

# O.B. WILLIAMS COMPANY

*Established 1889*



**AWI** ARCHITECTURAL  
WOODWORK  
INSTITUTE

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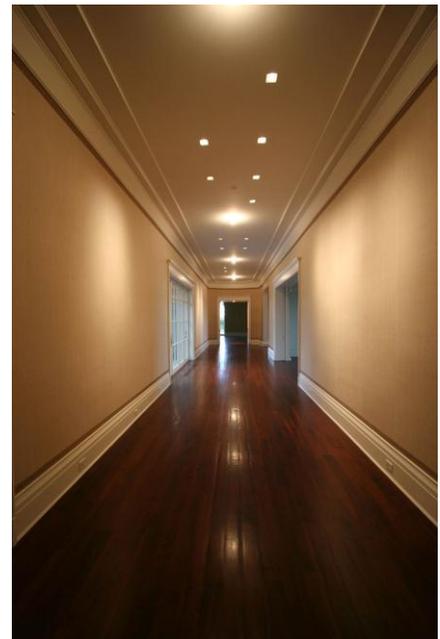
## MOULDING DESIGN GUIDE

*\*\*Includes Architectural Woodwork Institute AIA continuing education content*

A well designed wood millwork package adds substantial value to any project. In the beginning stages of the design process, consideration of a few key issues will maximize the value of the project and avoid many common problems and challenges.

The architectural woodwork package is important for the project owner for the following reasons:

- Woodwork is considered as “permanent furniture” in any home or commercial building.
- Domestic hardwoods are renewable.  
They are the definition of “green” and “sustainable.”



There are not many things that can provide a project with a feeling of warmth better than the hardwoods used in a well-designed millwork package. Unlike “synthetic” mouldings made from plastic, fiberboard or foam, real wood is natural, re-generating and renewable. Consider adding elements of naturally finished wood in lieu of painted synthetic mouldings to add value to your project. If using painted mouldings in your design, consider using real hardwoods such as Poplar for profiled mouldings for the rich, warm and genuine qualities they will provide.

**Design is critical** to providing a millwork installation that is both appealing and functional.

Value-engineering needs to be considered to maximize the thickness of your mouldings while utilizing industry standard wood thicknesses and widths. The team at O.B. Williams Company has decades of experience helping our customers design and plan for the installation of their moulding packages.

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The proportions of the mouldings are typically based on the room size. For window and door casings, choose a width that will not need to be ripped down in order to accommodate walls or cabinetry. Allow 2” between the outside edge of your casing and any wall to ensure that baseboard will die into the edge of the casing versus the face.

If you are not using plinth blocks, make sure that the casing you select is thicker than the baseboard you have chosen so that the baseboard will transition nicely below the face of the casing. Consider the thickness of your casing when designing a chair rail or wainscot cap for the same reasons. Also keep in mind any conflicts with cabinet drawers where casing is located on an adjacent wall and could interfere with drawer operation.

**To provide consistency in your design**, choose similar profiles in different widths and thicknesses versus mixing and matching completely different profiles. Remember that larger run quantities are more cost effective so if utilizing the same profiles throughout the project is possible - this will result in significant savings.



#### How mouldings are made:

- 1<sup>st</sup> - The profile is selected or designed, sketched or drawn by the designer or architect.
- 2<sup>nd</sup> – An electronic drawing is created by the millwork shop.
- 3<sup>rd</sup> – A plastic template is created using the electronic drawing.
- 4<sup>th</sup> – Knife steel is installed into cutter heads. One cutter head for each profiled surface is required.
- 5<sup>th</sup> – Knives are ground to the correct profile using the plastic template created in step 3.
- 6<sup>th</sup> – The cutter heads are installed in a moulding machine and the machine is adjusted.
- 7<sup>th</sup> – Pre-dimensioned wood blanks are fed through the moulding machine, cutting all sides in one pass.

**There are three standard methods of how a moulding goes to market.** One method is moulding that is stocked in a dealer’s inventory. The second method refers to custom moulding for which the **tooling has been previously created**. Finally, there are custom mouldings created **entirely from scratch**.

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Following is a brief description of these different methods:

**Selecting from stock items:** The “pros” for selecting from a dealer’s stock inventory are ease of selection, quick availability and low cost. The main drawbacks of selecting from stock inventory are limited profiles, species availability is extremely limited and length selection is seldom available. Typically the selection of mouldings in this category is very limited and includes mainly pre-primed MDF fiberboard or finger-jointed softwood mouldings.

**Selecting from an existing tooling library:**

Choosing from a manufacturer’s existing tooling library provides the ability to save on tooling costs and lead time, as well as simplifying the design process. This also provides a much broader range of profiles, allows for species selection and matching of materials. Typical lead times for such mouldings are usually about two weeks. Another advantage is the ability to order exactly the quantity required, in exactly the right lengths, from virtually any species of wood.



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**Starting from Scratch:** When selecting and/or designing a trim package, one key phrase plays an important factor – value engineering. When designed effectively, for a minimal up-charge, you can create value for your clients by providing them with a look that is unique and different. With today’s resources, it is no longer necessary to specify the “cookie-cutter” mouldings you have seen in the market for so many years. Another advantage is that new mouldings can be created to be an exact match with existing or historic trim.

**Profile selection:** Selecting profiles for a project is more than just “putting a bunch of mouldings together.” In many of today’s open home plans, the rooms are getting larger and ceiling heights are taller. What might look good in a 12 x 12 room with 8’ ceilings will not look as pleasing in a 16 x 16 room with a 10’ – 12’ ceiling.

**Crown Moulding:** Properly proportioned crown moulding adds to a room, but installing the wrong size of moulding can result in a look that is visually unappealing. If the moulding is too small for a large room, it will be visually lost. On the other hand, installing a wide, heavy moulding in a small room can result in an overstated design.

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A common recommendation for crown moulding follows, based on ceiling height:

(Wider crown mouldings are usually created using multiple pieces in combination with flat stock.)

- 8 foot ceilings – 3” – 5” drop
- 9 foot ceilings – 5” – 10” drop
- 10-12’ ceilings – 10” – 20” drop
- 16’ ceilings – 18” – 25” drop

**Door and Window Casing:** As a general rule,

Casing should be approximately one half to two thirds the width of the base:

- 3 ¼” Base -- 2 ¼” Casing
- 4 ¼” Base -- 2 ¼” – 2 ¾” Casing
- 5 ¼” Base -- 2 ¾” – 3 ½” Casing
- 7 ¼” Base -- 3 ½” – 5 ¾” Casing



**Wainscoting:** The height of your room will help determine how high the wainscoting needs to be, but generally speaking, for a standard height ceiling the wainscoting should be about 32” above the floor. However there is no hard and fast rule. Height for craftsman-style wainscoting can rise up to 6 feet or even higher. At the top, a wider plate often replaces or tops the chair rail to provide a platform for decorative objects.

**Interior Stile and Rail Wood Doors:** For ceiling heights that are 10’ or higher, 8’-0” tall doors should be used as opposed to 6’-8” or 7’ doors. Using the correct door height also allows spacing for an adequate crown detail to fit above the door casing. When specifying stile and rail doors that are 8’ and taller, it is suggested to use a minimum door thickness of 1 ¾”. Due to the increased weight, doors taller than 7’-6” should utilize four hinges.

**Wood species characteristics:** It is important to know that when using hardwoods, not all species come in wide widths and long lengths. Often, an owner may see a species that he or she likes, and not understand the physical properties and functionality of that material. So when designing a room it is important to keep in mind available lengths, widths, thicknesses and density characteristics.

Your architectural woodwork expert – O.B. Williams Company - can be a valuable asset to provide this information to you during the design phase of your project – give us a quick call us and ask about any species of wood you are considering and we can tell you about any unique characteristics or design limitations to keep in mind.

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In addition to the many different species of available hardwood, there are a couple of different methods of cutting the wood at the sawmill that are important to the designer. Nearly all hardwoods are available as **“Plain Sawn”** which simply means that the logs are sawed lengthwise into boards on a tangent to the annual growth rings. This results in wood grain that displays a combination of straight grain and distinctive elliptical or “cathedral” figure.

Some hardwoods are also available in a **“Quarter Sawn”** or “vertical grain.” These boards may be selected from center cuts of plain sawn material that naturally develop a “straight grain”, or may be purposefully produced by first sawing the log into quarters and then cutting “pie-shaped” boards out of each quarter. In Oak species, this results in a characteristic known as “ray fleck” or “tiger striping”. (Think of how an antique Oak desk top looks)



Other species such as Walnut and Mahogany are available in “quarter sawn” lumber and offer a more uniform “linear” grain appearance than plain sawn material.

The term **“Rift”** is reserved for the Red Oak and White Oak species, although it is often incorrectly specified for other species where a quarter sawn or a linear grain appearance is desired.

The reason the term “Rift” is assigned to Oak is that it is a slightly different angle of cut which provides straight grain while minimizing the “Ray fleck” effect that occurs in quarter sawn Oak.

In reality, much of the fine variations in wood materials are the result of “pulling” or “sorting and grading” material to match the designer’s intent from larger quantities of plain sawn material.

In most species of wood, only the “Heartwood” is use for architectural woodwork. This is the darker wood in the center of the tree as opposed to the “Sapwood” which is the outer layer wood nearest to the bark. Exceptions include species such as “Select White Maple” and “Select White Ash” which are cut exclusively from sapwood. Sapwood in Cherry, Walnut and Oak is generally considered a defect.

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### **Proper Jobsite Conditions:**

One huge key to the successful installation and finishing of a millwork and door package is to make sure that the material is properly stored once it is delivered to the jobsite. Following are several things to keep in mind to prevent damage and moisture absorption into the wood:

- The jobsite must be fully enclosed and protected from the elements.
- HVAC must be up and running with a maintained temperature between 68 and 72 degrees F.
- Relative humidity must be maintained between 25% and 55%.
- Woodwork must be stored inside the living area on the main floor. Never store material in a garage or basement. Never store material on concrete floors due to potential moisture absorption.
- Store millwork on racks or on 2 x 4 skids that are shimmed flat and level. Store doors lying flat and level; never lean doors against walls to prevent warping.
- Allow mouldings to acclimate 1-2 weeks prior to installation.

When woodwork absorbs moisture – only bad things will happen! Wood will naturally expand if it is allowed to absorb moisture from high humidity in the air, or from concrete floors or direct exposure to moisture or from “wet-work” such as on-going drywall mudding or plastering. If this is allowed to happen, once the woodwork is installed and humidity control is in place, the mouldings will naturally shrink again - opening joints and creating gaps and all manner of other undesirable effects.



Don't allow your fine woodwork design and vision to be spoiled at the last moment by poor handling and storage of the material after delivery to the jobsite. The staff at O.B. Williams can provide you with storage, care and handling instructions to be followed at the jobsite.

In conclusion, a well-designed millwork trim package provides added value, added beauty and added function.

Please consider O.B. Williams Company as your go-to resource for information regarding the design, species characteristics and appearance, pricing and manufacturing of high quality architectural woodwork.

We look forward to your call or visit!

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