



HARDY FALL PROTECTION SYSTEMS, INC.

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HARDY TIE BACK DEVICES AND HARDY TIE BACK SADDLES

CSI Sections:

- 05 50 00 Metal Fabrications
- 06 05 23 Wood, Plastic, and Composite Fastenings
- 11 81 29 Facility Fall Protection

1.0 RECOGNITION

The Hardy Fall Protection Systems, Inc., Hardy Tie Back Devices, and Hardy Tie Back Saddles, recognized in this report have been evaluated for use as roof level tie back systems. The structural and durability properties of the Hardy Tie Back Devices and Hardy Tie Back Saddles comply with the intent of the provisions of the following codes and regulations:

- 2021, 2018, 2015, and 2012 International Building Code® (IBC)
- 2021, 2018, 2015, and 2012 International Residential Code® (IRC)
- 2020 City of Los Angeles Building Code (LABC) – attached Supplement
- 2020 City of Los Angeles Residential Code (LARC) – attached Supplement

2.0 LIMITATIONS

Use of the Hardy Tie Back Devices and Hardy Tie Back Saddles recognized in this report are subject to the following limitations:

2.1 The Hardy Tie Back Devices and Hardy Tie Back Saddles shall be manufactured, identified, and installed in accordance with the manufacturer’s published installation instructions and this report. A copy of the instructions shall be available at the job site continuously during installation. If there is a conflict between this report and the manufacturer’s published installation instructions, the more restrictive prevails.

2.2 Calculations showing compliance with this report shall be submitted to the building official. The calculations shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

2.3 The Hardy Tie Back Devices and Hardy Tie Back Saddles shall be designed for installation on a specific building roof framing system by a registered design professional and approved by the building official.

2.4 Connected wood members and fasteners shall comply, respectively, with Sections 4.2.2 and 4.2.3 of this report.

2.5 The Hardy Tie Back Devices and Hardy Tie Back Saddles shall not be used simultaneously for two different setups.

2.6 Each Hardy Tie Back Device and Hardy Tie Back Saddle shall be designed to support one worker only.

2.7 Use of Hardy Tie Back Devices and Hardy Tie Back Saddles with fire-retardant-treated or preservative-treated lumber shall be in accordance with Section 4.2.1 of this report. Use of fasteners with fire-retardant-treated or preservative-treated lumber shall be in accordance with Section 4.2.3 of this report.

2.8 The Hardy Tie Back Devices and Hardy Tie Back Saddles are fabricated in Santa Ana, California.

3.0 PRODUCT USE

3.1 General: The Hardy Tie Back Devices and Hardy Tie Back Saddles are roof tie backs for anchoring workers or suspended scaffolding when access to a building exterior façade is necessary or required for maintenance. Buildings constructed three stories or 36 feet (10.9 m) or more in height above grade plane shall have eyebolts installed at the roof level for securing or tying back suspended scaffold hooks or clamps and safety lines. Each system consists of the device and fasteners. The device is fastened to wood members. Fasteners include screws or bolts placed through the device holes into the supporting structure.

3.2 Design:

3.2.1 Capacity: When installed in accordance with this report, the Hardy Tie Back Devices and Hardy Tie Back Saddles achieve a 5,000-pound (22.2 kN) peak load without permanent deformation, in the vertical and horizontal directions. This result complies with ANSI/International Window Cleaning Association (IWCA) I-14.1-2001, Window Cleaning Safety Section 9.1 and the California Code of Regulations Title 8, Chapter 4, Subchapter 7, Article 5, Section 3291 (f) (2) (C).

3.2.2 Allowable Stress Design (ASD): In compliance with 2021 IBC Section 1607.11.4, 2018 IBC Section 1607.10.4, 2015 IBC Section 1607.9.4, and Section 4.6.5 of ASCE 7-16, the ASD level strength for the Hardy Tie Back Device and Hardy Tie Back Saddle is 3,100 pounds (13.8 kN) maximum in the horizontal and vertical directions. The eyebolt shall be

The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provision of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with IBC Section 104.11. This document shall only be reproduced in its entirety.





oriented parallel or perpendicular to the horizontal load. When placed on and fastened to the structural supports, the device shall be designed to develop the 3,100 pounds (13.8 kN) ASD strength. Fastening to wood is based on $C_D = 1.5$ for a 30-minute duration of load as recommended by US Occupational Safety and Health Administration (OSHA), in accordance with the ANSI/AWC NDS. The design shall comply with IBC Chapter 23 and ANSI/AWC NDS.

3.3 Installation:

3.3.1 General: The Hardy Tie Back Devices and Hardy Tie Back Saddles shall be installed in accordance with this report, the IBC or IRC, ANSI/IWCA I-14.1-2001, and the manufacturer's installation instructions. Where conflicts occur, the more restrictive shall govern. Installation shall be performed only by qualified installers approved by Hardy Fall Protection Systems, Inc. The eyelet shall be oriented to be perpendicular to the structural framing and parallel to blocking framing. The Hardy Tie Back Devices and Hardy Tie Back Saddles shall be placed a minimum of six feet (1829 mm) from the edge of the roof to minimize the angle on the device except as otherwise determined by a registered design professional. In addition, placing the device at the center of the roof allows it to be used from each side of the roof. The Hardy Tie Back (HTB) devices are available with post heights from 4 inches (102 mm) to 32 inches (813 mm). The installation requirements for intermediate post heights shall be based on the next highest post height shown in Table 1 of this report.

3.3.2 Existing Construction: Existing wood framing and decking shall be repaired or replaced if damaged. Where portions of the roofing are altered to allow installation of the Hardy Tie Back Devices or Hardy Tie Back Saddles, these areas shall be repaired. Wood species and grade shall be verified as complying with provisions in Section 4.2.2 and Table 1 or Table 2 of this report.

3.3.3 Fastening: The Hardy Tie Back Device and Hardy Tie Back Saddle shall be fastened either by screws or bolts directly to the supporting wood framing. Table 1 or Table 2 of this report provides fastening to wood framing schedule. Fastener installation shall conform to Section 11.1 of the ANSI/AWC National Design Specification for Wood Construction (NDS) and, as applicable, the evaluation report for the fastener.

3.3.4 Periodic Inspection and Testing: Where required in accordance with California Code of Regulations, Title 8, Chapter 4, Article 6, Section 3296(b) or as required by the building official or structural designer, a program for annual inspection and on-site proof loading shall be prepared and conform to the following minimum requirements:

1. Frequency of inspection and proof loading;
2. Proof test procedures shall be prescribed by a registered design professional;
3. Proof tests shall be performed by an approved agency under the direction of the registered design

professional;

4. Proof loads shall be no more than 50 percent of the rated capacity;
5. Proof loads shall be in both vertical and horizontal directions;
6. A certification record shall be kept for each inspection and test;
7. In the event of failure to achieve proof load, the device shall be removed from service.

4.0 PRODUCT DESCRIPTION

4.1 General: The Hardy Tie Back Devices (HTB) described in this report are available as five different types. The Hardy Tie Back Saddles (HTB-S) described in this report are available as three different types.

4.1.1 HTB-16: The HTB-16 Hardy Tie Back Device is depicted in Figure 1 of this report.

4.1.2 HTB-24: The HTB-24 Hardy Tie Back Device is depicted in Figure 2A of this report.

4.1.3 HTB-24 New: The HTB-24 New Hardy Tie Back Device is depicted in Figure 2B of this report.

4.1.4 HTB T24: The HTB-T24 Hardy Tie Back Device is depicted in Figure 2C of this report.

4.1.5 HTB-32: The HTB-32 Hardy Tie Back Device is depicted in Figure 3 of this report.

4.1.6 HTB-S12: The HTB-S12 Hardy Tie Back Saddle is depicted in Figure 4 of this report.

4.1.7 HTB-S18: The HTB-S18 Hardy Tie Back Saddle is depicted in Figure 5 of this report.

4.1.8 HTB-S24: The HTB-S24 Hardy Tie Back Saddle is depicted in Figure 6 of this report.

4.2 Materials

4.2.1 Steel: The HTB-16, HTB-24, HTB-24 New, and HTB-T24 Hardy Tie Back Devices, and the HTB-S12, HTB-S18 and HTB-S24 Hardy Tie Back Saddles described in this report are manufactured from plain steel plates complying with ASTM A36, and plain steel extra strong pipe complying with ASTM A53.

The HTB32 Hardy Tie Back Device described in this report is manufactured from plain steel plates complying with ASTM A36, and round HSS tube plain complying with ASTM A500.

The assemblages are provided with a batch hot-dipped galvanized coating in accordance with ASTM A123, with a minimum G60 coating total for both sides for the exposed post, pipe, eye bolt, and cap plate components. Alternatively,



a powder coating system may be provided, subject to the approval of the building official. The unexposed plates and skirts are provided with a paint system.

The holder of this report (Hardy Fall Protection Systems, Inc.) or lumber treater shall be contacted for recommendations on minimum corrosion resistance of steel in contact with specific proprietary preservative-treated or fire-retardant-treated lumber.

4.2.2 Wood: Wood members to which the Hardy Tie Back Devices and Hardy Tie Back Saddles are connected shall be either sawn lumber or engineered lumber complying with ANSI/AWC National Design Specification for Wood Construction and its Supplement (NDS). Sawn Lumber shall be minimum 0.42 specific gravity and engineered lumber shall be of equivalent specific gravity for bolting or 0.50 for SDS screws. Lumber receiving screws or bolts shall be a minimum 4 by 10. The thickness (depth) of the wood main member shall be equal to or greater than the length of the fasteners specified by the calculations unless the reduced penetration effect on the load calculation per the NDS is taken into account, or as required by wood member design, whichever is greater.

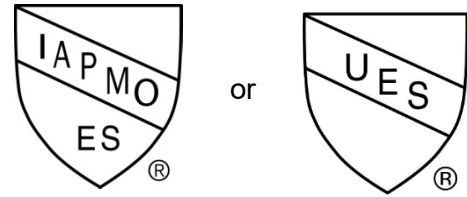
4.2.3 Fasteners: SDS screws shall comply with ICC-ES ESR-2236.

Bolts shall comply with ANSI/ASME B18.2.1 and ASTM A307 when used with the Hardy Roof Tie Back System described in this report and shall have a 7/8 inch (22.2 mm) shank diameter.

Fasteners used in contact with fire-retardant-treated or preservative-treated lumber shall comply with 2021 IBC Section 2304.10.6, 2018 or 2015 IBC Section 2304.10.5, 2012 IBC Section 2304.9.5, or IRC Section R317.3, as applicable. The report holder or lumber treater shall be contacted for recommendations on minimum corrosion resistance and connection capacities of fasteners used with the specific proprietary preservative-treated or fire-retardant-treated lumber.

5.0 IDENTIFICATION

The Hardy Tie Back Devices and Hardy Tie Back Saddles are color-coded according to height and identified by the Hardy Fall Protection Systems, Inc. name and trademark, product name, the quantity of bolts and screws, and the evaluation report number (ER-461). In addition to the above, each unit will be labeled with the serialized label that will also include the IAPMO ER-461 evaluation report number. The Hardy Tie Back Devices and Hardy Tie Back Saddles identification shall also include the IAPMO Uniform Evaluation Service Mark of Conformity. Either Mark of Conformity may be used as follows:



IAPMO UES ER-461

6.0 SUBSTANTIATING DATA

6.1 Manufacturer's descriptive literature and installation instructions.

6.2 Reports of physical and mechanical property testing.

6.3 Reports of load tests.

6.4 Test reports are from laboratories in compliance with ISO/IEC 17025.

6.5 Engineering calculations.

6.6 Quality documentation.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on the Hardy Tie Back Devices and Hardy Tie Back Saddles to assess their conformance to the codes shown in Section 1.0 of this report and documents the product's certification. Products are manufactured at the location noted in Section 2.8 of this report under a quality control program with periodic inspections under the surveillance of IAPMO UES.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org



Table 1 HTB– Fastening Requirements¹

Device	Fastener	Fastener Diameter (inch)	Minimum Fastener Length ²	No. of Fasteners per opposing skirt (total)	Minimum wood member size (nominal)	Minimum Lumber Specific Gravity	Minimum Edge Distance (inch) ^{3,5}	Minimum End Distance (inch) ^{3,4,6}	
								⊥	∥
HTB-16	Bolt ⁷	¾	Footnote 2	2(4)	4 by 10 or 2- 2 by 10	0.42	2018 and 2015 NDS Table 12.5.1C	2018 and 2015 NDS Table 12.5.1A	2018 and 2015 NDS Table 12.5.1A
	SDS Screw ⁸	0.185	3	6 (12)	4 by 10 or 2- 2 by 10	0.50	1½	3	4
HTB-24	Bolt ⁷	¾	Footnote 2	4 (8)	4 by 10 or 2- 2 by 10	0.42	2018 and 2015 NDS Table 12.5.1C	2018 and 2015 NDS Table 12.5.1A	2018 and 2015 NDS Table 12.5.1A
	SDS Screw ⁸	0.185	3	8 (16)	4 by 10 or 2- 2 by 10	0.50	1½	3	4
HTB-24NEW	SDS Screw ⁸	0.185	3	20 (40)	4 by 10 or 2- 2 by 10	0.50	1½	3	4
HTB-T24	SDS Screw ⁸	0.185	3	20 (40)	4 by 10 or 2- 2 by 10	0.50	1½	3	4
HTB-32	Bolt ⁷	¾	Footnote 2	4(8)	4 by 10 or 2- 2 by 10	0.42	2018 and 2015 NDS Table 12.5.1C	2018 and 2015 NDS Table 12.5.1A	2018 and 2015 NDS Table 12.5.1A
	SDS Screw ⁸	0.185	3	10 (20)	4 by 10 or 2- 2 by 10	0.50	1½	3	4

For SI: 1 inch = 25.4 mm

- HTB Devices shall be placed between structural framing with eyelet oriented perpendicular and fastened to the framing through the skirt. Wood blocking shall be installed perpendicular to the structural framing adjacent to the device (Figures 1, 2, and 3 of this report).
- Bolts shall be long enough for a minimum thread protrusion of one full thread beyond the face of the nut.
- Edge distances and end distances may need to be increased, as applicable, to prevent wood splitting.
- End distance is for loading perpendicular to grain (⊥) or parallel to grain (∥).
- Minimum bolt edge distance shall comply with Table 11.5.1C of the 2012 NDS as applicable.
- Minimum bolt end distance for loading perpendicular to grain (⊥) or parallel to grain (∥) shall comply with Table 11.5.1A of the NDS, as applicable.
- Bolted connection only resists the 3,100 pounds (13.8 kN) ASD strength as referenced in Section 3.2.2 of this report
- SDS screw connection only resists the 3,100 pounds (13.8 kN) ASD strength as referenced in Section 3.2.2 of this report

Table 2 HTB-S– Fastening Requirements¹

Device	Fastener	Fastener Diameter (inch)	Minimum Fastener Length (inch)	No. of Fasteners per opposing skirt (total)	Minimum wood member size (nominal) ⁵	Minimum Lumber Specific Gravity	Minimum Edge Distance (inch) ²	Minimum End Distance ^{2,3}	
								⊥	∥
HTB-S12	SDS Screw ⁴	0.185	2 ½	16 (32)	6 by 10	0.50	1½	3	4
HTB-S18	SDS Screw ⁴	0.185	2 ½	20 (40)	6 by 10	0.50	1½	3	4
HTB-S24	SDS Screw ⁴	0.185	2 ½	26 (52)	6 by 10	0.50	1½	3	4

For SI: 1 inch = 25.4 mm

- HTB-S Saddles shall be placed upon a 6x10 minimum structural framing with eyelet oriented perpendicular or parallel and fastened to the framing through the saddle. Wood blocking shall be installed adjacent to the structural framing adjacent to the device. Wood blocking shall be installed perpendicular to the structural framing (Figures 4, 5, and 6 of this report).
- Edge distances and end distances may need to be increased, as applicable, to prevent wood splitting.
- End distance is for loading perpendicular to grain (⊥) or parallel to grain (∥).
- SDS screw connection resists the 3,100 pounds (13.8 kN) ASD strength as referenced in Section 3.2.2 of this report.
- The saddles are available for wood beams from 5¼ to 12 inches wide.

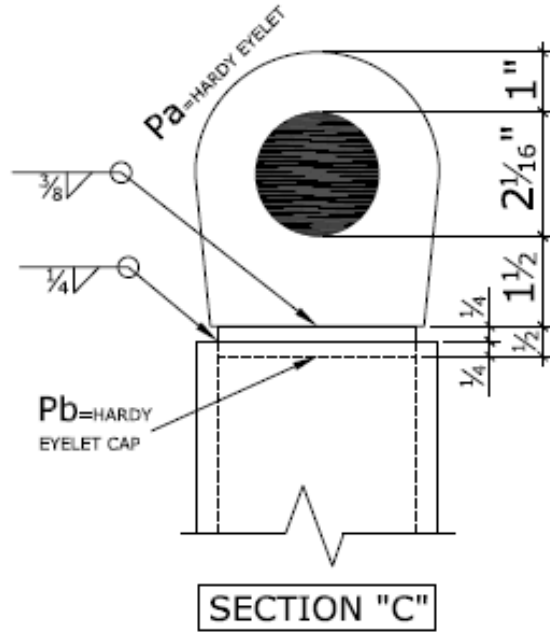
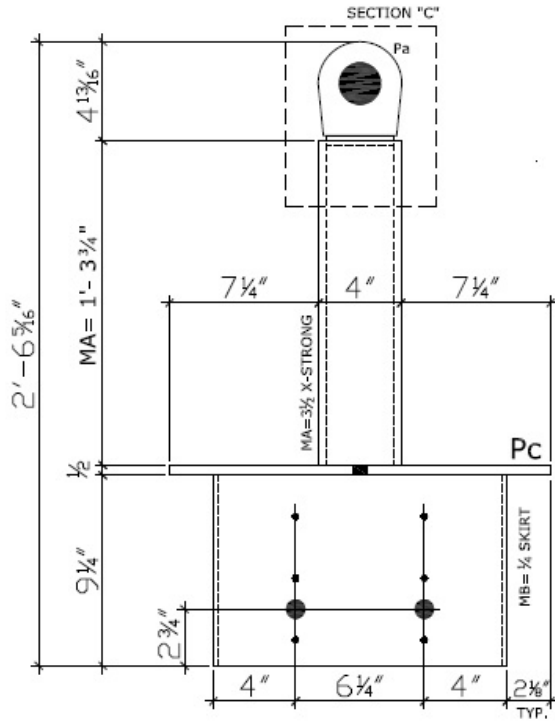


Figure 1—HTB-16 Device

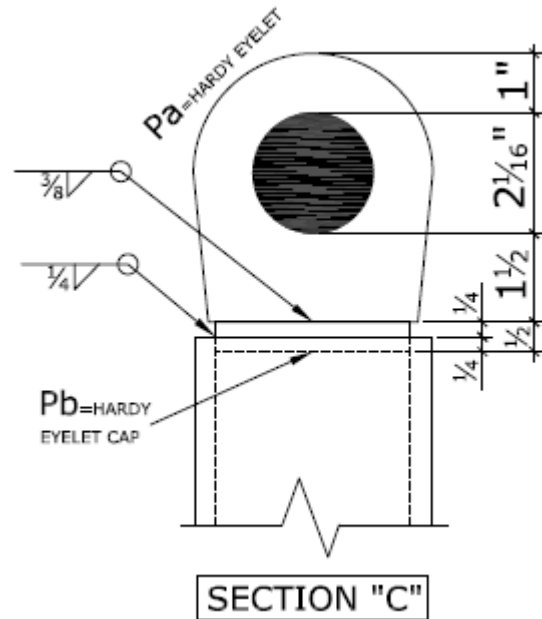
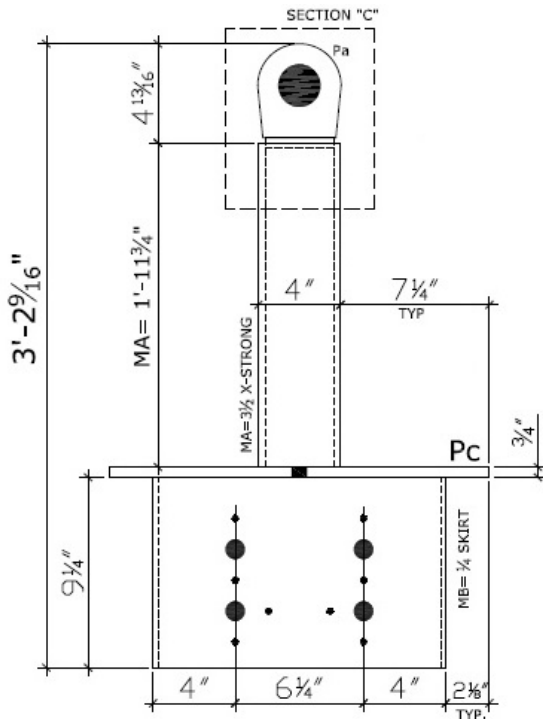


Figure 2A—HTB-24 Device

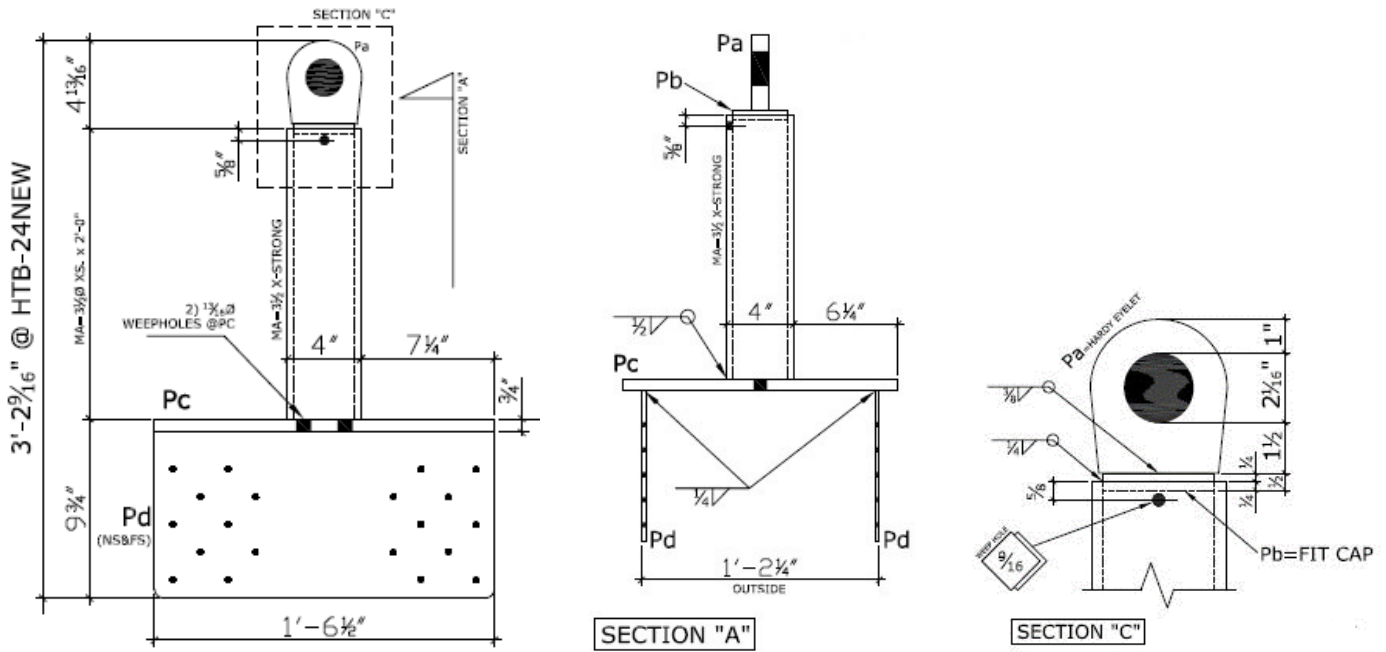


Figure 2B—HTB-24 New Device

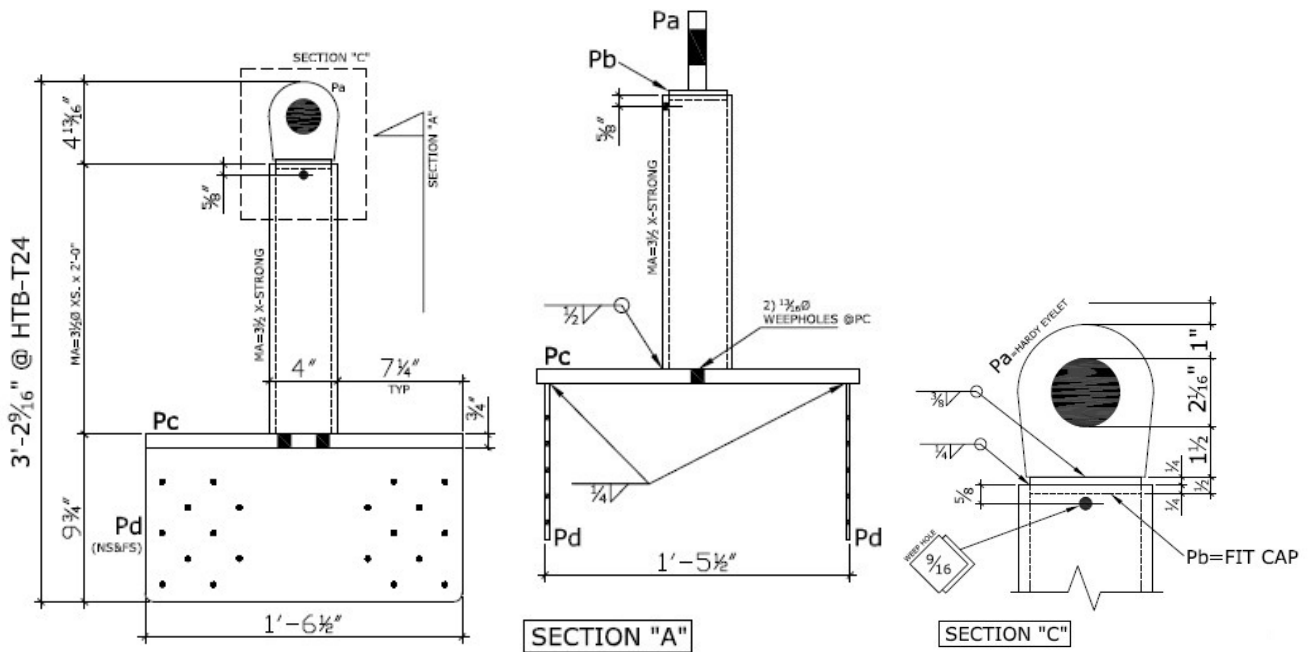


Figure 2C—HTB-T24 Device

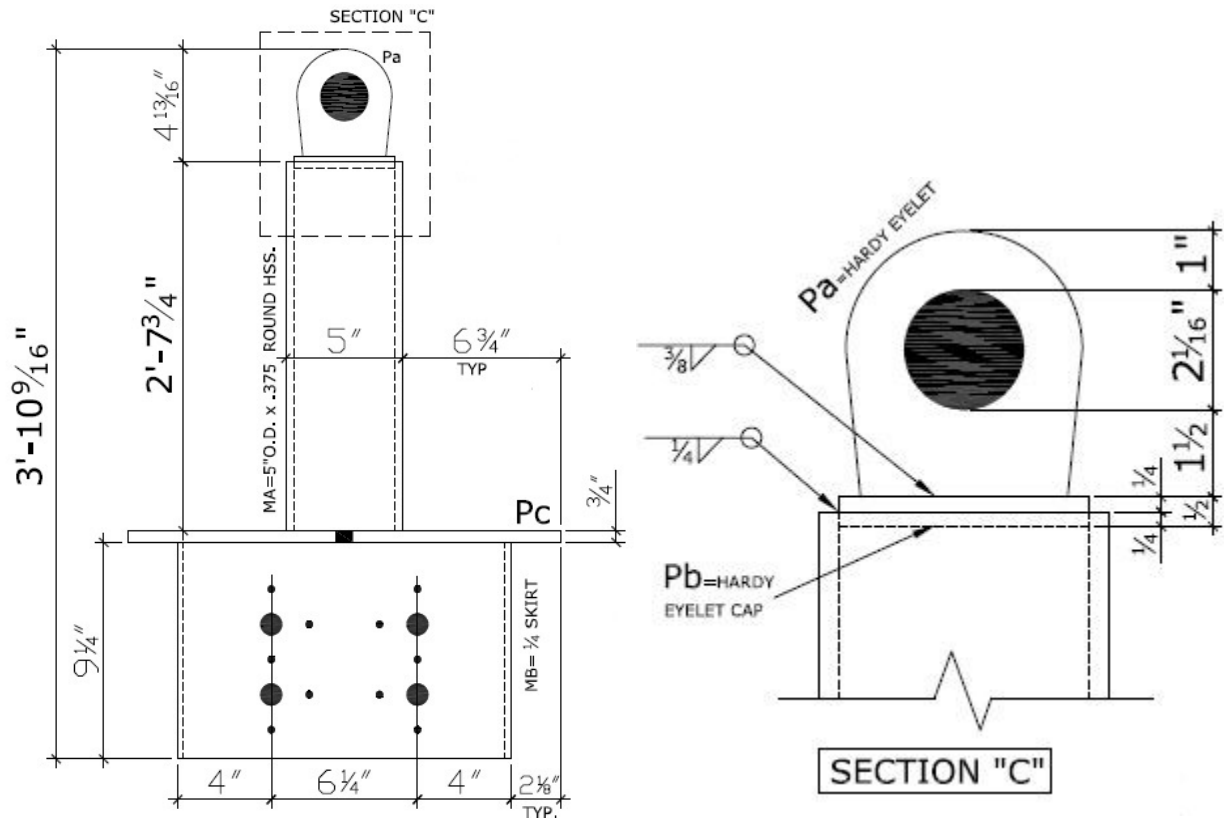


Figure 3—HTB-32 Device

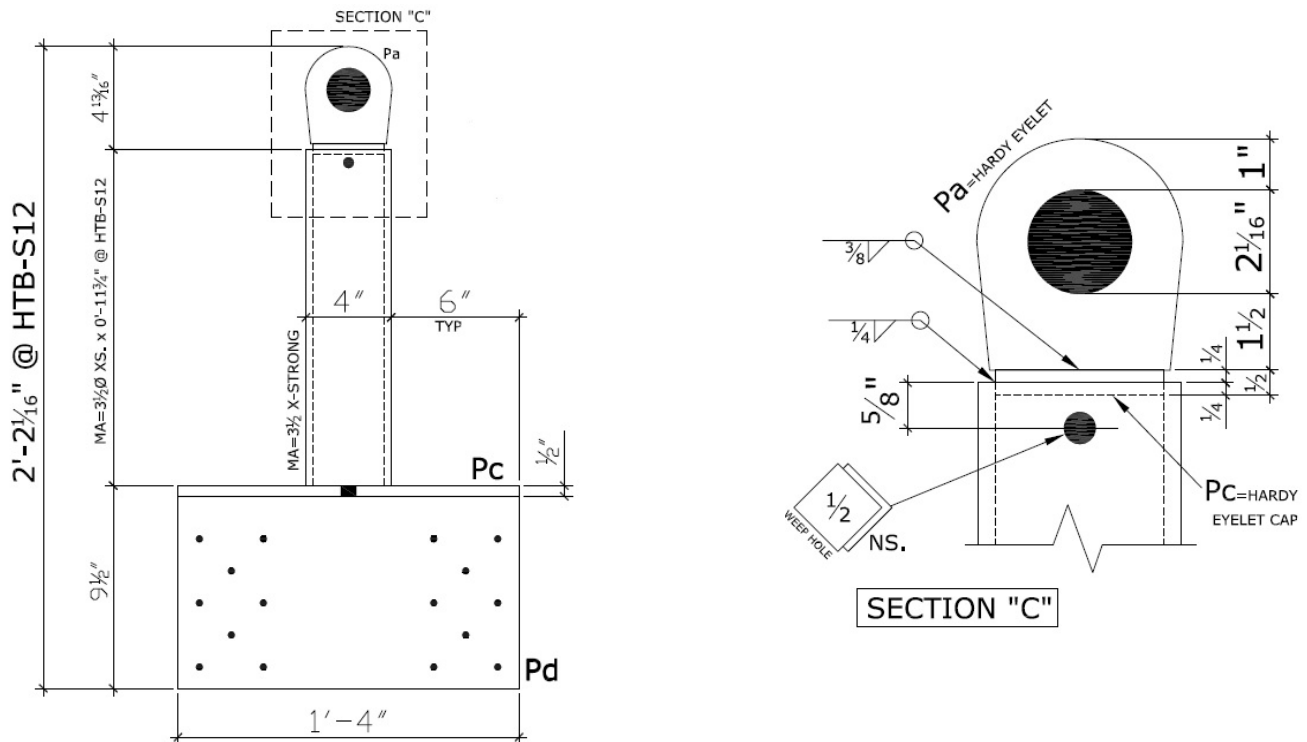


Figure 4—HTB-S12 Saddle

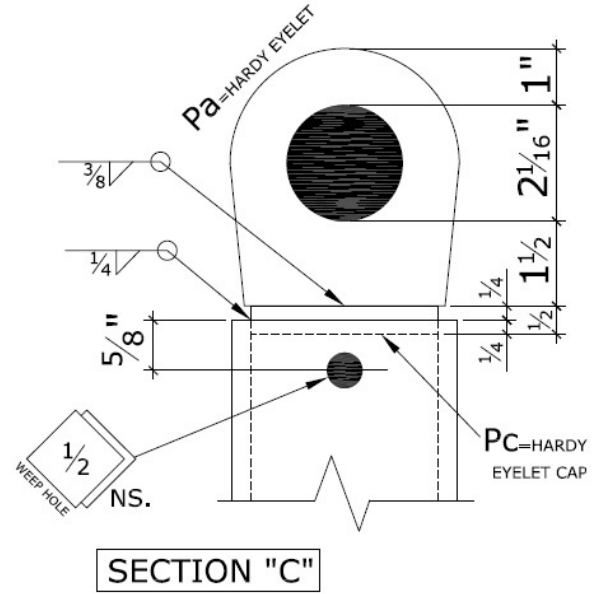
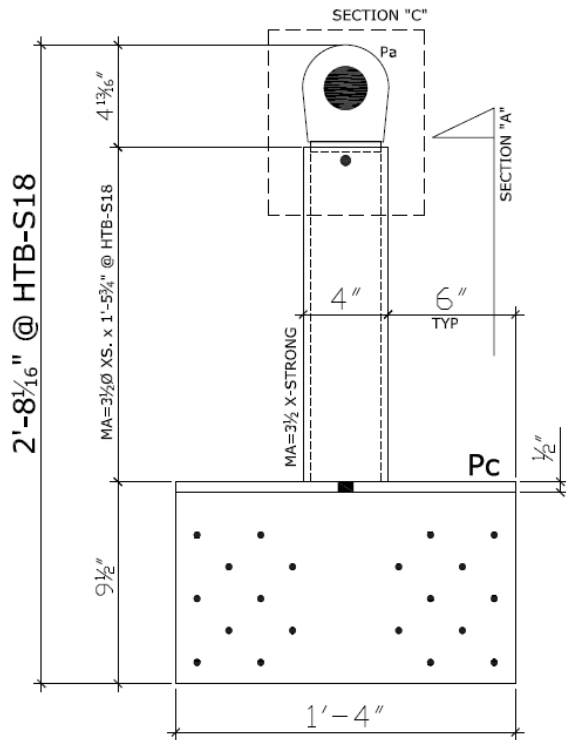


Figure 5—HTB-S18 Saddle

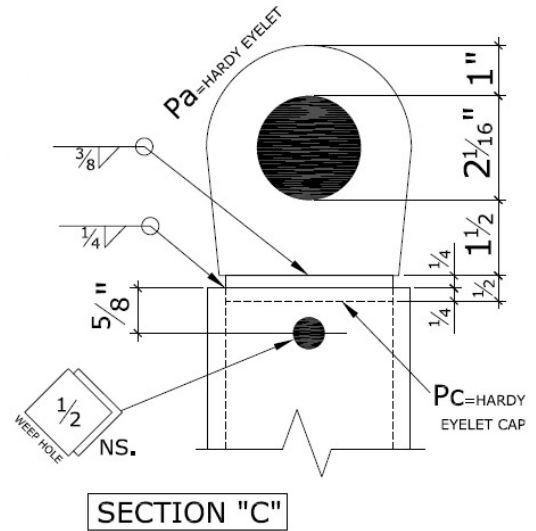
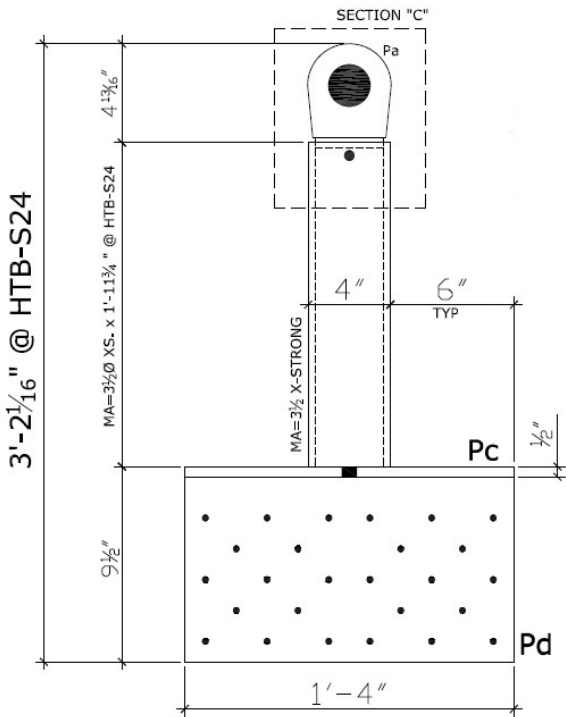


Figure 6—HTB-S24 Saddle



CITY OF LOS ANGELES SUPPLEMENT

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1.0 RECOGNITION

The Hardy Fall Protection Systems, Inc. Hardy Tie Back Systems recognized in ER-461 and this supplement have been evaluated for use as roof level tie back systems. The structural and durability properties of the Hardy Tie Back Systems comply with the intent of the provisions of the following codes and regulations:

- 2020 City of Los Angeles Building Code (LABC) – Supplement to this evaluation report
- 2020 City of Los Angeles Residential Code (LARC) – Supplement to this evaluation report

2.0 LIMITATIONS

Use of the Hardy Roof Tie Back Systems recognized in this report are subject to the following limitations:

2.1 Hardy Roof Tie Back Systems shall comply with the provisions in IAPMO UES ER-461.

2.2 Computations and details shall be submitted to the Department of Building and Safety for approval. In accordance with LABC Section 106.3.3.2, computations and drawings shall be prepared and stamped by an engineer or architect licensed by the State of California for the type of service performed except as otherwise permitted by the Department of Building and Safety.

2.3 This supplement expires concurrently with ER-461.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org



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