

GENERAL NOTES

Inspect all materials carefully before installation. Warranties do not cover materials with visible defects once they are installed. It is the responsibility of the installer/owner to determine if the jobsite sub floor and jobsite conditions are environmentally and structurally acceptable for wood flooring installation. Graf Custom Hardwood Engineered Flooring declines any responsibility for wood floor failure resulting from or connected with sub floor, subsurface, jobsite damage or deficiencies after hardwood flooring has been installed. *Please refer to the NWFA Technical Manual or your Graf Custom Hardwood Engineered Distributor for installation support.

JOBSITE CONDITIONS

Wood flooring is one of the last jobs of any construction project. Prior to delivery of the wood flooring a site evaluation should be done. Check for the following:

- The building should be completely enclosed.
- All outside doors and windows must be in place and have latching mechanisms.
- Surface drainage should direct water away from the building.
- All concrete, masonry, plastering, drywall, and other wet work should be completed and thoroughly dry.
- All texturing and painting primer coats should be completed.
- In warm months, the building must be well ventilated each day.
- Be sure the flooring will not be exposed to extremes of humidity or moisture.
- Interior environmental conditions must be near the average for the geographical area.
- Basements must be dry.
- Crawl spaces must be dry.

ACCLIMATION

Allowing wood moisture content to become at equilibrium with the environment in which it will perform is crucial to quality installation. Acclimation of solid $\frac{3}{4}$ " flooring depends on geographic location, interior climate control and time of year. * Graf Custom Hardwood Engineered Flooring engineered flooring does not need to be acclimated to the job site unless the flooring will be transported from one extreme relative humidity to another. If there is a severe relative humidity difference, make sure to condition the wood flooring 24 hours before the installation. Wood is hygroscopic. It will absorb and expel moisture based on its environment. Graf Custom Hardwood Engineered Flooring Plank is constructed with all natural hardwoods and is not immune to these changes. Although the floor's multi-ply construction will greatly reduce these changes, we recommend that the flooring be stored in a controlled environment prior to installation.

GLUE-DOWN INSTALLATION

PREPARATION

Make sure you remove all foreign material from the concrete. To remedy any surface irregularities, 36 or 60 grit open coat paper may need to be used to grind a concrete floor. This will loosen any dirt, loose concrete or contaminants. Thoroughly sweep and vacuum and make sure that all previously or existing glue or adhesives are removed before installing new hardwood flooring. Any irregularities and undulations may cause any wood flooring to develop hollow spots between the flooring and the sub floor. Keep in mind that these hollow spots are not the result of any manufacturing defect in the flooring and are not covered by the Graf Custom Hardwood warranty.

INSTALLATION

When to Install: Lay only after sheetrock and tile work are thoroughly dried and all but the final woodwork and trim have been completed. The building interior should have been dried and seasoned to a comfortable living environment and installation should be done in a similar, comfortable working environment.

As part of your sub floor preparation remove any existing base, shoe mold or doorway thresholds. These items can be replaced after installation, but should be replaced in such a way as to allow room for 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 engineered product on the sub floor as a height guide for your handsaw or jamb saw. Interior walls should be dry enough to be painted and a room temperature as required by adhesive manufacturer with a relative humidity of 35-65% should be provided before any installation begins. To determine if a concrete slab is suitable for hardwood flooring, please follow the NFWA guidelines to perform a Calcium Chloride test. If excessive moisture is present, do not lay flooring. Check floor in several locations.

Concrete sub floors must be clean, flat and sound and of sufficient compression strength (3000lbs PSI) being sure that the surface is not slick. Sections not flat such as waviness, trowel marks, etc. are to be eliminated by grinding or the use of an acceptable leveling compound. Especially along the walls, the sub floor flatness must be checked and, if necessary, improved. Flat to 1/8" in a 6' radius and/or 3/16" in a 10' radius. In addition to concrete sub floors, these products can be installed over dry, flat wood sub floors, such as plywood. If plywood is used as an overlay over an existing sub floor, the thickness of the overlay material must be such as to net a total 3/4" sub floor thickness.

New wood type sub floors should also be checked for moisture using a moisture meter. In general, wood or plywood sub floors should not exceed 12% moisture content or 4% moisture content difference between wood flooring and sub floor.

WET-LAY INSTALLATION

PREPARATION

When using this method, flooring is placed into "wet" adhesive and workers do not walk on wood. Do not walk on fresh laid flooring. Proper humidity must be controlled between 30-50% for successful performance during and after installation.

ADHESIVE

Graf Custom Hardwood recommends the following or equivalent:

- R851 Bona adhesive with the 1500G trowel
- 1500 trowel 5/16th x 5/16th x 7/16th V-notch

INSTALLATION

Flooring should be installed from several boxes at the same time to achieve a uniform look. Install tongue into groove. To ensure a random pattern, make sure butt joints are at least 6" from the butt joint of the prior row. Proceed until you have come to the final row to complete the room. When you have reached the final row, you will need to measure the width of the final planks. You may need to rip the planks to match the width of the space remaining. The tongue of the final row will need to be removed for a clean fit. Use a "Last Board Puller" to snug the last row of planks with the completed second row. Lift a plank periodically to check for adhesive transfer (approx 95-100% glue to flooring).

Please refer to the NFWA Technical Manual, your Graf Custom Hardwood Flooring Distributor, and/or the adhesive manufacturers for installation support.

NAIL / STAPLE INSTALLATION

PREPARATION

Evaluate the job site. Always check the job site for satisfactory conditions. The sub floor must be clean, dry, firm and flat. Refer to the NFWA Technical Manual for required conditions. When you are ready to begin, open the cartons and inspect each plank for quality. Do not install planks that are not of the quality or grade purchased.

INSTALLATION

Choose a wall to start on. Place expansion shims against the entire perimeter of the room. Lay the first with the groove against wall. Nail or staple tongue in the nail pocket of the first row. Nailing pattern should be every 6" or closer. You may want to glue assist the first row close to the wall so the base molding will cover when finished.

After the first row is secure, engage the planks, one at a time to start the second row. Nail/staple each plank in the tongue nail pocket as you go to secure into position. Proceed by sliding each individual board into place making sure both the tongue and groove are tight, along with the butt joints. To ensure a random pattern, make sure butt joints are at least 6" from the butt joint of the prior row. Proceed with this procedure until you have come to the final row to complete the room.

When you have reached the final row, you will need to measure the width of the final planks. You may need to rip the 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. Use a "Last Board Puller" to snug the last row of planks with the completed second to last row. You again will need to glue assist close to the wall to secure. Make sure you nail close enough to the wall so that the base molding will cover nails.

Please refer to the NFWA Technical Manual or your Graf Custom Hardwood Engineered Flooring Distributor for installation support.

RADIANT HEAT SUB FLOOR

RECOMMENDATIONS

Graf Custom Hardwood products, greater than 1/2" thickness are approved for installation over radiant heated subfloors using Adhered installation methods for the product. We do not warranty our 6 mm wear layer over radiant heat installation. Hickory engineered in any width or thickness is not recommended for installation over radiant heat installation.

- Nail or Staple Down installation methods are not recommended for Radiant Heated Sub Floors.
- Radiant Heating Systems used must be designed and controlled specifically for Hardwood flooring by the system manufacturer, and include an Outside Temperature Probe, and Surface Temperature Controls.
- The end consumer should be aware that minor gapping between wood planks during the heating season is a normal occurrence with hardwood flooring installed over radiant heated subfloors.
- Proper humidity controls within the home or business will help to minimize the natural wood reaction to seasonally changing climate conditions.
- Indoor climate should be maintained between 60-80° F and a relative humidity range of 35%-65%.

Adhere to the following guidelines for a successful installation:

- Newly installed hydronic type radiant heated flooring systems should be in operational mode with the temperature set between 64° -72°F, for a minimum of 4 weeks to insure that all sub floor moisture has properly dried.
- Older water type radiant floor heat systems should be fully pressure tested, properly maintained, and set to a minimum of 64°F, for at least 6 days before flooring delivery; acclimation, or installation processes may begin.
- All radiant heating systems must be set to room temp. (A minimum of 64°F), for at least 6 days before flooring delivery; acclimation, or installation processes may begin.
- Always check wood sub floors to insure that the moisture content is less than 12% using an accurate wood moisture meter.
- Concrete sub floors must register "dry", using approved quantitative concrete moisture meter.
- The pH level of concrete sub floors should register between 6 and 9, on a fourteen point pH scale.
- Sub floors must fully comply with these "dry" requirements before proceeding with the delivery, acclimation, or installation of the wood flooring at the job site.
- Install the hardwood flooring according to the instructions that pertain to the product.
- After completing the installation, do not change the radiant heat setting for 48 hrs.
- Throughout the life of the installation, 3 to 5 degree daily increments must be used when adjusting system temperature for either upward or lower adjustments; so that the hardwood flooring can adjust to the temperature changes in a gradual manner.
- Never raise the flooring surface temperature setting above 85 degrees Fahrenheit.
- Regulate the job site to insure that the relative humidity is between 35% and 65%, and that temperature is between 60° and 80° F, throughout the flooring delivery, acclimation, installation and any required curing processes.
- Deliver and acclimate the engineered hardwood flooring, for at least 48 hours before installation begins.