

# ENGINEERED HARDWOOD FLOORING INSTALLATION GUIDELINES

## ATTENTION

**PLEASE EXAMINE** ALL OF THIS FLOORING **BEFORE** INSTALLING THIS MATERIAL.  
**CAREFULLY EXAMINE** THIS MERCHANDISE FOR COLOR, FINISH, QUALITY AND STYLE ORDER  
**BEFORE** INSTALLING THIS MATERIAL. IF THIS MATERIAL IS NOT ACCEPTABLE, CONTACT THE  
PERSON FROM WHOM YOU PURCHASED THE MATERIAL IMMEDIATELY.  
**THE MANUFACTURER WILL NOT ASSUME ANY RESPONSIBILITY FOR THE**  
**ABOVE AFTER THIS MATERIAL HAS BEEN PERMANENTLY INSTALLED.**

### Important Information Before You Begin

It is **EXTREMELY IMPORTANT** that you read and understand this information completely prior to starting, since improper installation can void the warranties.

#### Installer/Owner Responsibility

Carefully inspect **ALL** material prior to installation for defects. Materials installed with visible defects are not covered under warranty. Remember – Wood is a natural product that can vary in color, grain, and contains natural characteristics that varies from plank to plank and is to be expected. We do not warrant against these natural variations from plank to plank or variations from sample to plank. Remember – If you are not satisfied with the flooring prior to installation, simply return the cartons to your dealer for a full replacement. Accepting or rejecting the material must be done on full shipment of quantities only, not carton by carton or plank by plank. Material is manufactured to exceed industry standards (ANSI/HPVA EF 2002).

**We urge you, as the final inspector to inspect for proper color, finish, style, and quality PRIOR to installation. Verify that the flooring is the correct material. Care should be taken at this time to remove or repair particular characteristics you do not desire. Manufacturer declines responsibility for any costs incurred when plank(s) with visible defects have been installed.**

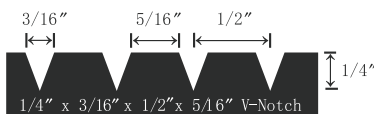
#### Tools & Accessories Needed

##### (All Installation Methods)

• Broom • Tape measure • Hammer • Chalk line & chalk • Hand saw or jamb saw  
• Recommended hardwood flooring cleaner • Electric power saw • Eye protection  
• Moisture meter (wood, concrete or both) • Transition and wall moldings • NIOSH-designated dust mask

##### (Add for Glue-Down Installations)

• Recommended adhesive & adhesive remover  
• 1/4" x 1/2" x 3/16" (6 mm x 13 mm x 8 mm) trowel  
• 3M Scotch-Blue™ 2080 Tape  
• Armstrong™ VapArrest™ S-135 Professional Moisture Retardant System on concrete (if needed). Use with urethane adhesive only.



##### (Add for Staple-Down Installations)

• Stanley-Bostitch SX150-2 with LHFAD adjustable foot, Senco SLS20HF or equivalent  
• 1-1/4" (32 mm) 18-19 ga. Staples/fasteners (minimum) • Compressor and hose  
• Nylon/plastic tapping block • In-line regulator

##### (Add for Floating Installations)

• Recommended underlayment • Pull bar • Tapping block • Recommended wood glue



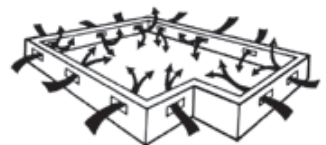
#### CAUTION: WOOD DUST

The International Agency for Research on Cancer has classified wood dust as a nasal carcinogen. The sawing, sanding, and/ or machining of wood products can produce wood dust that can cause respiratory, eye, and skin irritations. Equipment should be equipped with a dust collector to reduce airborne wood dust. Wear an appropriate NIOSH designated dust mask to reduce exposure to airborne wood dust. Avoid contact with eyes and skin. In case of irritation, flush eyes or skin with water for at least 15 minutes.

### PRE INSTALLATION & JOBSITE CONDITIONS

It is the installer/ owners' responsibility to ensure that the jobsite conditions and jobsite subfloor are environmentally and structurally acceptable prior to the installation of any hardwood flooring. The manufacturer declines any responsibility for failures or deficiencies of hardwood flooring resulting from or related to sub-floor, sub-surface, or job-site environmental conditions. All substrates must be clean, flat, dry, and structurally sound.

- Subfloors must be clean and free of dirt, curing compounds, sealers, drywall mud, paint, wax, grease, urethane, or other materials that may affect the integrity of the flooring material or adhesives used to install the flooring.
- All subfloors and subfloor systems must be structurally sound and must be installed following their manufacturer's recommendations. Local building codes may only establish minimum requirements of the flooring system and may not provide adequate rigidity and support for proper installation and performance of a hardwood floor. Whenever possible install the planks perpendicular to the floor joists for maximum stability. Our warranties **DO NOT** cover any problems caused by inadequate substructures or improper installation of said substructures.
- Test wood sub floors and wood flooring for moisture content using a pin-type moisture meter. The moisture content of the subfloor should not exceed 13% and the moisture content of the wood should be within 4% of the subfloor moisture content.
- The moisture content for concrete subfloors registered after a calcium chloride test should not be greater than 3 pounds per 1000 square feet of area. If it exceeds these limits, **DO NOT** install the flooring. **Before moisture testing begins, the slab must be cured for a minimum of 30 days.**
- Basements and crawl spaces must be dry. Use of a 6 mil black polyethylene is required to cover 100% of the crawl space earth. Crawl space clearance from ground to underside of joist to be no less than 18" and perimeter vent spacing should be equal to 1.5% of the total square footage of the crawl space area to provide cross ventilation.
- The subfloor must be flat, meeting a minimum of 3/16" within 10' or 1/8" in 6'.



**Concrete subfloors** - Grind high spots or use a Portland-cement-based leveling material (minimum compressive strength 3000 psi) to fill all low spots. Follow the leveling compound manufacturer's

instruction. Leveling compounds must be allowed to thoroughly cure and dry prior to installation of wood flooring.

**Wood subfloors** - For staple down application use layers of 15lb. felt or wooden shims to fill low spots. Staples must be able to penetrate for holding power.

- All “wet” work – i.e. – paint, drywall, concrete, masonry, plumbing must be complete and dry well in advance of delivery of hardwood flooring
- Gutters and downspouts should be in place and the exterior grade complete to allow for proper drainage of water away from the building’s exterior perimeter.
- Flooring should not be exposed to extremes of humidity or moisture.
- Permanent HVAC should be on and operational a minimum of 7 days and maintained between 65 – 75 degrees and a relative humidity of 35%- 55% prior to delivery, during, and after installation of the flooring.
- If HVAC is not possible at time of installation the environmental conditions must be at or near normal living conditions between 60 – 80 degrees and at the average yearly relative humidity for the area.

It is the Installer/Owner responsibility to ensure that the conditions are acceptable prior to the installation of the hardwood floors. The manufacturer declines any and all problems with the hardwood flooring that are related to or attributed to improper jobsite conditions.

### Recommended Subfloor Surfaces

**Concrete subfloors:** Concrete slabs should be of high compressive strength and constructed to prevent groundwater from permeating the concrete. Engineered hardwood flooring can be installed on, above, or below-grade. In addition, it can be installed over above-ground, suspended concrete floors. The suspended concrete must be a minimum of 1 1/2 inches thick and must be structurally sound. The exception to this is lightweight concrete (which usually contains high amounts of gypsum) having a density of 100 pounds or less per cubic foot. Test for lightweight concrete by using a nail to scratch the surface of the concrete. If the concrete crumbles or turns to powder, it is not sound and you should **NOT** install the hardwood flooring. Use the floating installation method (products 3” or wider) only for lightweight concrete subfloors.

### Wood Subfloors:

**Preferred Subflooring** ¾” (23/32”, 18.3 mm) CDX grade Plywood subfloor/ underlayment (Exposure 1), 4’x8’ sheets or ¾” (23/32”, 18.3mm) OSB subfloor/ underlayment grade, PS2 rated, sealed side down, with joist spacing of 19.2” (475) on center or less.

**Minimum Subflooring** - 5/8” (19/32, 15.1mm) CDX Plywood subfloor/ underlayment (Exposure 1), 4’x8’ sheets, maximum 16” on center joist construction.

Follow panel manufacturer’s recommendations for spacing and fastening. Typical panel spacing and fastening for joist systems, 1/8” (3.2mm) around perimeter and fastened every 6” (150mm) on bearing edges and every 12”(300mm) along intermediate supports.

Installation of flooring should not be made over joists spacing greater than 19.2 on center or parallel to the joists unless the subfloor has been properly strengthened, applying a second layer of underlayment may be necessary to bring the overall subfloor thickness to 1-1/8”.

- Test the moisture content of the wood subfloor and wood flooring with a pin type moisture meter. Wood subfloors must not exceed 13% and the wood flooring should be within 4% of the wood subfloor.
- For existing wood floors install new flooring at right angles to the existing flooring.
- Do not glue, staple, or nail down hardwood flooring over particle board, floating application is acceptable (products 3” or wider).
- Do not install over existing glue down hardwood floors.

**Ceramic tile and terrazzo:** All wax and sealers must be removed with an appropriate cleaner/stripper. Ceramic tile and terrazzo should be abraded to allow for proper adhesion. Check for loose tiles by tapping and re-adhere. Fill grout lines with a cementitious latex fortified leveling compound.

**Resilient tile, resilient sheet vinyl:** Material must be full spread and secured to the subfloor. Do not install over perimeter glued floors. Do not install over more than one layer that exceeds 1/8” in thickness.

**Nail/ Staple Down Only** - If old flooring is unsuitable to install new flooring then overlay with new underlayment. Test to conclude that the staples/ cleats are able to properly penetrate and secure the flooring to the subfloor.

**Glue Down Only** – Do not install over more than one layer that exceeds 1/8” in thickness. Clean flooring with an appropriate cleaner and allow to thoroughly dry. If necessary degloss the floor using an abrasive pad to enhance the bonding of the adhesive, if wax or other coatings are present, completely remove the material with a quality stripper, rinse the floor and allow to dry. Always check for proper adhesion bond prior to installing.

**CAUTION: DO NOT SAND** any existing resilient tile, sheet vinyl flooring, or flooring felt as they may contain asbestos fibers that are not readily identifiable. Inhalation of asbestos dust can cause serious bodily harm. Check local, state, and federal laws for handling hazardous material before attempting the removal of these floors.

**Acoustic Cork Underlayment: (Glue Down Only)** – Install the cork underlayment according to the manufacturer’s instructions. The cork underlayment must be fully adhered to the subfloor. The cork underlayment should be of pure granulated cork combined with a polyurethane binder with a minimum density of 11.4 lbs. per cubic foot and not to exceed 13 lbs. per cubic foot.

### Pre installation/ Job Preparation

**Inspect the Flooring** – Inspect material for color, finish, milling, and grade. Hold out pieces that may not be acceptable once installed.

**PLEASE NOTE: We do not accept responsibility for any costs incurred when plank(s) with visible defects have been permanently installed.**

**Undercut Door Casings** - Undercut all door casings 1/16" higher than the thickness of the flooring being installed. To do this, use a scrap piece of flooring as a guide. Lay it on the substrate and cut the casing with a handsaw or use a power jamb saw set at the correct height.

**Blending of Cartons-** To achieve a uniform appearance across the entire floor, we highly recommend that you open and work from several cartons at a time and dry-lay the flooring, mixing the planks from several cartons. This will allow you to blend the planks for maximum aesthetic appearance. Make certain the room is well lit to ensure color is consistent and that any visual defects can be seen and removed.

**Match Transition Moldings:** For best appearance blend all transitions and moldings to planks that have similar color and graining. Set them aside for use as needed.

**Layout of Flooring:** “Racking the Floor” is essential to achieve a random appearance. Start by either using random-length planks found in the carton or by cutting four or five planks in random lengths, differing by at least six inches. As you continue working across the floor try to maintain a six-inch minimum between end joints. Randomly install different lengths to avoid a patterned appearance. Never waste materials; the end cuts from starter rows should be used at the opposite side of the room to complete rows or used to start the next row.

**Expansion space:** Expansion space around the perimeter is required and should be equal to the thickness of the flooring material. For floating installation the minimum is ½” regardless of the thickness of the material. For commercial installations use a minimum of ½” expansion.

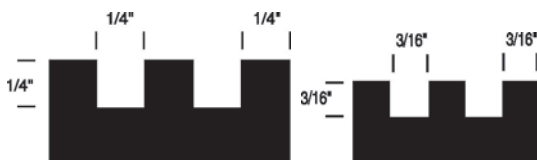
## GLUE DOWN INSTALLATION GUIDELINES

### Additional tools & material needed:

A.F.B. Engineered Wood Flooring Adhesive™ or A.F.B. Urethane™ Adhesive	3/16"x 3/16"x 3/16" or 1/4"x 1/4"x 1/4" square notch trowel
Rags	Mineral Spirits / Urethane Adhesive Remover Straight edge

For all material 3/8" thick and 1/2", 4 1/2" wide or less use a 3/16"x 3/16"x 3/16" square notch trowel

For 1/2" material wider than 4 1/2" use a 1/4"x 1/4"x 1/4" square notch trowel

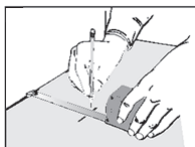


**NOTE:** With the A.F.B. adhesives, you **MUST** install the hardwood flooring by using the "Off the Floor" technique. In other words, you **MUST** be working from the subfloor and **NOT** standing or walking on the newly installed flooring during installation. Failure to follow this procedure can result in the planks moving during installation, creating gaps at both end and side joints. Do not roll A.F.B. Adhesives

**Before you begin using the following instructions, please refer to the Pre-Installation Job Prep information above.**

### Getting Started

1. Select a starter wall. An outside wall is best: it's most likely to be straight and square with the room. Measure out from this wall, at each end, the width of two planks including the tongue plus the space needed (3/8" or 1/2") for expansion.
2. Snap a chalk line from these points, parallel to that wall.
3. Prior to installing the flooring, secure a straight edge inside the chalk line to act as a guide and to prevent the row of planks from shifting during installation. The straightedge could be a straight piece of lumber or piece of flooring. Alternatively, the first row can be face-nailed with finishing nails into the wood subfloor or sprig nailed into a concrete subfloor.



### Spreading the Adhesive

Using the proper trowel, hold the trowel at a 45° angle to ensure proper spread rate of adhesive. Apply pressure to allow the trowel to leave ridges of adhesive on the substrate with little adhesive left between the ridges. This will help to achieve the proper spread rate of the adhesive. Temperature and air flow across the adhesive can have an affect on the open time of the adhesive. A.F.B. Urethane Adhesive™ will have a longer open time in areas of low humidity and will have a shorter open time in areas of high humidity. (See A.F.B. Urethane Adhesive™ label for further information).

### Installing The Floor

4. Spread adhesive from the chalk line/straightedge out to approximately the width of two planks. Install the first row of starter planks along the chalk line/straightedge and secure into position with the tongue facing the starter wall.

**NOTE:** Proper alignment is critical. Misaligned starter rows can cause side and end gaps to appear in proceeding rows of flooring. When you have the starter rows complete, you can begin the next row

5. When you are certain the first two starter rows are straight and secure, spread adhesive 2 to 3 feet wide across the length of the room. As a general rule, never spread more adhesive than can be

covered in 30 to 45 minutes. If the adhesive has skinned over remove dried adhesive and trowel new adhesive.

6. Continue to install planks and push them into place. Place the tongue of the board into the grooves of installed boards and press into the adhesive. As you continue working across the floor try to maintain a six-inch minimum space between end joints. Randomly install different lengths to avoid a patterned appearance.

**NOTE:** Never strike a rubber mallet or hammer directly on the flooring to engage the tongue-and-groove. This practice can damage the flooring and/or the finish.

7. Remove the adhesive from the surface of the installed flooring as you work – this will help to save time. A damp rag with water or mineral spirits will remove A.F.B. Engineered Wood Flooring Adhesive™ **NOTE:** When using A.F.B. Urethane Adhesive™ clean the floor as you are working using mineral spirits or Parabond Urethane Adhesive Remover – **DO NOT USE WATER.** Frequently change towels to avoid leaving a haze on the flooring surface.
8. As you approach the end wall it may be necessary to cut the width of the last row – be sure to allow for the expansion space along the end wall. Once the final cuts are made set planks into place.
9. After the floor is complete remove the straight edge and glue down the first two boards.
10. Restrict foot traffic for a minimum of 6-8 hours and wait 24 hours before permitting moving of furniture onto the floor.
11. Clean any wet A.F.B. Engineered Wood Flooring Adhesive™ from the flooring with a lightly dampened clean cloth or sponge. If the adhesive has dried, use mineral spirits on a clean cloth. Remove A.F.B. Urethane Adhesive™ with Parabond Urethane Adhesive Remover.

**Final Inspection:** After the floor has been cleaned, inspect the floor for nicks, scratches, gaps or planks that may have moved during installation, as well as any other imperfections that need attention. Touch up nicks and scratches with touch-up products. In typical climates, the new floor can accept foot traffic within 24 hours. In areas where additional curing time is required, more time may be needed.

## NAIL OR STAPLE DOWN INSTALLATION GUIDELINES

### Additional Tools and Material Needed:

Drill	Tapping Block	Compressor
Air Hose	In-line Air Regulator	Pneumatic Nailer/ Stapler

15 lb. Roofers Felt

**Before you begin using the following instructions, please refer to the Pre-Installation Job Prep information above.**

**NOTE:** Our products are not warranted against squeaking, popping or crackling when using staple-down or nail-down installation methods. Some squeaking, popping or crackling is normal and possible when using staple-down or nail-down installation methods. These symptoms may be aggravated in arid areas or during dry conditions.

### SET UP AND USE OF PNEUMATIC STAPLERS AND NAILERS

Minor occasional noises within the flooring are inherent to all staple/nail-down installations and can change as environmental changes occur. This is not a manufacturing defect and is therefore not covered under our warranties (see warranty brochure for complete warranty coverage). You can help reduce squeaking, popping, and crackling by being sure that the subfloor is structurally sound, does not have any loose decking or joists, and is swept clean prior to installation. You should also be sure that your stapler or nailer is setting the fastener properly, not damaging the planks, and that you are using the correct nailing schedule.



When used improperly, staples or cleats can damage wood flooring. If the tool is not adjusted properly the staples/ cleats may not be positioned at the proper angle and cause blistering, peaking, squeaking, or crackling of the floor. Some models may require the use of an adapter to adjust for proper thickness. Test the tool on a piece of scrap material first - set the stapler/ nailer flush on the tongue side of the plank and install a staple/ cleat. Should the staple/ cleat penetrate too deeply reduce the air pressure; if the staple/ cleat is not deep enough then increase the air pressure using an in-line regulator. The crown of the staple/ cleat should sit flush within the nail pocket to prevent damage to the flooring and to reduce squeaking. The flooring manufacturer is not responsible for damage caused by the mechanical fasteners.



**IMPORTANT NOTE:** Only use manufacturer's recommended staples or cleats.

**For 3/8" thick products the minimum length staple/ cleat is 1"**  
**For 1/2" thick products the minimum length staple/cleat is 1 1/4"**

Read and follow the manufacturer's instructions for complete set-up and operation of equipment.

### Getting Started

1. After the subfloor has been properly cleaned and prepped cover the subfloor with 15lb. asphalt felt paper. This material will help to keep the floor clean and help to retard moisture from below (there is no complete moisture barrier system for staple or nail-down applications).
2. Select a starter wall. An outside wall is best: it's most likely to be straight and square with the room. Measure out from this wall, at each end, the overall width of the plank (board width + tongue + the space needed (3/8" or 1/2") for expansion).
3. Snap a chalk line from these points, parallel to that wall.
4. Install the first row of starter planks along the chalk line/straightedge and secure into position with the tongue facing away from the starter wall (toward you). Drill pilot holes through the face of the plank every 6" (in the dark grain); approximately 1" from the back edge of the board and secure planks with 1" finishing nails. Countersink nails and fill with appropriate colored wood filler – remove excess filler from surface.
5. Blind nail at a 45° angle through the tongue 1"-2" from the end joints and every 6" in between along the length of the starter boards (Predrill holes to make this easier). Depending on the width of the flooring it may be necessary to do this for the first few rows prior to using a pneumatic stapler/ nailer.

**NOTE:** Proper alignment is critical. Misaligned starter rows can cause side and end gaps to appear in proceeding rows of flooring.

### Installing the Floor

6. Continue to install the flooring making sure to nail/staple 1"-2" from the ends and every 3" – 4" thereafter. Make certain the tool is adjusted properly to ensure that the fastener is at the proper angle and is flush within the nail pocket. As you continue working across the floor try to maintain a six-inch minimum space between end joints. Randomly install different lengths to avoid a patterned appearance.
7. If needed use a tapping block to help engage the boards together until the tongue-and-groove is flush and tight and no gaps are present between adjacent planks. **NOTE:** Never use a rubber mallet or hammer directly on the flooring to engage the tongue-and-groove. This can damage the flooring and/or finish.
8. As you approach the end wall it may be necessary to cut the width of the last row – be sure to allow for the expansion along the end wall. Once the final cuts are made set planks into place.
9. The last few rows will need to be fastened by hand. To fasten the final planks into place, you must either manually blind nail and/or

face-nail through the surface on the final planks. Drill pilot holes at a 45-degree angle to the floor and blind nail using 1" finishing nails. Alternatively, drill pilot holes in the face every 6" (try to drill holes in darker portion of the wood) and install with 1" finishing nails. Countersink nails and fill with appropriate colored wood filler – remove excess filler from surface with a clean rag and proper cleaner.

## FLOATING FLOOR INSTALLATION GUIDELINES

(Products 3/8" & 1/2" thick, 3" or wider only)

### Additional tools & material needed:

A.F.B. Floating Floor Adhesive™	Bona® Hardwood Floor Cleaner
Terry Cloth towels	6 Mil Poly Plastic Sheeting
Foam underlayment	Tapping Block & Spacers
Pry/Pull Bar	

**Before you begin using the following instructions, please refer to the Pre-Installation Job Prep information above.**

- 6 Mil Polyethylene not required over a vinyl, wood, or a wood product sub floor.
- 6 Mil Polyethylene required over concrete type subfloors – on grade or below grade.
- Do not install over carpet.
- If installing over vinyl, ensure that the vinyl is secure to the sub floor. Do not install over perimeter glued vinyl.
- If installing over an existing wood floor, install the flooring at right angles to the wood floor.
- Secure creaking and loose floorboards with screws.
- Do not install over wood flooring glued to a concrete sub floor.
- 1/2" of expansion space required at all vertical surfaces.

### Getting Started

1. Remove all doors and shoe moldings. Undercut all door casings 1/16" higher than the thickness of the flooring and underlayment to be installed. Place a scrap piece of plank and a sheet of underlayment against the door casing to act as a guide and cut the door casing with a hand saw or power jamb saw set to the correct height.
2. After determining the direction to run the planks, measure the width of the room (the dimension perpendicular to the direction of the flooring). The last row of the flooring should be no less than 1 1/2" wide; if it is less, cut the width of the starter row to avoid a narrow last row.
3. Select a starter wall. An outside wall is best: it's most likely to be straight and square with the room. Measure out from the wall, at each end, the overall width of the plank plus 1/2" for expansion. If the first row requires ripping then measure from the wall the width of the ripped board plus 1/2" for expansion.
4. Snap a chalk line using a (brightly colored chalk) from these points.
5. Install Underlayment: Unroll the 6 mil. Poly sheeting overlapping edges 4" and seal seams with clear plastic tape. Allow the poly to run 2" up the wall and trim back after installation of flooring. Install 1/8" foam underlayment.

**Note: Use of a floating floor 2 in 1 underlayment may be used. Follow manufacturer's instructions for application installing the 2 in 1 underlayment.**

6. Prior to installing the flooring, secure a straight edge (starter board) inside the chalk line to act as a guide and to prevent the row of planks from shifting during installation. The straightedge could be a straight piece of lumber or piece of flooring. This is temporary and will be replaced as the floor is completed.



## Installing the Floor

7. Insert spacers at walls to maintain the expansion space between the flooring and the wall.

8. Before starting to glue planks, dry lay the first two rows of flooring. Working from left to right, install planks so that the groove faces the straight edge (starter board). When reaching the end of the first row, cut the plank as necessary to fit. On the first 4 rows stagger end joints a minimum of 16" and then 8" thereafter.

9. Use the remainder of the plank from the first row to start the second row. If the piece is less than 8" long, cut a new plank in half and use that piece to start the second row.

10. Lay the remainder of the planks in the second row. Make sure that the rows are straight and no gapping exists on the sides or ends. Once you have dry laid the first two rows, remove all the planks in order. You are ready to begin.

11. Begin gluing the boards; Run a continuous bead of adhesive along the groove of the short side (width) and the plank's side groove (length). Proper alignment is critical. Misaligned starter rows can cause side and end gaps to appear in proceeding rows of flooring.

12. Install first row of planks with groove facing the straight edge. Work from left to right. Complete the first row. Make sure there are no gaps between the boards. Use a tapping block if need to close the boards together. Immediately wipe away any excessive adhesive with a clean, slightly dampened cloth.

**CAUTION:** Adhesive that is allowed to dry on the finish surface can be difficult to remove and may leave a haze.

13. At the end wall use an end pry bar, if needed, to pull the ends of the planks tight.

14. Continue to install the floor working left to right, repeating the process until the completion of the floor. Continue to use the spacers on all vertical surfaces to maintain the 1/2" expansion.

**DO NOT USE** laminate straps as they may damage the flooring  
15. The last row will most likely require cutting to width but it should be no less than 1 1/2" wide. To do this, lay the plank face up on top of the last full row installed. Trace the wall contour on the last plank using a scrap piece of plank and a pencil.

16. Install cut planks and pull into place with a pry bar. Install spacing wedges between planks and wall.

17. Remove the straight edge (starter row) and install the last row using the pry bar.

Allow floor to dry for a minimum of 12 hours before removing all spacing wedges and allowing foot traffic.

18. Install trim and moldings the following day.

## Radiant Heated Subfloors

*Refer to Website for list of approved products. Non Approved products are not warranted for use over Radiant Heat*

- ♦ Prior to installation of flooring over radiant heat system it is important that the guidelines are followed in strict accordance. Failure to follow the guidelines may produce unsatisfactory results.
- ♦ Floating installation methods only, direct glue down is NOT RECOMMENDED.
- ♦ Sub floor must be flat to 3/16" in 10' or 1/8" in 6'
- ♦ Prior to installation moisture testing must be conducted and documented per ASTM test method 1869-89 for concrete or using a pin type 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 it exceeds these limits, DO NOT install the flooring.
- ♦ Relative humidity of the jobsite must be maintained between 35-55% relative humidity. Use of humidification system may be required to maintain the proper humidity level. Failure to maintain proper humidity level can result in excessive dryness of flooring.
- ♦ It is highly recommended that the radiant heat system be designed specifically to accept a wood floor

1. Use of an in floor temperature sensor as well as a separate thermostat for the individual room is required.
2. An outdoor temperature sensor should be used to adjust water temperature according to anticipated heat loss.

## JOBSITE REQUIREMENTS

- ♦ Prior to installation of flooring the radiant system must be installed per manufacturer's instructions.
- ♦ Before floating installation of flooring material the follow conditions are required
  1. Moisture content of concrete (lightweight concrete) must not exceed 2.0 lbs per CaCl test method (ASTM1869-89) Wood sub floors not to exceed 13% and be within 4% of the wood flooring.
  2. Concrete must be allowed to properly cure and dry a minimum of 4 weeks prior to operation of radiant heat system
  3. Operation of radiant heat system should be set to run at 2/3 maximum output for a minimum of 2 weeks prior to installation of flooring to further allow moisture from concrete to dissipate and reach a final moisture content. This must be done in both heating and non heating seasons.
  4. Prior to installation (4 days) reduce to a temperature of 65°.
  5. Install flooring according to floating floor installation guidelines. Use of a 2 in 1 underlayment is required.
  6. When gluing planks run a continuous bead of adhesive in the groove on both the end and length of the board.
  7. Remove any excess glue that squeezes out onto surface of the planks with a clean damp rag. Change rags and water periodically to avoid leaving a haze on surface.

## AFTER INSTALLATION & SEASONAL OPERATION

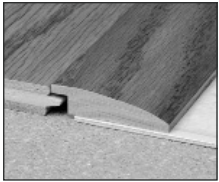
- ♦ 48 hours after completion of installation, slowly raise temperature of the heating system to its preferred operating level over a period of 5 days. **Do not allow the surface temperature to exceed 82°**
- ♦ Humidity level must be maintained between 35%-55% R.H.
- ♦ Seasonal gapping should be expected.
- ♦ Surface checking can be expected if the proper humidity level is not properly maintained between 35-55% R. H. or if the floor's surface temperature exceeds 82°.

## COMPLETING THE JOB – ALL INSTALLATIONS

- Sweep or vacuum floor
- Clean the floor with Bona® Swedish Formula® Hardwood Floor Cleaner
- Install transition pieces -i.e. – thresholds, t-moldings, base boards and quarter round. Nail moldings to wall, not the floor.
- Inspect final floor for nicks and or minor gaps – fill with appropriate color wood putty.
- Leave Warranty and Maintenance brochure with customer.
- Unused material should be left with owner and stored in a dry place in case of future repairs are needed.
- Use plywood or hardboard when moving heavy appliances or furniture across floor.

**Floor Protection During Construction:** Always protect the surface of the installed flooring during construction by laying a quality rosin paper or other paper that will allow the floor to breathe, taping it to the baseboards. Never use plastic or polyethylene sheeting to cover the floor since they will trap moisture that will damage the flooring.

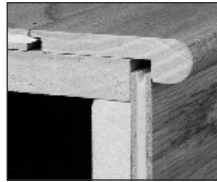
## TRANSITION AND WALL MOLDINGS



Reducer Strip



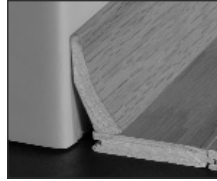
Threshold



Stair Nosing



Quarter Round



Combination  
Base and Shoe



T-Molding

- **Reducer Strip:** A teardrop-shaped molding used around fireplaces, doorways, as a room divider, or as a transition between wood flooring and adjacent thinner floor coverings. Fasten down with adhesive, small nails or double-faced tape.
- **Threshold:** A molding undercut for use against sliding door tracks, fireplaces, carpet, ceramic tile, or existing thresholds to allow for expansion space and to provide a smooth transition in height difference. Fasten to subfloor with adhesive and/or nails through the heel. Pre-drill nail holes to prevent splitting.
- **Stair Nosing:** A molding undercut for use as a stair landings trim, elevated floor perimeters, and stair steps. Fasten down firmly with adhesive and nails or screws. Pre-drill nail holes to prevent splitting.
- **Quarter Round:** A molding used to cover expansion space next to baseboards, case goods, and stair steps. Pre-drill and nail to the vertical surface, not into the floor.
- **Combination Base and Shoe:** A molding used when a base is desired. Used to cover expansion space between the floor and the wall. Pre-drill and nail into the wall, not the floor.
- **T-Molding:** A molding used as a transition piece from one rigid flooring to another of similar height or to gain expansion spaces. Fasten at the heel in the center of the molding. Additional rigid support may need to be added to the heel of the molding dependent upon the thickness of the goods covered. Do not use this molding as a transition to carpet.

## FLOOR CARE AND MAINTENANCE

Remember, like any floor covering, our real wood floors will show signs of wear over time, depending on the size and lifestyle of your family. By observing a few precautions and setting up a regular cleaning routine and maintenance program, you can expect years of beauty from your floor. The following are examples of the reasonable and necessary maintenance you are expected to perform. They are not intended to be an exclusive list.

- Sweep or vacuum regularly since built-up grit can damage the surface of the wood. The vacuum head must be a brush or felt type. Be certain the wheels of the vacuum are clean and do not damage the finish. **DO NOT USE A VACUUM WITH A BEATER BAR HEAD.**
  - Remove spills promptly using a soft cloth and recommended cleaning products.
  - NEVER wet-mop, damp-mop, or flood your floor with water or other products. This can severely damage the flooring and will void the warranties. The use of Dry Swiffer® by Proctor & Gamble, or other similar product, is highly recommended. Do not use hardwood floor cleaning machines.
  - The use of approved maintenance and floor-care products, including but not limited to BonaX Swedish Formula Hardwood Flooring Cleaner and Basic Coating Squeaky Hardwood Floor Cleaner, is highly recommended.
  - **IMPORTANT:** Do not use oil soaps, liquid or paste wax products or other household cleaners that contain lemon oil, tung oil, silicon or ammonia since these warranties do not cover damage caused by non-recommended products. Use of these and other such products will harm the long-term performance of your floor and may also affect its recoat ability.
  - Keep pets' nails trimmed, and paws clean and free of dirt, gravel, grease, oil, and stains.
  - Place protective pads beneath furniture legs and feet to reduce scratches and dents.
  - Use a dolly and protective sheets of plywood when moving heavy objects, furniture, or appliances.
  - Make certain furniture casters are clean and operate properly (a minimum 1" width is recommended).
  - Remove shoes with spiked or damaged heels before walking on floor.
  - Exposure to the sun and its UV rays accelerates the oxidation and aging of wood and fabrics. This causes the stain and/or wood to fade and/or to change color. We recommend that you rearrange rugs and furniture periodically so the floor ages evenly. These warranties do not cover damage from the sun and its UV rays.
- Use area rugs in high traffic areas and pivot points (e.g., stair landings, room entries, etc.), especially if you have a large family or indoor pets.