

VINYLAST, INC. TEST REPORT

SCOPE OF WORK

ICC-ES AC174 COMPLIANCE EVALUATION ON POST BRACKET SYSTEM

REPORT NUMBER

N2703.01-119-16 R0

TEST DATE

04/21/22

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TEST REPORT FOR VINYLAST, INC.

Report No.: N2703.01-119-16 R0

Date: 05/24/22

REPORT ISSUED TO

VINYLAST, INC.

1830 Swarthmore Avenue

Lakewood, NJ 08701

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Vinylast, Inc. to perform testing in accordance with ICC-ES™ AC174 on their post bracket system. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at the Intertek Building & Construction (B&C) test facility in York, Pennsylvania where testing was completed.

Intertek B&C in York, Pennsylvania has demonstrated compliance with ISO/IEC International Standard 17025 and is consequently accredited as a Testing Laboratory (TL-144) by International Accreditation Service, Inc. (IAS). Intertek B&C is accredited to perform all testing reported herein.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained for the entire test record retention period.

For INTERTEK B&C:

COMPLETED BY:	Adam J. Schrum
TITLE:	Project Manager
SIGNATURE:	
DATE:	05/24/22

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SECTION 2

TEST METHODS

The specimens were evaluated in accordance with Section 5.1 of the following:

ICC-ES™ AC174 (approved January 2012, editorially revised April 2021), Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails)

ICC-ES™ AC174 was developed by the ICC Evaluation Service, Inc. (ICC-ES™) as acceptance criteria to evaluate compliance with the following building codes:

2021 *International Residential Code*®, International Code Council

The specimens were evaluated in accordance with the following:

ASTM D7032-10a, Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)

Limitations

All tests performed were to evaluate structural performance of the post mount assembly to carry and transfer imposed loads. The test specimen evaluated included the post mount and supporting wood structure.

Testing is limited to satisfying the IRC - One- and Two-Family Dwellings requirements of ICC-ES™ AC174.

SECTION 3

MATERIAL SOURCE

All materials utilized for testing reported herein were provided to Intertek B&C by Vinylast, Inc. and were not sampled or selected by an independent inspection agency.

Representative samples of the test specimens will be retained by Intertek B&C for a minimum of four years from the test completion date.

SECTION 4

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Steven Leary	Vinylast, Inc.
Travis A. Hoover	Intertek B&C

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SECTION 5

GENERAL DESCRIPTION

The steel post mount brackets are comprised of 0.060 in thick (16 gauge) steel plate bent and welded to accept a 4x4 (nominal) wood post and attach to a wood deck structure. Drawings are included in Section 9 to verify the overall dimensions and other pertinent information of the tested product, its components and any constructed assemblies.

Unless otherwise indicated, all testing reported herein was conducted in a laboratory set to maintain temperature in the range of 68 ± 4 °F and humidity in the range of 50 ± 5 % RH.

SECTION 6

STRUCTURAL PERFORMANCE TESTING OF POST BRACKET SYSTEM

General

Post mounts were mounted on a mock wood deck fabricated by Vinylast, Inc. Reference Component Descriptions and Fastening Schedule below along with Section 10, Installation Instructions for additional information. The specimen was loaded using an electric winch mounted to a rigid steel test frame. High strength steel cables, nylon straps, and load distribution beams were used to impose test loads on the specimen. Applied load was measured using an electronic load cell located in-line with the loading system. Deflections were measured to the nearest 0.01 in using electronic linear displacement transducers.

Component Descriptions

Post Bracket	0.060 in thick (16 gauge) steel plate bent and welded to accept a 4x4 wood post
Support Post	Preservative treated Southern Yellow Pine 4x4
Mock Wood Deck	Preservative treated 2x8 joists at 16 in on-center, with 2x8 rim joist and 2x8 support block

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Fastening Schedule

CONNECTION	FASTENER
Rim Joist to Joist	Four #10-10 x 4" (0.126 in minor diameter) flat head, start drive, type 17 point, coated steel screws
Wood Support Block to Joist	Four #10-10 x 4" (0.126 in minor diameter) flat head, start drive, type 17 point, coated steel screws
Post Bracket Top Tab to Rim Joist	Two #9-11 x 2" (0.118 in minor diameter) flat head, start drive, type 17 point, coated steel screws
Post Bracket Top Tab to Support Block	Two #9-11 x 2" (0.118 in minor diameter) flat head, start drive, type 17 point, coated steel screws
Post Bracket Bottom Tab to Support Block	Two #9-11 x 2" (0.118 in minor diameter) flat head, start drive, type 17 point, coated steel screws
Rim Joist to Wood Post	Four #10-10 x 4" (0.126 in minor diameter) flat head, start drive, type 17 point, coated steel screws
Support Block to Wood Post	Two #10-10 x 4" (0.126 in minor diameter) flat head, start drive, type 17 point, coated steel screws

Test Setup

The post mount assembly was assembled and installed by an Intertek B&C technician by directly securing the mock wood deck to a rigid test frame, which rigidly restrained the wood deck. Transducers mounted to an independent reference frame were located to record movement of the post mount. See photographs in Section 8 for test setups.

Test Procedure

Testing and evaluation was performed in accordance with Section 5.1 of ICC-ES™ AC174. The test specimen was inspected prior to testing to verify size and general condition of the materials, assembly, and installation. No potentially compromising defects were observed. One specimen was used for all load tests which were performed in the order reported. Each design load test was performed using the following procedure:

1. Zeroed transducers and load cell at zero load; and
2. Increased load to specified test load in no less than ten seconds

Test Results

Unless otherwise noted, all loads and displacement measurements were normal to the post (horizontal). The test results apply to the post mount, its anchorage to the mock wood deck and the construction of the mock wood deck.

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Key to Test Results Tables:

Load Level: Target test load

Test Load: Actual applied load at the designated load level (target)

Elapsed Time (E.T.): The amount of time into the test with zero established at the beginning of the loading procedure

Test Series No. 1

Post Bracket System with Load Applied Parallel to Screw Install/Perpendicular to Rim Joist at 42 in from Deck Surface

IRC - Residential Use Only / ICC-ES™ AC174

Specimen No. 1

Test Date: 04/21/22

Design Load: 200 lb Concentrated Load on Top of a Single Post

LOAD LEVEL	TEST LOAD (lb)	E.T. (min:sec)	DISPLACEMENT (inches)
200 lb	203	00:31	1.82
500 lb (2.50 x D.L.)	500	01:30	Result: Withstood load equal to or greater than 500 lb without failure

Deflection Evaluation:

Maximum post deflection at 203 lb on a 42 in high post = 1.82 in

Limits per AC174 ¹:

$$\left(\frac{h}{12}\right) = \left(\frac{36}{12}\right) = 3.00" \geq 1.82" \therefore OK$$

¹ Deflection limit calculation based on worse case 36 in railing height to satisfy One- and Two-Family Dwelling requirements.

Specimen No. 2

Test Date: 04/21/22

Design Load: 200 lb Concentrated Load on Top of a Single Post

LOAD LEVEL	TEST LOAD (lb)	E.T. (min:sec)	DISPLACEMENT (inches)
200 lb	201	00:45	1.90
500 lb (2.50 x D.L.)	500	02:15	Result: Withstood load equal to or greater than 500 lb without failure

Deflection Evaluation:

Maximum post deflection at 201 lb on a 42 in high post = 1.90 in

Limits per AC174 ¹:

$$\left(\frac{h}{12}\right) = \left(\frac{36}{12}\right) = 3.00" \geq 1.90" \therefore OK$$

¹ Deflection limit calculation based on worse case 36 in railing height to satisfy One- and Two-Family Dwelling requirements.

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Date: 05/24/22

Specimen No. 3

Test Date: 04/21/22

Design Load: 200 lb Concentrated Load on Top of a Single Post

LOAD LEVEL	TEST LOAD (lb)	E.T. (min:sec)	DISPLACEMENT (inches)
200 lb	200	00:29	2.26
500 lb (2.50 x D.L.)	500	03:05	Result: Withstood load equal to or greater than 500 lb without failure

Deflection Evaluation:

Maximum post deflection at 200 lb on a 42 in high post = 2.26 in

Limits per AC174 ¹:

$$\left(\frac{h}{12}\right) = \left(\frac{36}{12}\right) = 3.00" \geq 2.26" \therefore OK$$

¹ Deflection limit calculation based on worse case 36 in railing height to satisfy One- and Two-Family Dwelling requirements.

Test Series No. 2

Post Bracket System with Load Applied Perpendicular to Screw Install/Parallel to Rim Joist at 42 in from Deck Surface

IRC - Residential Use Only / ICC-ES™ AC174

Specimen No. 1

Test Date: 04/21/22

Design Load: 200 lb Concentrated Load on Top of a Single Post

LOAD LEVEL	TEST LOAD (lb)	E.T. (min:sec)	DISPLACEMENT (inches)
200 lb	202	00:16	1.73
500 lb (2.50 x D.L.)	500	02:18	Result: Withstood load equal to or greater than 500 lb without failure

Deflection Evaluation:

Maximum post deflection at 202 lb on a 42 in high post = 1.73 in

Limits per AC174 ¹:

$$\left(\frac{h}{12}\right) = \left(\frac{36}{12}\right) = 3.00" \geq 1.73" \therefore OK$$

¹ Deflection limit calculation based on worse case 36 in railing height to satisfy One- and Two-Family Dwelling requirements.

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Specimen 2

Test Date: 04/21/22

Design Load: 200 lb Concentrated Load on Top of a Single Post

LOAD LEVEL	TEST LOAD (lb)	E.T. (min:sec)	DISPLACEMENT (inches)
200 lb	200	00:15	1.71
500 lb (2.50 x D.L.)	500	02:06	Result: Withstood load equal to or greater than 500 lb without failure

Deflection Evaluation:

Maximum post deflection at 200 lb on a 42 in high post = 1.71 in

Limits per AC174 ¹:

$$\left(\frac{h}{12}\right) = \left(\frac{36}{12}\right) = 3.00" \geq 1.71" \therefore OK$$

¹ Deflection limit calculation based on worse case 36 in railing height to satisfy One- and Two-Family Dwelling requirements.

Specimen 3

Test Date: 04/21/22

Design Load: 200 lb Concentrated Load on Top of a Single Post

LOAD LEVEL	TEST LOAD (lb)	E.T. (min:sec)	DISPLACEMENT (inches)
200 lb	201	00:28	1.78
500 lb (2.50 x D.L.)	500	02:23	Result: Withstood load equal to or greater than 500 lb without failure

Deflection Evaluation:

Maximum post deflection at 201 lb on a 42 in high post = 1.78 in

Limits per AC174 ¹:

$$\left(\frac{h}{12}\right) = \left(\frac{36}{12}\right) = 3.00" \geq 1.78" \therefore OK$$

¹ Deflection limit calculation based on worse case 36 in railing height to satisfy One- and Two-Family Dwelling requirements.

SECTION 7

CONCLUSION

When installed in a wood deck with blocking construction details as noted in the installation instructions, the post mount assembly reported herein meets the structural performance requirements of Section 5.1 of ICC-ES™ AC174 for use in One- and Two-Family Dwellings (IRC).

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SECTION 8 PHOTOGRAPHS



Photo No. 1
Installed Post Mount Bracket

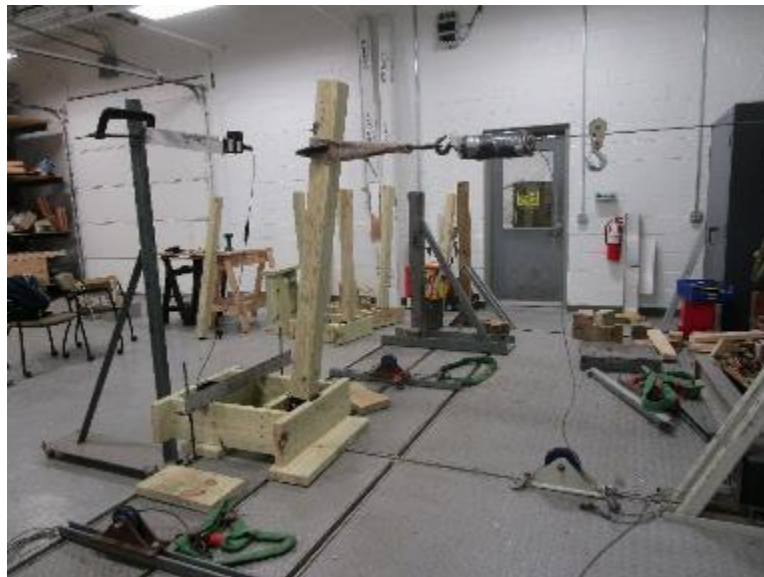


Photo No. 2
Concentrated Load Test at Top of Post Mount
(Parallel to Screw Install/Perpendicular to Rim Joist)

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Photo No. 3

**Concentrated Load Test at Top of Post Mount
(Perpendicular to Screw Install/Parallel to Rim Joist)**



Photo No. 4
Fastener Screws

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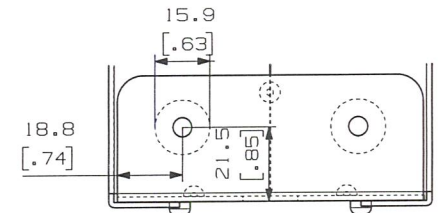
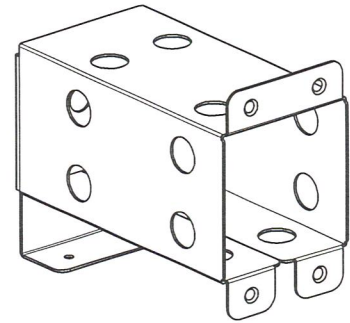
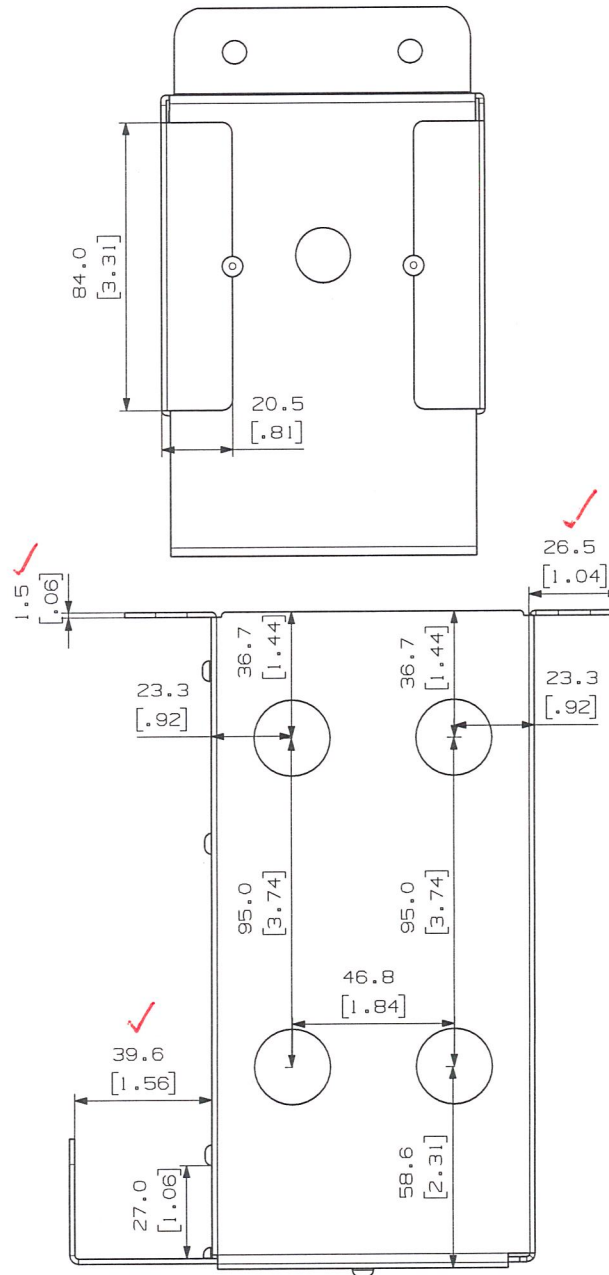
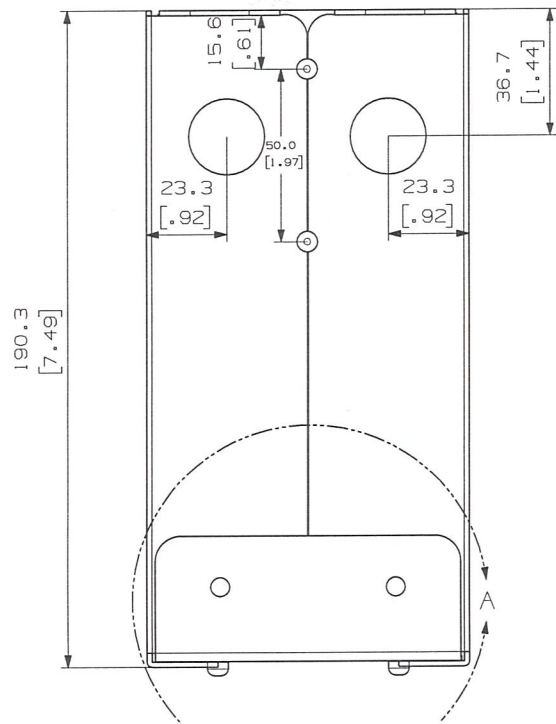
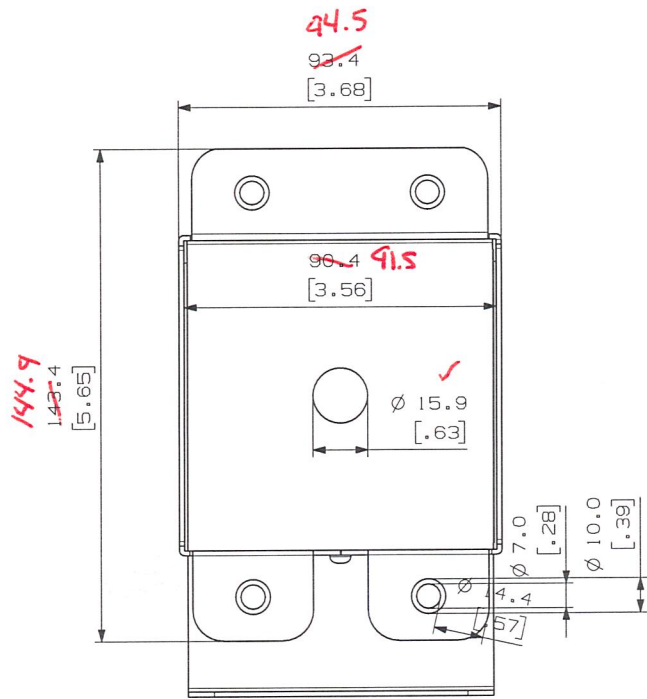
Date: 05/24/22



Photo No. 5
Mock Deck Fabrication

SECTION 9 **DRAWINGS**

The "As-Built" drawings for the post bracket system which follow have been reviewed by Intertek B&C and are representative of the project reported herein. Project construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.



DETAIL A
SCALE 1:1

NOTE: LIMITED DIMENSION DRAWING.
SEE SOLID MODEL FOR PART DETAILS.



Test sample complies with these details.
Deviations are noted.

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Total Quality. Assured.

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SECTION 10

INSTALLATION INSTRUCTIONS

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700

Facsimile: 717-764-4129

www.intertek.com/building

Post Pocket Bracket Installation

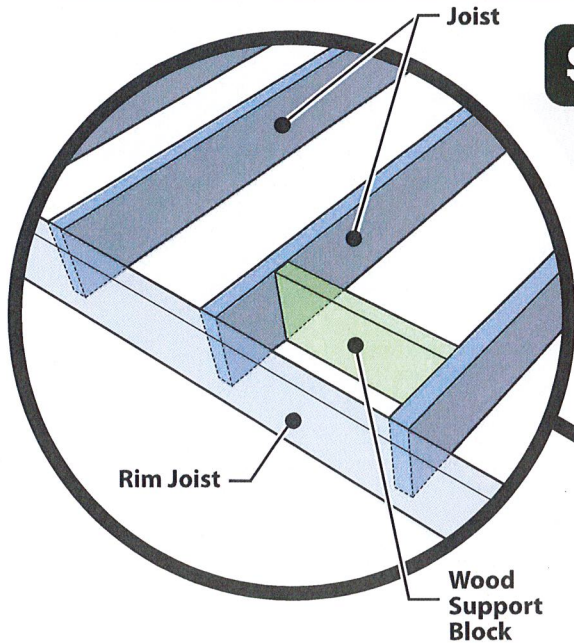
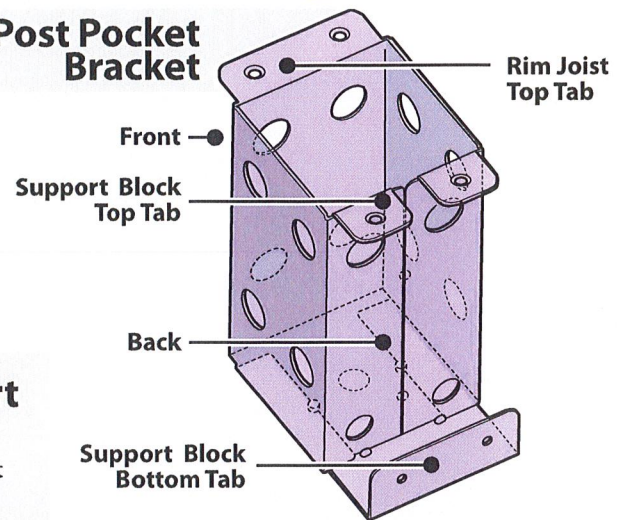
Hardware List:

- 4 - #9 x 2" Screws for (Top Tab Rim Joist)
- 24 - #10 x 4" Screws
 - Support Block (4 each side of support block)
 - Rim Joist Reinforcement
 - Bracket Front & Back

Required Tools:

- Impact Driver Drill
- Level
- Saw

Post Pocket Bracket



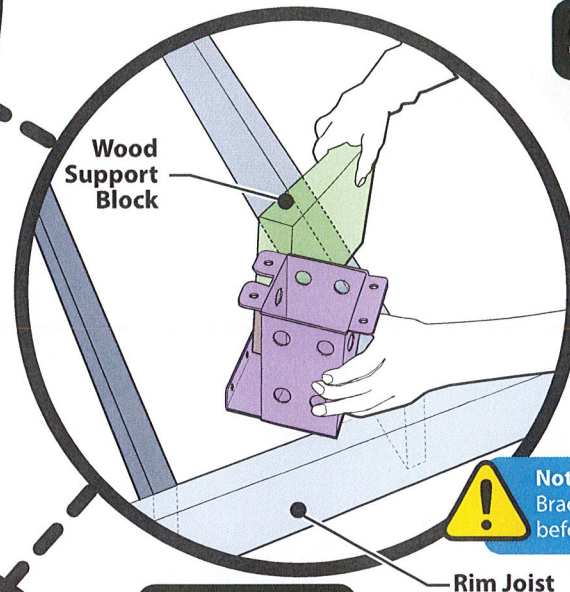
STEP 1

Wood Support Block

Measure between joist and cut (2" x 8") wood support block to fit

STEP 2

Slide Post Pocket Bracket onto Support Block



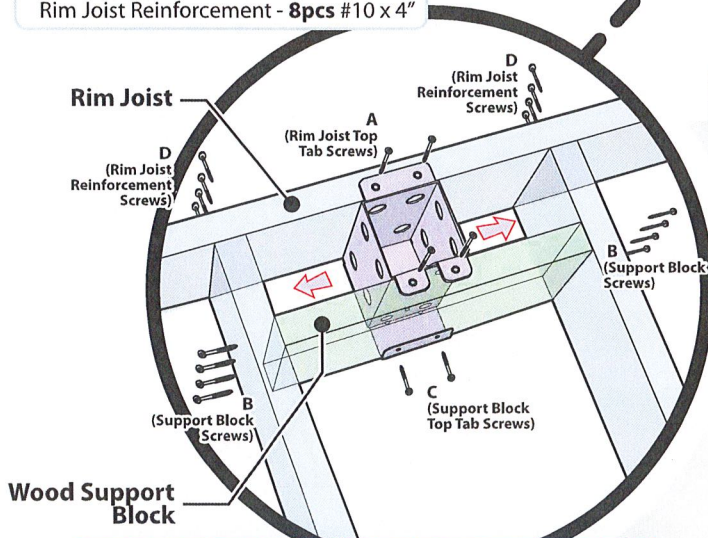
Step 3 (Included) Screws

- Top Tabs - 4pcs #10x3" #9x2"
- Support Block - 8pcs #10 x 4"
- Rim Joist Reinforcement - 8pcs #10 x 4"

Note: Sliding the Post Pocket Bracket must happen first, before you move to STEP 3.

STEP 3

Locate and Fasten Post Pocket Bracket



A. Install the rim joist top tab screws

Place the support block with the bracket between the joists as shown with the top tabs on the rim joist. Install the rim joist top tab screws.

B. Mark and install the support block screws

Push the support block squarely against the bracket and using the template mark and install on each side (4) 4" screws.

C. Install the (2) support block top tab screws

Install the screws then use an impact driver to seat all the screws, on the top tabs, flush to the wood. This will allow the decking to be installed over the top of the bracket as needed.

D. Install the rim joist reinforcement screws

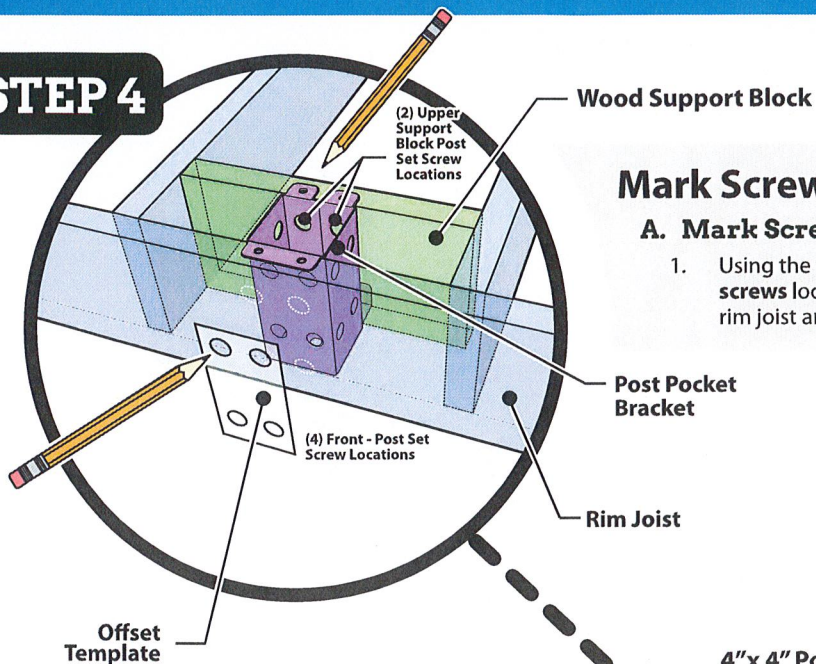
Using the template mark the hole locations and install rim joist reinforcement screws.



Note: Use the impact driver to seat all the top tab screws flush to the wood. This will allow the decking to be installed over the top of the bracket as needed.

Post Pocket Bracket Installation

STEP 4



Mark Screw Locations

A. Mark Screw Locations

1. Using the template mark the (6) post set screws locations with (4) on the front of the rim joist and (2) on the upper support block.

STEP 5

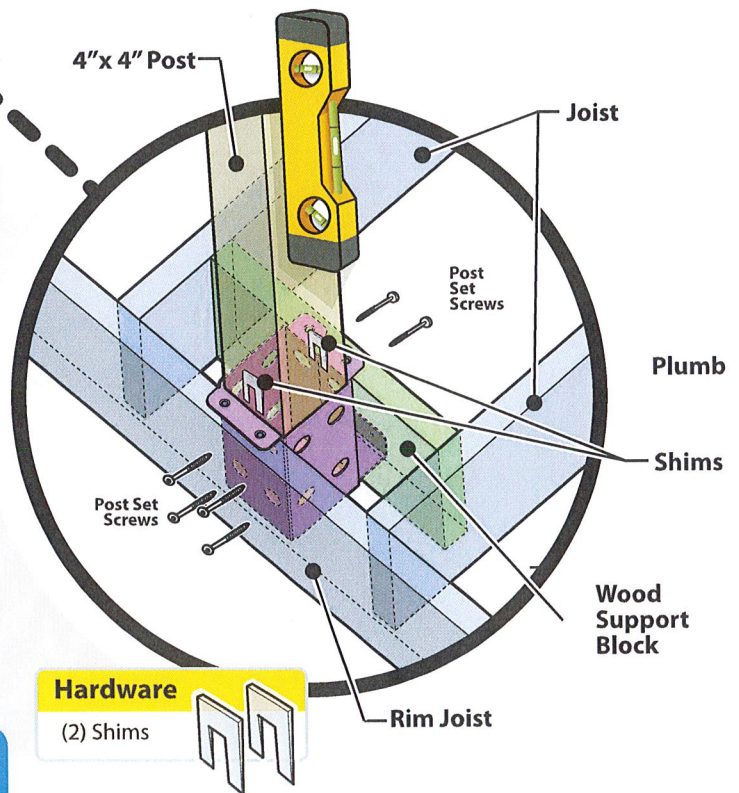
Post Installation

A. Put (4x4) Wood Post in Bracket

1. Cut the wood (4"x 4") post to size and place it into the bracket.
2. Plumb the post front to back using the shims to hold the post in place then plumb the post side to side.
3. With the post now in position and plumbed install the (4) post set screws thru the rim joist into the wood post.

B. Install (4) Post set Screws Through the Support Block

1. Install both the (2) post set screws thru the top of the support block and thru the bottom into the wood post



Note: Wood blocking can be added as needed to ensure that the decking is properly supported around the post and bracket.

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Test sample complies with these details.
Deviations are noted.

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Total Quality. Assured.

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SECTION 11

REVISION LOG

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