



WindsorONE+™ Protected  
EXTERIOR INSTALLATION AND MAINTENANCE MANUAL  
For Warranty Information, Please Visit [www.WindsorONE.com](http://www.WindsorONE.com)  
8-20-2008

**IMPORTANT:** This Manual includes the (i) Installation Instructions, & (ii) Maintenance Instructions. Failure to install or maintain WindsorONE+ Protected Siding in accordance with applicable building codes and these instructions may affect its performance and void the limited warranty.

#### PREFACE – Design and Construction Considerations

Every building structure should be designed and constructed to minimize any possible infiltration of moisture. Moisture infiltration can be reduced and controlled by incorporating construction practices that:

- Do not allow moisture to accumulate for extended periods without runoff;
- Minimize moisture penetration by sealing and flashing; and
- Allow water that has penetrated the exterior envelope to easily drain away from the structure.

The use of flashing around wall penetrations, such as around window and door openings, can reduce moisture, but the performance of any building system depends on how its entire design and construction addresses local environment and climate conditions, building codes, and product and material limitations. Design and installation of flashing and sealing systems are the responsibility of the architect, contractor and installer, not that of the manufacturer of the building materials.

#### BEST PRACTICES

WindsorONE+ Protected Sidings are manufactured to give years of satisfaction and beauty to owners of elegant homes. The best service will result from installation according to current best practices for wood construction. Besides following the Installation Instructions and Maintenance Instructions (next sections), all installers of WindsorONE+ Protected Sidings should follow these industry best practices.

#### The DO NOT list:

- Do not use WindsorONE+ Protected Sidings for structural support purposes.
- Do not use WindsorONE+ Protected Sidings for decking, railing, fences, planters or trellises.
- Do not allow WindsorONE+ Protected Sidings to be in contact with the ground.
- Do not backfill or place sod, mulch, etc., closer than 8 inches to WindsorONE+ Protected Sidings.
- Do not place in direct contact with concrete, masonry, patios, porches, and/or roofs.
- Do not install where water sprinklers can regularly wet WindsorONE+ Protected Sidings.
- Do not install in a manner to allow water to be entrapped behind WindsorONE+ Protected Sidings.
- Do not use caulking sealant as a substitute for flashing.
- Do not install with moisture content over 14%, or paint over wet WindsorONE+ Protected Sidings
- Do not install directly over rigid foam insulation. Instead, use furring strips to create an air space and a building wrap directly against foam insulation.
- Do not assume your installation crews know what to do.

#### The DO list:

- Do adhere strictly to WindsorONE+ Protected Sidings installation and maintenance instructions.
- Do follow the local building code requirements.
- Do follow the highest building industry construction standards.
- Do install Siding to create easy drainage planes to shed water accumulations.
- Do be aware of potential sources of moisture penetration, including condensation, around the building, and modify design to avoid exposure.
- Do re-coat all surfaces exposed by jobsite field cuts during installation.
- Do paint within 1 year of installation.
- Do re-paint in accordance with the paint manufactures written label instructions
- Do make sure your installation crews know how to install WindsorONE+ Protected Sidings properly.

### I. WindsorONE+™ Protected Siding INSTALLATION INSTRUCTIONS

Install WindsorONE+™ Protected Sidings only according to these instructions and your local building code. Also follow the “Best Practices” techniques (above).

#### 1. Before You Begin

- Visit [www.WindsorONE.com](http://www.WindsorONE.com) for WindsorONE+ Protected Trim Board installation instructions!
- Ensure window and doors are installed in accordance with the manufacturer’s instructions and local building code specifications.
- Ensure flashing is installed at all windows, doors, bandboards, fascia, skirts, posts, and other areas where moisture must be directed away from the building.
- Ensure housewrap/building paper is installed in accordance with the manufacturer’s instructions and local building code specifications.
- Ensure that WindsorONE+ Protected Sidings are not installed directly over rigid foam insulation. Use furring strips to create an air space and a building wrap directly against foam insulation.

- Before installation, protect WindsorONE+ Protected Sidings from exposure to direct sunlight, water saturation, and dirt. Do not allow it to come in contact with the ground.
- Before installation, ensure that the WindsorONE+ Protected Sidings are dry. Do not install Siding that has a moisture content above 14%.
- During cutting and handling, avoid marring and scuffing WindsorONE+ Protected Trim Boards.
- Immediately after cutting, re-coat all exposed surfaces with 2 coats of high quality exterior paint to 3 mils of dry finish.
- Employ rainscreen wall construction as shown below. Products such as Homslicker are good ways to create a rainscreen. (see figure 1.1 on page 5)

## 2. Storage

Until installed, WindsorONE+ Protected Siding need protection from direct sunlight, water saturation, dirt, and other elements. Store the WindsorONE+ Protected Sidings flat and off the ground on stringers so that moisture is not absorbed through the bottom Sidings of the stack. Protect with a waterproof covering elevated in the center so that water does not pool on the cover. Do not completely seal the bundle, as good air circulation is required. Ideally, WindsorONE+ Protected Sidings should be stored in an enclosed building such as a garage prior to use.

## 3. Moisture Content

Do not install Siding with moisture content higher than 14%, and ensure this by use of a moisture meter to gauge moisture content levels for all installations. WindsorONE+ Protected Sidings are shipped with an average moisture content of 10% to 14%. Storing material in humid environments or near concrete or dirt will increase the moisture content. Installing material in unheated or unconditioned environments during wet winter or summer months will also increase moisture content, resulting in expansion and potential joint failure. Condition the Siding material on the jobsite by allowing it to adjust to an equilibrium moisture condition.

## 4. Fasteners

### Type

Stainless steel and Galvanized nails are recommended. Use No. 304 for general applications and No. 316 for seacoast exposures. Other types of fasteners are not recommended; they can rust and disintegrate resulting in iron stains and streaks.

For best results use “split-less” ring shank stainless steel siding nails. These nails have thin shanks and blunt points to reduce splitting when fastening. Near edges and ends, nail holes may need to be pre-drilled to avoid splitting.

### Size

Nails must be long enough to go through the underlying materials, such as sheathing and insulation, and penetrate into at least 1-¼ inch of solid wood. Siding should be fastened to each stud or furring strip (rainscreen method) with nails spaced a maximum of 24” on center. Nails must penetrate 1 ¼ inch into the solid wood frame. Two nails per course for 6-inch & 8-inch patterns, three nails per course for 10-inch patterns.

### Nail with Care

Nails should be driven with care. Heavy nailing distorts the wood and may cause splitting. Like all wood products, WindsorONE+ Protected Sidings should be hand-nailed. The use of pneumatic fasteners is discouraged for exterior use; but, if used, they must employ stainless steel nails and a flush nailing device to ensure that nails are driven snug with the surface. Overdriven nails that are not filled with exterior putty will void the limited warranty.

### Overdriven Nails

Overdriven nails must be remedied immediately. Fill overdriven nail holes with exterior grade wood putty specifically designed for filling exterior nail holes. Allow putty to dry, sand smooth with 100 grit sandpaper and spot prime before painting. Over time, spackling putty may need to be replaced or touched up.

### Countersunk Nails

In some situations you may choose to intentionally countersink nails. If so, follow the same procedure to fill the cavity as with overdriven nails.

## 5. Fastening Requirements

For Siding application, WindsorONE+ Protected Sidings must be double nailed and fastened at a maximum of 24 inches on center. Double nail all joints and do not nail any closer than 2 inches from the edge of material without drilling pilot holes. Follow the nailing guidelines set out in table 1.2 (located on page 5) for the various WindsorONE+ Protected Siding products. Note nails must penetrate 1 ¼ inch into the solid wood framing.

## 6. Spacing Requirements

Leave 1/16”-1/8” gaps (pending weather conditions) between each course of siding to allow for movement over time – DO NOT butt siding courses tight to each other

## 7. Butt Joints

All joints where two pieces meet end to end must occur over framing. Butt joints are recommended for both horizontal and vertical trim. In runs of 16 feet or less, the ends should lightly touch. Runs over 16 feet require a gap of 1/8 inch, which should be sealed with exterior caulk. Attach to the framing members with two nails on each side of the joint. Drill pilot holes first to avoid splitting.



## 8. Clearance

Siding that extends down to a roof (dormers, second floors, etc.) and decks requires a minimum 2-inch gap to avoid wicking.

## 9. Flashing at Openings and Horizontal Changes

Flashing is an important line of defense against moisture in wall assemblies. Use flashing to intercept and direct the flow of water away from the building to designed drainage paths. Install horizontal flashing extending from the top of all windows and doors and where there is any change in material or direction. The flashing should tilt downward to allow water to drain away from the wall. Do not caulk where the flashing, Siding, Trim or other materials meet. Note that caulking in lieu of flashing is not acceptable.

## 13. Caulking

Use exterior grade high-performance acrylic-latex, silicone, acrylic, or urethane caulks and sealants to seal gaps around windows, doors, corners, and other exterior joints that are exposed to potential water intrusion. Caulking is not a permanent solution and as such requires regular maintenance. If not inspected and maintained, caulking may fail and trap water, creating severe moisture problems. Do not rely on it as the only barrier to moisture penetration. Do not caulk areas that will prevent moisture from escaping the wall cavity (e.g., under windows and around flashing).

Avoid three-sided adhesion. The caulk should only adhere to the two surfaces that create the opening in the surface plane, not to any rigid substrate behind. For gaps wider than ¼ inch, insert a backer rod into gaps where caulk seals are to be made, and then caulk over. In all cases, follow the caulking manufacturer's recommendations.

## 14. Field Cuts Must Be Re-Primed

Prior to installation, all siding surfaces exposed by jobsite field cuts must be re-primed with two coats of 100% acrylic latex primer. The technique for re-priming depends on which board surface was exposed by field cuts: end-grain, edge or face. Coat all exposed surfaces including the bottom edge.

### Re-priming End-Grain

Exposed end grain of any wood product absorbs liquids much faster than the wood's other surfaces, so special care is required to re-prime end cuts. 100% acrylic-latex primer is acceptable as long as it is able to properly cure according to the primer manufacturer's instructions. However, where temperatures drop below 50 degrees Fahrenheit either during application or within the curing period, use an alkyd oil wood primer to coat end grain exposed by jobsite cuts. Siding with end cuts coated with alkyd oil primer can be installed before drying without compromising the coating's effectiveness. Above 50 degrees, a high quality 100% acrylic-latex primer will suffice to coat exposed end grain if allowed to dry before installation. With either primer, follow manufacturer's recommendations.

### Re-priming Other Exposed Surfaces

Exposed Siding wood surfaces other than end-grain must be re-primed with high quality 100% acrylic-latex primer. In temperatures above 50 degrees Fahrenheit, re-prime these other exposed surfaces with high quality 100% acrylic-latex paint. For temperatures between 35 and 50 degrees, use a low-temperature acrylic-latex primer. The curing temperature, however, must remain above 35 degrees until the coating is cured according to manufacturer's instructions.

In colder weather (below 35 degrees Fahrenheit), follow these simple steps:

- Precut the siding and take it into a heated building where the temperature is maintained above 50 degrees Fahrenheit.
- Ensure the siding is dry and then prime the cuts with a 100% acrylic-latex primer.
- Allow the re-primed trim to dry overnight and then proceed with installation.

## 15. Painting the Siding

Paint WindsorONE+ Protected Sidings with two coats of high-quality, 100% acrylic-latex paint as soon as possible after installation, preferably within 90 days but no later than 1 year after installation, according to industry best practices. The surface must be free of dust, dirt or mildew before painting. Wash away any foreign material with water and a mild detergent, and allow the surface to dry before painting. Apply paint according to manufacturer's specifications and recommended spread rates and number of coats. Do not use paints with vinyl-based resin combinations. Brush application of primers and top-coats ensures best coverage and protection. The painting of the tongues on tongue-and-groove siding with a coat of the final topcoat color is recommended prior to installation.

CAUTION: Wood dust produced by sawing, sanding, or machining wood and wood products can be hazardous.

- Wood dust is flammable and presents a possible explosion hazard.
- Wood dust may cause respiratory, eye, and skin irritation.
- Wood dust from some tree species may cause dermatitis or allergic response.
- The International Agency for Research on Cancer (IARC) classifies wood dust as a nasal carcinogen in humans.
- The National Toxicology Program (NTP) classifies wood dust as a human carcinogen.

## II. WindsorONE+™ Protected MAINTENANCE INSTRUCTIONS

No home is maintenance-free. Every building is subject to wear and tear from weather conditions and occupant usage. All building components have a design service life, which may be affected by environmental conditions and installation and maintenance measures. All building components require regular inspections and scheduled maintenance to maximize their performance and service life. The maintenance instructions here provide some guidelines for such inspections and maintenance.

Windsor Willits Company's limited warranty is conditional upon the homeowner having undertaken proper maintenance on both WindsorONE+ Protected™ Siding and other components of the exterior envelope which are integral in moisture control. If any damage to Siding occurs due to the homeowner's failure to follow proper maintenance procedures, or to mitigate any damage, including damage caused by water penetration, it is excluded from warranty coverage. (Windsor Willits Company is an affiliate of Windsor Mill, and manufacturer of WindsorONE+ Protected™ Sidings)

### WindsorONE+™ Protected Sidings

#### Exterior Paint

Exterior paint is applied primarily to decorate and protect the wood substrate. Paint coatings increase the durability of the Siding and must be checked annually for wear including cracking and peeling. Damage to the paint film must be corrected immediately. Siding installed on the south and west sides are subject to the most weathering, and dark or bright colors there fade more rapidly. Wood siding and trim require re-coating whenever the surface begins to fade, discolor, or peel.

WindsorONE+ Protected Sidings should be repainted in accordance with the paint manufacturer's written label instructions, depending on the quality of the paint previously used, its initial coverage and exposure to the elements. Siding should be painted with the best available exterior acrylic latex coating applied at the manufacturer's recommended spread rates.

#### Cleaning

Remove dirt from the siding with a mild detergent, a gentle brush and a garden hose. Never use a pressure washer to clean the siding. Excessive water pressure can cause damage to the surface of the Siding, force water into the pores of the wood and the wall cavity behind.

Over time, mildew and moss can grow on a shaded surface on any type of siding. A mild solution of bleach and water may remove this growth. Wall surfaces should be washed from the bottom upwards, otherwise the lower portions of the wall will become excessively stained as they absorb the contaminants washing down from above.

#### Sealants (Caulking)

Flexible sealing compounds are referred to as caulking. Caulking is used to seal gaps between dissimilar materials on the building exterior and to seal gaps or joints in exterior finishes. Buildings normally experience some settlement/shrinkage of the building components which, in turn, causes settlement of flashing and cracked caulking. These areas should be immediately corrected as failure to do so will likely lead to moisture ingress into the building envelope. As a building moves during settlement, the caulking materials experience considerable stress. Since caulking helps keep water out of the building envelope, it should be examined annually before the wet weather arrives. Any cracked, damaged, or loose caulking should be removed and replaced with exterior grade high-performance acrylic-latex, silicone, acrylic, or urethane caulks or sealants. Siding should be checked for cracks or holes in the wood. Cracks should be filled with exterior grade wood putty.

#### Flashing

Flashing redirects water away from the face of the building and allows water to drain from behind the exterior wall finish. Flashing is normally installed at junctions of dissimilar materials and above door and window openings. Flashing may also be installed at each floor level to anticipate movement in the exterior finish as the building settles. Flashing requires periodic washing to remove grime and re-painting when corrosion of metal appears. Upon installation, flashing is sloped downwards to the outer edge in order to drain water. If, with building settlement, flashings begin to slope upward towards the building, repairs should be made to correct the slope which, ideally, should be 15 degrees.

#### Nails

Rusty nails indicate that moisture is soaking into the wood siding. If rusty nails are found, the moisture source must be eliminated and the siding checked for moisture damage. If the trim was installed by counter sinking nails, the putty used to fill nail holes should also be checked. If it has fallen out, the holes must be filled with an exterior grade wood putty designed for filling exterior nail holes.

#### General Site Maintenance

The building envelope is comprised of components and materials which separate and protect the interior of the building from adverse climate conditions such as moisture penetration, or heat and air flow. Exterior wood siding is only one component of the building envelope, but its optimal performance can depend on the entire building having been properly maintained.

Exterior paint failures or decay in wood siding are usually caused by moisture penetration, which may result from improper installation (see instructions above), or negligent maintenance (e.g., failure to repaint or maintain as described in this section).

#### Windows

The flashing and caulking used to prevent moisture from entering behind the window and trim should be checked annually. Most window designs incorporate a drainage track at the bottom of the window to collect any condensation. These tracks have weep holes to the outside to drain this moisture. These holes must be kept clean and can be maintained with a short piece of wire or a cotton swab.

### Doors

Exterior doors are exposed to detrimental weather conditions and extreme temperature variations from inside to outside that can harm the door surface and its surrounding components. The flashing and caulking used to prevent moisture from entering behind door Trim should be checked annually.

### Gutters and Downspouts

Gutters are installed at the roof perimeter to control the runoff of water. Gutters also prevent water from collecting at the foundation wall where it could seep into the basement or splash onto the wall surface. If gutters or down pipes are clogged with debris or ice, water damage can occur. Twice a year, check gutters, roof drains and downspouts for obstructions such as leaves and moss.

### Corner Boards

Corner Boards should be checked to ensure that all joints are tight and waterproofed and that there is no water damage on the ends where the trim and siding is in proximity to decks, concrete or landscaping.

### Roof

Trim used around and on the roof should be checked to ensure it is not absorbing moisture due to inadequate clearances or snow loads. All penetrations through the roof such as skylights, plumbing stacks, vents, etc., need to be checked annually and re-sealed as necessary. Snow melting on the roof and then freezing in runoff at un-insulated roof eaves can lead to ice damming which, in turn, causes water to back up under shingles and results in a leak inside. When ice dams occur, the snow and ice should be removed from eaves and valleys.

### Site Drainage and Grading

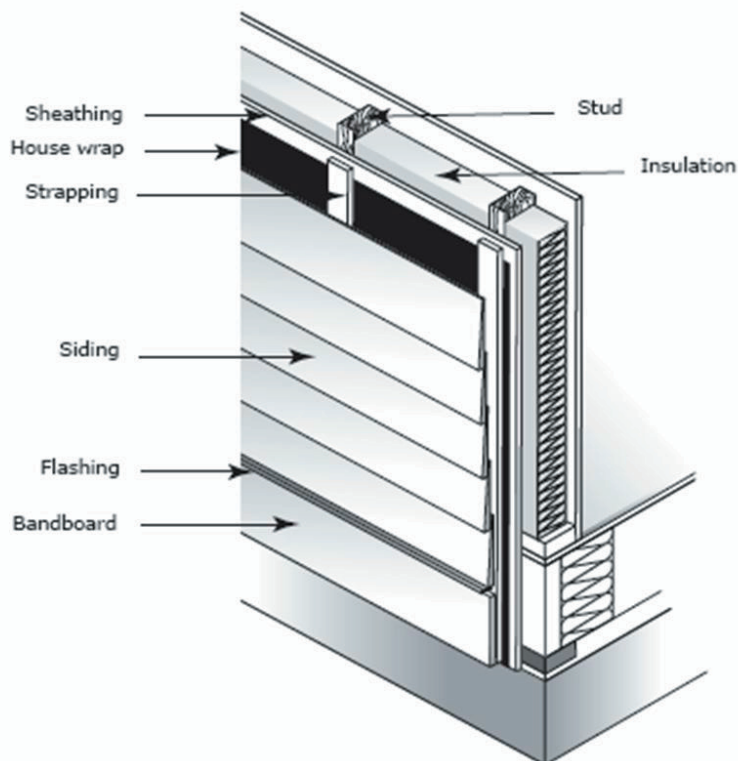
Water should not be allowed to pool against foundation walls. Site drainage patterns, such as sloping the soil away from the building, can prevent surface water from pooling against foundation walls. Flowerbeds should be graded so as not to interfere with drainage. A minimum clearance of 8 inches should separate the ground and the bottom of exterior wall cladding. Never allow soil or gravel to come in contact with exterior wood materials or finishes of the building. Review and adjust the spray pattern of sprinkler systems regularly to prevent spray onto wood building components.

### Ventilation, Condensation and Relative Humidity

The optimum year-round relative humidity level within residences is approximately 50%. Due to seasonal variations, this level is difficult to maintain without specialized equipment. Building Code standards require sealing the building against incidental leakage of warm air to the outdoors. Warm air holds moisture in suspension until contact with cold surfaces causes condensation, which may then lead to mold or mildew and moisture penetration into adjacent wood. Control of humidity and condensation requires proper heating and ventilation to exchange warm moist air for dry cool air from the outdoors.

Figure 1.1

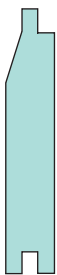

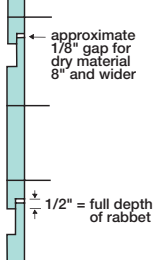
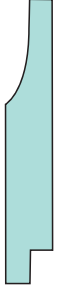
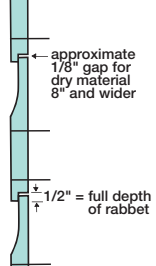

Figure 1.2



Width	Nails per Framing Member
6"	2
8"	2
10"	3



## EXAMPLES OF SOLID WOOD SIDING PATTERNS

Siding Pattern	Nailing
<p><b>TONGUED &amp; GROOVED (DROP)</b></p> 	<p><b>SHIPLAP (CHANNEL RUSTIC)</b></p>  
<p><b>COVE SHIPLAP</b></p> 	
<p><b>RABBETED BEVEL</b></p> 	<p><b>Rabbeted Edge</b></p> 