DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
SECTION: 06 17 53—SHOP-FABRICATED WOOD TRUSSES

REPORT HOLDER:

MITEK USA, INC.

14515 NORTH OUTER FORTY, SUITE 300
CHESTERFIELD, MISSOURI 63017

EVALUATION SUBJECT:

MITEK® MTH18 AND SMH18 HINGE PLATE CONNECTORS

"2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence"
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CHESTERFIELD, MISSOURI 63017
(314) 434-1200
www.mii.com

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MITEK® MTH18 AND SMH18 HINGE PLATE CONNECTORS

1.0 EVALUATION SCOPE
Compliance with the following codes:

Property evaluated:
Structural

2.0 USES
MiTek® MTH18 and SMH18 Hinge Plate Connectors are metal hinge plates used to connect wood chord members end-to-end in prefabricated wood trusses complying with IBC Section 2303.4 (Section 2303.4.2 of the 2006 IBC) and IRC Sections R502.11 and R802.10.

3.0 DESCRIPTION
MiTek® MTH18 and SMH18 Hinge Plate Connectors are No. 18 gage [0.0456 inch (1.158 mm) minimum base-metal thickness] connectors fabricated from ASTM A653 SS Grade 50 steel with a G60 galvanized coating. The MiTek® MTH18 Hinge Connector Plate (Figure 1) consists of two 2 1/4-inch-by-5 1/8-inch (57 mm by 132 mm) plates connected with a 1-inch-diameter (25.4 mm) hinge. Each half of each plate is composed of an approximately 2-inch-by-3-inch (51 mm by 76 mm) area of integral teeth that are approximately 1 1/32 inch (8.7 mm) long and punched at right angles to the plate. The MiTek® SMH18 Hinge Connector Plate (Figure 2) consists of two 2-inch-by-4-inch (51 mm by 102 mm) plates connected with a 3/4-inch-diameter (19.1 mm) hinge, with each half of each plate composed of an approximately 1 3/4-inch-by-2-inch (44 mm by 51 mm) area of integral teeth that are approximately 1 1/32 inch (8.7 mm) long and punched at right angles to the plate. The MiTek® MTH18 and SMH18 Hinge Connector Plates must be pressed into the chord for the full depth of their teeth by hydraulic-platen embedment presses, multiple roller presses that use partial embedment followed by full-embedment rollers, or combinations of partial embedment roller presses and hydraulic-platen presses that feed trusses into a stationary finish roller press. See Figure 3 for examples of trusses incorporating MiTek® Hinge Connector Plates.

4.0 DESIGN AND INSTALLATION
4.1 General:
Installation of the MiTek® MTH18 and SMH18 Hinge Plate Connectors must comply with this report and the manufacturer’s published installation instructions. The manufacturer’s published installation instructions must be available to the truss fabricator at all times during installation. Trusses must be assembled within the tolerances given in Chapter 3 of ANSI/TPI 1.

The connectors must be installed in pairs in the 180-degree position on opposite faces of truss top chord members, which must be braced by sheathing installed at the jobsite. The sheathing must comply with and be installed in accordance with Section 5.5 of this report and the applicable code. The chords must be composed of sawn wood lumber with a minimum specific gravity of 0.42. The gap between chord members for the MTH18 Hinge Connector Plate must be 1 inch (25.4 mm) or less, and the gap between chord members for the SMH18 Hinge Connector Plate must be 1 1/2 inches (38.1 mm) or less.

4.2 Allowable Design Values:
Allowable shear, tension and compression design values for the MiTek® MTH18 and SMH18 Hinge Connector Plates are given in Table 1. Imposed forces at the joint and internal stresses within the truss containing the joint must be determined using a structural model with a pin at the hinge joint location. The design load, due to combined shear and axial loads, must not exceed the allowable load using the Hankinson formula as follows:

\[ F_0 \leq P_0 \]

where:

\[ F_0 = \text{Imposed combined shear and axial load, lbf} = (F_s + F_a)^{0.5}. \]
\[ P_0 = \text{Allowable combined shear and axial load, lbf} = \left(\frac{(P_s \times (\sin \Theta)^2)}{((P_s \times \cos \Theta)^2)} + (P_a \times (\cos \Theta)^2)\right). \]
**TABLE 1—ALLOWABLE DESIGN VALUES FOR THE MITEK® MTH18 AND SMH18 HINGE CONNECTOR PLATES**

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>ALLOWABLE DESIGN VALUE (lbf)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MTH18</td>
</tr>
<tr>
<td>Shear (Pᵥ)</td>
<td>950</td>
</tr>
<tr>
<td>Tension (Pₐ)</td>
<td>1624</td>
</tr>
<tr>
<td>Compression (Pₐ)</td>
<td>1624</td>
</tr>
</tbody>
</table>

For 1lbf = 4.448 N.

¹Allowable design values are applicable to application of the metal hinge plates installed in pairs to truss chord members.
FIGURE 2—MITEK® SMH18 HINGE CONNECTOR PLATE
For SI: 1 inch = 25.4 mm
Conventional Truss OverHeight Hinge Replaces Piggyback or Cap Truss

These drawings are for illustration purposes only. They are not intended for use as construction documents for the purpose of fabrication, design or erection.

Modular Construction uses MTH18 or SMH18 to reduce shipping height

FIGURE 3—EXAMPLES OF TRUSSES INCORPORATING MITEK® HINGE CONNECTOR PLATES
1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that Mitek® MTH18 and SMH18 Hinge Plate Connectors, recognized in ICC-ES master evaluation report ESR-3282, have also been evaluated for compliance with the codes noted below:

Applicable code editions:

- 2013 California Building Code (CBC)
- 2013 California Residential Code (CRC)

2.0 CONCLUSIONS

2.1 CBC

The use of the Mitek® MTH18 and SMH18 Hinge Plate Connectors, as described in Sections 2.0 through 7.0 of the master report ESR-3282, complies with the 2013 CBC, Chapter 23, provided the design and installation are in accordance with the 2012 International Building Code® (IBC) provisions noted in the master report and the additional requirements of CBC Chapters 16, 16A, 17, 17A and 23, as applicable.

2.2 CRC

The use of the Mitek® MTH18 and SMH18 Hinge Plate Connectors, as described in Sections 2.0 through 7.0 of the master evaluation report ESR-3282, complies with CRC Sections R502.11 and R802.10, provided the design and installation are in accordance with the 2012 International Residential Code® (IRC) provisions noted in the master report.

This supplement expires concurrently with the master evaluation report, reissued October 2016.
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