

# **SOLID PLANK FLOOR**

## **TONGUE AND GROOVE:**

**3/4" X 3", 4", 5", 6", 7" and up Unfinished/Factory Finished**

### **I. Minimum Acceptable Jobsite Conditions and Checklist**

**NOTE: With wider plank flooring, environmental conditions associated with a factory finished flooring product should be present.**

### **II. Acclimation Guidelines**

**NOTE: Always follow the manufacturer's recommendation for acclimation.**

Upon delivery check wood flooring moisture content to establish a baseline for required acclimation.

Acclimation depends on geographic location, interior climate control and time of year.

### **III. Subfloor Grade Levels**

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Above Grade: Solid plank wood floors can be installed successfully above grade level.

On Grade: Solid plank wood floors can be installed successfully on grade level.

Below Grade: **SOLID WOOD FLOORS ARE NOT RECOMMENDED FOR BELOW GRADE INSTALLATIONS.**

**NOTE: The entire flooring level is considered to be BELOW grade where soil is present along any perimeter wall and is more than 3" above the installed wood flooring level. Ground should be sloped away from the house for proper drainage. Check local building codes. Local building codes prevail. Follow local building codes.**

### **IV. Subfloor Guidelines – Wood Joist Systems – panel products or solid boards**

**NOTE: Always follow the manufacturers recommendation for proper subfloor**

**NOTE: Subfloor/Underlayment panels should conform to the US Voluntary Product Standard PS 2-92 or PS 1-95 and/or Canadian performance standard CAN/CSA 0325.0-92 Construction Sheathing. Check underside of boards for codes.**

**NOTE: Solid board subflooring should be: 3/4" x 5 1/2", Group 1 dense softwoods, (SYP, Doug Fir, Larch, etc), No. 2 Common, Kiln dried less than 15% MC.**

Check subfloor for performance stamp and/or specification agency.

Subfloor must be flat, clean, dry, structurally sound and free of squeaks and free of protruding nails/staples.

Test subflooring for moisture

Moisture content should be within 4% of average area environmental conditions.

For installations using mechanical fasteners of 1-1/2" and above, the subfloor should be flat to within 1/4" in 10' or 3/16" in 6'.

For paneled subflooring/underlayment – nailing schedule must be adequate, typical-every 6" along panel ends and every 12" along intermediate supports; all panel edges should exhibit spacing; edge swell should be flattened as necessary.

For board subflooring – Boards should be no wider than 6"; installed at 45 degree angle with all board ends full bearing on joists and nailed with 2, 8d nails; 1/4"-1/2" space should be present between board edges.

**PREFERRED SUBFLOORING:** 3/4" (23/32", 18.3mm) CDX Plywood subfloor/underlayment (Exposure 1), 4' X 8' sheets; OR 3/4" (23/32", 18.3mm) OSB subfloor/underlayment, with joist spacing 19.2" (475mm) on center or less.

**MINIMUM:** 5/8" (19/32", 15.1mm) CDX Plywood subfloor/underlayment (Exposure 1) 4' X 8' sheets, maximum 16" (400mm) on center joist construction.

Follow panel manufacturer 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" (300 mm) along intermediate supports.

**NOTE: With minimum specified materials, at maximum span and spacing (i.e. greater than 19.2") plank flooring will exhibit minimum performance.**

**Minimum performance may result in the following conditions: movement, gaps, noises, and with site finished flooring finish delamination.**

For 3/4" (18.3mm) CDX Plywood and 23/32" (18.3mm) OSB, with joist systems spaced over maximum 19.2" (475mm) o/c requires an additional layer of plywood is required. Minimum requirement; 1/2" (15/32", 11.9mm) CDX plywood subfloor/underlayment,(Exposure 1) 4'X8'sheets. The 1/2"plywood should be offset by 1/2 panel in each direction to the existing subflooring. The panels may also be laid on a diagonal or perpendicular, with 1/8" spacing between sheets. Nail on a 6" minimum grid pattern-using ring shanked nails. Or brace between joists with 2X6 or wider boards every 24".

## **V. Subfloor Guidelines – Concrete Slab**

NOTE: Always follow the manufacturers recommendation for proper subfloor.

Concrete must be flat, dry, structurally sound and clean.

**NOTE: A moisture retarder with permeance equivalent to 4-mil polyethylene film is always required over the concrete slab and below the subflooring material.**

Test concrete for moisture according to Moisture Testing Procedures. Excess moisture should not be present.

Tolerance should be flat to within 3/16" in 10' or 1/8" in 6'.

For installations using mechanical fasteners of 1-1/2" and above, the subfloor should be flat to within 1/4" in 10' or 3/16" in 6'.

Substrate should be flattened to tolerance

Lightweight concrete (less than 3000 psi) where adhesive used has a higher psi rating than concrete, use with a Subfloor-Floated.

RULE OF THUMB: Draw a nail across the top and if it leaves an indentation, it is probably lightweight concrete, use Subfloor-Floated.

**Before moisture testing begins, the slab must be cured for a MINIMUM of 30 days.**

NAIL DOWN PLANK FLOORING MUST HAVE AN APPROVED SUBFLOOR OVER THE CONCRETE. PLANK CAN NOT BE SHOT TO THE CONCRETE. 3/4" PLANK CANNOT BE DIRECT GLUED TO CONCRETE. PLANK CANNOT BE GLUED AND NAILED DIRECT TO CONCRETE.

**NOTE: Some manufacturers suggest direct glue installation of 3/4" plank in lengths less than 11 1/4". In such cases follow manufacturers recommendation.**

NOTE: A MOISTURE RETARDER IS RECOMMENDED ANYTIME SOLID WOOD FLOORING IS INSTALLED OVER CONCRETE.

## Subfloor – Floated

**NOTE: Always follow the manufacturers recommendation for proper subfloor**

Add moisture barrier before applying underlayment.

PREFERRED Subfloor system: 2 layers 1/2" (15/32", 11.9mm) CDX Plywood subfloor/underlayment (Exposure 1), 4'X 8' sheets. MINIMUM Subfloor system: 2 layers 3/8" (10mm) CDX plywood subfloor/underlayment, (Exposure 1), 4'x8' sheets.

Place first plywood layer with edges parallel to wall, without fastening.

Plywood should be placed with 1/8" gaps between sheets

Lay second layer perpendicular or at 45 degree angle to first

Plywood should be placed with 1/8" gaps between sheets

3/4" minimum expansion space at all vertical obstructions and wall lines

Staple, screw, or nail second layer to first layer on 12" grid pattern.

ALTERNATE Subfloor: 3/4" (23/32", 18.3mm) CDX Plywood sheathing, (Exposure 1), 4'x8' sheets; cut to 16"X8' planks, scored on back 3/8" deep every 12" across width, 16" planks oriented perpendicular to direction of flooring, panels staggered every 2", and spaced 1/8" between ends and 1/4" to 3/4" between edges. 3/4" minimum expansion space at all vertical obstructions.

## Glue Down Subfloor

**NOTE: Always follow the manufacturers recommendation for proper subfloor**

Add moisture barrier before applying underlayment.

PREFERRED Subfloor: 3/4" (23/32), 18.3mm) CDX Plywood sheathing, (Exposure 1), 4'x8' sheets.

For single layer system; Apply adhesive per manufacturers recommendations (typical spread rate – 30-35 sq.ft.per gallon with a 1/4"x 1/4" notched trowel), cut plywood to 16"X8' planks, or 2'x8' sections or 4'x4' sections, scored on back 3/8" deep (scoring for 16" planks every 12" across width, for 2' and 4' sections on a 12"X12" grid). 16" planks and 2' sections oriented perpendicular to direction of flooring, panels, staggered every 2', and spaced 1/8" between ends and 1/4" to 3/4" between edges. Space 4'x4' sections 1/8" to 1/4"

3/4" minimum expansion space at all vertical obstructions.

## Nail Down Subfloor

**NOTE: Always follow the manufacturers recommendation for proper subfloor**

Add moisture barrier before applying underlayment.

PREFERRED Subfloor system: 3/4" (23/32", 18.3mm) CDX Plywood subfloor/underlayment, (Exposure 1), 4'X8' sheets.

Use full 4'x8' sheets or cut to 16"X8' planks, or 2'x8' sections. Full sheets oriented at 45 degrees (preferred) or perpendicular to direction of flooring. 16" planks and 2' sections oriented perpendicular to direction of flooring staggered every 2'. Space 1/8" between ends and 1/4" to 3/4" between panel edges. Panels are staggered, full sheets by 1/2" sheet for planks and sections every 2'.

Fasten every 12" and 6" from edge along the border for a minimum of 32 shots per 4'x8" sheet.

For 2' sections and 16" planks fasten every 12" along the length with 1 or 2 fasteners equally spaced from edges.

3/4" minimum expansion space at all vertical obstructions

**NOTE:** Fasteners may be powder driven pins, pneumatic driven nails, hand nails, screws, deformed pins, or other fasteners suitable for concrete application. Check with fastener distributor for specification such as length, drill size, and/or shot load where applicable.

### Screed System

**NOTE: Plank flooring 4" and wider cannot be installed directly to screeds.**

Screed System must be overlaid with 3/4" (23/32" 18.3mm) Exposure 1, or 5/8" (19/32" 15.1mm), Exposure 1, CDX plywood subfloor/underlayment or 3/4" (23/32", 18.3mm) OSB underlayment properly spaced and oriented perpendicular to screed direction.

Screeds. 2"X 4" or 2"X 3" Group 1 species, pressure treated, kiln dried after treatment to 12% m.c. or less should be flat with minimum twist or crook, cut as necessary to maintain flatness, 18" - 48" long.

Use adhesive approved by the manufacturer

Set screeds with widest dimension in rivers of adhesive for 100% contact, space 1/8" at end joints, screed joints should be staggered and not fall directly under subfloor panel edges.

Lay screed runs maximum 16" on center at right angles to direction of finished floor, leaving 3/4" expansion at all vertical obstructions.

Lay 6-8 mil poly film over screeds

## VI. INSTALLATION

**NOTE: Always follow the manufacturers recommended installation procedure.**

Unfinished/Factory finished solid plank should be installed perpendicular to the joists or on a diagonal for any single layer subfloor. (exception, diagonal, solid subfloor boards, install perpendicular to joist or subfloor direction).

CAUTION: When laying 3/4" solid plank flooring parallel with the floor joists either add an additional layer of minimum 1/2" (15/32") CDX plywood underlayment to the existing subfloor (as previously recommended) or brace between joists with 2" X 6" or wider boards every 24" minimum. Subfloor must be within 4% moisture content of the hardwood floor before installing.

Before installing wood flooring place 15 lb. asphalt saturated felt paper that meets ASTM Standard D4869 or use a building paper with an equivalent permeance over wood subfloor. REFER TO MANUFACTURERS RECOMMENDATION BEFORE PROCEEDING.

Snap a working line parallel to the starting wall allowing 3/4" expansion space between the starting wall and the edge of the first plank run.

A 3/4" expansion space must be left around the perimeter and at all vertical obstructions.

Plank is laid out in the same manner as strip flooring, alternating courses by widths. Start with the widest board, then the next width, etc., and repeat the pattern.

Lay one row of plank along the entire length of the working line.

Top and blind nail the first row (hand nail if necessary), using appropriate fasteners. Each succeeding row should be blind nailed with the nailing machine wherever possible. At the finishing wall and other obstructions, it may be necessary to blind nail by hand until top nailing is required.

Racking rule of thumb: Stagger end joint a minimum of 6" between pieces on adjacent rows, see figure 1-1. Avoid H joints

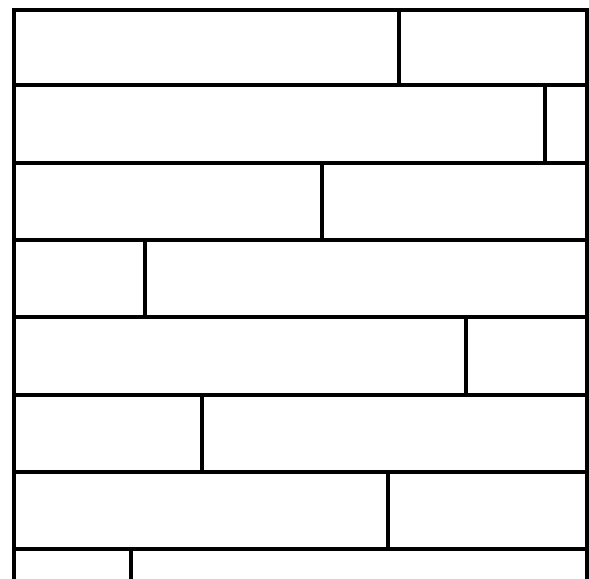


Figure 1-1 ACCEPTABLE

Add each additional row of flooring, watching the pattern repeat and offsetting or staggering the end joints at least 6 inches.

On floors wider than 20' to minimize expansion: More or less spacing may be needed depending on geographical area, interior climate control and time of the year.. In some areas, additional spacing may not be necessary.

Where spacing is required: Use a washer or removable spacer to leave additional space every few rows and/or start in center of room and work out to both sides.

Nailing: Blind nail through the tongue using 2" barbed flooring cleat, 7d or 8d flooring nail, or 2" (15 gauge) staples with 1/2" crown. Use 1 1/2" length, fasteners with 3/4" plywood subfloor direct to concrete slab. Face nail boards where needed using 7d or 8d flooring nail – casing nail – galvanized nail – finishing nail, or flooring cleat. Fasteners should be spaced every 8".

For additional fastening, any of the following options may be used in addition to the nailing schedule.

FOLLOW Manufacturer's instructions for installing Plank Flooring.

It is general practice to countersink one or more No. 9 or No. 12 screws at each end of each plank. The wider the plank the more the general practice is used. Fill with wood putty or use plugs of the same or contrasting species as desired. Appropriate mastic may be applied to the ends of each board and/or on back or to the subfloor in addition to nailing schedule. This will make repair/replacement of boards very difficult.

Blind nail and face nail, as necessary, to complete the final rows.

## **VI. EXISTING FLOORING GUIDELINES**

**NOTE: Always follow the manufacturer's recommendations for installation over existing flooring.**

Check existing flooring for soundness and repair and refasten as necessary.

Wood flooring can be nailed directly into existing sheet vinyl or vinyl tile if the subfloor is within NWFA guidelines (5/8" or thicker CDX grade plywood underlayment or 3/4"(23/32") or thicker OSB Underlayment Grade. (Particleboard is not an acceptable underlayment.)

Wood flooring can be nailed to existing flat, dry and structurally sound solid strip or plank wood floors by sanding high spots and laying the floor at a 45 to 90

degree angle to the existing wood floor. Adding an additional 1/2" underlayment (minimum 3/8") allows for the floor to be installed in any direction.

Wood flooring can be installed over existing ceramic tile, terrazzo, or marble with proper underlayment only on manufacturers recommendation.