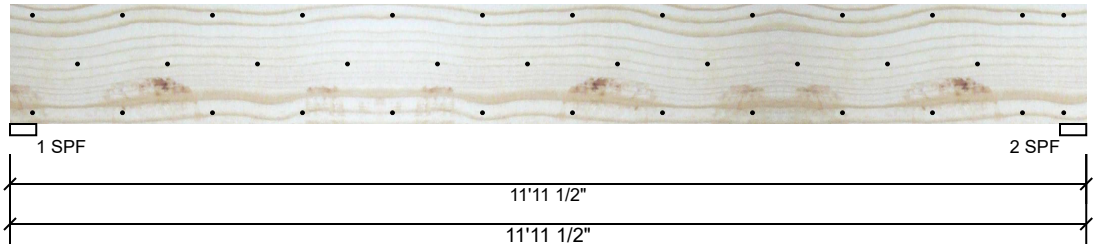
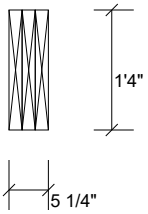
| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# BM1 Kerto-S LVL 1.750" X 16.000" 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 | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 1046 | 3287 | 2350 | 0 | 0 |
| 2 | 1046 | 3287 | 2350 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF | 3.500" | 75% | 3287 / 2547 | 5834 | L | D+0.75(L+S) |
| 2 - SPF | 3.500" | 75% | 3287 / 2547 | 5834 | L | D+0.75(L+S) |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 16187 ft-lb | 5'11 3/4" | 62010 ft-lb | 0.261 (26%) | D+0.75(L+S) | L |
| Unbraced | 16187 ft-lb | 5'11 3/4" | 16274 ft-lb | 0.995 (99%) | D+0.75(L+S) | L |
| Shear | 4898 lb | 1'6 5/8" | 20608 lb | 0.238 (24%) | D+0.75(L+S) | L |
| LL Defl inch | 0.057 (L/2434) | 5'11 3/4" | 0.288 (L/480) | 0.200 (20%) | 0.75(L+S) | L |
| TL Defl inch | 0.130 (L/1063) | 5'11 3/4" | 0.384 (L/360) | 0.340 (34%) | D+0.75(L+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 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 | 80 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | Wall Load |
| 2 | Uniform | | | Top | 253 PLF | 0 PLF | 253 PLF | 0 PLF | 0 PLF | B1 |
| 3 | Uniform | | | Near Face | 140 PLF | 0 PLF | 140 PLF | 0 PLF | 0 PLF | M1 |
| 4 | Uniform | | | Far Face | 58 PLF | 175 PLF | 0 PLF | 0 PLF | 0 PLF | F4 |
| | Self Weight | | | | 19 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 1/8/2023

**Manufacturer Info**

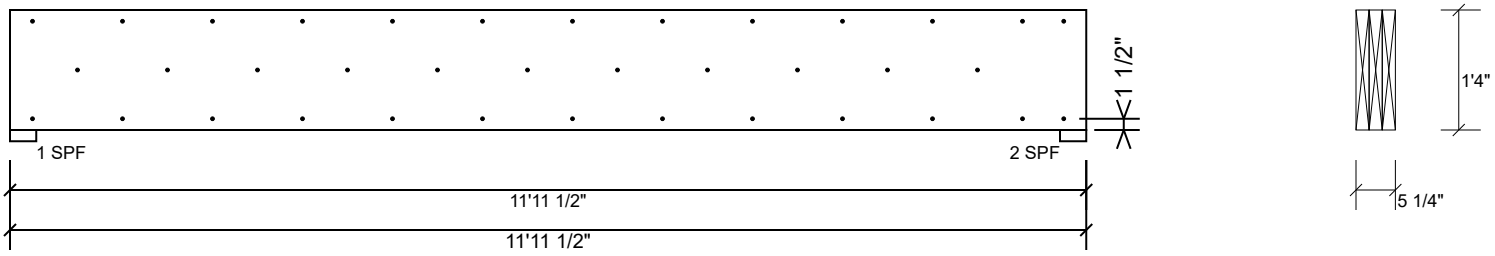
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# BM1 Kerto-S LVL 1.750" X 16.000" 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 | 66.1 % |
| Load | 186.7 PLF |
| Yield Limit per Foot | 282.4 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 1/8/2023

**Manufacturer Info**

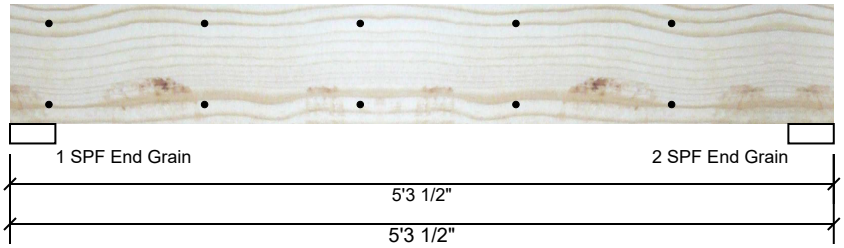
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

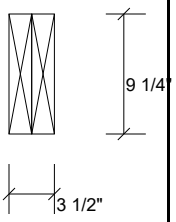
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# BM2 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 | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 2500 | 852 | 0 | 0 | 0 |
| 2 | 2500 | 852 | 0 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 3.500" | 31% | 852 / 2500 | 3353 | L | D+L |
| 2 - SPF End Grain | 3.500" | 31% | 852 / 2500 | 3353 | L | D+L |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 3700 ft-lb | 2'7 3/4" | 12542 ft-lb | 0.295 (30%) | D+L | L |
| Unbraced | 3700 ft-lb | 2'7 3/4" | 10922 ft-lb | 0.339 (34%) | D+L | L |
| Shear | 2086 lb | 4'3 1/2" | 6907 lb | 0.302 (30%) | D+L | L |
| LL Defl inch | 0.035 (L/1659) | 2'7 3/4" | 0.121 (L/480) | 0.290 (29%) | L | L |
| TL Defl inch | 0.047 (L/1237) | 2'7 3/4" | 0.161 (L/360) | 0.290 (29%) | 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 | 315 PLF | 945 PLF | 0 PLF | 0 PLF | 0 PLF | F3 |
| | 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 1/8/2023

**Manufacturer Info**

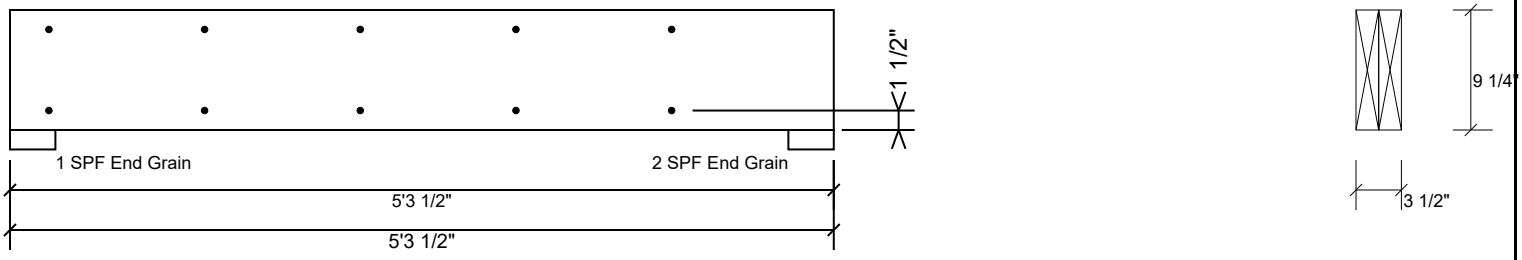
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# BM2 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 1/8/2023

**Manufacturer Info**

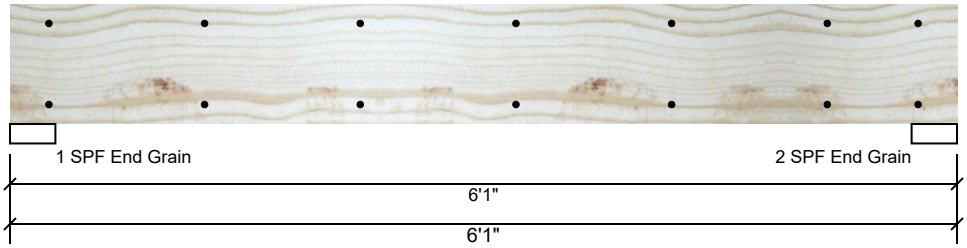
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

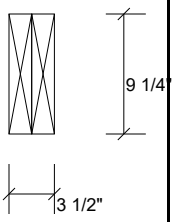
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# F. Room W. Hdr. 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 | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 1736 | 1523 | 33 | 0 | 0 |
| 2 | 1410 | 1871 | 707 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 3.500" | 31% | 1523 / 1736 | 3259 | L | D+L |
| 2 - SPF End Grain | 3.500" | 32% | 1871 / 1588 | 3459 | L | D+0.75(L+S) |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 4166 ft-lb | 3' | 12542 ft-lb | 0.332 (33%) | D+L | L |
| Unbraced | 4166 ft-lb | 3' | 10300 ft-lb | 0.404 (40%) | D+L | L |
| Shear | 2222 lb | 5'1" | 6907 lb | 0.322 (32%) | D+L | L |
| LL Defl inch | 0.035 (L/1946) | 3' 3/16" | 0.141 (L/480) | 0.250 (25%) | L | L |
| TL Defl inch | 0.066 (L/1023) | 3' 1/4" | 0.188 (L/360) | 0.350 (35%) | 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 | 107 PLF | 320 PLF | 0 PLF | 0 PLF | 0 PLF | F4 |
| 2 | Uniform | | | Top | 125 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | Wall Load |
| 3 | Part. Uniform | 0-0-0 to 4-6-8 | | Top | 264 PLF | 264 PLF | 0 PLF | 0 PLF | 0 PLF | B1 |
| 4 | Point | 5-7-4 | | Top | 740 lb | 0 lb | 740 lb | 0 lb | 0 lb | A1SE |
| | 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 1/8/2023

**Manufacturer Info**

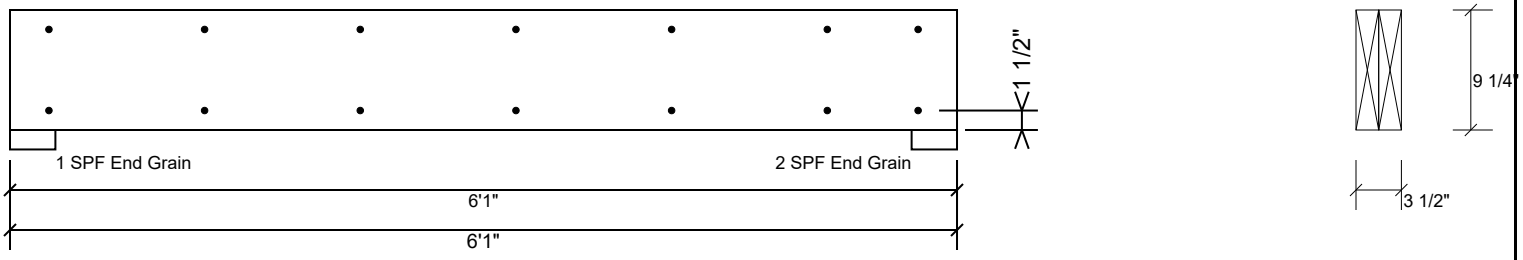
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

## F. Room W. Hdr. 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 1/8/2023

**Manufacturer Info**

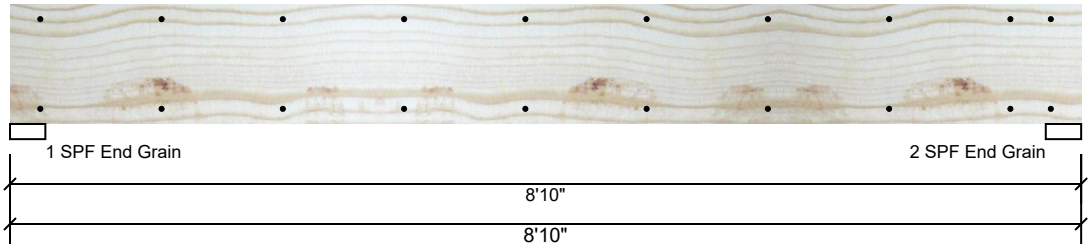
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

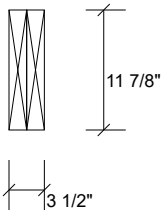
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | 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 | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 0 | 827 | 521 | 0 | 0 |
| 2 | 0 | 827 | 521 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 3.500" | 13% | 827 / 521 | 1348 | L | D+S |
| 2 - SPF End Grain | 3.500" | 13% | 827 / 521 | 1348 | L | D+S |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 2676 ft-lb | 4'5" | 22897 ft-lb | 0.117 (12%) | D+S | L |
| Unbraced | 2676 ft-lb | 4'5" | 10756 ft-lb | 0.249 (25%) | D+S | L |
| Shear | 976 lb | 1'2 5/8" | 10197 lb | 0.096 (10%) | D+S | L |
| LL Defl inch | 0.016 (L/6189) | 4'5 1/16" | 0.209 (L/480) | 0.080 (8%) | S | L |
| TL Defl inch | 0.042 (L/2392) | 4'5 1/16" | 0.279 (L/360) | 0.150 (15%) | D+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 | 118 PLF | 0 PLF | 118 PLF | 0 PLF | 0 PLF | M1 |
| 2 | Uniform | | | Top | 60 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | Exterior Loads |
| | Self Weight | | | | 9 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 1/8/2023

**Manufacturer Info**

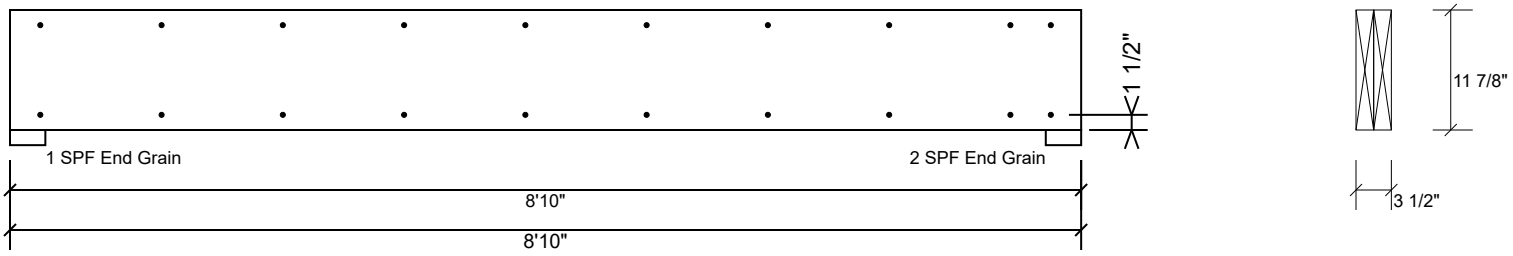
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | 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

This design is valid until 1/8/2023

**Manufacturer Info**

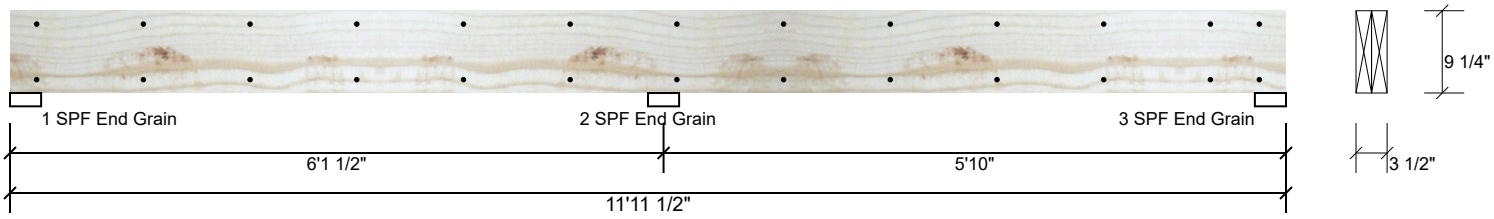
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# PB1 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 | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 238 | 1352 | 936 | 0 | 0 |
| 2 | 665 | 3780 | 2618 | 0 | 0 |
| 3 | 221 | 1256 | 870 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 3.500" | 22% | 1322 / 976 | 2298 | L_ | D+S |
| 2 - SPF End Grain | 3.500" | 61% | 3841 / 2661 | 6502 | LL | D+S |
| 3 - SPF End Grain | 3.500" | 20% | 1225 / 922 | 2146 | _L | D+S |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Neg Moment | -3744 ft-lb | 6'1 1/2" | 14423 ft-lb | 0.260 (26%) | D+S | LL |
| Unbraced | -3744 ft-lb | 6'1 1/2" | 10676 ft-lb | 0.351 (35%) | D+S | LL |
| Pos Moment | 2417 ft-lb | 2'6 1/2" | 14423 ft-lb | 0.168 (17%) | D+S | L_ |
| Unbraced | 2417 ft-lb | 2'6 1/2" | 10676 ft-lb | 0.226 (23%) | D+S | L_ |
| Shear | 2604 lb | 5'4 1/4" | 7943 lb | 0.328 (33%) | D+S | LL |
| LL Defl inch | 0.019 (L/3767) | 2'11 7/8" | 0.147 (L/480) | 0.130 (13%) | S | L_ |
| TL Defl inch | 0.042 (L/1677) | 2'11 5/16" | 0.197 (L/360) | 0.210 (21%) | D+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 | 32 PLF | 94 PLF | 0 PLF | 0 PLF | 0 PLF | F1, F2 & F5 |
| 2 | Uniform | | | Top | 125 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | Wall Load |
| 3 | Uniform | | | Top | 370 PLF | 0 PLF | 370 PLF | 0 PLF | 0 PLF | A2 |
| | 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 1/8/2023

**Manufacturer Info**

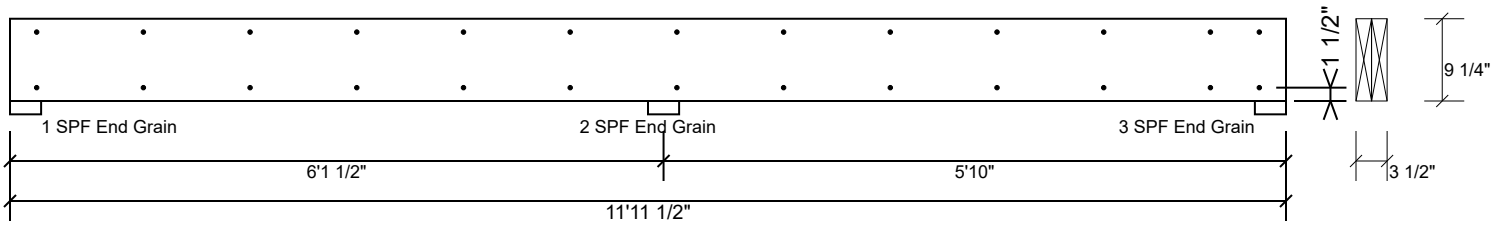
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# PB1 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 1/8/2023

**Manufacturer Info**

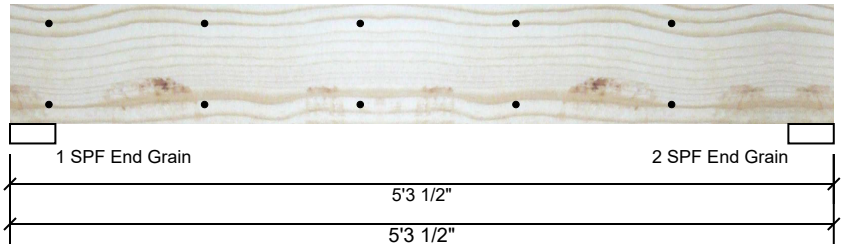
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

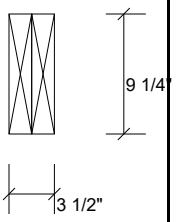
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# PB2 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 | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 0 | 614 | 0 | 0 | 0 |
| 2 | 0 | 614 | 0 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 3.500" | 6% | 614 / 0 | 614 | Uniform | D |
| 2 - SPF End Grain | 3.500" | 6% | 614 / 0 | 614 | Uniform | D |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 678 ft-lb | 2'7 3/4" | 11288 ft-lb | 0.060 (6%) | D | Uniform |
| Unbraced | 678 ft-lb | 2'7 3/4" | 10138 ft-lb | 0.067 (7%) | D | Uniform |
| Shear | 382 lb | 4'3 1/2" | 6216 lb | 0.061 (6%) | D | Uniform |
| LL Defl inch | 0.000 (L/999) | 0 | 999.000 (L/0) | 0.000 (0%) | | |
| TL Defl inch | 0.009 (L/6753) | 2'7 3/4" | 0.161 (L/360) | 0.050 (5%) | 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 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 | 125 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | Wall Load |
| 2 | Uniform | | | Top | 50 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | A1GE |
| 3 | Uniform | | | Top | 50 PLF | 0 PLF | 0 PLF | 0 PLF | 0 PLF | KW5 |
| | 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 1/8/2023

**Manufacturer Info**

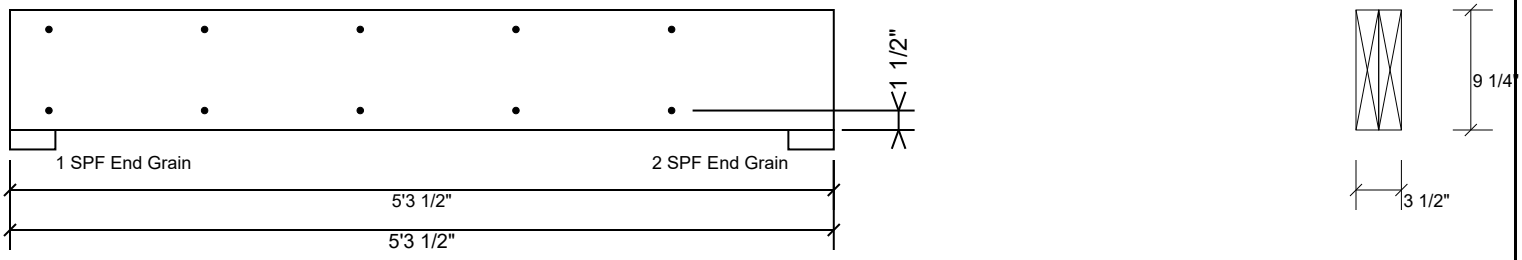
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# PB2 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 1/8/2023

**Manufacturer Info**

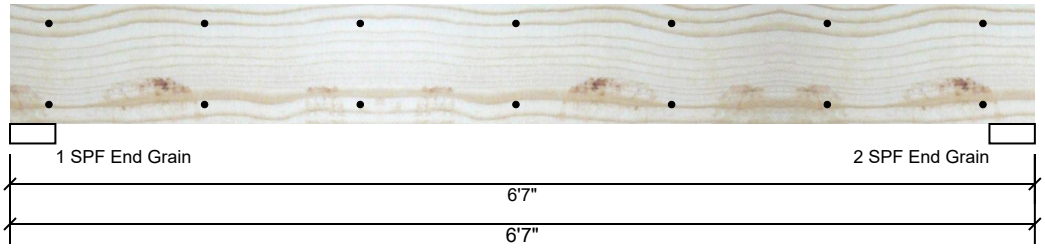
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

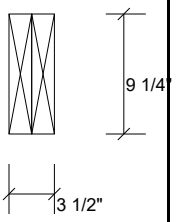
Comtech, Inc.
1001 S. Reilly Road, Suite #639
Fayetteville, NC
USA
28314
910-864-TRUS

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

# Sliding Door Hdr. 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 | | |
| Temperature: | Temp <= 100°F | | |

## Reactions UNPATTERNED lb (Uplift)

| Brg | Live | Dead | Snow | Wind | Const |
|---|---|---|---|---|---|
| 1 | 2051 | 708 | 0 | 0 | 0 |
| 2 | 2051 | 708 | 0 | 0 | 0 |

## Bearings

| Bearing | Length | Cap. | React D/L lb | Total | Ld. Case | Ld. Comb. |
|---|---|---|---|---|---|---|
| 1 - SPF End Grain | 3.500" | 26% | 708 / 2051 | 2759 | L | D+L |
| 2 - SPF End Grain | 3.500" | 26% | 708 / 2051 | 2759 | L | D+L |

## Analysis Results

| Analysis | Actual | Location | Allowed | Capacity | Comb. | Case |
|---|---|---|---|---|---|---|
| Moment | 3931 ft-lb | 3'3 1/2" | 12542 ft-lb | 0.313 (31%) | D+L | L |
| Unbraced | 3931 ft-lb | 3'3 1/2" | 9934 ft-lb | 0.396 (40%) | D+L | L |
| Shear | 1921 lb | 1' | 6907 lb | 0.278 (28%) | D+L | L |
| LL Defl inch | 0.053 (L/1383) | 3'3 1/2" | 0.153 (L/480) | 0.350 (35%) | L | L |
| TL Defl inch | 0.071 (L/1028) | 3'3 1/2" | 0.204 (L/360) | 0.350 (35%) | 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Uniform | | | Top | 208 PLF | 623 PLF | 0 PLF | 0 PLF | 0 PLF | F1 & F2 |
| | 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 1/8/2023

**Manufacturer Info**

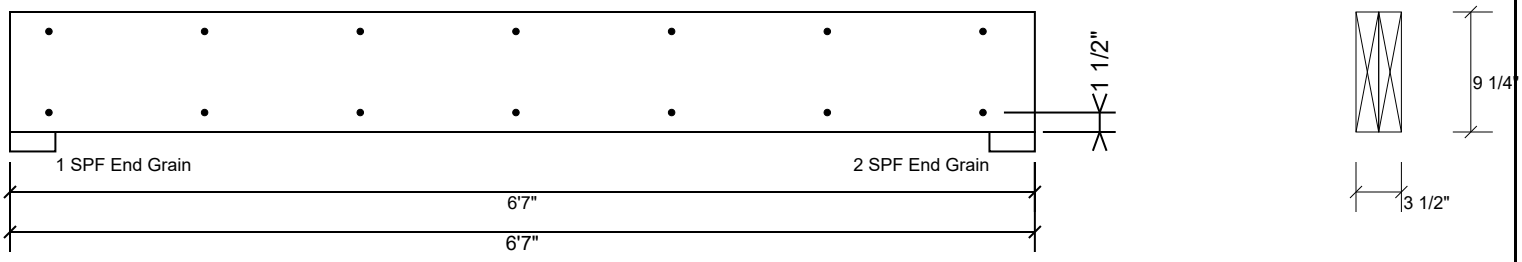
Metsä Wood
301 Merritt 7 Building, 2nd Floor
Norwalk, CT 06851
(800) 622-5850
www.metsawood.com/us
ICC-ES: ESR-3633

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

| | | | |
|---|---|---|---|
| Client: | Weaver Development | Date: | 8/5/2020 |
| Project: | Poplar Plan | Input by: | Christine Shivy |
| Address: | Poplar Plan | Job Name: | Poplar |
| | | Project #: | |

## Sliding Door Hdr. 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 1/8/2023

**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