

Technical Evaluation Report

DIVISION: 05 00 00—METALS, SECTION: 05-05-23 METAL FASTENINGS

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(Subject to Renew January 1, 2024 or next code cycle)

EVALUATION SUBJECT: 4" POST TO BEAM CONNECTOR (ITEM NO. 51775)

TER-22-50066

REPORT HOLDER:The Hillman Group, Inc.
10590 Hamilton Ave.
Cincinnati, OH 45231
www.hillmangroup.com**NOTE: THE GRAPHICAL DEPICTIONS IN THIS REPORT ARE FOR ILLUSTRATIVE PURPOSES ONLY AND MAY DIFFER IN APPEARANCE.****SCOPE OF EVALUATION (compliance with the following codes):****THIS IS A STRUCTURAL (WIND) PERFORMANCE EVALUATION ONLY. NO ELECTRICAL OR TEMPERATURE PERFORMANCE RATINGS OR CERTIFICATIONS ARE OFFERED OR IMPLIED HEREIN.**

This Product Evaluation Report is being issued in accordance with the requirements of the *International Building & Residential Codes (2012, 2015, & 2018), *California Building & Residential Codes (2019), & the *Florida Building Code Seventh Edition (2020) per FBC/IBC Section 104.11, FBC/IBC Building Ch. 16 and ASCE 7. The product noted on this report has been tested and/or evaluated as summarized herein.

IN ACCORDANCE WITH THESE CODES EACH OF THESE REPORTS MUST BEAR THE ORIGINAL SIGNATURE & RAISED SEAL OR DIGITAL SEAL OF THE EVALUATING ENGINEER.**SUBSTANTIATING DATA:****• Product Evaluation Documents**

Substantiating documentation has been submitted to provide this TER and is summarized in the sections below.

• Structural Engineering Calculations

Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

- Max. allowable load rating

Calculation summary is included in this TER and appears herein. NOTE: No 33% increase in allowable stress has been used in the design of this product.

LIMITATIONS & CONDITIONS OF USE:

Use of the product(s) listed herein shall be in strict accordance with this TER as noted herein and manufacturer-provided model specifications. Installation shall conform to the minimum standards stated in the referenced building code(s) in addition to the specifications and limitations stated herein. See herein for complete limitations & conditions of use.

OPTIONS:

This evaluation is valid for all applications that appear in the design schedule(s) of this report. Any structural changes outside of the design as described herein would void this certification.

UNIT MATERIAL:

Powder-coated ASTM A653 GR. 33 or stronger galv. steel (YS = 33 ksi min. & UTS = 45 ksi min.), 11 GA. (0.12") min. thick. See "Product Dimensions" section herein for sizing. See "Design Schedule" & Notes herein for fastener information. Contact Report Holder for further unit construction information.

TERMINOLOGY:

See herein for definitions of terms and abbreviations used in this report.

STRUCTURAL PERFORMANCE:

Models referenced herein are subject to the following design limitations:

**Maximum Rated Design Loads:
SEE DESIGN SCHEDULES**

- Required design loadings shall be determined separately in accordance with applicable sections of the building code(s).
- Required design loadings shall be less than or equal to the maximum allowable (ASD) loadings listed herein.
- Valid for use inside and outside the High-Velocity Hurricane Zone (HVHZ).

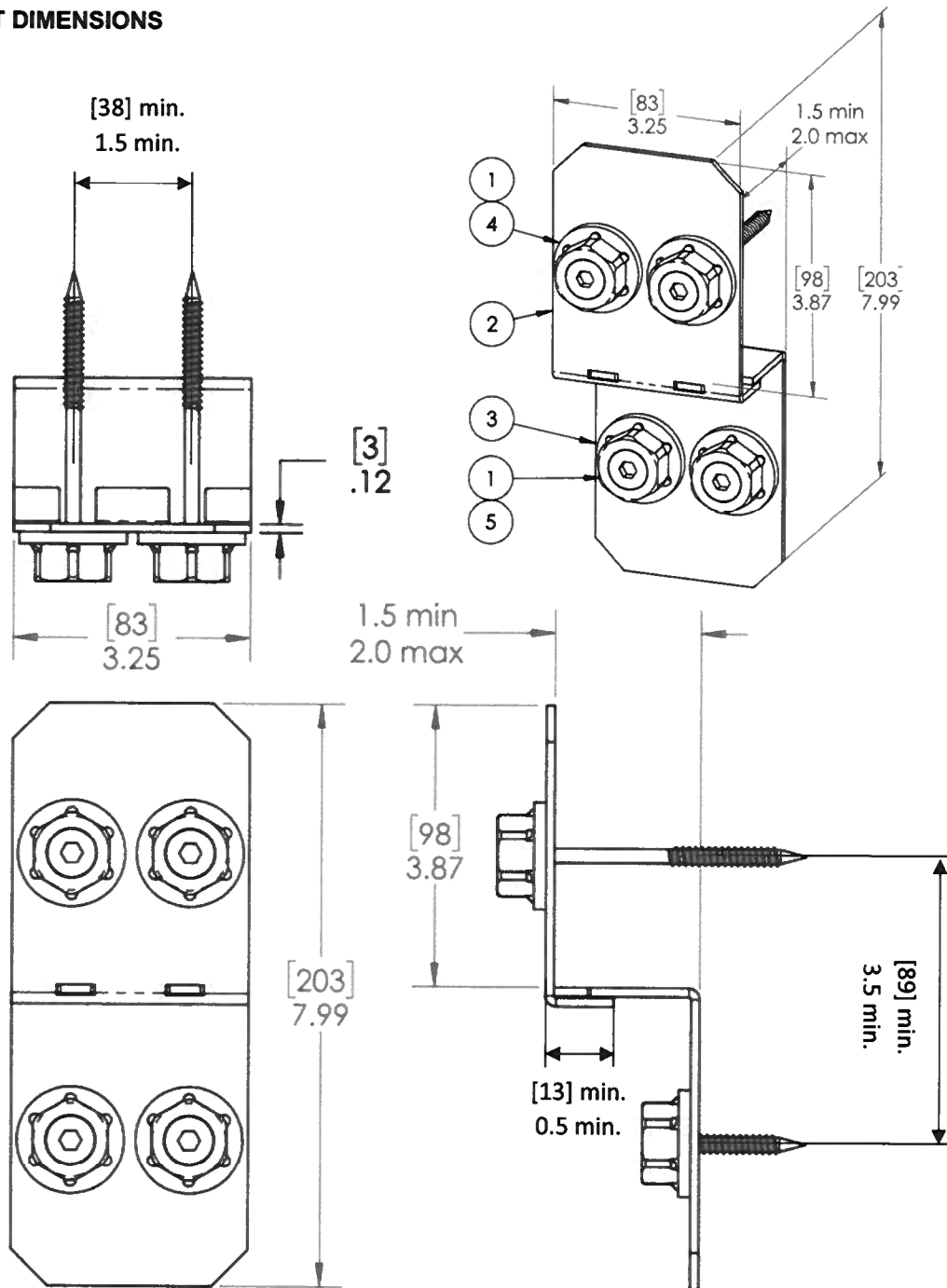
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July 8, 2022

Richard Neet, P.E.
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PRODUCT DIMENSIONS



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	8	56621	1 1/2" Hex Cap Nut (HCN)
2	2	51775-12	Plate, 4" Post to Beam (P2B-IW-4)
3	2	51775-11	Ledge, 4" Post to Beam (P2B-IW-4)
4	4	56627	OWT Timber Screw 3-3/4"
5	4	56625	OWT Timber Screw 1-3/4"

ALL DIMENSIONS ARE LISTED IN THE FOLLOWING FORMAT: [MILLIMETERS] INCHES

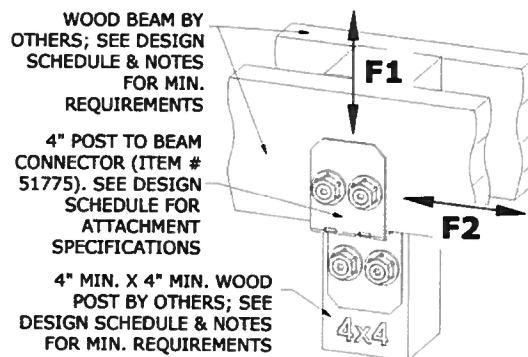
DESIGN SCHEDULE

Fastener Specifications	Beam Size	Post Size	Wood Type (Specific Gravity)	Maximum (ASD) Design Load Capacity	
				F1	F2
(2) 1/4" x 3-3/4" OWT Timber Screws (Item # 56627) per Plate through beam and into post, and (2) 1/4" x 3-3/4" OWT Timber Screws (Item # 56625) per Ledge into post, (4) screws total per connector. Provide 1-1/2" OD Hex Cap Nut (Item # 56621) per screw, typ. Provide 1" min. end/edge distance from edges of wood beam and post for all screws. See "Product Dimensions" section herein for fastener positioning.	2" x 6" min.	4" min. x 4" min.	G=0.42	275 lb	520 lb
			G=0.55	354 lb	708 lb

DESIGN SCHEDULE NOTES:

- Maximum design connection loads were calculated per the American Wood Council National Design Specification (NDS) version as referenced in the approved FBC/IBC codes listed herein. Wood design parameters used in the calculations in this schedule are listed below:

- Load Scenario = Single Shear or Withdrawal
- Load Duration Factor = 0.90
- Wet Service Factor = 1.0
- Temperature Factor = 1.0
- Group Action Factor = 1.0
- Geometric Factor = 1.0
- Direction Of Load to Grain = 0 Deg. (End Grain Factor = 1.0)

DESIGN SCHEDULE DIAGRAM
(ISOMETRIC VIEW)

- The maximum design connection loads were calculated for connections into wood under dry conditions, with moisture content equal to or less than 19%, and where sustained temperatures are 100°F (37.8°C) or less. The allowable loads must be adjusted by the applicable factors for wet service conditions and higher temperatures in accordance with the NDS and are not included in this certification. The maximum design loads listed may be adjusted for alternate wood design parameters by contacting Engineering Express for additional engineering or by obtaining separate certification from a registered Professional Engineer.
- Each load capacity listed in the Design Schedule table above considers the respective load acting on the system by itself, not simultaneously with loading in other directions. Combining simultaneous loading in multiple directions using a unity equation is recommended for final connection capacity, as determined separately by a registered Professional Engineer.
- This connector is intended for use as shown in the design schedule, for tension and shear loading only. This schedule is not certified for any additional moment, torsion, or any other loads not described.
- Position connector on post such that the edges of the bracket are 1/8" minimum away from the edges of the post, typ. Center connector on post width wherever feasible. Position connector low enough from the top of the post to provide the top plate screws the required 1" min. end/edge distance. Beam shall be flush against post, and connector flush against both beam and post.
- Two connectors may be used on opposite ends of the post as shown in the Design Schedule diagram; in such configurations, stagger the connectors such that the wood screws do not interfere with each other from opposite ends. Ensure minimum end/edge distance requirements are met. Capacities listed in the Design Schedule are per connector.
- This schedule does not certify the integrity of any wood member (connection capacity only). All wood members shall be calculated and certified separately for maximum allowable member loads. If allowable member load is calculated to be less than the value listed in this schedule, the lesser value shall be used for maximum design load.
- Member types listed are nominal values. Actual member thickness was considered as (nominal thickness) - 1/2". Example: "2x" = 1.5" actual thickness.
- Minimum thread penetration for wood screws = actual member thickness - 3/8" (screw penetration does not include wood finishes).
- For wood types with specific gravities greater than G=0.55, use the G=0.55 tier for capacity. For wood types less than G=0.55 but greater than G=0.42, use the G=0.42 tier. Wood types with specific gravities less than 0.42 are not approved in this document.
- The effects on strength of lumber from new preservative treatments or fire-retardant treatments other than those specified under the NDS are not included in the scope of this report and certification, and shall be considered separately.
- All wood screws shall have a minimum bending yield stress (Fyb) of 70 ksi.
- This product is not designed for welded or nailer applications.

IN ALL CONDITIONS IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO ENSURE THE HOST STRUCTURE IS CAPABLE OF WITHSTANDING THE RATED GRAVITY, LATERAL, AND UPLIFT FORCES BY SITE-SPECIFIC DESIGN. NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS OFFERED BY ENGINEERING EXPRESS AS TO THE INTEGRITY OF THE HOST STRUCTURE TO CARRY DESIGN FORCE LOADS INCURRED BY THIS UNIT.

TERMINOLOGY, CONTINUED

The following abbreviations may appear in this report: "Addtl." for "additional", "AHJ" for "Authority Having Jurisdiction", "alum" for "aluminum", "ASCE" for "American Society of Civil Engineers", "ASD" for "Allowable Stress Design", "ASTM" for "American Society for Testing and Materials", "EA." for "each", "E.D." for "edge distance", "EDDS" for "extra deep drawing steel", "e.g." for "*exempli gratia*" or "for example", "equiv." for "equivalent", "FBC" for "Florida Building Code", "FEA" for "Finite Element Analysis", "FLCA" for "Florida Certificate of Authorization", "FS" for "Florida Statutes", "Fu" for "ultimate tensile strength" or "ultimate tensile stress", "Fy" for "yield strength" or "yield stress", "GA" or "GA." for "gauge", "GR." or "Gr." for "grade", "HVAC" for "heating, ventilation, and air conditioning", "HVHZ" for "High-Velocity Hurricane Zone", "i.e." for "*id est*" or "in other words", "in" for "inch", "lb" for "pound (force)", "max." for "maximum", "min." for "minimum", "mm" for "millimeter", "NTS" for "not to scale", "O.C." for "on center", "OD" for "outer diameter", "PE" for "Professional Engineer", "qty" for "quantity", "RTU" for "rooftop unit", "SAE" for "Society of Automotive Engineering", "SDS" for "self-drilling screws", "SMS" for "sheet metal screws", "SS" for "stainless steel", "TER" for "Technical Evaluation Report", "typ." for "typical", "U.N.O." for "unless noted otherwise", "UTS" for "ultimate tensile strength" or "ultimate tensile stress", "WLL" for "working load limit", "w/o" for "without", "YS" for "yield strength" or "yield stress", "#" for "number", "&" for "and", and "Ø" for "diameter". For additional abbreviation/terminology clarifications, please contact this office.

LIMITATIONS & CONDITIONS OF USE, CONTINUED:

Use of this product shall be in strict accordance with this TER as noted herein. The supporting host structure shall be designed to resist all superimposed loads as determined by others on a site-specific basis as may be required by the Authority Having Jurisdiction. Host structure conditions which are not accounted for in this product's respective anchor schedule shall be designed on a site-specific basis by a registered professional engineer. No evaluation is offered for the host supporting structure by use of this document; Adjustment factors noted herein and the applicable codes must be considered, where applicable. All components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times. The installer is responsible for the protection of dissimilar materials in contact. Product components shall be of the material(s) specified in the manufacturer-provided product specifications.

Fasteners, including washers, shall be rated for use in exterior conditions and in contact with preservative-treated wood, or, for fire-retardant-treated wood, shall be either hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Wood screws are permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum. All fasteners shall be installed in accordance with the applicable provisions in the NDS and as specified herein, in addition to the fastener manufacturers' published installation instructions. Fasteners must penetrate the supporting members such that the full length of the threaded portion is embedded within the main member. Use all specified fasteners. The assembly kit includes fasteners for uniform finishing. See Design Schedule notes.

The connector itself is composed of two components: plate and ledge. Follow all manufacturer's instructions in assembling the connector and ensure the ledge tabs are fully engaged with the plate. Ensure the ledge is attached to the post and that the plate is attached to the beam as shown herein.

This product has not been evaluated for bending or torsion and is thus not permitted for use as a moment connection by this evaluation. For these certifications, contact Engineering Express for further evaluation or seek additional engineering by a registered Professional Engineer.

*NOTE: State-specific building and/or residential codes referenced herein apply only when this evaluation report bears the Certifying Engineer's license information and digital or raised seal corresponding to the state in question. The Certifying Engineer shall verify that this evaluation complies with the state-specific code requirements.

This evaluation does not offer any certification to meet large missile impact debris requirements which typically are not required for this type of product. Contact Engineering Express for any reevaluation needs as designated by the Authority Having Jurisdiction.

Proj. #	Remarks	By	Checked	Date	Proj. #	Remarks	By	Checked	Date
22-50066	Initial Issue	EPR, CDR	RWN	07/08/22					