

**(Specifier Note:** The purpose of this guide specification is to assist the specifier in correctly specifying glass-fiber-reinforced asphalt shingle products for sloped roofing applications. The specifier needs to edit these guide specifications to fit the needs of each specific project. Contact a PABCO® Roofing Products Representative to assist in appropriate product selections. Throughout the guide specification, there are Specifier Notes to assist in the editing of the file. The term Architect is used throughout these guide specifications and may be revised to read "Design Professional", "Engineer", "Owner" or other appropriate designation as required for specific projects.

References have been made within the text of the specification to MasterFormat 2004 Section numbers and titles, specifier needs to coordinate these numbers and titles with sections included for the specific project. Brackets [ ]; "AND/OR"; and "OR" have been used to indicate when a selection is required.

This guide is for residential and commercial roofing applications using a three tab, single ply construction, fiberglass reinforced, mineral-granule surfaced, self-sealing asphalt shingle assembly.

## **SECTION 07 31 13**

### **ASPHALT SHINGLES**

PABCO® Roofing Products

**(Specifier Note:** This Section is applicable for PABCO Tahoma® Shingles.)

#### **PART 1 - GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Asphalt shingles.
- B. Felt underlayment.
- C. Self-adhering sheet underlayment.

##### **1.2 REFERENCES**

- A. ASTM International:
  - 1. ASTM D 226; Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
  - 2. ASTM D 1970; Standard specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection

3. ASTM D3161; Standard Test Method for Wind Resistance of Asphalt Shingles(Fan Induced Method)
4. ASTM D 3462; Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules
5. ASTM D 4586 – Standard Specification for Asphalt Roof Cement, Asbestos-Free
6. ASTM D 4869; Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steel Slope Roofing
7. ASTM D 6757; Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing
8. ASTM D7158; Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force / Uplift Resistance Method)
9. ASTM F1667; Standard Specification for Driven Fasteners; Nails, Spikes, and Staples

B. Underwriters Laboratories, Inc.:

1. UL 790 – Tests for Fire Resistance of Roof Covering Materials
2. CAN/ULC (Underwriters Laboratories of Canada)-S107 – Methods of Fire Tests of Roof Coverings

C. National Roofing Contractors Association:

1. The NRCA Roofing and Waterproofing Manual 5th Ed., 2001 (2003 Update)

1.3 SUBMITTALS

*(Specifier Note: When project is being submitted for USGBC LEED™ certification, contact PABCO® Product Representative for assistance in determining how the use of PABCO® Roofing Products can assist in obtaining points for recycled content, environmental product declaration, and/or local material supplier.*

- A. Refer to Section [01 33 00 Submittal Procedures] [insert section number and title].
- B. Product Data: Submit manufacturer current technical literature for each component.
- C. [LEED Submittal:
  1. Product Data for Credit MR 4.1[and Credit MR 4.2]: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.]
- D. Samples for Initial Selection: For each type of asphalt shingle, [ridge and hip cap shingles] product indicated.

1. Include similar samples of exposed trim and accessories involving color selection.

*(Specifier Note: Delete paragraph and subparagraph above if colors and other characteristics are preselected and specified or scheduled. Retain first paragraph and subparagraph below with or without above if products have been pre-selected.)*

- E. Samples for Verification: For the following products, of sizes indicated and to verify color selected:
  1. Asphalt Shingle: Full-size asphalt shingle strip.
  2. Ridge and Hip Cap Shingles: Full-size ridge and hip cap asphalt shingle.
  3. Self-Adhering Underlayment: 12-inches square.
- F. Maintenance data: For asphalt shingles to include in maintenance manuals.
- G. Warranties: Sample of special warranties specified in this Section.
- H. Closeout Submittals:
  1. Refer to Section [01 78 00 Closeout Submittals] [insert Section number and title].

#### 1.4 QUALITY ASSURANCE

- A. Qualifications:
  1. Installer shall have successful installation experience with installation of PABCO® Roofing Products under similar conditions.
  2. Installation shall be in accordance with asphalt shingle manufacturer's installation guidelines and recommendations.
- B. Source Limitations: Provide ridge and hip cap shingles [felt underlayment] [and] [self-adhering sheet underlayment] through one source as recommended by the asphalt shingle manufacturer.
- C. Fire-Test Response Characteristics:
  1. Exterior Fire Test Exposure: Class A; UL 790 and CAN/ULC S-107 for application and roof slopes indicated. Identify materials with appropriate markings of applicable testing and inspecting agency.
- D. Mock-up:
  1. Install mock-up using approved asphalt shingle assembly including related accessories per manufacturer's current printed instructions and recommendations.

- a. Mock-up size: [10-feet by 10-feet] [insert size].
  - b. Mock-up may [not] remain as part of the work.
2. Contact manufacturer's designated representative prior to asphalt shingle assembly installation, to perform required mock-up visual inspection and analysis as required for warranty.
- E. Pre-installation Meeting:
1. Refer to Section [01 31 00 Project Management and Coordination] [insert section number and title].
  2. Hold a pre-installation conference, prior to start of asphalt shingle installation at Project site to review all related project requirements and submittals, status of substrate work and preparation, areas of potential conflict and interface, availability of asphalt shingle assembly materials and components, installer's training requirements, equipment, facilities and scaffolding, and coordinate methods, procedures and sequencing requirements for full and proper installation, integration and protection.
    - a. Attendees shall include Contractor, Architect, installer, Owner's Representative, and asphalt shingle manufacturer's designated representative.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section [01 60 00 Product Requirements] [insert section number and title].
- B. Deliver asphalt shingle materials and components in manufacturer's original, unopened, undamaged packages with identification labels intact.
- C. Store asphalt shingle materials as recommended by asphalt shingle manufacturer.

**(Specifier Note: The PABCO® Limited Shingle Warranty has different provisions for installation on a single family residence and for installation on all other structures.)**

#### 1.6 WARRANTY

- A. Refer to Section [01 78 36 Warranties] [insert section number and title].
- B. Provide PABCO® Limited Shingle Warranty: PABCO® warrants that shingles are free from manufacturing defects that adversely affect their performance.

**(Specifier Note: Scotchgard™ Algae Resistant Roofing System does not apply to all products and is not available in all markets.)**

C. Algae Resistance:

1. Scotchgard™ Algae Resistant Roofing System shingles are warranted to be free from obvious and unsightly black streaks caused by blue-green algae (cyanobacteria) for 20 years.

PART 2 - PRODUCTS

2.1 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Asphalt Shingles: ASTM D3462, single ply construction, glass-fiber reinforced, mineral-granule surfaced, and self sealing.
- B. Wind Resistance: ASTM D7158, Class H.

2.2 MANUFACTURER

- A. Basis of Design Manufacturer: Subject to compliance with requirements, the design for glass-fiber-reinforced asphalt shingles is based on PABCO® Roofing Products, 1476 Thorne Road, Tacoma, WA 98421; Phone: (253) 272.0374; [www.pabcoroofing.com](http://www.pabcoroofing.com)
- B. Basis of Design Product: The design for glass-fiber-reinforced asphalt shingles is based on [PABCO Tahoma®] as follows:
  1. PABCO Tahoma® Fiberglass Shingles:

**(Specifier Note: Scotchgard™ Algae Resistant Roofing System is not available in all markets.)**

- a. [Algae Resistance.]

**(Specifier Note: Verify required warranty is available for specific color prior to making selection). Not all warranty terms are available for each available color.)**

- b. Warranty Available: Limited Shingle Warranty:
  - 1) Single Family Residence, Fully Transferable: [30 year Limited Warranty and 60 mph Wind Resistance.]
  - 2) All Other Structures, Fully Transferable: [30 year Limited Warranty and 60 mph Wind Resistance.]
- c. Color: [Antique Black] [Buckskin Tan] [Harvest Brown] [Oakwood] [Pewter Gray] [Sherwood Green] [Star White] [Weathered White] [Weathered Wood]

d. Performance Characteristics:

- 1) Size: 13-1/4 inches by 39-3/8 inches.
- 2) Exposure: 5-5/8 inches.
- 3) Offset: 5-5/8 inches.
- 4) Approx. Lbs. per Square:  
PABCO Tahoma®: 210 lbs.

*(Specifier Note: PABCO® allows but does not recommend site fabrication of hip and ridge shingles.*

2. Hip and Ridge Shingles: Shadow Cap to match asphalt shingles.

*(Specifier Note: PABCO® SHINGLES SHOULD NEVER BE APPLIED TO ANY OTHER DECK without first obtaining written approval from PABCO® Roofing Products. Requests for approval must be accompanied by the deck manufacturer's recommended application procedure for asphalt shingles. APPLICATION DIRECTLY OVER POLYURETHANE OR POLYSTYRENE SURFACES WILL NOT BE APPROVED.)*

## 2.3 ROOF DECK REQUIREMENTS FOR NEW CONSTRUCTION

- A. Plywood decks must be at least 3/8-inch thick plywood or 7/16-inch OSB type structural sheets conforming to the exposure standards and specifications of the APA - The Engineered Wood Association and the building code, or wood board decks must be well-seasoned, minimum nominal thickness 1-inch, not over 6-inches in width.

## 2.4 ACCESSORIES

- A. PABCO® Universal Starter, or site fabricated as specified in Part 3:
1. Size: 7-5/8 inches by 39-3/8 inches.
  2. Coverage: 105 linear feet.
- B. PABCO® Shadow Cap
1. Size: 13-1/4 inches by 39-3/8 inches, perforated to 4 pieces.
  2. Coverage: 41-1/4 linear feet.

*(Specifier Note: Felt shall be 3<sup>rd</sup> party listed as prepared roofing accessory or complying with ASTM D226, ASTM D4869, or ASTM D6757, applied per manufacturer's instructions.)*

- C. Felt Underlayment: Felt underlayment to comply with local building code.

**(Specifier Note: Self-adhering underlayment shall be 3rd party certified complying with ASTM D1970, applied per manufacturer's instructions.)**

- D. Self-Adhering Sheet Underlayment: ASTM D1970.
- E. Asphalt Roofing Cement: ASTM D 4586, asbestos free.
- F. Fasteners:
  - 1. Roofing Nails: ASTM F 1667; aluminum, stainless-steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch- diameter, [barbed] [smooth] shank, sharp-pointed, with a minimum 3/8-inch diameter flat head and of sufficient length to penetrate 3/4-inch into solid wood decking or through OSB or plywood sheathing.
  - 2. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- G. METAL FLASHING AND TRIM
  - 1. Sheet Metal Flashing and Trim: [Comply with requirements in Section 07 62 00 - Sheet Metal Flashing and Trim.] [Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.]
  - 2. Drip Edges: Fabricate in lengths not exceeding [10-feet] [Insert length] with a minimum 2-inch roof deck flange and a minimum 1-1/2 inch fascia flange with 3/8-inch drip at lower edge.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify substrate and surface conditions are in accordance with asphalt shingle manufacturer recommended tolerances prior to installation of asphalt shingle and accessories.

### 3.2 GENERAL INSTALLATION OF SHINGLES

- A. General: Install in accordance with PABCO® Roofing Products' written instructions and in compliance with local authorities having jurisdiction. To qualify for warranty protection and to obtain stated coverage, manufacturer's written instructions must be followed.
  - 1. [Local roofing practices that do not materially deviate from PABCO® Roofing Products' installation instructions may be considered, but should

be submitted to the design professional and to PABCO® for review prior to installation.]

**(Specifier Note:** PABCO® shingles are not approved for use on roof slopes less than 2:12.)

- B. Manufacturer's standard application instructions apply to slope/inclines between 4-inches per foot and 21-inches per foot. Refer to manufacturer's additional requirements for use on slopes between 2:12 and 4:12, or greater than 21:12.
- C. From shingle course to shingle course upwards on roof deck, end joints must be maintained with a horizontal offset of 5-5/8 inches.
- D. Ventilation: Provide minimum of 1 square feet of total net free ventilating area for each 150 square feet of ceiling area, or 1 square foot for each 300 square feet of ceiling area if either a vapor barrier is installed on warm side of ceiling area or if approximately one-half the ventilation is provided near roof ridge.

### 3.3 UNDERLAYMENT

- A. Roof decks with pitch of 4-inches per foot or greater, for new construction or when old roofing has been removed, apply a single layer of felt underlayment complying with ASTM D226, D4869 or D6757 and local building code.

**(Specifier Note:** For slopes at least 4-inches per foot, PABCO® recommends single layer felt underlayment.)

- 1. [Single Layer Felt Underlayment: Apply underlayment with 2-inch wide top laps and 4-inch wide end laps. Lap felt underlayment a minimum of 6-inches from both sides over all hips, ridges and valleys.]

**(Specifier Note:** On slopes between 2 inches and 4 inches per foot, PABCO® recommends self-adhering underlayment or double-layer felt underlayment.)

- B. Roof decks with pitch of greater than 2-inches per foot and less than 4-inches per foot, for new construction or when old roofing has been removed, apply underlayment:
  - 1. [Self-Adhering Underlayment: Apply self-adhering underlayment according to underlayment manufacturer's written instructions and in compliance with local building code.]
  - 2. [Double-Layer Felt Underlayment: Apply a first course of underlayment with 19-inch wide top laps and 12-inch wide end laps. Over this, apply a full 36-



inches wide sheet. Continue 36-inches wide sheets, lapping each 19-inches over the preceding course.]

### 3.4 EAVE FLASHING

- A. Install self-adhering underlayment as an eave flashing for ice dam protection in areas of winter temperatures averaging 30°F or less, applied parallel to the eave. Eave flashing overhangs drip edge 1/4-inch to 3/8-inch and extends up the roof to at least 24-inches inside the interior wall line. Horizontal (top) overlaps (when needed), should be located over the overhang area. Top laps are at least 2-inches, end laps are at least 6-inches.
- B. Eave Drip Edges: Install eave drip edge flashings below underlayment and fasten to roof sheathing.

### 3.5 NAILING INSTRUCTIONS

- A. Use four nails per shingle for normal application, positioned in the nail zone as recommended by shingle manufacturer. Nails shall be at least 1 inch long, aluminum or galvanized, 3/8-inch head, 11 or 12 gauge roofing nails. Nails must be driven flush with shingle surface. NAILS MUST NOT BE OVERDRIVEN TO CUT INTO SHINGLES.

**(Specifier Note: See the PABCO Tahoma® Application Details – Nailing Instructions for additional details at [www.pabcoroofing.com](http://www.pabcoroofing.com).)**

- B. Special Applications:
  - 1. High Wind Application: For areas where local knowledge indicates exposure to high winds may occur, shingles must be applied with 6 nails spaced according to shingle manufacturer's written instructions and sealed to qualify for wind damage warranty coverage.
  - 2. Steep Slope Application: On slopes greater than 21-inches per foot (Mansard type roofs), 6 nails are required, spaced according to shingle manufacturer's written instructions. These shingles are to be hand sealed at the time of application with asphalt roof cement, by applying 6 spots about the size of a quarter, located under the shingle tab corners.

### 3.6 VALLEYS

**(Specifier Note: Closed-cut valleys are recommended by PABCO®; woven valleys are also accepted.)**

- A. Closed-cut Valleys:
  - 1. Valley Flashing: Valley starts with 36-inches self-adhered, bottom layer underlayment centered down the valley. Extend felt underlayment from the field over this and trim overlap 6-inches. A second underlayment layer (ASTM D4869 Type II or heavier) is applied over this, centered down the

valley. Lay the first course of shingles along the eaves of one roof plane and over the valley, extending it into the adjoining plane at least 12 inches. Repeat with succeeding courses of that roof plane. Then apply the first course of shingles along the eaves of the intersection roof plane, extending it over the previously applied shingles and trim it 2 inches short of the valley center line. Clip the upper corners of each shingle 1 inch at a 45 degree angle. Succeeding courses are applied in the same manner.

### 3.7 APPLICATION, DIAGONAL OFFSET PATTERN

**(Specifier Note: PABCO Tahoma® uses a 5-5/8 inches diagonal offset. See the PABCO Tahoma® Application Instructions – Directions For Application for more details at [www.pabcoroofing.com](http://www.pabcoroofing.com).)**

- A. Starter Course: Use PABCO® Universal starter or a self sealing three tab shingle with the tabs removed and the adhesive at the eave. Cut 6-inches from the end of the first piece of starter course and apply it at the lower left hand corner of the roof. The starter course overhangs the rake edge and drip edge 1/4-inch to 3/8-inch. Nail in place with 4 nails about 2-inches up from the eave, spaced evenly across the shingle. Continue the Starter across the deck with full shingles.
- B. First Course: Apply full shingle flush with starter course at lower left hand corner of roof.
- C. Second Course: Cut 5-5/8 inches off left end of shingle and apply the 33-3/4 inches long piece over the headlap of the first course shingle, exposing the first course 5-5/8 inches.
- D. Third Course: Cut 11-1/4 inches from left end of shingle and apply the 28-1/8 inches long piece over the headlap of the second course shingle, exposing the second course 5-5/8 inches.
- E. Succeeding Courses: Courses four through seven are begun with a partial shingle 5-5/8 inches shorter progressively, establishing the overall diagonal pattern. See the PABCO Tahoma® Application Instructions – Directions For Application for more details at [www.pabcoroofing.com](http://www.pabcoroofing.com).

### 3.8 APPLICATION, ADDITIONAL CONSIDERATIONS

- A. Base and Cap (Counter) Flashing:
  - 1. Install metal base flashing for the front of a chimney, skylight, vent or adjoining wall, over the headlap of the last course of shingles below the chimney, and extending up the chimney. Set both the roof and chimney overlaps in asphalt roof cement. Where the roof abuts the chimney or vertical wall, the shingles must be flashed with metal flashing shingles applied over the end of each course of shingles. The flashing shingles are 8-inches by 7-5/8 inches, bent to extend 4-inches out over the shingles on

the roof deck and 4-inches up the vertical surface. Each flashing shingle is placed so that its bottom edge is just back from the exposed edge of the shingle which will overlap it. It is secured to the deck with one nail near the top corner. The base flashing must be flashed with cap flashing of sheet metal. The cap flashing must extend at least 1-inch into the masonry mortar joints and be caulked with asphalt roof cement to insure a water-tight connection. Base flashing should be cut to cover the entire cricket and extend 6-inches up the brickwork on the chimney. See ARMA Residential Asphalt Roofing Manual for additional details.

B. Hips and Ridges:

1. Trim shingles to be even with the ridge and cap with PABCO® Shadow Cap shingles exposed 5-5/8 inches to the weather. Nail 6-5/8 inches back from the exposed edge and 1-inch up from the bottom edge with galvanized roofing nails long enough to penetrate deck 3/4-inch. Applying PABCO® Shadow Cap as a double layer piece is recommended to accent the hip and ridge lines.
2. In cold weather (40°F or below) store shingles for hip & ridge in heated location 24 hours prior to application.

DISCLAIMER:

*PABCO® Roofing Products Guide Specifications have been written as an aid to the professionally qualified specifier and design professional. The use of this information requires the professional judgment and expertise of the qualified specifier and design professional to adapt the information to the specific needs of the building Owner and the project; to coordinate with the design professional's construction document process, and to meet the applicable building codes, regulations and laws. PABCO® Roofing Products disclaims any warranty, expressed or implied, including the warranty of fitness for a particular purpose of the product for a project.*

END OF SECTION 07 31 13