

JOBSITE EVALUATION, ESTIMATING AND PREPARATION

Introduction:

Congratulations, contractors — you're in business! You've invested in all the tools and equipment you'll need for success in the hardwood flooring trade. You've printed your business cards and letterhead. You've painted your van or truck and gotten it in tip-top shape.

You may have spent a few years working for a more experienced contractor; you may have also refreshed your skills by attending one of the training schools offered by both the National Oak Flooring Manufacturers Association (NOFMA) and the National Wood Flooring Association (NWFA). You may have even "grown up" in the business with various family members.

Once you have arranged for your contractor's license (if one is required in your state) and have the appropriate insurance coverage, you are ready to take on jobs — on your own or perhaps with a partner or even with a bigger company. To make the most of every job that comes your way, you should focus on three critical business steps — long before the first piece of wood flooring is installed.

Those three steps?

- Evaluating the jobsite
- Estimating the job
- Preparing the jobsite.

Before you sign on to any job, you should know what has occurred on the site before you got involved, what's ahead and how you can best handle the job. This publication will present the myriad of questions that need addressing and answering before you commit to the job.



EVALUATING THE JOB

The first contact with the customer

When a prospective buyer makes an inquiry, it was likely generated by one of the following: a referral; a lead produced by you or your salesperson; a random call or drop-in, the source of which may well have been the Yellow Pages; or even the result of someone seeing you working on another job.

Whatever the source, take the call and respond professionally, promptly and cheerfully. By doing so, you're quite possibly on your way to landing the job.

After hearing what the customer wants, you can tell him or her a bit about you and your company. Talk about what kinds of jobs you do and have done around town. This is a good time to qualify the customer. Is the job the type and size that you are comfortable with? Is the customer's time schedule within your parameters? If the preliminary answer is no, you could tell him or her why you aren't able to accept the job. Then thank the customer and refer him or her, if possible, to another contractor.

If the customer's answers are positive, and if you are serious about closing the deal and taking on the work, arrange to meet him or her — pencil, notebook and samples in hand. After all, the customer is merely a potential customer at this point. Yes, you got the customer's call, but you may be bidding against other wood flooring contractors in the area for a job.

Professionalism

As you meet with the potential customer, be professional. Being professional means more than just knowing your job. Many things play a part in how the potential customer perceives you and your company.

- Be on time. The customer's time is valuable, and so is yours.
- Your appearance will give customers their first impression. Dress neatly and in appropriate work attire.
- Be sure to have all the necessary items (paper, pencils, tape measure and estimating forms, for example) with you to complete the job at hand.
- Be courteous and polite. A professional and personable attitude will make the potential customer feel good about doing business with you.

Make the customer comfortable

Your meeting with the customer may take place in a showroom — allowing you to more easily supplement your selling with actual samples. Or, it could take place in the customer's home or other location where he or she wants to install hardwood flooring — allowing you to gain insights into the work involved. Do not be negative about things that “won't work.” Be polite and **a good listener**. Let the customer tell you what he or she wants. Try to put the customer at ease.

Before you can even start talking prices, it's necessary to schedule a visit to the potential jobsite. It's important to learn some details about the prospective job and what the customer expects the end result to look like. After you have observed the jobsite conditions and taken your measurements, ask any questions you might have.

There are numerous details to consider when bidding for and taking a job. Most of them are summarized in the NWFA Jobsite Checklist included in this publication.

Ask yourself the following questions:

- Who is the customer? An established homeowner? A builder? A young family with several active children? How much money do they expect to spend on this project?
 - Is the job residential or commercial? Is it a new or existing building?
 - If residential, where will the flooring go? In the kitchen? The more formal areas of the home? The basement?
 - If commercial, is it for private offices, or for a high-traffic area, such as a restaurant or retail store? What will the maintenance routine be?
 - Is the job in a high-rise building? Are sound controls necessary?
 - Is the home being remodeled? Will the customer's family be at home while you work around them? Who is responsible for moving furniture and appliances?
 - Once you know the parameters and the physical nature of the place, ask for more details: Will the floor be over concrete? Over radiant heat? Over a crawl space? What is the condition of the subfloor?
- These questions may come off initially as dull to the customer, but they're necessary as the job's logistics formulate in your mind.

But now come the more exciting questions — the ones the customer's been waiting for.

EDUCATE THE CUSTOMER

Customer expectations

Before you go any further, however, make sure your customer's expectations are in line with what your wood flooring installation can deliver. Keep the following points in mind:

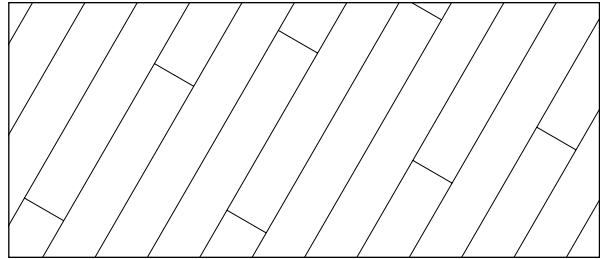
- Do not oversell the job.
- Explain the natural beauty and characteristics of hardwood flooring and that each piece is unique.
- It's easier to explain wood flooring's characteristics — expansion and contraction, and color and grain variations, for example — before you start the job than at the end when you are trying to collect your payment.
- Provide samples with the stain color and finish you will be using.
- Discuss the use of the room — pets, children and parties, for example — and the ultimate effect of that use on the floor.
- Discuss proper maintenance procedures with the customer. Talk about scratching, fading and ambering.
- Do not underestimate your customers' needs and expectations. Make sure of your ability to satisfy those needs and expectations before starting. Educate your customer as to reasonable expectations for hardwood flooring.
- Tell the customer about the need for environmental controls during installation, acclimation and finishing, as well as during the lifetime of the floor.

The product presentation: Which floor?

If you sense that the customer's flooring choice is not going to work, then you need to explain why and offer an alternative. This is where your knowledge of the available products and their application comes into play. The customer knows he or she wants wood flooring. You, the contractor, know wood flooring. It's up to you to walk the customer through the hundreds of choices at his or her feet. The more educated you appear, the more confidence you will instill in your customer. Take the time to educate yourself on the multitude of choices available and your sales potential will increase.

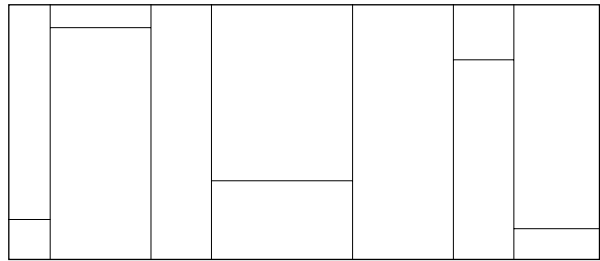
Pattern

The floor's pattern is the initial consideration. The options: Strip (usually in the standard 2 $\frac{1}{4}$ -inch width); plank (usually between 3- and 7-inches); and parquet, which presents an endless choice of geometric designs.



Standard 2 $\frac{1}{4}$ -inch strip, laid diagonally

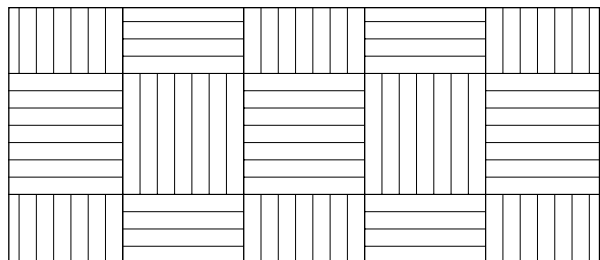
Many floors use the strip product, but many other customers opt for plank or parquet for particular reasons. If plank is chosen, the next question needs to be: Does the customer want square-edges or V-joints (bevels) on the face? There are differences and



Random-width plank

advantages that the customer needs to be told. For example, square-edged flooring in, say, the kitchen makes for easier cleaning. However, wider square-edged planks may show cupping. Thus, in certain environments, it's best to go with beveled edges with wider planks.

With parquet, the customer needs to understand



Block parquet pattern

how the scale of the pattern relates to the installation area. Parquet patterns can make a room feel grand and formal, but too many repeats of the pattern may make the room seem too busy. When the customer is considering a particular parquet pattern, let the customer take his or her time! You should show a picture of how the pattern works as it repeats itself throughout the room.

Another option: Might the customer want to customize the installation with a border or medallion or other decorative inset in the center of the room?

Species

Now comes the species choice. Does the customer want to go with a domestic wood or an “exotic” — that is, an imported wood? If the customer wants oak — which constitutes more than 80 percent of wood flooring in America these days — then it’s largely a matter of red oak or white oak. Make sure your customer sees the difference between the two.

If the customer wants a species other than oak, then it’s time to look at four factors — a wood’s appearance, cost, hardness and stability. All the better if you can show samples of various woods as you talk about them. If the customer wants some time to consider the species options, you might want to give him or her a copy of *Wood Species Used In Wood Flooring*, one of the technical publications in this series. The look and properties of some 22 different woods, both domestic and exotic, are detailed in a customer-friendly form there.

[For information on how to obtain copies of *Wood Species Used In Wood Flooring (A200)*, contact the National Wood Flooring Association at the address or phone numbers listed on the back page of this publication.]

Cost may be the biggest consideration for the customer — very few woods are less expensive than oak. But if the circumstances suggest, it may be smart to point out qualities of hardness — high-traffic areas may not be suitable for softer wood species. Or, you might talk about stability if you’re working in a region where seasonal humidity swings could cause movement in the floors. Some species are more dimensionally stable than others and therefore less susceptible to movement as a result of humidity changes.

Grade

Third, after the pattern and species are chosen, talk about the wood’s grade. If you’re going with oak, explain NOFMA’s four grades for unfinished oak — clear, select, No. 1 common and No. 2 common — or three grades for prefinished oak — prime, standard and tavern. If you’re going with maple, explain the maple grades — 1st, 2nd and 3rd — used by NOFMA and the Maple Flooring Manufacturers Association.

There are grades for most other species, as well, and many manufacturers of flooring also have proprietary grade names.

Show samples, and point out the differences in the appearance and allowance for natural characteristics in the flooring. Does the customer want a clean, “pure” floor? Or does he or she want a knottier, “busier” floor that creates a rustic look? The grade that the customer ultimately chooses will make a difference in the price. By explaining the industry’s grading standards in advance, you are establishing a realistic expectation in your customer.

Cut

Once the grade is decided, it’s time to choose the wood’s cut — or its grain pattern. Plainsawn, quarter-sawn or riftsawn? Plainsawn wood is the most typical and least expensive. It’s also probably what the customer is most familiar with. Quartersawn and rift-sawn flooring are often found in older homes. They are rarer and, accordingly, more expensive. They tend to be more dimensionally stable than plainsawn.

Again, just like the grade, the customer’s decision in his or her flooring’s cut will reflect a difference in the job’s cost and what it will end up looking like.

Layout

Here is one of the most dramatic decisions a customer can make. A conventional layout — wall-to-wall — is the simplest way to cover a floor, and the most traditional. For a more decorative look, the customer can choose a framed layout — two, three or four boards wide, depending on the size of the room. This can get intricate: How will the corners meet? As mitered joints or lapped, as in a log-cabin? Also, a diagonal layout may be appropriate for some rooms.

As we discussed in the Pattern section, will you be using special in-lays in the corner, or perhaps around the edge of the fireplace? Can a feature strip in a contrasting species be carried around the whole room? Consider a medallion or other artistic touch for a focal point?

Engineered/laminated or solid

Is the installation below grade? Humidity or moisture may be a problem. Is the floor height matching to other floor coverings critical? Is the installation over wood joists or over a concrete slab? These variables will dictate which product is best for your customer — engineered/laminated or solid.

Prefinished or unfinished

Which is more important to the customer — speed of job completion or multiple options? The customer can have a prefinished floor more quickly and with less disruption. Or, with unfinished flooring, he or she can have more choices in terms of species and colors.

Follow up

It will take time for the customer to consider all these options. But by the time he or she decides, you’re closer to the sale. While the customer is thinking, “What will my floor look like?” you need to be thinking, “How will I best handle all the job’s logistics, in order to give the customer the floor he or she wants?”

All these customer choices will figure into your selling price. But don’t jump to that just yet, because there’s still so much more to be learned about the job.

ESTIMATING THE JOB

Providing an estimate for a job — How much should I charge? — is both subjective (that's the sales part) and objective (the mechanics of gathering information and churning out a number). You want to deliver an estimate that gets you both a signed contract and a job that turns a profit.

Let's look at the subjective part of estimating first. Once the customer has clarified what kind of floor he or she wants, the next step is working up a bid. Concerned that the customer might ask another contractor to bid the same job, once you've walked him or her through the process of sensible choices? Here's where professionalism plays a big role: Generally, the contractor **who listens to the customer** and then gets the bid to him or her in a timely fashion, with a valuation of service included, will have the edge over the competition.

The objective aspect of estimating a job encompasses following a checklist, being aware of the conditions of the jobsite that will affect your work and the performance of the wood.

The paper trail begins

How much time do you spend on an estimate? What you'll be giving the customer is a charge for the work you'll do, as outlined in the bid. Accordingly, spend just enough time to interact with the customer, gather your information and get the bid out. Then it's either time to sign the contract and start the job, or else move on to the next bid.

Some more questions you will need to ask up front:

- Who is the job billed to? The address and phone number?
- Who is the legal owner of the property?
- What is the jobsite mailing address, zip code and telephone number?

These answers should come easily from your initial conversation. Should you get the job, they will prove important for the following reasons: If you are not working directly for the owner, you will need this information to file a preliminary notice to protect your lien rights. You also may have to tell another person how to get there (a supplier or another worker, for example). You may have to call the jobsite someday, and you will have all the information in front of you when you pull out the job ticket.

You don't need to spend all day at the potential jobsite initially; just long enough to scout the site and learn about any unusual characteristics. Write the specs and information as you go. Once you leave, it is costly to go back if you forgot to ask about something. Even worse — and not at all to your benefit — is having to guess at what you saw at the site. A wrong guess can be costly.

Checking for moisture - inside and out

Before flooring can be installed, the new construction or renovation project must be very close to completion. All excessive building moisture must be eliminated. A more detailed discussion of how moisture affects wood flooring is contained in the *Water and Wood* technical publication in this series.

[For information on how to obtain copies of *Water and Wood* (A100), contact the National Wood Flooring Association at the address or phone numbers listed on the back page of this publication.]

Ensuring that moisture conditions are met means the building must be roofed, walled and windowed, and the heating and air conditioning units should be operating. Ideally, a flooring installation should proceed only after the interior atmospheric conditions are established at normal living conditions.

Here is a visual checklist for clues for potential sources of moisture:

- On new construction, check blueprints for landscape details.
- Check the eave overhang on the building. Is all rain water funnelled away from the foundation?
- Check the gutters and downspouts. Is all rain water properly diverted away from the foundation? During a rain, the depressions below the spouts can fill with water that will eventually find its way indoors.
- Are there raised flower beds or planter boxes adjoining the building's foundation? If so, a special moisture membrane should be installed. Are landscape sprinklers directed away from the house?
- Is there an outdoor pool or body of water elevated above the home's foundation that could overflow or leak into the home's foundation?
- In a crawl space, the square footage of the perimeter vents through the foundation should be equal to 1.5 percent of the square foot area within the crawl space? Vents must be open to allow proper cross ventilation?
- Is the soil within the crawl space properly covered with 6- to 8-millimeter black polyfilm moisture barrier?
- Do outside doors and windows appear to be properly caulked and weatherproofed?
- Is the concrete slab's moisture level suitable for installation? Conduct a moisture test before installation. (Refer to *Water and Wood* for a more detailed discussion.)
- Is there a 6-mil polyfilm moisture barrier or equal beneath the slab?
- Are all major appliances and systems properly vented to release warm, moist air? Visually

inspect plumbing in the area where the floor is to be installed.

- Is there a sense of damp, moist or stagnant air when entering the home? If so, the situation must be corrected. Are the heating and air conditioning operational? Temperatures of the subfloor, adhesives and flooring should be over 60 degrees Fahrenheit during installation. Check manufacturers' recommendations.

Remember: Always write down all your answers.

Evaluating the exterior

Your check for moisture involves many exterior conditions. Here are some more:

- What is the lot's relationship to the street, to the neighboring site, to a nearby hillside, to a nearby pool?
- How is the landscaping? Is there or will there be a sprinkler or irrigation system? Is there no yard, a new yard or an established yard?
- Is the site properly graded to divert water away from the foundation?
- Does the driveway slope away from the house?
- Are the roof, windows and doors all in place and weather-stripped?

Evaluating the interior

You're still not ready to take out the first tool — far from it, in fact. Once indoors, take a look around:

- Are both the heating and air conditioning systems in place and working? The intent is to install the flooring as close to normal living conditions as possible.
- What type of heating? Radiant, baseboard, radiator, forced air (electric or gas)?
- Is the heating system equipped with a humidifier?
- What is the moisture content of the subfloor and what is the relative humidity of the jobsite?
- What is the condition of the subfloor? Is it over wood joists or slab? If it's over wood joists, what is the thickness of the subfloor? Is the subfloor approved for wood-flooring application?
- Is the subfloor clean? Dry? Flat? Sound?
- How old is the concrete slab? In a new building, it must be at least 30 days old before you can consider moisture testing.
- How much further preparation will you need to do? Will you have to remove the old flooring, flatten, patch, sand, renail it, or replace or install the subfloor?
- Is asbestos or lead abatement necessary?

The bottom line when evaluating the interior's readiness for an installation: Any sense of a damp, cold and "clammy" feeling structure is an indication of future problems for wood floors.

The NWFA Jobsite Checklist

The NWFA offers the Jobsite Checklist, an example of which is included in this publication. (See page 12.) It lists an array of points that should be addressed. The NWFA has printed copies of the form available for purchase in bulk. For more information on ordering the forms, contact NWFA at the address or phone numbers listed on the back page of this publication.

Making notes

When you arrive at the jobsite, begin the paperwork process by making notes.

- What is the driving time to the site?
- On a commercial job, how is the parking? Will you have to pay \$20 per day in an office complex? If you park on the street, will you need coins for the meter throughout the day?
- How is the access for delivery of materials and equipment? (You will want to know beforehand if you have to carry a sanding machine up 50 steps!).
- If the jobsite is in a commercial or high-rise building, where is the loading dock?
- How big are the elevators for loading materials? Are they tall enough for your needs? When are they accessible?
- If installation is in a multifamily dwelling, what hours are available for construction work?
- Is there power? (Where do you hook into for 220 volts? Do you need a booster?) Does an electrician have to hook you up for power from the main source? If so, have a pigtail delivered a day in advance, so you do not have to lose time.
- How will trash removal be handled?

We suggest you write everything down at this point, highlighting those items that strike you as abnormal or that may incur additional costs.

Crunching numbers

Now that you've gathered the facts, it's time to formulate your bid. If the job is a straightforward installation or sanding and refinishing, you can probably write the bid on the spot, according to your usual charges for that segment of work. If the job is more complicated, tell the customer you will work up an estimate and get back to him or her right away. Don't forget to leave behind your business card, and follow up when you told the customer you would.

But how? It's impossible for this publication to merely say a job of so much square footage should bring one amount; a more elaborate job demands a higher price. It's impossible because the going price for hardwood flooring installations and remodeling work varies greatly from one city to the next.

Some contractors who have been in the business for several years, and have costed hundreds of jobs,

develop unit pricing for each function — installation, sanding and finishing. On a normal job, they plug in the unit price to the square footage and arrive at a selling price.

Other contractors figure the selling price by calculating the number of man hours and cost of materials involved, and then multiplying that direct cost by overhead and profit to develop a selling price. “Overhead” can involve a variety of factors, including payments on your trucks and equipment, as well as rent and utilities. You must be aware of what your true overhead costs are. The information can be developed from your records by your accountant. The *NWFA Profit Planning Report* provides material to help you in this area. [For more information, contact NWFA at the address or phone numbers listed on the back page of this publication.]

Write your bid so that your customer can understand exactly what you are offering, and at what price you are offering it. **Make sure you have communicated the bid clearly**, so that you and your customer are both “on the same mental page.” Before you even present the bid, review its details — and only then engage in your final selling conversation with the customer. If the materials are a special-order item, write in the lead time from the date of the signed contract, rather than the date of the bid. Also specify whether a deposit is required.

A critical point in estimating jobs: Get the bid out on time! Do it while the details are fresh in your mind. Once the job is let, it doesn't matter how long you have spent working up your bid — you have missed the opportunity and the job has gone to another contractor. You have probably also lost a chance to bid again with this customer, since he or she may perceive you as slow, unresponsive and unprofessional.

Bidding for commercial work

In commercial and institutional estimating, the general contractor or owner will send a set of plans and a specification book. The specifications book will tell you what product is to be used and how it is to be installed and/or finished. Any conflict between specifications and manufacturers' recommendations should be clarified in writing.

The plans will show you what rooms the floor goes into, as well as the room sizes. Plans will also have details showing special conditions or how the wood flooring interacts with other surfaces.

A basic knowledge of blueprint reading is essential. If you have questions, call the general contractor or send a written request for information.

Formulate your estimate as clearly and concisely as possible. Make sure you can understand your mathematical progression. The potential buyer may want to add or delete an item at a later time, and it is easier to get back into the bid if it is clear and logical. Clearly detail any substitutions in materials or

installation that you will make. Try this test: Can someone else at your company read your take-off and estimate, and understand what you are doing, as well as how you arrived at the selling price?

Scheduling the job

Once you know when you will have an individual or crew available to perform the work, and when the materials will be available for delivery, call your customer and negotiate a schedule. The issues are:

- When are you ready?
- When is the customer ready?
- When is the jobsite ready?
- When are the other trades affecting your work completed?

Remember, you signed the contract. Now is the time you must act as a competent wood flooring contractor and a good businessperson.

Outline a schedule that allows for proper acclimation time (if necessary) before and after installation. Figure, too, that something is going to go wrong or slow you down — a sick worker, a broken tool, your other jobs and schedule, etc. You need the time to do the job right, and give him or her quality work.

If your job is completed ahead of schedule, you will be considered a hero. But if your job is behind schedule, you'll likely never get a call again from that customer — and you'll certainly never get any referrals from him or her.

If your customer demands that you start or accelerate work that you know is not ready, explain carefully the dangers of a rushed job. Share with him or her the *Water and Wood (A100)* technical publication, which explains the perils that may lie ahead. Also, review the NWFA Waiver Form with your customer. Make sure he or she understands why the waiver applies, and have him or her sign it. With any waiver form you ask a customer to sign, make sure the specific consequences of proceeding are detailed in the waiver.

Present this form and the facts to the customer as his or her friend, not as the enemy. Let the customer know that you want to speed up the schedule, too, but it is not physically within your power to speed up jobsite conditions or acclimation period. Therefore, you will do the work — if the customer still wants you to do it — but only after he or she waives your liability for the consequences that are not within your control.

You'll need to know if there are other trades that are going to affect your ability to work in your area. You cannot expect to lay a floor or sand and finish one if others are walking all over and through the room, have scaffolding on it or are spraying toxic vapors nearby. Nor can you have dust from other trades floating around when you are putting on your finish.

PREPARING TO DO THE JOB

Now that the schedule is set, you are ready to do the job. But there are still more checklists to mind: Preparation of the home or building's exterior, preparation of its interior and acclimation of your materials.

The work ticket

Use the estimate sheet you prepared for the job to write up a work ticket, even if you are doing the work yourself. Why a work ticket? It helps you focus, prepare and work through the job both in your mind and on paper.

First, pull out your estimate and evaluate the information you observed.

Keep in mind that time constraints could necessitate delivery of material by special freight — and this will obviously cost more.

Write down your room sizes so that someone else can identify the room. A layout is also useful. Show total footage of the job, and the quantity and type of materials ordered. This information will be necessary to check in your delivery from a supplier.

Write down how you want the job installed and/or finished. List all sundry items necessary — finishes, nails and mouldings. A review of the work ticket will help you catch something you may have forgotten.

Once you have detailed the scope and method of installation and finishing in the work ticket, you can order all the materials necessary to complete this job.

A few minutes spent now will save labor, money and goodwill at the jobsite. There is nothing worse than having the crew tell the customer they cannot do the work because they did not bring the right equipment or material.

Actual jobsite preparation

There are still dozens of little tasks that make a jobsite wood-worthy. They include, if applicable:

- Removing furniture and appliances, if necessary;
- Checking the moisture content of the subfloor — again — and recording it on the work ticket;
- Taking up the old flooring and disposing of it properly;
- Taking up the subfloor;
- Grinding and sanding the slab to flat acceptability, if necessary;
- Repairing the subfloor by re-nailing or shimming the subfloor or reinforcing the joists;
- Flattening the subfloor by sanding or using recommended patching compounds;
- Adding an underlayment to the existing subfloor, (installing plywood over a slab, for example);
- Getting rid of all waste materials produced, so the new floor can start with a clean appearance;
- Removing all baseboards, trim, moulding and thresholds;
- Removing the doors;
- Measuring and undercutting to allow for expansion around fireplaces, stair skirts, casings, door

In most new construction projects, moisture is introduced into the structure during the construction process. Examples of this are:



Concrete foundations one cubic foot = 3 pints of water per cubic foot



Concrete slab 4" thick, size 25' x 40' (1000 sq. ft.) = 250 gallons of water or a quart per square foot



Plaster walls = 1 quart of water per square foot of surface



Wall texture (heavy) = 8 ounces of water per square foot (16 square foot per gallon)

- jamb, etc.;
- Measuring the room for squareness, to lay out your work line;
- Sweeping or vacuuming to once more present a clean workplace.

It's now time to make sure that everything in your estimate has been addressed and repaired. It's also now time to get to work.

Wood at the jobsite

Even before wood is delivered to the jobsite, the jobsite itself must be checked to see if it is ready for the delivery of the wood. Wood should stay separate of the jobsite if the jobsite conditions are too moisture-ridden. Otherwise, the wood will be affected by the moisture and react adversely.

Once at the jobsite, follow the manufacturer's recommendations for acclimation. Moisture contents of both the flooring and the subfloor must be checked and recorded before any work begins.

If flooring is delivered on a damp day, the exposed boards and the ends of others in the bundles can absorb moisture. If installed in this condition, the flooring can shrink a few months later and show gaps. Also, wood flooring should not be delivered to the jobsite until the building is fully enclosed, and after plastering and painting are completed and dried.

It is more prudent to accept a delay in completion rather than to have the floor installed while the walls are still damp, thus risking unsatisfactory results. Moisture evaporates from damp walls into the air within the house, and some of it may be absorbed by the flooring.

Acclimation

Another condition that causes flooring to pick up moisture during construction is less obvious, but more common: Between the time the floor is installed and the house occupied, the general temperatures within the house both day and night are likely to be lower, and the humidity higher, than they would be if the house were occupied. By having the heating and air conditioning operating, the flooring can acclimate to its anticipated environment. It's recommended that the heating system is operating for at least 48 hours even before the delivery of the flooring to stabilize the moisture conditions of the interior, and remain operating for the lifetime of the floor.

Only after wood has acclimated to the jobsite is the installer ready to install — and only after getting satisfactory measurements from the concrete slab, the subfloor and the wood itself. When installation of unfinished wood flooring is completed, good practice calls for a delay of one to three weeks for further acclimation before beginning the sanding and finishing part of the job.

Now you're ready to start

Now you're ready to start installation. Follow the manufacturer's specifications and NOFMA and NWFA guidelines, ensuring the best job possible. If you stick to your game plan, do good work and finish on time and on budget, then you will have a satisfied customer. That customer will pay you, and then refer you to friends and associates.

Moreover, you and your workers will enjoy the sense of accomplishment associated with a job well-done. And that is one of the biggest rewards of our business.

WOOD FLOORING HAS A COMFORT LEVEL, TOO

Wood flooring will perform best when the interior environment is controlled to stay within a relative humidity range of 30 to 50 percent and a temperature range 60 to 80 degrees Fahrenheit. Fortunately, that's about the same comfort range most humans enjoy. The chart below indicates the moisture content wood will likely have at any given combination of temperature and humidity. Note that equilibrium moisture contents in the recommended temperature/humidity range (shaded area) coincide with the 6 to 9 percent range within which most hardwood flooring is manufactured. Although some movement can be expected even between 6 and 9 percent, wood can expand and shrink dramatically outside that range.

MOISTURE CONTENT OF WOOD AT VARIOUS TEMPERATURES AND RELATIVE HUMIDITY READINGS

Temperature (°Fahrenheit)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	98
30	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
40	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
50	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
60	1.3	2.5	3.6	4.6	5.4	6.2	7.0	7.8	8.6	9.4	10.2	11.1	12.1	13.3	14.6	16.2	18.2	20.7	24.1	26.8
70	1.3	2.5	3.5	4.5	5.4	6.2	6.9	7.7	8.5	9.2	10.1	11.0	12.0	13.1	14.4	16.0	17.9	20.5	23.9	26.6
80	1.3	2.4	3.5	4.4	5.3	6.1	6.8	7.6	8.3	9.1	9.9	10.8	11.7	12.9	14.2	15.7	17.7	20.2	23.6	26.3
90	1.2	2.3	3.4	4.3	5.1	5.9	6.7	7.4	8.1	8.9	9.7	10.5	11.5	12.6	13.9	15.4	17.3	19.8	23.3	26.0
100	1.2	2.3	3.3	4.2	5.0	5.8	6.5	7.2	7.9	8.7	9.5	10.3	11.2	12.3	13.6	15.1	17.0	19.5	22.9	25.6

Chart taken from *Wood Handbook: Wood as an Engineering Material*, (Agriculture Handbook 72), Forest Products Laboratory, U.S. Department of Agriculture.

JOBSITE CHECKLIST

I. GENERAL INFORMATION

Owner's Name _____ Date _____
 Address _____
 Home phone _____
 Husband's work phone _____ Wife's work phone _____
 Cellular/car phone _____ Pager _____
 Jobsite address _____
 Jobsite visit appointment date _____ Time _____

II. TYPE OF JOB

Residential _____ Commercial _____
 New _____ Remodel _____

III. RESIDENTIAL USE INFORMATION

Traffic High _____ Average _____ Low _____
 Any special or unique use _____
 Project rooms/areas _____
 Project budget _____

IV. COMMERCIAL USE INFORMATION

Retail store _____ Restaurant _____ Office _____
 Bar _____ Other _____
 Traffic High _____ Average _____ Low _____
 High-rise Yes _____ No _____
 Freight elevator Yes _____ No _____
 Passenger elevator Yes _____ No _____
 Hours of access _____
 Power access _____
 Maintenance _____
 Maintenance company _____
 Phone _____
 Proximity of parking _____
 Cost of parking _____

V. INTERIOR

Relative humidity in air-space:
 Hygrometer ___% Sling psychrometer ___%
 HVAC units operable Yes _____ No _____
 If no, date to be operating _____
 Type of heat:
 Radiant _____ Baseboard _____ Radiator _____
 Forced air _____ Electric _____ Gas _____
 Wood-burning stove Heat ducts _____
 Overhead _____ Under floor _____

Insulated Yes _____ No _____

Humidity controls Yes _____ No _____

Thermostat setting
 First unit _____ F Second unit _____ F

Air conditioning Yes _____ No _____

Large window/sliding glass doors facing:
 East _____ South _____ West _____

Drapes Yes _____ No _____

Tinted glass Yes _____ No _____

Double-glazed/
 storm windows Yes _____ No _____

KITCHEN:

Instant hot water Yes _____ No _____

Refrigerator Yes _____ No _____

Icemaker Yes _____ No _____

Food freezer Yes _____ No _____

Dishwasher Yes _____ No _____

Other _____

MUD ROOM/LAUNDRY ROOM:

Clothes dryer
 vented outside Yes _____ No _____

Plumbing leaks _____

Ceiling stains _____

BATHROOM:

Bathroom exhaust Yes _____ No _____

Heated exhaust Yes _____ No _____

BASEMENT

Walls cracked Yes _____ No _____

Paint peeling Yes _____ No _____

Floor stained Yes _____ No _____

Damp Yes _____ No _____

Vented Yes _____ No _____

Rusty nails Yes _____ No _____

Sump pump Yes _____ No _____
 Condensation on cold-water lines Yes _____ No _____
 Musty smell Yes _____ No _____
 Heated Yes _____ No _____
 Air-conditioned Yes _____ No _____

Relative humidity in air-space:
 Hygrometer ___% Sling psychrometer ___%

VI. EXTERIOR

Building is over
 Basement ___ Crawl space ___ Slab ___

Relation of lot to street
 Above ___ Level ___ Below ___

Lot cut and fill Yes _____ No _____

Relation of lot to neighbor
 Above ___ Level ___ Below ___

Lot drainage away from foundation
 Yes _____ No _____

Shaded lot Yes _____ No _____

Gutters/downspouts Yes _____ No _____

Directed away Yes _____ No _____

Roof overhang Yes _____ No _____

Foundation perimeter:

Waterproof Yes _____ No _____

Soil damp Yes _____ No _____

Window wells-dry Yes _____ No _____

Planterbox Yes _____ No _____

Shrubs/flowers Yes _____ No _____

Comments _____

Yard established Yes _____ No _____

Recent Yes _____ No _____

Sprinklers/irrigation Yes _____ No _____

Excess watering Yes _____ No _____

Entry is:
 Step up ___ Level ___ Down ___

Swimming pool Yes _____ No _____
 In-ground ___ Above-ground ___

Distance from pool to foundation _____ feet

Drains in pool deck and/or patio Yes _____ No _____

Is street curb drain active Yes _____ No _____

CRAWL SPACE:

Distance from soil to subfloor _____

Condensation Yes _____ No _____

Musty smell Yes _____ No _____

Concrete slab Yes _____ No _____

Moisture barrier beneath concrete Yes _____ No _____

Dirt floor Yes _____ No _____

6- or 8-mil black poly cover over dirt Yes _____ No _____

15sf open vent per 1,000sf floor area Yes _____ No _____

Vents open Yes _____ No _____

Cross-ventilation Yes _____ No _____

VII. SUBFLOOR INFORMATION

(Reference NWFA Installation Guidelines, Section 2, Chapters 2-7 for approved subfloor.)

Existing wood type:

3/4-inch CDX plywood _____
 5/8-inch CDX plywood _____
 23/32-inch OSB underlayment grade _____
 Solid board _____
 Other _____

Renail Yes _____ No _____

Sand Yes _____ No _____

Damage Yes _____ No _____

Pet stains Yes _____ No _____

Rot Yes _____ No _____

Other subfloor repair _____

Average moisture content in flooring _____%

Average moisture content in subfloor _____%

Average moisture content in sleepers _____%

Average moisture content in joists _____%

In areas or seasons of extreme moisture conditions, check moisture content in:

Adjacent baseboard _____%
 Door trim _____%
 Wood threshold _____%

Paint/finish lines exposed Yes _____ No _____

Trim pieces dislodged Yes _____ No _____

SLAB:

Relate elevation of slab surface to exterior soil line +/- _____ inches

Slab tested for moisture before install
 Yes _____ No _____

What test _____

Results _____

New slab _____ Date poured _____

Existing slab _____ Age _____

Float/grind slab Yes _____ No _____

Install wood subfloor Yes _____ No _____

Moisture membrane Yes _____ No _____

VIII. FLOORING TYPES

Unfinished _____ Prefinished _____

Species _____

Size of flooring desired _____

Solid _____ Engineered _____ Floating floor _____

Strip _____ Plank _____ Parquet _____

INSTALLATION:

Glued _____ Stapled _____ Nailed _____

Stain color _____

Sealer _____

Finish _____

Number of coats _____

Trim and moldings _____

Special layout Yes _____ No _____

If yes, type _____

IX. SPECIAL REQUIREMENTS

NEW CONSTRUCTION:

Power 110 _____ 220 _____

Distance to pole _____

Booster Yes _____ No _____

Time schedule for installation _____

Other trades _____

Wet work completion _____

REMODEL:

Move furniture Yes _____ No _____

Special needs

Piano _____ Antiques _____ Appliances _____

Toilet _____ Other _____

(Note: Gas and water lines must be disconnected by customer or qualified personnel.)

Company responsible _____

Phone _____

Existing floor covering

Carpet _____ Sheet vinyl _____

Vinyl tile _____ Ceramic tile _____

Wood _____ Other _____

Do existing wall moldings

need to be removed Yes _____ No _____

Does the existing floor covering need

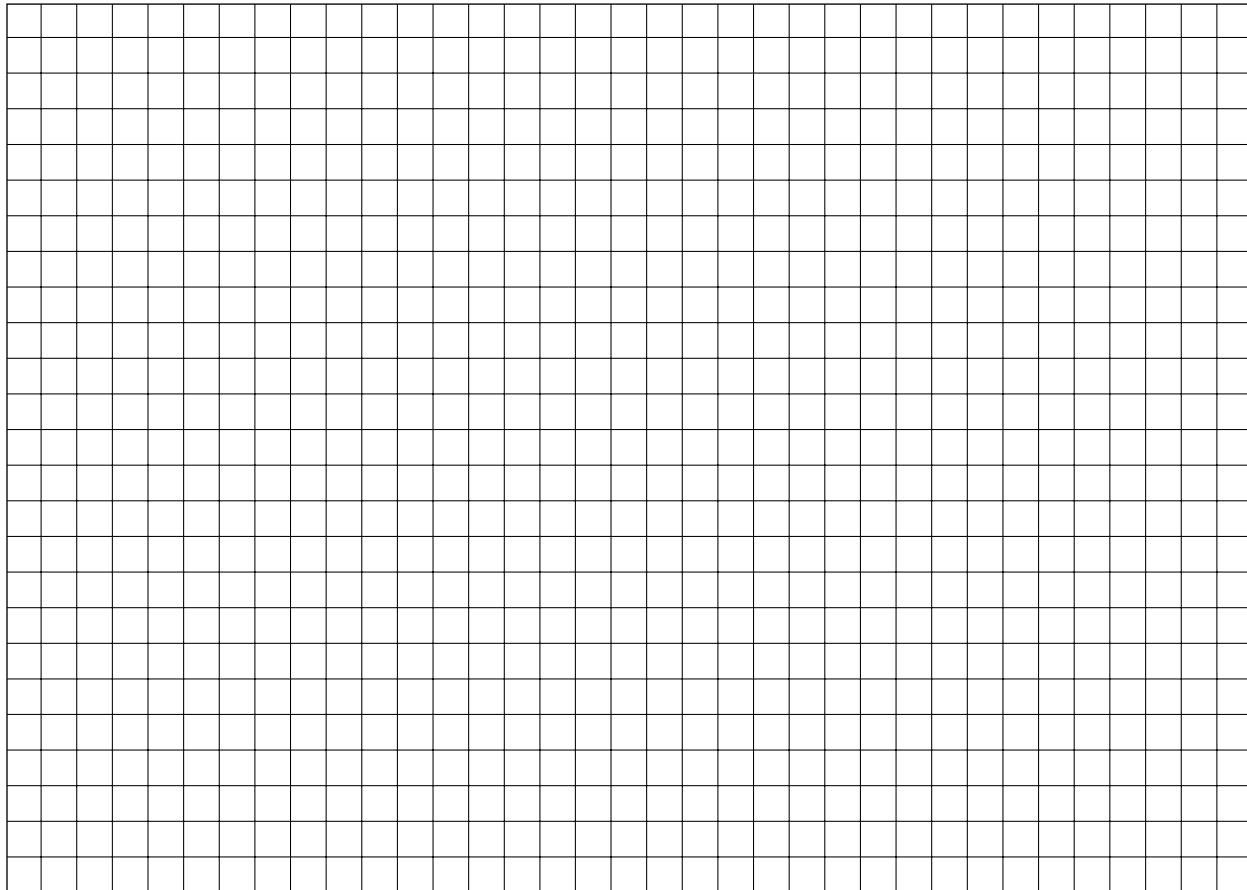
to be removed Yes _____ No _____

Note: If it appears that floor covering could contain asbestos, check with the dealer/contractor company for proper abatement procedures.

Who is responsible for removal of existing floor covering? _____

Who is responsible for trash disposal? _____

Use graph paper like that below to sketch the dimensions of the installation to scale.



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SOURCES AND CREDITS

NWFA TECHNICAL AND EDUCATION COMMITTEE

- John Hoopes, 3M Company, committee chair
- Coley Armstrong, Basic Coatings
- Joe Audino, Rode Brothers Floors
- Don Bollinger, Wood Floor Products
- Daniel Boone, National Wood Flooring Association
- Jeff Buysse, Minuteman International
- Chris Coates, Golden State Flooring
- Don Conner, Harris-Tarkett Inc.
- Tom Conser, The Roane Company
- Bill Costello, Dura Seal

- Tom Derleth, Indiana Hardwood Specialists
- Galen Fitzel, 3M Company
- Jim Garth, Dynamic Laser Applications
- John Goss, Woodwise/Design Hardwood Products
- Kevin Hacke, Maple Flooring Manufacturers' Association
- Woody Hilscher, BonaKemi USA
- Tim McCool, Dri-Tac Adhesives Group
- Mickey Moore, National Oak Flooring Manufacturers' Association
- Neil Moss, Robbins Hardwood Flooring
- Brian Roberts, Franklin International
- Bob Vanderlinden, Bruce Hardwood Floors