

# Architectural Woodwork Standards

## PREFACE

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### 1. ARCHITECTURAL WOODWORK STANDARDS

#### 1.1 PURPOSE

- 1.1.1 Provide design professionals with logical and simple means to comprehensively specify elements of architectural woodwork.
- 1.1.2 Provide compliance criteria to ensure that all manufacturers/installers bidding on a project compete on an equal basis and are obligated to perform work of equal quality.
- 1.1.3 Provide industry information, terminology, and test criteria to properly determine compliance.

#### 1.2 OVERVIEW

- 1.2.1 These standards are based on three Grades of quality that may be mixed within a single project. Limitless design possibilities and a wide variety of lumber and veneer species, along with overlays, high-pressure decorative laminates, factory finishes, and profiles are available in all three Grades.
  - 1.2.1.1 **ECONOMY GRADE** defines the minimum quality requirements for a project's workmanship, materials, or installation and is typically reserved for woodwork that is not in public view, such as in mechanical rooms and utility areas.
  - 1.2.1.2 **CUSTOM GRADE** is typically specified for and adequately covers most high-quality architectural woodwork, providing a well-defined degree of control over a project's quality of materials, workmanship, or installation.
  - 1.2.1.3 **PREMIUM GRADE** is selectively used in the most visible and high-profile areas of a project, such as reception counters, boardrooms, and executive areas, providing the highest level of quality in materials, workmanship, or installation.
- 1.2.2 These standards cannot address every contingency; however, this document is the most comprehensive architectural woodworking standard available.
- 1.2.3 When these standards are referenced, the client is protected, and the manufacturer/installer has a clear direction for what is required.
- 1.2.4 When these standards are referenced as a part of the contract documents and no Grade is specified, Custom Grade will be the **DEFAULT STIPULATION**.
  - 1.2.4.1 In the absence of material specifications, it will be the manufacturer's option to select lumber or veneers suitable for opaque finish.
- 1.2.5 These standards are not restrictive; they merely establish the rules for what will happen under normal conditions. Issues not set forth in the contract documents or in these standards, when referenced in the specifications, will be resolved by selection, fabrication, finishing, and/or installation at the option of the manufacturer.
- 1.2.6 In addition to the specific requirements as outlined in these standards, it is intended that all architectural woodwork specified to meet these standards will conform to the generally accepted definitions of "First-Class Workmanship" as defined within these standards and the glossary.

#### 1.3 EXCEPTION

- 1.3.1 These standards are a guide from which the design professional is free to deviate.
  - 1.3.1.1 When the design professional, as part of the contract documents, deviates from these standards, the contract document takes precedence over the standards.
    - 1.3.1.1.1 Such deviations cannot be adjudicated using the standards as a basis.
- 1.3.2 These standards are intended for typical commercial/institutional applications and environments and might not perform as expected in abusive environments in which special design considerations should be taken.

#### 1.4 DISCLAIMERS

- 1.4.1 The sponsors of these standards shall not be responsible to anyone for the use of or reliance upon these standards.

**1. ARCHITECTURAL WOODWORK STANDARDS** (continued)**1.4 DISCLAIMERS** (continued)

- 1.4.2 The sponsors of these standards shall not incur any obligation nor liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon these standards.
- 1.4.3 These standards provide the minimum criteria for the concept, design, fabrication, finishing, and installation of architectural woodwork.
  - 1.4.3.1 Provisions for mechanical and electrical safety have not been included. References to life-safety requirements are included for information only.
  - 1.4.3.2 Governmental agencies or other national standards-setting organizations provide the standards for life-safety requirements.
- 1.4.4 Illustrations are intended to assist in understanding the standards and might not include all requirements for a specific product or unit, nor do they show the only method of fabrication. Such partial drawings shall not be used to justify improper or incomplete design and/or construction.
- 1.4.5 Unless otherwise stated or referenced, Appendixes A and B are not considered integral parts of these standards. The appendixes are provided as an additional resource to the manufacturer, design professional, educator, user, or certifying organization, and shall not be interpreted as legal advice or code-compliance language.
- 1.4.6 If a conflict is found in these standards, the least restrictive requirement shall prevail until addressed by errata.

**1.5 IMPROVEMENT**

- 1.5.1 The Associations encourage your suggestions for changes, revisions, and/or improvements to these standards. A suggestion form is provided just before these prefaces or can be found on each of the Associations' websites ([www.awinet.org](http://www.awinet.org), [www.awmac.com](http://www.awmac.com), or [www.woodworkinstitute.com](http://www.woodworkinstitute.com)). Simply follow the form's instructions.

**2. VARIATIONS IN NATURAL WOOD PRODUCTS**

- 2.1 Wood is a natural material with variations in color, texture, and figure.
  - 2.1.1 These variations are influenced by the natural growing process and are uncontrollable by the manufacturer.
- 2.2 The color of wood within a tree varies between the "sapwood" (the outer layers of the tree that continue to transport sap), which is usually lighter in color, and the "heartwood" (the inner layers in which the cells have become filled with natural deposits).
- 2.3 Various species produce different grain patterns (figures), which influence the selection process.
  - 2.3.1 There will be variations of grain patterns within any selected species.
- 2.4 The manufacturer cannot select solid lumber cuttings within a species by grain and color in the same manner in which veneers might be selected.
- 2.5 Therefore, color, texture, and grain variations may occur in the finest architectural woodworking.

**3. SYSTEMS OF MEASUREMENT**

- 3.1 These standards are written with the U.S. Customary System of measurement followed by the metric system in brackets.
  - 3.1.1 The system of measurement used in the original design of a project's architectural drawings will dictate which system of measurement within the standards is used for verification of compliance.
  - 3.1.2 The metric number is typically a "soft" conversion of the U.S. Customary System of measurement.
  - 3.1.3 In order to make the metric number more conceptually coherent and consistent, most conversions for less than 3" (76 mm) in dimension are "soft" converted to the nearest 0.1 mm; for measurements above 3" (76 mm), the "soft" value is converted to the nearest 1 mm.
  - 3.1.4 Exceptions to this convention will occur as, for example, 1220 mm is commonly used for 48", as opposed to 1219 mm.

## 4 ARCHITECTURAL WOODWORK SPECIFICATIONS - GUIDELINES

- 4.1 Specifications, along with the architectural drawings, are the road map for a project's success.
- 4.1.1 Budget constraints should be communicated up front so that all parties can work together toward a successful resolution.
- 4.2 Use of these standards will greatly reduce the text of your specifications and their development time.
- 4.2.1 They eliminate the need to worry about every fabrication and material detail.
- 4.2.1.1 Requirements for each **GRADE** are specifically defined within the standards.
- 4.2.2 However, **SPECIAL REQUIREMENTS** or **UNUSUAL APPLICATIONS** will need to be noted.
- 4.3 **COMPLIANCE PROGRAMS**, which all sponsor Associations offer, are cost-effective and help enforce your specifications.
- 4.3.1 They ensure the performance and compliance of your architectural woodwork project's specifications.
- 4.3.2 Written status reports are issued during the project's progression, affording you timely notification of any noncompliant findings.
- 4.4 **AVOID CONFLICT** in your specifications that might allow for interpretation other than what was envisioned.
- 4.4.1 Use of certain words can make a big difference.
- 4.4.1.1 Requiring compliance to Example A **AND** Example B means that the end result will be in full compliance with both.
- 4.4.1.2 Requiring compliance to Example A **OR** Example B means that compliance to either is acceptable.
- 4.5 **ENFORCE** your specifications and their intent; however, be open-minded to proposed changes and cost savings.
- 4.5.1 Materials and their availability are in constant flux; therefore, listen and be open to change when it does not affect your design intent.
- 4.6 **PRE-QUALIFY** your bidders to ensure their performance ability.
- 4.7 Seek out and take advantage of our industry's knowledge and experience.
- 4.8 The following summarizes the applicable **CSI MASTERFORMAT™ 2004 Edition** Numbers and Titles for which we provide Guide Specifications in the Appendix.
- 4.8.1 06 20 00 - Finish Carpentry
- 4.8.2 06 40 00 - Architectural Woodwork
- 4.8.3 08 14 00 - Wood Doors
- 4.8.4 09 93 00 - Staining and Transparent Finishing
- 4.8.5 12 35 00 - Speciality Casework
- 4.8.6 12 36 00 - Countertops

## 5 ARCHITECTURAL WOODWORK DRAWINGS - GUIDELINES

- 5.1 For design professionals, the proper use of these standards will greatly reduce drafting time.
- 5.1.1 It is not necessary to produce standard joinery details on your drawings.
- 5.1.2 Requirements for each **GRADE** are defined throughout these standards.
- 5.1.3 **SPECIAL REQUIREMENTS** or **UNUSUAL APPLICATIONS** need to be noted and detailed.
- 5.2 Casework and Countertops:
- 5.2.1 Indicate **CONSTRUCTION TYPE** of casework desired:
- 5.2.1.1 **TYPE A** - frameless construction.

**5 ARCHITECTURAL WOODWORK DRAWINGS** (continued)

## 5.2 Casework and Countertops (continued)

5.2.1 Indicate **CONSTRUCTION TYPE** of casework desired (continued)

5.2.1.2 **TYPE B** - face-frame construction (not recommended for decorative laminate faced casework, and standards are not provided for such).

5.2.2 The standards define the following basic types of casework **CONSTRUCTION TYPES**:

5.2.2.1 Wood Faced - **TYPE A**

5.2.2.2 Wood Faced - **TYPE B**

5.2.2.3 Decorative Laminate Faced - **TYPE A**

5.2.2.4 Solid Phenolic Constructed - **TYPE A**

5.2.3 Casework elevations are not necessary if the **CABINET DESIGN SERIES** numbers are utilized; however, a floor plan indicating each design number selection and relative dimensions is required.

## 5.2.4 When casework elevations are shown, they should indicate:

5.2.4.1 The basic overall dimensions.

5.2.4.2 Dimensions of those portions that are required to be of predetermined or controlled size.

5.2.4.3 Dimensions required for installation of items of equipment.

5.2.4.4 Whether sliding or hinged doors are desired, including swing if hinged.

5.2.4.5 Thickness of cabinet doors if other than nominal 3/4" (19 mm) is required.

5.2.4.6 Required details not shown in these standards or those that involve installation of unusual equipment.

5.2.4.7 If and where locks are required.

5.2.4.8 Shelf location and whether fixed or adjustable.

5.2.4.8.1 Material and load capacity required.

5.2.4.9 Type of countertop.

## 5.3 Standing and Running Trim

## 5.3.1 Elevations should indicate the placement of all standing and running trim, including:

5.3.1.1 Cross section details along with overall dimensions should be shown for all trim types.

5.3.2 If a finish schedule is used in lieu of elevations, it should be comprehensive enough to clearly indicate all of the above.

## 5.4 Architectural Wall Surfacing

5.4.1 Elevations should indicate the placement of architectural wall surfacing, including each panel size, along with edge, corner, reveal, ceiling, and base treatments.

5.4.1.1 Door and/or other woodwork matching should be so indicated.

5.4.1.2 Reveals should be as specified; however, a minimum of 1/4" (6.4 mm) is recommended.

5.4.2 If a finish schedule is used in lieu of elevations, it should clearly indicate all of the above.

## 5.5 Wood Doors

5.5.1 Include a comprehensive door schedule indicating the location, type, size, and handling of each door, along with applicable requirements for:

5.5.1.1 Pair and/or transom matching

5.5.1.2 Room and/or panel matching

**5 ARCHITECTURAL WOODWORK DRAWINGS** (continued)

## 5.5 Wood Doors (continued)

## 5.5.1 Include a comprehensive door schedule (continued)

5.5.1.3 Transom panel or Dutch door edge treatment

5.5.1.4 Special core blocking

5.5.1.5 Glass and louver cutouts

5.5.1.6 Undercut tolerances

5.5.1.7 Fire, acoustical, x-ray, and/or other ratings/requirements

5.5.1.8 Hardware

5.5.2 Include elevations of typical door types to indicate glass and louver cutout locations.

**6 CASEWORK REFINISHING/REFACING/REFURBISHING - GUIDELINES**

6.1 The work is typically required to be done in the field.

6.1.1 Refinishing, refacing, and/or refurbishing of casework will not update any **SEISMIC FABRICATION** and/or **INSTALLATION** deficiencies.

6.1.2 Lead and/or toxic material abatement shall not be the responsibility of the woodwork manufacturer/installer.

6.2 **SPECIFICATIONS** shall clearly indicate whether refinishing, refacing, refurbishing, or a combination thereof is required.6.2.1 **REFINISHING** can be as simple as the application of a new finish over the existing cabinet surfaces or as extensive as the removal of the existing finish, repair or patch of all physical defects, and the application of a new finish; however:

6.2.1.2 Does not include the replacement of hardware, unless so specified.

6.2.2 **REFACING** is usually more involved and very field-labor intensive, and:

6.2.2.1 Existing surfaces, including doors, drawer fronts, cabinet face, and finished ends:

6.2.2.1.1 If **HPDL**, shall be removed with any damaged core areas repaired and core surface suitably prepared for proper adhesion of the new surface material.6.2.2.1.2 If **PAINT**, shall be stripped to the original surface with any damaged areas repaired and resurfaced with the specified material.

6.2.2.2 Does not include the replacement of hardware, unless so specified.

6.2.3 **REFURBISHING** includes either the refinishing or refacing of the exterior cabinet body, replacement of the cabinet doors and drawer fronts, and replacement of all exposed cabinet hardware, including hinges, pulls, catches, and locks; however:

6.2.3.1 It does not include the repair or replacement of interior components such as shelves, drawer boxes, or drawer slides unless so specified.

6.3 **ARCHITECTURAL PLANS** shall clearly indicate all casework to be refinished, refaced, and/or refurbished. The casework elevations shall also indicate any unusual or special requirements (such as structural repair or component replacement).

6.3.1 It is the design professional's responsibility to specify any and all modifications required for code compliance.

6.3.1.1 Including the means, methods, and materials required to retrofit casework for UBC, Title 24 compliance.

6.3.2 The requirement for reinstallation of existing casework (if needed to be removed), in a manner other than the original, shall be so specified.

6.3.2.1 If new or additional wall blocking is required, it shall be so specified and be the responsibility of the contractor.

## 6 CASEWORK REFINISHING/REFACING/REFURBISHING (continued)

- 6.4 All refinishing, refacing, and/or refurbishing of casework governed by these standards shall generally be in accordance with these standards as applicable, with the following exception:
- 6.4.1 Repair or modification of existing casework shall be in compliance with accepted methods of joinery as contained in these standards.
    - 6.4.1.1 The method of repair used shall be optional with the manufacturer/installer.
    - 6.4.1.2 **NEW COMPONENTS**, such as doors, drawer fronts, drawer boxes, and shelves, shall be compliant to these standards.
    - 6.4.1.3 **GAPS** and **TOLERANCES** shall match that of the existing casework within an elevation and within a room.
    - 6.4.1.4 Hardware replacement for refurbished casework, or when specified to be included with refinishing or refacing, shall include door hinges, door and drawer pulls, and locks (keying requirement to be as specified).
      - 6.4.1.4.1 Drawer slide replacement is not included unless specifically required in the contract documents.
      - 6.4.1.4.2 Match of existing hardware is contingent on the availability of such from a manufacturer's current stock.
      - 6.4.1.4.3 The method of repair or patching of tear-outs used for proper hardware replacement shall be optional with the manufacturer/installer.
    - 6.4.1.5 All work shall meet the requirements of first-class workmanship.

## 7 MOISTURE AND ARCHITECTURAL WOODWORK

- 7.1 The moisture content of wood is crucial. If wood is not properly dried and/or seasoned:
- 7.1.1 The best of **WORKMANSHIP CANNOT PREVENT MOISTURE-RELATED DEFECTS** such as surface checks, cracking, bowing, twisting, and glue-line failure that might occur during production and afterward.
  - 7.1.2 The woodwork product will not have the expected quality and beauty.
  - 7.1.3 In severe cases, a product can even be destroyed.
  - 7.1.4 Unfortunately, **MOST MOISTURE DEFECTS ARE IRREVERSIBLE**.
- 7.2 Wood is a hygroscopic material, expanding when it takes on moisture, shrinking when it loses moisture.
- 7.2.1 How much moisture will be absorbed or how fast lumber will dry depends upon the present moisture content of the wood, the wood species, the relative humidity, and the temperature of the surrounding air.
  - 7.2.2 The drying process of lumber has to be slow enough to avoid stress between the surface and the core because too much stress results in surface checks, cracks, split ends, and other drying effects.
- 7.3 If wet and dry pieces of wood are placed in an area, they will absorb or lose moisture until all pieces have the same final moisture content (Equilibrium Moisture Content or EMC).
- 7.3.1 For instance, if you make furniture, cabinets, picture frames, or clocks for inside a home, an office, or other heated live-in area, all wooden parts will eventually dry to approximately 6-12% wood moisture (extreme climate zones might have slightly higher or lower values).
- 7.4 For lasting quality and beauty, use only wood with a moisture content between 6-12%.
- 7.4.1 Moisture-related defects might occur if only one piece has a higher or lower moisture content than 6-12%.
  - 7.4.2 Without control of the moisture content, there is a greater chance to get moisture-related defects.
- 7.5 Many manufacturers hope to avoid moisture problems by buying only kiln-dried wood.
- 7.5.1 **KILN-DRIED WOOD** should have a moisture content between 6-12%.

**7 MOISTURE AND ARCHITECTURAL Woodwork** (continued)

- 7.5 Many manufacturers hope to avoid moisture problems (continued)
- 7.5.2 Even though the wood might be dried properly when it leaves the dry kiln, it can change in moisture content during manufacturing, transportation, or storage.
  - 7.5.3 Manufacturers might inadvertently further complicate the problem by assembling a project with materials that have dissimilar moisture contents.
- 7.6 To reduce the risk of moisture damage, the U.S. Department of Agriculture, Forest Service, Forest Products Laboratory recommends in their General Technical Report 113 that:
- 7.6.1 Large assemblies, such as ornamental beams, cornices, newel posts, stair stringers, and handrails, should be built up from comparatively small pieces.
  - 7.6.2 Wide door and window casing and base molding should be hollow-backed.
  - 7.6.3 Backband trim, if mitered at the corners, should be glued and splined before erection.
  - 7.6.4 Large solid pieces, such as wood stile and rail paneling, should be designed and installed so that the panels are free to move across the grain. Narrow widths are preferable.

**8 FOREST MANAGEMENT CERTIFICATION:** The Associations acknowledge and have adopted the International Wood Products Association's (IWPA) Statement on Certification as modified below.

- 8.1 We acknowledge the interest in certified timber products and verification of good forest management.
- 8.2 A number of certification and verification systems are in operation or in development today, and we make no judgment against or endorsement of any single plan.
- 8.3 Certification can serve as an audit of work already being done toward improved forest management. An absence of certification, however, does not mean there is a lack of quality forest management.
- 8.4 We wish to recognize the efforts that many countries and companies are making with regard to improved forest management practices. Further, we strongly endorse the right of individual countries and companies that become involved with certification or the verification of forest management to pursue the development of their own internal auditing system or the selection of one that is already established.
- 8.5 Global consensus has not been reached regarding the scope and viability for any single system of certification to be appropriate for all locations and conditions. Efforts are being made to develop an international framework of mutual recognition between credible and market-oriented sustainable forest management standards and certification systems.
- 8.6 The development of a mutual recognition process should ensure that these various certification or verification systems:
  - 8.6.1 Do not discriminate against different forest types.
  - 8.6.2 Should be regularly reviewed and updated.
  - 8.6.3 Should be transparent.
  - 8.6.4 Should be cost-effective, recognizing that there is no clear indication that the cost of certification can be incorporated into the pricing of wood products being produced.
- 8.7 We strongly endorse the development of a mutual recognition system and support any and all efforts that will further enhance management of the world's forests and the growth of global and sustainable trade in wood products.

**9 ENVIRONMENTAL VENEER CONSIDERATIONS**

- 9.1 Wood veneer will yield about forty times more surface area than the same log sawn for lumber. Consider using veneered products where feasible in lieu of solid lumber.
- 9.2 "Environmental" choice is not merely one of species, but of knowing the forest origin and its management status. Good sustainable forestry includes a professionally administered forestry management plan in which timber growth equals or exceeds harvesting rates in both quantity and quality, and ensures adequate regeneration of desired species.

## 10 Warranty/Guarantee Language

10.1 There have been repeated requests for “industry standard” warranty or guarantee language, both on the part of design professionals and woodwork manufacturers. It is not the purpose or intent of this publication to give legal advice with regard to warranties. Such language varies from governing body to governing body.

10.1.1 **CAUTION:** You might use the following language as a starting point; however, the sponsors of these standards assume no liability whatsoever from its use. **IT IS ADVISED THAT ALL WARRANTY LANGUAGE BE REVIEWED BY COMPETENT COUNSEL FOR THE STATE OR PROVINCE IN WHICH IT IS INTENDED.**

10.1.2 All architectural woodwork is guaranteed to be of good material and workmanship and free from defects that render it unserviceable for the use for which it is intended. Natural variations in the color or texture of the wood are not to be considered defects. The quality of architectural woodwork is safeguarded while it is in the manufacturer's possession. To be protected by this guarantee, products must not be stored in damp warehouses or placed in moist or freshly plastered buildings. The woodwork must not be subjected to abnormal heat or dryness. Permanent-type heat and air conditioning must be in operation a sufficient length of time to “cure” the building before any woodwork or doors are delivered to the site. (Temporary-type heat sources might either add excessive moisture or create excessive dryness, depending upon the type of fuel. Thus, temporary heating can be a source of woodwork problems and should be avoided.)

Adhere to the requirements in Section 2 for range and maintenance of relative humidity. Acclimatize delivered woodwork to the job site for a minimum of 72 hours before installation. Factory-finished woodwork requires up to a week or more on site for acclimatization.

Woodwork must be inspected upon arrival, and all claims or complaints must be filed before painters' finish is applied. All doors must be properly sealed on all surfaces, including top and bottom edges, to prevent absorption of moisture. The manufacturer will not be responsible for defects resulting from neglect of these precautions.

The manufacturer agrees, within a period of  (insert year)  year(s) after delivery date, to repair or replace (in the white, unfinished, if so furnished originally) without charge any woodwork that is defective within the meaning of this guarantee. The manufacturer does not agree to be responsible for any work that was not originally performed by them. The manufacturer  (insert does or does not)  agree to pay charges for finishing or installing replaced woodwork. This guarantee is not effective if goods are repaired or replaced without first obtaining the manufacturer's written consent.

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# NOTES

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