



# WEST FLOORING & DESIGN (WFD)

## THE PORTFOLIO COLLECTION INSTALLATION GUIDELINES- Engineered Flooring Installation Instructions

READ ALL OF THESE INSTRUCTION THOROUGHLY BEFORE BEGINNING INSTALLATION. IN ADDITION TO THESE INSTRUCTIONS, WE RECOMMEND THAT THE INSTALLER FOLLOW ALL INSTALLATION GUIDELINES SET FORTH BY THE NATIONAL WOOD FLOORING ASSOCIATION ([WWW.NWFA.ORG](http://WWW.NWFA.ORG)). WHERE THESE INSTRUCTIONS DIFFER FROM NWFA GUIDELINES, THIS DOCUMENT TAKE PRECEDENCE.

### Prior To Installation

It's the Installer's responsibility to ensure that all these General Conditions are met prior to installation, and that all specific installation instructions below for the installation method you have chosen (Glue Down, Nail Down, or Floating Floor plus, when applicable, Radiant Heat Systems) are followed carefully. When installed according to these instructions, WFD. Engineered Hardwood Flooring is approved for use above, on and below grade. When installing below grade, use the Floating Floor installation method.

It is the installer's responsibility to inspect the flooring for proper color, grade, visible manufacturing defects, damage, or otherwise unsatisfactory appearance. **Do not install damaged or visibly unsatisfactory material. Installing a plank constitutes acceptance of its appearance.** If necessary, contact your local retailer, distributor, or WFD. regarding any unsatisfactory material **PRIOR TO INSTALLATION.**

If installing over radiant heat, read the 'Radiant Heat Systems' section below before finalizing product selection or beginning installation. Careful adherence to these guidelines is required for a successful and fully warranted installation. Certain wood species and plank sizes are not warranted for installation over any type of radiant heat. WFD. does not offer a warranty on ANY flooring installed over electric radiant heat systems. Only hydronic (water) systems may be approved.

**NOTE: when nailing wide-plank flooring to a wood subfloor, we recommend both nailing and gluing to prevent potential squeaks in the floor, although gluing is only required when nailing down planks wider than 5". (See below under Nail + Glue installation Instructions for details.)**

### General Conditions – All Installation Methods

#### **Environmental Conditions**

To help minimize moisture-related expansion and contraction, verify the following conditions prior to installation:

- All exterior walls, windows, and doors must be in place and the building envelope closed during acclimation and installation.
- All wet work such as painting, drywall, masonry, and concrete must be completed and dry.

Basements and crawl spaces must be dry and well ventilated. Crawlspace must be a minimum of 18" high from the ground to the bottom of the joist. Dirt floors in crawl spaces should be covered with a 6-10 mil black plastic to reduce moisture migration. Seams should overlap and be sealed with waterproof tape. Perimeter crawl space cross ventilation should equal 1.5% of the square footage. Vents must remain open year round.

- Exterior grading should be complete and drainage should move away from the building structure with minimum drop of 3" in 10'.

#### **Acclimation**

Ensure that the flooring has been properly acclimated to the site conditions prior to installation. Permanent HVAC should be on and operational and maintained between 60-75°F with relative humidity of 35% - 55% for a minimum of 7 days prior to delivery, as well as during and after installation of the flooring. Humidity levels below 35% may cause movement in the flooring, including gapping



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between pieces and possible cupping and cracking in the face. Use of a humidification / dehumidification system may be required to maintain proper humidity levels, particularly over radiant heat.

**The flooring must be delivered to the jobsite and the packages opened a minimum of 5 days prior to the start of the installation. Additional special requirements apply when installing over radiant heat. See below under "Radiant Heat Systems" for details.**

### Subfloor Conditions

Subfloors must be:

**Clean-** Subfloors must be scraped clean and free of debris. Sweep and /or vacuum all debris from the subfloor. Debris on the subfloor may cause over-wood and uneven surfaces in the finished floor, poor fit between planks, and poor adhesives bond in glue-down installations.

**Flat –** Subfloors must be flat to within 3/16" over any 10' radius and 1/8" over any 6' radius. Check the flatness using a straight edge, laser line or string line. Grind, scrape, sand or shim all high or low spots. On concrete subfloors, grind all high areas and fill low areas using a quality cementitious leveling compound. Ensure that all fasteners securing the subfloor are set flush.

**Dry –** Check and record all moisture and temperature conditions prior to installation. Visually check the jobsite for potential moisture problems. Look for signs of water intrusion around window and doors. Check for mold or fungus on walls and all other areas. Water intrusion may necessitate structural repairs and/or create conditions unsuitable for flooring installation.

-Plywood and composite subfloors should be checked using a calibrated moisture meter. Be sure to use the correct moisture meter setting for the species being checked. Carefully follow the moisture meter manufacturer's operation instructions. Moisture readings should not exceed 10% in any location and the moisture variation between the subfloor and the flooring should not exceed 2% at time of installation.

-Concrete subfloors must be fully cured, at least 60 days old, and should have minimum 6-mil polyfilm between the concrete and ground. Lightweight concrete can hold more moisture and may take longer to dry out to and acceptable moisture content.

-Installations over concrete require the use of the use of a Calcium Chloride test per ASTM F 1869, or an in-situ Relative Humidity test using probes inserted into holes drilled into the concrete. Test all areas where wood will be installed. The results of the Calcium Chloride tests should not exceed 3lbs per 24 hours per 1000 square feet, and in-situ tests results should not exceed 75% RH. Carefully record all results.

-Note: These tests give a snapshot of moisture conditions at the time of the test, but do not reflect the permanent year-round condition of the substrate. If Gluing Down on concrete that is on or below grade, it is highly recommended to use a concrete sealer approved by the manufacturer of the adhesive you have chosen, even if you believe the concrete is dry. WFD is not responsible for related moisture issues.

-More stringent requirements regarding the dryness of the subfloor apply when installing over radiant heat. See below under 'Radiant Heat Systems' for details.

**Structurally Sound-** Wood subfloors must be well fastened. Use screws every 6" and replace subfloor panels/boards as necessary to eliminate all movement and squeaking.

Acceptable subfloor types:



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-CDX plywood-at least 5/8" thick for joist spacing up to 16" on center minimum 3/4" thick for joist spacing greater than 16" on center (19.2" maximum). Plywood subfloors installed over concrete must be installed in accordance with guidelines set forth by the National Wood Flooring Association (NWFA) – [www.nwfa.org](http://www.nwfa.org).

-OSB- at least 3/4" thick, PS 2-92 rated or PS 1-95 rated.

-Existing hardwood flooring over a suitable subfloor as outlined above. Existing floor must be well-fastened, smooth, and for Glue Down installations, unfinished.

-Underlayment grade particleboard (minimum 40 lb. density) - Glue Down/ Floating Floors only.

-Concrete slab- Glue Down/ Floating Floors only. Concrete must be at least 3000 lbs density for Glue Down Installations.

- Lightweight concrete (gypcrete) - Floating Floors only. Gluing to concrete that is less than 3000 lbs. density is NOT WARRANTED. WFD provides no guarantee that lightweight concrete or gypcrete will remain structurally sound during the life of the floor. Separation of the flooring from the subfloor caused by deterioration or fracturing of the substrate will not be considered a product failure.

-Ceramic tile- Floating Floor only. Tile must be well- adhered and flat to 3/16" over any 10' radius.

-Resilient tile & sheet vinyl – Glue Down/Floating Floors only: for glue-down, tile/vinyl must be new and non-urethane-coated.

### Preparing the Perimeter

-Undercut door trim, jambs and casing to the thickness of the flooring plus any adhesives or underlayments you plan to use.

-All wood flooring expands and contracts with changes in humidity. It is essential to install the floor leaving adequate expansion space between ALL sides of the flooring and ALL vertical obstructions, including door trim, jambs, studs, plumbing, cabinets, etc. This space will be covered with base molding. **Failure to provide adequate expansion space in any single location can cause damage to the entire floor.**

**-Minimum expansion space for 9/16"**

**-3/4" thick flooring is 5/8"**

**-Minimum expansion space for 5/16"**

**-1/2" thick flooring is 1/2"**

### Layout

On wood subfloors, if the subfloor is fastened to joists or trusses, the flooring should be installed perpendicular or at a 45° angle to the joists/trusses. If possible, use an outside wall as the starting wall. Over radiant heat, always run the flooring perpendicular to the radiant tubing.

No contiguous area of installed flooring should exceed 30' across the widths of the planks or 50' along the lengths of the planks. For spaces wider or longer than these dimensions, add expansion space midway through the span and cover with a T- molding or other transition piece.

**General Tool's and Accessories recommended (all installation methods):**



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-Pencil – Tape Measure –Safety Glasses –Utility Knife- Moisture Meter

-Hammer –Shim Wedges –Tapping Block –Rubber Mallet

-Carpenter Square – Pry-bar or pull-bar –Wood Filler –Scraper

-Dust Mask –Rags

-Chalk Box & Chalk –Recommended Saws: power miter saw, table saw, jamb saw

**- If tape is needed (we recommend avoiding its use if possible), use ONLY 3M Advance Delicate Surfaces 2080EL Tape, and be sure to remove any tape within 20 minutes of application. Never tape protective covering directly to the floor – only tape it to itself.**

Once all these general conditions are met, continue the installation using the instructions for the type(s) of installation you have chosen (Nail Down, Nail + Glue, Glue Down, Floating Floor and Radiant Heat Systems).

**Nail Down installation Instructions – for planks up to 8” wide (If nailing down planks wider than 7.5”, follow the ‘Nail + Glue Installation Instructions’ below.)**

WFD Engineered Wood Flooring can be nailed to plywood, OSB and existing wood floors meeting the requirements outlined above under ‘Subfloor Conditions.’

**For Nail Down Installations, you will need the General Tools and Accessories, plus:**

-Nail set- Tack Stapler or 1” roofing nails (for felt)

-6-d Finish Nails or Pneumatic Finish Nailer with 1 ¼” to 1 ½” fastener

-Edge or Blind Stapler/Nailer (Manual or Pneumatic) with 1 ½” - 2” Fasteners for flooring 5/8” – ¾” thick, or 1-1/4” to 1-1/2” fasteners for flooring 5/16” – 9/16” thick (always do a test plank to verify that fasteners are seating properly and not causing dimpling on the surface)

-15lb. roofing felt, #15 hardwood floor underlayment felt, or Aqua Bar underlayment paper

### **Nailing Down the Floor**

1. After installing 15lb. felt or Aqua bar per the manufacturer’s instructions, measure out from the starting wall the width of one flooring plank plus the appropriate expansion space for that thickness of flooring. Mark two points toward each end of the starting wall and snap a chalk line along the full length of the wall through the marks.
2. Lay the tongue side of the first row of flooring along the chalk line. Face nail (top nail) the first row of flooring in place. Place the fasteners approximately ¾” from the wall side (groove side) of the flooring board every 4” to 6”. Continue the first row installation blind/edge nailing every 4” to 6” along the tongue and every 2” to 3” from every end joint. Note: Blind/edge nailing of the first row may require the installer to use 6-d finish nails or pneumatic finish nailer along the tongue.
3. Continue the installation across the room, blind/edge nailing every 4” to 6” and 2” to 3” from each end joint. Stagger end joints by at least 8”. Avoid creating “H” patterns (where an end joint is adjacent to another end joint in the second to last row installed). Use cut ends to start the subsequent row, discarding any pieces shorter than 8”.
4. Trim the last row of flooring to maintain the minimum expansion space at the far wall.
5. At the far (finish) wall, it may be necessary to face-nail the last 2-3 rows due to the angle of the stapler/nailer. The last row or two of flooring may need to be pulled together using a pulling bar.



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6. Sand & Finish per NWFA guidelines. Avoid color techniques that require the application of significant quantities of chemical solvents such as bleach or lye, which can soak into the floor and potentially cause delamination and other problems.
7. Complete the installation by reinstalling new base moldings.

### **Nail + Glue Installation Instructions – required for planks over 7.5” wide, recommended for all planks over 5” wide.**

WFD Engineered Wood Flooring can be nailed + glued to plywood, OSB and existing wood flooring meeting the requirements outlined above under ‘Subfloor Conditions’.

### **For Nail + Glue Installations, you will need the General Tools and Accessories, plus:**

- Adhesive: Bostik Best urethane wood flooring adhesive or equivalent
- Adhesive Remover recommended by the manufacturer of the adhesive selected
- Adhesive Trowel recommended by the manufacturer of the adhesive selected
- Nailset –Tack Stapler or 1” roofing nails (for felt)
- 6-d Finish Nails of Pneumatic Finish Nailer with 1 1/4’ to 1 ½” fastener
- Edge or Blind Stapler/Nailer (Manual or Pneumatic) with 1 ½” – 2” Fasteners for flooring 5/8” – ¾” thick, or 1-1/4” to 1 ½” fasteners for flooring 5/16” – 9/16” thick (always do a test plank to verify that fasteners are seating properly and not causing dimpling on the surface)

### **Nailing + Gluing the Floor:**

1. Measure out from the starting wall the width of one flooring plank plus the appropriate expansion space for the thickness of flooring. Mark two points towards each end of the starting wall and snap a chalk line along the full length of the wall through the marks.
2. Trowel spread the adhesives on the subfloor along the chalk line wide enough to allow the first row of flooring to be installed, being careful not to cover the line. Follow the adhesive manufacturer’s recommendations for the wet lay times before proceeding to the next step.
3. Lay the tongue side of the first row of flooring along the chalk line. Face nail (top nail) the first row of flooring in place. Place the fasteners appropriately ¾” from the wall side (groove side) of every 4” to 6”. Once the face nails are set, use 6-d finish nails or the pneumatic finish nailer to blind/edge nail along the tongue of the first row, every 4” to 6” and every 2” to 3” from every joint. Check to make sure the first row is still straight along the chalk line before proceeding.
4. Trowel spread enough adhesive to install 2-3 more rows.
5. Install the second row by sliding the groove side on to the tongue of the first row. Blind/edge nail it in to place, with fasteners every 4” to 6” and 2” to 3” from each end joint. Stagger end joints by at least 8”.
6. Continue nailing and gluing 2-3 rows at a time in this manner across the room. Avoid creating “H” patterns (where an end joint is adjacent to another end joint in the second to last row installed). Use cut ends to start the subsequent row, discarding any pieces shorter than 8”.
7. Most adhesives require that the installer clean the adhesives off the flooring boards during the installation. Follow the adhesive manufacturer’s recommendation for this procedure.
8. Trim the last row of flooring to maintain the minimum expansion space at the far wall.



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9. At the far (finish) wall, it may be necessary to face –nail the last 2-3 rows due to the angle of the stapler/nailer. The last row or two of flooring may need to be pulled together using a pulling bar.
10. Do not allow foot traffic on the floor for 24 hours after installation is complete.
11. Sand & Finish per NWFA guidelines. Avoid color techniques that require the application of significant quantities of chemical solvents such as bleach or lye, which can soak into the floor and potentially cause delamination and other problems.
12. Complete the installation by reinstalling or installing new base moldings.

### **Glue Down Installation Instructions – for planks 7.5” wide and narrower**

WFD Engineered Flooring can be glued down to concrete, plywood, OSB, underlayment grade particleboard, and existing wood floors meeting the requirements outlined above under General Conditions/Subfloor Conditions, WFD Engineered Flooring can also be glued to other surfaces such as well- adhered sheet vinyl, vinyl tile, ceramic, etc., but the performance of the adhesive is the responsibility of the adhesive manufacturer and careful adherence to the adhesive manufacturer’s installation instructions for that particular subfloor surface is crucial. WFD does not warrant the adhesive bond between the subfloor and the wood flooring.

### **For Glue Down Installations, you will need the General Tools and Accessories, plus:**

- Adhesive: Bostik Best urethane wood flooring adhesive or equivalent
- Adhesive Remover recommended by the manufacturer of the adhesive selected
- Adhesive Trowel recommended by the manufacturer of the adhesive selected
- Masking Tape: 3M Advanced Delicate Surfaces 2080EL Tape

### **Gluing Down the Floor**

1. Measure out from the starting wall the width of one flooring plank plus the appropriate expansion space for that thickness of flooring. Mark two points toward each end of the starting wall and snap a chalk line along the full length of the wall through the marks. Install backer boards as guides along the wall side of the chalk line. Anchor the backer boards in place with screws or finish nails. Over concrete subfloors, anchor the backer boards with concrete screws or concrete nails. These boards will be removed later.
2. Lay the first row of flooring, but do not glue into place. Align the tongue side of the flooring boards against the backer board. Dry lay the next two rows of flooring in place, siding the tongue into the groove. End joints should be staggered by at least 8”. Pull the rows of flooring boards out away from the backer board approximately 24” to allow for the glue to be spread.
3. Trowel spread the adhesive on the subfloor along the backer board wide enough to allow the first three rows of flooring to be installed. Follow the adhesives manufacturer’s recommendation for wet lay times before proceeding to the next step.
4. Install the first row of flooring, pressing the tongue to the backer board. Slide the tongue of the next row of flooring into the groove of the first row and continue until the first three rows are done.
5. If tape is needed to hold boards together, **use ONLY 3M Advanced Delicate Surfaces 2080EL Tape, and be sure to remove any tape within 20 minutes of application.**
6. Trowel spread adhesives and continue the installation across the room. Trim the last row of flooring to maintain the minimum expansion space at the far wall. Be careful not to move the installed flooring out of position. Using knee-boards



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can help prevent movement. Some flooring boards may need to be tapped or pulled into place with a tapping block or pull bar.

7. Most adhesives require that the installer clean the adhesive off the flooring boards during the installation. Follow the adhesives manufacture's recommendation for this procedure
8. Once the room is finished, remove the backer boards at the starter row.
9. Dry lay the first row of flooring to replace the backer board. Trowel spread the adhesive on the back of the flooring boards (not on the subfloor) and install the flooring, sliding the groove onto the tongue of the already installed starter row. Doorways and other openings may require installation of the flooring the same way. Slide the flooring boards under the previous cut door trims and casings.
10. Do not allow foot traffic on the floor for 24 hours after installation is complete.
11. Sand & Finish per NWFA guidelines. Avoid color techniques that require the application of significant quantities of chemical solvents such as bleach or lye, which can soak into the floor and potentially cause delamination and other problems.
12. Complete the installation by reinstalling of installing new base moldings.

### **Floating Floor Installations Instructions**

WFD Engineered Wood Flooring can be installed as a floating floor system over almost all types of subfloors including Plywood, OSB, Existing Wood Floor, Vinyl, Vinyl Tile, and Ceramic Tile provided they are clean, flat, dry and structurally sound, meeting the requirements outlined above under 'Subfloor Conditions' Note: WFD Engineered Wood Flooring boards must be at least 4" wide to be installed as a floating floor system.

### **For Floating Floors, you will need the General Tools and Accessories, plus :**

- Tongue and Groove Glue: Franklin Titebond III or Equivalent PVA adhesive
- Underlayment Pad: ~1/8" thick Two – in – One pad (pad plus vapor barrier) or ~ 1/8" thick pad with 6 mil polyfilm sheeting
- Masking Tape: 3M Advanced Delicate Surfaces 2080EL Tape

### **Floating the Floor**

1. If installing over underlayment pad plus a separate layer of polyfilm, install the 6 mil polyfilm first, taping all seams with waterproof tape, and then install the pad. Roll out the first run of pad from wall to wall parallel to the starter wall. On the installed pad mark two points toward each end of the starting wall and chalk a line the full length of the wall through the marks. This is the starter line.
2. Lay the first row of flooring using only long boards. The first flooring board and the last flooring board in this row should be a minimum of 12" long and cut to provide the appropriate expansion space on each end. Apply a 1/8" continuous bead of T&G glue on the bottom side of the groove of each end joint. Align the tongue side of the starter row along the chalk line and engage the end joints together. Use shims along the long wall at both ends of the row to keep the floor in place and maintain the right expansion space.
3. Lay the second and third row of flooring boards. End joints should be separated by a minimum of 8" from the adjacent row. Spread a 1/8" bead of T&G glue along the bottom side of the long groove and each end joint groove on the second row of flooring. Engage the groove side of the second row with the tongue of the starter row. Engage the end joints at the same time, aligning them and cutting at the end of each row to allow for appropriate expansion space. Continue this procedure for the third row. These three rows must be aligned straight to ensure that the rest of the installation remains straight.



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4. Continue using the same procedure. If boards do not easily engage together, use a tappingblock or pull-bar. Use masking tape as needed to keep the boards together and rows straight. **Remove all tape within 20 minutes of application. Use only the 3M Advanced Delicate Surfaces 2080EL Tape.**
5. Avoid working on top of the installed flooring to prevent breakage of the glue joint.
6. Do not allow foot traffic on the floor for 24 hours after installation is complete.
7. Sand & Finish per NWFA guidelines. Avoid color techniques that require the application of significant quantities of chemical solvents such as bleach or lye, which can soak into the floor and potentially cause delamination and other problems.
8. Complete the installation by reinstalling or installing new base moldings.

### Radiant Heat Systems

**Note: the following WFD products are NOT WARRANTED in installations over radiant heat:**

- All Hickory products, regardless of plank dimensions
- All products 1/2" or thinner, regardless of species or plank width
- All products with plank widths greater than 7-1/2"

**The following products ARE WARRANTED for use over hydronic radiant heat:**

- European Oak, White Oak, Red Oak, Ash or Walnut with planks at least 9/16" thick and not wider than 7-1/2"

If the product you plan to install is not described above, please contact WFD for clarification before finalizing product selection.

In all installations over radiant heat, the warranty will be void if any of the following requirements and instructions are not adhered to:

- The radiant heat system must be hydronic (using warm water).

**WFD Engineered Flooring is not warranted over electric radiant floor heat systems.**

- The flooring must be installed running perpendicular to the radiant tubing.
- The heat system must be designed for wood flooring and have an outside temperature sensor and in-floor direct contact temperature sensors.
- The system controller must be designed for wood flooring and have a temperature control mechanism that will not allow the surface temperature of the subfloor to exceed 82°F.
- The system must be kept on and within 15°F of normal operating temperature AT ALL TIMES.
- For concrete subfloors, conduct and document Calcium Chloride Tests per ASTM F186. Test results must exceed **2.0 lbs.** per 1000 square feet per 24 hours.
- For wood subfloors, use a pin type meter to document the moisture content of the subfloor. Moisture readings should not exceed **8%** in any location and readings for the subfloor must be within 2% of the flooring at the time of installation.





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- Relative humidity at the jobsite must be maintained between 35% and 55% at all times. Failure to maintain proper humidity levels will void all warranties.
- The radiant heat system must be on and operating at normal output a minimum of 14 days prior to the start of the installation.
- Wood flooring must be delivered to the jobsite and acclimated to the installation environment a minimum of 7 days prior to the start of the installation.
- Temperature in the installations area must be controlled between 60°F and 80°F at all times.
- Maximum surface temperature of the wood flooring can never exceed 82°F.
- Excessive heat, rapid heating, and/or failure to maintain humidity levels between 35% and 55% may cause cracking, cupping and other forms of failure and will void the warranty.
- **NOTE: in wood flooring installations over radiant heat, moderate surface checking, cracking (especially at the ends of the boards and around knots), shrinkage, gapping between planks, and slight cupping are all to be expected and do not constitute a product defect.**

Once these instructions and requirements are met, continue the installation by following the instructions for your specific installation method as outlined above.