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1.0 Purpose

a) Provide standards and tolerances for the quality and fit of architectural wood casework and related interior finishes (henceforth referred to as “Product”).

b) Establish minimum aesthetic and performance standards intended to provide a well-defined degree of control over a project’s quality of materials and workmanship for Product.

2.0 Scope

a) Provides aesthetic and structural performance standards for Product designed and manufactured/supplied for specific construction projects.

2.1 Included

a) Product as specified within the following sections per CSI's MasterFormat:
- 06 41 00 Architectural Wood Casework
  - 06 41 13 Wood-Veneer-Faced Architectural Cabinets
  - 06 41 16 Plastic-Laminate-Clad Architectural Cabinets
  - 06 41 93 Cabinet and Drawer Hardware

2.2 Not Included

a) Structural components, grounds, in-wall blocking, backing, furring, brackets, or other anchorage that become an integral part of the building's walls, floors, or ceilings are not furnished or installed under the scope of this standard's requirements.

b) Product as specified under CSI MasterFormat Division 12.

c) Manufactured wood casework included in the scope of ANSI/KCMA A161.1 Performance and Construction Standard for Kitchen and Vanity Cabinets (latest edition).

3.0 Requirements

3.1 General

a) The following requirements shall govern unless a project's contract documents require otherwise.

b) Should a conflict be discovered within this standard, the least restrictive requirement shall prevail.

c) Manufacturer/supplier shall provide drawings in accordance with AWI 100 - Submittals (latest edition).

d) When applicable, manufacturer/supplier shall verify field measurements.

e) Unless otherwise indicated, requirements apply equally to all performance duty levels/aesthetic grades.

f) Any term used herein that is defined by the AWI Glossary uses only that definition for conformance to this standard.

3.1.1 Measurements

a) This standard is written with the International System of Units (SI) followed by the United States customary system of measurement in brackets.

b) The system of measurement used in the project's original contract documents and architectural drawings shall dictate which system of measurement within these standards is used for verification of compliance.

c) The United States customary measurement is typically a "soft" conversion of the SI measurement. In order to make the SI number more conceptually coherent and consistent, most conversions for less than 152.4 mm [6″] in dimension are "soft" converted to the nearest 0.1 mm. For measurements above 152.4 mm [6″], the "soft" value is converted to the nearest 1 mm.

d) "Inconspicuous," when used in this standard, means not readily visible without careful inspection at a distance of:

Premium	Custom	Economy
610 mm [24″]	1219 mm [48″]	1829 mm [72″]

e) Gaps and flushness between exposed components shall be tested with a feeler gauge at points where components are required to contact as indicated within this standard.

3.1.2 Special Requirements

a) When seismic construction is required for Product, such requirements and details shall be specified in the contract documents.

b) Requirements for Product, such as moisture-resistant or fire-retardant materials, shall be specified in the contract documents.

3.1.3 Environmental Conditions

a) Requirements of this standard are contingent upon maintaining proper interior environmental controls prior to, during, and after installation. See AWI 200 - Care & Storage (latest edition).

3.1.4 Requirements for Installation

a) Manufacturer/supplier shall provide documented instructions for Product installation, fastening/joinery methods, instructions, and fastener details for attachment to adjacent panels and/or components.

b) Manufacturer/supplier shall provide drawings indicating required location of blocking and supports. See AWI 100 - Submittals (latest edition).

c) Manufacturer/supplier shall provide documented instructions for the fastening methods of adjacent cabinets. Documented instructions shall include fastener details.

d) Installation of Product shall be in accordance with ANSI/AWI 0620 - Finish Carpentry/Installation (latest edition).

3.1.5 Default Requirements

a) ~~Unless otherwise specified,~~ Product shall comply with the following minimum defaults:
- Structural Performance: Duty Level 3
- Aesthetic Performance: Custom Grade

b) Product default shall include:
- Flush overlay frameless construction
- Doors
- Adjustable shelves (2 per wall unit and 1 per base unit)
- Unfinished closed-grain hardwood intended for an opaque finish or white decorative laminate (TFL or HPDL)

3.2 Material

a) Materials used for the construction of Product shall comply with tested, documented, and approved means and methods for the specified performance duty level.

b) Materials used for construction of Product covered within the scope of this standard shall comply with the requirements set forth in AWI 300 - Materials (latest edition).

c) Materials used for the same purpose, within the scope of this standard, shall be consistent throughout a project.

d) Glass used in conjunction with casework, doors, and/or lites shall be in accordance with ANSI Z97.1 (latest edition).

3.2.1 Base, Wall, and Tall Cabinets

a) Components and their assembly shall meet structural performance and aesthetic values set forth in this standard.

b) In the absence of specified thickness values, all components and assemblies shall meet the minimum thickness and material requirements of those tested and used to establish the structural performance values set forth within this standard. Alternative materials and assemblies are permitted provided they meet the structural performance and aesthetic values set forth within this standard.

3.2.1.1 Security Panels

a) When doors and/or drawers within the same cabinet are keyed differently, security panels are required.

3.2.1.2 Base Support Assemblies

a) Material shall be a minimum of 17.5 mm [.688″] thick with a minimum finished installed height of 101.6 mm [4″].

b) If specified, moisture-resistant base requires base components to be fabricated from particleboard or fiberboard with a 24-hour thickness swell factor of 5.5% or less, in accordance with ASTM D1037 (latest edition), or veneer core substrate with Type II adhesive.

c) Use of leg levelers is permitted at the option of the manufacturer/supplier provided, they meet the specified Performance Duty Level.

3.2.1.3 Aprons and Light Valances

a) Shall be a minimum of 15.9 mm [.625″] thick.

3.2.2 Doors

a) Solid wood doors are not permitted, except at stile and rail doors.

b) Maximum cabinet door size shall be 610 mm [24″] by 2134 mm [84″]. Larger doors may be susceptible to warp. Doors in excess of these width or height dimensions are not subject to warp tolerances and tests contained within this standard.

c) Thicknesses of 34.9 mm [1.375″] or greater shall be governed by the ANSI/WDMA I.S.1A (latest edition) and ANSI/WDMA I.S.6A (latest edition) Architectural Door Standards, as applicable. Such doors are not subject to the tolerances and conditions contained within this AWI standard.

3.2.3 Drawer Boxes

3.2.3.1 Decorative Laminate

a) Material shall be HPDL or TFL.

3.2.3.2 Solid Wood and Veneer, Transparent Finish

a) Shall be a hardwood species at the option of the manufacturer/supplier.

b) Solid wood shall be in compliance with Custom Grade requirements set forth in AWI 300 - Materials (latest edition).

c) Veneer shall be a minimum of ANSI/HPVA HP-1 (latest edition) Grade C.

3.2.3.3 Opaque Finish

a) Material shall be at the option of the manufacturer/supplier.

3.2.4 Shelves

3.2.4.1 Pullout

a) Components shall operate smoothly in channels or rigid slides.

b) Material shall be a minimum of 19.1 mm [.750″] thick.

3.2.4.2 Glass

a) Glass type, thickness, color, and edge treatment shall be as specified.

3.2.5 Hardware

a) Hardware used for construction of Product covered within the scope of this standard shall comply with the requirements set forth in applicable ANSI/BHMA A156.9 (latest edition).

b) This standard has adopted ANSI/BHMA A156.9 (latest edition), Grade 2, as the default minimum requirement for casework hardware except shelf suspension hardware.

c) Shelf suspension system shall perform within the specified performance duty level.

d) Hardware types used for the same purpose, within the scope of this standard, shall be consistent throughout a project.

e) Quantity and installation spacing shall be within the hardware manufacturer/supplier's recommendation and listed capacity.

f) Manufacturer/supplier shall furnish hardware as required to provide a complete casework assembly without impairment of the cabinet’s structural integrity and/or functionality.

g) Keyboard trays shall conform to section 4.13 (Test 12, Drawers and Trays) of ANSI/BHMA A156.9 (latest edition).

3.2.5.1 Hardware, Doors

a) Hinges shall be self-closing or provided with a catch.

b) Bumper pads shall be installed at the top and bottom of each hinged door.

c) Door size and weight shall be within the hardware manufacturer/supplier’s listed capacity.

3.2.5.2 Hardware, Drawers

a) If stops are not integral to the drawer slides, a mechanism shall be provided to prevent drawer face from impacting the cabinet body.

b) If stops are not integral to the drawer slides, a mechanism shall be provided to prevent the drawer from pulling out of the cabinet.

c) Drawer slides shall provide for a minimum extension of 75 percent of the length of the drawer box from the face of the cabinet.

d) File drawer slides shall provide for a minimum extension of 100 percent of the length of the drawer box from the face of the cabinet.

e) At file storage, sufficient clearance for hanging file folders with tabs shall be provided.

f) Stands or rails for file storage systems shall be at the option of the manufacturer/supplier.

g) File direction shall be at the option of the manufacturer/supplier.

h) Where legal-sized file storage is required, the file storage system shall accommodate both legal-sized files and letter-sized files.

3.2.5.3 Hardware, Locks, and Latches

a) Locks shall be furnished, located, and keyed as indicated in the contract documents.

b) Locks within a room shall be keyed alike.

c) Locks shall be keyed differently and/or master keyed only if specified.

d) Strike plates are required for installed locks and latches only if specified.

3.3 Structural

3.3.1 Product Performance Requirements

a) Manufacturer/supplier shall provide a current AWI Performance Quality Test Report including documented fabrication methods, ~~including~~ joinery, material, and component details, that have been tested in conformance with AWI Test Methods referenced within this standard. Testing shall be conducted by AWI, laboratories holding ISO 17025 accreditation, or laboratories operating under an equivalent quality management system approved by AWI.

b) Load values expressed within this standard are specific to referenced laboratory tests conducted in accordance with AWI Test Methods. **These load values do not suggest service loads nor shall they be construed as suggesting normal casework usage loads.**

c) Construction methods and materials shall be consistent throughout the project.

d) Cabinet units which will receive sinks or appliances may be modified as required, provided structural integrity is retained.

3.3.2 Determination of Product Performance Duty Level

a) Product performance duty level is determined by the lowest tested value derived from AWI Test Methods referenced within this standard for joinery methods and materials or components. (Example: A Product may include a cabinet body construction meeting Performance Duty Level 4 and may also include an adjustable shelf meeting Performance Duty Level 2. The assembled casework unit would then meet Performance Duty Level 2 as the lowest tested value.)

3.3.3 Casework, General

a) The following terms for duty level test components are used only as described within the cited test methods:
- Top
- Bottom
- Adjustable Shelf
- Fixed Shelf
- Drawer
- Door

3.3.3.1 Base Cabinets

a) Load values expressed within this standard are specific to referenced laboratory tests conducted in accordance with AWI Test Methods. **These load values do not suggest service loads nor shall they be construed as suggesting normal casework usage loads.**

b) Minimum performance requirements according to AWI BC-1 Base Cabinet Assembled Unit Test Method:

Component	Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
Top	219.7 kg/~~sq.~~ m² [45 lb./~~sq. ft.~~ ft²]	341.8 kg/~~sq.~~ m² [70 lb./~~sq. ft.~~ ft²]	439.4 kg/~~sq.~~ m² [90 lb./~~sq. ft.~~ ft²]	561.5 kg/~~sq.~~ m² [115 lb./~~sq. ft.~~ ft²]
Adjustable Shelf	122 kg/~~sq.~~ m² [25 lb./~~sq. ft.~~ ft²]	195.3 kg/~~sq.~~ m² [40 lb./~~sq. ft.~~ ft²]	244.1 kg/~~sq.~~ m² [50 lb./~~sq. ft.~~ ft²]	317.4 kg/~~sq.~~ m² [65 lb./~~sq. ft.~~ ft²]
Doors	45.4 kg [100 lb.] each			
Drawers	22.7 kg [50 lb.] each			

c) Minimum performance requirements according to AWI BC-2 Base Cabinet Structural Integrity Test Method:

Component	Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
Top	659.1 kg/~~sq.~~ m² [135 lb./~~sq. ft.~~ ft²]	976.5 kg/~~sq.~~ m² [200 lb./~~sq. ft.~~ ft²]	1293.8 kg/~~sq.~~ m² [265 lb./~~sq. ft.~~ ft²]	1611.2 kg/~~sq.~~ m² [330 lb./~~sq. ft.~~ ft²]

3.3.3.2 Wall Cabinets

a) Load values expressed within this standard are specific to referenced laboratory tests conducted in accordance with AWI Test Methods. **These load values do not suggest service loads nor shall they be construed as suggesting normal casework usage loads.**

b) Minimum performance requirements according to AWI WC-1 Wall Cabinet Assembled Unit Test Method:

Component	Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
Top	170.9 kg/~~sq.~~ m² [35 lb./~~sq. ft.~~ ft²]	244.1 kg/~~sq.~~ m² [50 lb./~~sq. ft.~~ ft²]	317.4 kg/~~sq.~~ m² [65 lb./~~sq. ft.~~ ft²]	415 kg/~~sq.~~ m² [85 lb./~~sq. ft.~~ ft²]
Adjustable Shelf	170.9 kg/~~sq.~~ m² [35 lb./~~sq. ft.~~ ft²]	244.1 kg/~~sq.~~ m² [50 lb./~~sq. ft.~~ ft²]	317.4 kg/~~sq.~~ m² [65 lb./~~sq. ft.~~ ft²]	415 kg/~~sq.~~ m² [85 lb./~~sq. ft.~~ ft²]
Bottom	170.9 kg/~~sq.~~ m² [35 lb./~~sq. ft.~~ ft²]	244.1 kg/~~sq.~~ m² [50 lb./~~sq. ft.~~ ft²]	317.4 kg/~~sq.~~ m² [65 lb./~~sq. ft.~~ ft²]	415 kg/~~sq.~~ m² [85 lb./~~sq. ft.~~ ft²]
Doors		54.43 kg [120 lb.] each		

c) Minimum performance requirements according to AWI WC-2 Wall Cabinet Structural Integrity Test Method:

Component	Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
Bottom	268.5 kg/~~sq.~~ m² [55 lb./~~sq. ft.~~ ft²]	415 kg/~~sq.~~ m² [85 lb./~~sq. ft.~~ ft²]	537 kg/~~sq.~~ m² [110 lb./~~sq. ft.~~ ft²]	659.1 kg/~~sq.~~ m² [135 lb./~~sq. ft.~~ ft²]

3.3.3.3 Tall Cabinets

a) Load values expressed within this standard are specific to referenced laboratory tests conducted in accordance with AWI Test Methods. **These load values do not suggest service loads nor shall they be construed as suggesting normal casework usage loads.**

b) Minimum performance requirements per shelf (4 adjustable shelves and one fixed shelf) according to AWI TC-1 Tall Cabinet Assembled Unit Test Method:

Component	Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
Shelf (Adjustable and Fixed)	146.5 kg/~~sq.~~ m² [30 lb./~~sq. ft.~~ ft²]	219.7 kg/~~sq.~~ m² [45 lb./~~sq. ft.~~ ft²]	293 kg/~~sq.~~ m² [60 lb./~~sq. ft.~~ ft²]	366.2 kg/~~sq.~~ m² [75 lb./~~sq. ft.~~ ft²]

c) Minimum performance requirements according to AWI TC-2 Tall Cabinet Structural Integrity Test Method:

Component	Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
Fixed Shelf	512.7 kg/~~sq.~~ m² [105 lb./~~sq. ft.~~ ft²]	756.8 kg/~~sq.~~ m² [155 lb./~~sq. ft.~~ ft²]	1025.3 kg/~~sq.~~ m² [210 lb./~~sq. ft.~~ ft²]	1269.4 kg/~~sq.~~ m² [260 lb./~~sq. ft.~~ ft²]

3.3.4 Drawer Boxes

a) Load values expressed within this standard are specific to referenced laboratory tests conducted in accordance with AWI Test Methods. **These load values do not suggest service loads nor shall they be construed as suggesting normal casework usage loads.**

b) Tested values shall not indicate a drawer slide rating.

c) Minimum performance requirements according to AWI DB-1 Drawer Bottom Compression Test Method:

Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
1112.06 Newtons [250 lbf~~.~~]			

d) Minimum performance requirements according to AWI DF-1 Drawer Front Tension Test Method:

Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
889.64 Newtons [200 lbf]		1334.47 Newtons [300 lbf]	1779.29 Newtons [400 lbf]

e) At drawer bank cabinets, when the total opening height for drawers exceeds 762 mm [30″], an intermediate front stretcher is required.

3.3.5 Shelves

3.3.5.1 Shelves, Adjustable

a) Load values expressed within this standard are specific to referenced laboratory tests conducted in accordance with AWI Test Methods. **These load values do not suggest service loads nor shall they be construed as suggesting normal casework usage loads.**

b) Performance duty level of shelf support system is dependent upon the combination of core material and shelf suspension hardware. Minimum performance requirements according to AWI SS-1 Shelf Suspension Test Method:

Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
1223.26 Newtons [275 lbf]	1890.49 Newtons [425 lbf]	2557.73 Newtons [575 lbf]	3224.96 Newtons [725 lbf]

c) Adjustable shelves shall be supported on evenly spaced, cleanly bored holes a maximum of 64 mm [2.520″] on center with shelf rests or on shelf standards with metal shelf rests.

d) Center line of shelf rests, from the front or the back of the interior cabinet body, shall not exceed a minimum of 25.4 mm [1″] to a maximum of 101.6 mm [4″]. The dimension between the centerline of the shelf rests shall not be less than 60% of the overall shelf's depth.

3.3.5.2 Shelves, Maximum Allowable Span

a) The maximum allowable span for an adjustable shelf shall be determined by the shelf material's modulus of elasticity (MOE). (See Figure 87)

b) This standard allows a maximum calculated deflection for adjustable shelves at 6.4 mm [.250″] based on the following formula.

$$L = DEt^3 / (.1563s^4) \times 144$$

L = ~~lbs/SF~~ lb/ft^2 of uniformly distributed load
D = deflection (inches)
E = MOE (psi)
t = thickness (inches)
s = span of shelf (inches)

c) Manufacturer/suppliers shall use the formula above and associated table (See Figure 87) to determine acceptable adjustable shelf thickness with a minimum "L" value of 40 ~~lbs/SF~~ lb/ft^2, with no shelf exceeding a total applied weight of 200 lbs uniformly distributed during normal casework usage.

d) The maximum allowable span for an adjustable shelf may be determined using the following calculator: www.awinet.org/tools/shelf-span/

3.3.6 Hardware

a) Shall be fitted and adjusted to ensure operation without binding.

3.3.6.1 Hardware, Drawer

a) Drawer slides shall conform to the following minimum load capacity requirements, as measured per ANSI/BHMA A156.9 (latest edition):

Drawer Type	Load Capacity
Pencil drawers	22.7 kg [50 lbs.]
General purpose drawers	34 kg [75 lbs.]
File drawers	45.4 kg [100 lbs.]
Lateral file drawers greater than 610 mm [24″] and less than 762 mm [30″] in width	68 kg [150 lbs.]
Lateral file drawers equal to or greater than 762 mm [30″] in width	90.7 kg [200 lbs.]

3.3.6.2 Hardware, Locks and Latches

a) Locks shall withstand a minimum of 22.7 kg [50 lb.] pull force in any direction while in the locked position.

b) At locking pairs of doors, the inactive door shall be equipped with a mechanism to prevent opening when in locked position.

3.3.7 Exposed Exterior Surfaces, Decorative Laminate Casework

a) At exposed exterior surfaces, HPDL or TFL shall meet a Resistance to Impact by Large Diameter Ball (ISO 4586-2-2018(E): Test 25) from a distance of:

Duty Level 1	Duty Level 2	Duty Level 3	Duty Level 4
375 mm [14.764″]	375 mm [14.764″]	600 mm [23.622″]	600 mm [23.622″]

3.4 Aesthetic

a) Aesthetic performance, in relation to this standard, refers to and is an evaluation of surfaces exposed or semi-exposed following installation.

b) The three grades of aesthetic performance are:

Premium	Custom	Economy
The highest degree of control over materials, workmanship, and manufacture	A high degree of control over materials, workmanship, and manufacture	The minimum degree of control over materials, workmanship, and manufacture

c) Surface terminology category examples may be found in Supplemental (See Figure 86)

d) Unless otherwise ~~specified or~~ noted within this standard, material at vertical surfaces with a defined grain and/or directional pattern shall be applied and assembled with grain or pattern oriented vertically.

e) At exposed exterior surfaces, exposed fasteners are not permitted except at access panels.

f) At exposed interior surfaces, fastener cover caps of compatible color to interior finish shall be furnished by the manufacturer/supplier and are:

Premium	Custom	Economy
Required	Required	Not required

g) When fastener provision is countersunk, fasteners shall be countersunk.

h) Final adjustments for gaps, flushness, and alignment shall be in accordance with ~~the~~ ANSI/AWI 0620 - Finish Carpentry/Installation (latest edition).

i) Semi-exposed surfaces require consistent color or species to be used throughout entire project.

j) At semi-exposed surfaces, matching exposed surfaces are only required if so specified.

k) Concealed surface materials shall be at the option of the manufacturer/supplier.

l) At exposed and semi-exposed surfaces, exposed core is not permitted.

3.4.1 Base, Wall, and Tall Cabinets

3.4.1.1 Face Frame Construction

a) At face frame casework, exposed fastening shall be:

Premium	Custom	Economy
Not permitted	Permitted if inconspicuous	Permitted

b) Grain shall run vertically on stiles and horizontally on rails.

c) Horizontal reveals between countertop's bottom edge and overlay doors, drawer fronts, and false fronts shall be 6.4 mm [.250″] to 25.4 mm [1″] and shall be consistent across elevations. (See Figure 16)

d) When designed for flush inset doors, use of a bottom face frame component is:

Premium	Custom	Economy
Required	Required	Not required

3.4.1.2 Frameless Construction

a) Horizontal reveals between countertop's bottom edge and overlay doors, drawer fronts, and false fronts shall be 3.2 mm [.125″] to 9.6 mm [.375″] and shall be consistent across elevations. (See Figure 15) At laboratory countertops, the maximum reveal permitted shall be 25.4 mm [1″]. (See Figure 17)

3.4.1.3 Tops and Bottoms

a) Bottoms of wall-hung cabinets for exposed interiors shall be:

Premium	Custom	Economy
Uniform in thickness for the entire elevation or connected elevations except when concealed behind a minimum 38.1 mm [1.500″] face frame component	Uniform in thickness for the entire elevation or connected elevations except when concealed behind a minimum 38.1 mm [1.500″] face frame component	Material thickness at the option of the manufacturer/supplier

3.4.1.4 Ends and Divisions

a) On wall-hung cabinets, if cabinet ends or sides extend below the cabinet bottoms, the portion below the cabinet bottom is considered an exposed interior surface and shall be:

Premium	Custom	Economy
The same color and pattern as the exposed surface	The same color and pattern as the exposed surface	Material at the option of manufacturer/supplier

b) Exposed ends shall be:

Premium	Custom	Economy
Of integral construction	Of integral construction or secondarily applied	Of integral construction or secondarily applied

c) When viewed from the side, exposed ends shall conceal all other cabinet structural components, except toe kicks on base cabinets where ladder bases or levelers are used.

d) Horizontal components (excluding countertops) shall not extend beyond the exposed end.

e) Secondarily applied exposed ends shall be mechanically fastened to the cabinet body.

f) Unless prevented by design or usage, drawer compartments within a casework unit shall be separated from shelf or open compartments by a full-depth vertical division.

3.4.1.5 Backs

a) Cabinet backs are:

Premium	Custom	Economy
Required	Required	Required if back is an exposed surface

b) At multiple-panel backs, joints shall be inconspicuous at exposed or semi-exposed interiors where panels intersect.

c) At semi-exposed surfaces, vinyl overlay is permitted in cabinet backs if matched for color to other semi-exposed materials.

3.4.1.6 Base Support Assemblies

a) Base/toe kick shall be integral (constructed as an integral part of the cabinet body) or separate (constructed as a separate component).

3.4.1.7 Joints

a) Joints in Product shall be assembled to meet the tolerances defined within this standard and be securely attached, with any adhesive residue removed from exposed and semi-exposed surfaces.

b) Fixed horizontal cabinet components, including tops and bottoms, shall be either flush or set back (See Figure 27) a maximum of 2 mm [.078″] at their intersection with vertical components and shall be uniform throughout the room.

c) Edgebanding shall be square, radiused, or beveled (See Figure 28).

d) The “V” that is formed where edgebanding meets shall be uniform throughout the room.

e) Flushness variations in exposed and semi-exposed surfaces (See Figure 26, D) when mitered or butted shall not exceed:

Premium	Custom	Economy
.3 mm [.012″]	.4 mm [.016″]	.6 mm [.025″]

f) Gaps in exposed and semi-exposed surfaces, when mitered or butted (See Figure 30, A), shall not exceed:

Premium	Custom	Economy
.3 mm [.012″] wide by 20% of the joint length	.4 mm [.016″] wide by 20% of the joint length	.6 mm [.025″] wide by 20% of the joint length

g) Gaps in exposed and semi-exposed surfaces between parallel components (See Figure 30, B) shall not exceed:

Premium	Custom	Economy
.3 mm x 101.6 mm [.012” x 4″] and shall not occur within 1829 mm [72″] of a similar gap in the same joint	.4 mm x 152.4 mm [.016” x 6″] and shall not occur within 1524 mm [60″] of a similar gap in the same joint	.6 mm x 229 mm [.025” x 9″] and shall not occur within 1219 mm [48″] of a similar gap in the same joint

h) Gaps in exposed and semi-exposed surfaces, when mitered or butted (See Figure 30, C), shall not exceed:

Premium	Custom	Economy
.3 mm [.012″]	.4 mm [.016″]	.6 mm [.025″]

i) Joint filler (putty), when used, shall be inconspicuous.

j) Panels shall have adequate space to move, float, expand, and/or contract as a result of temperature and/or relative humidity.

3.4.1.8 Decorative Laminate

a) Material, pattern, and color shall be as specified and, if not specified, shall be at the option of the manufacturer/supplier.

b) Material shall be of one color or pattern per room, with a maximum of five different colors or patterns per project.

3.4.1.9 Exposed Exterior Surfaces, Decorative Laminate

a) Require HPDL or TFL.

3.4.1.10 Exposed Interior Surfaces, Decorative Laminate

a) At exposed interior surfaces at doors and drawer fronts, interior face shall be:

Premium	Custom	Economy
Same material, color, pattern, and thickness as face	Same material and thickness as face, color to match interior or face	Same material and thickness as face, color to match interior or face

b) Exposed interior surfaces, except at doors and drawer fronts, require:

Premium	Custom	Economy
HPDL or TFL compatible to exposed exterior surface for color, grain, and pattern	HPDL or TFL compatible to exposed exterior surface for color, grain, and pattern	HPDL or TFL at the option of the manufacturer/supplier

3.4.1.11 Semi-Exposed Surfaces, Decorative Laminate

a) Semi-exposed surfaces shall be HPDL or TFL at the option of the manufacturer/supplier.

3.4.1.12 Transparent Finish

a) ~~Unless otherwise specified,~~ Product shall be finished with an AWI Finishing System Number or Finishing Technology per ANSI/AWI 0400 - Factory Finishing (latest edition).

b) Hardboard is not permitted for exposed surfaces.

3.4.1.13 Exposed Exterior Surfaces, Transparent Finish

a) Material shall be of the specified species, cut, veneer match, and:

Premium	Custom	Economy
Solid stock shall be well matched for color and grain	Solid stock and/ or veneer shall be compatible for color and grain	Solid stock and/ or veneer shall be compatible for color
Veneer shall be compatible for color with solid stock		
Adjacent veneer panels shall be well-matched for color and grain		

b) Veneer for transparent finish shall be a minimum of:

Premium	Custom	Economy
ANSI/HPVA HP-1 (latest edition) Grade AA	ANSI/HPVA HP-1 (latest edition) Grade A	ANSI/HPVA HP-1 (latest edition) Grade A

3.4.1.14 Exposed Interior Surfaces, Transparent Finish

a) Transparent finish requires:

Premium	Custom	Economy
The same species and cut as the exposed exterior surface	The same species as the exposed exterior surface	Decorative laminate or wood veneer at the option of the manufacturer/supplier

b) Veneer for transparent finish shall be a minimum of:

Premium	Custom	Economy
ANSI/HPVA HP-1 (latest edition) Grade A	ANSI/HPVA HP-1 (latest edition) Grade B	ANSI/HPVA HP-1 (latest edition) Grade C

c) Veneer at interior face of door and drawer fronts shall be a minimum of:

Premium	Custom	Economy
ANSI/HPVA HP-1 (latest edition) Grade A face of the same species and cut as the exposed exterior surface	ANSI/HPVA HP-1 (latest edition) Grade B face of the same species and cut as the exposed exterior surface	ANSI/HPVA HP-1 (latest edition) Grade C face of the same species as the exposed exterior surface

3.4.1.15 Semi-Exposed Surfaces, Transparent Finish

a) Surfaces shall be a minimum of:

Premium	Custom	Economy
ANSI/HPVA HP-1 (latest edition) Grade C of compatible species to exposed surface	ANSI/HPVA HP-1 (latest edition) Grade C of compatible species to exposed surface or decorative laminate	ANSI/HPVA HP-1 (latest edition) Grade at the option of the manufacturer/supplier

3.4.1.16 Opaque Finish

a) ~~Unless otherwise specified,~~ Product shall be finished with an AWI Finishing System Number or Finishing Technology per ANSI/AWI 0400 - Factory Finishing (latest edition).

3.4.1.17 Exposed Exterior Surfaces, Opaque Finish

a) Opaque finish permits substrates of:

Premium	Custom	Economy
MDF or MDO	MDF, MDO, closed-grain hardwood veneer, or solid stock	Particleboard, MDF, MDO, softwood veneer, hardwood veneer, or solid stock

b) Veneer for opaque finish shall be closed-grain hardwood of manufacturer/supplier's choice of species and a minimum of:

Premium	Custom	Economy
ANSI/HPVA HP-1 (latest edition) Grade B	ANSI/HPVA HP-1 (latest edition) Grade C	ANSI/HPVA HP-1 (latest edition) Grade D

3.4.1.18 Exposed Interior Surfaces, Opaque Finish

a) Opaque finish permits substrates of:

Premium	Custom	Economy
MDF or MDO	MDF, MDO, closed-grain hardwood veneer, or solid stock	Particleboard, MDF, MDO, softwood veneer, hardwood veneer, or solid stock

3.4.1.19 Exposed Interior Surfaces, Opaque Finish

a) Opaque finish permits substrates of:

Premium	Custom	Economy
MDF or MDO	MDF, MDO, closed-grain hardwood veneer, or solid stock	Particleboard, MDF, MDO, softwood veneer, hardwood veneer, or solid stock

3.4.2 Doors

a) This section applies to doors less than 34.9 mm [1.375″] thick.

b) Door thicknesses of 34.9 mm [1.375″] or greater shall be governed by ANSI/WDMA I.S.1A (latest edition) and ANSI/WDMA I.S.6A (latest edition) Architectural Door Standards, as applicable. Doors and casework utilizing such doors are not subject to the tolerances and conditions contained within this AWI standard.

c) When veneer cores are specified for doors, they may be susceptible to warp and shall not be subject to warp tolerances contained within this standard.

d) Grained or patterned faces on doors shall be vertical.

3.4.2.1 Doors, Hinged

a) Flush overlay is the default for frameless construction.

b) Reveal overlay is the default for face frame construction.

c) At exposed knuckle hinges, defaulting to reveal overlay is at the option of the manufacturer/supplier~~, unless otherwise specified~~.

d) At reveal overlay, the reveal shall be determined by the hinge clearance requirements (See Figure 35).

e) When adjacent and exposed, hinges shall align horizontally.

f) At flush overlay, wrap-around hinges shall be let into the edge of the door to maintain proper gap tolerance (See Figure 33). The resulting notching for hinges is:

Premium	Custom	Economy
Required to be painted or stained to match exposed surface	Not required to be finished	Not required to be finished

g) At reveal overlay, wrap-around hinges are not required to be let into the edge of the door (See Figure 34).

3.4.2.2 Doors, Sliding

a) Interior and exterior faces of sliding doors shall be of the same thickness and material.

b) Thickness of wood and/or decorative laminate doors shall be a minimum of 6.4 mm [.250″] for doors 610 mm [24″] and under in height or 19.1 mm [.750″] for doors over 610 mm [24″] in height.

c) Hardboard 6.4 mm [.250″] thick and painted to match adjacent surfaces is:

Premium	Custom	Economy
Not permitted	Not permitted	Permitted

d) Sliding doors more than 1.5 times as tall as they are wide shall be mounted with an overhead metal track and roller hanger to prevent tipping and binding.

e) In hanging track systems, exposed tracks are permitted.

f) Frameless glass sliding doors require carriers with metal tracks and top guides. Bottoms of upper cabinets shall be reinforced as needed to prevent sagging.

g) Thickness of frameless glass sliding doors shall be a minimum of 6.4 mm [.250″] tempered or laminated glass at the option of the manufacturer/supplier.

h) Frameless glass sliding doors shall have:

Premium	Custom	Economy
Exposed edges flat polished	Exposed edges flat polished	Exposed edges flat ground

3.4.2.3 Doors, Stile and Rail

a) Moulded profile (sticking) shall be at the option of the manufacturer/supplier.

b) Stile and rail components shall be a minimum of 38.1 mm [1.5″] in width.

c) Stiles shall run the full height of the door.

d) Rails, including top, intermediate, and bottom, shall run between stiles.

e) Grain or directional pattern shall run vertically on stiles and horizontally on rails.

f) At panels, direction of grain or pattern shall:

Premium	Custom	Economy
Run vertically and adjacent door panels for transparent finish shall match for color and grain	Run vertically and adjacent door panels for transparent finish shall match for color and grain	Be at the option of the manufacturer/supplier

g) When solid stock is used with veneer panels:

Premium	Custom	Economy
Solid stock shall be well matched for color	Solid stock and veneer panel shall be compatible for color	Solid stock and veneer panel shall be compatible for color
Veneer panel shall be compatible for color with solid stock		

h) Flat panels shall be a minimum of 6.4 mm [.250″] thick.

i) At flat panels:

Premium	Custom	Economy
Solid wood panels are not permitted	Edge-glued solid wood is permitted if at least 12.7 mm [.500″] thick and is 350 mm [13.780″] wide or less	Edge-glued solid wood is permitted if at least 12.7 mm [.500″] thick and is 350 mm [13.780″] wide or less

j) At raised panels:

Premium	Custom	Economy
Solid wood panels are not permitted	Edge-glued solid wood is permitted for panels a minimum of 12.7 mm [.500″] thick and a maximum of 350 mm [13.780″] wide.	Edge-glued solid wood is permitted for panels a minimum of 12.7 mm [.500″] thick and a maximum of 350 mm [13.780″] wide.

k) Solid wood is permitted for rim banding raised panels if mitered and glued under pressure.

l) The panel face veneer may be applied before or after rim banding.

m) Regardless of retention method, panels shall have adequate space to move, float, expand, or contract as a result of ambient humidity changes.

n) Applied moulding shall be securely attached. Fasteners shall be inconspicuous.

o) Cores of panel product materials shall not be exposed.

3.4.2.4 Doors, Glazed

a) When machining a door with glass cutout, minimum clearance shall be 9.5 mm [.375″] between hardware machining and glass cutout.

b) At opaque finish and decorative laminate doors, stops shall be synthetic or solid wood and compatible color to exposed interior surfaces.

c) At transparent finish doors, stops shall be synthetic or solid stock of compatible species to adjacent surfaces and compatible color to exposed interior surfaces.

d) Stops shall be continuous, removable, and on the interior only.

e) Mechanically fastened glass clips (See Figure 32) are:

Premium	Custom	Economy
Not permitted	Permitted in lieu of continuous stops	Permitted in lieu of continuous stops

f) Silicone or glazing putty used as a stop is:

Premium	Custom	Economy
Not permitted	Not permitted	Permitted

g) Exposed rabbet shall be:

Premium	Custom	Economy
Painted or stained compatible to the exposed interior surface	Painted or stained compatible to the exposed interior surface	At the option of the manufacturer/supplier

3.4.2.5 Doors and Drawer Fronts, Flush Panel and Solid Wood

a) When veneer cores are specified for doors, they may be susceptible to warp and shall not be subject to warp tolerances contained within this standard.

b) Grained or patterned faces on doors, drawer fronts, and false fronts shall:

Premium	Custom	Economy
Run and match vertically and be sequenced horizontally within each cabinet. At cathedral grain, the ~~crown~~ cathedral shall be pointing up and run in the same direction for the entire project. Doors, drawer fronts, and false fronts shall be well-matched for color and grain across multiple cabinet faces in one elevation. Requirement for blueprint or sequencing between cabinets only if specified. (See Figure 22)	Run and match vertically within each cabinet. Doors and drawer fronts shall be compatible in color across multiple faces in each room. (See Figure 21)	Run either vertically or horizontally at the option of the manufacturer/ supplier for the entire project. Doors shall be vertical. Mismatch is permitted. (See Figure 20)

c) Solid wood is not permitted at doors, except at stile and rail doors.

d) Solid wood drawer front grain shall run horizontally.

3.4.3 Drawer Boxes

a) Drawer box materials shall be at the option of the manufacturer/supplier, provided the assembled drawer meets the specified Performance Duty Level and the requirements set forth in **3.4.3 Drawer Boxes**.

b) Drawer boxes (including trays and sliding bins) of solid wood or veneer are required to be finished with a finishing technology per ANSI/AWI 0400 - Factory Finishing (latest edition), of the manufacturer/supplier's choice.

c) Drawer box shall be fitted to the cabinet to allow no more than 50.8 mm [2″] of clearance between the back of the drawer box and the interior face of rear panel of the cabinet body with a drawer box maximum length of 558.8 mm [22″] ~~unless otherwise specified~~. Drawer boxes greater than 558.8 mm [22″] may be supplied at the option of the manufacturer/supplier. (See Figure 72-A).

d) Drawer box shall be fitted to the cabinet to allow no more than 38.1 mm [1.500″] of clearance between the top of the drawer box and the stretcher or structural component above (See Figure 72-B).

3.4.3.1 Drawer Boxes, Decorative Laminate

a) At decorative laminate drawer box joinery:

Premium	Custom	Economy
Visible core is not permitted	Visible core shall be edgebanded, painted, or stained to match drawer side	Visible core shall be at the option of manufacturer/supplier

3.4.3.2 Drawer Boxes, Systems

a) Drawer box systems shall be assembled in accordance with manufacturer/supplier's documented instructions.

b) Wood components shall meet semi-exposed requirements within this standard or be ~~color~~ compatible for color with box system at the option of the manufacturer/supplier.

3.4.4 Shelves

a) Grain or directional pattern of the surface shall run parallel to the width of the cabinet.

3.4.4.1 Shelves, Fixed

a) Thickness shall be:

Premium	Custom	Economy
Uniform at each elevation or connected elevations in open casework	Uniform at each elevation or connected elevations in open casework	At the option of the manufacturer/supplier

3.4.4.2 Shelves, Adjustable

a) Minimum depth shall be:

Premium	Custom	Economy
No less than 6.4mm [.250″] shorter than the interior cabinet depth	No less than 6.4mm [.250″] shorter than the interior cabinet depth	At the option of the manufacturer/supplier

b) Length shall be (See Figure 36):

Premium	Custom	Economy
A maximum of 3.2 mm [.125″] less than the interior cabinet width plus any additional offset created by the shelf rests used	A maximum of 3.2 mm [.125″] less than the interior cabinet width plus any additional offset created by the shelf rests used	Maximum length at the option of manufacturer/ supplier

c) Metal shelf standards shall be recessed in a plow with the face slightly proud of the cabinet side surface with the core not exposed.

d) Metal shelf standards shall extend vertically to within 152.4 mm [6″] of the interior top and bottom of the cabinet shelf space.

e) Bored-hole shelf rest systems shall extend vertically to within 152.4 mm [6″] of the interior top and bottom of the cabinet shelf space.

3.4.5 Dividers

a) Shall be:

Premium	Custom	Economy
Well-matched to adjacent surfaces	Hardboard permitted if tempered and smooth on both sides	Hardboard permitted if tempered and smooth on both sides

3.4.6 Other

3.4.6.1 Presentation Panels

a) Casework surfaces that are behind sliding presentation panels or removable presentation panels (such as marker and tack boards) shall be treated as:

Premium	Custom	Economy
Exposed surfaces	Exposed surfaces	Semi-exposed surfaces

3.4.6.2 Cutouts

a) Cutouts shall have a minimum 6.4 mm [.250″] radius.

b) At cutouts and corresponding access panels creating a reveal greater than 3.2 mm [.125″], edges shall be painted or edgebanded.

3.4.6.3 Scribe, Fillers, and Closure Panels

a) Manufacturer/supplier shall provide material used for scribe fillers, scribe mouldings, scribe allowances, scribe closure panels, scribe corner closure panels, or HPDL closures as part of the Product.

b) Exposed material shall match exposed surfaces and be furnished by manufacturer/supplier.

c) Scribe fillers (See Figure 8) and scribe mouldings (See Figure 9) shall have a maximum installed width of 76.2 mm [3″].

d) Scribe fillers and closure panels shall be a minimum of 6.4 mm [.250″] thick, except at HPDL closures where permitted (See Figure 41). HPDL closure thickness shall be at the option of the manufacturer/supplier.

e) Scribe allowance options (See Figure 10).

f) Voids less than 76.2 mm [3″] in width at the top and bottom of a cabinet shall have scribe closure panels (See Figure 42). HPDL closure (See Figure 41) is permitted at the top of a cabinet when above 2032 mm [80″] unless visible from above.

g) Voids in width greater than or equal to 76.2 mm [3″] at the top and bottom of a cabinet shall have scribed closure panel (See Figure 42) or scribe corner closure panel (See Figure 103)

h) Voids at inside corners where two elevations of casework meet shall use scribe inside corner fillers (See Figure 104) and be equal in width and not wider than 76.2 mm [3″] unless required for cabinet operation.

3.4.6.4 Soffit and Fascia Panels

a) Joints are not permitted:

Premium	Custom	Economy
In material less than 2438 mm [96″] of horizontal grain or directional pattern and 1219 mm [48″] of vertical grain or directional pattern	In material less than 2438 mm [96″] of horizontal grain or directional pattern and 1219 mm [48″] of vertical grain or directional pattern	No requirement

b) Soffit and fascia panels shall be a minimum of 12.7 mm [.500″] thick.

c) At fascia panels, grain direction (if any) shall run vertical, or be at the option of the manufacturer/supplier if less than (See Figure 85):

Premium	Custom	Economy
38.1 mm [1.500″] tall	305 mm [12″] tall	305 mm [12″] tall

d) Where soffit and fascia panels meet, grain direction shall be continuous.

3.4.7 Edges, Exposed and Semi-Exposed

a) Edgebanding is required.

b) Top edge of the cabinet ends less than 2032 mm [80″] above the floor or, when visible from above, shall be:

Premium	Custom	Economy
Edgebanded with material compatible with the exposed exterior surface	Edgebanded with material compatible with the exposed exterior surface	Edgebanded at the option of the manufacturer/supplier

c) Bottom edges of wall cabinet ends and light valances shall be of a:

Premium	Custom	Economy
Material and color well matched to the exposed exterior surface	Material and color well matched to the exposed exterior surface	Material compatible to the exposed surface

d) Bottom edges of aprons shall be edgebanded.

e) Edgebanding grain direction shall run parallel to the long direction of the edge regardless of grain and/or pattern of the panel surface.

f) T-moulding only if specified.

g) At exposed surfaces, dadoes or lock joints shall:

Premium	Custom	Economy
Not run through the edgebanding	Not run through the edgebanding	Run through the edgebanding at the option of the manufacturer/ supplier

h) ~~Unless otherwise specified,~~ the sequence of edge/face lamination shall be at the option of the manufacturer/supplier. Sequence of edge/face lamination shall be consistent throughout the project.

3.4.7.1 Edges, Decorative Laminate Casework (Assembled Unit Including Doors and Drawer Fronts)

a) Edges shall be HPDL, PVC, or ABS a minimum of .5 mm [.018″] thick and maximum of 3 mm [.118″] at the option of the manufacturer/supplier.

b) Edgebanding thicker than 1 mm [.039″] shall be radiused or beveled on edges and corners.

c) Exposed PVC and ABS shall be well-matched for color to exposed exterior surfaces.

d) Exposed HPDL edgebanding shall match exposed exterior surfaces.

e) Semi-exposed edgebanding shall be compatible for color with semi-exposed surfaces.

3.4.7.2 Edges, Transparent Finish Casework (Assembled Unit Including Doors and Drawer Fronts)

a) Edgebanding on exposed edges is required and shall be compatible for color and grain with exposed exterior surfaces.

b) Exposed edges shall be edgebanded with solid wood, veneer, or veneer tape a minimum of .5 mm [.018″] thick of same species as exposed exterior surfaces.

c) Veneer tape edgebanding thicker than 1 mm [.039″] shall be radiused or beveled on edges and corners.

d) Finger joints in veneer tape used as edgebanding are permitted.

e) Semi-exposed edgebanding shall be compatible to semi-exposed surfaces.

3.4.8 Edges, Doors

a) Edgebanding showing on face less than or equal to 6.4 mm [.250″], the sequence of application shall be at the option of the manufacturer/supplier.

b) Edgebanding showing on face greater than 6.4 mm [.250″] shall be mitered.

c) At back-beveled edges, edgebanding shall be specified.

d) Doors shall be edgebanded at all four edges except when back-beveled or when composed of solid wood.

3.4.8.1 Edges, Opaque Finish Doors

a) At opaque finish:

Premium	Custom	Economy
MDO shall be edgebanded	All edges shall be filled or edgebanded	All edges shall be filled or edgebanded
MDF shall be filled or edgebanded at the option of the manufacturer/supplier		

3.4.8.2 Edges, Sliding Doors

a) Top and bottom edges are concealed and not required to be edgebanded or filled.

b) Vertical edges are considered exposed and shall be edgebanded.

3.4.8.3 Edges, Stile and Rail Doors

a) Doors manufactured/supplied from panel products shall be edgebanded or finished to match exposed surfaces.

3.4.8.4 Edges, Glass Doors

a) Frameless glass doors shall have:

Premium	Custom	Economy
Exposed edges flat polished	Exposed edges flat ground	Exposed edges flat ground

3.4.9 Edges, Drawers

3.4.9.1 Edges, Drawer Fronts and False Fronts

a) Edgebanding showing on face less than or equal to 6.4 mm [.250″], the sequence of application shall be at the option of the manufacturer/supplier.

b) Edgebanding showing on face greater than 6.4 mm [.250″] shall be mitered.

c) At back-beveled edges, edgebanding shall be specified.

d) Drawer fronts and false fronts shall be edgebanded at all four edges except when back-beveled or when composed of solid wood.

3.4.9.2 Edges, Opaque Finish Drawer Fronts

a) At opaque finish:

Premium	Custom	Economy
MDO shall be edgebanded	All edges shall be filled or edgebanded	All edges shall be filled or edgebanded
MDF shall be filled or edgebanded at the option of the manufacturer/supplier		

3.4.9.5 Edges, Decorative Laminate Drawer Boxes

a) Top edges of drawer box shall be edgebanded.

b) Edgebanding shall match drawer box color.

3.4.9.3 Edges, Transparent Finish Drawer Boxes

a) Top edges of drawer box shall be edgebanded.

b) At veneer core of seven-ply or more with no voids, edgebanding is not required.

c) At transparent finish panel product drawers:

Premium	Custom	Economy
Edgebanding shall match drawer side surface	Edgebanding shall match drawer side surface	Veneer core edges shall be filled and sanded smooth

3.4.9.4 Edges, Opaque Finish Drawer Boxes

a) Top edges of drawer box shall be filled and sanded smooth or edgebanded.

3.4.9.6 Edges, Solid Wood Drawer Boxes

a) At solid stock, drawer edges shall be:

Premium	Custom	Economy
Stop shaped or eased	Profiled at the option of the manufacturer/ supplier	Profiled at the option of the manufacturer/ supplier

3.4.10 Edges, Shelves

3.4.10.1 Edges, Adjustable Shelves

a) Edges of adjustable shelves at semi-exposed surfaces shall match interior or exterior surfaces at the option of the manufacturer/supplier.

b) If the gap between the end of a shelf and the interior cabinet body exceeds 6.4 mm [.250″], both ends of the shelf shall be:

Premium	Custom	Economy
Edgebanded	Edgebanded	At the option of manufacturer/supplier

3.4.10.2 Edges, Pullout Shelves

a) Edges of writing or utility shelves shall be edgebanded with a material compatible for color to the exposed interior surface.

3.4.11 Tolerances

3.4.11.1 Machining, Exposed and Semi-Exposed Surfaces

a) Sharp edges shall be eased.

b) Flat wood surfaces require a minimum of:

Premium	Custom	Economy
150 grit sanding	120 grit sanding	15 KMPI or 100 grit sanding

c) Profiled and shaped wood surfaces require a minimum of:

Premium	Custom	Economy
120 grit sanding	20 KMPI or 120 grit sanding	15 KMPI or 100 grit sanding

d) Turned wood surfaces require a minimum of:

Premium	Custom	Economy
180 grit sanding	120 grit sanding	15 KMPI or 100 grit sanding

e) Visible sanding marks, excluding turned surfaces, shall be inconspicuous.

f) Tear out, nicks, or hit and miss machining is not permitted.

g) Glue or filler (putty) shall be inconspicuous and match the adjacent surface for smoothness.

3.4.11.2 Machining, HPDL, PVC, and Prefinished Wood

a) Edges shall be machined flush and filed, sanded, or buffed to remove machine marks and sharp edges.

b) Overlap (See Figure 23, F) shall not exceed:

Premium	Custom	Economy
.1 mm [.004″] for a maximum length of 25.4 mm [1″] in any 1219 [48″] run	.1 mm [.004″] for a maximum length of 25.4 mm [1″] in any 610 mm [24″] run	.1 mm [.004″] for a maximum length of 50.8 mm [2″] in any 305 mm [12″] run

c) Chip-out (See Figure 24, G) in area G shall be inconspicuous when viewed at:

Premium	Custom	Economy
610 mm [24″]	1219 mm [48″]	1829 mm [72″]

d) Over-machined (See Figure 25, H) removal of color or pattern of face material shall be limited to:

Premium	Custom	Economy
.8 mm x 38.1 mm [.031” x 1.500″] and shall not occur within 1829 mm [72″] of a similar occurrence	.8 mm x 76.2 mm [.031” x 3″] and shall not occur within 1524 mm [60″] of a similar occurrence	2.4 mm x 152.4 mm [.094” x 6″] and shall not occur within 1219 mm [48″] of a similar occurrence

3.4.11.3 Edge and Face Alignment

a) Doors, drawer fronts, and false fronts shall be properly sized to permit edge alignment between doors and adjacent drawers.

b) Edge alignment of doors and drawers (See Figure 30-N), in both the vertical and horizontal plane, shall not exceed:

Premium	Custom	Economy
.8 mm [.031″]	1.2 mm [.047″]	1.6 mm [.063″]

c) Doors and drawers shall align on the same flat plane as one another (See Figure 30-J) with a variance not to exceed:

Premium	Custom	Economy
.8 mm [.031″]	1.6 mm [.063″]	3.2 mm [.125″]

3.4.11.4 Cabinet Reveal Variance, Reveal Overlay Frameless

a) The maximum uniform reveal (See Figure 43) within a cabinet elevation, between any edge of a door and/or drawer and another door and/or drawer or finished end, and doors hung in pairs, shall be as specified. If not specified, the following conditions shall apply (See Figure 43):

b) “X” shall be 3.2 mm [.125″], subject to a maximum uniform variance of:

Premium	Custom	Economy
+/- .8 mm [.031″]	+/- 1.6 mm [.063″]	+/- 2.4 mm [.094″]

c) “Y” shall be determined by the hinge overlay.

d) “Z” varies from 3.2 mm [.125″] to 9.5 mm [.375″] and shall be consistent across elevations (See Figure 15). However, for laboratory countertops, reveal at “Z” may be 6.4 mm [.250″] to 25.4 mm [1″] to permit attachment of laboratory equipment. (See Figure 17)

3.4.11.5 Cabinet Reveal Variance, Flush Overlay Frameless

a) The maximum uniform reveal (See Figure 44) within a cabinet elevation, between any edge of a door and/or drawer and another door and/or drawer or finished end, and doors hung in pairs, shall be as specified. If not specified, the following conditions shall apply (See Figure 44):

b) “X” shall not exceed 3.2 mm [.125″].

c) “Y” shall not exceed 1.6 mm [.063″].

d) “X” and “Y” are subject to a maximum uniform variance of:

Premium	Custom	Economy
+/- .8 mm [.031″]	+/- 1.6 mm [.063″]	+/- 2.4 mm [.094″]

e) “Z” varies from 3.2 mm [.125″] to 9.5 mm [.375″] and shall be consistent across elevations (See Figure 15). However, for laboratory countertops, reveal at “Z” may be 6.4 mm [.250″] to 25.4 mm [1″] to permit attachment of laboratory equipment. (See Figure 17)

3.4.11.6 Cabinet Reveal Variance, Reveal Overlay Face Frame Construction

a) The maximum uniform reveal (See Figure 45) within a cabinet elevation, between any edge of a door and/or drawer and another door and/or drawer or cabinet component, and doors hung in pairs, shall be as specified. If not specified, the following conditions shall apply (See Figure 45):

b) “X” shall not exceed 3.2 mm [.125″], subject to a maximum uniform variance of:

Premium	Custom	Economy
+/- .8 mm [.031″]	+/- 1.6 mm [.063″]	+/- 2.4 mm [.094″]

c) “Y” shall be as specified, indicated, or agreed. “Z” varies from 6.4 mm [.250″] to 25.4 mm [1″] and shall be consistent across elevations (See Figure 16).

3.4.11.7 Cabinet Reveal Variance, Inset Face Frame Construction

a) The maximum uniform reveal (See Figure 46) within a cabinet elevation, between any edge of a door and/or drawer and another door and/or drawer or cabinet component, and doors hung in pairs, for “X” shall not exceed 3.2 mm [.125″], subject to a maximum uniform variance of:

Premium	Custom	Economy
+/- .8 mm [.031″]	+/- 1.6 mm [.063″]	+/- 2.4 mm [.094″]

b) “Y” and “Z” shall be as specified, indicated or agreed.

3.4.11.8 Warp

a) As a lineal ratio, per 305 mm [12″], Product (See **Figure 5**, E), including doors, shall not exceed:

Premium	Custom	Economy
.8 mm [.031″]	1.2 mm [.047″]	1.6 mm [.063″]

b) Cabinet doors shall not exceed a maximum of 6.4 mm [.250″] in any single door. (Measurements for warp shall be taken on the concave face of the panel.)

4.0 Illustrations

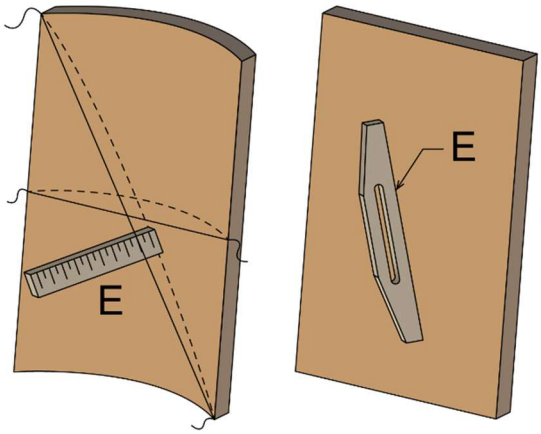

Figure 5 - Compliance Testing Measurement

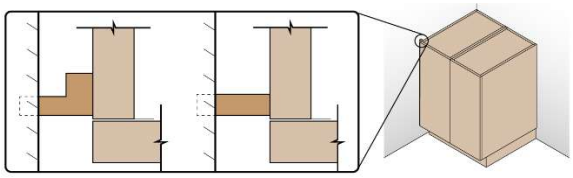

Figure 8 - Scribe Filler

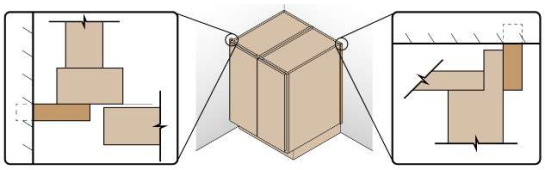

Figure 9 - Scribe Moulding

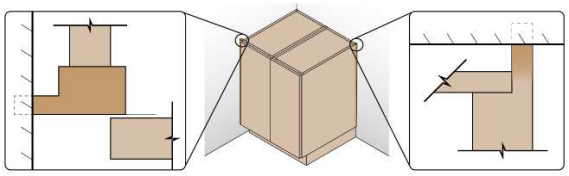

Figure 10 - Scribe Allowance

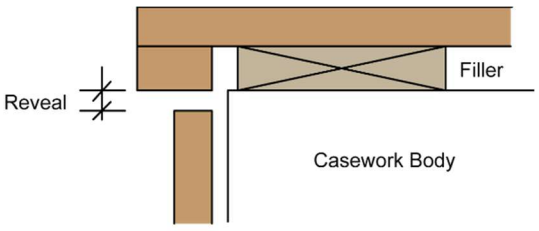

Figure 15 - Frameless Construction Reveal

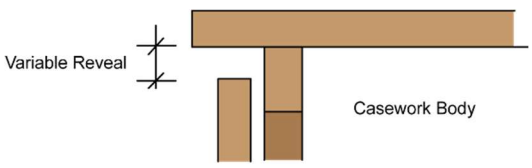

Figure 16 - Face Frame Construction Reveal

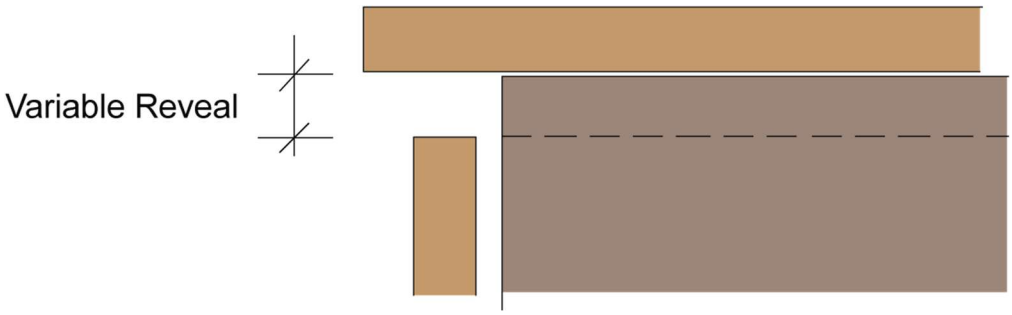

Figure 17 - Laboratory Application Reveal

Figure 18 - Grain Layout, Stile and Rail 1

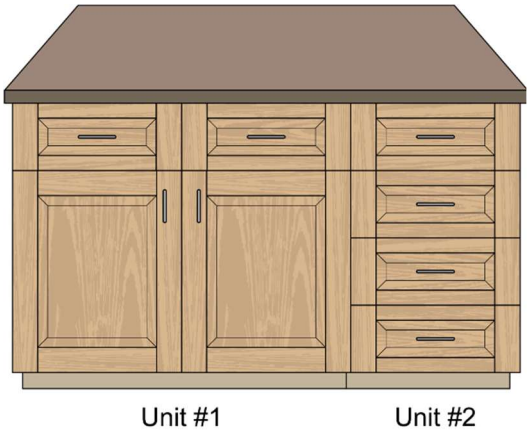

Figure 19 - Grain Layout, Stile and Rail 2

Figure 20 - Grain Layout, Flush Panel, Economy Grade

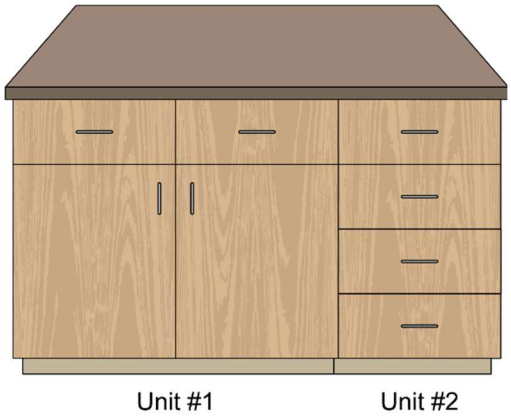

Figure 21 - Grain Layout, Flush Panel, Custom Grade

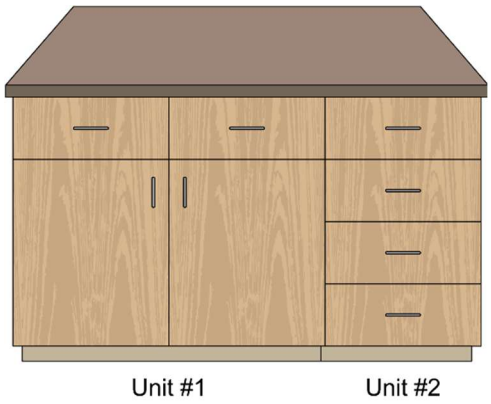

Figure 22 - Grain Layout, Flush Panel, Premium Grade

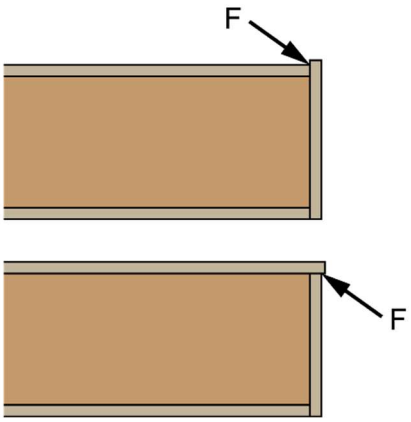

Figure 23 - Overlap

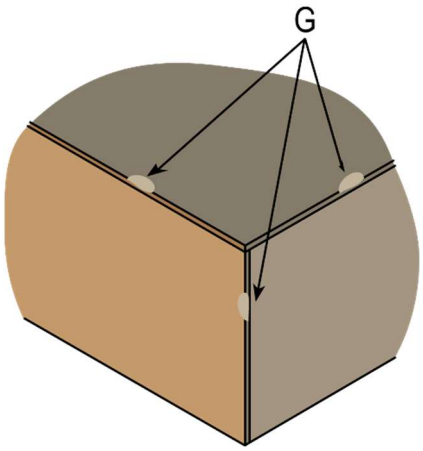

Figure 24 - Chip-Out

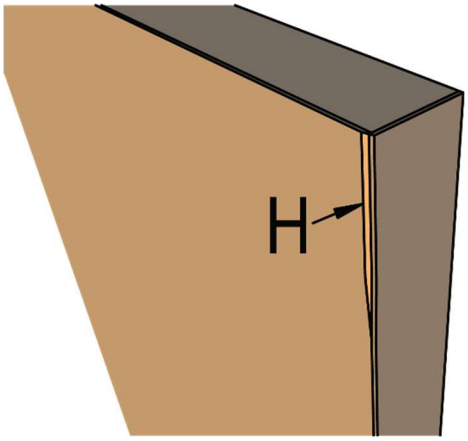

Figure 25 - Over-Filing / Over-Machining

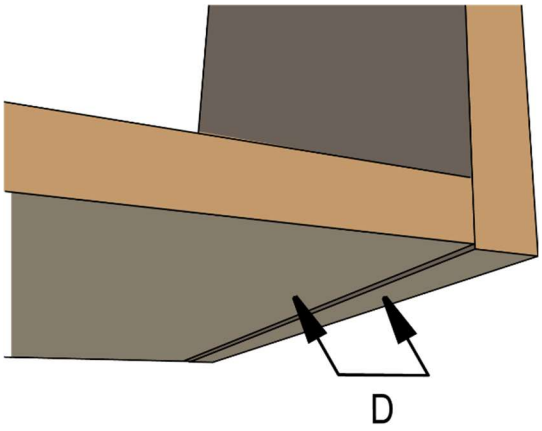

Figure 26 - Flushness Variations, Exposed and Semi-Exposed

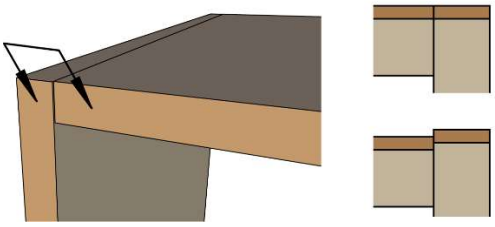

Figure 27 - Flushness, Fixed Horizontal

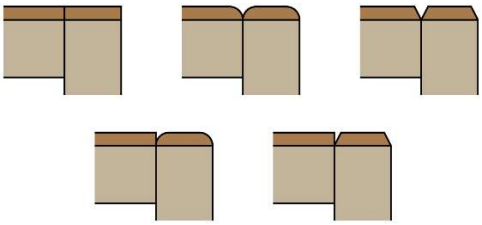

Figure 28 - Radius, Beveled, or Square Edges

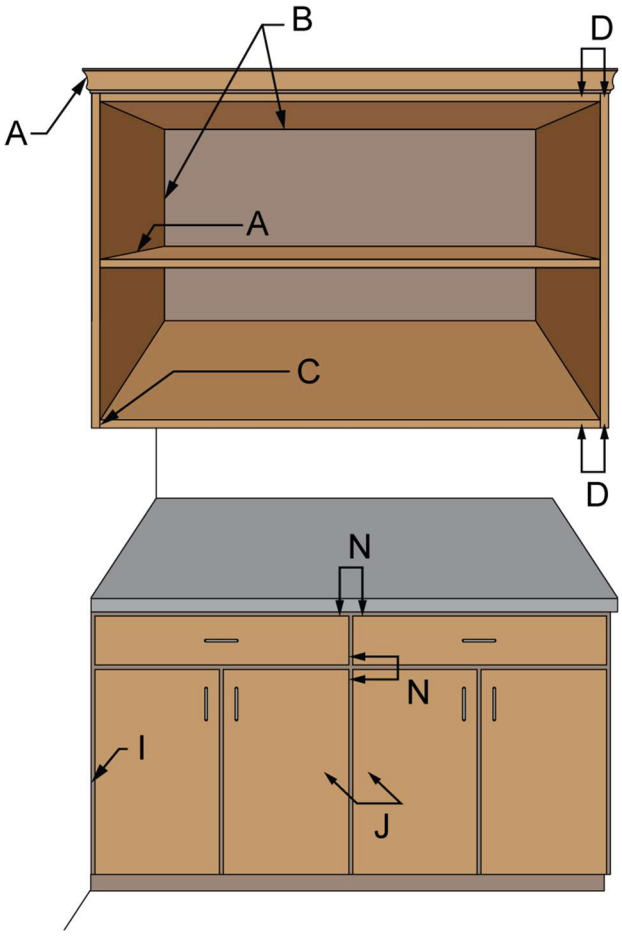

Figure 30 - Gaps and Flushness, Casework

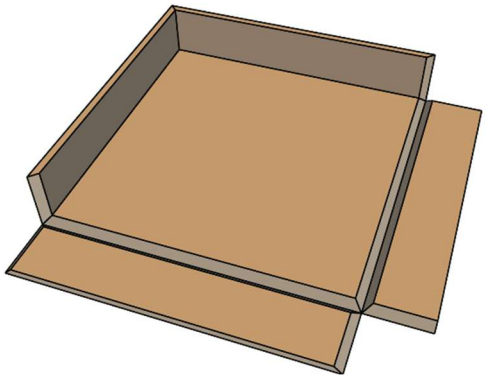

Figure 31 - Miter Folding

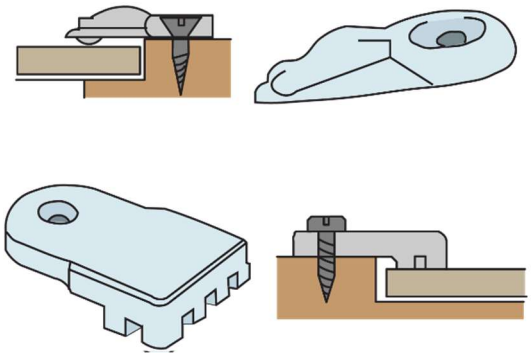

Figure 32 - Glass Clips

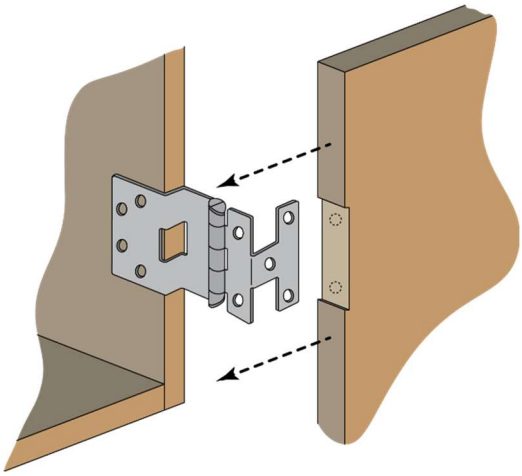

Figure 33 - Wrap-Around Hinges, Flush Overlay

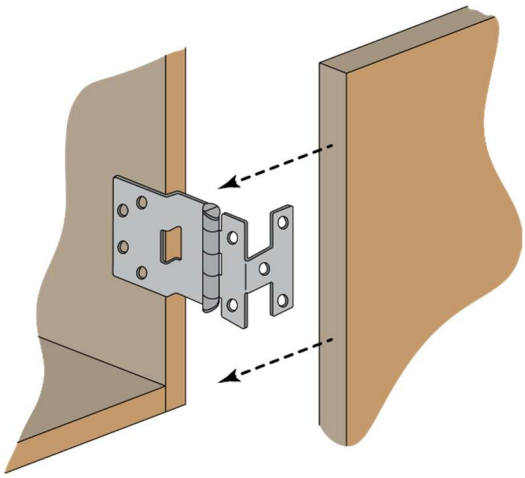

Figure 34 - Wrap-Around Hinges, Reveal Overlay

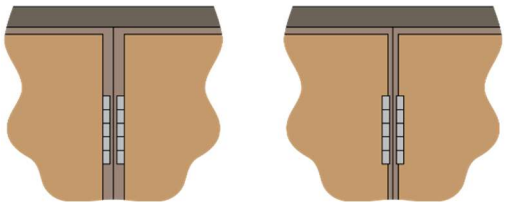

Figure 35 - Reveal, Hinge Overlay

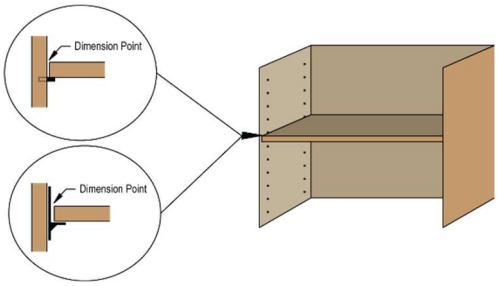

Figure 36 - Adjustable Shelves

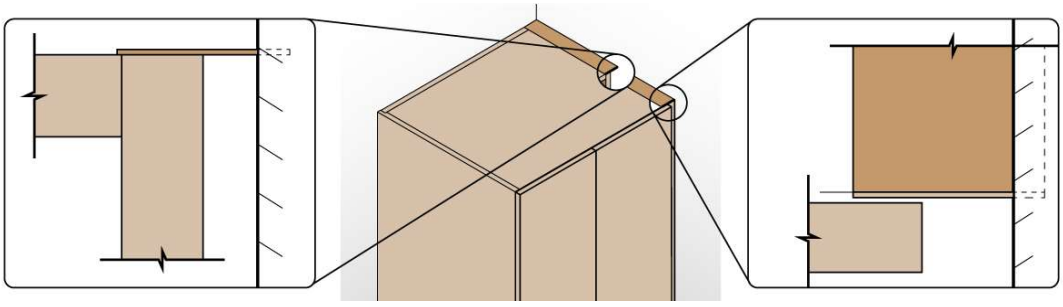

Figure 41 - Closure, Laminate

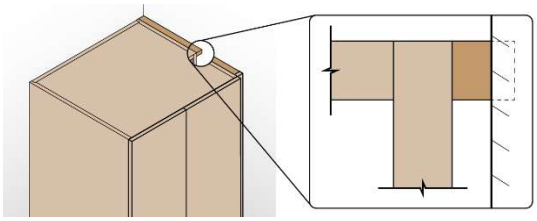

Figure 42 - Closure, Filler

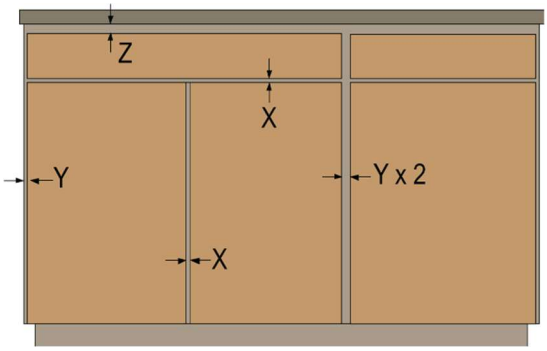

Figure 43 - Gaps, Reveal Overlay Frameless

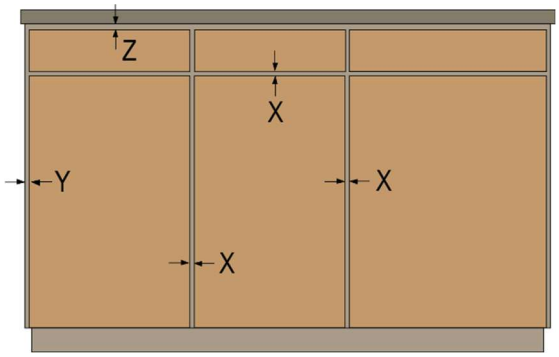

Figure 44 - Gaps, Flush Overlay Frameless

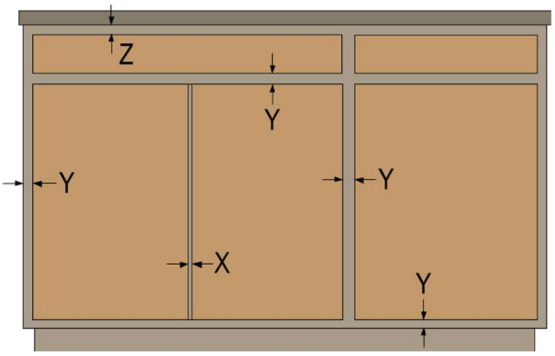

Figure 45 - Gaps, Reveal Overlay Face Frame

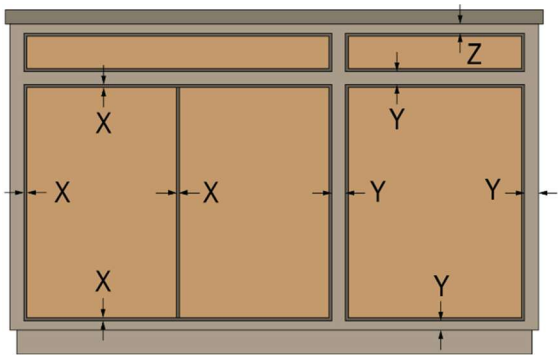

Figure 46 - Gaps, Inset Face Frame

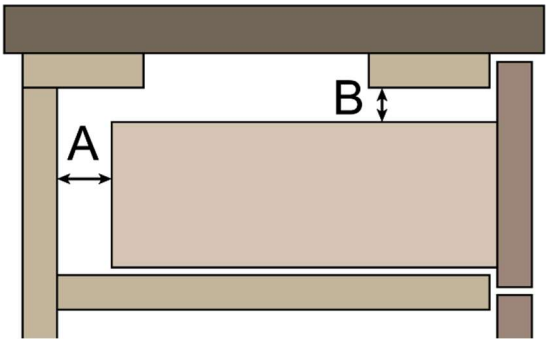

Figure 72 - Drawer Gaps

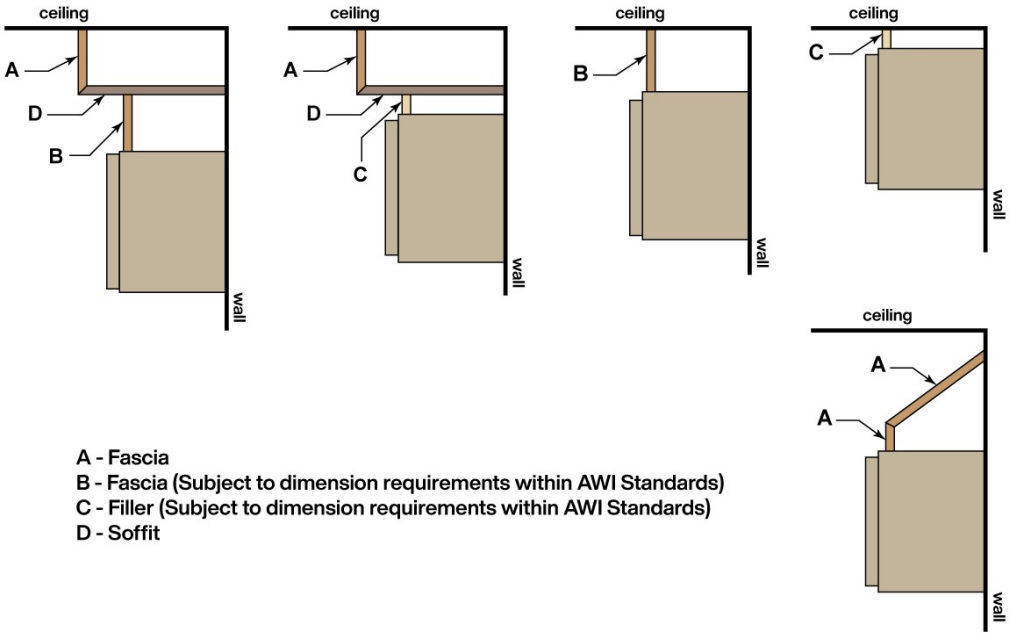

Figure 85 - Soffit, Fascia, and Filler

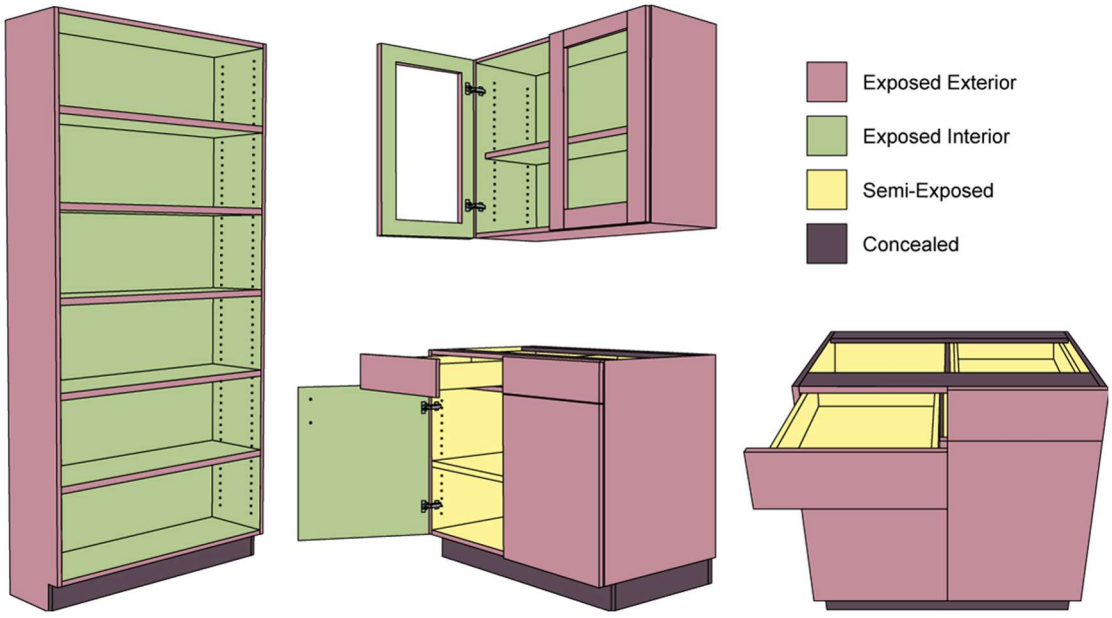

Figure 86 - Casework Surfaces

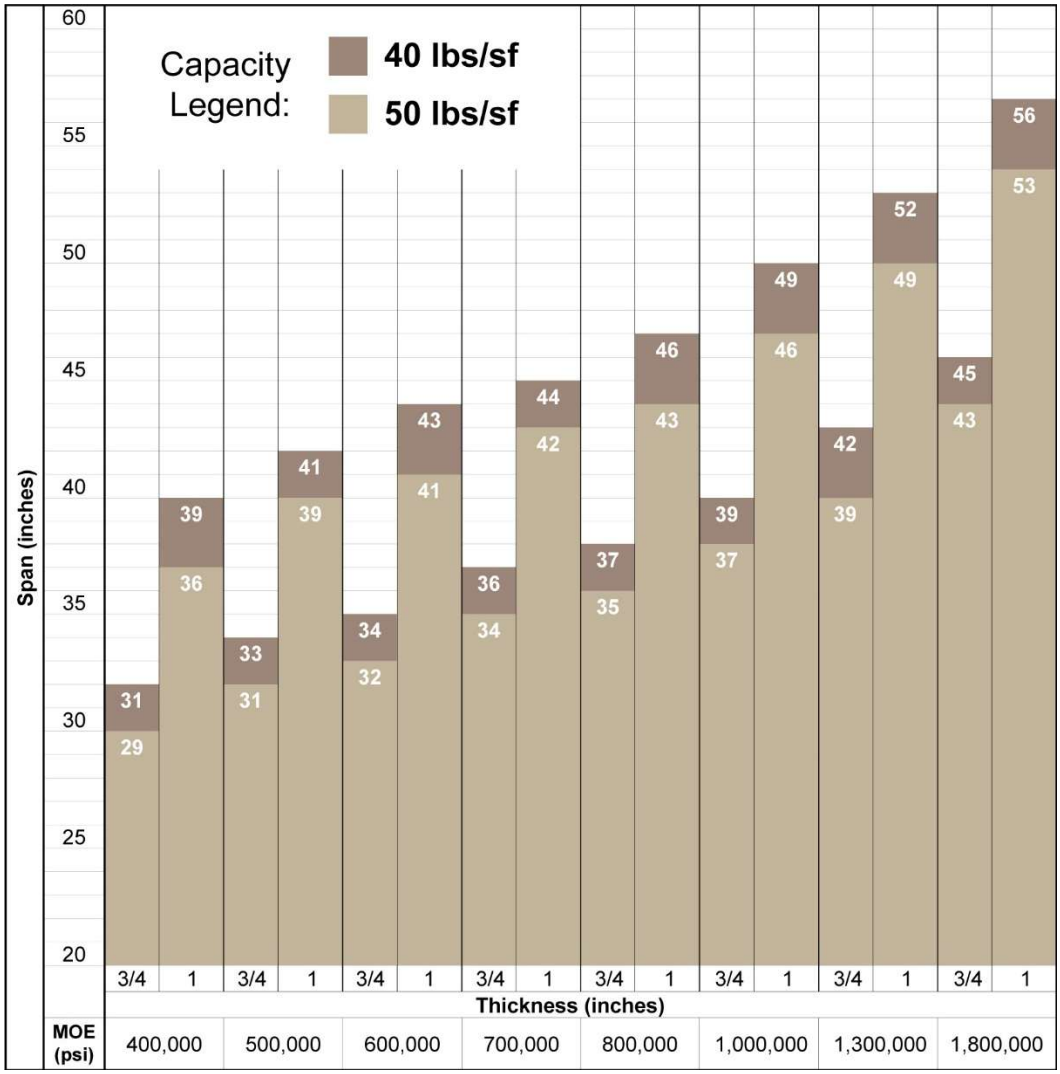

Figure 87 - Maximum Allowable Adjustable Shelf Lengths for MOE Values

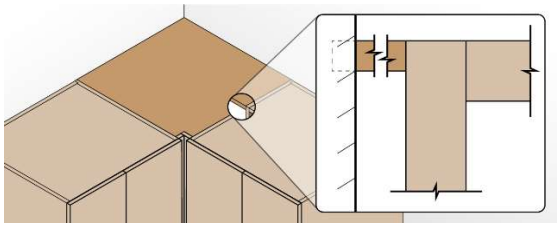

Figure 103 - Scribed Corner Closure Panel

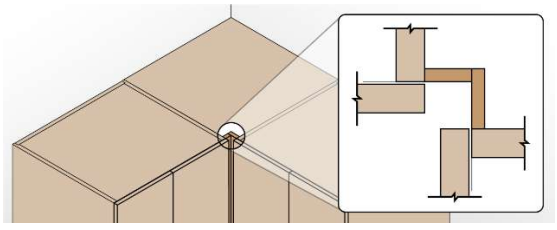

Figure 104 - Scribed Inside Corner Filler

5.0 Supplemental Information

5.1 Glossary

a) The Architectural Woodwork Institute Glossary can be found at: www.awinet.org/glossary

5.2 Design Professional Responsibilities

a) Specify “AWI Standards” in each applicable specification section.

b) Examine product technical data sheets to determine if material performance (e.g. scratch and wear resistance) is appropriate for the project.

5.2.1 Contract Document Requirements

a) Specify structural performance:

Performance Duty Level	Typical Application
Duty Level 1	Light Commercial
Duty Level 2	Commercial
Duty Level 3*	**Institutional**
Duty Level 4	Laboratory

*Standard default

b) Specify aesthetic performance:

Premium	***Custom****	Economy
The aesthetic grade defining the highest degree of control over materials, workmanship, and manufacture	The aesthetic grade defining a high degree of control over materials, workmanship, and manufacture	The aesthetic grade defining the minimum degree of control over materials, workmanship, and manufacture

*Standard default

c) Glass type, thickness, color, edge treatment, and glazing requirements

d) Door and drawer front interface style

e) Door and drawer front edge profile

f) Toe kick finish.

g) Grain or pattern direction

h) Interior clearance

i) Seismic fabrication and/or installation

j) Flame spread rating

k) Moisture resistance

l) Insulation from adjacent heating and cooling sources

m) Hardware

n) Special features, such as:
- Access panels
- Pipe chase allowance and/or removable backs behind base cabinets.
- Removable top at countertop splash.
- Chemical-resistant finish or surfaces.

o) Locks:
- Location
- Keying requirements
- Strike plates

5.2.2 Wood Specifications

a) Species or engineered material (e.g. reconstituted)

b) AWI Finishing System Number or Finishing Technology

c) Staining requirements for transparent finishes

d) Grain direction

e) Matching between doors, drawers, and adjacent panels (non-sequenced, sequenced, or blueprint)

5.2.2.1 Solid Wood

a) Cut (plain, quartered, rift)

5.2.2.2 Veneer

a) Method of slicing (plain, quartered, rift, or rotary).

b) Veneer matching requirements.

c) Veneer figure and other unique visual characteristics is not a function of a veneer species and/or its grade. If required, Design Professional/Specifier shall identify such veneer figure and visual characteristics in the contract documents.

d) If the Design Professional has pre-selected/identified specific veneer(s) for project, then the project specifications are to identify the veneer supplier and the flitch number(s).

5.2.3 Decorative Laminate Specifications

a) Pattern and color

b) Pattern direction

c) Grade

d) Laminate finish

5.3 Surface Categories

5.3.1 Exposed Exterior

a) Defined as all exterior surfaces exposed to view, including:

- All surfaces visible when doors and drawers are closed, including knee spaces.
- Underside of cabinet bottoms over 1067 mm [42″] above the finished floor, including cabinet bottoms behind light valances and the bottom edge of light valances.
- Cabinet tops under 2032 mm [80″] above the finished floor, or if 2032 mm [80″] and over and visible from an upper building level or floor.
- Front edges of stretchers, ends, divisions, tops, and bottoms.
- Sloping tops of cabinets that are visible.

5.3.2 Exposed Interior

a) Defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
   - ~~T~~ Shelves, including edgebanding.
   - Divisions (front edge is an exposed surface).
   - Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 914 mm [36″] or more above the finished floor.
   - Interior face of door and applied drawer fronts.

5.3.3 Semi-Exposed

b) Defined as those interior surfaces only exposed to view when doors or drawers are opened, including:

- Tops and bottoms of shelves, including front edgebanding.
- Divisions (front edge is an exposed surface).
- Interior face of ends (sides), backs, and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 914 mm [36″] or more above the finished floor.
- Drawer sides, sub fronts, backs, and bottoms.
- The underside of cabinet bottoms between 610 mm [24″] and 1067 mm [42″] above the finished floor.
- Security panels or drawer stretchers.

5.3.4 Concealed

a) Defined as those exterior or interior surfaces that are covered or not normally exposed to view, including:

- Toe spaces.
- Sleepers, stretchers, and solid sub tops.
- The underside of cabinet bottoms less than 610 mm [24″] above the finished floor.
- The flat tops of cabinets 2032 mm [80″] or more above the finished floor, except if visible from an upper floor or building level.
- The three non-visible edges of adjustable shelves.
- The underside of knee spaces, aprons and drawer boxes that are less than 914 mm [36″] above the finished floor.
- The faces of cabinet ends of adjoining units that butt together.

5.5 References

a) ANSI/AWI 0400 - Factory Finishing (latest edition)

b) ANSI/AWI 0620 - Finish Carpentry/Installation (latest edition)

c) ANSI/BHMA A156.9 (latest edition)

d) ANSI/HPVA HP-1 (latest edition)

e) ANSI/KCMA A161.1 Performance and Construction Standard for Kitchen and Vanity Cabinets

f) ANSI/WDMA I.S.1A (latest edition)

g) ANSI/WDMA I.S.6A (latest edition)

h) ANSI Z97.1 (latest edition)

i) ASTM D1037 (latest edition)

j) AWI 100 - Submittals

k) AWI 200 - Care and Storage

l) AWI 300 - Materials (latest edition)

m) AWI Casework Installation Guidelines (latest edition)

n) AWI Tested and Approved Methods and Materials for Casework Construction

o) ISO 4586-2 (latest edition)