

PRODUCT EVALUATION REPORT	
Project No.: ACE-2025-129	Report No.: ACE-PER-1201, Rev. 0
<u>Product Manufacturer</u> E. F. San Juan, Inc. 11442 Highway 231 Youngstown, FL 32466	<u>Product Series, Model and/or Description</u> Product Evaluation of Door Hinge Component Interchangeability to E. F. San Juan, Inc. Inswing and Outswing Wood Entry Doors

Code: Current Edition of the Florida Building Code including the 9th Edition (2026) Florida Building Code

Compliance Methods:

- Product Approval Rule 61G20-3.005(1)(d) – Product Evaluation Report by a Licensed Professional Engineer
- Florida Building Code Section 1709.5.3 (2026 FBC)
 - Door components evaluated by an approved product evaluation entity, certification agency, testing laboratory or engineer may be interchangeable in exterior door assemblies provided that the door component(s) provide equal or greater structural performance as demonstrated by accepted engineering practices.
- Florida Residential Code Section R609.10 (2026 FRC)
 - ANSI/WMA 100; or
 - be evaluated by an approved product evaluation entity, certification agency, testing laboratory, or engineer and may be interchangeable in exterior door assemblies if the components provide equal or greater structural performance as demonstrated by accepted engineering practices.

Product Fenestration Description: Products covered by this evaluation include the following.

- E. F. San Juan, Inc. Outswing Wood Entry Doors
 - Drawing No. SAN0001, Rev. H, dated 7/22/26, Outswing Wood Entry Doors Installation Anchorage Details, signed and sealed by Robert J. Amoruso, P.E.
- E. F. San Juan, Inc. Inswing Wood Entry Doors
 - Drawing No. SAN0002, Rev. D, dated 7/22/26, Inswing Wood Entry Doors Installation Anchorage Details, signed and sealed by Robert J. Amoruso, P.E.

Product Testing:

- National Certified Testing Laboratories, Test Report No. NCTL-210-3699-1, dated 2/7/11, *AAMA/WDMA/CSA 101/I.S. 2/A440-05 and ASTM E1996/E1886-02 testing for fixed sidelights to be used with exterior swinging entry doors.*
- National Certified Testing Laboratories, Test Report No. NCTL-210-3699-2, dated 2/7/11, *ASTM E330-02 and ASTM E1996/E1886-02 testing alternate panel configurations to be used with exterior swinging entry doors.*
- National Certified Testing Laboratories, Test Report No. NCTL-210-3699-3, dated 2/7/11, *ASTM E330-02 and ASTM E1996/E1886-02 testing for double (XX) exterior swinging entry doors.*

- National Certified Testing Laboratories, Test Report No. NCTL-210-3699-4, dated 2/7/11, *AAMA/WDMA/CSA 101/I.S. 2/A440-05 and ASTM E1996/E1886-02 testing for double (XX) exterior swinging entry doors.*

Engineering Analysis: The following engineering and/or rational analysis/calculations have been performed.

- Report. No. ACE-CALC-1200, Anchorage and product verification has been substantiated by calculation prepared, signed, and sealed by Robert J. Amoruso, P.E., in accordance with the current edition of the Florida Building Code.
- Window glazing verified using ASTM E1300-2024.

Performance Testing:

- AAMA/WDMA/CSA 101/I.S. 2/A440-05, Standard/Specification for Windows, Doors, and Unit Skylights.
- ASTM E330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- ASTM E1996-02, Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes
- ASTM E1886-02, Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

Limitations & Conditions of Use:

- This product has not been evaluated for use inside the HVHZ (High Velocity Hurricane Zone)
- This product is Impact Resistance. Therefore, a protective impact-rated device (i.e., shutter(s)) is not required.
- Refer to Product Installation Instructions noted above for:
 - Maximum allowable wind loads at related maximum allowable size(s).
 - Overall dimensions and material/grade of main product components, accessories, etc.
 - Illustrated diagrams of the attachment of the product to the structure.
 - Anchor type(s), size(s), substrate(s), embedment, edge distance, and spacing/locations.
- Site wind pressures shall be determined by a licensed professional engineer in accordance with the current edition of the Florida Building Code and/or ASCE 7-16 for components and cladding based on allowable stress design.
- Site conditions not covered in this product evaluation document are subject to additional engineering analysis by a licensed professional engineer or registered architect as required by the authority having jurisdiction.
- Adequacy of the existing structural substrates as a main wind force resisting system capable of withstanding and transferring applied product loads to the foundation is the responsibility of the licensed professional engineer or registered architect acting as the design professional of record for the project of installation.

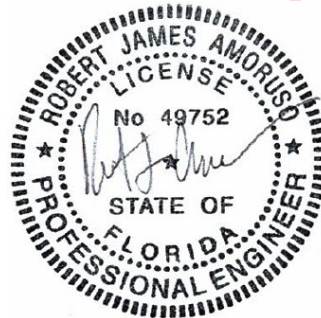
Door Hinge Component Interchangeability - Conclusion:

Based on the engineering analysis in Appendix 1 performed in accordance with Compliance Methods 2 and 3 above, it was determined that the Deltana SS45US32D 4-1/2" x 4-1/2" stainless steel hinge used in testing can be replaced with a PBB Inc. BB5145 4-1/2" x 4-1/2" stainless steel hinge.

Certificate of Independence per Product
Approval Rule 61G20-3.009

Robert J. Amoruso, P.E., does not have, nor will acquire, any financial interest in the company manufacturing or distributing product(s) covered by this Product Evaluation Report.

Robert J. Amoruso, P.E., does not have, nor will acquire any financial interest in any other entity involved in the approval process or testing of the product(s) covered by this Product Evaluation Report.



Digitally signed
by Robert J
Amoruso
Date:
2026.08.04
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Evaluated by:
Robert J. Amoruso, P.E.
FL PE License No. 49752

Appendix 1 - Door Hinge Component Interchangeability

Exterior door assembly components can be interchanged in accordance with the following sections of the Florida Building Code if it can be shown they provide equal or greater structural performance.

1. Florida Building Code Section 1709.5.3 (2026 FBC)
 - a. Door components evaluated by an approved product evaluation entity, certification agency, testing laboratory or engineer may be interchangeable in exterior door assemblies provided that the door component(s) provide equal or greater structural performance as demonstrated by accepted engineering practices.
2. Florida Residential Code Section R609.10 (2026 FRC)
 - a. ANSI/WMA 100; or
 - b. Be evaluated by an approved product evaluation entity, certification agency, testing laboratory, or engineer and may be interchangeable in exterior door assemblies if the components provide equal or greater structural performance as demonstrated by accepted engineering practices.

Structural Testing of E. F. San Juan, Inc. Wood Entry Doors, Florida Product Approval Number FL14680, Drawing No. SAN0001 and SAN0002 is listed above under *Performance Testing* heading to a Design Pressure of +/-65 psf for all configurations except the 176-1/2" x 153-7/16" OOO/OXXO configuration which tested to +/-60 psf.

Hinge hardware used in testing was a Deltana SS45US32D 4-1/2" x 4-1/2" stainless steel hinge (see Appendix 2).

The hardware to be interchanged with the Deltana SS45US32D 4-1/2" x 4-1/2" stainless steel hinge is PBB Inc. BB5145 4-1/2" x 4-1/2" stainless steel hinge (see Appendix 3).

Evaluation Methodology

The 2026 FBC requires component substitutions for side-hinged doors to meet ANSI/WMA 100-2023 or otherwise be evaluated by an engineer.

From ANSI/WMA 100-2023

15. HINGES

15.1 Hinges shall be permitted to be substituted without testing if they meet all of the following criteria:

- 15.1.1. Equal or stronger material type and grade (per BHMA A156.1) as specified in the rated door system test report;
- 15.1.2. Equal or larger plate size and thickness as specified in the rated door system test report; and
- 15.1.3. Equal or greater screw diameter and screw length as specified in the rated door system test report.

If the BHMA A156.1 testing has not been performed, the following will be used to assess suitability.

1. BHMA A156.1 rating for the existing and replacement hinge if applicable.

2. Drawings dimensioned of both hinges (current and replacement).
3. Material of both hinges (current and replacement).

Evaluation

DELTANA SS45US32D 4-1/2" X 4-1/2" STAINLESS STEEL HINGE details (Appendix 2):

1. Based on a review of Deltana's website and published catalogs, the SS45US32D Butt Hinge does not appear to have an ANSI/BHMA A156.1 (Butt Hinges) rating.
2. Dimensions:
 - a. Hinge width and height = 4.5" x 4.5:
 - b. Hinge thickness = 0.134"
 - c. Hinge shaft = 0.5625"
3. Material:
 - a. Stainless Steel
4. Installation Screw Size:
 - a. No. 12 Screw

PBB INC. BB5145 4-1/2" X 4-1/2" STAINLESS STEEL hinge details (Appendix 3):

1. Based on the cut sheets in Appendix 3, the BB5145 Butt Hinge does not appear to have an ANSI/BHMA A156.1 (Butt Hinges) rating.
2. Dimensions:
 - a. Hinge width and height = 4.5" x 4.5:
 - b. Hinge thickness = 0.134"
 - c. Hinge shaft = 0.60"
3. Material:
 - a. Stainless Steel
4. Installation Screw Size:
 - a. No. 12 Screw

Based on the above comparison, the PBB replacement hinge is of the same size, material and installation screw as the as-tested Deltana.

Therefore, it is concluded that the PBB Inc. BB5145 4-1/2" x 4-1/2" stainless steel hinge can be used as a replacement for the Deltana SS45US32D 4-1/2" x 4-1/2" stainless steel hinge used in testing.

Appendix 2 - DELTANA SS45US32D 4-1/2" X 4-1/2" STAINLESS STEEL HINGE



STAINLESS STEEL
HINGES

STEEL & STAINLESS

4 1/2"X 4 1/2" SQUARE HINGE

Deltana stainless steel hinges are great for waterside properties and outdoor use. They have excellent corrosion resistance compared to regular steel hinges.

- U/M: pair
- Box Qty: 1 pr
- Case Qty: 24 pr
- Case Weight: 56 lbs
- Corners: Square
- Thickness: .134"
- Wood Screw: #12x 1-1/4"
- Material: Stainless Steel



US32D

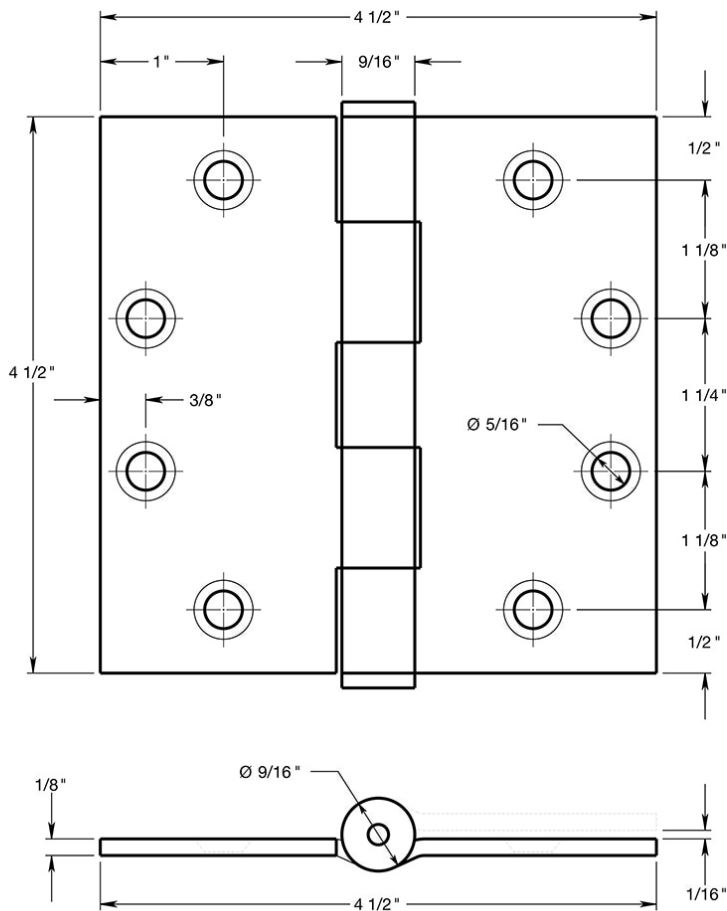
LIST PRICE	OPTIONS	MACHINE SCREW	FINISH	DESCRIPTION
44.50	Standard	#12x 1/2"	US32D	Brushed Stainless

Appendix 2 - DELTANA SS45US32D 4-1/2" X 4-1/2" STAINLESS STEEL HINGE

47.50	2BB	#12x 1/2"	US32D	Brushed Stainless
47.50	NRP	#12x 1/2"	US32D	Brushed Stainless
50.00	2BB/ NRP	#12x 1/2"	US32D	Brushed Stainless
54.00	4BB	#10x 1/2"	US32	Polished Stainless
60.00	4BB/ NRP	#12x 1/2"	US32	Polished Stainless

SS45

4-1/2"x 4-1/2" SQUARE CORNERS HINGE
 STAINLESS STEEL



DRAWING NOT TO SCALE

NOTE: Deltana reserves the right to constantly improve its products and is not responsible for differences between the product in-hand and the specifications contained in this drawing. We do not recommend to pre-drill holes or pre-cut woods or metals based on the drawing information if the veracity of the specifications has not been proven by the live product.

Appendix 3 - PBB INC. BB5145 4-1/2" X 4-1/2" STAINLESS STEEL HINGE

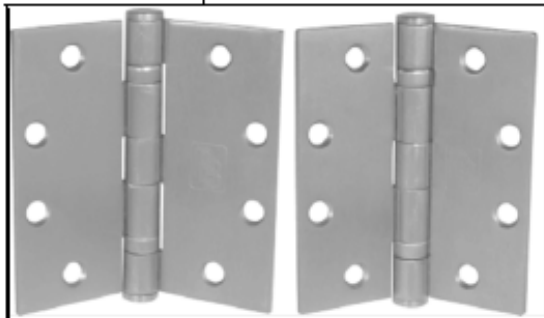


FULL MORTISE TEMPLATE BALL BEARING

STANDARD WEIGHT
 4 1/2" x 4", 4 1/2" x 4 1/2"

Templates:

BB45



BB81 (ANSI A8112)
 Steel-Polished and Plated or Bonderized and Prime Coated for Painting.

BB21 (ANSI A2112)
 Brass-Polished and Plated

BB51 (ANSI A5112)
 Stainless Steel-Polished and Satin Finish

- For use on medium weight doors or doors requiring average frequency service.
- Ball bearing hinges must be used on doors in conjunction with door closers and on all fire rated openings.

- For hospital type, add HT to suffix of part number.
- All hinges are ANSI template.

GENERAL PRODUCT INFORMATION: PBB, Inc. template hinges are manufactured to close tolerances and meet all specifications and requirements set by the American National Standards Institute (ANSI).

OTHER SPECIFICATIONS:

Height of hinge:
 4.50 (+.000/- .015) for 4-1/2" x 4"
 4.50 (+.000/- .015) for 4 1/2" x 4-1/2"

HINGE SWAGING: A standard swaging of our standard weight full mortise hinge when closed to parallel position provides a 1/16" clearance between leaves.

Width:
 4.00 ± .015 for 4-1/2" x 4"
 4.50 ± .015 for 4-1/2" x 4-1/2"

MATERIAL GAUGE:

.134 ± .005 for 4-1/2" x 4"
 .134 ± .005 for 4-1/2" x 4-1/2"

4-1/2" STANDARD SCREW SIZE

FHMS - 12-24 x 1/2"
 FHWS - 12 x 1-1/4"

PACKAGING INFORMATION:

One hinge per plastic bag, 3 hinges and 1 screw pack per unit carton.
 16 unit carton or 48 hinges per master shipping carton.
 1 screw pack includes all machine screws (24), and 1/2 wood screws (12). ATMS & AWS also available.

Appendix 3 - PBB INC. BB5145 4-1/2" X 4-1/2" STAINLESS STEEL HINGE



EXPLANATION OF NUMBERING SYSTEMS & SYMBOLS

FIRST TWO/FOUR CHARACTER DENOTES STYLE/FUNCTION OF HINGE:

2B	=	2 Knuckle Ball Bearing
2H	=	2 Knuckle Ball Bearing Heavy Weight
2P	=	2 Knuckle Plain Bearing
4B	=	4 Ball Bearing Heavy Weight
4C	=	Concealed Bearing Heavy Weight
4F	=	5 Knuckle Concealed Heavy Weight
PB	=	Plain Bearing
BB	=	Ball Bearing
CP	=	Concealed Plain Bearing
CB	=	Concealed Bearing
CH	=	Continuous Heavy Weight
FB	=	5 Knuckle Concealed Bearing
IT	=	3/16" Slip-In Insert
IF	=	5/16" Slip-In Insert
PF	=	Concealed Bearing Heavy Weight Prison Hinge
RB	=	Raised Barrel
RS	=	Residential Spring Hinge
RP	=	Residential Plain Bearing
SP	=	Spring Hinge
SC4B	=	Swing Clear Heavy Weight
SCPB	=	Swing Clear Plain Bearing
SCBB	=	Swing Clear Ball Bearing
WT4B	=	Wide Throw Heavy Weight
WTPB	=	Wide Throw Plain Bearing
WTBB	=	Wide Throw Ball Bearing
WB	=	Welding Butt

THIRD/FIFTH CHARACTER DENOTES BASE MATERIAL USED:

8	=	Wrought Steel
5	=	Stainless Steel
3	=	Aluminum
2	=	Wrought Brass

FOURTH/SIXTH CHARACTER DENOTES TYPE OF HINGE:

1	=	Full Mortise
2	=	Half Mortise
3	=	Full Surface
4	=	Half Surface

Example 1 = PB81

PB = Plain Bearing
 8 = Steel
 1 = Full Mortise

Example 3 = SP51

SP = Spring Hinge
 5 = Stainless Steel
 1 = Full Mortise

Example 2 = 4B24

4B = Four Bearing Heavy Weight
 2 = Brass
 4 = Half Surface

Example 4 = SC4B83

SC4B = Swing Clear Heavy Weight
 8 = Steel
 3 = Full Surface

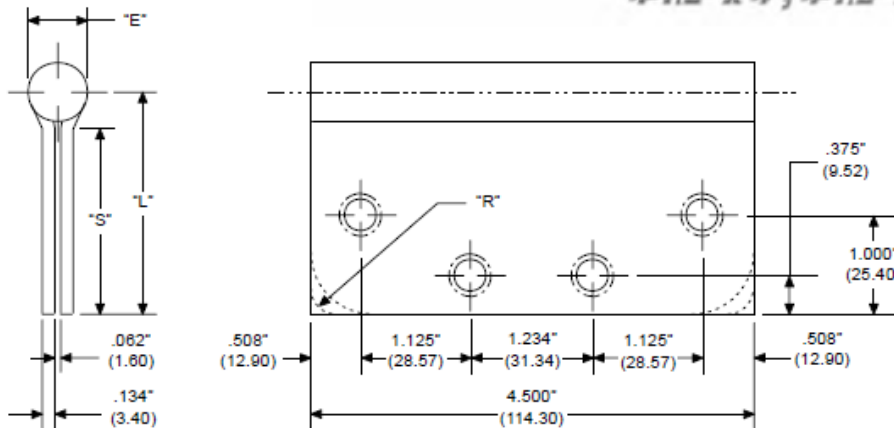
Appendix 3 - PBB INC. BB5145 4-1/2" X 4-1/2" STAINLESS STEEL HINGE



TEMPLATE: BB45
 JUNE 1, 2003
 DO NOT SCALE

FULL MORTISE STANDARD WEIGHT TEMPLATE

BB - PB - CB - CP - FB
 4-1/2" x 4", 4-1/2" x 4-1/2"



Part Number			Gauge of Metal	"E" Outside Dia.	"L" Leaf Width	"S" Swage Line	"R" Corner Radius
Steel	Brass	Stainless					
BB81/CB81	BB21/CB21	BB51/CB51	.134"	.600"	2.00"	1.63"	Square, 1/4", 5/8"
PB81/CP81	PB21/CP21	PB51/CP51	.134"	.600"	2.00"	1.63"	Square, 1/4", 5/8"
BB81/CB81	BB21/CB21	BB51/CB51	.134"	.600"	2.25"	1.88"	Square, 1/4", 5/8"
PB81/CP81	PB21/CP21	PB51/CP51	.134"	.600"	2.25"	1.88"	Square, 1/4", 5/8"

NOTE:

- 1 screw pack includes all machine screws (24), and 1/2 wood screws (12). ATMS & AWS also available.
- Screw size: FHMS - 12-24 x 1/2"
FHWS - 12 x 1-1/4"
- All hinges are ANSI template.

PBB, Inc.
 World Class Hinges
 1311 E. Philadelphia Street • Ontario • CA 91761 • USA
 PBB reserves the right to make changes without notice.

Template: BB45