

The MSH is field adjustable. The flanges can be used in top mount, face mount, or combination installations. An open back design allows installation after a member is placed in position.

Materials: See chart

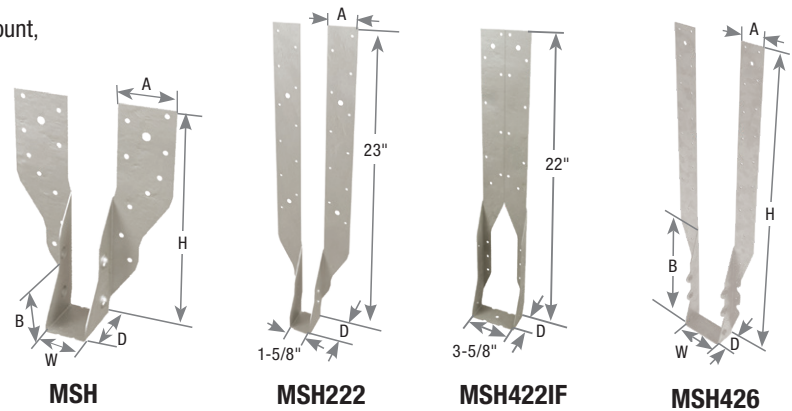
Finish: G90 galvanizing

Options: See chart for Corrosion Finish Options on pages 274-275 and Nailer Options Chart below

Codes: IBC, FL, LA

Installation:

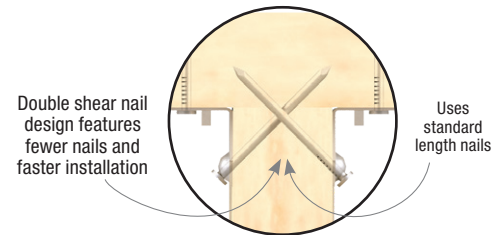
- Use all specified fasteners. See Product Notes, page 18.
- Web stiffeners are required for I-Joist installations.



Nailer Options

– chart represents maximum allowable loads for hangers used on wood nailers. Reference page 203.

| MiTek USP Series | Nailer Size | Fastener Schedule ² | | | | DF/SP Allowable Loads (Lbs.) ¹ | SPF Allowable Loads (Lbs.) ¹ | |
|----------------------|-------------|--------------------------------|----------|--------------|-----|---|---|---------------|
| | | Nailer | | Joist | | | | |
| | | Top Qty | Face Qty | Type | Qty | Type | Download 100% | Download 100% |
| MSH (18 gauge) | 2X | 4 | -- | 10d x 1-1/2" | 4 | 10d x 1-1/2" | 1245 | 1045 |
| | 3X | 4 | -- | 10d x 1-1/2" | 4 | 10d x 1-1/2" | 1245 | 1045 |
| | (2) 2X | 4 | 2 | 10d | 4 | 10d x 1-1/2" | 1950 | 1540 |
| | 4X | 4 | 2 | 10d | 4 | 10d x 1-1/2" | 1950 | 1540 |
| MSH (16 or 14 gauge) | 2X | 4 | 2 | 10d x 1-1/2" | 6 | 10d x 1-1/2" | 2355 | 1860 |
| | 3X | 4 | 2 | 10d x 1-1/2" | 6 | 10d x 1-1/2" | 2355 | 1860 |
| | (2) 2X | 4 | 2 | 16d x 2-1/2" | 6 | 10d x 1-1/2" | 2080 | 1745 |
| | 4X | 4 | 2 | 16d x 2-1/2" | 6 | 10d x 1-1/2" | 2080 | 1745 |



- 1) Listed loads shall not be increased.
- 2) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d x 2-1/2" nails are 0.162" dia. x 2-1/2" long. New products or updated product information are designated in **blue font**.

Mounting Conditions

Face Max

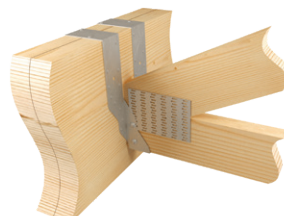
All header nails used should be driven into the wide face of the header.



Typical MSH face-max installation

Top-Max

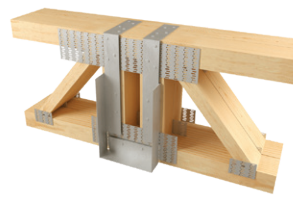
The hanger is installed in a top mount condition with at least six lowest header face nail holes filled, and four top flange nails filled. Refer to **Table 1** below for minimum top flange length requirements.



Typical MSH top-max installation

Top-Min

The hanger is installed in a top mount condition with at least the top two header face nail holes filled, and four top flange nail holes filled. Refer to **Table 1** below for minimum top flange length requirements. The joist nails shall be installed straight into the joist for all models.



Typical MSH top-min installation

Combination Face-Max / Top-Max

Face-Max values apply for the entire connection. Follow fastening directions for the applicable mounting condition for each individual flange strap.



Typical MSH combination installation

Table 1

| Minimum Top Flange Length for Top Mount Installations ¹ | | | | | | | | | | | |
|--|--------|-----------|------------|----------|---------|--------|---------|----------|----------|--------|----------|
| 7/8" | 1-1/8" | 1-3/8" | 1-1/2" | 1-3/4" | 1-7/8" | 2" | 2-3/16" | | 2-5/8" | 2-3/4" | 2-13/16" |
| MSH426 | MSH29 | MSH2322-2 | MSH422-2 | MSH426-2 | MSH1713 | MSH424 | MSH222 | MSH222-2 | MSH218-2 | MSH218 | MSH213 |
| MSH426IF | -- | MSH2622-2 | MSH422-2IF | -- | -- | -- | MSH1722 | MSH422IF | -- | MSH413 | -- |
| -- | -- | -- | -- | -- | -- | -- | MSH2322 | MSH2022 | -- | MSH418 | -- |
| -- | -- | -- | -- | -- | -- | -- | MSH322 | -- | -- | MSH422 | -- |

1) Total hanger height will be reduced by the top flange length. Carried member height must be accounted for accordingly.

Continued on next page

The MSHL/R is a versatile 45° skewed hanger with multiple installation options. It can be installed on a supporting girder truss as well as solid-sawn and structural composite lumber headers.

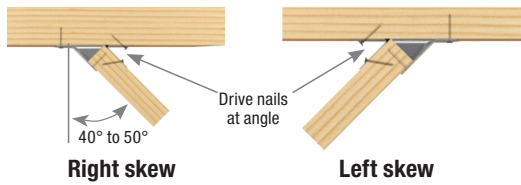
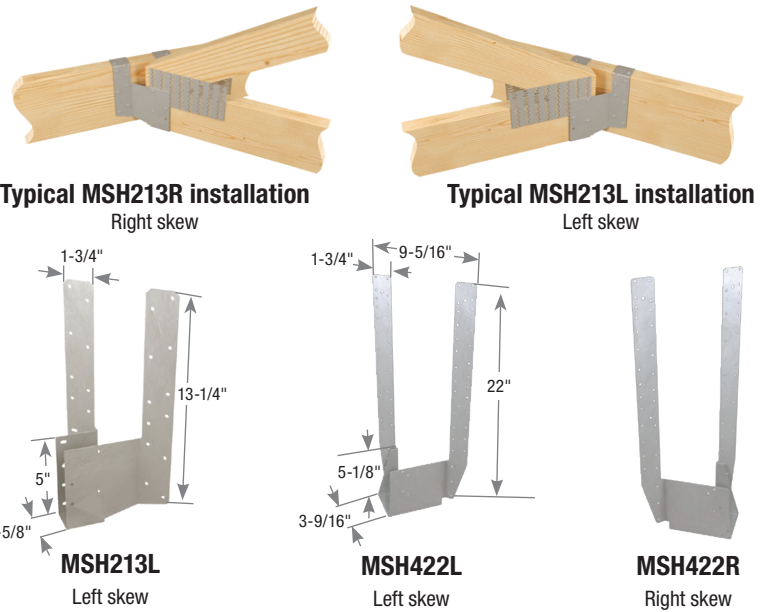
Materials: See chart

Finish: G90 galvanizing

Codes: See chart for code references

Installation:

- Install the required number of fasteners according to the load table.
- Install fasteners into the carrying members at the locations described below based on the proper "Mounting Condition."
- Web stiffeners are required for I-Joist installations.
- Hanger is factory skewed at 45° left or right.



CONNECTION TO CARRYING MEMBER – Mounting Condition

| Face-Max | Top-Max | Top-Min | Combination Face-Max/Top-Max |
|--|--|---|--|
| For MSH422L/R, the bottom six (6) fastener holes (three on each side of the bucket) must be filled. Install eight additional fasteners (four (4) in each strap) where applicable. For MSH213L/R, the bottom eight (8) fastener holes must be filled (four (4) in each strap). Install fourteen (14) additional fasteners, seven (7) in each strap. Min. 2x6 bottom chord required. | The straps must be field-bent over the header a minimum of 2" to allow four (4) top flange nail holes to be filled (two in each strap). The bottom six (6) fastener holes (three on each side of the bucket) must be filled. Min. 2x6 bottom chord required. | The straps must be field bent over the header a minimum of 2" to allow four (4) top flange nail holes to be filled (two in each strap). Also install the two (2) uppermost face nails (one on each strap) near the top of the header. | Follow the Face-Max installation for one side of the connector and the Top-Max installation for the opposite side of the connector. The Face-Max allowable loads apply to this type of installation. Min. 2x6 bottom chord required. |
| | | | |
| Typical MSHL/R face-max installation | Typical MSHL/R top-max installation | Typical MSHL/R top-min installation | Typical MSHL/R combination installation |

CONNECTION TO CARRIED MEMBER – All Mounting Conditions

Install six (6) 10d x 1-1/2" nails into 2x carried member, or six (6) 10d nails into 3-1/2" wide carried member.

| Joist Material & Width | MiTek USP Stock No. | Ref. No. | GA | Mounting Condition | Fastener Schedule ² | | | | | DF/SP Allowable Loads (Lbs.) | | | | S-P-F Allowable Loads (Lbs.) | | | | Code Ref. |
|-----------------------------|---------------------|-----------|----|--------------------|--------------------------------|----------|-------|-----|-------------|------------------------------|------|------|------|------------------------------|------|------|------|-------------|
| | | | | | Header | | Joist | | | Download | | | | Uplift ¹ | | | | |
| | | | | | Top Qty | Face Qty | Type | Qty | Type | 100% | 115% | 125% | 160% | 100% | 115% | 125% | 160% | |
| | | | | | | | Type | | | | | | | | | | | |
| 2x Lumber or Trusses | MSH213L/R | -- | 18 | face-max | -- | 22 | 10d | 6 | 10d x 1-1/2 | 1770 | 1770 | 1770 | 670 | 1430 | 1430 | 1430 | 540 | IBC, FL, LA |
| | | | | top-max | 4 | 6 | 10d | 6 | 10d x 1-1/2 | 1810 | 1810 | 1810 | 670 | 1460 | 1460 | 1460 | 540 | |
| | | | | top-min | 4 | 2 | 10d | 6 | 10d x 1-1/2 | 1325 | 1325 | 1325 | -- | 1240 | 1240 | 1240 | -- | |
| | | | | combination | 2 | 14 | 10d | 6 | 10d x 1-1/2 | 1770 | 1770 | 1770 | 670 | 1430 | 1430 | 1430 | 540 | |
| 3-1/2" LVL or Floor Trusses | MSH422L/R | THAL/R422 | 16 | face-max | -- | 14 | 10d | 6 | 10d | 1750 | 1755 | 1755 | 560 | 1395 | 1395 | 1395 | 445 | IBC, FL, LA |
| | | | | top-max | 4 | 6 | 10d | 6 | 10d | 1820 | 1820 | 1820 | 560 | 1490 | 1490 | 1490 | 445 | |
| | | | | top-min | 4 | 2 | 10d | 6 | 10d | 1385 | 1385 | 1385 | -- | 1100 | 1100 | 1100 | -- | |
| | | | | combination | 2 | 10 | 10d | 6 | 10d | 1750 | 1755 | 1755 | 560 | 1395 | 1395 | 1395 | 445 | |

1) Uplift loads have been increased 60% for wind or seismic loads; no further increase shall be permitted.
 2) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long
 New products or updated product information are designated in **blue font**.

MiTek's MSSH217 hanger accommodates a skew range of 60° to 85° (30° maximum off the girder) without the need for a more expensive custom design hanger. Face nail to webs or bend the flange strap over the chord. Available in left (L) or right (R) configurations.

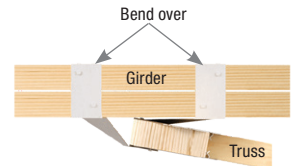
Materials: 18 gauge
Finish: G90 galvanizing

Installation:

- Use all specified fasteners. See Product Notes, page 18.
- The 3 lower holes on each strap are for top nailing when the strap is bent over the truss chord. These holes are not for face nailing.
- One or both straps may be bent over the bottom chord of the girder with top or backside nailing.
- **Note:** Select the correct (right or left) hanger so that the strap on the outside of the angle will pass the end of the truss. When facing the hanger, the strap in the rear turns in the direction of the skew. The front strap turns to pass behind the end of the carried member.
- Attach the hanger at the end of the truss with a single 10d (0.148" dia.) x 1-1/2" nail into the side flange or bottom.
- Place the truss in position against the girder. Push the outside strap past the end of the truss to the girder web and face nail through the top 8 holes with 10d (0.148" dia.) x 1-1/2" nails for a 1-ply girder, or 10d (0.148" dia. x 3") common nails for multiple-ply girders.
- The strap inside the angle can be formed over diagonal webs (if design allows) or bend over the girder chord. Use two nails into the top and/or back side of the girder.
- If the outside strap does not contact a web, bend the strap tightly over the girder chord. Use two nails into the top and/or back side of the girder.
- For uplift resistance, other means of attachment are required. If both the truss and girder have vertical webs, attach a scab to pack out the girder web nearly flush with the truss web and use a field adjustable MP framing angle across the two. A top chord connection for uplift requires a flat LSTA strap tie wrapped under the girder and over the truss chord.



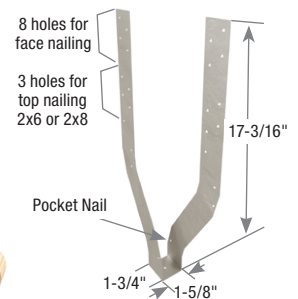
MSSH217L
 Left shown attached to web and top of chord



Top view right shown

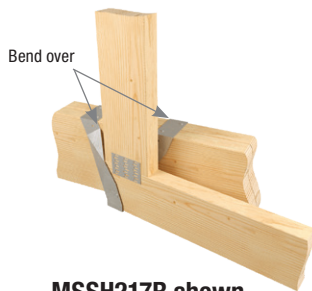


MSSH217R
 Right shown attached to webs

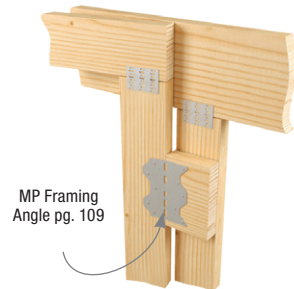


MSSH217R
 Right shown

Plated Truss



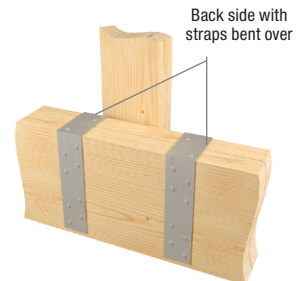
MSSH217R shown bent over bottom chord



Additional strapping for high uplift



Additional strapping for high uplift



Back view shown

| MiTek USP Stock No. | Ref. No. | Steel Gauge | Fastener Schedule ^{2,3,5} | | | | | | | Girder Truss | DF/SP Allowable Loads (Lbs.) ¹ | | | S-P-F Allowable Loads (Lbs.) ¹ | | | Code Ref. |
|---------------------|----------|-------------|------------------------------------|-------------------|------|---------------|------|-------------------------------|-------------|--------------|---|------|------|---|------|------|-----------|
| | | | Mounting Condition | Supporting Member | | | | Supported Member ⁴ | | | Floor | Roof | | Floor | Roof | | |
| | | | | Top | | Face/Backside | | | | | | 100% | 115% | | 125% | 100% | |
| | | | | Qty | Type | Qty | Type | Qty | Type | | | | | | | | |
| MSSH217L/R | -- | 18 | face-max | -- | -- | 16 | 10d | 1 | 10d x 1-1/2 | 1 Ply | 1755 | 1770 | 1770 | 1140 | 1155 | 1165 | -- |
| | | | top-min | 4 | 10d | 6 | 10d | | | 1 Ply | 1735 | 1735 | 1735 | 1140 | 1155 | 1165 | |

1) No uplift value with this hanger. Use other hardware or nailing higher on supported member to counteract uplift.
 2) One or both straps may be bent over bottom chord of girder with top or backside nailing.
 3) Maintain minimum 3/4" edge distance when installing nails.
 4) The supported member shall be supported by blocking or other means to prevent rotation.
 5) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.

Note: The 3 lower holes on each strap are for top nailing when strap is bent. These holes are not for face nailing.

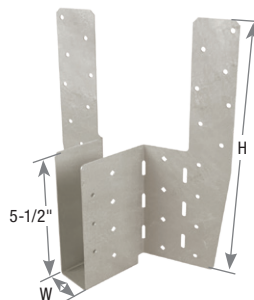
MiTek's MSHA Series hanger offers the most flexible field solution for truss-to-truss connections accommodating a range of skews and challenging web-chord geometry often found in truss framing. Eliminating the need for special orders, the MSHA Series hanger provides economical solutions for 1-ply or 2-ply roof trusses and 1-ply floor trusses skewed between 22-1/2° to 75°. MSHA hangers can be installed in top-min, top-max, face-max, or combination mounting conditions as required.

Materials: 16 gauge

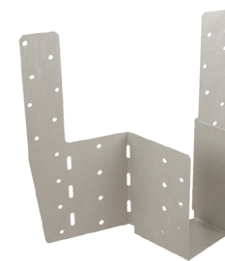
Finish: G90 galvanizing

Installation:

- Install the required number of fasteners according to the load table.
- Install fasteners into the carrying member at the locations described below based on the proper "Mounting Condition".
- Product is factory skewed 22-1/2° and may be field skewed from 22-1/2° to 75°. See installation sequence on page 279 for skews greater than 22-1/2°.
- Face-Max and Combination mounting conditions require a minimum chord or header height of 7-1/4". Top-Max and Top-Min mounting conditions require a minimum chord or header height of 5-1/2".



MSHA29L
Left Shown



MSHA29R-2
Right Shown

Plated Truss

CONNECTION TO CARRYING MEMBER
Mounting Conditions:

Face-Max

Fill the lowest four holes nearest each side of the bucket. For a 22-1/2° skew, fill the four diamond holes on one side and 4 round holes on the other. For skews greater than 22-1/2°, fill the 4 round holes on each side.

Add an equal amount of nails in each side of the hanger in any of the remaining nail holes to meet the minimum fastener requirements listed in the table on page 279.

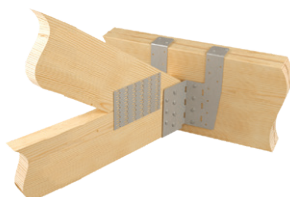


Typical MSHA
face-max installation

Top-Max

Field bend the strap over the supporting member. The bent strap must extend a minimum of 2" over the carrying member to allow for the four top flange nail holes to be filled.

Fill the lowest four nail holes nearest each side of the bucket. For a 22-1/2° skew, fill the four diamond holes on one side and 4 round holes on the other. For skews greater than 22-1/2°, fill the 4 round holes on each side.

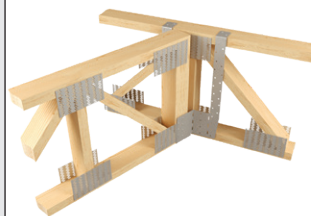


Typical MSHA
top-max installation

Top-Min

Field bend the strap over the supporting member. The bent strap must extend a minimum of 2" over the carrying member to allow for the four top flange nail holes to be filled.

Fill the four nail holes (two each strap) nearest the top of the carrying member.



Typical MSHA
top-min installation

Combination
Face-Max/Top-Max

Follow the Face-Max installation for one side of the connector. Follow the Top-Max installation for the opposite side of the connector. The Face-Max allowable loads apply to this type of installation.



Typical MSHA
combination installation

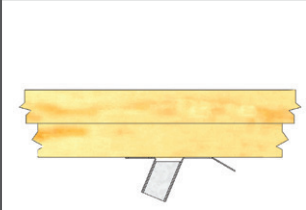
CONNECTION TO CARRIED MEMBER
Mounting Conditions:

For the 22-1/2° skew installation, all round holes must be filled. For skews greater than 22-1/2°, all holes must be filled in bucket including diamond holes.

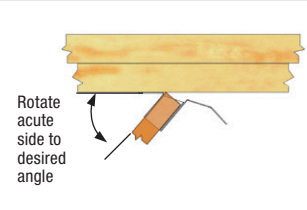
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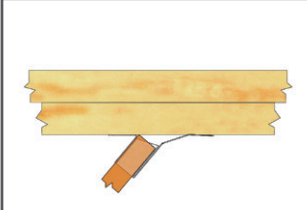
Installation Sequence for Skews > 22½°:



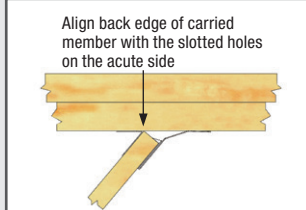
Step 1: Install acute side top and/or face header nails.



Step 2: Utilizing a piece of scrap fastened to the hanger on the obtuse side, bend the hanger to the desired angle.



Step 3: Bend the obtuse side of hanger back toward the header until the flange lies flat against the header, and install header top and/or face nails as noted below.



Step 4: Install carried truss and all required nails fasteners working from the bottom up.

| Joist Material & Width | MiTek USP Stock No. | Ref. No. | Dimensions (in) | | Min H _{eff} ² (in) | Mounting Condition ³ | Skew Angle (degrees) | Fastener Schedule ⁴ | | | | | DF/SP Allowable Loads (Lbs.) | | | | S-P-F Allowable Loads (Lbs.) | | | | Code Ref. |
|------------------------|---------------------|------------|-----------------|----------|--|---------------------------------|----------------------|--------------------------------|-----|-------------|------------------------|-------------|------------------------------|------|------------------------|------|------------------------------|------|------|-----|-----------|
| | | | Carrying Member | | | | | Carried Member | | | Allowable Loads (Lbs.) | | | | Allowable Loads (Lbs.) | | | | | | |
| | | | Top Qty | Face Qty | | | | Type | Qty | Type | 100% | 115% | 125% | 160% | Uplift ¹ | 100% | 115% | 125% | 160% | | |
| 2x Trusses | MSHA29L/R | THASRL29 | 1-5/8 | 10-3/4 | 7-1/4 | face-max | 22-1/2 | -- | 12 | 10d | 7 | 10d x 1-1/2 | 1500 | 1615 | 1615 | 975 | 1250 | 1275 | 1275 | 770 | -- |
| | | | | | | | 23 to 45 | -- | 12 | 10d | 4 | 10d x 1-1/2 | 1485 | 1485 | 1485 | 560 | 1250 | 1350 | 1350 | 435 | |
| | | | | | | | 46 to 75 | -- | 12 | 10d | 4 | 10d x 1-1/2 | 1500 | 1615 | 1615 | 720 | 1250 | 1315 | 1315 | 560 | |
| | | | 5-1/2 | top-max | 22-1/2 | 4 | 8 | 10d | 7 | 10d x 1-1/2 | 1985 | 1985 | 1985 | 975 | 1510 | 1510 | 1510 | 745 | | | |
| | | | | | 23 to 45 | 4 | 8 | 10d | 4 | 10d x 1-1/2 | 1705 | 1705 | 1705 | 560 | 1255 | 1255 | 1255 | 415 | | | |
| | | | | | 46 to 75 | 4 | 8 | 10d | 4 | 10d x 1-1/2 | 1605 | 1605 | 1605 | 720 | 1605 | 1605 | 1605 | 560 | | | |
| | | | | top-min | 22-1/2 | 4 | 4 | 10d | 7 | 10d x 1-1/2 | 1350 | 1350 | 1350 | -- | 1045 | 1045 | 1045 | -- | | | |
| | | | | | 23 to 45 | 4 | 4 | 10d | 4 | 10d x 1-1/2 | 1335 | 1335 | 1335 | -- | 1060 | 1060 | 1060 | -- | | | |
| | | | | | 46 to 75 | 4 | 4 | 10d | 4 | 10d x 1-1/2 | 695 | 695 | 695 | -- | 695 | 695 | 695 | -- | | | |
| 2-2x Trusses | MSHA29L/R-2 | THASRL29-2 | 3-1/8 | 10-3/4 | 7-1/4 | face-max | 22-1/2 | -- | 12 | 10d | 7 | 10d | 1500 | 1615 | 1615 | 975 | 1215 | 1215 | 1215 | 735 | -- |
| | | | | | | | 23 to 45 | -- | 12 | 10d | 4 | 10d | 1485 | 1485 | 1485 | 560 | 1210 | 1260 | 1260 | 405 | |
| | | | | | | | 46 to 75 | -- | 12 | 10d | 4 | 10d | 1500 | 1615 | 1615 | 720 | 1250 | 1300 | 1300 | 555 | |
| | | | 5-1/2 | top-max | 22-1/2 | 4 | 8 | 10d | 7 | 10d | 1985 | 1985 | 1985 | 975 | 1495 | 1495 | 1495 | 735 | | | |
| | | | | | 23 to 45 | 4 | 8 | 10d | 4 | 10d | 1705 | 1705 | 1705 | 560 | 1275 | 1275 | 1275 | 420 | | | |
| | | | | | 46 to 75 | 4 | 8 | 10d | 4 | 10d | 1605 | 1605 | 1605 | 720 | 1565 | 1565 | 1565 | 535 | | | |
| | | | | top-min | 22-1/2 | 4 | 4 | 10d | 7 | 10d | 1350 | 1350 | 1350 | -- | 1040 | 1040 | 1040 | -- | | | |
| | | | | | 23 to 45 | 4 | 4 | 10d | 4 | 10d | 1335 | 1335 | 1335 | -- | 1060 | 1060 | 1060 | -- | | | |
| | | | | | 46 to 75 | 4 | 4 | 10d | 4 | 10d | 695 | 695 | 695 | -- | 695 | 695 | 695 | -- | | | |
| 4x Trusses | MSHA422L/R | THASRL422 | 3-5/8 | 22 | 7-1/4 | face-max | 22-1/2 | -- | 12 | 10d | 7 | 10d | 1500 | 1590 | 1590 | 960 | 1250 | 1250 | 1250 | 755 | -- |
| | | | | | | | 23 to 45 | -- | 12 | 10d | 4 | 10d | 1485 | 1485 | 1485 | 550 | 1250 | 1335 | 1335 | 430 | |
| | | | | | | | 46 to 75 | -- | 12 | 10d | 4 | 10d | 1500 | 1615 | 1615 | 705 | 1250 | 1300 | 1300 | 555 | |
| | | | 5-1/2 | top-max | 22-1/2 | 4 | 8 | 10d | 7 | 10d | 1955 | 1955 | 1955 | 960 | 1490 | 1490 | 1490 | 735 | | | |
| | | | | | 23 to 45 | 4 | 8 | 10d | 4 | 10d | 1680 | 1680 | 1680 | 550 | 1270 | 1270 | 1270 | 420 | | | |
| | | | | | 46 to 75 | 4 | 8 | 10d | 4 | 10d | 1605 | 1605 | 1605 | 705 | 1565 | 1565 | 1565 | 535 | | | |
| | | | | top-min | 22-1/2 | 4 | 4 | 10d | 7 | 10d | 1330 | 1330 | 1330 | -- | 1040 | 1040 | 1040 | -- | | | |
| | | | | | 23 to 45 | 4 | 4 | 10d | 4 | 10d | 1335 | 1335 | 1335 | -- | 1060 | 1060 | 1060 | -- | | | |
| | | | | | 46 to 75 | 4 | 4 | 10d | 4 | 10d | 695 | 695 | 695 | -- | 695 | 695 | 695 | -- | | | |

1) Uplift loads have been increased 60% for wind or seismic loads; no further increase shall be permitted.
 2) H_{eff} is the minimum distance from the top of the hanger seat to the top of the carrying member.
 3) For tabulated top-mount installation loads, the straps must be wrapped over the header a minimum of 2".
 4) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.