Cummings
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Manufacturers of Quality Appalachian Hardwoods. Green - Air Dried - Kiln DriedDried
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INSTALLATION RECOMMENDATIONS
BAREFOOT BRAND: SOLID HARDWOOD FLOORING

Every Barefoot Brand Hardwood Flooring installation must conform to all local building codes, ordinances, covenants, restrictions, trade practices, and climatic conditions.
Cummings realizes professional installation assures the end user of a result that performs as well as they expect and adds value to their home. Cummings recommends installation by NWFACP Certified Installers, and that the installation comply fully with these guidelines and current NWFA Installation Guidelines.

INSTALLATION CONSTITUTES ACCEPTANCE of flooring material, subfloor/substrate, the jobsite itself including the ambient temperature and relative humidity at the time of installation, and all impacting variables that may affect a wood floor. It is the responsibility of both the installer and owner to inspect and approve each piece of flooring prior to installation. Cummings must be notified, in writing, within 30 days of discovery of any flooring defect.

IF THE FLOORING AS SUPPLIED WILL NOT SATISFY THE CUSTOMER IN FULL, DO NOT PROCEED TO INSTALL. The decision not to proceed should be made within the first 10% or 100 square feet of flooring opened, whichever is less. Industry standards allow a variance from grading and manufacturing tolerances of 5%.

Many important decisions must be made at the installation site, and therefore must be the sole responsibility of the installer/owner. These include but are not limited to proper storage and handling, complete evaluation and permanent recording of site conditions including moisture testing of the subfloor and flooring, acclimation of flooring to appropriate conditions, subfloor preparation, flooring layout, milling, grade and proper installation methods, sufficient quantity on hand to complete the job, and jobsite cleanup.

Jobsite Conditions [NWFA, page 28-37; also refer to the NWFA Jobsite Checklist document]

Wood Flooring professionals should understand climatic conditions applicable to the job location, and assure the space where flooring is to be installed will accommodate the Barefoot product and installation methods chosen.

Exterior Conditions:

Inspect the entire exterior of the structure; grade, drainage, landscaping, irrigation; any potential concerns that may affect the wood flooring installation. Take/retain notes and photos, and address any concerns with the end user and/or builder. Exterior site/structure issues are NOT the responsibility of the flooring contractor/installer or Cummings, but wood flooring problems that result are often blamed on the installer who must then defend themselves.

Interior Conditions:

- Wood flooring should be one of the last jobs completed in any remodel or new construction project.
- Do not deliver or install wood flooring until the structure is fully enclosed and protected from exterior weather conditions, and all “wet trades” (concrete, drywall, painting, tile, and any power washing) are completed.
- HVAC (permanent or temporary) must be operational and capable of maintaining conditions necessary for the Barefoot flooring being installed. These systems must be operational for a minimum of five days preceding delivery of the Barefoot flooring, but longer HVAC operation may be required to reach the conditions required. These conditions should be achieved prior to delivery of the flooring, maintained during installation and in perpetuity thereafter. (**NOTE:** Temporary propane heaters - torpedo heaters – items producing large amounts of moisture should be avoided.)
- Test and document (photograph) temperature and relative humidity in each room receiving Barefoot flooring. A temperature range of 60-80f and R.H. of 30-50% is appropriate for most areas. [See NWFA Technical Publication C-300; Regional Climate Variations for additional information.]
- Never install a wood floor over a known moisture condition. Always test for moisture regardless of condition identify any hidden issues that may arise.

Acclimation/Conditioning:

- Only after the site conditions are confirmed suitable for wood flooring should the flooring be acclimated to those site conditions.
- Prior to delivery of the wood flooring, test and record the jobsite conditions and the subfloor moisture to ensure they are suitable for wood flooring delivery. Elevated readings must be resolved prior to delivery of any wood flooring.
- Upon delivery of the flooring to the site, again check and record the temperature and relative humidity in the space receiving the wood floor, these readings must be within the manufacturer’s requirements.
- Again, check and record (photograph) the MC of the (wood) subfloor. Check a minimum of 20 locations for the first 1,000 square feet, and an additional 4 readings per 100 square feet thereafter, and average the results. Write test results directly on the subfloor at each location, including date, and photograph this notation. Test locations should be representative of the entire project and include a minimum of three tests per room receiving wood, with special attention to exterior walls and plumbing. In general, more readings will result in a more-accurate average.
- Check and record (photograph) the MC of the flooring from throughout the shipment. Take readings of a minimum of 40 boards for the first 1,000 square feet, and an additional 4 readings per 100 square feet thereafter, and average the results. More readings will result in a more-accurate average.
- Any flooring with unusually high or low moisture readings should be isolated and not installed in the floor.
- The average of the wood subfloor readings should coincide with the manufacturer requirements. Any unusually high or low readings must be addressed prior to wood flooring installation.
- Ensure the MC of the wood subfloor is no more than 4% greater than the MC of solid strip (<3 1/4” widths) flooring, and no more than 2% greater than the MC of solid plank (≥3 1/4” widths) flooring being installed. If moisture testing indicates flooring and subflooring are not sufficiently acclimated, more acclimation is required. Also, note solid wood does not change moisture content and thus dimension uniformly. This may adversely affect the installation.

- Acclimation of solid wood can be facilitated by separating the flooring into small lots and/or completely opening the packaging. Cross stack the materials with spacers (3/4" to 1" stickers) between each layer of flooring to allow air circulation on all sides until equilibrium has been reached.
- Concrete subfloors must be moisture tested, and adequate moisture control systems in place prior to installation of any solid wood floor.
- When the wood flooring is delivered at a MC that coincides with the expected in-use conditions, and coincides with the subfloor moisture conditions as tested, and these conditions will be maintained indefinitely, the flooring may be installed immediately.
- **Record, date, photograph, and document all results – protect your business**

Moisture Testing Methods [NWFA page 38-44]:

- Understanding how to evaluate jobsite moisture and avoid or resolve any moisture related problems is critical to the success of every hardwood flooring installation.
- Test methods and equipment vary widely. Selection of both varies depending on the type of flooring and subflooring involved in a given job. Regardless, the installer must understand the equipment and test methods required to properly evaluate moisture on every hardwood-flooring job. The single biggest variable – operator error. The installer is responsible to test and record (photos) moisture conditions on every job.

Substrates - Wood [NWFA 48-60]:

Wood Subfloors: Wood flooring is not intended to add structural strength or stiffness to a subfloor; the wood flooring installation is only as good as the subfloor beneath it. The installer/flooring contractor is NOT responsible for the design or installation of the subflooring/structure unless qualified and otherwise contracted. If a subfloor/structure is deemed by the flooring installer/flooring contractor as not suitable, the installer is responsible to notify the builder/owner prior to installation so any deficiencies can be remedied.

- **Plywood subfloor panels** should conform to the most-current U.S. Voluntary Product Standard PS 1 performance standard on the date it was manufactured.
- **Oriented strand board (OSB) subfloor panels** should conform to the governing version U.S. Voluntary PS 2 on the date it was manufactured.
- **Single layer subfloor panels** should be installed continuous over two or more spans, with the long panel dimension (strength axis) perpendicular to floor trusses or joists. All panel edges not supported continuously with framing shall be tongue and groove. To minimize the potential for floor squeaks, all subfloor panels should be glued and nailed or screwed to the floor framing using recommended fasteners and subfloor adhesives conforming to ASTM D3498 or APA Specification AFG-01. The ends of the panels must land at the center of the floor joist/truss, with a minimum bearing of 1/2". Fasten with 6d ring- or screw-shank nails, 8d common nails, or proprietary screws spaced 12" O.C. along panel edges and 12" O.C. along intermediate supports. Leave a 1/8" gap around the perimeter (all four sides) of each panel.
- **Double-Layer Subfloor Systems** should consist of two layers of either plywood or OSB, compliant with the same specs as single layer structural panels. A double layer may be required where the existing/base layer and structure do not meet NWFA minimum guidelines.
- Both layers must be fully acclimated (see acclimation section), and gapping and fastening requirements remain as for single layer subfloors. The "top" layer should be a minimum 15/32" thickness. A second layer should be oriented perpendicular to the floor framing and offset from the long axis of the base layer by a minimum of 4" and end joints by a minimum of one joist spacing; edges of both layers should never be aligned. This top layer may alternately be installed

diagonal to the base layer. No base vs. top seams should align. 1/16" to 1/8" gap must be left around each panel and ¾" gap at all vertical obstructions. Fastening schedule should be the same as for single layer subfloors. If the existing base layer is particleboard or solid boards, removal is not an option, and the subfloor does not meet NWFA minimum guidelines, the top layer should be a minimum 19/32" thick; otherwise, the same joint stagger and fastening guidelines apply.

- Solid board subfloors should be "1x6" nominal dimension, installed 45 degrees to the joists, and structurally sound. All end joints require full bearing on a joist, fastened with a minimum 8d rosin-coated or ring shank nails or equivalent.
- Particleboard is not suitable for any mechanically fastened or "glue-assisted" nail down Barefoot hardwood flooring installation.

Wood subfloors - conditions required:

- Subfloors must be **structurally sound.** Address any movement, delamination, squeaks/noise, water damage, physical damage, etc. with the homeowner, builder, or other responsible party prior to installation. Protruding or loose fasteners, squeaks/noises, etc. may be resolved by the installer, while some issues are not an installer's responsibility and may not be within a flooring installer's capability. Document any such conditions with notes in the job file including photographs.
- Subfloors must be **flat**. Subfloor flatness is not the same as "level". Level is typically not necessary, but reasonably flat is very important. For installation with mechanical fasteners at least 1 ½" long, the subfloor must be flat within ¼" in 10' of 3/16" in 6'. For all other installations (shorter fasteners, glue down), the subfloor must be flat within 1/8" in 6', or 3/16" in 10'. There are various means of correcting subfloor flatness; for more information see NWFA Installation Guidelines, page 58-59.
- Subfloors must be **dry.** The builder is responsible to control moisture during the building process. The installer must confirm subfloor moisture conditions are suitable before installing any hardwood floor. Any damage due to moisture exposure (swelling, distortion, etc.) prior to flooring installation must be resolved before proceeding with any Somerset flooring installation.
- Subfloors must be **clean.** Remove any debris present, and address any contamination that may compromise the installation.

Substrates – Existing Flooring [NWFA Page 102-105]:

- Installing hardwood flooring parallel to an existing solid nailed down wood floor will require an overlay of a minimum 11/32" panel subfloor (see double layer subfloors section). Any new subflooring and the old flooring under it must be fully acclimated (see acclimation section).
- New flooring may be installed (nail or glue down) directly over existing wood flooring if installed perpendicular or at least a 45-degree angle to the existing floor.
- Existing Vinyl, Resilient, Cork, Linoleum floors may be installed over if they are well bonded to the subfloor, flat (1/8" in 6'), clean, and no more than two layers thick. Fasteners must penetrate the subfloor by a minimum of 5/8". Any glue down installation requires checking compatibility of the adhesive with the existing flooring.
- Existing Ceramic, Terrazzo, Slate, and Marble may be installed over using glue down methods only. Refer to the concrete subfloors section for more information. Many such substrates will require abrasion to create a good bond for the adhesive.
- Carpet: Never install hardwood flooring over carpet or carpet pad.

Underlayment's – Moisture Control [NWFA Page 106-109]:

When installing over a wood subfloor, always identify if the space below the flooring is conditioned (heated/cooled and humidified/dehumidified) or unconditioned space (not directly heated/cooled or humidified/dehumidified).

- No vapor retarder is necessary under the new wood floor when installed over a **conditioned** space maintained at the same temperature and humidity as the living space directly above. No vapor retarder should be installed under the wood floor if a Class I or Class II vapor retarder exists on the underside of the joists.
- A Class II vapor retarder should be used on wood subfloors over **unconditioned** spaces. IMPORTANT: Never use a vapor retarder to remedy a known moisture condition, and never install a wood floor over a known moisture condition.
- When installing over a concrete subfloor, a Class I impermeable vapor retarder is always recommended, whether installing the wood flooring directly on the concrete, installing a wood subfloor on the concrete, or installing over existing flooring [existing vinyl, resilient, linoleum, or cork flooring may not require a vapor retarder be installed.]
- Sound Control/Acoustical Underlayment's [See NWFA – Page 110 for details]

Layout [NWFA 2019 Installation Guidelines, Page 116-120]:

- Hardwood flooring is typically installed parallel to the length of the room, but always install perpendicular to the floor joists unless special subfloor conditions are met (see installation section). A primary line should be established as the longest, straightest, continuous line on the job, and all other working lines based off the primary line so the job flows well and is visually "balanced" in the space.

INSTALLATION METHODS [NWFA 2019 Installation Guidelines, Page 121-131]:

- Nail Down
    1. Barefoot solid flooring must be installed perpendicular (45-degree angle or greater) to the floor joists, unless special subfloor requirements are met.
    2. When installing parallel to joists it is critical to confirm adequate subfloor thickness. Typically add a second layer of minimum 15/32" plywood underlayment to the existing subfloor (refer to double-layer subfloor systems for more detailed information.) Another option is to brace between joists/floor trusses. This should be completed by a qualified professional.

- Fasteners

    1. Blind nail using cleats (flooring nails) either 15.5, 16, or 18 gauge, minimum 1 ½" long, or staples 15.5 gauge, ½" crown, minimum 1 ½" long. For plank (3 ¼" +) fasten on 6" – 8" intervals, 1"-3" from each end joint, minimum 2 fasteners per board. For strip (2 ¼") fasten on 8" – 10" intervals, 1"-3" from each end joint, minimum 2 fasteners per board. Blind fasteners should be seated flush in the nail pocket, not too deep.
    2. For face nailing (near walls and obstacles to blind nailing), use casing or finish nails, minimum 18 gauge. For plank floors face nail on 8" to 10" intervals; for strip flooring face nail on 10"-12" intervals. Fill face nail holes with matching wood filler.

3. Elastomeric adhesive may be used as an alternative or addition to the use of face nails where required [see “glue assist” section for more details].
4. Fastening at intervals less than required are acceptable as long as the tongue and core of the flooring is not compromised or split by the fasteners.

- Remove existing base/shoe, thresholds, etc. Undercut doorjambs and casings.
- Maintain ¾” expansion space at all vertical obstructions. If the floor span (perpendicular to grain) is greater than 20’, field expansion space may be required [see NWFA guidelines page 128 for further information].
- Install a vapor retarder/underlayment as necessary.
- Racking prior to installation, work from multiple bundles or cartons to achieve satisfactory assortment of color variation, lengths, etc. Distribute lengths to avoid patterns such as stair-steps or H- joints. Cutting varied starter board lengths will assist in “randomizing” joints. In general, end-joint stagger from row-to-row should be a minimum of twice the width of the flooring (6” stagger for 3” wide material). Wider-width materials may be more difficult to stagger joints due to product length limitations. Fasten a starter row along the entire length of the primary working line. Installed wood flooring should not deviate from a straight line more than 3/16” in 10’. Use spline (aka “slip-tongue) anytime the flooring direction changes, at all headers or flush transitions, and when reversing installation direction such as starting in the center of a layout or back filling.

- Glue Assisted Nail Down [fasteners AND adhesive combined]
    1. Cummings recommends this method when installing all products **4” and wider**.
    2. A traditional sheet-good vapor retarder must be omitted. However, proper and stable site moisture conditions remain important. Glue assisted nail down installations remain subject to moisture issues.
    3. Where wood flooring is being installed over unconditioned space, use of a liquid-applied or similar Class II vapor retarder compatible with the flooring adhesive may be used in a glue-assist directly to the subfloor.
    4. The nailing schedule should remain the same as normal installation for the flooring being installed. The addition of adhesive is not intended as a replacement fastener mechanism, rather supplemental to the mechanical fastener.
    5. The wood flooring adhesive used should be elastomeric to allow for normal movement of the flooring system. The adhesive must be compatible with the subflooring and any liquid-applied or similar vapor retarder system used.
    6. Adhesive may be applied to the subfloor or back of the board to supplement the mechanical fasteners. Adhesive should cover the entire width and length of each plank, to within a minimum of 1” from the edges and ends of each board. Serpentine and striped patterns are acceptable.

- Full Spread Glue Down
    1. Barefoot solid flooring must be installed perpendicular (45-degree angle or greater) to the floor joists, unless special subfloor requirements are met.
    2. When installing parallel to joists it is critical to confirm adequate subfloor thickness. Typically add a second layer of minimum 15/32” plywood underlayment to the existing subfloor (refer to double-layer subfloor systems for more detailed information.) Another option is to brace between joists/floor trusses. This should be completed by a qualified professional.
    3. A traditional sheet-good vapor retarder must be omitted [except acoustical underlayment systems]. However, proper and stable site moisture conditions remain important. Glue down installations remain subject to moisture issues.

4. Where wood flooring is being installed over unconditioned space, use of a liquid-applied or similar Class II vapor retarder compatible with the flooring adhesive may be used in a glue-down installation.
5. Cummings recommends a quality hardwood-flooring adhesive. Follow the adhesive manufacturer's instructions for proper use of the adhesive, application methods, flash-time, working-time, etc. All wood flooring adhesives must be elastomeric and remain flexible despite movement in the installed flooring system.
6. Expansion space, racking, joint spacing, etc. remain the same as recommended for nail down installations.

NOTE: SPECIAL INSTRUCTIONS FOR PLANK FLOORING Seasonal distortion (shrinkage/cupping) in wide width flooring (**4˝ (10 cm) and over**) will be reduced by gluing the flooring to the subfloor, in addition to the use of mechanical fasteners. Reminder: adhesives used for this purpose will not perform their function when used in conjunction with a moisture retardant. Glue assisted applications will not be satisfactory without direct contact with the subfloor. The glue should be a premium grade urethane construction adhesive applied in a serpentine pattern to the back of the hardwood plank in a 1/4˝ bead or follow the adhesive manufacturer's recommendation for proper spread rate and trowel notch.

Protection, Care, and Maintenance [NWFA page 150-152]

- After installation, if a protective cover over the floor is needed, cover the floor completely. Areas left uncovered may change color. Also, note covering a glue-down or glue-assisted application may not allow some adhesives to properly cure; follow the adhesive manufacturers' recommendations. Any adverse effects of covering any Barefoot floor after installation are excluded by the Cummings limited warranty.
  Any protective covering should be taped, using a low-adhesion tape, to base or shoe moldings. NEVER tape to the finished flooring. When taping paper or sheets together, tape them to each other, not to the floor. Do not allow the floor covering to sit on the installed floor for an extended period of time.