Best Practices

KENTWOOD®

INTRODUCTION

At Metropolitan, we manufacture our flooring products with an obsessive attention to detail and quality, with full-time Quality Assurance and Quality Control oversight throughout the manufacturing process to ensure we are meeting our commitments to environmental compliance, product performance and sustainability.

Our company has over 30 years of hands-on experience in product development, service support and project management. In that time, we have had the opportunity to participate in thousands of successful projects, from single-family residential developments to prestigious condominium towers.

We have also witnessed some completely preventable installation failures that could have been avoided with proper adherence to standard industry practices.

> The purpose of this document is to share some of the experience and expertise we have gained over the years to help you and your team deliver a successful installation and to avoid some of the common, costly problems we have seen in the past.

The fiscal responsibility and legal liability for the installation ultimately lie with the contractor; following our best practices will provide a very solid measure of protection against the most common problems.

Our objective, ultimately, is to set up you, your customer and ourselves for success.

Please have your team review this document and contact us with any questions. Throughout this document, you will see reference to more in-depth technical information available on our website at **metrofloors.com**. We also recommend that you also review the installation standards outlined by the National Wood Flooring Association (nwfa.org) and the (Canadian) National Floor Covering Association (nfca.ca). And, of course, our Technical Services team are always at your service to provide advice, information and support at **techserv@metrofloors.com**.

We look forward to working with you.

METROPOLITAN

SINCE 1992

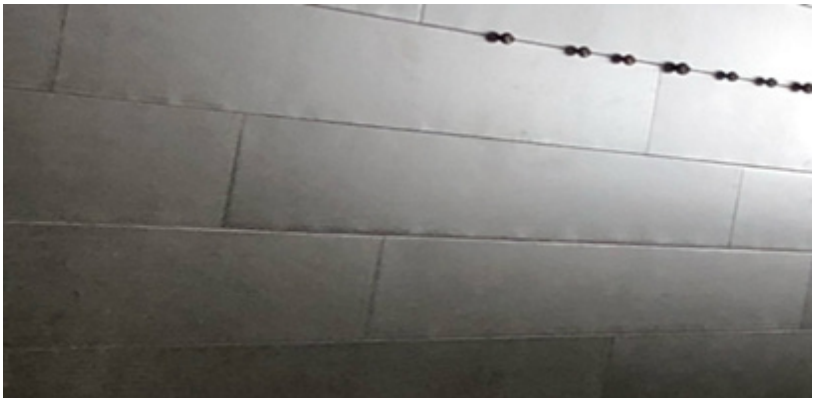
THE FLOOR FACTOR

As a flooring manufacturer, we're naturally preoccupied with that aspect of any building project. But the fact is that a flooring failure is one of the most costly problems to correct, especially if it happens post-occupancy. In a multi-family project, failures often effect multiple units, increasing the cost and inconvenience for all. It is in everyone's interest to ensure a successful installation and to work proactively to prevent common problems.

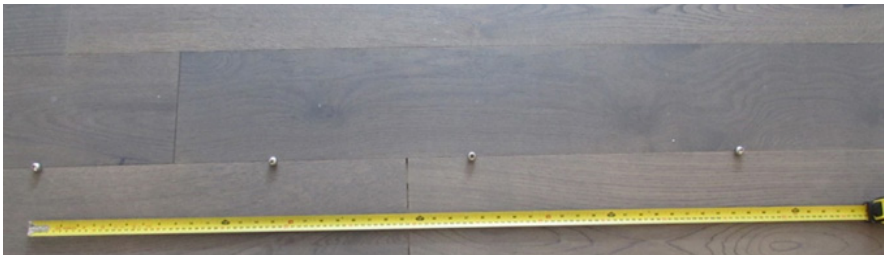
Common causes of installation failures or disappointed clients.

Floating floor has buckled and lifted
Cause: Flooring installed with improper expansion space and/or relative humidity levels

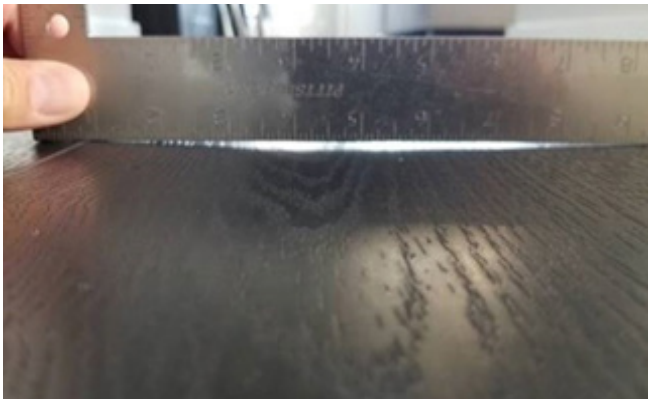
Floating floor has buckled and lifted
Cause: Floating floor installed under cabinetry



Visible bumps on surface of flooring
Cause: Incorrect cleats and nailer settings for the style of flooring being installed

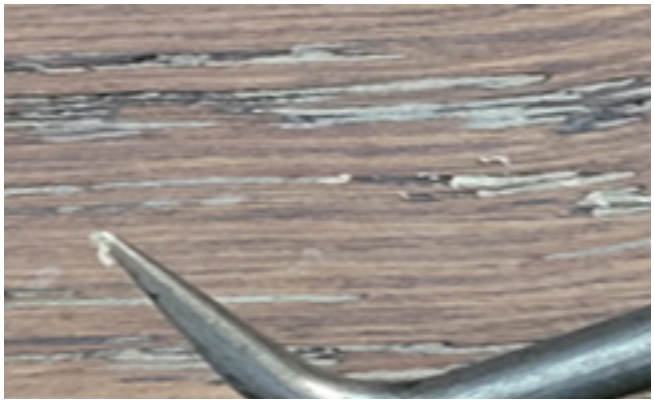


Floor moves and makes noise when walked on
Cause: Incorrect nailing schedule; boards are not sufficiently fastened to subfloor



Dry cupping (boards deform and lift at edges)
Cause: Improper humidity levels

Scratches and chips in floor surface
Cause: Trade damage



Drywall dust embedded in brushed surface
Cause: Poor scheduling of work and/or lack of adequate floor protection

Water damage; boards swollen and deformed from exposure to moisture
Cause: Wet mopping

MOST COMMON REASONS FOR FLOORING FAILURE

- Improperly stored materials
- Excess moisture in the subfloor
- Subfloor flatness not to specification
- Failure to follow recommended installation procedures
- Inadequate acoustic assembly performance
- Trade damage after installation
- Improper heat and humidity levels (during and post-installation)

> As ***National Wood Flooring Association (NWFA)*** accredited Flooring Inspectors, our Technical Services team has been called to inspect many job sites with flooring problems. In virtually all cases, the problems resulted from poor or improper installation practices, not faulty products, and required remediation at the contractor's expense.

In the following pages, we'll provide information and best practices on how to avoid these common pitfalls, along with recommendations to help ensure a successful project.

It is very important to thoroughly read through and understand the installation instructions for the product you are installing. If you have any questions please don't hesitate to ask our Technical Services team; we are there to help. Email them at **techserv@metrofloors.com**.

PRE-INSTALLATION

Some important information should be collected during the preparation of the bid as it may significantly affect your choice of materials and their cost. The following are some key points to consider:

PRODUCT SELECTION

When selecting the actual flooring product, there are several factors that should be considered in addition to visual appearance and usage patterns.

Hardwood flooring – i.e., all Kentwood products – and wood-based products like Evoke Laminate (and Surge®) will expand and contract with changes in humidity. Conditions for these products must be maintained with the temperature between 60-80°F (15-26°C) and the relative humidity at 30-50% before, during and at all times after the installation.

Vinyl flooring will expand and contract with temperature changes. For Evoke Rigid Core Vinyl, conditions must be maintained between 60-80°F (15-26°C); for Evoke Luxury Vinyl temperature must be maintained between 65-85°F (18-29°C) before, during and after the installation.

Please consider these requirements when selecting the product for your project.

ACOUSTICS

In recent years noise pollution has become a growing concern as more and more people live in multi-family buildings. The trend toward hard surface flooring has also brought this topic to the forefront. Many new multi-family projects now routinely require floor assemblies to meet very specific – and often unrealistic – acoustic performance specifications. The flooring industry has responded by publishing unrealistic and often wildly inflated ratings on their products.

There is a significant liability in supplying acoustic materials that fail to perform to the published specification, as several lawsuits in the US have shown. If the project you are supplying does have an acoustic specification for the flooring assembly, we recommend you do some homework. Simply providing a low-cost underlay that boasts an unsubstantiated claim of a high rating is not an effective or responsible approach.

> When evaluating acoustic materials, ask for confirmation of the test used for claimed IIC ratings. Compare the tested installation against your plans and for added assurance, have your proposed flooring assembly reviewed by a qualified acoustic technician and approved by the developer.

Research your materials and find out not only what the published IIC rating is, but how it was obtained. Have your proposed flooring assembly reviewed and approved by a qualified acoustic technician. Metropolitan has a wealth of expertise in this area and can provide support and guidance in developing an effective acoustic solution. For more information, visit **www.metrofloors.com/acoustics101** or contact your Metropolitan representative.

INDOOR AIR QUALITY (IAQ)

Consumers are demanding products that support good indoor air quality and, as with acoustics, many multi-family projects will require products that meet certain performance specifications for VOC emissions. Of course all Kentwood floors are compliant with the US TSCA Title VI and Canadian CANFER formaldehyde emissions requirements, but we go further with full CA 01350 compliance for all floors, a standard utilized by LEED to identify low-emitting products. Furthermore, most Kentwood floors carry the GREENGUARD Gold certification, one of the strictest air quality standards in the world. Most adhesives and underlayments Metropolitan offers are also CA 01350 compliant. For more on Kentwood's IAQ program, visit **kentwoodfloors.com/iaq**, or consult your Metropolitan representative.

LEED

Leadership in Energy and Environmental Design (LEED) is a certification program originally developed by the U.S. Green Building Council (USGBC) which is now used worldwide. It considers the design, construction, operation, and maintenance of buildings, homes, and neighborhoods to help builders and occupants to be environmentally responsible and use resources efficiently.

To achieve LEED certification, a project earns points in credit categories that address carbon, energy, water, waste, transportation, materials, health and indoor environmental quality. Depending on the number of points achieved, the project will be certified Silver, Gold, or Platinum status.

Metropolitan can support LEED projects in a variety of ways, especially in the indoor environmental quality, low emitting materials credit categories. On a LEED project, the flooring contractor may be required to specify products (flooring, underlayment and adhesives) that are certified as low emitting. As noted above, virtually all of Metropolitan's products can contribute in this category and we encourage bundling materials for maximum impact. We may also be able to support other credit targets.

When bidding on a new project, it is essential to confirm if the plans include LEED certification as it may have a significant impact on what materials we will recommend for the job.

DELIVERY & ACCLIMATION

Site conditions vary from job to job and are seldom ideal for material storage. However, wood-based products are particularly susceptible to damage when exposed to excessive heat, humidity and moisture, so care must be taken to store the flooring in a suitable environment. Damp, unheated parkades and garages are not suitable storage areas. Any damage to the product resulting from improper storage is not covered by the product warranty.

Hardwood flooring should be stored in a dry, warm environment (temperature of 60 - 80°F / 15 - 26°C and humidity at 30-50%) with boxes cross-stacked for optimum ventilation and held on site for a minimum 24 hours prior to install. The installation instructions of the product may have more specific information; refer to them for guidance.

We recommend arranging a site meeting prior to materials delivery so that the site supervisor and flooring contractor can determine a suitable site for delivery and storage and thereby avoid a last-minute scramble to find a solution as the boxes are coming off the truck.

SUBFLOOR PREPARATION

Improperly constructed or prepared subfloors can result in many performance problems. Subfloor problems are also usually very costly to correct after the fact. The flooring contractor is responsible for ensuring that substrate construction and surface conditions meet or exceed the specifications laid out in the product installation instructions. The general guidelines are that all subfloors must be flat, clean, dry, structurally sound, free of squeaks and protruding fasteners. The subfloor must be flat to within 3/16" over 10 feet, or 1/8" in 6 feet radius.

We recommend arranging a site inspection with the site supervisor prior to installation. Inspect the construction and condition of the subfloor(s), including moisture content testing, to ensure they meet the required specifications. If they do not, the general contractor must correct the problems before the hardwood is installed. Remember, once installed, the responsibility for the performance of the floor falls with the flooring contractor.

Plywood or OSB subfloors should be constructed with the appropriate combination of panel thickness and truss/joist spacing to provide adequate support and minimize deflection. Subfloor moisture content must not exceed 12%.

Concrete subfloors must be fully cured (a minimum 30 days) and have been tested for moisture content to ensure they meet one of the following specifications:

ASTM F1869 (Calcium Chloride Test): moisture vapor emissions rate (MVER) should not exceed 3 lbs/ 1000 sq/ft per 24 hours.

ASTM F2170 (RH Probe Test): relative humidity within the slab should not exceed 75%.

> It is the responsibility of the General Contractor to pay for moisture testing; the installer is responsible for test verification and results, including jobsite documentation.

We recommend that your project bid specify both the material make-up of the substrate and the required flatness tolerances and moisture content levels to be met. This will provide some insurance should you be faced with a slab that doesn't meet the spec and requires costly levelling work prior to installation.

For complete information on required standards for substrate construction and surface preparation, including recommended methods for measuring surface flatness and moisture testing, refer to the installation instructions at **kentwoodfloors.com**.

INSTALLATION

PRODUCT INSPECTION & VISUAL APPEARANCE

Every sample of Kentwood flooring carries this disclaimer:

It is the responsibility of the installer and/or customer to ensure that the Kentwood product meets or exceeds their expectations for visual appearance and manufacturing quality. Because Kentwood floors are made from real wood, every piece of Kentwood flooring will have a unique appearance, often with naturally-occurring variations in color, texture and grain pattern. Showroom samples and photographic reproductions may not represent the full range of color, texture and grain variations and milling tolerances which can occur in the product itself. It is strongly recommended that, prior to commencing installation, the customer and installer open several boxes of product and loose lay the boards on the floor. Examine the product carefully to ensure that it meets the customer's expectations for appearance, color and visual character and quality before proceeding with the installation. If the visual appearance or manufacturing quality of the product is deemed unacceptable, it should not be installed. Flooring that has been installed will be deemed to have been inspected and accepted by the installer and customer, even if the customer is not present at the time of installation. Every piece of flooring should be inspected and if any piece does not meet expectations of quality, it should not be installed.

The notice also appears in all our installation instructions, product catalog and website. Nevertheless, it often goes unheeded and customers reject complete, finished jobs because they "don't like the way it looks".

Prior to installation, open several boxes of product and "rack out" the boards. Hardwood flooring will often have wide variations in color and visual character, so it is important to review several boxes of product. Observe the product from a standing position in good, direct light.

Have the customer or customer's representative (e.g., Site Supervisor) inspect the material and confirm that it meets or exceeds their expectations for visual appearance and manufacturing quality. If the material is unacceptable to them for any reason, it should not be installed.

As it says in the disclaimer above, 'Flooring that has been installed will be deemed to have been inspected and accepted by both the installer and customer, even if the customer is not present at the time of installation, so we highly recommend having your customer's approval before you commence the installation.

PRODUCTION DATE

Subject to project size and scope, Metropolitan's quality commitment includes supplying project material made in a single production run to ensure color, milling and gloss consistency. In the event we supply material from different production runs, we recommend coordinating production dates wherever possible to ensure visual continuity and minimize possible discrepancies in the finished installation.

RADIANT HEAT SYSTEMS

Prior to installation, ensure that the radiant heat system is in full working order and has been fully tested and running for a minimum of two weeks. The system should be turned off for 24 hours prior to installation in the install zone. After installation, the surface temperature of the floor never be allowed to exceed 82°F/28°C and changes in temperature should be calibrated in increments of 5°F/2°C per day to avoid 'shocking' the floor.

Where possible, we recommend the use of a data logger to monitor and record temperature and humidity conditions; this provides a record of the environmental conditions and may also help take preventive measures where conditions are outside of recommended levels.

INSTALLATION METHODS

Read and follow all manufacturers' materials installation instructions. If for some reason you intend to deviate from the instructions, you must obtain written permission in advance from your Metropolitan representative. As always, our Technical Services team is prepared to answer questions or provide support at any time.

Most Kentwood floors can be installed in a variety of methods; check the installation instructions for the options recommended for the product being installed. In addition to the installation instructions, please take note of the following guidelines:

Wide-plank flooring can be successfully installed using the nail-down method, however we recommend using either the full-spread glue-down method or glue-assist method in order to reduce the potential for noise-related issues. For more information, contact **techserv@metrofloors.com**.

Floating floor installations are very common in multi-family work partly because they are quick to install. However, the push for efficiency often encourages a couple of bad practices.

In a floating installation, our instructions require transitions to be used in certain situations to preserve the integrity of the flooring assembly. We acknowledge that they take time to install and may compromise the appearance of the finished product, but they are necessary. Omitting transitions where they are required will void the product warranty. Should you or your customer wish to obtain an exemption from this requirement, please consult your Metropolitan representative or email **techserv@metrofloors.com.**

Omitting transitions where they are required will void the product warranty.

Floating installations require that an underlay be installed before laying the floor itself. Some situations may require the installation of an additional vapor barrier in addition to the underlay. Floating floors must not be installed under cabinetry, kitchen islands or any other fixtures. Doing so will void the warranty. Refer to the installation instructions for more information.

EXPANSION SPACE

All hardwood flooring will expand and contract with changes in humidity. This can be minimized by maintaining the recommended heat and humidity levels, however a certain amount of movement is to be expected. To allow for this, during installation leave an expansion space around the entire perimeter of the floor, between the flooring and the walls. Also leave expansion space where the flooring will meet any vertical obstruction, such as stairs, pipes, door sills, tiles, cabinets, etc. Refer to the installation instructions for more information.

POST-INSTALLATION

On any new construction project but especially in multi-family situations, a significant challenge comes after installation is complete: Keeping the floors clean, protected and well-maintained until the unit is delivered to the homeowner. The following are some pointers on how to do that.

INSPECTION & SIGN OFF

On completion of the installation, ensure any excess adhesive has been cleaned off the surface. Adhesive residue left on the surface for extended periods of time may degrade the finish. Follow the glue manufacturer's instructions for cleaning procedures.

Sweep or vacuum the surface to remove any dust and debris. Give the surface a light cleaning with Pro Series Therapy by Metropolitan or other cleaner approved for use on prefinished hardwood floors. Do not use general household cleaners, oils or waxes on the flooring.

> On completion, inspect the floor with the Site Supervisor and have them sign off on the work.

Inspect the flooring with the Site Supervisor and have them sign off on the work. As an added measure of insurance, take photographs of the floor and file them with the customer's signed approval.

We also recommend completing an Installation Checklist upon completion of each installation. This will be an important record of the work done, site conditions and other important information. The checklist is appended to all our installation instructions and may also be downloaded from **kentwoodfloors.com**.

FLOOR PROTECTION

Given that a completed unit may sit for months before occupancy, we recommend using a Metropolitan-approved floor protection membrane until delivery so the floor can be presented in mint condition.

We recommend that the flooring installation be performed as one of the last steps in the construction process after all "wet work" has been completed and allowed to cure. In multi-family projects, this frequently doesn't happen for reasons of scheduling. **If additional construction and finishing work is planned after the flooring installation, a flooring protector is a must.** Repairing trade damage and cleaning up construction debris is time-consuming, challenging and costly for everyone. If you are not contracted to cover the floor after installation, take photographs of the completed installation and job site conditions before you leave as proof of your performance, should you need it in future.

> Repairing trade damage and cleaning up construction debris is time-consuming, challenging and costly for everyone.

If you are using floor protection after installation, ensure that the floor surface is covered with a breathable membrane to prevent moisture buildup on the floor surface. Ensure the entire surface is covered as sunlight may alter the color of the floor of exposed areas. Use a low-adhesion tape to secure the edges to the wall, baseboards or shoe moldings only. **Do not** tape the floor protection to the finished floor.

Remind the customer that the membrane should be removed before an in-floor radiant heating system is turned on.

DRYWALL DUST

This topic deserves special mention. Many Kentwood products feature brushed surface treatments and beveled joints; these fine, narrow spaces are perfect traps for drywall dust. This dust can be stubborn to remove with sweeping or vacuuming; if you attempt to wash it away, the moistened dust hardens to a cement-like consistency and becomes extremely difficult to remove. In some cases, the only remedy is board replacement or, in extreme cases, entire floor replacement. Extrapolate this scenario to multiple living units and you have a considerable problem.

> Drywall dust and brushed flooring surfaces are a combination to be avoided at all costs.

The best way to deal with this issue is to simply avoid it. Wherever possible, don't install flooring until drywalling and painting are complete and dry. Where this can't be avoided, insist on adequate floor protection being installed over the completed flooring, or have your customer sign a waiver absolving you of any responsibility for subsequent damage or soiling of the floor.

HEAT & HUMIDITY

Heat and humidity must be controlled in every unit before, during, and at all times after installation is complete. The recommended temperature range is 60-80°F (15-26°C) and humidity at 30-50%. This is especially important in completed units that may sit unoccupied for weeks or months before delivery, and even more important in the summer months when heat and humidity may build up inside closed and unventilated units – the so-called "greenhouse effect" – leading to potential damage to the floors.

As a contractor, this may be difficult to monitor and control, but it is essential that you and the Site Supervisor coordinate a plan to protect the work and investment.

> Coordinate a plan with the Site Supervisor to keep temperature and humidity regulated at all times.

If you are working on a large long-term project, you may wish to occasionally return to inspect the installed units and assess the environmental conditions to ensure they're meeting the required standards.

EXTRA MATERIAL

There is often demand for 'attic stock' at the conclusion of a job. We recommend making a provision for this when you place your order, especially for custom products. The extra material should be protected with a moisture-proof wrapping and stored in a warm, dry location.

HOMEOWNER DOCUMENTS

Most builders present their customers with an information package when they take occupancy. We recommend you instruct them to include a copy of the installation instructions and care and maintenance guide for the flooring you've installed. These are all available in PDF format at **kentwoodfloors.com**.