

# WOOD FLOORING INTERNATIONAL

## ENGINEERED WOOD FLOORING INSTALLATION

The following information is aimed at the wood floor installer, whose focus is producing the finest finished product possible. The installer may in some cases be the person who sold the job, the homeowner or in many instances the job was sold by someone else. Good communication between the sales person and the installer is important. Customer expectations should always be considered when both selling a wood floor and installing one. If the floor is “oversold” and things such as over-wood, under-wood, or small gaps are not discussed, the job becomes an accident waiting for a place to happen. The bottom line is good communication between all parties.

When installing factory finished wood always keep in mind that what comes out of the box is what the final floor is going to look like! You the installer are the last person to inspect the flooring. Lay out of several different boxes at a time. Constantly check for color and sheen level, do not lay boards that are dramatically different in grain color or sheen in main areas. Save these “culls” for closets or small cut in pieces, do not install boards with different sheen levels. From time to time stand up and look at the floor from different angles to make sure it looks good. It is hard to get an overall view from your knees. Work with good light, so there are no surprises when the lights come on. NOTE: ALL WOOD FLOORING WILL PATINA OVER TIME, THIS NATURAL COLOR CHANGE IS MUCH MORE DRAMATIC IN EXOTIC SPECIES SUCH AS BRAZILIAN CHERRY, SANTOS MAHOGANY AND MORE. Do not place area rugs over your new floor for at least thirty days to allow this natural color change to happen; then move rugs from time to time to help prevent extreme color variation under rugs.

**Do a dry layout with the homeowner (taking material out of several boxes) to insure that the flooring meets expectations.**

**Before starting any wood floor installation make sure that the job site conditions are correct! It is the installer/owners responsibility to ensure that the jobsite conditions and jobsite sub-floor are structurally and environmentally correct before any wood flooring is installed. Wood Flooring International declines any responsibility for failures or deficiencies of hardwood flooring resulting from or related to sub-floor or job site conditions. Permanent HVAC should be on and operational a minimum of seven days and maintained between 60 and 80 degrees Fahrenheit. The relative humidity must be maintained between 30 and 50 per cent before delivery, during and after installation. If HVAC is not possible at the time of installation, the job site conditions must be at or near normal living conditions between 60 and 80 degrees Fahrenheit, and at the average yearly relative humidity for the area. All wet work must be completed before wood floor installation begins, i.e. painting, drywall mud, ceramic installation/grouting etc.**

### I. FLOOR PREPARATION

A. Concrete, prepping for glue down installation.

1. MAKE SURE IT IS FLAT. Make sure the concrete slab is flat to manufactures specification, i.e. 1/8” in a 6 foot radius or 3/16” in ten foot radius. If the slab is out of specification, consider grinding, floating or both. Many high spots can be removed by grinding, depressions can be filled with various patching

compounds, and very bad or rough slabs can be fixed using a good self-leveling concrete product such as Ardex K-15, or equal.

2. MAKE SURE IT IS DRY. The current specification for a dry slab measured using a calcium chloride test is 3 pounds per 1000 sq. ft. or less.
  - a. Concrete moisture meters will show you if the slab is dry enough to install wood. Remember that a meter will only give a go, or no go. Slabs with high meter readings should be checked further using a calcium chloride test.
  - b. Another method for testing a slab is the plastic or rubber mat test. Tape a piece of plastic approximately 2 X 2 to the slab for 24 hours remove and check for moisture accumulation; if there is obvious water under the mat **STOP** and do a calcium chloride test.
  - c. If the above testing show that the slab is too wet (over 3 pounds, but less than 12 pounds on a calcium chloride test) consider using a topical vapor barrier such as Bostik MVP, Stauf Vapor barrier or equal.
3. If a slab tests too high in vapor emission to glue a floor down (higher than 12 pounds), consider using a vapor barrier and a floating plywood sub-floor or using an alternative installation method such as WFI single strip “floating system”. NOTE: be sure the WFI product you are installing is can be floated, check the individual instructions for each product being used.  
Sheet vinyl made of PVC<sup>1</sup> may be used as a vapor barrier if installed **using an adhesive with the same bond strength as the adhesive used to glue down the wood floor.** A topical sealer should be used over the vinyl to prevent plasticizer migration. Keep in mind that if the slab is producing excessive amounts of moisture (over 10 pounds) sheet vinyl may fail as well. Also, mold can grow in the sheet vinyl backing and cause long term problems.
4. Concrete has to be clean, free from sealers, waxes, and oil, paint drywall compound etc. Check for the presents of sealers by applying drops of water to the slab, if the water beads up there may be sealers or oils. If the slab has been sealed it can be prepped using bead or shot blasting. This should be done by a professional.
5. Look for excessive settling cracks and check these areas carefully for excessive moisture transmission. **SETTLING CRACK MUST BE ADDRESSED BEFORE FLOORING IS INSTALLED.**
6. Do not attempt to glue a wood floor over a chalky or soft concrete slab.

B. Light weight concrete sub-floors, i.e. gypcrete.

1. Make sure the gypcrete is well bonded to the sub-floor, check for hollow spots, cracks and loose areas.
2. As with on grade concrete sub-floors make sure the gypcrete is clean, flat to specification and dry.
3. Adhesive choice is very important when installing over lightweight concrete, as is product choice. Choose a product that is very dimensionally stable, as any floor that “moves” a lot may pull the gypcrete loose. Consider “floating” systems over Gypcrete.
4. Seal Gypcrete with two coats of latex milk before gluing flooring.

C. Other type sub-floors: Terrazzo, Tile, Stone

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<sup>1</sup> Do not install wood flooring over vinyl made with a urethane wear surface!

1. Terrazzo floors make fine sub-floors for gluing wood flooring down as the terrazzo is ground flat and smooth during its installation process. Remember, to remove any terrazzo sealers or wax before starting the wood installation. Clean the terrazzo with a strong stone or tile cleaner, and then rough it up using a buffer with 12 or 16 grit sandpaper discs.
2. Ceramic tile floors that are sound well bonded and flat make excellent sub-floors. Grout lines can be filled by skim coating and “pillowed” tile can be floated using a self-leveling underlayment. Abrade all ceramic or stone floors before installing wood flooring. Soft clay type tile such as Mexican tile should be roughed up using a buffer and 12 or 16 grit sandpaper, removing any surface sealer, and then skim coated with a self-leveling underlayment such as Ardex K-15.
3. Stone and marble should be clean free of sealers and all shine should be removed by grinding with a buffer as mentioned above.
4. Note that it is much less labor intensive and therefore less expensive to the end user if existing hard surface floors are prepped and left down. Removing tile, marble, or stone is an expensive very messy procedure, which leave you with a sub-floor that will need extensive preparation before a wood floor can be installed on it. .

#### D. Plywood sub-floors

1. Check for loose plywood and re-nail or screw down securely, check for expansion between sheets of plywood (1/8”minimum) and address, as needed using a circular saw. If the seams are too tight the sub-floors will squeak.
2. Check for delaminated areas and repair as needed.
3. As with all sub-floors, make sure the plywood is free of debris, paint drywall compound etc.
4. Install wood flooring perpendicular to joists.
5. Sub-floor must be flat to 3/16” in a ten foot radius, or 1/8” in a six foot radius. If it is not repair by sanding off high areas, shimming over joists, or shoring up joists from below. Do not use cement based patch over plywood sub-floors.

***Undercut all door trim and casings as part of the floor preparation process.***

## II. LAYOUT

**NOTE: Remember to leave expansion space around the perimeter of the floor as well as any obstacles such as pipes, columns, hearths etc. Expansion space should equal the thickness of the flooring being installed: i.e, 9/16” thick requires 9/16” expansion, 3/8” thick requires 3/8” expansion etc.**

The layout of any flooring product is a matter of esthetics. What the customer considers the right look for their room or rooms. The size and pattern of the flooring is a major determining factor. In any case the layout is determined by first squaring the room or rooms. If the flooring is going to continue throughout in a contiguous flow, then the job has to be laid out on a grid to insure that the floor is as uniform as possible:

1. First determine a starting area, find the center of the room and strike a line.
2. Now layout a perpendicular line to the first line. Once you have an intersection in what should be the center of the room, you measure three (3) feet out on one line and four (4) feet out on the perpendicular line.
3. Now measure the distance from the four-foot mark to the three-foot mark. This measurement should be exactly five (5) feet. If it is off, check which line you need to adjust and make the changes then check the 3, 4, 5, again.

These lines will give you a starting point not only for that room but also for the entire job. Extending the starting lines and snapping lines through the installation will give you a visual or

how the installation will proceed, and allow you to make adjustments in other rooms as to out of square walls, going around islands etc. Remember to always include your customer in the lay out process, so there are no surprises as the job progresses.

All patterns or decorative floors should be built from the inside of the room out using the junction of the working line and the perpendicular line. **Lay the flooring in a random pattern; avoid stair step patterns, H joints, and make sure all end matches are separated by at least 6 inches. A good rule of thumb is to try and keep end match joints separated by two times the width of the flooring being installed: 6" for 3" wide material, 10" for 5" wide material etc.**

Parquet patterns should be laid out leaving any cut in areas around the room as even as possible. Start in the center of the room working in a pyramid pattern and finishing with the cut pieces the same size on parallel walls.

Herringbone patterns should be installed by breaking the room down into quadrants. Lay out the pattern and discuss with the customer which direction the "arrows" should face. What looks like a herringbone to some, looks like a zigzag to others.

Strip and plank should be laid out to avoid leaving very small cut in pieces at wall lines, or ending up with boards that are three inches one end and one inch at the other.

Consider using a diagonal layout in smaller rooms or in installation where the walls are obviously out of square. Remember to add a higher waste factor for diagonal layouts.

Trammel points are a good way to find a perpendicular line to your working line. Just remember that the first line must be true, because the perpendicular line will be square to your line, not necessarily to the walls.

***The lay out process is a great time to suggest adding a decorative border, apron or medallion to the installation.***

### **III. INSTALLATION**

Always use extra care not to scratch or ding the face when installing pre-finished wood flooring. Keep tools off the finished areas, if nailing the floor cover your nailer with blue tape in areas that make contact with wood surface and keep the work area clean and free of debris. Use the proper mallet heads as not to damage the finish as you are tapping the floor together; consider using a vinyl tapping block made for either nail down or glue down installation. Keep a piece of cardboard or clean carpet to keep tools on and off of the wood. Undercut doorjambs as part of the preparation process.

#### **A. GLUE DOWN**

1. Choose the right adhesive for the job. Follow the manufactures recommendation as to trowel size and spread rate. **Do not use adhesives that contain water!** WFI recommends using a pure urethane such as Bostik Best, an alcohol solvent such as Stauf, or a polymer such as Stauf. ([www.staufUSA.com](http://www.staufUSA.com))
2. Install a backer row along your working line, then snap a second line approximately 1/4" short of where your first run will end. Do not spread more adhesive than you can cover in the time allowed according to the adhesive manufacturers' recommendation. The second line is where you will stop applying the adhesive. By using this "glue line" you will avoid over spreading the work area, and having to scrape up the excess. Plus it will allow you to work cleaner.
3. Install the flooring tongue into groove, as this helps prevent "scooping" adhesive into the grove and causing side match gaps.
4. Use blue tape or straps (made for this type of installation) to keep the job tight during the installation. Use field wedges to tighten up the floor and

hold it in place if you have to leave the job for any length of time. Do not over tighten wedges or straps.<sup>2</sup>

5. Continue this process throughout the installation.
6. If using urethane adhesive take extra care not to get the adhesive on the flooring surface. If adhesive does get on the flooring clean it up immediately with denatured alcohol, mineral sprits, or the manufactures recommended cleaner: **DO NOT ATTEMPT TO CLEAN UP URETHANE ADHESIVE WITH WATER!**
7. Stop from time to time and check to make sure you are getting good adhesive transfer to the back of the flooring. Check for hollow spots and weight same if found.
8. Wait 24 hours before allowing traffic on the new flooring

**DO NOT GLUE DOWN WOOD FLOORING OVER RADIANT HEAT SYSTEMS WITHOUT FIRST CHECKING WITH THE ADHESIVE MANUFACTURE FOR MAXIMUM HEAT TOLERANCES!**

## **B. NAIL DOWN**

1. Follow all of the standard installation procedures for any nailed down wood floor with extra care given to protecting the factory finish on the flooring as mentioned previously.

WFI recommends Powernail tools as follows:

- 9/16” use Powernail Model 50 P regular pad with 4 shims, 1-1/2” 18 gauge Powercleat (red box) at 80 psi.
- 5/16” use Powernail Model 200 with B-1 pad and 1 shim, 1-1/4” 20 gauge Powercleat (green box) at 70 psi.
- 5/8” use Powernail Model 200 with U-1 pad and 4 shims, 1-1/2” 20 gauge Powercleat (green box), at 70 psi.
- 1/2” use Powernail Model 200 with U-1 pad and 2 shims, 1-1/2” 20 gauge Powercleat (green box), at 70 psi.

## **FLOATING FLOORS**

There are two basic floating systems; edge glued or click together. In a glue together system; the glue is applied to the side match in the groove area, and at the end match on the groove side. Always use the recommended glue as it is made to stay flexible and allow the flooring to move as needed. Typical carpenter wood glue will become brittle and the bond may break; use Titebond II or equal. Click systems work using an interlocking tongue and groove.

Sub-floors should be flat to 3/16” in a ten-foot radius, and again check the manufacture recommendation for their exact specifications. Leave the proper expansion around the perimeter and at any obstacle or fixed objects. Undercut doorjamb and casings as needed. As “floating” floors are not attached to the sub-floor, almost any sound flat floor will work.

***Do not open the cartons or puncture the plastic wrappers on WFI Single Strip systems,*** as this will allow the introduction of moisture and make it difficult to put the boards together. Install the flooring from random boxes as you open them.

**Remember again to take extra care to protect the factory finish.**

**FLOATING FLOORS MAY BE INSTALLED OVER RADIANT HEAT; ALL INSTALLATION GUIDELINES MUST BE FOLLOWED. WFI DOES NOT**

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<sup>2</sup> Use Motivator Straps which are made for installing real wood floors; do not use straps made for installing laminate flooring. Never over tighten the straps.

**WARRANT ANY WOOD FLOORING OVER RADIANT HEAT<sup>3</sup> NOTE: IF NEW CONSTRUCTION NOTIFY YOUR BUILDER THAT WOOD FLOORING IS BEING INSTALLED AS RADIANT HEATING SYSTEMS CAN BE DESIGNED EXPRESSLY FOR WOOD FLOORING APPLICATIONS. IF REMODELING EXISTING STRUCTURE, CHECK TO MAKE SURE THE SYSTEM IS COMPATIBLE WITH WOOD FLOORING.**

- Prior to installation moisture testing must be conducted and documented per ASTM test method 1869-89 (calcium chloride) for concrete or wood moisture meter for wood sub floors.
- The moisture content for concrete sub floors registered after a calcium chloride test must not be greater than 2 pounds per 1000 square feet of area. If testing exceeds these limits, DO NOT INSTALL FLOORING.
- Relative humidity of the jobsite must be maintained between 35-55% rh. The use of a humidifier may be required to maintain the proper humidity levels. Failure to maintain proper humidity level can result in excessive drying of the flooring and will void all manufactures warranties.
- Use of an in floor temperature sensor as well as a separate thermostat for individual rooms is required.
- An outdoor temperature sensor should be used to adjust water temperature according to anticipated heat loss.
- Operation of radiant heat system should be set to run at 2/3 maximum output for a minimum of two weeks prior to installation of flooring. This will insure that any residual moisture in the sub-floor has dissipated.
- Prior to installation reduce the heat to 65 degrees F. for at least four days
- Install flooring as per WFI floating system guidelines.

**JOBSITE REQUIREMENTS FOR RADIANT HEAT WOOD FLOOR INSTALLATIONS. PRIOR TO THE INSTALLATION THE RADIANT SYSTEM MUST BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.**

- Moisture content of concrete must not exceed 2 pounds per 1000 square feet of area per calcium chloride test (ASTM 1869-89). Wood sub floors can not exceed 13% and must be within 4% of the wood flooring.
- Concrete must be allowed to cure and dry a minimum of four weeks before operation of radiant heat system
- The radiant heat system should be set to run at 2/3 maximum output for a minimum of two weeks prior to install of flooring to further allow moisture from the concrete to dissipate and reach a final moisture content. This must be done in both heating and non-heating seasons.
- Four days before installation reduce to a temperature of 65 degrees.
- Install the wood flooring according to WFI floating floor installation guidelines. The use of a two in one underlayment is required.
- 48 hours after completion of the installation, slowly raise the temperature of the heating system to it preferred operation level over a period of five days.

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<sup>3</sup> Wood Flooring International will warrant installations over radiant heat if the contractor has been trained and certified by WFI's technical training staff and all protocols have been followed.

**ANY DEVIATION FROM THESE INSTRUCTIONS WILL VOID ALL MANUFACTURERS' WARRANTIES!**

**V. DECORATIVE PRE-FINISHED WOOD FLOORS**

Installing inlays, borders, aprons and medallions in pre-finished floors is done exactly the same as in unfinished with the extra care given to not damaging the factory finish.

- A. Layout where your decorative work is going to be on the sub-floor and remember to leave these areas free of adhesive, cleats, nails or staples.
- B. When using a template to cut out around fieldwork or drop in a medallion, secure the template with double face tape or weights. Never nail a template to the pre-finished flooring.
- C. When using a template to cut out around fieldwork or drop in a medallion, secure the template with double face tape or weights. Never nail a template to the pre-finished flooring.
- D. Tape the bottom of your saws and routers to prevent scratching the floor with their base.
- E. Always use a new sharp carbide blade or bit to cut. This will help eliminate splintering.
- F. Tape over the area you are cutting to prevent scratches and splintering.
- G. Do not let blades or bits get over heated. Take your time. If the blade or bit gets too hot it will splinter the edges or warp and make an inaccurate cut.
- H. Keep the work area **VERY** clean as debris will scratch the factory finish
- I. When installing "Hand Scrapped" wood floors, it is important to ease the edges of any cut pieces of flooring with a block and sandpaper before installing any butt transitions. Follow the contour of the scraping and if necessary recoat the edge with a clear finish. Matt clear nail polish works well. For stained floors use Minwax color match stain touch up "pencils" that contain stain, then re-coat edge. Do not use wax color pencils.

**VI. BAMTEX BAMBOO**

Install engineered bamboo flooring as per WFI instructions for our engineered wood floors.

**VI. CLEAN UP**

When working with any pure urethane adhesive, tape your trowel before spreading the adhesive leaving only the notches exposed. This tape "trick" works well with most adhesives. Simply remove the tape at the end of the day and all you have left to clean are the notches. Clean up any adhesive that may have gotten on the surface; and remember that removing dried urethane adhesive from a pre-finished floor is difficult to impossible. **Do not attempt to clean up pure urethane adhesive with water! Look at the floor as if you own it, because if it isn't right, you do!** Check for gaps and fill them with color match putty. Make sure all trim pieces and transitions look good and are fitted and installed properly. Provide your customer a wood floor care kit, and go over maintenance procedures with them.