified loads.
- 4 Girders are designed to be supported on the bottom edge only.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be laterally braced at end bearings.
- 7 Bottom must be laterally braced at end bearings.
- 8 Lateral slenderness ratio based on single ply width.

| ID | Load Type | Location | Trib Width | Side | Dead 0.9 | Live 1 | Snow 1.15 | Wind 1.6 | Const. 1.25 | Comments |
|----|-------------|----------|------------|------|----------|---------|-----------|----------|-------------|----------|
| 1 | Uniform | | | Top | 50 PLF | 150 PLF | 0 PLF | 0 PLF | 0 PLF | FLOOR |
| 2 | Uniform | | | Top | 405 PLF | 405 PLF | 0 PLF | 0 PLF | 0 PLF | J1 |
| | Self Weight | | | | 12 PLF | | | | | |

Notes
 Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber
 1. Dry service conditions, unless noted otherwise
 2. LVL not to be treated with fire retardant or corrosive chemicals

Handling & Installation
 1. LVL beams must not be cut or drilled
 2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
 3. Damaged Beams must not be used
 4. Design assumes top edge is laterally restrained
 5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

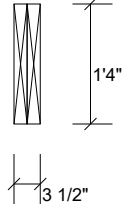
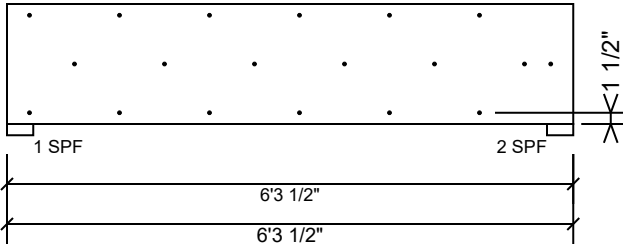
This design is valid until 11/3/2024

Manufacturer Info
 Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
 www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS

BM4 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

| | |
|--------------------------|-----------|
| Capacity | 0.0 % |
| Load | 0.0 PLF |
| Yield Limit per Foot | 245.6 PLF |
| Yield Limit per Fastener | 81.9 lb. |
| Yield Mode | IV |
| Edge Distance | 1 1/2" |
| Min. End Distance | 3" |
| Load Combination | |
| Duration Factor | 1.00 |

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

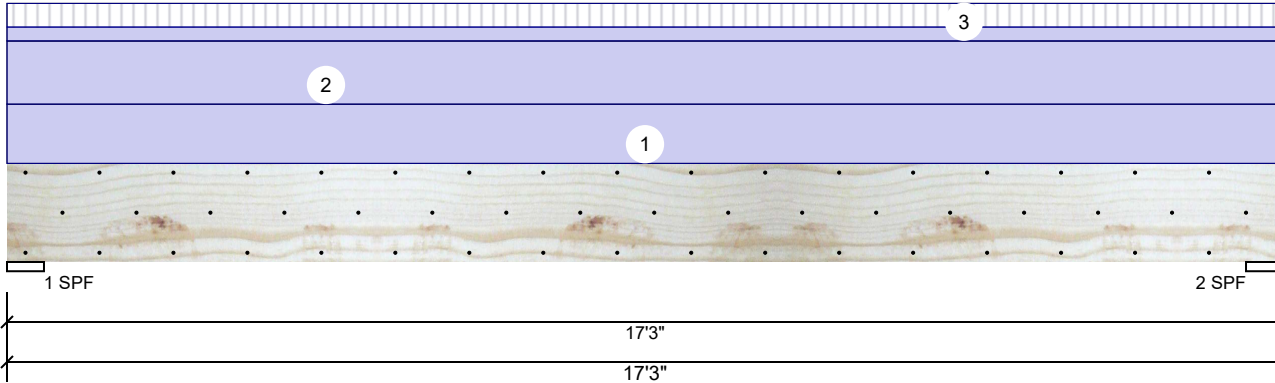
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



GDH Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Member Information

| | |
|---------------------|---------------|
| Type: | Girder |
| Plies: | 2 |
| Moisture Condition: | Dry |
| Deflection LL: | 480 |
| Deflection TL: | 600 |
| Importance: | Normal - II |
| Temperature: | Temp <= 100°F |

| | |
|----------------|-------------|
| Application: | Roof |
| Slope: | 0/12 |
| Design Method: | ASD |
| Building Code: | IBC 2012 |
| Load Sharing: | No |
| Deck: | Not Checked |

Reactions UNPATTERNED lb (Uplift)

| Brg | Direction | Live | Dead | Snow | Wind | Const |
|-----|-----------|------|------|------|------|-------|
| 1 | Vertical | 518 | 3083 | 0 | 0 | 0 |
| 2 | Vertical | 518 | 3083 | 0 | 0 | 0 |

Bearings

| Bearing | Length | Dir. | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---------|--------|------|------|--------------|-------|----------|-----------|
| 1 - SPF | 6.000" | Vert | 40% | 3083 / 518 | 3600 | L | D+L |
| 2 - SPF | 6.000" | Vert | 40% | 3083 / 518 | 3600 | L | D+L |

Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|--------------|----------------|-----------|---------------|--------------|-------|------|
| Moment | 14027 ft-lb | 8'7 1/2" | 34565 ft-lb | 0.406 (41%) | D+L | L |
| Unbraced | 14027 ft-lb | 8'7 1/2" | 14050 ft-lb | 0.998 (100%) | D+L | L |
| Shear | 2852 lb | 1'10" | 11947 lb | 0.239 (24%) | D+L | L |
| LL Defl inch | 0.045 (L/4374) | 8'7 9/16" | 0.410 (L/480) | 0.110 (11%) | L | L |
| TL Defl inch | 0.313 (L/629) | 8'7 9/16" | 0.328 (L/600) | 0.954 (95%) | D+L | L |

Design Notes

- Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- Refer to last page of calculations for fasteners required for specified loads.
- Girders are designed to be supported on the bottom edge only.
- Top loads must be supported equally by all plies.
- Top must be laterally braced at a maximum of 8'5 1/16" o.c.
- Bottom must be laterally braced at end bearings.
- Lateral slenderness ratio based on single ply width.

| ID | Load Type | Location | Trib Width | Side | Dead 0.9 | Live 1 | Snow 1.15 | Wind 1.6 | Const. 1.25 | Comments |
|----|-------------|----------|------------|------|----------|--------|-----------|----------|-------------|------------|
| 1 | Uniform | | | Top | 150 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | WALL |
| 2 | Uniform | | | Top | 160 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | BRICK |
| 3 | Uniform | | | Top | 35 PLF | 60 PLF | 0 PLF | 0 PLF | 0 PLF | Roof/Floor |
| | Self Weight | | | | 12 PLF | | | | | |

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

- Dry service conditions, unless noted otherwise
- LVL not to be treated with fire retardant or corrosive chemicals

chemicals

Handling & Installation

- LVL beams must not be cut or drilled
- Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
- Damaged Beams must not be used
- Design assumes top edge is laterally restrained
- Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

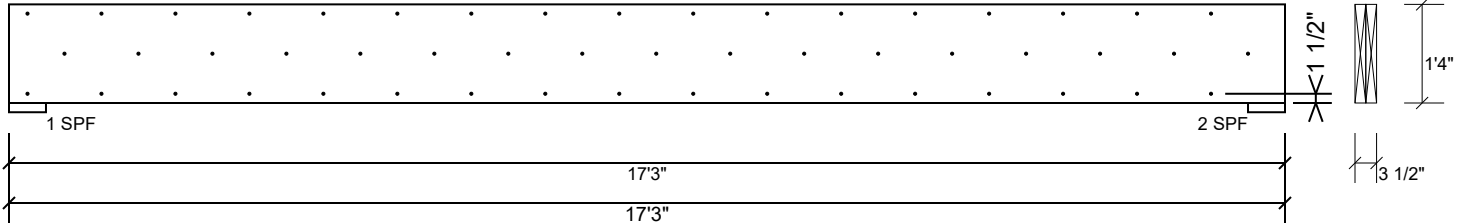
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



GDH Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

| | |
|--------------------------|-----------|
| Capacity | 0.0 % |
| Load | 0.0 PLF |
| Yield Limit per Foot | 245.6 PLF |
| Yield Limit per Fastener | 81.9 lb. |
| Yield Mode | IV |
| Edge Distance | 1 1/2" |
| Min. End Distance | 3" |
| Load Combination | |
| Duration Factor | 1.00 |

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

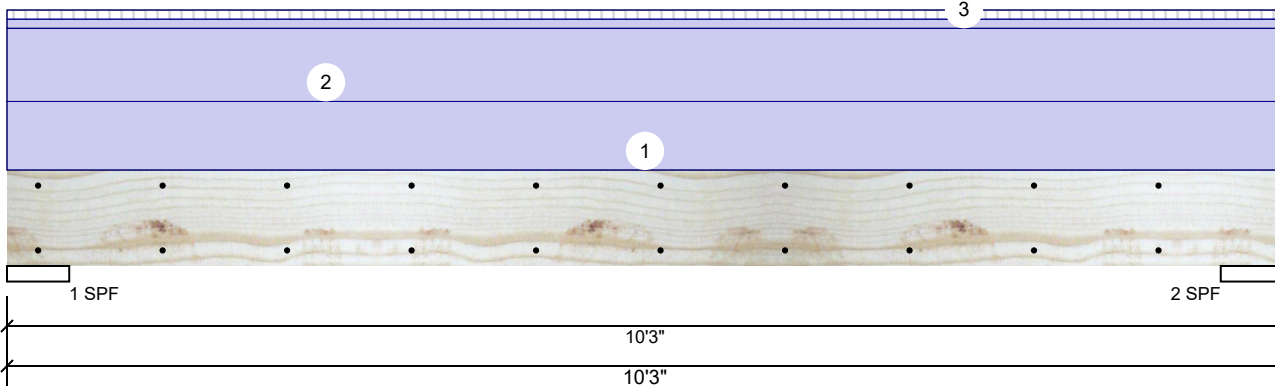
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



GDH-9 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Member Information

| | | | |
|---------------------|---------------|----------------|-------------|
| Type: | Girder | Application: | Roof |
| Plies: | 2 | Slope: | 0/12 |
| Moisture Condition: | Dry | Design Method: | ASD |
| Deflection LL: | 480 | Building Code: | IBC 2012 |
| Deflection TL: | 600 | Load Sharing: | No |
| Importance: | Normal - II | Deck: | Not Checked |
| Temperature: | Temp <= 100°F | | |

Reactions UNPATTERNED lb (Uplift)

| Brg | Direction | Live | Dead | Snow | Wind | Const |
|-----|-----------|------|------|------|------|-------|
| 1 | Vertical | 103 | 1728 | 0 | 0 | 0 |
| 2 | Vertical | 103 | 1728 | 0 | 0 | 0 |

Bearings

| Bearing | Length | Dir. | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---------|--------|------|------|--------------|-------|----------|-----------|
| 1 - SPF | 6.000" | Vert | 21% | 1728 / 103 | 1831 | L | D+L |
| 2 - SPF | 6.000" | Vert | 21% | 1728 / 103 | 1831 | L | D+L |

Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|------------------------|------------|-----------|---------------|-------------|-------|---------|
| Moment | 3705 ft-lb | 5'1 1/2" | 11288 ft-lb | 0.328 (33%) | D | Uniform |
| Unbraced | 3924 ft-lb | 5'1 1/2" | 7663 ft-lb | 0.512 (51%) | D+L | L |
| Shear | 1305 lb | 8'11 3/4" | 6216 lb | 0.210 (21%) | D | Uniform |
| LL Defl inch (L/13536) | 0.008 | 5'1 1/2" | 0.234 (L/480) | 0.035 (4%) | L | L |
| TL Defl inch (L/758) | 0.148 | 5'1 1/2" | 0.188 (L/600) | 0.792 (79%) | D+L | L |

Design Notes

- Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- Refer to last page of calculations for fasteners required for specified loads.
- Girders are designed to be supported on the bottom edge only.
- Top loads must be supported equally by all plies.
- Top must be laterally braced at end bearings.
- Bottom must be laterally braced at end bearings.
- Lateral slenderness ratio based on single ply width.

| ID | Load Type | Location | Trib Width | Side | Dead 0.9 | Live 1 | Snow 1.15 | Wind 1.6 | Const. 1.25 | Comments |
|----|-------------|----------|------------|------|----------|--------|-----------|----------|-------------|----------|
| 1 | Uniform | | | Top | 150 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | WALL |
| 2 | Uniform | | | Top | 160 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | BRICK |
| 3 | Uniform | | | Top | 20 PLF | 20 PLF | 0 PLF | 0 PLF | 0 PLF | Roof |
| | Self Weight | | | | 7 PLF | | | | | |

Notes

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

- Dry service conditions, unless noted otherwise
- LVL not to be treated with fire retardant or corrosive chemicals

chemicals

Handling & Installation

- LVL beams must not be cut or drilled
- Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
- Damaged Beams must not be used
- Design assumes top edge is laterally restrained
- Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

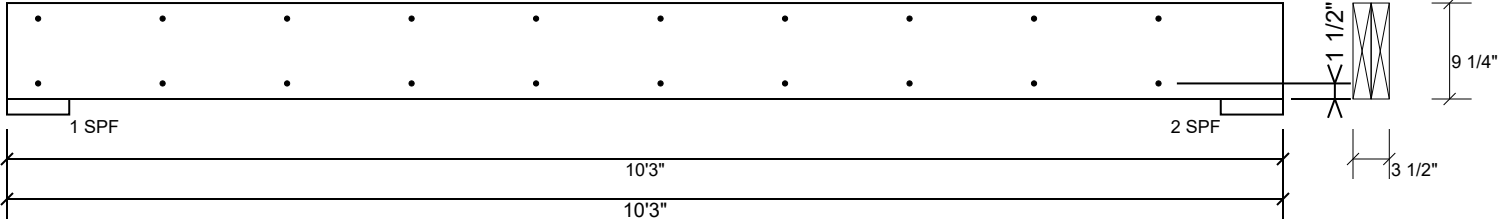
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



GDH-9 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

| | |
|--------------------------|-----------|
| Capacity | 0.0 % |
| Load | 0.0 PLF |
| Yield Limit per Foot | 163.7 PLF |
| Yield Limit per Fastener | 81.9 lb. |
| Yield Mode | IV |
| Edge Distance | 1 1/2" |
| Min. End Distance | 3" |
| Load Combination | |
| Duration Factor | 1.00 |

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

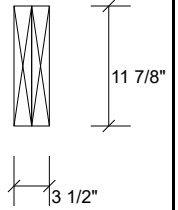
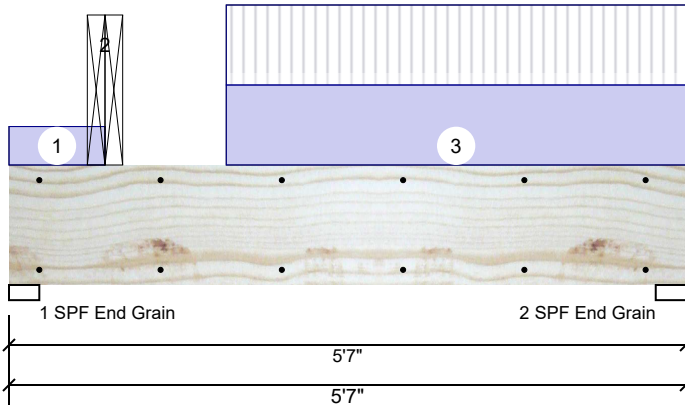
Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS



Sliding Door Header Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Level



Member Information

| | | | |
|---------------------|---------------|----------------|-------------|
| Type: | Girder | Application: | Floor |
| Plies: | 2 | Design Method: | ASD |
| Moisture Condition: | Dry | Building Code: | IBC 2012 |
| Deflection LL: | 360 | Load Sharing: | No |
| Deflection TL: | 240 | Deck: | Not Checked |
| Importance: | Normal - II | | |
| Temperature: | Temp <= 100°F | | |

Reactions UNPATTERNED lb (Uplift)

| Brg | Direction | Live | Dead | Snow | Wind | Const |
|-----|-----------|------|------|------|------|-------|
| 1 | Vertical | 684 | 2489 | 0 | 0 | 0 |
| 2 | Vertical | 709 | 960 | 0 | 0 | 0 |

Bearings

| Bearing | Length | Dir. | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|-------------------|--------|------|------|--------------|-------|----------|-----------|
| 1 - SPF End Grain | 3.000" | Vert | 36% | 2489 / 684 | 3173 | L | D+L |
| 2 - SPF End Grain | 3.000" | Vert | 19% | 960 / 709 | 1669 | L | D+L |

Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|--------------|----------------|-----------|---------------|-------------|-------|------|
| Moment | 2327 ft-lb | 2'5 3/16" | 19911 ft-lb | 0.117 (12%) | D+L | L |
| Unbraced | 2327 ft-lb | 2'5 3/16" | 15061 ft-lb | 0.155 (15%) | D+L | L |
| Shear | 1840 lb | 1'2 7/8" | 8867 lb | 0.208 (21%) | D+L | L |
| LL Defl inch | 0.007 (L/9597) | 2'9 7/8" | 0.174 (L/360) | 0.038 (4%) | L | L |
| TL Defl inch | 0.018 (L/3391) | 2'7 1/2" | 0.260 (L/240) | 0.071 (7%) | D+L | L |

Design Notes

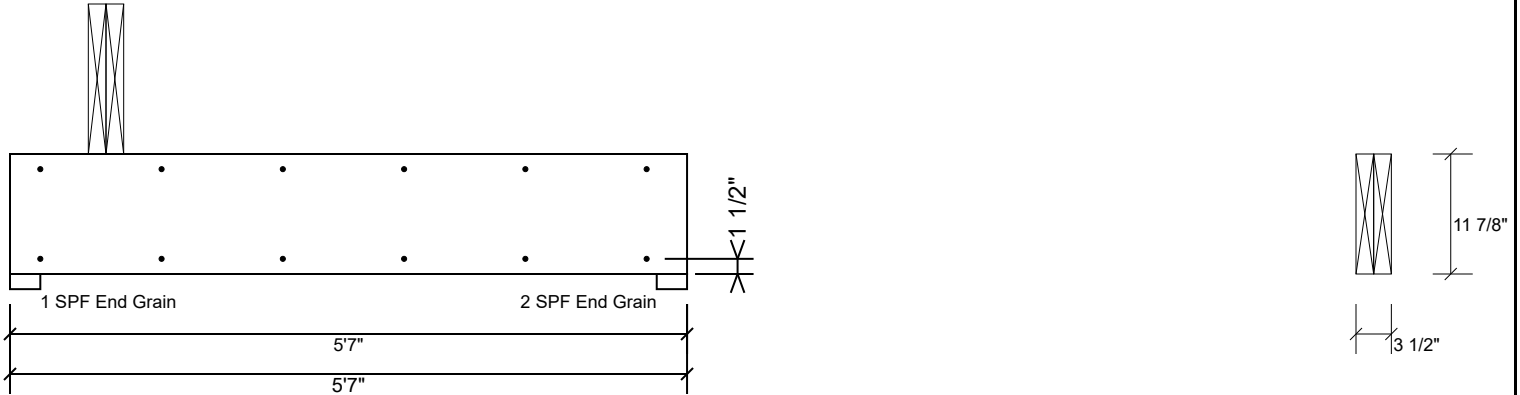
- 1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- 2 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 3 Refer to last page of calculations for fasteners required for specified loads.
- 4 Girders are designed to be supported on the bottom edge only.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be laterally braced at end bearings.
- 7 Bottom must be laterally braced at end bearings.
- 8 Lateral slenderness ratio based on single ply width.

| ID | Load Type | Location | Trib Width | Side | Dead 0.9 | Live 1 | Snow 1.15 | Wind 1.6 | Const. 1.25 | Comments |
|----|----------------|----------------|------------|------|----------|---------|-----------|----------|-------------|-----------|
| 1 | Part. Uniform | 0-0-0 to 0-9-8 | | Top | 125 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | Wall Load |
| 2 | Point | 0-9-8 | | Top | 2312 lb | 407 lb | 0 lb | 0 lb | 0 lb | BM3 Brg 1 |
| | Bearing Length | 0-3-8 | | | | | | | | |
| 3 | Part. Uniform | 1-9-8 to 5-7-0 | | Top | 260 PLF | 260 PLF | 0 PLF | 0 PLF | 0 PLF | C2 |
| | Self Weight | | | | 9 PLF | | | | | |

| | | | | |
|--|--|---|---|---|
| <p>Notes</p> <p>Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.</p> <p>Lumber</p> <ol style="list-style-type: none"> 1. Dry service conditions, unless noted otherwise 2. LVL not to be treated with fire retardant or corrosive chemicals | <p>Handling & Installation</p> <ol style="list-style-type: none"> 1. LVL beams must not be cut or drilled 2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals 3. Damaged Beams must not be used 4. Design assumes top edge is laterally restrained 5. Provide lateral support at bearing points to avoid lateral displacement and rotation | <p>6. For flat roofs provide proper drainage to prevent ponding</p> | <p>Manufacturer Info</p> <p>Metsä Wood 301 Merritt 7 Building, 2nd Floor Norwalk, CT 06851 (800) 622-5850 www.metsawood.com/us</p> | <p>Comtech, Inc. 1001 S. Reilly Road, Suite #639 Fayetteville, NC USA 28314 910-864-TRUS</p> |
| | | | <p>This design is valid until 11/3/2024</p> | |

Sliding Door Header Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Level



Multi-Ply Analysis

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

| | |
|--------------------------|-----------|
| Capacity | 0.0 % |
| Load | 0.0 PLF |
| Yield Limit per Foot | 163.7 PLF |
| Yield Limit per Fastener | 81.9 lb. |
| Yield Mode | IV |
| Edge Distance | 1 1/2" |
| Min. End Distance | 3" |
| Load Combination | |
| Duration Factor | 1.00 |

Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

Lumber

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

Handling & Installation

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 11/3/2024

Manufacturer Info

Metsä Wood
 301 Merritt 7 Building, 2nd Floor
 Norwalk, CT 06851
 (800) 622-5850
www.metsawood.com/us

Comtech, Inc.
 1001 S. Reilly Road, Suite #639
 Fayetteville, NC
 USA
 28314
 910-864-TRUS

