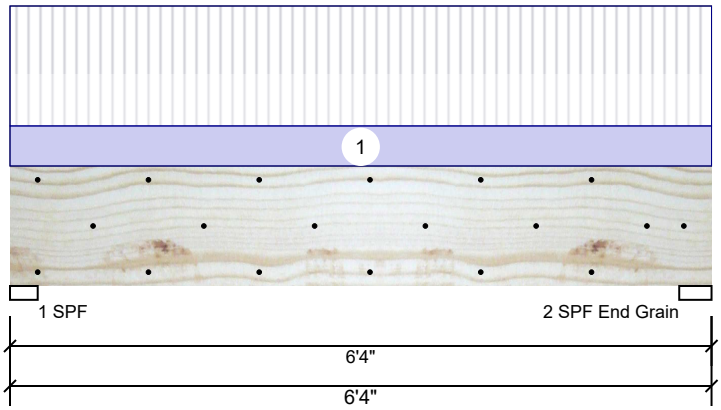
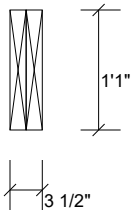
| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM4 Kerto-S LVL 1.750" X 13.000" 2-Ply - PASSED

Level: Level




## Member Information

| | | | |
|---|---|---|---|
| Type: | Girder | Application: | Floor |
| Plies: | 2 | Design Method: | ASD |
| Moisture Condition: | Dry | Building Code: | IBC/IRC 2015 |
| Deflection LL: | 480 | Load Sharing: | No |
| Deflection TL: | 360 | Deck: | Not Checked |
| Importance: | Normal - II | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 1431 | 510 | 0 | 0 | 0 |
| 2 | 1450 | 517 | 0 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF | 3.000" | 44% | 510 / 1431 | 1941 | L | D+L |
| 2 - SPF End Grain | 3.500" | 18% | 517 / 1450 | 1967 | L | D+L |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 2700 ft-lb | 3'1 3/4" | 23540 ft-lb | 0.115 (11%) | D+L | L |
| Unbraced | 2700 ft-lb | 3'1 3/4" | 15335 ft-lb | 0.176 (18%) | D+L | L |
| Shear | 1157 lb | 5' 1/4" | 9707 lb | 0.119 (12%) | D+L | L |
| LL Defl inch | 0.015 (L/4787) | 3'1 3/4" | 0.148 (L/480) | 0.100 (10%) | L | L |
| TL Defl inch | 0.020 (L/3530) | 3'1 3/4" | 0.197 (L/360) | 0.100 (10%) | D+L | L |

## Design Notes

1 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
2 Refer to last page of calculations for fasteners required for specified loads.
3 Girders are designed to be supported on the bottom edge only.
4 Top loads must be supported equally by all plies.
5 Top braced at bearings.
6 Bottom braced at bearings.
7 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 | 152 PLF | 455 PLF | 0 PLF | 0 PLF | 0 PLF | F03 FL. TRUSSES |
| | Self Weight | | | | 10 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 11/27/2023

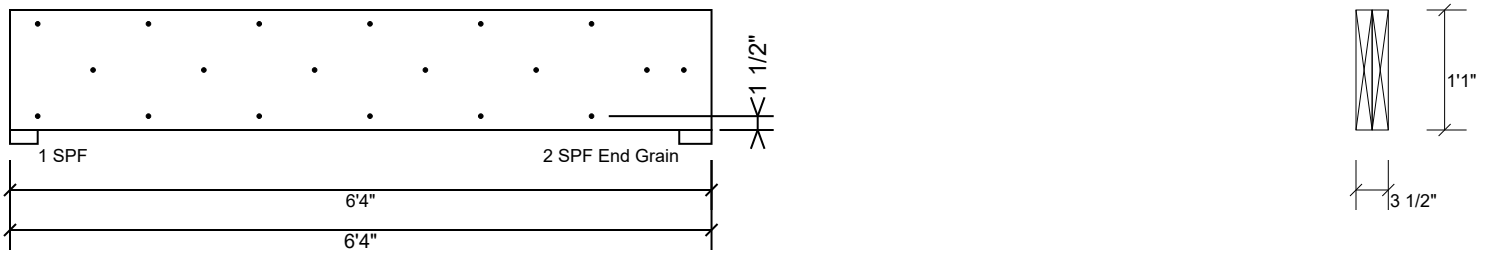
**Manufacturer Info**

Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

# BM4 Kerto-S LVL 1.750" X 13.000" 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 11/27/2023

**Manufacturer Info**

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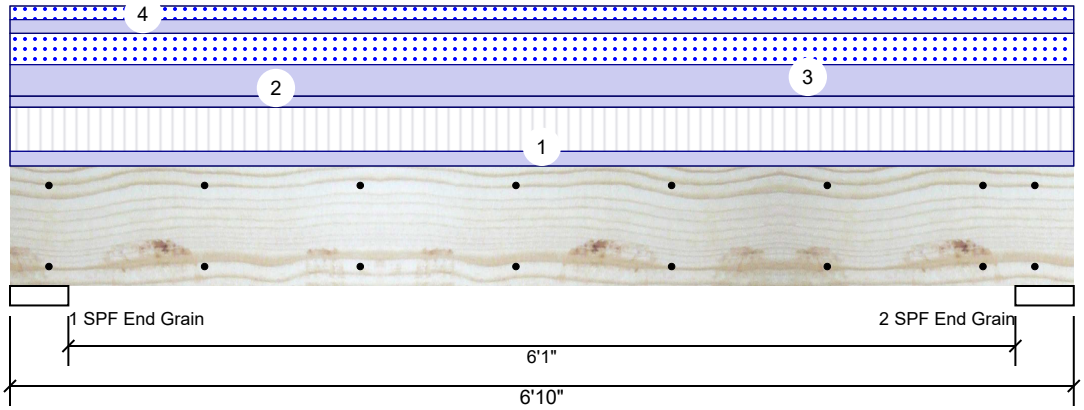
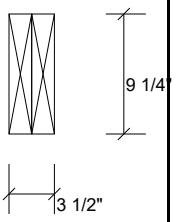
| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM6 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level




## Member Information

| | | | |
|---|---|---|---|
| Type: | Girder | Application: | Floor |
| Plies: | 2 | Design Method: | ASD |
| Moisture Condition: | Dry | Building Code: | IBC/IRC 2015 |
| Deflection LL: | 480 | Load Sharing: | No |
| Deflection TL: | 360 | Deck: | Not Checked |
| Importance: | Normal - II | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 1548 | 2508 | 1579 | 0 | 0 |
| 2 | 1548 | 2508 | 1579 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 4.500" | 35% | 2508 / 2345 | 4853 | L | D+0.75(L+S) |
| 2 - SPF End Grain | 4.500" | 35% | 2508 / 2345 | 4853 | L | D+0.75(L+S) |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 6844 ft-lb | 3'5" | 14423 ft-lb | 0.474 (47%) | D+0.75(L+S) | L |
| Unbraced | 6844 ft-lb | 3'5" | 10370 ft-lb | 0.660 (66%) | D+0.75(L+S) | L |
| Shear | 3503 lb | 1'1" | 7943 lb | 0.441 (44%) | D+0.75(L+S) | L |
| LL Defl inch | 0.061 (L/1212) | 3'5" | 0.155 (L/480) | 0.400 (40%) | 0.75(L+S) | L |
| TL Defl inch | 0.127 (L/586) | 3'5" | 0.207 (L/360) | 0.610 (61%) | D+0.75(L+S) | L |

## Design Notes

1 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
2 Refer to last page of calculations for fasteners required for specified loads.
3 Girders are designed to be supported on the bottom edge only.
4 Top loads must be supported equally by all plies.
5 Top braced at bearings.
6 Bottom braced at bearings.
7 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 | 151 PLF | 453 PLF | 0 PLF | 0 PLF | 0 PLF | F03 FL. TRUSSES |
| 2 | Uniform | | | Top | 114 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | WALL ABOVE |
| 3 | Uniform | | | Top | 322 PLF | 0 PLF | 322 PLF | 0 PLF | 0 PLF | A03 RF. TRUSSES |
| 4 | Uniform | | | Far Face | 140 PLF | 0 PLF | 140 PLF | 0 PLF | 0 PLF | M01 RF. TRUSSES |
| | Self Weight | | | | 7 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 11/27/2023

**Manufacturer Info**

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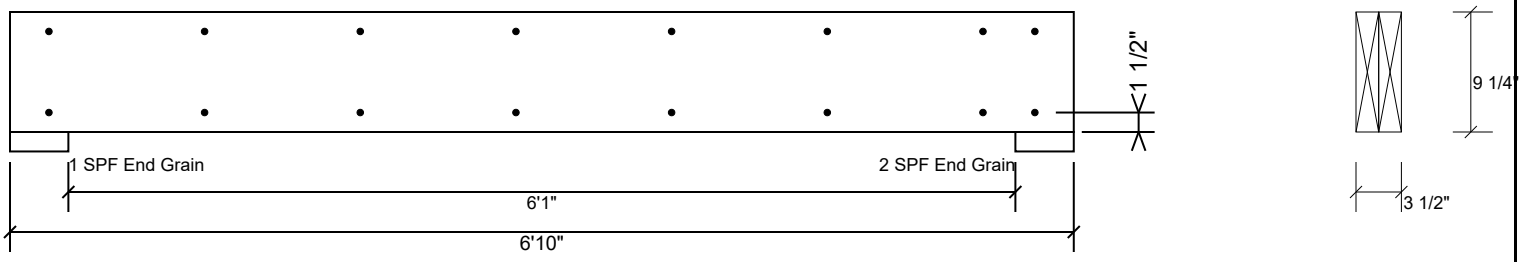
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM6 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 | 74.4 % |
| Load | 140.0 PLF |
| Yield Limit per Foot | 188.3 PLF |
| Yield Limit per Fastener | 94.1 lb. |
| Yield Mode | IV |
| Edge Distance | 1 1/2" |
| Min. End Distance | 3" |
| Load Combination | D+S |
| Duration Factor | 1.15 |

### 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 11/27/2023

### Manufacturer Info

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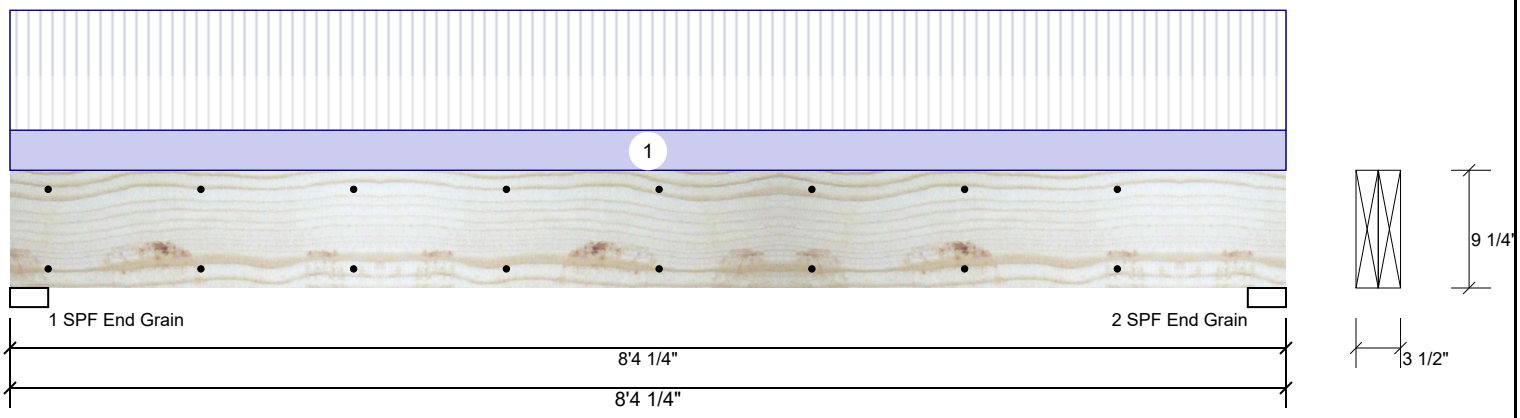
USA
28314
910-864-TRUS

| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM3 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED

Level: Level




## Member Information

| | | | |
|---|---|---|---|
| Type: | Girder | Application: | Floor |
| Plies: | 2 | Design Method: | ASD |
| Moisture Condition: | Dry | Building Code: | IBC/IRC 2015 |
| Deflection LL: | 480 | Load Sharing: | No |
| Deflection TL: | 360 | Deck: | Not Checked |
| Importance: | Normal - II | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 3254 | 1116 | 0 | 0 | 0 |
| 2 | 3254 | 1116 | 0 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 3.000" | 48% | 1116 / 3254 | 4370 | L | D+L |
| 2 - SPF End Grain | 3.000" | 48% | 1116 / 3254 | 4370 | L | D+L |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 8326 ft-lb | 4'2 1/8" | 12542 ft-lb | 0.664 (66%) | D+L | L |
| Unbraced | 8326 ft-lb | 4'2 1/8" | 8569 ft-lb | 0.972 (97%) | D+L | L |
| Shear | 3367 lb | 7'4 3/4" | 6907 lb | 0.488 (49%) | D+L | L |
| LL Defl inch | 0.176 (L/544) | 4'2 3/16" | 0.199 (L/480) | 0.880 (88%) | L | L |
| TL Defl inch | 0.236 (L/405) | 4'2 3/16" | 0.266 (L/360) | 0.890 (89%) | D+L | L |

## Design Notes

1 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
2 Refer to last page of calculations for fasteners required for specified loads.
3 Girders are designed to be supported on the bottom edge only.
4 Top loads must be supported equally by all plies.
5 Top braced at bearings.
6 Bottom braced at bearings.
7 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 | 260 PLF | 779 PLF | 0 PLF | 0 PLF | 0 PLF | F01 FL. TRUSSES |
| | Self Weight | | | | 7 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 11/27/2023

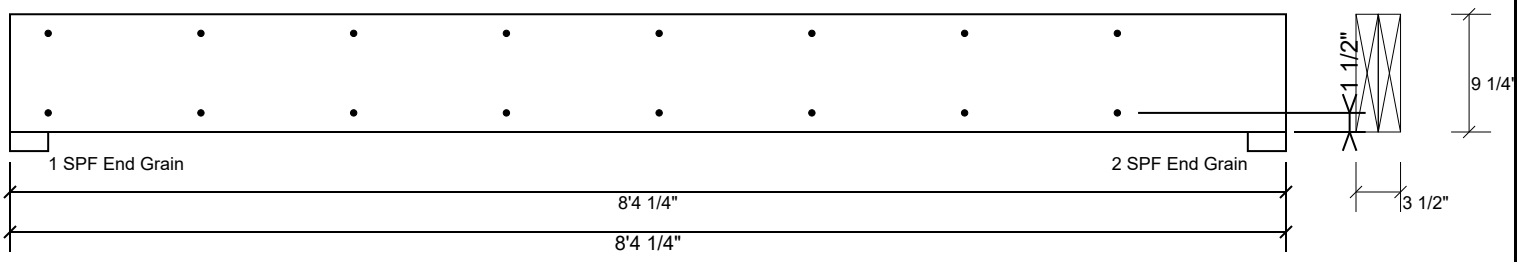
**Manufacturer Info**

Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

# BM3 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 11/27/2023

**Manufacturer Info**

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Fayetteville, NC
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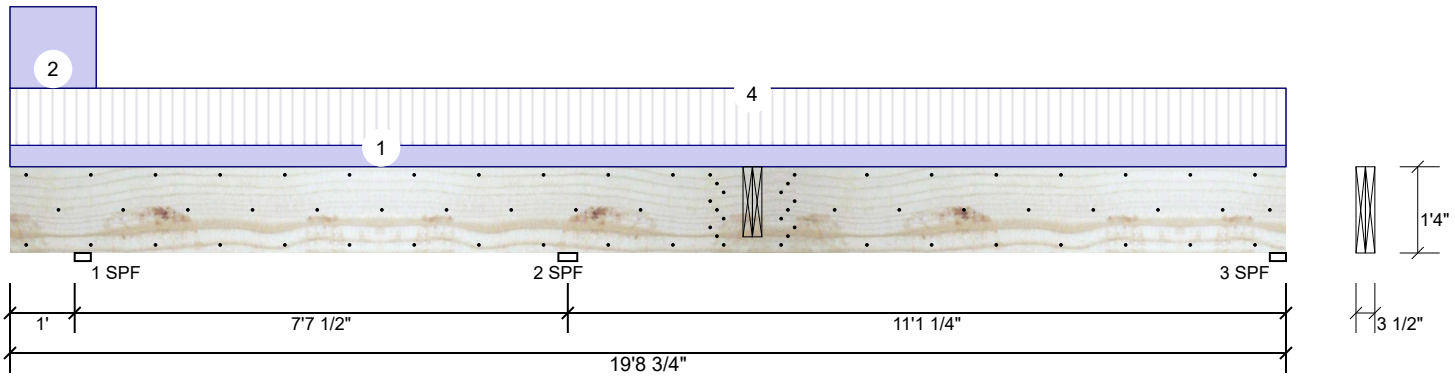
910-864-TRUS

| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM2 Kerto-S LVL 1.750" X 16.000" 2-Ply - PASSED

Level: Level




## Member Information

| | | | |
|---|---|---|---|
| Type: | Girder | Application: | Floor |
| Plies: | 2 | Design Method: | ASD |
| Moisture Condition: | Dry | Building Code: | IBC/IRC 2015 |
| Deflection LL: | 480 | Load Sharing: | No |
| Deflection TL: | 360 | Deck: | Not Checked |
| Importance: | Normal - II | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 92 | 242 | 0 | 0 | 0 |
| 2 | 2314 | 976 | 0 | 0 | 0 |
| 3 | 622 | 287 | 0 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF | 3.000" | 13% | 230 / 366 | 596 (-65) | LL_ | D+L(D+L) |
| 2 - SPF | 3.500" | 65% | 997 / 2374 | 3371 | _LL | D+L |
| 3 - SPF | 3.000" | 20% | 279 / 622 | 901 | L_L | D+L |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Neg Moment | -3557 ft-lb | 8'7 1/2" | 34565 ft-lb | 0.103 (10%) | D+L | _LL |
| Unbraced | -3557 ft-lb | 8'7 1/2" | 11260 ft-lb | 0.316 (32%) | D+L | _LL |
| Pos Moment | 3155 ft-lb | 12'4 1/2" | 34565 ft-lb | 0.091 (9%) | D+L | L_L |
| Unbraced | 3155 ft-lb | 12'4 1/2" | 11260 ft-lb | 0.280 (28%) | D+L | L_L |
| Shear | 2284 lb | 9'11 1/2" | 11947 lb | 0.191 (19%) | D+L | _LL |
| LL Defl inch | 0.027 (L/4865) | 13'5 7/8" | 0.273 (L/480) | 0.100 (10%) | L | L_L |
| TL Defl inch | 0.038 (L/3483) | 13'6 1/2" | 0.364 (L/360) | 0.100 (10%) | D+L | L_L |
| LL Cant | 0.001 (2L/16297) | Lt Cant | 0.200 (2L/480) | 0.007 (1%) | L | L_L |
| TL Cant | 0.002 (2L/12872) | Lt Cant | 0.300 (2L/360) | 0.006 (1%) | D+L | L_L |

## Design Notes

1 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
2 Refer to last page of calculations for fasteners required for specified loads.
3 Concentrated load fastener specification is in addition to hanger fasteners if a hanger is present.
4 Girders are designed to be supported on the bottom edge only.
5 Top loads must be supported equally by all plies.
6 Tie-down connection required at bearing 1 for uplift 65 lb (Combination D+L, Load Case __L).
7 Top braced at bearings.
8 Bottom braced at bearings.
9 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**

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 11/27/2023

**Manufacturer Info**

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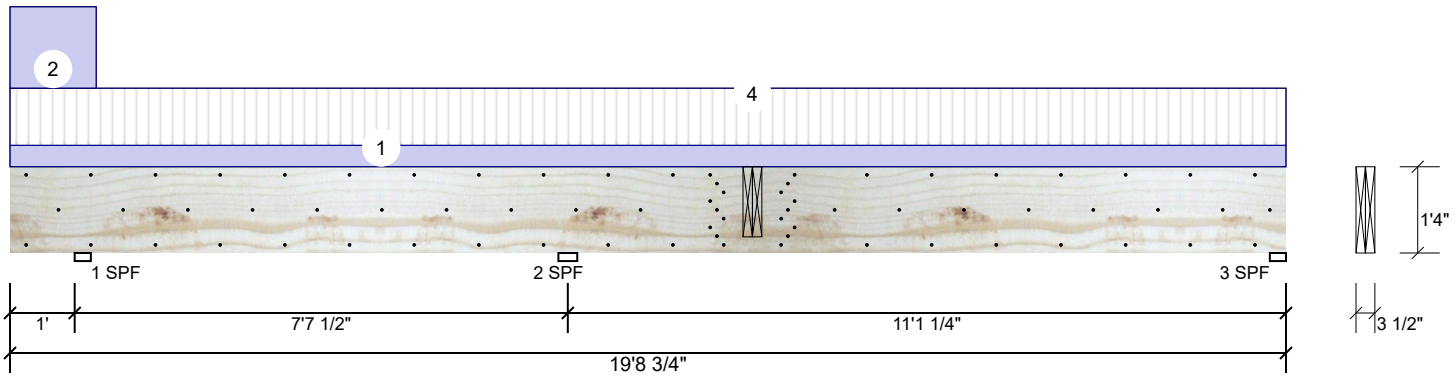
| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM2 Kerto-S LVL 1.750" X 16.000" 2-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 | 30 PLF | 80 PLF | 0 PLF | 0 PLF | 0 PLF | FL. LOADING |
| 2 | Part. Uniform | 0-0-0 to 1-4-0 | | Top | 114 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | WALL ABOVE |
| 4 | Point | 11-5-12 | | Far Face | 517 lb | 1450 lb | 0 lb | 0 lb | 0 lb | 7'-FB. @ FOYER Brg 2 |
| | 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 11/27/2023

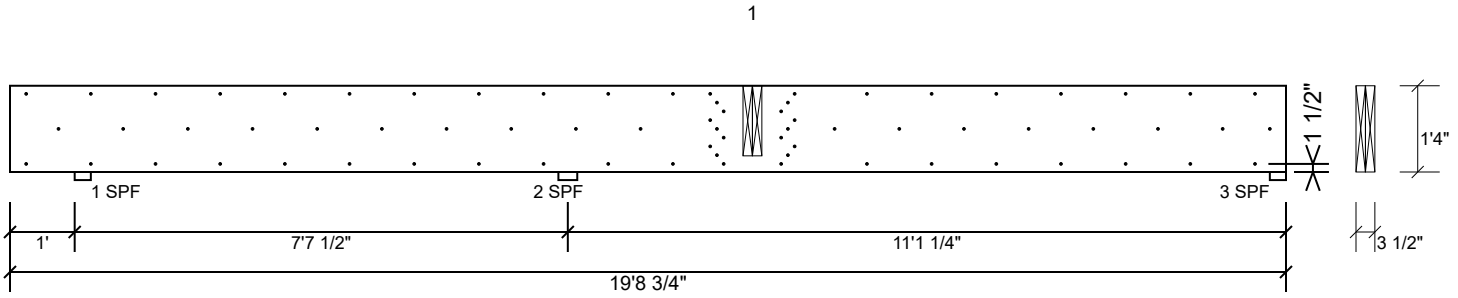
**Manufacturer Info**

Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

# BM2 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.. except for regions covered by concentrated load fastening. Maximum end distance not to exceed 6"

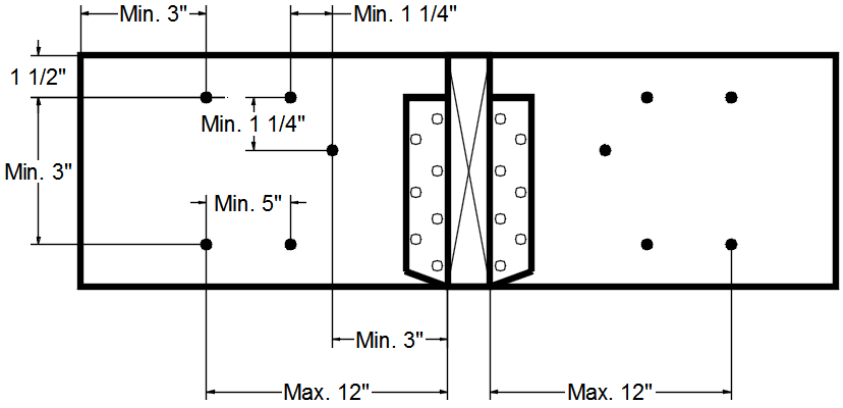
| | |
|---|---|
| Capacity | 0.0 % |
| Load | 0.0 PLF |
| Yield Limit per Foot | 245.6 PLF |
| Yield Limit per Fastener | 81.9 lb. |
| Yield Mode | IV |
| Edge Distance | 1 1/2" |
| Min. End Distance | 3" |
| Load Combination | |
| Duration Factor | 1.00 |

## Concentrated Load

Fasten at concentrated side load at 11-5-12 with a minimum of (18) – 10d Box nails (.128x3") in the pattern shown.

| | |
|---|---|
| Capacity | 66.8 % |
| Load | 983.5lb. |
| Total Yield Limit | 1473.0 lb. |
| Cg | 0.9998 |
| Yield Limit per Fastener | 81.9 lb. |
| Yield Mode | IV |
| Load Combination | D+L |
| Duration Factor | 1.00 |

### Min/Max fastener distances for Concentrated Side Loads




**Notes**

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**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 11/27/2023

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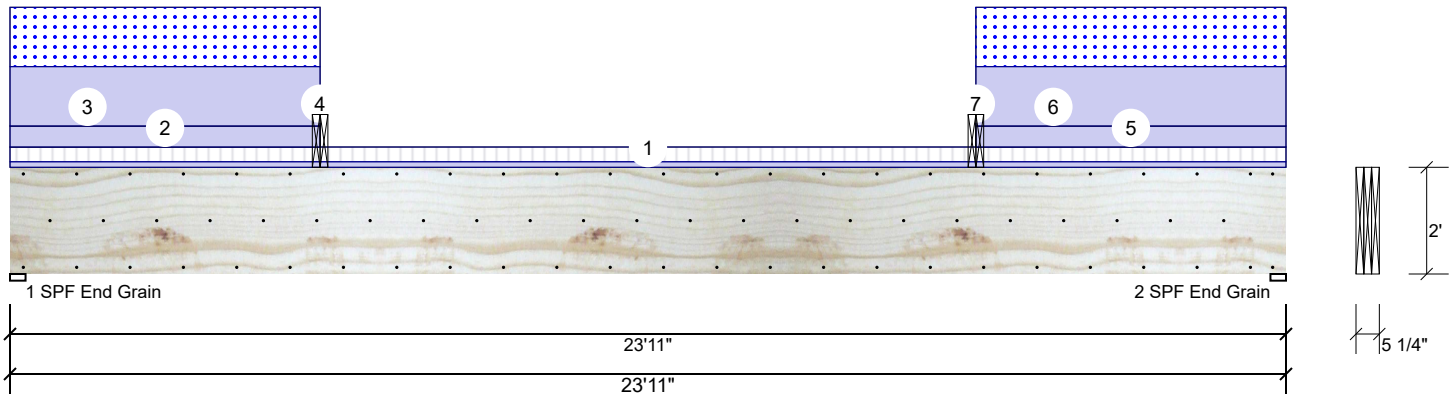
USA
28314
910-864-TRUS

| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM5 Kerto-S LVL 1.750" X 24.000" 3-Ply - PASSED

Level: Level




## Member Information

| | | | |
|---|---|---|---|
| Type: | Girder | Application: | Floor |
| Plies: | 3 | Design Method: | ASD |
| Moisture Condition: | Dry | Building Code: | IBC/IRC 2015 |
| Deflection LL: | 480 | Load Sharing: | Yes |
| Deflection TL: | 360 | Deck: | Not Checked |
| Importance: | Normal - II | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 957 | 5205 | 3791 | 0 | 0 |
| 2 | 957 | 5205 | 3791 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 3.500" | 56% | 5205 / 3791 | 8996 | L | D+S |
| 2 - SPF End Grain | 3.500" | 56% | 5205 / 3791 | 8996 | L | D+S |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 37841 ft-lb | 11'11 1/2" | 131295 ft-lb | 0.288 (29%) | D+0.75(L+S) | L |
| Unbraced | 37841 ft-lb | 11'11 1/2" | 37957 ft-lb | 0.997 (100%) | D+0.75(L+S) | L |
| Shear | 7185 lb | 21'8 3/8" | 30912 lb | 0.232 (23%) | D+S | L |
| LL Defl inch | 0.160 (L/1763) | 11'11 9/16" | 0.587 (L/480) | 0.270 (27%) | S | L |
| TL Defl inch | 0.378 (L/746) | 11'11 9/16" | 0.783 (L/360) | 0.480 (48%) | D+S | L |

## Design Notes

1 Fasten all plies using 3 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
2 Refer to last page of calculations for fasteners required for specified loads.
3 Girders are designed to be supported on the bottom edge only.
4 Top loads must be supported equally by all plies.
5 Top must be laterally braced at a maximum of 7'1 1/8" o.c.
6 Bottom braced at bearings.
7 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 | 30 PLF | 80 PLF | 0 PLF | 0 PLF | 0 PLF | FL. LOADING |
| 2 | Part. Uniform | 0-0-0 to 5-9-12 | | Top | 114 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | WALL ABOVE |
| 3 | Part. Uniform | 0-0-0 to 5-9-12 | | Top | 322 PLF | 0 PLF | 322 PLF | 0 PLF | 0 PLF | A01 RF. TRUSSES |
| 4 | Point | 5-9-12 | | Top | 1977 lb | 0 lb | 1919 lb | 0 lb | 0 lb | 13'-FB. @ PLAY ROOM Brg 1 |
| 5 | Part. Uniform | 18-1-4 to 23-11-0 | | Top | 114 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | WALL ABOVE |

Continued on page 2...

**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 11/27/2023

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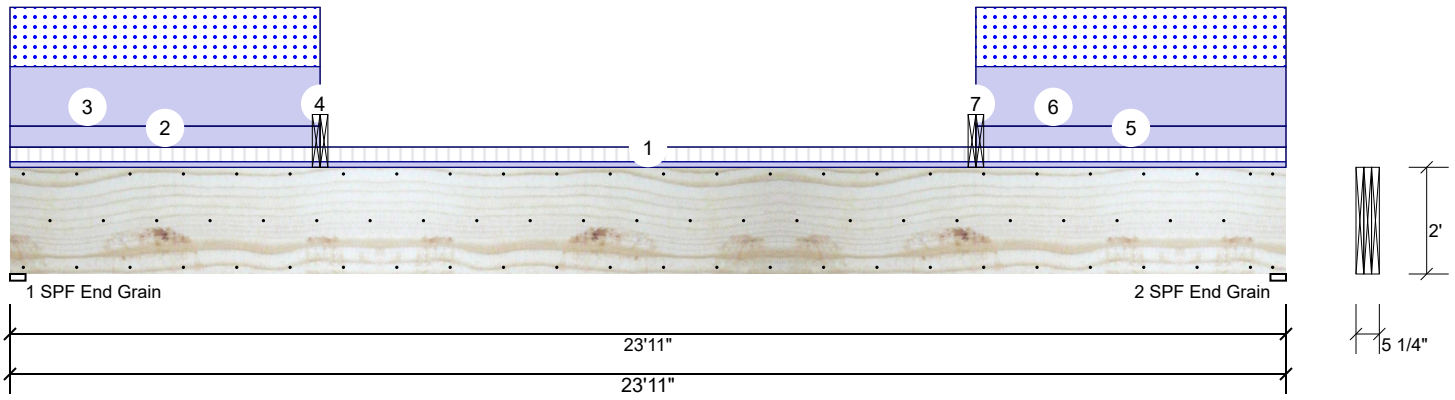
# BM5 Kerto-S LVL 1.750" X 24.000" 3-Ply - PASSED

Level: Level




...Continued from page 1

| ID | Load Type | Location | Trib Width | Side | Dead 0.9 | Live 1 | Snow 1.15 | Wind 1.6 | Const. 1.25 | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Part. Uniform | 18-1-4 to 23-11-0 | | Top | 322 PLF | 0 PLF | 322 PLF | 0 PLF | 0 PLF | A01 RF. TRUSSES |
| 7 | Point | 18-1-4 | | Top | 1977 lb | 0 lb | 1919 lb | 0 lb | 0 lb | 13'-FB. @ PLAY ROOM Brg 2 |
| | Self Weight | | | | 28 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

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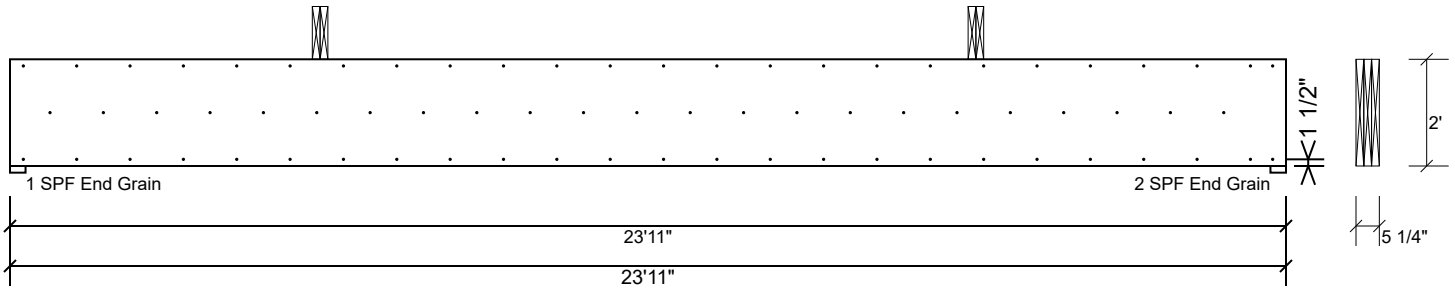
| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM5 Kerto-S LVL 1.750" X 24.000" 3-Ply - PASSED

Level: Level




## Multi-Ply Analysis

Fasten all plies using 3 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 | 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

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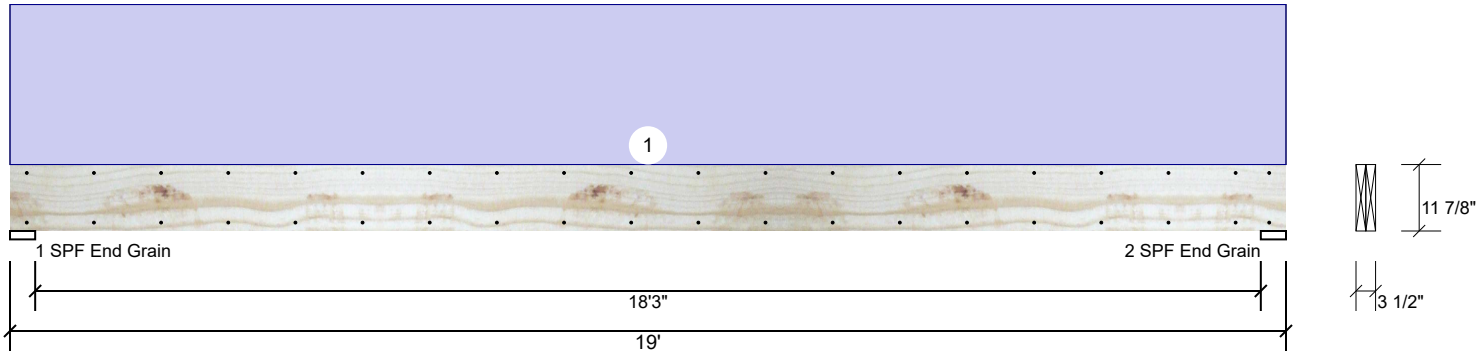
| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# GDH 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/IRC 2015 |
| Deflection LL: | 480 | Load Sharing: | No |
| Deflection TL: | 360 | Deck: | Not Checked |
| Importance: | Normal - II | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 0 | 2016 | 0 | 0 | 0 |
| 2 | 0 | 2016 | 0 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 4.500" | 15% | 2016 / 0 | 2016 | Uniform | D |
| 2 - SPF End Grain | 4.500" | 15% | 2016 / 0 | 2016 | Uniform | D |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 8957 ft-lb | 9'6" | 17919 ft-lb | 0.500 (50%) | D | Uniform |
| Unbraced | 8957 ft-lb | 9'6" | 8966 ft-lb | 0.999 (100%) | D | Uniform |
| Shear | 1740 lb | 17'8 3/8" | 7980 lb | 0.218 (22%) | D | Uniform |
| LL Defl inch | 0.000 (L/999) | 0 | 999.000 (L/0) | 0.000 (0%) | | |
| TL Defl inch | 0.582 (L/379) | 9'6 1/16" | 0.612 (L/360) | 0.950 (95%) | D | Uniform |

## Design Notes

1. Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
2. Refer to last page of calculations for fasteners required for specified loads.
3. Girders are designed to be supported on the bottom edge only.
4. Top loads must be supported equally by all plies.
5. Top must be laterally braced at a maximum of 10'4 1/8" o.c.
6. Bottom braced at bearings.
7. 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 | 203 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | END WALL / GABLE |
| | Self Weight | | | | 9 PLF | | | | | |

**Notes**

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**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 11/27/2023

**Manufacturer Info**

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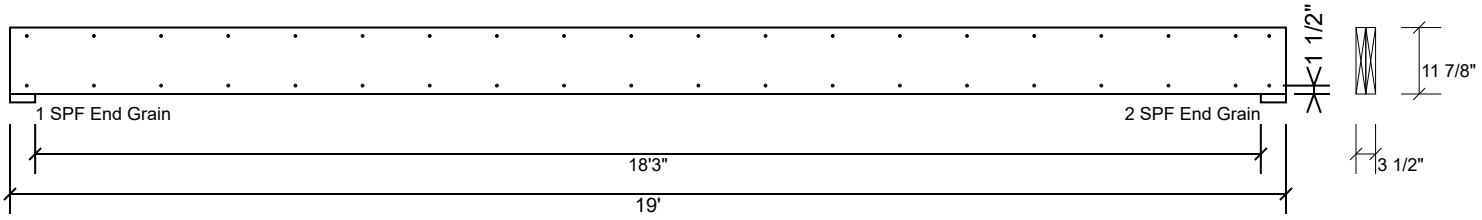
| | | | |
|---|---|---|---|
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# GDH 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

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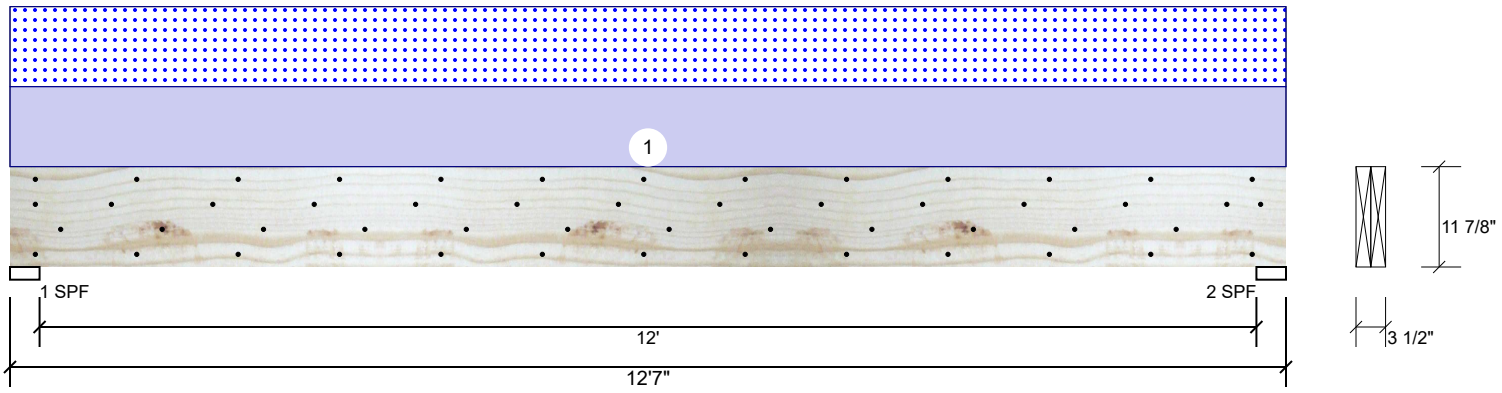
| Client: | BEN STOUT | Date: | 4/8/2021 |
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM1 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Level




## Member Information

| | | | |
|---|---|---|---|
| Type: | Girder | Application: | Roof |
| Plies: | 2 | Slope: | 0/12 |
| Moisture Condition: | Dry | Design Method: | ASD |
| Deflection LL: | 360 | Building Code: | IBC/IRC 2015 |
| Deflection TL: | 240 | Load Sharing: | No |
| Importance: | Normal - II | Deck: | Not Checked |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 0 | 1977 | 1919 | 0 | 0 |
| 2 | 0 | 1977 | 1919 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF | 3.500" | 75% | 1977 / 1919 | 3896 | L | D+S |
| 2 - SPF | 3.500" | 75% | 1977 / 1919 | 3896 | L | D+S |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 11380 ft-lb | 6'3 1/2" | 22897 ft-lb | 0.497 (50%) | D+S | L |
| Unbraced | 11380 ft-lb | 6'3 1/2" | 11401 ft-lb | 0.998 (100%) | D+S | L |
| Shear | 3745 lb | 1'2 5/8" | 10197 lb | 0.367 (37%) | D+S | L |
| LL Defl inch | 0.167 (L/869) | 6'3 1/2" | 0.404 (L/360) | 0.410 (41%) | S | L |
| TL Defl inch | 0.340 (L/428) | 6'3 1/2" | 0.606 (L/240) | 0.560 (56%) | D+S | L |

## Design Notes

1. Fasten all plies using 4 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
2. Refer to last page of calculations for fasteners required for specified loads.
3. Girders are designed to be supported on the bottom edge only.
4. Top must be laterally braced at a maximum of 7'9" o.c.
5. Bottom braced at bearings.
6. 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 | | | Far Face | 305 PLF | 0 PLF | 305 PLF | 0 PLF | 0 PLF | A02 RF. TRUSSES |
| | Self Weight | | | | 9 PLF | | | | | |

### Notes

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### 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 11/27/2023

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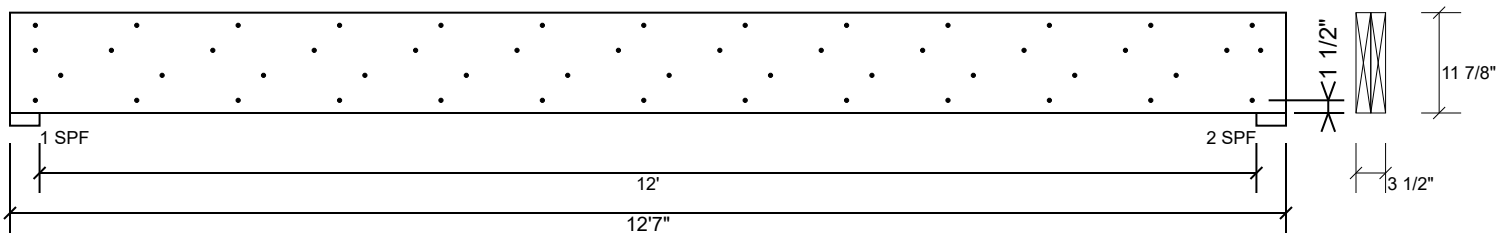
| Project: | | Input by: | Neal Baggett |
| Address: | | Job Name: | 17 FOREST RIDGE |
| | | Project #: | |

# BM1 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Level




## Multi-Ply Analysis

Fasten all plies using 4 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6"

| | |
|---|---|
| Capacity | 81.0 % |
| Load | 305.0 PLF |
| Yield Limit per Foot | 376.5 PLF |
| Yield Limit per Fastener | 94.1 lb. |
| Yield Mode | IV |
| Edge Distance | 1 1/2" |
| Min. End Distance | 3" |
| Load Combination | D+S |
| Duration Factor | 1.15 |

### 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 11/27/2023

### Manufacturer Info

Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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