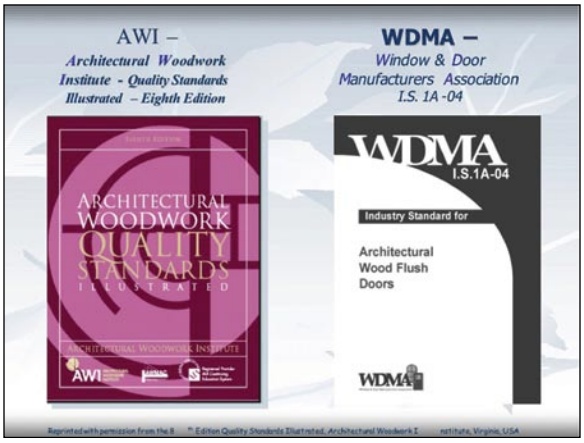
AWI VS. WDMA STANDARDS

BY HARRY REICHWALD

HAVE YOU EVER SEEN SPECIFICATIONS WHERE SECTION 08210 for wood flush doors references both AWI Section 1300 and WDMA I.S.1A-04 Premium Grade standards? Has this caused you any problems either in the bidding stage, or worse yet, after the doors arrived at the job site? Why does this happen? This article will provide the answers to these questions and more.

Background:

Both AWI (Architectural Woodwork Institute) and WDMA (Window & Door Manufacturers Association) have been developing standards impacting the commercial door industry for decades. Up until 1997, their standards were reasonably similar to each other. However in that year, AWI chose to have Section 1300 conform to the same requirements as other sections of their *Quality Standards Illustrated*, specifying that Premium Grade doors be manufactured with "AA" Grade veneers with a balance match. At the same time, WDMA chose to retain the previous "A" Grade veneer requirement, allowing options for either a running, balance or center balance match.



Both organizations once again updated their standards

a few years ago. In 2003 AWI further changed the Premium Grade door requirement to include a center balance match in lieu of a balance match. In 2004 WDMA introduced performance requirements in lieu of the prescriptive requirements both organizations previously referenced, and also made other changes which further increased the gap between the two standards.

What Are The Differences?

There are two primary expectations of architectural grade wood flush doors—they should be visually pleasing to the end-users (aesthetics), and they should function properly over the life of the installation (performance). Aesthetic standards pertain to the visible components of a wood flush door—generally the veneer faces, the vertical edges, the lite beads, and door finish. Performance standards pertain to the operation of the door—is the door square and flat, will the glue bond and finish endure over time, will the operable hardware remain attached to the door, and will the door swing with continued use?

While there are numerous differences between the two standards, there are three major ones that cause the most confusion in the marketplace:

Aesthetics:

1. AWI references HPVA's (Hardwood Plywood & Veneer Association—ANSI/HPVA HP-1 Standard) panel veneer grading tables while WDMA references HPVA's door veneer grading tables. This results in the AWI standard requiring a one inch wider face component than WDMA for both Premium and Custom Grades. Face component width is a yield issue such that a wider width will generally be more costly.
2. AWI's Premium Grade requires "AA" grade center balance match veneer while WDMA's Premium Grade allows "A" grade running match veneer. "AA" grade veneer limits allowable defects to a greater extent than "A" grade veneer. "AA" grade veneer also requires face component widths to be one inch greater than "A" grade veneer, in addition to the one inch referenced above. These attributes make "AA" grade veneer much more aesthetically pleasing, but also will generally result in more cost.

Performance:

3. AWI's standard remains prescriptive while WDMA's standard now provides performance-based requirements. Prescriptive standards essentially tell a manufacturer what materials and what sizes of materials to use in the production of their doors, while a performance-based standard provides more flexibility to manufacturers as long as there is adherence to rigid performance criteria.

A few additional differences between the two standards include recognition of LPDL (Low Pressure Decorative Laminates) as a facing material in WDMA, but not in AWI. In the area of finishing, AWI chose to eliminate the "TR" and "OP" system designations while WDMA chose to retain them. For Custom Grade doors, AWI requires a veneer match within pairs of doors and between doors and transoms, while WDMA allows selection for similar color and grain in both installations. Other subtle differences exist as well, but are not significant enough to materially affect project costs and expectations.

Problems Created By the Differences:

Back to the questions asked at the beginning of this article: Have you ever seen specifications that reference both AWI Section 1300 and WDMA I.S.1A-04 Premium Grade, and has this caused you any problems? Presumably many distributors would answer "yes" to those questions.

Because the AWI and WDMA standards were very similar up until 1997, the architectural community was not concerned about which standard they referenced in their specifications—either one worked fine. Since then both AWI and WDMA have worked hard to promote their individual standards and educate the architectural community about the differences, however not everyone has received the message. Specifications not only reference both standards, but often reference out-dated versions of those standards as well.

Aesthetic Issues:

The architectural community also has a propensity to specify Premium Grade over Custom Grade because of the perceived superiority of Premium Grade. Consequently, a project may be "over-specified". A specification referencing AWI Premium Grade will require the project to be bid with "AA" grade center balance match veneer with 6" face components, while the WDMA standard of "A" grade running match veneers with 4" face components may be perfectly acceptable. This unnecessarily increases the cost of the doors, and ultimately the cost of the project.

There are significant differences between Premium Grade and Custom Grade specifications within the AWI standard. However, differences between Premium Grade and Custom

Example of "AA" grade blueprint matched installation.

Example of an "A" grade PS Red Oak door for a typical hospital installation.

Grade specifications within the WDMA standard are minimal and subtle. The reality is that AWI Premium Grade is in a class by itself, while AWI Custom Grade, WDMA Premium Grade, and WDMA Custom Grade are remarkably similar.

AWI Section 1300 states that Premium Grade is "usually reserved for special projects, or feature areas within a project" while further stating that "the vast majority of all work produced is Custom Grade". The architectural community should heed these words. Buildings such as courthouses where blueprint matched doors and paneling are often specified should require AWI Premium Grade because a higher level of aesthetics is the expectation. Specific rooms within other buildings such as boardrooms may also require AWI Premium Grade (note that this may require the specifier to reference AWI Premium Grade for certain rooms and one of the other grades for the balance of the building). These are both appropriate uses for an AWI Premium Grade specification. Other typical installations for architectural wood flush doors such as schools, hospitals, and office buildings do not require that level of aesthetics, and therefore should reference either AWI Custom Grade, WDMA Premium Grade, or WDMA Custom Grade.

Specifications referencing Premium Grade from both standards leave the distributor and door manufacturer in a quandary. What are the architect and owner really expecting? If I bid AWI Premium Grade and my competitor bids WDMA Premium Grade, will I price myself out of the project? However if I bid and furnish WDMA Premium Grade, will I be meeting the architect and owner expectations, or will my product be rejected? All of these are valid questions. While the logical answer is to ask the architect what his expectations are prior to bidding the project, the reality is that this seldom occurs due to time constraints and other logistical issues. The end result in most cases is that low cost will prevail on bid day based on the assumption the specification has been met, and any unmet expectations will be debated after the product arrives.

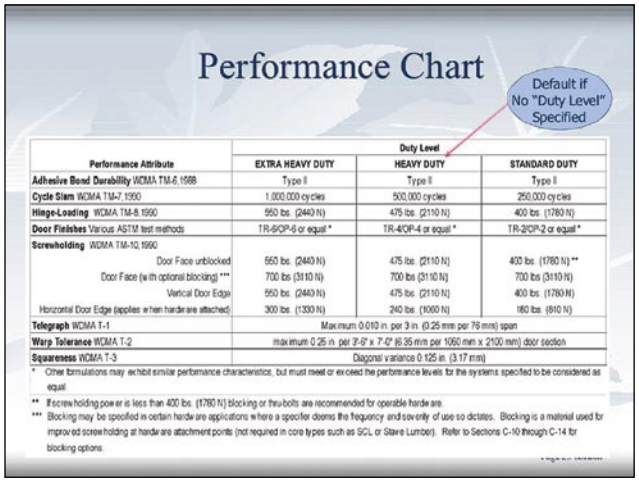
Performance Issues:

WDMA introduced the first performance-based wood flush door stan-

dard in 2004. Why is this important since both AWI and WDMA have published prescriptive door standards for years and doors have functioned well using that methodology?

Prescriptive standards tend to stifle the use of innovative materials and manufacturing procedures. Implementation of new materials and manufacturing procedures are often delayed until the standard-setting organizations have had time to evaluate them and deem them acceptable. Implementation is also delayed until these organizations update their standards and redistribute them to the architectural community. In the meantime, end-users continue to incur higher costs than they might otherwise had these materials and procedures been introduced sooner.

Contrast that to a performance-based environment that allows manufacturers the flexibility to implement new materials and procedures as soon as they have been successfully tested against the criteria outlined in the performance standard. The following chart from WDMA I.S.1A-04 delineates the performance criteria that door manufacturers must meet with their products:



Performance Chart

Default if No "Duty Level" Specified

Performance Attribute	Duty Level		
	EXTRA HEAVY DUTY	HEAVY DUTY	STANDARD DUTY
Adhesive Bond Durability WDMA TM-6, 1988	Type II	Type II	Type II
Cycle Slam WDMA TM-7, 1990	1,000,000 cycles	500,000 cycles	250,000 cycles
Hinge-Loading WDMA TM-8, 1990	550 lbs. (2440 N)	475 lbs. (2110 N)	400 lbs. (1780 N)
Door Finishes Various ASTM test methods	TR-6/OP-6 or equal *	TR-4/OP-4 or equal *	TR-2/OP-2 or equal *
Screwholding WDMA TM-10, 1990			
Door Face unblocked	550 lbs. (2440 N)	475 lbs. (2110 N)	400 lbs. (1780 N) **
Door Face (with optional blocking) ***	700 lbs (3110 N)	700 lbs (3110 N)	700 lbs (3110 N)
Vertical Door Edge	550 lbs. (2440 N)	475 lbs. (2110 N)	400 lbs. (1780 N)
Horizontal Door Edge (applies when hardware attached)	300 lbs. (1330 N)	240 lbs. (1060 N)	180 lbs. (810 N)
Telegraph WDMA T-1	Maximum 0.010 in. per 3 in. (0.25 mm per 76 mm) span		
Warp Tolerance WDMA T-2	maximum 0.25 in. per 3'-6" x 7'-0" (6.35 mm per 1050 mm x 2100 mm) door section		
Squareness WDMA T-3	Diagonal variance 0.125 in. (3.17 mm)		

* Other formulations may exhibit similar performance characteristics, but must meet or exceed the performance levels for the systems specified to be considered as equal.

** If screw holding power is less than 400 lbs. (1780 N) blocking or thru-bolts are recommended for operable hardware.

*** Blocking may be specified in certain hardware applications where a specifier deems the frequency and severity of use so dictates. Blocking is a material used for improved screwholding at hardware attachment points (not required in core types such as SCL or Stave Lumber). Refer to Sections C-10 through C-14 for blocking options.

Potential Solutions:

A couple of obvious solutions to this problem are:

1. **Do a better job of educating** the architectural community regarding the differences between the two standards.
2. **Align the standards** to remove the differences between them.

Unfortunately neither of these solutions are as simple to implement as they may appear at first blush.

Both AWI and WDMA have been educating the architectural community for years. The fact that this problem continues to exist today in specifications indicates that either they have been unable to accomplish this effectively, or the audience is so large that the task will never be completed. History would suggest this solution is problematic.

AWI is an organization of woodworkers while WDMA is an organization of door and window manufacturers. While each of these organizations does an excellent job of meeting their members' needs, those needs are different. Both organizations believe that alignment of the two standards would be in the best interests of the architectural community. An attempt to do just that occurred prior to the release of the latest version of each standard in 2003 and 2004, but that attempt failed for a variety of reasons.

AWI is currently in the process of reviewing and updating their *Quality Standards Illustrated* in anticipation of producing their 9th Edition. The current edition is already a collaboration of AWI and the Architectural Woodwork Manufacturers Association of Canada (AWMAC). There are also discussions underway now between AWI and the Woodwork Institute (WI) regarding some form of collaboration between those two organizations. WI is a regional association of woodworkers covering the states of Arizona, California, Nevada, and Oregon, and produces their own standard entitled the *Manual of Woodwork*.

While WDMA is not scheduled to review and update its I.S.1A standard at this time, there is nevertheless a window of opportunity with the AWI standard review and the AWI / WI collaboration discussions, to perhaps produce a true unified North American architectural wood flush door standard. This would require all affected organizations to set aside their own parochial interests and compromise for the betterment of the industry, and ultimately for the betterment of the end-users of our products.

Recommended Solution:

The following is provided as a suggested blueprint for discussions between AWI and WDMA on aligning their wood flush door standards:

1. **AWI** should adopt the HPVA door veneer grading tables for Section 1300. These tables were not available to AWI in 2003 when they produced their current standard. While AWI desires to maintain consistency between the various sections of their Quality Standards Illustrated, it is reasonable for them to reference the panel veneer grading tables for the panel section and the door veneer grading tables for the door section. Blueprint matched door and panel projects could default to the panel veneer grading tables.
2. **WDMA** should change the specifications for their Premium Grade from "A" grade running match to "AA" grade center balance match

to conform to the AWI standard. WDMA needs to create a meaningful difference between their Premium Grade and their Custom Grade, and this would accomplish that. This would also enable AWI to maintain consistency between sections of their standard.

3. **WDMA** should make available to AWI its performance specifications, and AWI should abandon its prescriptive construction standards. WDMA should be given credit within the AWI standard for the performance specifications. This will provide the industry with the framework to continue innovating products and procedures.
4. **AWI** should reinstate the "TR" and "OP" finishing system designations in Section 1500. AWI did a good job of promoting these designations when they were originally created, such that they are still used by the architectural community today. We should take advantage of a useful tool already engrained in the marketplace.
5. **AWI** should recognize the existence of Low Pressure Decorative Laminates in its standard. This is a product currently available in the marketplace.
6. **WDMA** should require a veneer match within pairs of doors and between doors and transoms for its Custom Grade to coincide with the AWI standard. This is the expectation in the marketplace and will negate any possible confusion between the two standards.
7. **Other minor issues** need to be addressed as well to better align the two standards.

While this article focuses specifically on wood flush doors, the same issue arises for stile and rail doors as well. These doors are covered in Section 1400 of the AWI *Quality Standards Illustrated* and in WDMA's I.S.6A-99 standard. Significant differences exist between those two documents. WDMA currently has a task force reviewing and updating their standard, so the timing is ideal for discussions with AWI to also align the two stile and rail door standards.

Are AWI and WDMA up to the challenge? Time will tell. D

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