



# EXTERIOR & INTERIOR Wall Manual



**2025**  
Edition

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This manual is intended for use with Western Red Cedar and Alaskan Yellow Cedar shingle and shake applications only. Western Red Cedar products manufactured by CSSB members are labeled with the “Certi” brand name. Alaskan Yellow Cedar products manufactured by CSSB members are labeled with “Yellow Cedar” at the top of their label. For ease of reference this manual refers to “Certi-label® Western Cedar” and the term is understood to include both Western Red Cedar and Alaskan Yellow Cedar products manufactured by CSSB members.

Certi-label® Western Cedar shingles and shakes are the ideal exterior wall cladding for new construction and remodeling. They bring life in the form of beauty, texture, durability, insulative quality and low maintenance to any building. Restyling with Certi-label® Western Cedar shingles or shakes is easily accomplished, whether replacing the previous wall material (re-wall) or applying right over the existing wall (over walling).

## Exterior and Interior Walls Construction Manual

Material for this manual has been compiled from various authoritative sources and many of the construction methods shown herein have been developed by the shingle and shake specialists in both the United States and Canada. The design and application details and methods of construction reflect current good building practice. Other options are possible but ensure that you check with your local building code official for approval.

## Certi-label® Products

Certi-label® Western Cedar shingles and shakes manufactured by members of the Cedar Shake & Shingle Bureau® (“CSSB”) are the only products labeled with the “Certi” brand name. Certi-label® Western Cedar shingles and shakes are made by experienced craftsmen who take pride in their trade and the quality of their product. Despite their varying sizes and sometimes remote locations, member mills are bound together by a rigid quality code. Unannounced independent inspections conducted by accredited third party agencies ensure that product quality is maintained. Products are inspected to conform with various local, national and international codes and standards (contact the CSSB for specific details).

All CSSB member product has the mill’s distinctive Certi-label® tucked under the bundle strap or printed on the carton. Asking for “the blue label” or “number one blue label” is not specific enough: CSSB members’ products are the only ones with the “Certi” brand name on the label.

## Application Notes

Good workmanship is crucial to the integrity of any sidewall system. Installers should read this manual carefully and ensure that they follow proper workmanship practices.

Certi-label® Western Cedar shingles and shakes are applied on walls in a different manner than on roofs. The major point of difference is in permissible weather exposures - the maximum weather exposure on walls is greater than it is on roofs. A given area of wall, therefore, will require less material than the same area of roof.

Ask for warranty requirements, including product labels, before purchasing product. As usual, always check with your local building code official for requirements in your area.














### NOTE:

- ONLY experienced professionals who follow proper safety and workmanship practices should implement the information contained herein.
- Different climates have different code requirements. Ensure the right products and installation methods are used per the building code official in your area. **The information in this manual is not intended to supersede local building codes.**
- Confirm labels required for warranty registration before purchasing product. Ensure details are listed on purchase order.
- Refer to [www.cedarbureau.org](http://www.cedarbureau.org) for project inspiration and photo portfolio.

**Note: This manual replaces all previous versions of the “Design and Application Manual for Exterior and Interior Walls” and “Exterior and Interior Wall Manual”.**



| CERTIGRADE® WESTERN CEDAR SHINGLES  |   |  |
|---|---|--|
| <b>Number 1 Blue Label®</b><br>    |  | <p>The premium grade of shingles for sidewalls and roofs. These top-grade shingles are 100% heartwood, 100% clear and 100% edge grain. Available in 16", 18" or 24" lengths.</p>                         |
| <b>Number 2 Red Label</b><br>      |  | <p>A good grade for many applications. Not less than 10" clear on 16" shingles, 11" clear on 18" shingles and 16" clear on 24" shingles. Flat grain and limited sapwood are permitted in this grade.</p> |
| <b>Number 3 Black Label</b><br>    |  | <p>A utility grade for economy applications and secondary buildings. Not less than 6" clear on 16" and 18" shingles, 10" clear on 24" shingles.</p>  |
| <b>Number 4 Undercoursing</b><br> |  | <p>A utility grade for undercoursing of double coursed sidewalls only. Not a roofing material and not to be used as a starter course for roofs.</p>  |

| CERTI-LABEL® WESTERN CEDAR SHAKES  |   |   |
|--|---|---|
| <b>Certi-Split® Handsplit Shakes</b><br>      |  | <p>These shakes have split faces and sawn backs. Cedar logs are first cut into desired lengths. Blanks or boards of proper thickness are split and then run diagonally through a bandsaw to produce two tapered shakes from each blank. Available in Premium Grade (100% edge grain) or Number 1 Grade.</p> |
| <b>Certi-Sawn® Tapersawn Shakes</b><br>       |  | <p>These shakes are sawn both sides. Premium and Number 1 Grades are the most common. Premium Grade is 100% edge grain, 100% clear and 100% heartwood. Number 1 Grade allows up to 20% flat grain in each bundle. Number 2 and 3 Grades are also available.</p>   |
| <b>Certi-Split® Tapersplit Shakes</b><br>     |  | <p>Produced by hand, using a sharp bladed steel froe and a mallet. The natural shingle-like taper is achieved by reversing the block, end-for-end, with each split. Premium Grade only.</p>   |
| <b>Certi-Split® Straight-Split Shakes</b><br> |  | <p>Produced by machine or in the same manner as tapersplit shakes except that by splitting from the same end of the block, the shakes acquire the same thickness throughout. Premium Grade only.</p> <p><b>Note:</b> Western Cedar's natural color varies.</p>  |

## CERTI-LABEL® WESTERN CEDAR SIDEWALL PRODUCTS

### Certigrade® Rebutted & Rejointed Shingles



Also known as R&R products, these materials have the same specifications as Number 1 and Number 2 Certigrade® shingles, but they are machine re-trimmed for parallel edges and with smooth butts sawn at right angles where a uniform appearance is desired. They are primarily used for sidewall applications. Rebutted and rejointed shingles are also available with a smooth sanded face, with the length of the sanded face at a length greater than the maximum exposure. They are manufactured from 16", 18" and 24" lengths.

### Certigroove® Machine Grooved Shingles



Machine grooved shingles are manufactured as a rebutted and rejointed shingle with one face striated for a length greater than the maximum exposure. Machine grooved products are for sidewall applications only and are remanufactured from 16", 18" and 24" shingles.



#### NOTE:

Roofing products can be used for sidewall applications but will yield a less even appearance due to increased tolerance allowances of edges.

### Certi-Cut® Shingles

These shingles are 5" wide and are manufactured from 16" and 18" lengths. An 18" length, 96-piece carton will cover 25 square feet at 7 1/2" exposure. Nine of the most popular designs are shown. Certi-Cut® shingles can also be custom produced to meet individual design specifications.

Diagonal



Fish-scale



Diamond



Square



Half Cove



Hexagonal



Octagonal



Round



Arrow



## SIDEWALL CARTON PACKAGING EXAMPLE

Half Carton



Full Carton



LOOK FOR THE  
CERTI-LABEL®  
ON THE CARTON.

## Pressure-Impregnated Treated Products

Certi-label® products can also be treated. Products are available either fire-retardant-treated OR preservative-treated. Special care must be taken to follow the treatment company's recommended installation instructions.



### Certi-Guard® Fire-Retardant Treated Western Cedar Shingles and Shakes

Number 1 Grades of Certigrade® shingles and Premium and Number 1 Grades of Certi-Split shakes® and Certi-Sawn® shakes are available pressure-impregnated treated with fire retardants. Contact the treatment company for treatment warranty information, accessory product requirements (including recommended fastener types) and application details for treated Western Cedar material. Local code jurisdictions may have additional information regarding applications in specific areas.



### Certi-Last® CCA Preservative-Treated Western Cedar Shingles and Shakes

Number 1 Grades of Certigrade® shingles and Premium and Number 1 Grades of Certi-Split® shakes and Certi-Sawn® shakes are available preservative-treated by pressure impregnation process. This product is ideal in areas of high humidity. Specify the Certi-Last® treating label for this extra protection. Contact the treatment company for treatment warranty information, accessory product requirements (including recommended fastener types) and application details for treated Western Cedar material.



#### NOTE:

- Once Western Cedar shingles and shakes are pressure-impregnated treated you must contact the treatment company to determine if a finish, such as paint or stain or cleaning solution/agent, is allowable.
- Confirm product labels required for warranty registration BEFORE purchasing product. Ensure details are listed on purchase order.



Photo Courtesy: Tony Bonura

#### TIPS

Certi-label® Western Cedar shingle and shake size, exposure, width of joints, width of product, kiln versus air-drying process, moisture content and the local environment will all affect the expansion/contraction of Certi-label® Western Cedar sidewall products. These factors should always be taken into consideration when determining the installation details and adequate spacing needed for your specific project. Consult with your installer and refer to this manual for more lateral spacing details.

It is suggested that shingles from several job-specific boxes are blended during the installation process.

## Design and Application Details

The instructions given here are not meant to supersede local code requirements. Check with your local building code official for their preference in your area.

**Preparation** - Be sure that the walls are smooth, without protuberances. Nail ends or points should be removed or pounded flush.

### TIPS:

The CSSB recommends installing over plywood panel or dimensional lumber sheathing. If other sheathing materials are approved for use by your local building code official, the holding power of the fasteners should also be considered carefully.

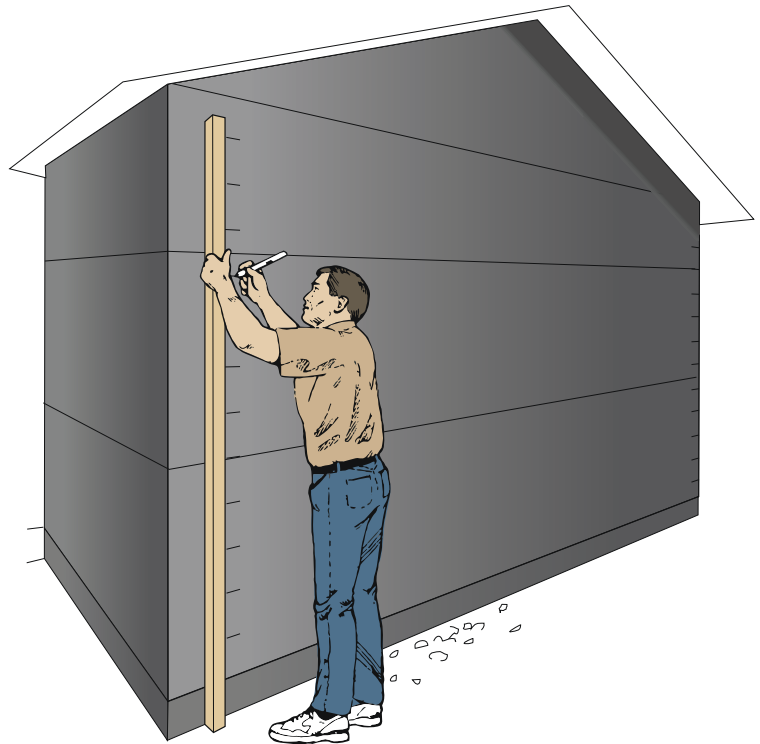
**Underlayment** - The CSSB recommends No. 30 organic felt (ASTM D226 Type II or ASTM D4869 Type IV) underlayment material. Apply it horizontally, with a staple gun, starting at the base of the wall, with a 2" horizontal overlap with each succeeding course and a 6" overlap vertically when starting a new roll. Wrap the organic felt underlayment 4" each way around both inside and outside corners.

**Corner Boards** - Install corner boards (**Figure 8**) at this time.

**Flashing** - Flashings associated with doors, windows and penetration details should be in accordance with local building code requirements.

**Laying Out** - Determine the number of Certi-label® courses by measuring the height of the wall at the lowest part of the foundation, from a point 1" below the top of the foundation, to the top of the wall. Divide the height into equal parts, corresponding closely to the weather exposure, but not exceeding the maximum weather exposure recommended. Transfer this measurement and the number of Certi-label® courses to a storypole (**Figure 1**), to lay out courses on all

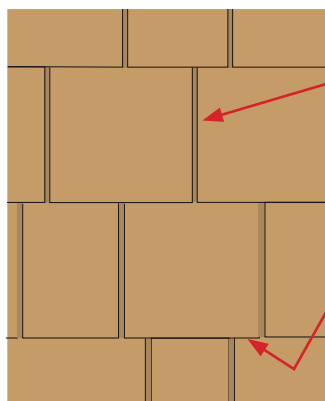
**Figure 1: Storypole**



other walls. Whenever possible butt lines should align with tops or bottoms of windows or other openings and for appearance the exposure of the final course at the top should match those below.

Certi-label® Western Cedar shingle and shake size, exposure, width of joints, width of product, kiln versus air-drying process, moisture content and the local environment will all affect the expansion/contraction of Certi-label® Western Cedar sidewall products. These factors should always be taken into consideration when determining the installation details and adequate spacing needed for your specific project. Consult with your installer and refer to **Figure 2: Spacing Detail**.

**Figure 2: Spacing Detail**

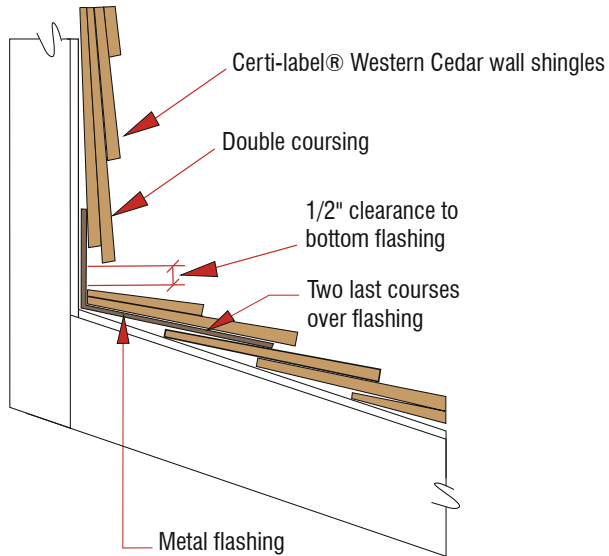


### Spacing Detail

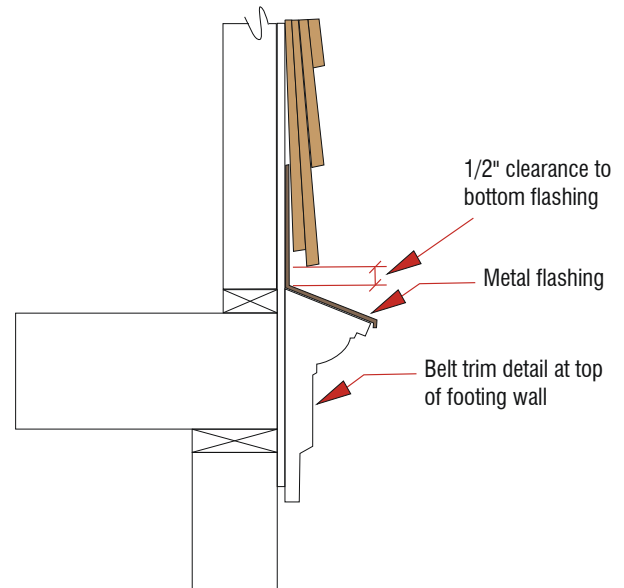
- Number 1 Grade Certi-label® Western Red Cedar shingles shall be spaced 1/8" to 1/4" apart (keyways are 1/8" to 1/4" wide).
- Number 1 Grade Certi-label® Yellow Cedar shingles shall be spaced 3/16" to 5/16" apart (keyways are 3/16" to 5/16" wide).
- These joints allow for expansion and prevent possible "buckling." For every 4" width of dry Certi-label® Western Cedar shingle material, the product will expand approximately 1/8". Therefore space keyways accordingly, i.e. 12" shingle is expected to have approximately 3/8" expansion.
- Allow minimum 1/4" to 3/8" keyway spacing for Number 2 Grade Rebutted and Rejointed Certi-label® Western Red Cedar shingles.
- Leave a side lap of at least 1 1/2" between joints in adjacent courses.



**Figure 3a: Flashing**

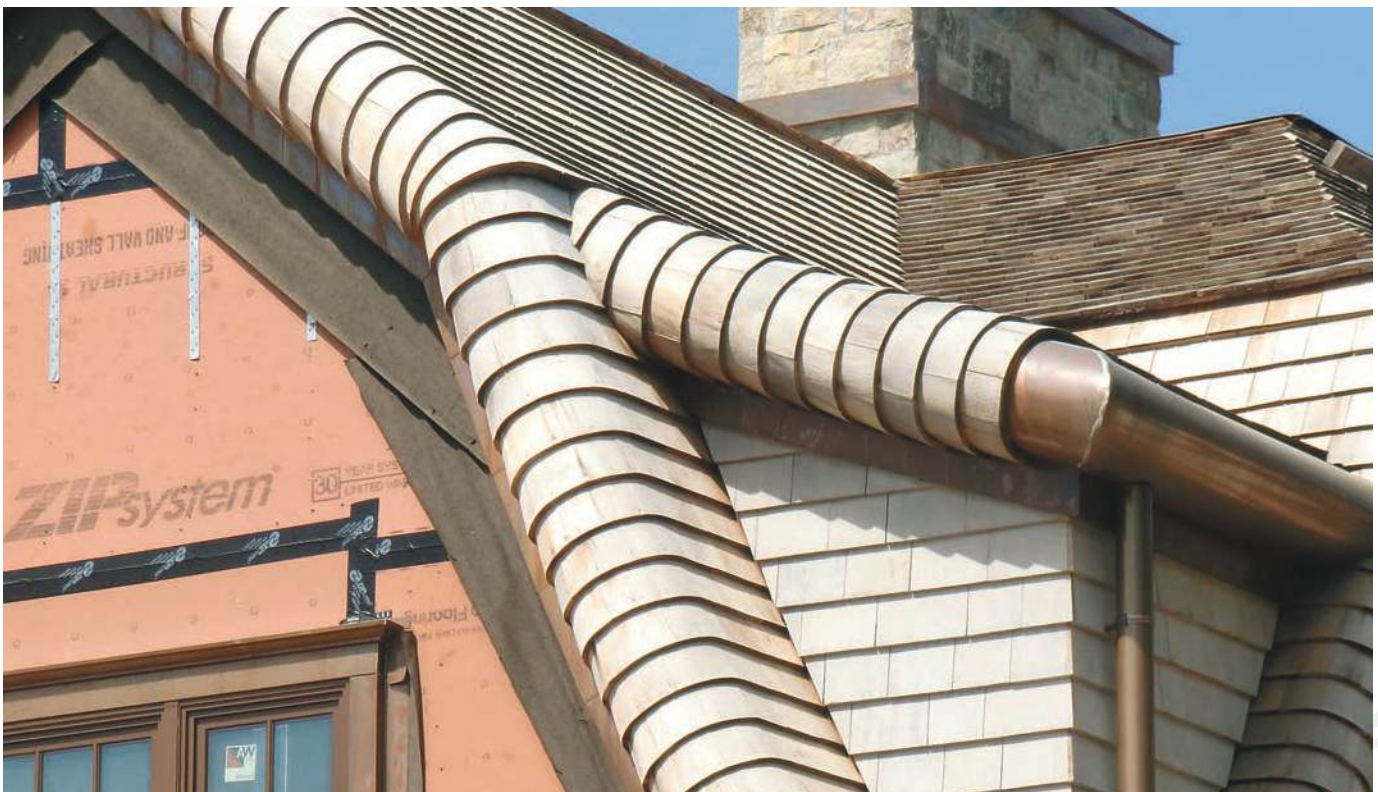


**Figure 3b: Flashing**



**Figures 3a and 3b:**

To prevent the wicking of water, which may cause staining, keep a 1/2" clearance between the first course of Certi-label® products from all surfaces below.



Sidewall Dormer Photo

## Nails

Each Certi-label® Western Cedar shingle or shake should be applied with two fasteners. Nails must be stainless steel Type 316 in locations within fifteen (15) miles of salt water. For locations outside the salt water zone - nails must be stainless steel Type 304, Type 316, or hot-dipped zinc coated galvanized after manufacture conforming to a coating weight 2 of ASTM A 153 Class D (1.0 oz/ft<sup>2</sup>). Stainless steel nails are a better value and offer the highest degree of corrosion resistance. Contact the nail manufacturer for further information to ensure the nails used comply with listed requirements and are correct for your application. Minimum nail lengths are shown in the fastener chart on page 8. In double course applications, the exposed Certi-label® Western Cedar shingle or shake shall be face-nailed with two nails (as above), driven 2" above the butt line and 3/4" from each edge.

Certi-label® Western Cedar shingles wider than 10" require 1 additional nail driven near the center of the shingle. Alternatively, split the shingle into 2 smaller width shingles.



Wallcladding Detail

Figure 4a: Nail Driving Detail

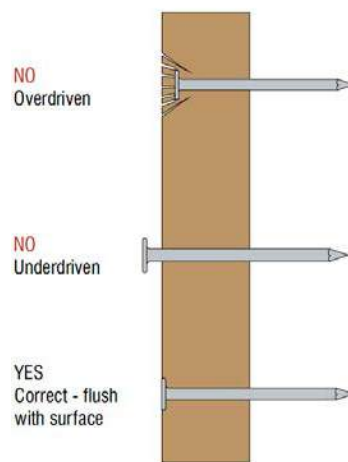
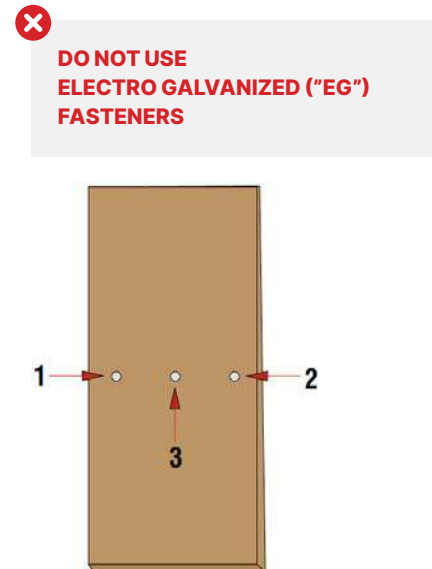


Figure 4b: Wide Shingle Fastener Detail



## Staples

If you choose to use staples they **MUST BE** stainless steel **Type 316** in locations within fifteen (15) miles of salt water. For locations outside of the salt water zone - stainless steel staples **Type 304** or **Type 316 MUST BE USED**.

Two staples should be driven per Certi-label® Western Cedar shingle or shake with the staple crowns 7/16" minimum horizontal, maximum 3/4" horizontal, to the Certi-label® Western Cedar shingle or shake butt. Staples are driven in the same location as nails relative to the sides and overlapping butt line. For Certi-label® Western Cedar shingles up to 10" wide, place two staples in each shingle 3/4" from each edge. Certi-label® Western Cedar shingles wider than 10" require an additional staple driven near the center of the shingle. Alternately, split the shingle into 2 smaller width shingles.

Fasteners should be long enough to penetrate into the sheathing at least 3/4" or all the way through and driven flush with the surface of the Certi-label® Western Cedar shingle or shake. In all applications, staples shall be concealed by the course above.



Example of a severely corroded electrogalvanized fastener. Ensure the correct fasteners are used. Corroded fasteners lead to serious sidewall system failures as well as unsightly staining.





## NOTES:

**Underdriving or overdriving** any fastener will affect the integrity of the Certi-label® Western Cedar sidewall system.

**DO NOT USE ELECTROGALVANIZED (EG) FASTENERS.** Ensure the fasteners used comply with listed requirements. Nails are preferred, for aesthetic reasons, in sidewall application using exposed fasteners.

**Some nail manufacturers offer nails specifically for wood shake or shingle sidewall application. Contact the nail manufacturer for further information to ensure the fasteners used comply with listed requirements and are correct for your application.**

The CSSB and building code require stainless steel Type 316 fasteners in locations within fifteen (15) miles of salt water. See details herein for more specifics.

## Pressure Impregnated Treated Shakes and Shingles

Fasteners used with fire-retardant (Certi-Guard®) or preservative treated (Certi-Last®) Western Cedar shakes or shingles must be stainless steel Type 316. For specifics on installation, accessory building materials (flashing, etc.) finishes and maintenance please contact the treatment company directly.

Ring shank nails are used for better withdrawal resistance and in designated high wind zone areas.

The information on this page is not meant for sidewall pre-made panel applications. Please contact the manufacturer for specific panel details. The information in this manual is not intended to supersede local building codes.

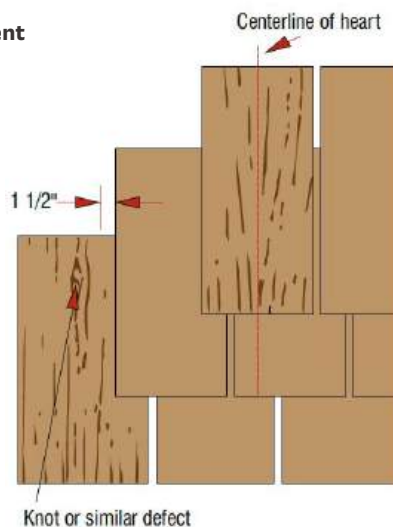
### Single Course Sidewall Fasteners

| Product Type                                   | Nail Type & Minimum Length |
|--|----------------------------|
| <b>Certigrade® R&amp;R and Sanded Shingles</b> | <b>Type (in)</b>           |
| 16" and 18" Shingles                           | 3d Box 1 1/4               |
| 24" Shingles                                   | 4d Box 1 1/2               |
| <b>Certigroove® Shingles</b>                   | <b>Type (in)</b>           |
| 16" and 18" Shingles                           | 3d Box 1 1/4               |
| 24" Shingles                                   | 4d Box 1 1/2               |
| <b>Certi-Split® &amp; Certi-Sawn® Shakes</b>   | <b>Type (in)</b>           |
| 18" Straight-Split Shakes                      | 5d Box 1 3/4               |
| 18" and 24" Handsplit Shakes                   | 6d Box 2                   |
| 24" Tapersplit Shakes                          | 5d Box 1 3/4               |
| 18" and 24" Tapersawn Shakes                   | 6d Box 2                   |

### Double Course Sidewall Fasteners

| Product Type                                   | Nail Type & Minimum Length             |
|--|--|
| <b>Certigrade® R&amp;R and Sanded Shingles</b> | <b>Type (in)</b>                       |
| 16", 18" and 24" Shingles                      | 5d Box 1 3/4 or same size casing nails |
| <b>Certigroove® Shingles</b>                   | <b>Type (in)</b>                       |
| 16", 18" and 24" Shingles                      | 5d Box 1 3/4                           |
| <b>Certi-Split® &amp; Certi-Sawn® Shakes</b>   | <b>Type (in)</b>                       |
| 18" Straight-Split Shakes                      | 7d Box 2 1/4 or 8d 2 1/2               |
| 18" and 24" Handsplit Shakes                   | 7d Box 2 1/4 or 8d 2 1/2               |
| 24" Tapersplit Shakes                          | 7d Box 2 1/4 or 8d 2 1/2               |
| 18" and 24" Tapersawn Shakes                   | 7d Box 2 1/4 or 8d 2 1/2               |

**Figure 5: Course Alignment**



**DO NOT USE  
ELECTROGALVANIZED ("EG")  
FASTENERS**

## Single Coursing

Double the starting course at the base of the wall (**Figure 6**). For Number 1 Grade Certi-label® Western Red Cedar shingles apply with 1/8" to 1/4" keyway space and for Number 1 Grade Yellow Cedar shingles, apply with 3/16" to 5/16" keyway space between the Certi-label® shingles, giving a pronounced individual effect to each course.

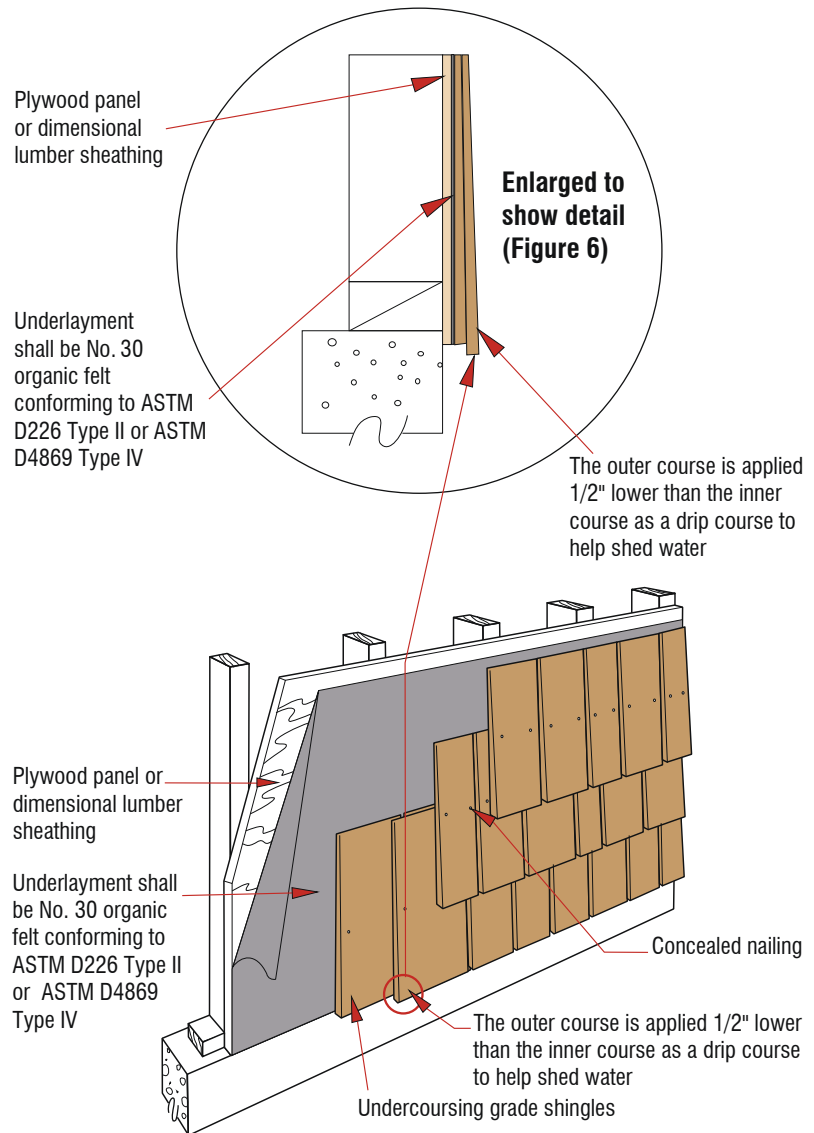
Offset the side joints in any one course at least 1 1/2" over joints in adjacent courses (**Figure 2**).

Use a straight edge, nailing it lightly to the wall with the edge at the butt line (to keep courses straight and level). Check for level every 3 or 4 courses.

This wall application features concealed nailing (**Figure 6**), with nails driven approximately 1" above the butt line of the succeeding course. With Certi-label® Western Cedar shingles wider than 10", drive one nail near the center or split wide shingle into two smaller width shingles.

Because Certi-label® Western Cedar shingles vary in width there should be little waste. At corners, or at door or window frames, you may have to trim a selected Certi-label® Western Cedar shingle slightly.

**Figure 6: Single Coursing**



### NOTE:

The CSSB recommends installing **over plywood panel** or dimensional lumber sheathing. If other sheathing materials are approved for use by your local building code official, the holding power of the fasteners should also be considered carefully. Consider using ring shank nails. Contact local building code official for **substrate (plywood)** attachment fastener detail.

All figures depict shingle applications. DO NOT interlay shingles or shakes with organic felt on sidewall applications.

The Cedar Shake & Shingle Bureau® recommends that underlayment shall be No. 30 organic felt conforming to ASTM D226 Type II or ASTM D4869 Type IV. Check with your local building code official for any questions about alternative underlayment materials.

## Double Coursing

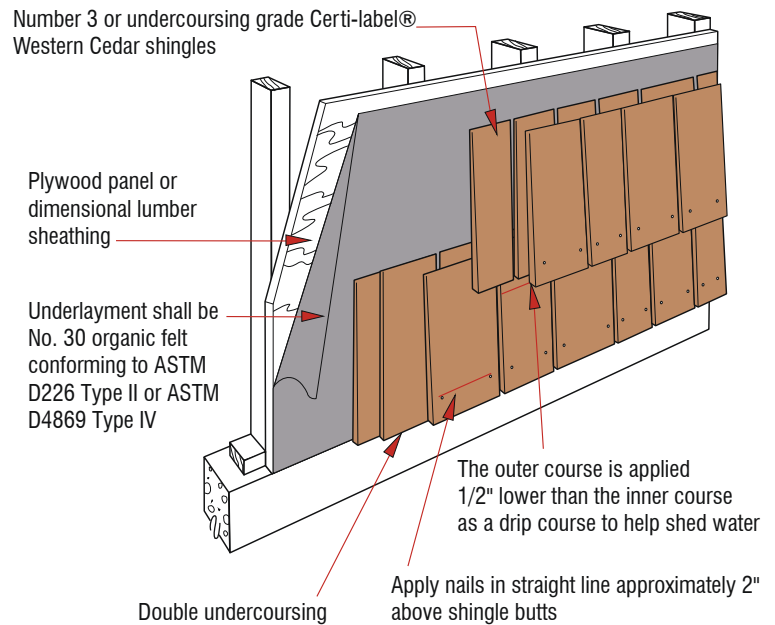
To obtain an attractive wall characterized by wide weather exposures and deep shadow lines, Certi-label® Western Cedar shingles and shakes can be applied double coursed. This method offers economy because of the wide exposures of the outer course and the use of less expensive undercoursing Certi-label® Western Cedar shingles for the under layer (**Figure 7a**). For double coursing exposure details refer to the chart on page 17.

In double coursing, the bottom or starter course is laid triple with two undercourse Certi-label® Western Cedar shingles or one undercourse Certi-label® Western Cedar shingle over a wood lath and then the outer course. This gives the bottom course the same slant as succeeding courses. All outer courses are applied 1/2" lower than the undercourse (**Figure 7a**). A straight edge can be used to facilitate placement and nailing of both the undercourse and exposed course.

Undercourse Certi-label® Western Cedar shingles are fastened at the top with one nail or staple in the center. The exposed Certi-label® Western Cedar shingle or shake is face-nailed with two casing-type nails, driven approximately 2" above the butt line, 3/4" from each edge.

Certi-label® Western Cedar shingles wider than 10" require 1 additional nail and this nail is driven near the center of the shingle.

**Figure 7a: Double Coursing**

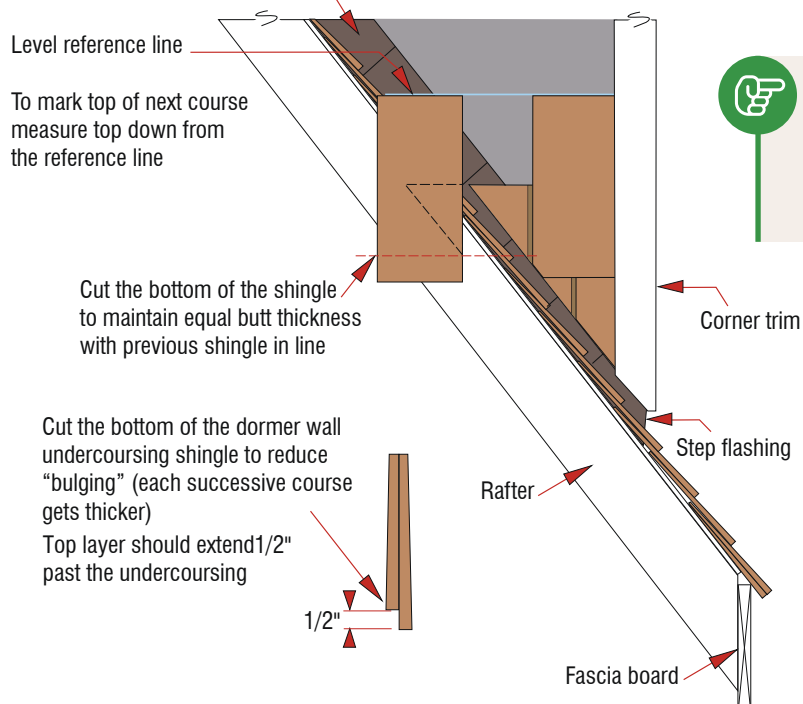


### NOTE:

The CSSB recommends installing over plywood panel or dimensional lumber sheathing. If other sheathing materials are approved for use by your local building official, the holding power of the fasteners should also be considered carefully.

**Figure 7b: Dormer Coursing**

**Note:** Consult your local building code official about the size and height (min 3") of the step flashing



### NOTE:

Cutting the shingle at the bottom avoids bulging or sidewall getting thicker with each adjacent course.

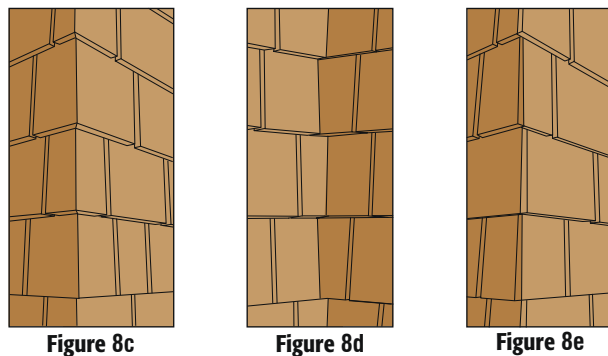
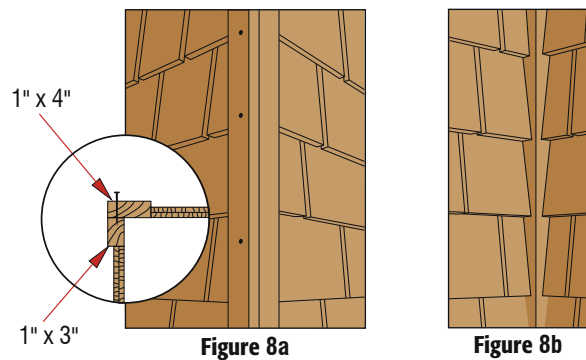


## Corners

Neatly fitting inside or outside corners are easily made. It is standard practice to lace outside corners (**Figure 8e**). On wide exposures this method requires small nails near the Certi-label® Western Cedar shingle butts to tighten and hold the lapped corners. For these corners use only nails that are corrosion resistant. In double course applications, the exposed Certi-label® Western Cedar shingle or shake shall be face-nailed with two hot-dipped galvanized after manufacture or stainless steel casing nails, driven 2" above the butt line and 3/4" from each edge. Certi-label® Western Cedar shingles wider than 10" require 1 additional nail driven near the center of the shingle. Corner boards can also be used to advantage by nailing a 1" x 4" cedar board to a 1" x 3" cedar board, then attaching the preassembled corner to the building (**Figure 8a**).

It is good practice to use flashing behind Certi-label® Western Cedar shingles or shakes at the inside and outside corners. They may be butted against a square wood strip (**Figure 8b**), or they may be fitted one course to the other (**Figure 8d**). When the latter method is used, courses must be completed on each wall progressively and can be best applied by working from the corners while alternately fitting one course to the other (**Figure 9**).

**Figures 8a-8e: Corner Option Details**



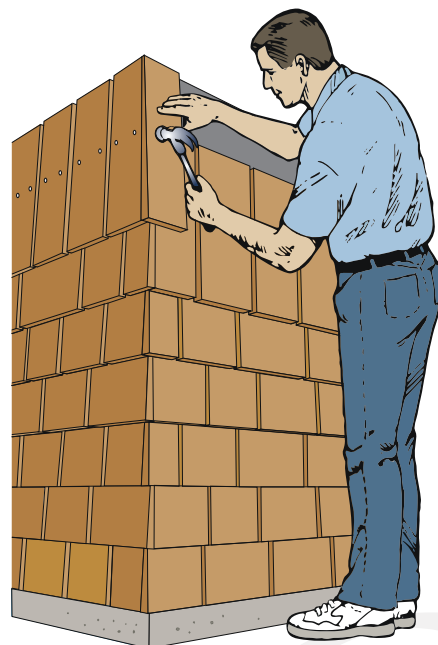
- 8a Certi-label® Western Cedar shingles butted against corner boards
- 8b Certi-label® Western Cedar shingles butted against square wood strip, flashing behind
- 8c Mitered corner
- 8d Laced inside corner with flashing behind inside strip on corner
- 8e Alternated laced outside corner



### NOTE:

It is preferred practice to install inside/outside corner flashing to safeguard against the cracking or tearing of No. 30 organic felt (ASTM D226 Type II or ASTM D4869 Type IV) underlayment at these corners.

**Figure 9: Fitting Laced Corner Courses**



## Design and Application Instructions

### Staggered Butt Coursing

For single course application, an attractive effect can be made by staggering the butt of the Certi-label® Western Cedar shingle from the horizontal line. Apply the Certi-label® Western Cedar shingle irregularly at variable distances below (but not above) the horizontal line.

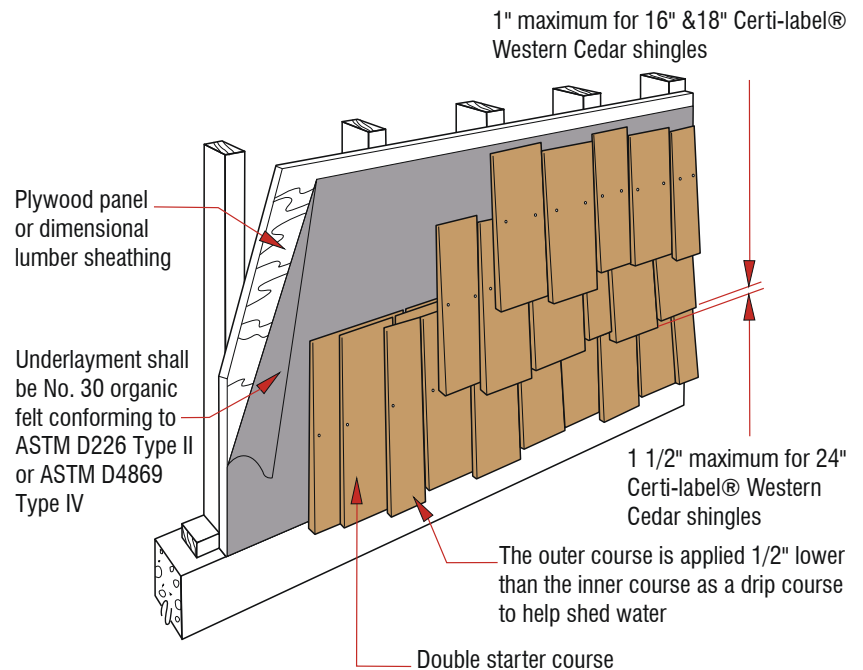
Staggered butt applications (**Figure 10**) are made by shortening the exposure less than the greater maximum exposure. No Certi-label® Western Cedar shingles or shakes shall be applied greater than the maximum exposure allowed. Check with your local building code official for approval of the staggered butt coursing installation method.



#### NOTE:

Butt nail all double coursed Certi-label® Western Cedar Sidewall shingles that are exposed more than their maximum single course exposure.

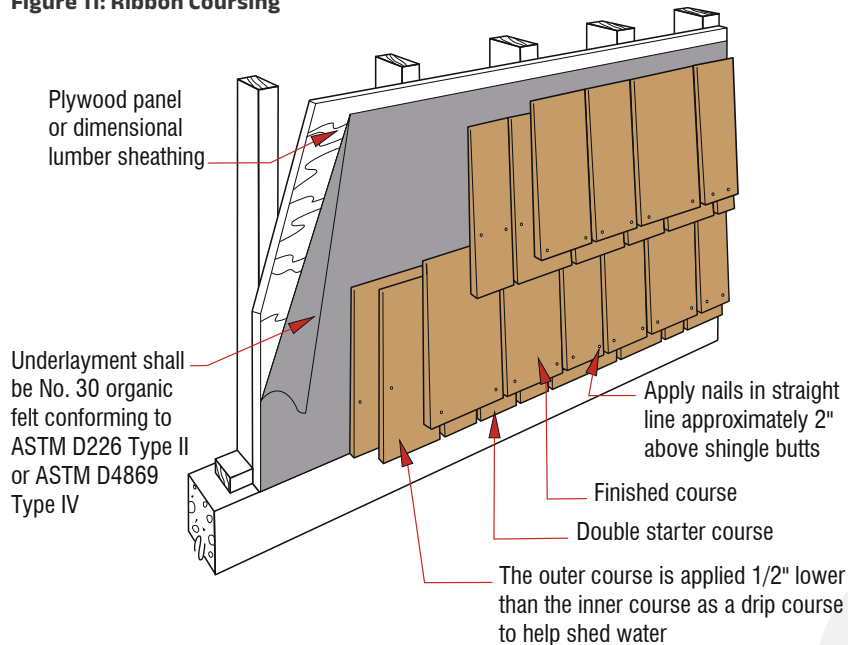
**Figure 10: Staggered Butt Coursing**



### Ribbon Coursing

A double shadow line effect can be obtained by raising the outer course Certi-label® Western Cedar shingles approximately 1" above the undercoursing. Use Number 1 Grade Certi-label® Western Cedar shingles for undercoursing when applying ribbon coursing (**Figure 11**).

**Figure 11: Ribbon Coursing**



## Design and Application Instructions

### Re-walling

Once the old exterior wall material has been removed and the old nails or other protrusions cleaned away, the new wall can be applied. No. 30 organic felt (ASTM D226 Type II or ASTM D4869 Type IV) underlayment should be applied since it is new construction.

### Over Walling

Applying Certi-label® Western Cedar shingles or shakes right over an old wall - whether wood, brick, stucco, or synthetic products - is easily done. It saves time involved in both removing the old exterior and in disposing of it. However, avoid nailing over vinyl or aluminum as they are not sufficiently strong to provide a proper support.

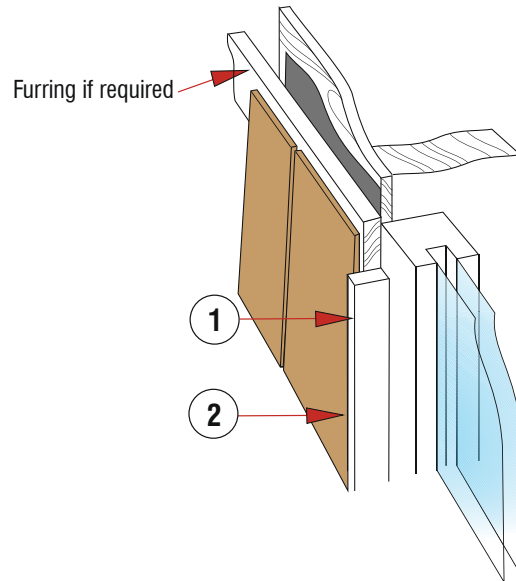
First, nail moulding strips on the face of existing window and door casings, flush with the outer edges. The Certi-label® Western Cedar shingles or shakes are then joined to the mouldings (**Figure 12**).

### Over Beveled Siding

Applying a new Certi-label® Western Cedar shingle or shake wall over old beveled siding can be accomplished in either of two ways: 1) By filling in the low points of the wall with low grade lumber or plywood strips (called horse feathers) of appropriate thickness and thereby increasing the potential nailing surface, or 2) by nailing the Certi-label® Western Cedar shingles or shakes to the high points of the bevels of each course of the old wall, or of alternate courses [provided it does not result in weather exposure greater than is recommended (**Figure 13**)].

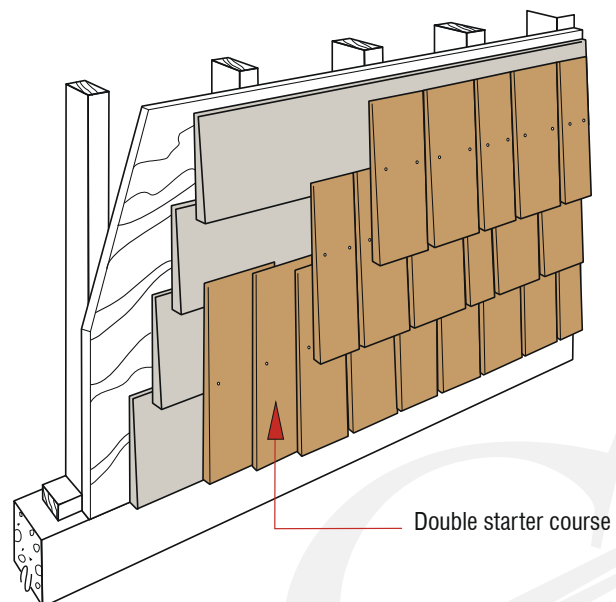
Ensure that the first course is properly attached. All Certi-label® Western Cedar shingle and shake product installation must meet nailing and exposure guidelines as detailed in this manual. It may be necessary to add occasional nailing strips.

**Figure 12: Typical Window and Door Casing Detail**



1. Apply new casing to bring Certi-label® Western Cedar shingles or shakes flush with surface.
2. The integrity of the original flashing is to be utilized. Additional trim is considered to be decorative only. If the original window does not have good structural integrity, it must be removed and a new one installed. New casings are to be installed as part of proper wall construction as shown throughout this manual.

**Figure 13: Over Beveled Siding Detail**





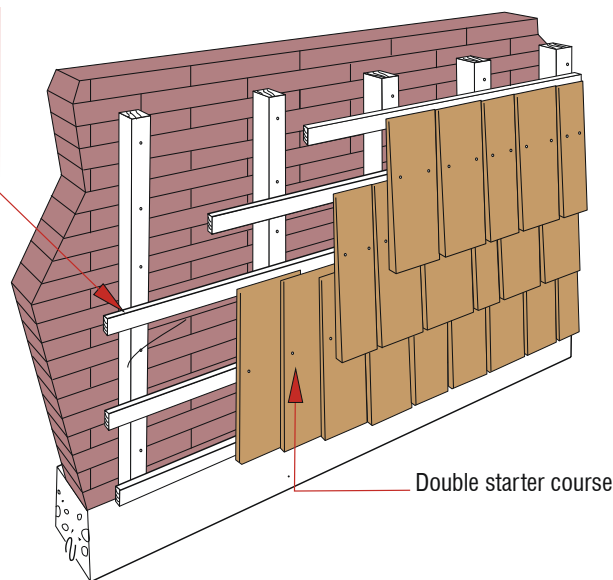
## Over Masonry or Foam Sheathing

Masonry walls are easily covered, by vertically furring the walls and applying nailing strips (1" x 3" or 1" x 4") spaced according to the exposure and single/double course product design. When installing over masonry, the nailing strips should be fastened with special nails, driven between the bricks or blocks, so that the outer shingled wall will be firmly attached.

When installing over foam sheathing, vertical spacers shall be attached with fasteners long enough to penetrate through the foam sheathing and the underlying wood sheathing. Do not apply only to the foam sheathing as it is too weak to provide proper support (**Figure 14**).

**Figure 14: Over Masonry or Foam Sheathing Detail**

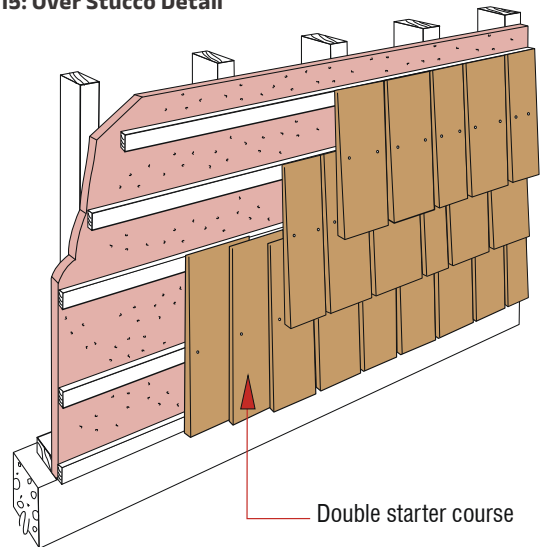
1" x 3" or 1" x 4" nailing strips spaced according to exposure of Certi-label® Western Cedar shingles or shakes, regardless of single or double course



## Over Stucco

Nailing strips should be attached with nails long enough to penetrate the stucco and the underlying sheathing. Do not apply directly to the stucco, which is too weak to provide a proper support. If the old stucco is removed, new No. 30 organic felt (ASTM D226 Type II or ASTM D4869 Type IV) underlayment is then applied to the walls and the shingling can proceed as in new construction (**Figure 15**).

**Figure 15: Over Stucco Detail**



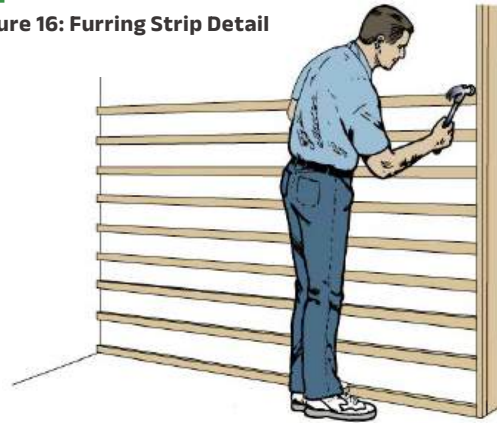
## Design and Application Details

Certi-label® Western Cedar shingles or shakes are building materials that adapt easily to many different structural forms. Their use in interiors is practically unlimited and a wide variety of imaginative effects can be achieved.

Certi-label® Western Cedar shingles or shakes can be readily applied over almost any interior wall surface, including wood, brick, plaster, or concrete. Nails, staples, or glue may be used as fasteners on interior wall projects. Certi-label® Western Cedar shingles or shakes may be attached directly to the interior wall providing it has sufficient holding qualities to support the fasteners. If this is not the case, they may be applied over spaced furring strips, which are fastened to the wall by nails or glue. As a general rule, the furring strips should be placed a distance apart equal to the desired exposure.

Calculate the number of courses by dividing the wall height (minus the height of the base board, if any) by the desired exposure. Mark the positions of the nailing strips on a furring strip, then transfer these measurements to the wall. Fasten 1" x 2" or 1" x 3" furring strips to the wall (e.g. by nailing them through the wall into the studs) at the positions marked. If the Certi-label® Western Cedar shingles or shakes are to be carried around the corner, make sure the furring strips line up (**Figure 16**).

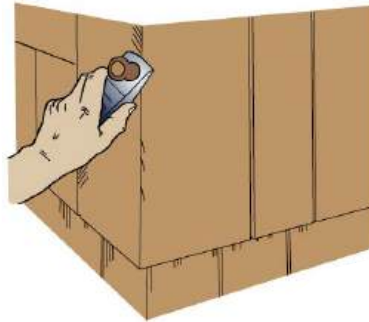
**Figure 16: Furring Strip Detail**



**Figure 17: Starter Course**



**Figure 18: Corner Detail**



Start with a double course at the bottom of the wall. Use two nails or staples in each Certi-label® Western Cedar shingle or shake placed so that the nail heads will be covered by the next course. The outer layer should overlap and conceal the side joints of the first course (**Figure 17**).

Continue with single courses to the top of the wall. A straight edge tacked to the wall will keep the courses true and the exposure consistent. Alternately overlap the Certi-label® Western Cedar shingles or shakes on the outside corner to give a "laced" effect, then trim them flush with a block plane (**Figure 18**).

**Figure 19: Top Course**



Cut the Certi-label® Western Cedar shingles or shakes for the last course and discard the thin end. Glue or nail the last course in place to make a neat top edge. A moulding strip may be applied to cover nail heads and hide any irregularities in the ceiling (**Figure 19**).

The interior Certi-label® Western Cedar shingles or shakes can now be finished to suit almost any taste. Contact a reputable finish manufacturer for more details.

## General Application Notes

1. The contractor shall cover all wall surfaces with Certi-label® Western Cedar shingles or shakes bearing the Cedar Shake & Shingle Bureau's® Certi-label®.
2. Certi-label® Western Cedar shingles or shakes for outer courses shall be (specify grade and length).
3. Certi-label® Western Cedar shingles or shakes for undercourses shall be (specify grade and length).

## Sidewall Application

4. Certi-label® Western Cedar sidewall shingles or shakes shall be (doubled or tripled) at foundation lines.
5. Number 1 Grade Certi-label® Western Red Cedar sidewall shingles shall be spaced apart 1/8" to 1/4"; Yellow Cedar shingles shall be spaced 3/16" to 5/16".



### NOTE:

- Number 2 Grade Certi-label® Western Red Cedar shingles should be spaced 1/4" to 3/8" apart.

6. Joints of Certi-label® Western Cedar shingles or shakes in any one courses shall be offset not less than 1 1/2" from the joints in adjacent courses.
7. Certi-label® Western Cedar shakes on sidewalls shall be spaced 3/8" to 1/2" apart.
8. Certi-label® Western Cedar sidewall shingles/shakes shall be applied with a weather exposure of (specify in inches from exposure chart).

## Fastening Sidewall Shingles/Shakes

9. Fasteners should be long enough to penetrate into the sheathing at least 3/4" or all the way through and driven flush with the surface of the Certi-label® Western Cedar shingle or shake. In all applications, staples shall be concealed by the course above. Fasteners cannot be electrogalvanized as they will corrode and cause staining. For aesthetic reasons, nails are preferred for sidewall applications.



### NOTE:

- Due to the diverse range of fastener requirements, please refer to pages 8 and 9 for fastener specifications.

## Maximum Sidewall Exposure Chart

### Number One Grade Products

| Certi-label® Western Cedar Product     | Grade | Single Course | Double Course |
|--|-------|---------------|---------------|
| <b>Certigrade®</b>                     |       |               |               |
| 16" Shingles                           | 1     | 7"            | 12"           |
| 18" Shingles                           | 1     | 8"            | 14"           |
| 24" Shingles                           | 1     | 10 1/2"       | 16"           |
| 16" R&R, sanded, Certigroove® Shingles | 1     | 7"            | 12"           |
| 18" R&R, sanded, Certigroove® Shingles | 1     | 7"            | 14"           |
| 24" R&R, sanded, Certigroove® Shingles | 1     | 10 1/2"       | 16"           |

### Certi-Split®

|                           |   |         |     |
|---------------------------|---|---------|-----|
| 18" Handsplit Shakes      | 1 | 8"      | 14" |
| 24" Handsplit Shakes      | 1 | 10 1/2" | 18" |
| 18" Straight Split Shakes | 1 | 8"      | 16" |
| 24" Tapersplit Shakes     | 1 | 10 1/2" | 18" |

### Certi-Sawn®

|                      |   |         |     |
|----------------------|---|---------|-----|
| 18" Tapersawn Shakes | 1 | 8"      | 14" |
| 24" Tapersawn Shakes | 1 | 10 1/2" | 18" |

### Number Two Grade Products

| Certi-label® Western Cedar Product | Grade | Single Course | Double Course |
|------------------------------------|-------|---------------|---------------|
| <b>Certigrade®</b>                 |       |               |               |
| 16" Shingles                       | 2     | 6"            | 9"            |
| 18" Shingles                       | 2     | 7"            | 10"           |
| 24" Shingles                       | 2     | 9"            | 14"           |
| 16" R&R, sanded Shingles           | 2     | 6"            | 9"            |
| 18" R&R, sanded Shingles           | 2     | 7"            | 10"           |
| 24" R&R, sanded Shingles           | 2     | 9"            | 14"           |
| <b>Certi-Sawn®</b>                 |       |               |               |
| 18" Tapersawn Shakes               | 2     | 7"            | 10"           |
| 24" Tapersawn Shakes               | 2     | 9"            | 14"           |



### Exterior Finishes (also known as Coatings)

There are a variety of paints, stains and preservative treatments available for Certi-label® Western Cedar sidewall products. Certi-label® sidewall products are available pre-finished (pre-primed or pre-stained) and natural (unfinished).

**Please note: A detailed product finishing discussion is beyond the scope of this manual; however, a brief overview is presented below. It is critical to read the instructions on the finish product's container as well as follow the finish manufacturer's directions. All areas of the world present unique painting/staining challenges. Some of the topics you should discuss with your sidewall product manufacturer, finish manufacturer and professional contractor include the following:**

1. Product coverage
2. Surface preparation
3. Qualified finish contractors in your area
4. Certi-label® Western Cedar moisture content level recommended for your specific locale
5. Appropriateness of finish for Certi-label® Western Cedar sidewall products
6. Drying color versus sample chip color
7. Material Safety Data Sheet
8. Mildew resistance
9. UV resistance and water repellency
10. Exterior/Interior finish usage
11. Depth of finish penetration
12. Application method, including how to cover all sides of product, mixing/stirring (to prevent lap marks), temperature, brush versus spraying tools and recommended proper clean up and disposal of all tools, brushes and rags. Talk to your finish manufacturer if you have questions about back-priming instructions for your particular project.
13. Price. Do not be fooled by a low price. Better quality brands tend to be more expensive. A cheap finish will usually cost more in the long run through quicker weathering, poorer coverage and less pigment. Use only the highest quality products from your finish manufacturer.

**Quality finish manufacturers have technical help lines you can call (some are toll-free).**

### The CSSB Recognizes these General Types of Finishes:

Transparent finishes (penetrating oil-based): clear, allow natural grain to show through, may also include paintable water repellent preservatives. Such treatment can possibly, depending upon the product, inhibit mildew growth as well as rapid change in color due to weathering.

Semi-transparent and semi-solid stains (penetrating oil-based): have some pigment, but allow some wood grain to show.

Paint or solid stain: provide opaque coverage, allowing little to no wood grain to show.

### Certi-label® Western Cedar Sidewall Finishing Systems: Preferred Paint System

Step 1: Factory or field applied alkyd oil or latex stain blocking primers on all surfaces.

Step 2: Field-applied top coat of highest quality 100% acrylic latex paint. This type of top coat is more flexible and more resistant to blistering and cracking. The best protection against extractive bleeding is the application of an oil-based, stain- blocking primer before the top coat is applied.

- OR -

### Less Durable Paint System

Step 1: Factory or field applied alkyd oil or latex stain blocking primers on all surfaces.

Step 2: Field-applied oil-based or alkyd top coat.

CSSB member manufacturers do supply factory-primed products. These products are usually more cost-effective than on-site priming.

### Stains

Use oil-based stains only. CSSB member manufacturers can factory-apply a coat of semi-transparent or semi-solid oil-based stain. This process is usually more cost-effective than on-site staining. Further enhancing the natural durability of Certi-label® Western Cedar shingles and shakes, some CSSB members offer pass-through finish warranties on their factory finished sidewall shingles and shakes. These can be further enhanced by application of a final, field-applied top coat. Contact participating CSSB members for details.

### To Accelerate the Weathering Process

To hasten the weathering process, apply a bleaching oil finish.

### How Soon to Finish

Generally finish products **IMMEDIATELY** after installation **PROVIDING** that the moisture content is appropriate for both the finish product being used and your locale. If the finish is not applied promptly, adhesion will be compromised (unless additional surface preparation is undertaken).

If you have installed a natural product (unfinished), apply your finish before rain and other moisture are absorbed. Ensure that you account for high humidity concerns.

If you are using a pre-finished product (where finish is applied at the manufacturing plant), ensure that the product is thoroughly dried before applying a top finish coat.

In all instances drying time varies from region to region. Excessive moisture will limit finish adhesion. Check with your professional contractor, finish manufacturer and/or sidewall product manufacturer for assistance.

### Surface Cleaning

There are products that claim to be effective for removing dirt, airborne pollution marks, mildew and prior finishes. If you clean the surface prior to finishing, ensure that it is allowed to dry to the finish manufacturer's recommended moisture content level before applying a new finish. Contact your finish manufacturer for more details.

### Extractive Bleeding

Extractive bleeding is characterized by the tannins in the wood being dissolved in moisture and migrating to the surface of the product. Rain will sometimes wash these stains away; however if left to weather, the sun can cause polymerization, requiring the addition of a tannin blocker and new top coat of finish (ensure proper surface preparation before applying new top coat) once the moisture problem has been solved. Compounds containing oxalic acid appear to be the most effective at removing extractive bleeding stains: ensure you use proper safety precautions and follow the oxalic acid compound manufacturer's application directions.

Extractive bleeding does not signify failure of the applied finish, but instead is found in applications where a source of moisture is present. Extractive bleeding is not a manufacturing defect nor is it a finish defect; it is a natural phenomenon that occurs in applications. Tannin blocking products help, however, the CSSB does not provide any finish warranty. Check with your sidewall product manufacturer, finish manufacturer and professional contractor for more assistance.

**The CSSB does not warrant this information or instruction regarding finishes.** If you see an attractive job that has endured in your locale, inquire about the type of finish used.

**Once Certi-label® Western Cedar shingles and shakes are pressure-impregnated treated you must contact the treatment company to determine if a finish, such as paint or stain, is allowable. If there is any confusion whatsoever it is highly recommended that you contact both your sidewall product manufacturer and the finish manufacturer.**



Robert A. Cardello Architects Photo Courtesy: Dennis Carbo Photography

Additional information on finishing as well as cleaning/maintenance can be found at [www.cedarbureau.org](http://www.cedarbureau.org)

## Certigrade Shingles® - Coverage (Number 1 Grades)

Approximate coverage, in square feet, of one square (4-bundle roof-pack) of shingles, applied at indicated weather exposures. (Some exposures on this chart are not acceptable for single course application. Consult the maximum exposure table on page 17 for more details.)

| Length & Thickness<br>▼ | Exposure ▼ |      |      |      |      |     |      |     |      |       |       |       |       |       |
|-------------------------|------------|------|------|------|------|-----|------|-----|------|-------|-------|-------|-------|-------|
|                         | 3 ½"       | 4"   | 4 ½" | 5"   | 5 ½" | 6"  | 6 ½" | 7"  | 7 ½" | 8"    | 8 ½"  | 9"    | 9 ½"  | 10"   |
| 16" x 5/2"              | 70         | 80   | 90   | 100  | 110  | 120 | 130  | 140 | 150  | 160   | 170   | 180   | 190   | 200   |
| 18" x 5/2 ¼"            | –          | 72 ½ | 81 ½ | 90 ½ | 100  | 109 | 118  | 127 | 136  | 145 ½ | 154 ½ | 163 ½ | 172 ½ | 181 ½ |
| 24" x 4/2"              | –          | –    | –    | –    | 73 ½ | 80  | 86 ½ | 93  | 100  | 106 ½ | 113   | 120   | 126 ½ | 133   |

## Certigrade Shingles® - Coverage (Number 1 Grades), Continued...

Approximate coverage, in square feet, of one square (4-bundle roof-pack) of shingles, applied at indicated weather exposures. (Some exposures on this chart are not acceptable for single course application. Consult the maximum exposure table on page 17 for more details.)

| Length & Thickness<br>▼ | Exposure ▼ |       |       |     |       |     |       |       |       |     |       |     |
|-------------------------|------------|-------|-------|-----|-------|-----|-------|-------|-------|-----|-------|-----|
|                         | 10 ½"      | 11"   | 11 ½" | 12" | 12 ½" | 13" | 13 ½" | 14"   | 14 ½" | 15" | 15 ½" | 16" |
| 16" x 5/2"              | 70         | 80    | 90    | 100 | –     | –   | –     | –     | –     | –   | –     | –   |
| 18" x 5/2 ¼"            | 191        | 200   | 209   | 218 | 227   | 236 | 245 ½ | 254 ½ | –     | –   | –     | –   |
| 24" x 4/2"              | 140        | 146 ½ | 153   | 160 | 166 ½ | 173 | 180   | 186 ½ | 193   | 200 | 206 ½ | 213 |

## Certigroove® Shingles/Rebutted & Rejointed Shingles - Coverage (Number 1 Grades)

Approximate coverage, in square feet, of one single-carton sidewall square of machine grooved shingles, rebutted & rejointed shingles and sanded face shingles applied at indicated weather exposures. (Some exposures on this chart are not acceptable for single course application. Consult the maximum exposure table on page 17 for more details.)

| Length<br>▼                    | Exposure ▼ |     |     |     |     |     |     |     |     |     |     |
|--------------------------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                | 6"         | 7"  | 8"  | 9"  | 10" | 11" | 12" | 13" | 14" | 15" | 16" |
| 16"                            | 50         | 590 | 67  | 76  | 84  | 93  | 100 | –   | –   | –   | –   |
| 18"                            | 43         | 50  | 57  | 64  | 72  | 79  | 86  | 93  | 100 | –   | –   |
| 24"<br>2 carton<br>wall square | 37         | 44  | 50  | 56  | 62  | 69  | 75  | 81  | 87  | 84  | 100 |
| 24"<br>4 carton<br>wall square | 74         | 88  | 100 | 112 | 124 | 138 | 150 | 162 | 174 | 188 | 200 |

### Coverage Guidelines

- Sidewall squares are calculated in a different manner than roof squares. The number of cartons in a square depends upon the product type. Check with your supplier for more details.
- Remember to deduct window and door areas from coverage calculations.

### Product Coverage Calculations:

Ensure you have the following information:

1. Size of wall area you are trying to cover, measured in square feet
2. Application method and exposure to be used
3. Product type used
4. Amount of product in each box (packaging)

Your supplier will be glad to assist you. As usual, always check with your local building official for requirements in your area.

### Sidewall Shingle Packaging

- Cartons are made of cardboard and must be kept dry.
- CSSB member product will be labeled with the Certi-label® on the carton.
- Mills pack in 1/2 carton and full carton sizes. Check with your supplier for more details.
- **Before starting please read the instructions printed on the carton.**

✓ **CHECK WITH YOUR SUPPLIER FOR MORE DETAILS**



## Certi-Split® Shakes - Coverage (Number One or Premium Grades)

Approximate coverage, in square feet, of one square of shakes applied at indicated weather exposures. (Some exposures on this chart are not acceptable for single course application. Consult the maximum exposure table on page 17 for more details).

| Shake Type, Length and Thickness ▾                    | Exposure ▾ |     |     |      |     |     |     |
|---|------------|-----|-----|------|-----|-----|-----|
|   | 7"         | 8½" | 10" | 11½" | 14" | 16" | 18" |
| 18" x 1/2" Handsplit-and-Resawn Mediums               | 70         | 85  | 100 | 115  | 140 | –   | –   |
| 18" x 3/4" Handsplit-and-Resawn Heavies               | 70         | 85  | 100 | 115  | 140 | –   | –   |
| 18" Tapersawn   | 70         | 85  | 100 | 115  | 140 | –   | –   |
| 24" x 3/8" Handsplit & Resawn                         | 70         | 85  | 100 | 115  | 140 | 160 | 180 |
| 24" x 1/2" Handsplit-and-Resawn Mediums               | 70         | 85  | 100 | 115  | 140 | 160 | 180 |
| 24" x 3/4" Handsplit-and-Resawn Heavies               | 70         | 85  | 100 | 115  | 140 | 160 | 180 |
| 24" Tapersawn   | 70         | 85  | 100 | 115  | 140 | 160 | 180 |
| 24" x 1/2" Tapersplit                                 | 70         | 85  | 100 | 115  | 140 | 160 | 180 |
| 18" x 3/8" True-Edge Straight-Split (4 bundle square) | 50         | 60  | 71  | 82   | 100 | –   | –   |
| 18" x 3/8" Straight-Split (5 bundle square)           | 82         | 100 | 118 | 135  | 165 | –   | –   |
| 24" x 3/8" Straight-Split                             | 70         | 85  | 100 | 115  | 140 | 160 | 180 |

*Starter Course: Underlying course can be the Number 1 Grade product used on outer course or a lower grade product.*



### NOTE:

1. Handsplit shakes are also known as Handsplit-and-Resawn shakes.
2. Do not interlay shakes or shingles with organic felt on sidewall applications.

### Coverage Guidelines

- Sidewall squares are calculated in a different manner than roof squares.
- Remember to deduct window and door areas from coverage calculations.

### Product Coverage Calculations:

Ensure you have the following information:

1. Size of wall area you are trying to cover, measured in square feet.
2. Application and exposure to be used
3. Product type used
4. Amount of product in each box or bundle

Your supplier will be glad to assist you. Ask for warranty requirements including product labels before purchasing product. As usual, always check with your local building official for requirements in your area.

### Sidewall Shake Packaging

- Shakes are packaged in bundles, secured with a metal strap. Each bundle will have a Certi-label® underneath.
- While most 18" shakes are packed in bundles of 12 courses each side (12/12) they may be packed 9/9. This will alter the number of bundles required to cover 1 square. Check with your supplier for more details.

For example: 18" shake bundles, 12/12 pack, 5 bundles, should cover 100 square feet at 7 1/2" exposure.

9/9 pack, 5 bundles, should give 75% coverage of a square at 7 1/2" exposure. When ordering check with your supplier to confirm bundle size.

✓ **CHECK WITH YOUR SUPPLIER FOR MORE DETAILS**



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**CERTIGRADE®**

**Red Cedar Shingles**

- 100% Edge Grain - 100% All Clear -  
- 100% Heartwood -  
**CEDAR SHAKE & SHINGLE BUREAU**  
THE RECOGNIZED AUTHORITY SINCE 1915  
SUMAS, WASHINGTON (604) 820-7700

LIFETIME LIMITED WARRANTY AVAILABLE FROM CSSB MEMBER MANUFACTURER BELOW  
WHEN APPLIED BY A CSSB MEMBER CONTRACTOR/INSTALLER

Quality Control Agency Logo

Mill Quality Certification Number

Cedar Shake & Shingle Bureau

Building Code Standards

Product Testing Numbers

030640

Litho in Canada www.cedarbureau.org Country of Manufacture

Mill Name  
Mill Location  
Mill Phone Number

Barcode: 7 20454 00004 2

ENVIROSMART®

NO. 1 BLUE GRADE LABEL®

PERFECTION

18" x 5 / 2 1/4" (457 mm X 5 / 57.0 mm)

| COVERAGE CHART<br>100 sq. ft. (9.30 m <sup>2</sup> ) |                   |
|--|-------------------|
| BUNDLES  | EXPOSURE          |
| 4  | 5 1/2" (140.0 mm) |

01. The "Certi" Brand Name - Your Quality Assurance
02. Product Type
03. Product Grade
04. Independent, 3rd Party, Quality Control Agency
05. This Number Shows Compliance with Total Quality Manufacturing System
06. Mill Name, Location and Phone Number
07. Industry Product Description
08. Product Dimensions
09. Cedar Bureau Label Number
10. Building Code Compliance Numbers
11. Product Performance Tests Passed
12. Label Identification Number
13. UPC Code
14. Coverage Chart and Recommended Exposure
15. Application Instructions on Reverse Side

On June 9, 1915, at a meeting of the Trustees of the West Coast Lumber Manufacturers Association, it was agreed to establish a branch of the association to serve those members who manufactured shingles.



1920s: Chief Inspector Fred Monte inspecting product

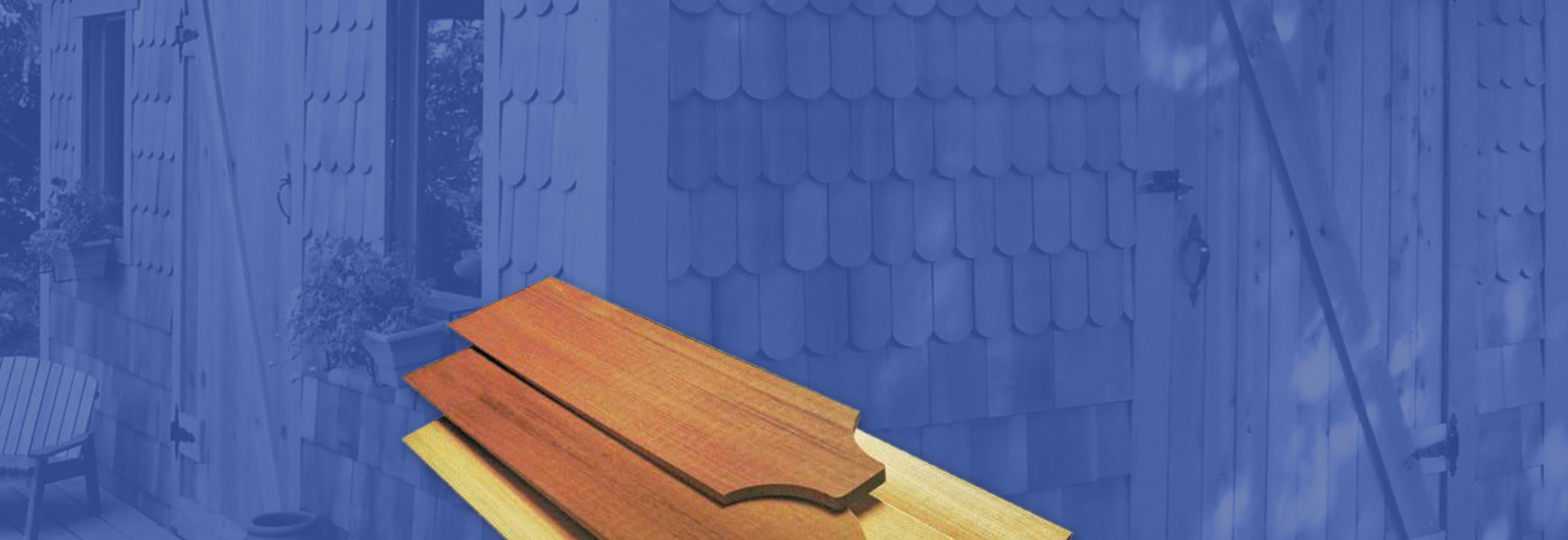
Our influence grew and as we survived both the Great Depression and World War II, manufacturers continued their quality commitment. In 1963, the organization merged with the Handsplit Shake Bureau to become the Red Cedar Shingle & Handsplit Shake Bureau.

Manufacturers' product lines continued to broaden and, in 1988, the members changed the organization's name to the Cedar Shake & Shingle Bureau® ("CSSB"). In the late 1980s, mill quality control inspections were subcontracted to independent, third party quality control agencies.

Each year the CSSB's staff answer thousands of technical questions and product selection queries. Our proud history, quality reputation and dedicated members provide excellent Certi-label® cedar shake and shingle roofing and siding products.







**Cedar Shake &  
Shingle Bureau**

**CONTACT US FOR MORE INFORMATION:**

**Tel:** 604-820-7700  
**Fax:** 604-820-0266

[www.cedarbureau.org](http://www.cedarbureau.org)  
[info@cedarbureau.org](mailto:info@cedarbureau.org)



**Forestry Innovation  
Investment®**

This manual shows Cedar Shake & Shingle Bureau® recommended procedures as of the manual's print date. It is advisable to contact the Cedar Shake & Shingle Bureau® to ensure that you are using the latest available information.

**The CSSB Is The Recognized Authority Since 1915**

Cedar Shake & Shingle Bureau®, the CSSB logo® ("C" with shingles/shakes), Blue Label®, Certigrade®, Certigroove®, Certi-Cut®, Certi-Guard®, Certi-label®, Certi-Last®, Certi-Ridge®, Certi-Sawn®, Certi-Split®, Certi-Wood®, Envirosmart® and The Crowning Touch of Quality & Design® are all registered trademarks of the Cedar Shake & Shingle Bureau®.