

Hawthorne Flooring, Inc. bamboo flooring Installation Guide:

General Considerations

To ensure proper installation and avoid potential problems or mistakes please read the following procedures thoroughly before attempting floor installation. Failure to follow the guidelines may dramatically effect or void product warranty.

Measure the rooms or area which require floor to be installed. Calculate number of square footage needed for the installation; allow 10% extra for cutting and waste. It's a good idea to save cut scraps for future need in case of accidental damage such as scratch.

Store product in a dry place, adequate air ventilation is highly recommended. If delivery is to a construction site, the flooring should be placed inside a building that is sufficiently enclosed to ensure the flooring will be protected from weather. Slab, concrete work, plastering, and all other moisture-related work should be thoroughly dry. Use the check list below before moving product to job site.

INITIAL JOB SITE CONDITION CHECK LIST: Use the checklist below to document site conditions to make necessary plan for your installation of flooring. Those items on the list are most important factors to be considered as those mostly recommended by NWFA (National Wood Flooring Associations), other environmental considerations may also need to taken into considerations prior to installation.

JOB SITE CONDITION CHECK LIST

Until the following Guidelines have been met, the job site is not ready for a bamboo flooring installation.

EXTERIOR CONDITIONS

Gutters and downspouts are properly placed to drain water away from the structure.

Soil surrounding the structure is graded properly to drain water away from the site.

INTERIOR CONDITIONS

All wet trades (drywall, plaster, paint, ceramic tile. etc.) have completed their work and water has ventilated to dry.

Air conditioning, heating and ventilation are completed and functioning normal.

The building is enclosed and weather-tight, including all doors and windows in place.

The temperature and relative humidity within the structure are at "normal living conditions"-that is, temperature is between 60 and 80 degrees Fahrenheit (or 15 to 27 degrees Centigrade) and between 30 and 50 percent relative humidity.

Six-mil polyethylene (preferably black) has been installed and covers the entire ground area in the crawl space.

CONCRETE SLAB CONDITIONS

Concrete has been installed for at least 30 days.

If wood flooring is to be installed over a slab, the concrete is flat per specifications.

A vapor barrier has been installed under the slab

What type of concrete testing was performed?

What were the test results?

SURVEY & PRE-LEVELING OF SUB FLOOR

Measure and evaluate your base or sub-floor where bamboo will be installed. Base must be horizontally leveled properly and is in clean, dry, firm and flat condition prior to installation.

MOISTURE CONDITIONS

Moisture content of the wood sub-floor is no more than 3 percentage points above or below the finish flooring and is within regional moisture content guidelines.

Moisture testing of concrete slab began no sooner than 30 days after the slab was poured. Test results indicate that it is safe for wood flooring installation to begin.

DELIVERY AND WORKING CONDITIONS

Proper electrical power is available:

120V _____

220V _____

Driveway and sidewalk are paved.

Floor materials delivered on job site, unpacked and set for minimum of 72 hours.

Avoid exposure directly to heat source, sun light or flood.

TOOLS REQUIRED FOR INSTALL

A sharp fine-tooth (finishing) circular/miter saw for cutting. Tape the area to be cut for a clean cut.

A drill. Some boxes of nails (for nail down method only) Eye protector and gloves (and long sleeve shirts when handling glues) A rubber faced hammer (for nail down only).

PREPARATION FOR INSTALL

Similar to common solid hard wood, Bamboo is a natural hydro-scopic material. It can absorb and expel moisture based on its environment. With proper design considerations prior to installation, the effects can be greatly reduced. Leave an empty space of least 1/4" space from the walls and projections (all directions) which rise from the floor such as pipes, pillars, as room for potential expansion and contraction during weather change. Temperature and humidity need to be maintained to normal conditions at least 72 hours before installation and maintained at those levels after installation for a period of time. If no equipment is available to measure moisture level, unpack all cartons and let bamboo acclimate stacked in the room for a least six days. The sub floor now must be leveled, clean, dry, firm and flat before installation starts. Sub floor irregularities and undulation may cause any wood flooring installation to develop hollow spots between the flooring and the sub floor. These hollow spots are not the result of any wood flooring manufacturing defect and are not covered by this warranty. Sub-floor preparation may include removing or filling any existing base, temporarily uninstall doorway thresholds. Always leave some room to allow

expansion around the perimeter of the room. All door casings should be notched out or undercut to allow for expansion and to avoid difficult scribe cuts. This is easily done by placing a piece of the bamboo product on the sub floor as a height guide for your handsaw or jamb saw. Bamboo being a natural material, color and grain variation and diversity are considered normal. It is suggested that installer should use and mix separate cartons of bamboo for color diversification and averaging, change planks from each carton to achieve optimum result. Some common reasons of wood flooring failures are either excessive or insufficient water content in the floor. Bamboo is less sensitive to moisture than solid wood flooring; however our bamboo uses solid slices natural material and very little additive components. Therefore the installation of bamboo has the same basic guidelines as you would have for a solid wood floor.

ESTABLISHING A MOISTURE BARRIER

A moisture barrier is necessary water insulation between floor and sub-floor to prevent potentially excessive water or flood. You can establish sheet-vinyl moisture barrier by applying 1/4 inches to 3/8 inch plywood with proper nail attachment. If a wood sub-floor is used above grade, a 6-mil polyethylene may be placed over the soil to reduce moisture stream coming up from ground.

TWO COMMON INSTALLATION METHODS

ENVIRONMENTAL CONDITIONS:

In area to be installed, temperature and humidity shall be brought to normal occupancy levels for a minimum of 72 hours before installation and maintained at those levels after installation. Some areas may require more time for proper acclimation. Make sure the job site is a closed atmosphere, all outside windows and doors are in place. Excessive Moisture caused by the slab or plaster drying out should be dissipated before the flooring is placed at the job-site. Flooring should be removed from the box and allowed to acclimatize on site at least 72 hours before installation. Be sure to use your moisture meter to check moisture levels in both the sub-floor and the bamboo flooring before installation. If there is a THREE- percent (3%) OR MORE difference between the two, DO NOT INSTALL THE FLOORING UNTIL THE DIFFERENCE IS LESS THAN THREE PERCENT.

Applications: Bamboo can be nailed or glued down over wood sub-floors or glued directly to concrete sub-floors on and above grade. Use a drill to drill some holes as shown to avoid rack when nailing.

Sub-floor: Surfaces shall be clean, dry, smooth (maximum 1/8" variance over 8 lineal feet) and free of dirt, wax, oil, paint, curing agents and other contaminants that would interfere with adhesive bond. Old resilient floors can be covered provided above conditions apply. Wood sub-floors shall be sanded level prior to new installation. Concrete sub-floors shall have all cracks and holes filled with a cement patching material (Ardex or equal). Concrete sub-floors must be tested for moisture and not exceed three (3) pounds per 1,000 square feet using the calcium chloride test.

NAIL DOWN PROCESS \GLUE DOWN PROCESS

Nail-down method is used only for installation on suitable sub-floor such as plywood sub floor. Nail down cannot be used directly onto concrete.

Use a two-layer, 15-pound felt, overlapped, under the bamboo for protection against moisture migration. Planks shall be started square with the room and parallel to its longest dimension by positioning with a chalk line, leaving a minimum 1/4" expansion space from base plate or wall. Ensure starter rows are firmly in place by wedging, face nailing or using adhesive. Drill some small holes in the plank approximately 45 degrees and nail each plank in the tongue nail pocket through those holes as you go to secure into position. Once initial rows are secure, further courses shall be blind nailed directly above tongue at a 45-50 degree angle to the face. Nails (or staples) at least three inches from the edge of the boards. Fasteners shall be spaced at 10 inches (or 20 cm) intervals with a minimum of two fasteners per piece and a fastener within 3 inches of each plank end. Proper spacing between nails or staples is quite critical. Model 200 T&G by Powernail and the Primatech R610 engineered flooring nailer maybe used.

Proceed by sliding each individual board into place making sure both the tongue and groove, along with the butt joints, are tight enough but a tiny bit of thickness of a paper or hair for expansion. The moldings are not fixed to real wood floor but to the base floor or the wall covers expansion gaps. When installation come to last row, measure the width of the final planks, and cut planks to match the width of the space remaining. Make sure the expansion shims are in place and take the shim width into consideration when ripping the final row. The tongue for the final row will need to be removed for a clean fit. Slide the planks groove into the tongue and use a pry bar to snug the last row of planks with the completed second to last row. You again will need to face nail close to the wall to secure. Make sure you nail close enough to the wall so that the base molding will cover nails. And make sure nailing positions are close enough to the wall so that the base molding will cover nails

NOTE: Particleboard does not provide adequate holding of the nails and is therefore not considered an acceptable sub-floor material. Use only 100% urethane-based wood flooring adhesive like "Bostik's Best", "FRANKLIN 811" or "STARK MASTER 400". Follow the adhesive manufacturer's guidelines for safe use, storage and handling so their warranty is in effect and your bamboo is installed properly for long lasting enjoyment. Trowel can be either Bostik's #9 or otherwise recommended by the adhesive manufacture. Wear eye protector, gloves and long sleeves for personal protection. Spread with a notched trowel as recommended by the adhesive manufacturer. Planks shall be started square with the room and parallel to its longest dimension by positioning with a chalk line, leaving a minimum 1/4" expansion space from base plate or wall. Ensure starter rows are firmly in place by wedging or face nailing. Once initial rows are secure, use adhesive in a Wet-Lay method of installation as follows: Apply adhesive to substrate with suitable trowel. Immediately place flooring onto "wet" adhesive. Spread no more adhesives than can be worked with in a forty-minute period (100 to 200 sq. ft.). Clean any adhesive that comes in contact with the face of the plank immediately. Use straps if necessary to remove any bowing or "banana" that is common in many types of plank flooring. This will ensure proper alignment of the rows and eliminate gaps along the length of the planks. Use blue painters tape to keep the planks

from creeping apart from one another by placing the tape perpendicular to the length of the planks, crossing over multiple planks. Remove the tape once the adhesive has set. Use weights if necessary to remove any bowing of the planks.

It is incumbent upon the installer to protect the floor from possible damage by other trades by using heavy craft paper or equivalent.

Moisture: While bamboo flooring is much more stable than most woods, it is still subject to damage when in direct contact with a constantly wet slab. The bamboo shall be isolated from this type of slab by use of a moisture barrier, plywood on slab, or a sleeper sub-floor. Urethane adhesive will usually fail when vapor pressure exceeds 3 pounds per 1000 sq. ft. in 24 hours as measured by the calcium chloride test. Bamboo flooring cannot be glued down under those conditions.

Nail down illustrations:

LOW-HUMIDITY CONDITIONS

In extremely dry climates, care should be taken to avoid shrinkage by allowing flooring to acclimatize under actual use conditions. Remove the planks from the box and expose to local conditions for a minimum of six (6) days. The bamboo flooring's moisture content (MC) is reduced to 6-10% through kiln drying at the manufacturing plant. However, the flooring may pick up moisture during the ocean voyage or while being warehoused. It is therefore necessary to test the flooring, as well as the slab/sub-floor, with moisture meter to make certain that the MC of the two are within 3 percent of each other. **Excessive Moisture:** In the event of excessive slab moisture either now or expected in the future, there are several options available to assure a sound floor.

1 Plywood on Slab -DO NOT USE THIS METHOD IF YOU ARE GOING OVER RADIANT HEATING PIPES.

Cover the slab with a vapor barrier. Do this by either priming the slab or applying cold, cutback asphalt mastic with a notched trowel (50 sq. ft. per gallon). Allow mastic to set for two hours. Unroll 15-pound asphalt felt or building paper, lapping the edges 4" and butting the ends. Apply a second coating of mastic over the asphalt or paper and roll out a second layer of asphalt or paper in the same direction as the first, staggering the overlaps to achieve an even thickness. OR Cover the entire slab with a 4 to 6 mil polyethylene film, overlapping the edges 4" to 6" and allowing enough film to extend under the baseboards at all sides. Under severe conditions, the film should be laid into mastic, which has been fine-troweled (100 sq. ft. per gallon). Always walk the film flat and puncture bubbles to release trapped air. Install ¾" x 4' x 8' exterior grade plywood panels diagonally across the direction of the finished floor after the vapor barrier is in place. Leave a ¼" space at the wall line and ¼" to ½" between the plywood sheets. Fasten the plywood to the slab by using power-actuated fasteners starting with the middle of the plywood and then the edges, using 9 or more fasteners per panel. The bamboo planks may now be nailed or glued to the plywood, leaving a 1/4" expansion space from base plate or wall.

2 Sleepers

Sweep the slab clean and apply an asphalt primer, allowing it to dry. Install flat, dry, preservative treated, random length 2" X 4" sleepers (18" to 48" in length) on their flat faces into rivers of hot (poured) or cold (cut-back) asphalt mastic, in rows 12" on center at a right angle to the direction of the finished flooring. Stagger the end joints, overlapping the ends of the spacers by 4" with a ¼" space in between. Loosely lay a 4 or 6 mil polyethylene vapor barrier over the sleepers, overlapping the edges on top of the sleepers. Avoid bunching or puncturing the film. Nail the flooring through the film.