Western Red Cedar
Distinctive Designs

Learning Objectives

At the end of this program, participants will be able to:

1. Have awareness of Western Red Cedar, its properties and performance characteristics
2. Understand grade and product specification requirements.
3. Have greater appreciation of cedar’s versatility and the enhanced appeal it brings to a project
4. Understand the facts about proper installation, finishing and maintenance of Western Red Cedar.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Copyright Materials

This presentation is protected by US and International Copyright laws. Reproduction, distribution, display and use of the presentation without written permission of the speaker is prohibited.

© The Wood Products Council 2013
Introduction

Western Red Cedar Lumber Association
- Non profit trade association, established in 1954, known worldwide as “the voice of the cedar industry.”
- Producing members account for more than 65 percent of the world’s production of Western Red Cedar and have an annual volume of nearly 1 billion board feet.
- Purpose: Increase market awareness for WRC through education, technical expertise and promotion.
- Offers technical and promotional resource for architects, builders, consumers.

Introduction – Real Cedar

Western Red Cedar (Thuja Plicata)
Western Red Cedar trees reach heights of 200 feet with diameters of 16 feet. The trunk of older trees is buttressed, fluted and quite tapered.

The “Tree of Life” is what the first residents of the Pacific Northwest called the stately Western Red Cedar. Its legendary durability made cedar nature’s gift for building ocean-going canoes, post-and-beam houses, ceremonial dance masks and ancestral totem poles, many of which have withstood centuries of weathering.

Today its exceptional beauty brings warmth, character and longevity to homes, and its supreme versatility as a building material has made it the enduring choice of craftsmen for centuries.
The Tree of Life

Cedar Totem Pole (nearly 200 years old)

Cedar continues to play a key cultural role

Growing Region

Two Growth Areas:
- West Coast of Canada. Some in southern Alaska and US Pacific Northwest
- BC Interior Wet Belt. Some in Idaho; Montana & Washington

Growing Region

- Forests of BC cover 149 million acres. Less than 1/3 of 1% are harvested annually.
- More than 200 million seedlings are planted each year (eight for every tree harvested).
- 50 million m3 of Western Red Cedar is growing in Provincial parks or other protected regions.
Standing Volume

- Total standing volume is estimated at 750 million m$^3$ (80% of this volume is in the coastal region).
- WRC represents 20% of inventory on the coast and 2% in the interior.
- In terms of total harvest, the proportion of cedar has remained constant over the last 25 years.

Harvesting Practices

Annual harvest volumes
- 6.4 million m$^3$ (4.8 million m$^3$ is from the Coast) in log form.
- This volume results in approx. 1 billion board feet of sawn timber.

Drastic Changes in Methods:
- Variable retention and helicopter logging are widely practiced and keeps the forest structure intact.

Harvesting Practices

Helicopter Logging
Certification in Canada & BC

- **FSC** – limited availability, due to lack of regional standard. Currently limited commercial availability.

- **SFI** (Sustainable Forestry Initiative) – evaluates forest practices using a tough standard of environmental principles, objectives, performance measures and core indicators.

- **CSA** (Canadian Standards Assoc) - evaluates forest practices and performance using internationally recognized criteria that are adapted to local conditions through a transparent public participation process.

**Certification in BC**

<table>
<thead>
<tr>
<th>Certification Scheme</th>
<th>BC (Mm Hectares)</th>
<th>Canada (Mm Hectares)</th>
<th>BC %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA</td>
<td>33.1</td>
<td>76.0</td>
<td>44.6</td>
</tr>
<tr>
<td>SFI</td>
<td>18.1</td>
<td>38.9</td>
<td>46.5</td>
</tr>
<tr>
<td>FSC</td>
<td>1.0</td>
<td>25.5</td>
<td>3.9</td>
</tr>
</tbody>
</table>

*Figures in Million Hectares
*Source: SFI – July 2008
Life Cycle Assessment

Embodied Environmental Impacts of Various Exterior Wall Systems

<table>
<thead>
<tr>
<th>Material</th>
<th>Global Warming</th>
<th>Acidification</th>
<th>Resp. Effects</th>
<th>Eutrophication</th>
<th>Smog</th>
<th>Total energy</th>
<th>Fossil</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRC Siding</td>
<td>Lowest</td>
<td>Lowest</td>
<td>Lowest</td>
<td>Lowest</td>
<td>Lowest</td>
<td>Lowest</td>
<td>Lowest</td>
</tr>
<tr>
<td>PVC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural insulated panels (SIP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- WRC Siding
- Virgin WPC Siding
- Recycled WPC Siding

Total Energy Use:
- Lowest: 140% more than wood
- 70% more than wood

Greenhouse Gases:
- Lowest: 45% more than wood
- 81% more than wood

Air Pollution:
- Lowest: 42% more than wood
- 67% more than wood

Water Pollution:
- Lowest: 1900% more than wood
- 90% more than wood

Solid Waste:
- Lowest: 36% more than wood
- 96% more than wood

Ecological Resource Use:
- Lowest: 16% more than wood
- 97% more than wood
**Western Red Cedar Siding**

**Siding Grades**

**Clear Siding Grades**

- **Clear VG Heart**
  - NLGA 200a/201a
  - WCLIB 102b/106aa

---

**WRC Unique Characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>What it means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensional Stability</td>
<td>Lays flat &amp; stays straight</td>
</tr>
<tr>
<td>Natural Durability</td>
<td>Resists rot/decay with natural preservatives</td>
</tr>
<tr>
<td>Presence of Thujic Acid</td>
<td>Prevents insect attack</td>
</tr>
<tr>
<td>Free of pitch &amp; resin</td>
<td>Readily accepts a wide range of finishes</td>
</tr>
<tr>
<td>Straight grain &amp; uniform texture</td>
<td>Easy to cut, saw, nail &amp; glue</td>
</tr>
<tr>
<td>Light weight</td>
<td>Easy to transport &amp; handle</td>
</tr>
<tr>
<td>Class II Flame Spread</td>
<td>Resists the spread of fire</td>
</tr>
<tr>
<td>Thermal Insulator</td>
<td>Energy efficient; does not transfer heat</td>
</tr>
<tr>
<td>Acoustic properties</td>
<td>Noise insulation and absorption</td>
</tr>
<tr>
<td>Natural Aesthetics</td>
<td>Unmatched warmth and beauty</td>
</tr>
</tbody>
</table>
Siding Grades

Clear Siding Grades

A Clear
NLGA 200b/201b
WCLIB 106a

Knotty Siding Grades

Select Knotty
NLGA 204a/205a
WCLIB 111e
Proprietary
WRCLA Members produce custom grades of high quality knotty siding.

Siding Options

Common Bevel Profiles:

- Bevel siding, thickness measured at the butt
- Rabbeted bevel siding

Specialty profiles such as wavy edge bevel are also available from select manufacturers.

Common Paneling/T&G Profiles:
Common Lap Siding Profiles:

**Clear Lap Siding**

**Color Lap Siding, features**

**Flat Lap Siding**

Western Red Cedar Decking

Decking Grades

Clear Board & Decking Grades

- **A Grade**
  - NLGA 200b/202b

Knotty Board & Decking Grades

- **Select Knotty**
  - NLGA 126a/204a

- **Proprietary**
  - WRCLA Members produce high quality knotty boards & decking suitable for appearance end uses
Western Red Cedar Timbers

Timber Grades

Clear Timber Grades

#2 Clear & Better
Export R List 401
Used as finished material or raw material for finely manufactured products.

#4 Clear
Export R List 65a

Knotty Timber Grades

Appearance
High quality knotty timbers graded for appearance and end uses.
Engineered Western Red Cedar

Western Red Cedar Products

Other Products Include:
- Fascia and trim
- Screening – Privacy Lattice
- Outdoor Furniture
- Balusters & Handrails
- Sidewall Shingle panels
- Custom Profiles & Products

You’re limited only by your imagination.

Commercial Projects

Project: The Kilternan Hotel
Ireland.

Project: IJsselstein (Netherlands)
Commercial Projects

Project: Retail Outlet (United States)

Project: Law Courts, Bordeaux, France

Project: Winery (New Zealand)

Project: Retail Complex (Australia)
Commercial Projects

Project: Langley Academy of Science (Berkshire, U.K.)

Institutional Projects

Project: UCD Virus Reference Lab, Ireland

Project location: Private School (United States)
Institutional Projects

Project: Rensselaer Polytechnic Institute (United States)

Project: University of Cambridge (UK)

Project: National Assembly of Wales (UK)
Institutional Projects

Project: The Mint, Historic Houses Trust (Australia)

Residential Projects

Project: Multi-Family Residence (Canada)

Project: Multi-Family Residence (Australia)

Project: Private Residence (Australia)
Residential Projects

Project: Private Residence (Chobham, Surrey, UK)

Project: Private Residence (United States)

Project: Private Residence (United States)

Project: Private Cottage (Canada)
Residential Projects

Product: Cedar windows and doors (Australia)

Product: Cedar shutters and Venetian blinds (Australia)

Outdoor Living Projects

Project: Private Residence (Canada)

Project: Private Residence (Ireland)
**Project:** Private Residence (United States)

**Product:** Knotty Cedar Decking

*Cedar is the environmentally friendly choice for decking*

---

**Project:** Private Residence (Canada)

**Product:** Knotty Timbers and trim, clear decking and shingles
Siding Installation

General Rules
• Acclimatize prior to installation
• Use proper wall construction
• Prevent rain penetration
• Prime or seal all surfaces prior to installation
• Use the appropriate fasteners and follow recommended nailing patterns

Source: Western Red Cedar Lumber Association www.wrcla.org

Wall Construction – The Basics
Provide for Nailing Base
• Horizontal applications
• Vertical applications
Vapor Barrier
• Non-permeable
• Installed on warm side of stud

Source: Western Red Cedar Lumber Association www.wrcla.org

Wood Frame Construction

Source: Western Red Cedar Lumber Association www.wrcla.org

Horizontal siding on concrete or brick and block.

Source: Western Red Cedar Lumber Association www.wrcla.org
Siding Installation

**Vertical siding on concrete or brick and block**

- Use the Correct Fastener
  - Stainless Steel (preferred)
    - 304 Stainless
    - 316 Stainless
  - Aluminum
  - Galvanized
    - Hot dipped galvanized.

- Lumber Size and Spacing

<table>
<thead>
<tr>
<th>Max. Lumber sizes</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal</td>
<td>Actual</td>
</tr>
<tr>
<td>Blocking</td>
<td>2x2</td>
</tr>
<tr>
<td>Battens over sheathing</td>
<td>1x2</td>
</tr>
<tr>
<td>Battens over masonry walls</td>
<td>2x2</td>
</tr>
</tbody>
</table>

Measurements in inches

- Fasteners - Important Features
  - Thin Shank
  - Ring or Spiral Shank
  - Blunt Tip
  - Textured Head
  - Proper Length

Sources:
- Western Red Cedar Lumber Association [www.wrcla.org](http://www.wrcla.org)
### Siding Installation

#### Rules for Fastening
- All WRC siding patterns are face nailed (except the narrow profiles of T&G)
- All joints should meet on solid surfaces
- Solid nailing should be spaced at max of 24” on center, max 16” on center if installed over batten strips or without sheathing
- Ring or spiral shank nails should penetrate solid wood 1 ¼ inches.

Source: Western Red Cedar Lumber Association [www.wrcla.org](http://www.wrcla.org)

#### Apply Coating Before Installation

**Reason for Sealing All Surfaces:**
- Keeps Wood From Absorbing moisture Unequally
- Can Increase the Service Life of Finish Coat
- Helps Prevent Extractive Staining

Source: Western Red Cedar Lumber Association [www.wrcla.org](http://www.wrcla.org)

#### Prevent Moisture Penetration
- Install Breathable Building Paper
- Miter Cut Joints and Seal
- Use Flashing on Horizontal Trim Pieces
- Use Flashing at the Top of Windows and Doors
- Caulk Where siding Abuts Vertical Trim
- Understand the Rainscreen Principle When Installing

Source: Western Red Cedar Lumber Association [www.wrcla.org](http://www.wrcla.org)

Source: Western Red Cedar Lumber Association [www.wrcla.org](http://www.wrcla.org)
• Trim and siding that extends down to a roof and decks requires a minimum of a 2” gap to avoid wicking.
• Trim, such as water table or skirt boards must be a minimum of 6” above the grade.

Enhance the versatility of Western Red Cedar

Five Basic Finishes:
• Transparent
• Semi-transparent
• Solid Color Stain
• Paint
• Bleaching Oils
Solid Color Stains and Paints
• Perform best on textured surfaces. They are non-penetrating and form a film
• Use a stain-blocking primer followed by a 100% acrylic latex-based top coat
• Apply stain to all six surfaces.

Semi Transparent Stains
• Latex or oil-based.
• Allows the natural beauty of the wood
• Reduced protection from ultraviolet light.
• Latex stains do not penetrate the surface.
• Apply stain to all six surfaces.

Protect Your investment:
• Periodic, preventative maintenance helps coating performance.
• Power washers are not recommended.
• Dilute bleach and cleaners to the minimum strength necessary to accomplish their task.
• Oxygen bleach is preferred for treating mold & mildew growth.
• Use wood brighteners to remove weathered fibers before applying finishes.
• Always rinse thoroughly after cleaning, and follow the coating manufacturers instructions.

Water repellants suitable for above ground uses.
• Reduces water absorption in the short term.
• Accentuates Cedar’s natural beauty but has limited UV protection.
• The addition of a fungicide that inhibits the growth of mildew and fungi is recommended.
**Western Red Cedar - Summary**

- Western Red Cedar is legal, sustainable and renewable.
- Western Red Cedar siding and decking have the lowest environmental impact of commonly available materials.
- WRC is ideal for a broad range of applications owing to its unique properties and aesthetics.
- No warranty can match WRC’s centuries of proven performance.
- When specifying grades, use industry standards to ensure the right product is used on your project.
- Remember the old adage “You get what you pay for.”
- Your clients will appreciate the natural beauty and unsurpassed performance of Western Red Cedar.

**WRCLA Resources**

- **On Web:**
  - www.wrcla.org
  - www.architect-gallery.org

- **Key WRC Literature Available (free of charge)**
  - Growth, Properties, & Uses of Western Red Cedar
  - How To Specify Western Red Cedar
  - How To Install Western Red Cedar siding
  - Guide to Finishing Western Red Cedar

- **Architect Advisory Services**
  Western Red Cedar experts available to assist with selection, specification, sourcing and application.

- **Online Training Tool (AIA Certified)**
  www.cedar-training.org

**Questions?**

This concludes The American Institute of Architects Continuing Education Systems Course

Steve From
Western Red Cedar Lumber Association
from@wrcla.org

**WRCLA Contacts**

**WRCLA Head Office**

#1501 – 700 West Pender St
Vancouver, B.C.
Canada V6C 1G8

TF. 1 866 778 9096
Tel. 604 891 1232
Fax. 604 687 4930

wrcla@wrcla.org
Thank you