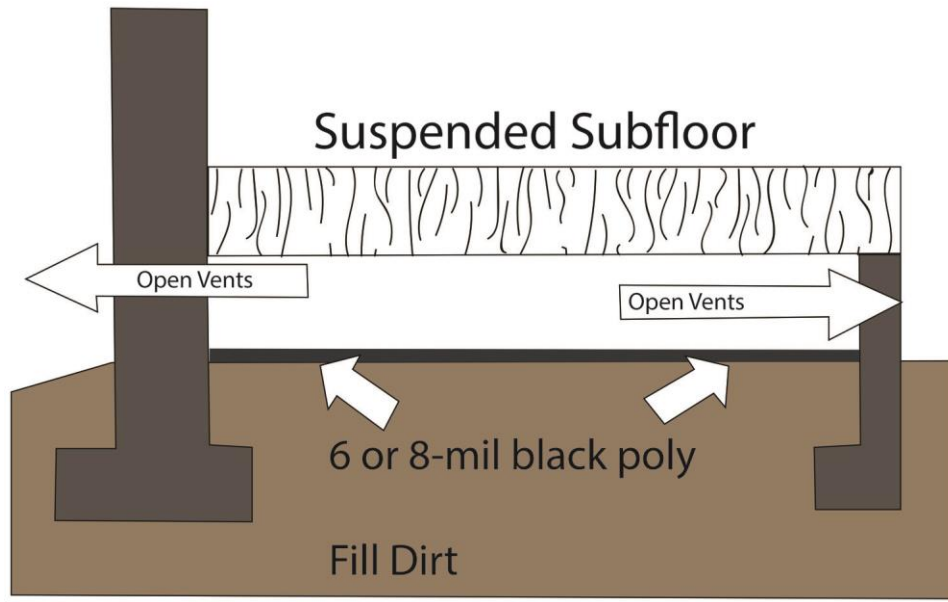


SOLID NAIL-DOWN WOOD INSTALLATION INSTRUCTIONS

Inspect the job site carefully before you begin the installation. Some conditions require specific installation methods. A level, flat, clean, dry, and firm subfloor is always necessary. All L.W. Mountain, Inc. products are manufactured in accordance with accepted industry standards, which permit grading deficiencies not to exceed 5%. If the material is not acceptable, do not install it and contact the seller immediately.

Climate and Pre-Installation Procedures

- Material should be stored on the job site in rooms where installation is to occur.
- Garages and exterior patios are not suitable for storing wood flooring.
- Do not remove the product from the cartons.
- Do not open just the ends of the cartons.
- HVAC systems must be installed and operating before the flooring is delivered to the job site.
- All concrete, masonry, framing members, drywall, paint and other “wet” work should be thoroughly dry.
- Exterior Grading should be complete with surface drainage offering a minimum drop of 3’ in 10’.
- Crawl spaces must be a minimum of 24” from the ground to the underside of the joists. A ground cover of 6-8 mil black polyethylene film is essential as a vapor barrier with joints lapped six inches and taped. The crawl space should have perimeter venting equal to 1.5% of the crawl space square footage.



Make sure the room environment is set at a normal living range 55 – 80 degrees and 35 – 55% humidity. **Normal living conditions** should be achieved and maintained a minimum of fourteen days before flooring is brought into the living area for acclimation purposes. It should be maintained during and after the installation as well. **Proper acclimation is not a measurement of time; it is a measurement of moisture levels.** It requires taking moisture readings of the flooring and the sub-flooring. The flooring is acclimated and ready for installation when it has reached a moisture level consistent with the job site and **normal living conditions**. Using a moisture meter, test the subfloor and hardwood flooring for moisture content. Moisture content of the subfloor should be 6-12% depending on your area. When wood flooring is produced for the North American market, it has a moisture content of between 6-9%. For solid strip flooring (less than 3” wide), there should be no more than 4 percent moisture content difference between properly acclimated wood flooring and sub-flooring materials. For wide-width solid flooring (3” or wider), there should be no more than 2 percent difference in moisture content between properly acclimated wood flooring and sub-flooring materials.

The customer is responsible for maintaining normal humidity conditions (35-55%) within the home throughout the year. L.W. Mountain, Inc. is not responsible for environmental conditions that cause excessive expansion and contraction.

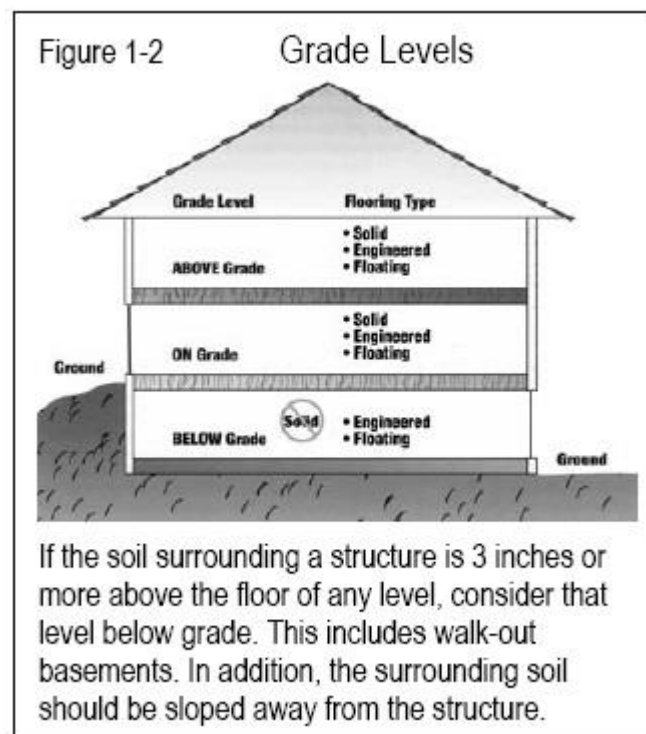
Appropriate Subfloors

1. Preferred Subfloor
 - 1) ¾ inch CDX plywood in 4 x 8-foot sheets
 - 2) ¾ inch OSB - PS2 rated in 4 x 8-foot sheets
2. Existing wood floors
3. Sheet vinyl or resilient tile as long as it is installed over one of the preferred subfloors.
4. Concrete slabs – Installation should be done by installer with substantial knowledge of N.W.F.A. (National Wood Flooring Association) recommended alternatives for installing over concrete slabs.

Radiant Heated Floors – L.W. Mountain, Inc. only recommends, and warranties certain engineered flooring be installed over in-floor radiant heated subfloors. Contact us for recommended floors. Our solid should never be installed over any kind of radiant heat system.

Subfloor Preparation

1. Subfloors must be cleaned. This can be scraping or sanding the floor to remove all foreign materials.
2. Subfloors must be flat. ¼ inch in 10 feet. Sand all seams and high spots.
3. Subfloors must be free of loose areas and squeaks before installation can start. Renail or screw down sections that are loose or squeak. Replace any subfloor that is damaged.
4. The subfloor must be dry before you begin your installation.



Above Grade - Engineered and Solid floors can be installed.

On Grade - Engineered and Solid floors can be installed. L.W. Mountain, Inc. does not recommend gluing down solid wood on concrete slabs. Solid Bamboo can be glued with appropriate adhesives. *See Technical Letter*

Below Grade - Engineered floors can be installed. Solid wood and bamboo should not be installed below grade.

Mechanical Fastener Selection

L.W. Mountain, Inc. only requires the use of flooring cleats with Strand Bamboo, Acacia, and Jatoba floors. Staples or cleats may be used for our other flooring, however, be aware that ALL cleats are made to install wood flooring, only certain staples are made exclusively for use with flooring. Using staples which are not directly intended for flooring can lead to loose and squeaking floors. This would be considered improper installation and void the warranty.

Fastener Length

For most installations of 3/4" Solid, LWM requires fasteners to be a minimum 1 3/4" length. If thicker sound deadening underlayment is used, longer fasteners will be needed.

TEST THE NAILER: Using one of the recommended type nail guns, test by fastening a sacrificial board to the floor. Check for surface damage in a **well-lighted area**, verify air pressure setting and tongue damage, make all adjustments and corrections before installation begins, remove the test board. **Tongue fracture** and **surface dimpling** during installation is common and can be minimized by (1) using the correct nail thickness, (2) using the recommended shoe adaptor, or (3) changing the angle of nail entry. Many installers will temporarily adjust the nailer angle by applying layers of duct tape to the bottom foot plate of the nailer. In addition, to reduce the occurrence of surface dimpling, the use of flooring nailers with a thinner **18-20 gage cleat nail** is recommended for bamboo especially the much harder **Strand Bamboo**. The use of the over-size base plate in order to distribute the driving force is encouraged. If, however, surface dimpling or tongue fracture still occurs, drilling pilot holes and hand nailing may be required. Pounding boards together during assembly with a rubber mallet may damage unprotected board edges.

Note: Only use flooring nailers that are fully adjustable and that engage the top profile over the tongue at the appropriate angle. Make sure that the flooring nailer is in good working condition and seats properly against the board to prevent top edge and surface dimple damage.



Important: Set air compressor pressure to allow appropriate fastener penetration. Test and adjust the air pressure to ensure proper setting of fasteners. If tongue damage occurs, lower the air pressure.

L.W. Mountain, Inc. only requires using proper mechanical fastening techniques for our solid wood flooring since all of our solid products are less than 5” in width. The use of “Glue-assist” is an option. This can help reduce the possibility of squeaky floors. Please contact us for proper “Glue-assist” techniques and recommended adhesives.

Installation

Notice: The installer is the final inspector of this product. Once a board is nailed or glued to the floor, it is deemed to be acceptable to the installer and homeowner. If the installer is not sure whether or not the floor’s milling or grading is acceptable, work should stop immediately, and a call should be made to the person that sold the floor.

A. Before installing wood flooring, place an approved vapor retarder. Some examples of acceptable vapor retarders over wood subfloors include:

1. An asphalt laminated paper meeting UU-B-790a, Grade B, Type 1, Style 1a.
2. Asphalt-saturated kraft paper of #15 or #30 felt that meets ASTM standard D-4869 or UU-B-790, Grade D
3. Red Rosin Paper

B. All solid wood and bamboo should be installed perpendicular to joists or on a diagonal for any single layer subfloor.

C. Wall Line Layout

1. Choose a starting wall according to the most aesthetically or architecturally important elements in the room, taking into consideration fireplaces, doors, cabinets, and transitions, as well as the squareness of the room. Outside walls of homes are generally the straightest. The starting wall will often be the longest unbroken wall in the room.

2. Snap a working line parallel to the starting wall, allowing a $\frac{3}{4}$ inch expansion space between the starting wall and the edge of the first run.

3. As a general rule, a $\frac{3}{4}$ inch expansion space must be left around the perimeter and at all vertical obstructions.

4. Lay one row of flooring along the entire length of the working line. Be sure to work with material out of several cartons to assure proper blending of lengths and natural wood variations.

5. Blind-nail the first row (hand-nail if necessary), using appropriate fasteners. Denser species (such as Acacia, Jatoba, and Strand Bamboo) may require pre-drilling. Each succeeding row should be blind-nailed with the nailing machine whenever possible. All nailing should begin and end approximately 2” from the ends of each board and continue every 6-8”. At the finishing wall and other obstructions, it may be necessary to blind-nail by hand or glue-down with subfloor adhesive, the final rows.

6. Racking rule of thumb: Stagger end joints in adjacent rows at least twice the width of the boards, as product allows. **Do not use stair step spacing. Avoid End-Joint line up & H joints.** See figure A-1.

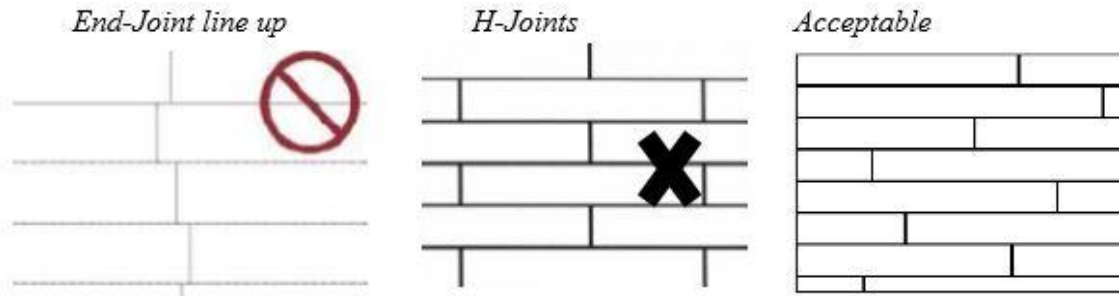


Figure A-1

7. Nailing: Blind-nail through the tongue. Use 1 ¾ inch to 2 inch fasteners for solid wood. Use 1 ½ inch fasteners for thinner woods and bamboos. Fasteners should be spaced every 6-8 inches on blind-nailing.

8. Complete the final rows by either blind-nailing or gluing them down with subfloor adhesive. **L.W. Mountain, Inc. does not recommend top-nailing any pre-finished flooring due to visual aspects.**

Remember that all walls and other vertical structures in the room must have a ¾ inch expansion space left between it and the floor. If your drywall stops at least ¾" above the floor, the thickness of the drywall can be considered part of the ¾" expansion space requirement.

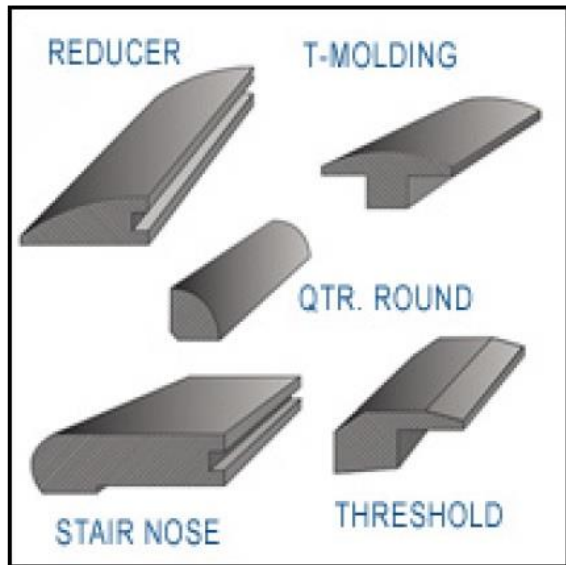
- Once the floor has been completed the base and the quarter round can be reinstalled into the room. This will cover the expansion gaps left between the wall and the floor.
- Sweep or vacuum the floor using a soft brush attachment.
- Finish by cleaning the floor with an approved hardwood floor cleaner.
- Enjoy your new hard wood floor.

Note: When installing denser species of wood, such as acacia and jatoba, L.W. Mountain, Inc. requires the use of cleat fasteners. Staples should not be used as they have a tendency to break tongues on harder species.

If installing bamboo flooring, see our Bamboo Fastener Selection section found at the end of this post.

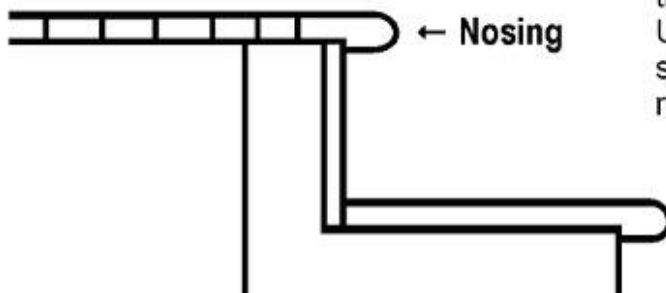
Trims & Transitions

There is a variety of trims and transitions to accent a floor by covering expansion gaps or transitioning from one flooring surface to another. Before completing your floor it is important to know what trim pieces you will need for your floor. These are rough diagrams of common transition pieces, bamboo transitions are different thicknesses.



- T-Mold- The molding is used mostly between tiled surfaces and wood floors. Also used for connecting to existing wood floors.
- Reducer- Used with floors to other floor coverings with lower vertical heights. Also used to transition to carpet.
- Staimose- Used to transition for step down and staircases.
- Threshold- Used to finish the flooring up to vertical objects and carpet.
- Quarter Round- Used to cover expansion around walls next to base boards.

STAIRS/STEPS



- NOSING -- also called stair nosing, bull nose, stairwell trim, landing tread. Thickness same as flooring. Used to create finished edge on top step, around stairwell, sunken living room, etc.

**Moldings must always be nailed to the wall or subfloor, never to the hardwood flooring.*

Additional Information

Waste Factor

Additional square footage ordered for an installation is commonly referred to as a waste factor. During installation, boards are cut to specifically fit your floor. In addition, some boards may not be suitable for installation because of milling or color preferences which means it becomes waste. Finally, unfortunate damage during the life of your floor may call for replacing a board, and having spare flooring from the same stock can help to keep your floor's appearance. The standard in the flooring industry is to order five - ten percent of additional flooring to cover cuts and other waste.

Post Installation

L.W. Mountain, Inc. does not recommend covering the flooring for any extended period. If covering is needed to protect the flooring from additional work, it should be immediately uncovered after the work is performed. Covering the flooring can give other trades the perception that no damage will occur no matter what they do. In addition, foreign matter between the flooring and the cover can cause abrasions to the surface.

This is especially true in NEW home construction. Covering a newly installed floor over a recently poured concrete basement with fresh paint and dry-wall can cause moisture to be trapped under the covering and causing major damage to the new flooring.