

# CERTIFICATE

## By Authority Of THE UNITED STATES OF AMERICA Legally Binding Document

By the Authority Vested By Part 5 of the United States Code § 552(a) and Part 1 of the Code of Regulations § 51 the attached document has been duly INCORPORATED BY REFERENCE and shall be considered legally binding upon all citizens and residents of the United States of America. HEED THIS NOTICE: Criminal penalties may apply for noncompliance.



**Document Name:** AAMA 1702.2: Swinging Exterior Passage Doors  
Voluntary Standard for Utilization in  
**CFR Section(s):** Manufactured-Housing  
24 CFR 3280.405(e)(2)

**Standards Body:** American Architectural Manufacturers Association



Official Incorporator:

THE EXECUTIVE DIRECTOR  
OFFICE OF THE FEDERAL REGISTER  
WASHINGTON, D.C.



Voluntary Standard  
**SWINGING EXTERIOR PASSAGE DOOR**  
For Utilization in Manufactured Housing

---



# SWINGING EXTERIOR PASSAGE DOOR VOLUNTARY STANDARD FOR UTILIZATION IN MANUFACTURED HOUSING

---

## 1. GENERAL REQUIREMENTS

### 1.1 INTRODUCTION

This performance standard is for swinging exterior passage doors manufactured and supplied for manufactured housing. The products defined herein are normally installed at the housing manufacturer's plant or at locations other than the home site and transported with glazing in place.

### 1.2 SCOPE AND INTENT

This standard sets the requirements for swinging exterior passage doors used in manufactured housing.

The requirements contained herein are intended to set a reasonable performance standard that is acceptable to fulfill the requirements for swinging exterior passage doors within the manufactured housing industry. Since building methods and materials used are expected to undergo continued design innovation, it is the purpose of this standard to establish reasonable performance levels for all present and future methods and materials of construction.

This standard requires certification in excess of ANSI Z34.1 by requiring periodic testing of randomly selected production samples.

### 1.3 DEFINITIONS

#### 1.3.1 Certification Program

A program sponsored by a HUD approved organization concerned with product evaluation. This organization maintains periodic testing, inspection and listing of products that meet this standard.

#### 1.3.2 Certified Product

A product which meets all requirements of the certification program and is included in that listing.

##### 1.3.2.1 Listed

To be included in a list published by a HUD approved certification program.

#### 1.3.3 Manufactured Home

A dwelling, other than site built, constructed in accordance with Federal Manufactured Home Construction and Safety Standards/24 CFR 3280 and 3282.

#### 1.3.4 Production Unit Testing Procedure

Performance testing of a randomly selected production unit in accordance with Section 1.4.3, conducted in accordance with the requirements of the certification program.

##### 1.3.4.1 Production Units

Swinging exterior passage doors which are intended for installation in manufactured housing.

#### 1.3.5 Swinging Exterior Passage Door

A swinging exterior passage door installed in an exterior wall.

#### 1.3.6 Prototype

A unit built strictly for test purposes.

## 1.4 TESTING

**1.4.1** All tests shall be performed on swinging exterior passage door units with all operable portions closed. The test unit constitutes the maximum size of this product that may be listed as certified.

Combination swinging exterior passage doors, (interior primary door, exterior storm door) shall be tested structurally and for air infiltration with all operable portions closed. For water resistance, this unit shall be tested in the following sequence:

- A.** Storm door latched with operable panels in OPEN position.
- B.** Storm door latched with operable panels in CLOSED position.

##### 1.4.1.1 Fixed or Operable Glazing

Units to be furnished with fixed or operable glazing shall be tested with such glazing in the largest-size for which conformance is desired.

#### 1.4.2 Performance Requirements

Test procedures as outlined in 1.4.2.1 to 1.4.3 are applicable to prototype units of swinging exterior passage doors. Production units shall be of the same construction as the successfully tested prototype units and shall also meet the requirements of 1.4.2.4.

##### 1.4.2.1 Structural Performance Test

**NOTE:** For the structural performance tests, each test pressure shall be maintained for a period of 10 seconds.

#### **1.4.2.1.1 Exterior Pressure**

There shall be no glass breakage, or any condition which would cause the specimen to be inoperable after being subjected to an exterior pressure of 25 psf (1197 Pa). The test method applicable to this requirement shall be ASTM E 330.

#### **1.4.2.1.2 Interior Pressure**

There shall be no glass breakage, or any condition which would cause the specimen to be inoperable after being subjected to an interior pressure of 12.5 psf (599 Pa). The test method applicable to this requirement shall be ASTM E 330.

#### **1.4.2.2 Air Infiltration Test**

Air infiltration shall not exceed 1.0 CFM per square foot (18.2 cubic meters per square meter per hour) of door area when tested in accordance with ASTM E 283 at an exterior pressure differential of 1.57 psf (75 Pa).

#### **1.4.2.3 Water Resistance Test**

No leakage shall pass the interior face of the test specimen at a test pressure of 0 psf (0 Pa) when tested in accordance with ASTM E 331.

#### **1.4.2.4 Production Units**

Swinging exterior passage doors production units shall comply with Sections 1.4.2.1, 1.4.2.2 and 1.4.2.3 for the products rated structural performance of this specification except that the water application rate in 1.4.2.3 shall be 2.5 GPH per square foot (1.7 liters per minute per square meter) of door surface area with all other parameters being the same as set forth in 1.4.2.3.

#### **1.4.3 Test Sequence**

The sequence of tests shall be performed as they are listed in 1.4.2. The Air Infiltration Test may be performed after the Water Resistance Test, providing all sealing areas are thoroughly dried.

### **1.5 CERTIFICATION**

Compliance shall be evidenced by the listing of the swinging exterior passage door unit by an independent, recognized quality assurance agency. The manufacturer shall show evidence of continued compliance by affixing a quality certification label to the product in accordance with ANSI Z34.1. In determining certifiability under this section, compliance shall consist of prototype specimen testing in accordance with each and every requirement of this section followed by an in-plant inspection and production unit testing procedure consisting of a minimum of two such inspections per year by an independent quality assurance agency, one of which must include randomly selected production unit testing.

#### **1.5.1 Permanent Identification**

As identification, each unit shall bear a certification label containing a code number traceable to the manufacturer through the certifying agency. The code number shall also indicate the specific location of the unit's production.

##### **1.5.1.1 Label**

The label shall be of a permanent type designed to discourage easy removal, shall be legible and shall remain legible under normal operating conditions for a period of not less than five years from the date of product installation.

##### **1.5.1.2 Label Location**

Location of the label shall be such that it is accessible for normal direct viewing purposes from the interior side of the product after the unit is installed, without the necessity of product disassembly. Identification located only on the glass or screen shall not be acceptable.

## 2. MATERIALS AND METHODS

Any material or method of construction, whether or not provided for in this standard, and any material or method of questioned suitability proposed for use in manufacturing, shall nevertheless conform in performance as outlined in 1.4.2 and proof of capability of structural integrity shall be presented. If applicable, units shall comply with the following:

### 2.1 WOOD AND WOOD BASED PRODUCTS

**2.1.1** Wood parts including plywood and particleboard parts shall have a moisture content of 6% to 12% at the time of fabrication. Wood parts, except inside stops and trim, shall be manufactured utilizing wet-use adhesive requirements as defined in ASTM D 3110 and preservative treated in accordance with NWWDA I.S. 4. Wood or hardboard clad doors shall conform to Type I requirements of ANSI/NWWDA I.S. 1.

**2.1.2** Plywood clad doors shall use exterior type plywood and be preservative treated in accordance with NWWDA I.S. 4.

**2.1.3** Hardboard clad doors shall meet or exceed the requirements for 1/8 inch (3.2mm) tempered hardboard in accordance with ANSI/AHA A135.4.

### 2.2 ALUMINUM

Aluminum shall be of a commercial quality and of proper alloy for door construction, free from defects impairing strength and durability.

Wrought aluminum alloys shall be those in which the alloying elements do not exceed the following maximum limits:

|                  |      |             |      |
|------------------|------|-------------|------|
| Silicone.....    | 7.0% | Iron.....   | 1.0% |
| Manganese.....   | 6.0% | Zinc.....   | 1.0% |
| Magnesium.....   | 6.0% | Copper..... | 0.4% |
| Chromium.....    | 6.0% | Other.....  | 0.5% |
| Balance Aluminum |      |             |      |

These limits apply to both unclad products and to the core of clad products. Cladding of clad products shall be within the same limits except that the maximum zinc limit shall be 3.0% to assure that cladding is anodic to the core.

Aluminum extrusions used for the main frame and sash or ventilator sections, shall have a minimum ultimate tensile strength of 22,000 psi (150 MPa) and a minimum yield strength of 16,000 psi (110 MPa).

### 2.3 VINYL

Rigid PVC mainframe and panel extrusions shall comply with AAMA 303. Rigid PVC glazing beads shall be produced from a compound conforming to ASTM D 4216.

### 2.4 GLASS

Glass requirements shall be in accordance with Table 1 of this standard. Glass tolerances and areas shall meet or exceed the values shown in Table 1.

#### 2.4.1 Jalousie

Glass in jalousies shall also be at least 7/32 inches (5.5 mm) in thickness and not longer than 36 inches (915mm). Exposed edges shall be seamed, ground or polished to prevent injury.

### 2.5 SAFETY GLAZING

Safety glazing materials shall meet ANSI Z97.1.

#### 2.5.1 Tempered Glass

Tempered Glass shall meet ASTM C 1048.

### 2.6 INSULATING GLASS

Sealed insulating glass, where used, shall conform to ASTM E 774 level C. The sealing system shall meet the requirements of ASTM E 773. Each glass unit shall have a permanent marking with the identification of the insulating glass manufacturer.

### 2.7 BACK-BEDDING MATERIALS

Back-bedding materials shall conform to one or more of the following specifications referenced in AAMA 800. Ductile back-bedding compounds shall meet AAMA 802.3. Bonding type back-bedding compounds shall meet AAMA 805.2 Ductile back-bedding glazing tapes shall meet AAMA 804.1. Bonding type back-bedding glazing tapes shall meet AAMA 806.1. Cured rubber-like back-bedding glazing tapes shall meet AAMA 807.1. Expanded cellular glazing tape shall meet AAMA 810. Back-bedding compounds or glazing tapes meeting these specifications may be used singly or in combinations.

### 2.8 FASTENERS AND HARDWARE

Screws, nuts, washers, bolts, rivets and other fastening devices used in the product shall be compatible with the material with which they come in contact and be of sufficient strength and quality to perform their designated functions.

Hardware having component parts which are exposed shall be compatible with the material with which they come in contact and be of sufficient strength to perform their designated functions.

Each swinging exterior passage door, other than screen or storm doors, shall have a key-operated lock that is a dead locking latch or key-operated dead bolt with a passage latch. Locks shall not require the use of a key for operation from the Inside. All exterior doors, including storm and screen doors, opening outward shall be provided with a safety door check.

### **2.8.1 Lock Block Requirements for Field Installation of Dead Bolt**

All swinging exterior passage doors shall be produced with appropriate lock blocks for possible future field installation of dead bolts. All doors shall be appropriately marked to identify this feature. This identification shall be a gummed label or similar device on the lock side of the frame to be worded and affixed in a manner to make the home owner aware of the lock block feature and to identify the location for the necessary drilling to prepare the door for the dead bolt installation.

## **2.9 SCREEN CLOTH**

Insect screening shall be of a material compatible with the screen frame and shall meet GSA-FS-L-S 125B, CS 248, ANSI/IWS 089.

## **2.10 WEATHERSTRIP**

A tight threshold and weatherstripping to reduce air infiltration and improve water resistance shall be provided, capable of conforming to the criteria stipulated in Performance Requirements 1.4.2 of this standard.

**2.10.1** Pile weatherstrip and replaceable weatherseals, where used, shall meet or exceed AAMA 701 or AAMA 702, respectively.

## **2.11 INCORPORATED BY REFERENCE**

The following standard specifications are part of this standard where referenced:

### **Federal Home Manufactured Standards**

Department of Housing and Urban Development  
Manufactured Home Construction and Safety  
Standards 24 CFR 3280 and 24 CFR 3282

### **Rigid PVC Extrusions**

AAMA 303-93, Voluntary Specification for Poly (Vinyl Chloride) (PVC) Exterior Profile Extrusions

ASTM D 4216-92, Specification for Rigid Poly (Vinyl Chloride) (PVC) and Related Plastics Building Products Compounds

### **Organic Coatings**

AAMA 603.8-92, Voluntary Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum

AAMA 605.2-92, Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels

### **Safety Glazing**

ANSI Z97.1-1 984, American National Standard for Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test

### **Flat Glass**

ASTM C 1036-91, Specification for Flat Glass

### **Insulating Glass**

ASTM E 773-88, Test Method for Seal Durability of Sealed Insulating Glass Units

ASTM E 774-92 (Level C), Specification for Sealed Insulating Glass Units

### **Tempered Glass**

ASTM C 1048-91, Specification for Heat-Treated Flat Glass Kind HS, Kind FT Coated and Uncoated Glass

### **Screens**

#### **Insect Wire Screening**

ANSI/IWS-089-1990, American National Standard Recommended Standards and Specifications for Insect Wire Screening (Wire Fabric)

#### **Vinyl Coated Glass, Fiber Insect - Screening and Louver Cloth**

CS 248-64, Commercial Standard Vinyl Coated Glass Fiber Insect Screening and Louver Cloth

#### **Screening Non-Metallic Insect**

GSA-FS-LS-125B (1972), Federal Specification Screening, Insect, Non-Metallic

### **Pile Weatherstrip**

AAMA 701-92, Voluntary Specification for Pile Weatherstrip

### **Replaceable Weatherseals**

AAMA 702.92, Voluntary Specification for Replaceable Fenestration Weatherseals

### **Sealants**

AAMA 800-92, Voluntary Specifications and Test Methods for Sealants

#### **Ductile Back-Bedding Compound**

AAMA 802.3-92, Voluntary Specification for Ductile Back-Bedding Compound

#### **Ductile Back-Bedding Glazing Tapes**

AAMA 804.1-92, Voluntary Specification for Ductile Back-Bedding Glazing Tapes

#### **Bonding Type Back-Bedding Compounds**

AAMA 805.2-92, Voluntary Specification for Bonding Type Back-Bedding Compounds

#### **Bonding Type Back-Bedding Glazing Tapes**

AAMA 806.1-92, Voluntary Specification for Ductile Back-Bedding Glazing Tapes

#### **Cured, Rubber-Like Back Bedding Glazing Tapes**

AAMA 807.1-92, Voluntary Specification for Oil Extended Cured Rubber Back-Bedding Glazing Tapes

**Expanded Cellular (Foam) Glazing Tape**

AAMA 810.1-92, Voluntary Specification for  
Expanded Cellular (Foam) Glazing Tape

**Wood Parts****Adhesives**

ASTM D 3110-90, Specification for Adhesives  
Used in Non Structural Glued Lumber Parts

**Industry Standard for Wood Window Units**

ANSI/NWWDA 1.5.2-87, Industry Standard  
Wood Windows

**Preservatives and Plywood/Particleboard****Preservatives**

NWWDA 1.S. 4-81, NWWDA Industry  
Standard for Water-Repellent Preservative  
Treatment for Millwork

**Hardboard Siding**

ANSI/AHA A135.4-95, Hardboard

**Test Methods****Structural**

ASTM B 330-90, Test Method for Structural  
Performance of Exterior Windows, Curtain  
Walls and Doors by Uniform Static Air  
Pressure Difference

**Air**

ASTM E 283-91, Test Method for Rate of Air  
Leakage Through Exterior Windows, Curtain  
Walls and Doors

**Water**

ASTM B 331-93, Test Method for Water  
Penetration of Exterior Windows, Curtain  
Walls and Doors by Uniform Static Air  
Pressure Difference

**Certification**

ANSI Z34.1-1993, American National Standard  
for Certification - Third Party Certification  
Programs for Products, Processes and Services

### 3. CONSTRUCTION

#### 3.1 Finish

The exposed surface of all members shall be clean and free from serious surface blemishes. Pigmented organic coatings, where used on extruded aluminum, shall meet AAMA 603.8 and MMA 605.2.

#### 3.2 Glazing

Any method of glazing conforming to Section 1.4.2 "Performance Requirements," and Section 2 "Materials and Methods" of this specification shall be acceptable.

#### 3.3 Screens

Screens, when specified, shall be provided with fastening devices, suited particularly for application to the specific door for which they are intended, and be of sufficient strength to perform satisfactorily.

#### 3.4 Assembly

Swinging exterior passage doors shall be assembled in a secure and workmanlike manner to perform as hereinafter specified and to assure neat and

weather-tight construction. A permanent weather-tight joint shall be made at the junction of the sill and side frame members.

#### 3.5 Shipping

Units shall be shipped as a completely assembled unit excluding locks and handles, but not as a KD or open unit.

#### 3.6 Protection

The housing manufacturer shall be responsible for the protection of the swinging exterior passage doors during the course of storage and construction of the manufactured homes.

#### 3.7 Installation Instructions

The installation instructions contained in the Appendix to this standard are typical of instructions that should be followed for proper installation of swinging exterior passage doors. Swinging exterior passage door manufacturers shall furnish the home manufacturer with written installation instructions applicable for the swinging exterior passage door.

**TABLE 1**  
**Required Nominal Thickness of Tempered Plate, Float & Sheet Glass**  
**Based on Minimum Thickness Allowed In 104841**  
**Design Factor 2.5**

Table uses an adjustment factor of (x4) on Maximum Allowable Glass Area

#### **MAXIMUM TEMPERED GLASS AREA IN SQUARE FEET (SQUARE METERS)**

| Structural Performance Rating |        | Nominal Tempered Glass Thickness |        |             |        |             |         |               |         |            |         |
|-------------------------------|--------|----------------------------------|--------|-------------|--------|-------------|---------|---------------|---------|------------|---------|
|                               |        | DS (3mm)                         |        | 5/32" (4mm) |        | 3/16" (5mm) |         | 7/32" (5.5mm) |         | 1/4" (6mm) |         |
| psf                           | (Pa)   | ft²                              | (m²)   | ft²         | (m²)   | ft²         | (m²)    | ft²           | (m²)    | ft²        | (m²)    |
| 25                            | (1197) | 60.0                             | (55.6) | 96.0        | (8.92) | 116.4       | (10.80) | 146.4         | (13.60) | 173.2      | (16.08) |

To determine the maximum allowable area for glass types listed, multiply the allowable area obtained from the table by the appropriate adjustment factor.

#### A. Allowable Maximum Area Factors:

##### 1. Sealed Insulating Glass

Two Panes<sup>(1)</sup>

Three Panes

x 1.70

x 2.50

#### B. Required Maximum Area Factors:

##### 1. Laminated Glass

x 0.75<sup>(2)</sup>

<sup>(1)</sup> Use the thickness of the thinner of the two lites, not the thickness of the unit.

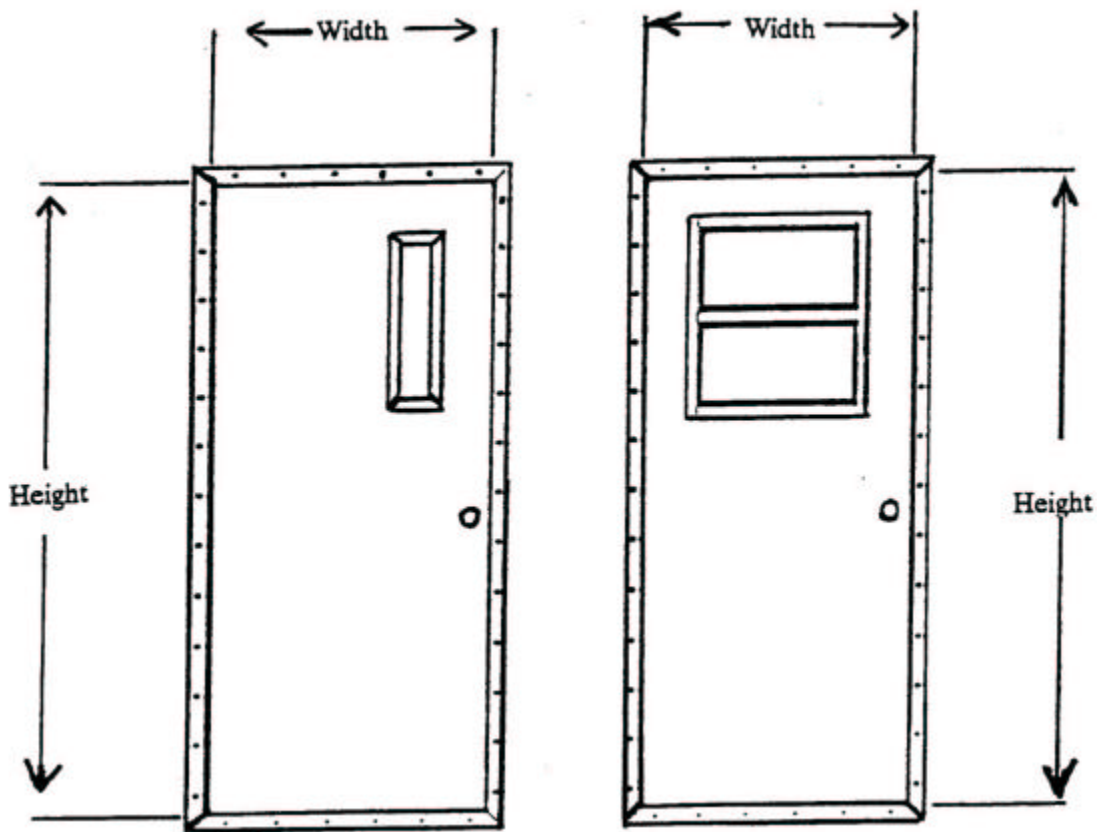
<sup>(2)</sup> Both plates must be identical in thickness and type. Use total glass thickness, not thickness of one ply.

## APPENDIX

This appendix is not part of this standard. It is included for information purposes only.

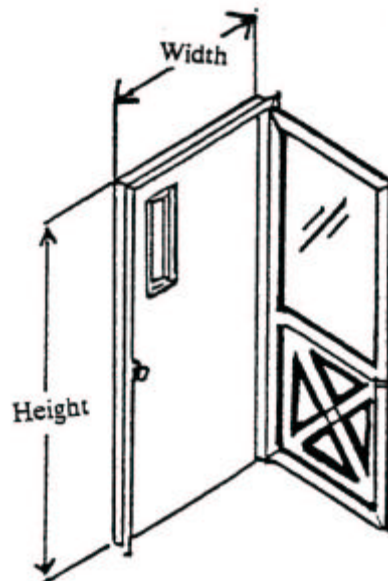
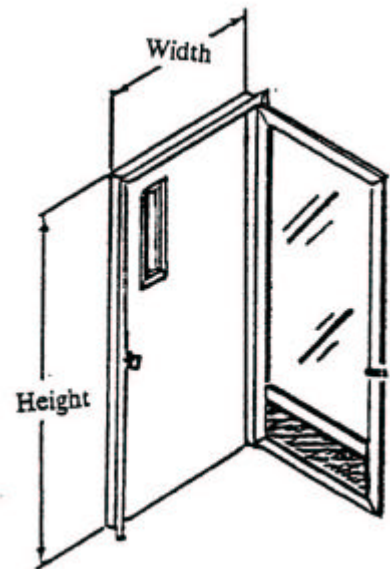
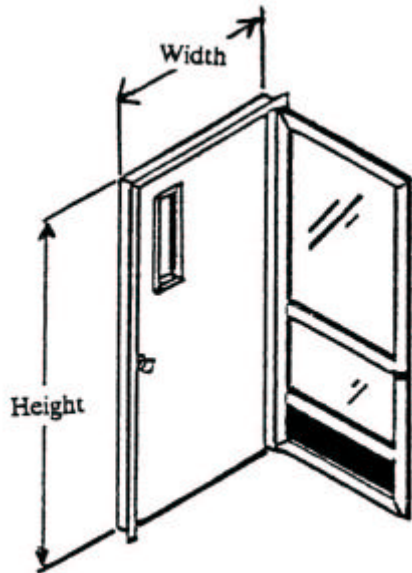
STANDARD SIZES FOR SINGLE SWINGING EXTERIOR PASSAGE DOORS

| CALL SIZE            | ROUGH<br>OPENING SIZE |
|----------------------|-----------------------|
| 32 (815) x 76 (1930) | Same                  |
| 32 (815) x 78 (1980) |                       |
| 34 (865) x 76 (1930) |                       |
| 34 (865) x 78 (1980) |                       |
| 34 (865) x 80 (2030) |                       |
| 36 (915) x 80 (2030) |                       |



# STANDARD SIZES FOR COMBINATION SWINGING EXTERIOR PASSAGE DOOR

| CALL SIZE            | ROUGH OPENING SIZE |
|----------------------|--------------------|
| 32 (815) x 76 (1930) | Same               |
| 34 (865) x 76 (1930) |                    |
| 34 (865) x 78 (1980) |                    |
| 34 (865) x 80 (2030) |                    |
| 36 (915) x 80 (2030) |                    |
| 38 (965) x 76 (1930) |                    |
| 38 (965) x 78 (1980) |                    |
| 38 (965) x 80 (2030) |                    |



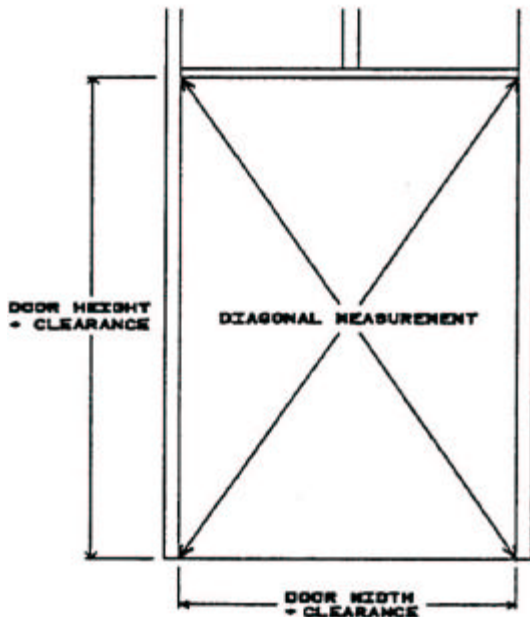
# MANUFACTURED SWINGING EXTERIOR PASSAGE DOOR INSTALLATION INSTRUCTIONS

## A1. ROUGH OPENING PREPARATION

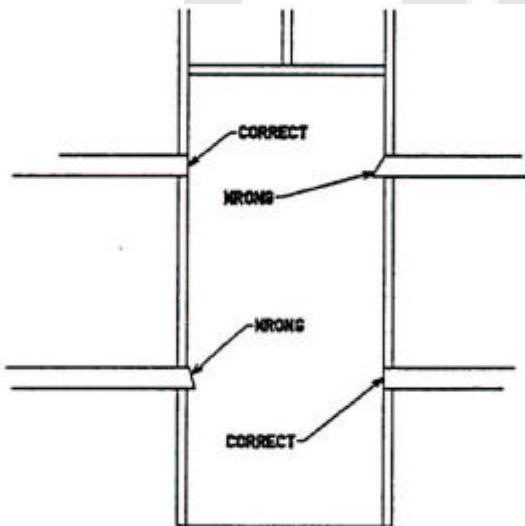
**A1.1** The rough stud opening should be in accordance with the manufacturer's recommended rough opening on width and height dimensions.

**A1.2** Select studs for the door framing that are not warped or twisted.

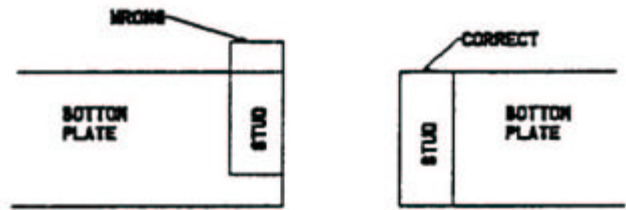
**A1.3** Check for squareness by measuring across the opening from the head to the floor diagonally both ways.



**A1.4** Make certain belt rails do not protrude into the rough opening in any way.



**A1.5** Make certain vertical studs are flush with the bottom and top plates.



**A1.6** Ensure that the door is installed square and parallel to the intended floor line.

## A2. DOOR INSTALLATION

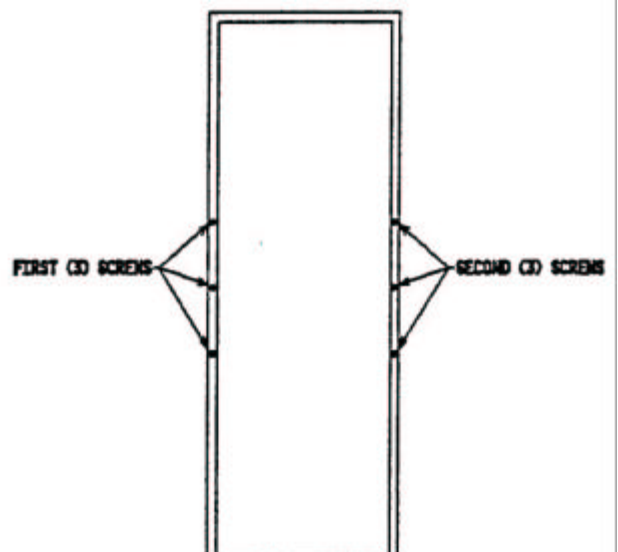
**A2.1** Make certain all mounting surfaces (siding seams included) are securely fastened and flat around the perimeter of the door opening.

**A2.2** Apply a suitable, non-hardening sealant to the backside of the door mounting flanges in order to provide a good seal.

**A2.3** Do not remove any shipping clips or fasteners and keep the door dosed and locked during installation. Opening the door prior to installation will destroy the pre-squaring by the door manufacturer.

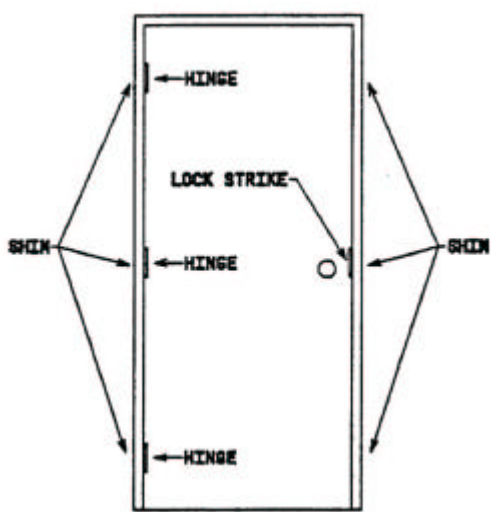
**A2.4** Carefully insert the door into the opening. Make certain the door sill is securely resting on the floor.

**A2.5** Proceed to fasten door with screws. Drive the first three screws into the outer frame in the middle at the hinge side. Drive the next three screws in the middle of the outer frame on the lock side. Secure the balance of the hinge side, the sill, the lock side, and the header.

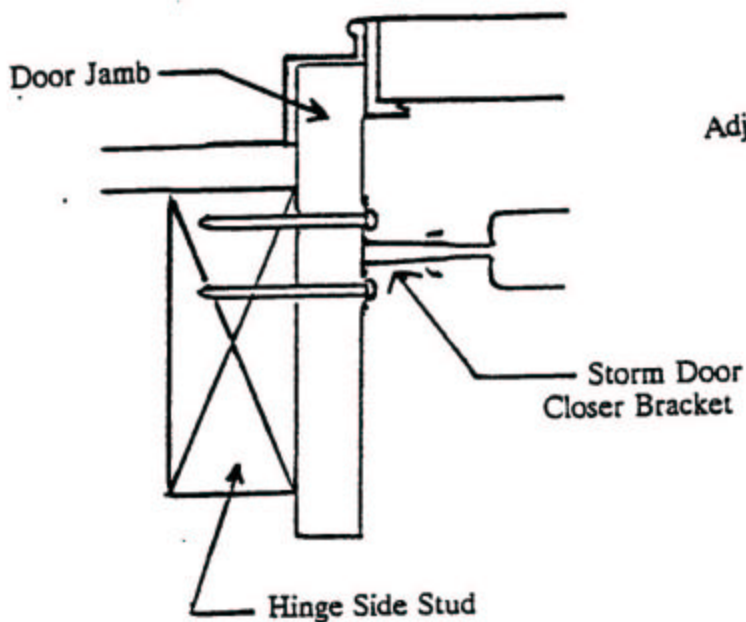


**A2.6** Remove the shipping clips and open the door. Install the hardware for the door being installed.

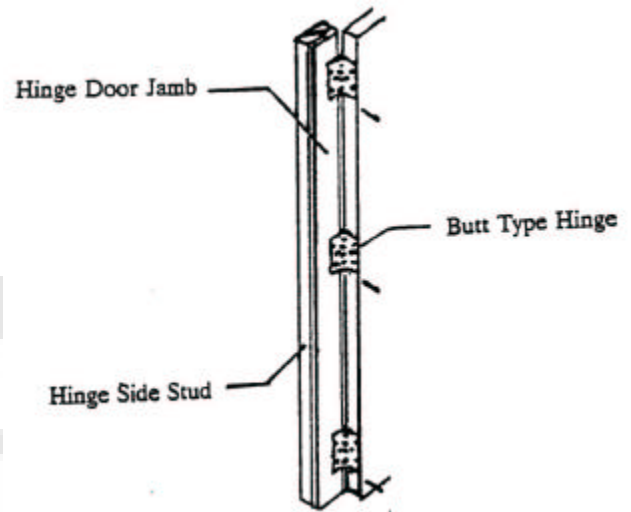
**A2.7** Shim behind each hinge, the lock strike, and behind the lock jamb at the head and sill.



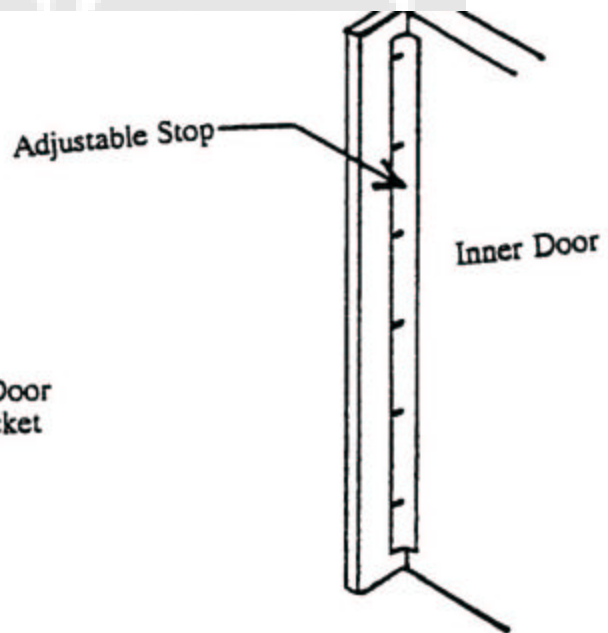
**A2.8** If it is a combination type door with storm door, make certain two long screws are put through the storm door plunger bracket fastened to the jamb. This is to anchor the bracket securely to your hinge side stud.



**A2.9** If the combination type inner door is secured to the outer frame with butt type hinges, run one long screw through each hinge on the jamb side to penetrate the hinge side stud.



**A2.10** If the combination type door has an adjustable stop, adjust the stop to the interior of the inner door to insure a good seal.



**A2.11** The certification label shall not be removed. Removal of the label negates the certification.