

~~AWI Standard~~
for
Architectural Wood Casework

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Architectural Woodwork Institute
46179 Westlake Drive, Suite 120
Potomac Falls, VA 20165
Phone: 571-323-3636, Fax: 571-323-3630
<http://www.awinet.org>

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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 requirements intended to provide a well-defined degree of control over a project’s quality of materials and workmanship for the manufacture of Architectural Wood Casework.

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2.0 Scope

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

2.1 Included

- a) Product as specified under CSI MasterFormat Divisions:
 - 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) Installation of Product.
- b) Product as specified under CSI MasterFormat Division 12.
- c) Structural components, grounds, in-wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings are not furnished or installed under the scope of this standard's requirements.

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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) When applicable, manufacturer/supplier shall verify field measurements.
- d) Unless otherwise indicated, requirements apply equally to all performance duty levels/ aesthetic grades.

3.1.1 Measurements

- a) This standard is written with the metric system of measurement followed by the U.S. Customary System of measurement in brackets.
- b) The system of measurement used in the project’s original contract documents and architectural drawings will dictate which system of measurement within these standards is used for verification of compliance.
- c) The U.S. Customary measurement is typically a “soft” conversion of the metric measurement. In order to make the metric 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 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, such requirements and details shall be clearly stated in the contract documents.
- b) Requirements for Product, such as moisture resistant or fire retardant materials, shall be specified by the design professional.

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 the AWI 200 - Care & Storage Standard.

3.1.4 Manufacturer/Supplier Requirements for Installation

- a) Manufacturer/supplier shall provide documented instructions for Product installation. In the absence of documented instructions, casework installation

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shall defer to AWI's Casework Installation Guidelines (available for download at <http://www.gotoawi.com/standards>).

- b) Installation of Product shall be in accordance with the ANSI/AWI 0620 - Finish Carpentry/Installation Standard (latest edition).
- c) Manufacturer/supplier shall provide drawings indicating location of blocking. See the AWI 100 - Submittals Standard.
- a) Manufacturer/supplier shall provide documented instructions for the fastening methods of adjacent cabinets. Documented instructions shall include fastener details.

3.1.5 Default Grade Requirements

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

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 the construction of Product covered within the scope of this standard shall adhere to the requirements set forth in the AWI 300 - Materials Standard for specified aesthetic grade.
- 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 compliance with ANSI Z97.1 (latest edition).
- e) The following include definitions of components that are subject to these material rules.

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.
- c) In the absence of manufacturer/supplier's tested and approved methods and materials for casework construction, manufacturer/suppliers may fabricate to AWI's Tested and Approved Methods and Materials for Casework Construction, available at www.gotoawi.com/standards

3.2.1.1 Face Frame Construction

- a) Face frames are components attached to the front of the cabinet body which overlay the edges of the cabinet body and provide an attachment point for doors and/or functional hardware.

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3.2.1.2 Frameless Construction

- a) Frameless construction is a casework construction type without a face frame. Frameless construction is characterized by components of the cabinet body that are usually edgebanded and the cabinet body provides attachment points for doors and/or functional hardware.

3.2.1.3 Tops and Bottoms

- a) Tops and bottoms are the uppermost and lowest horizontal components of a cabinet interior.

3.2.1.4 Ends and Divisions

- a) Ends are the outermost vertical components of cabinets or other casework. Ends are often referred to as sides. Divisions are horizontal or vertical cabinet components that are not one of the two ends, a top, or a bottom. A division divides a cabinet into multiple openings.

3.2.1.5 Backs

- a) At multiple-panel backs, visible joints are not permitted at exposed or semi-exposed interiors where panels intersect.

3.2.1.6 Security Panels

- a) Security panels are fixed components attached above a drawer or compartment of a cabinet assembly that prevent access to the secured space from above.
- b) When doors and drawers are keyed differently, security panels are required.

3.2.1.7 Stretchers

- a) Stretchers are structural casework components that span between the ends of a cabinet body. Stretchers may be oriented horizontally or vertically.

3.2.1.8 Anchor Strips

- a) Anchor strips are structural anchorage components which may be applied to the back of a cabinet to accommodate installation fasteners required to mount a cabinet to a wall. Other terms include nailers and hanging strips.
- b) When used, anchor strips shall be composed of material adequate to support the casework and meet the specified Performance Duty Level.

3.2.1.9 Toe Kicks, Bases, Sleepers, and Levelers

- a) Material shall be a minimum of 17.5 mm [.688"] thick with a minimum finished installed height of 101.6 mm [4"].
- b) Toe kicks are the recessed areas at the bottom of a base or tall cabinet.
 - Bases are the support assemblies between the cabinet's bottom components and the floor.
 - Sleepers are support components (usually vertical) that run inside the toe kick assembly from the front to the back of the assembly.
 - Levelers are adjustable casework support hardware components.

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- c) If specified, moisture resistant base requires base components to be fabricated from material tested in accordance with ASTM D1037 (latest edition) with a thickness swell factor of five percent (5%) or less.
- d) Use of leg levelers is permitted at the option of the manufacturer/supplier.

3.2.1.10 Aprons and Light Valances

- a) Aprons are horizontal trim members that extend vertically below a horizontal surface such as a countertop or table, typically at knee spaces or open sink areas.
- b) Light valances are horizontal trim members that extend vertically from the bottom of a wall cabinet, typically used to conceal under-cabinet lighting. Shall be a minimum of 19.1 mm [.750"] thick.

3.2.2 Doors

- a) 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/flatness tolerances and tests contained within this standard.
- b) Door 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. Doors and casework utilizing such doors are not subject to the tolerances and conditions contained within this AWI standard.

3.2.3 Drawers

3.2.3.1 Drawer Boxes, Decorative Laminate

- a) Material shall be HPDL or TFL.

3.2.3.2 Drawer Boxes, Solid Wood and Veneer

- a) Solid wood, when used for drawer boxes, shall be in compliance with Custom Grade requirements set forth in the AWI 300 - Materials Standard.
- b) Veneer, when used for drawer boxes, shall be a minimum of ANSI/HPVA HP-1 (latest edition) Grade C.

3.2.3.3 Drawer Boxes, Opaque Finish

- a) At opaque finish, drawer material shall be at the option of the manufacturer/supplier.

3.2.4 Shelves

3.2.4.1 Shelves, Pullout

- a) Components shall operate smoothly in channels or rigid slides.
- b) Shall be a minimum of 19.1 mm [.750"] thick.

3.2.4.2 Shelves, Glass

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

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3.2.5 Hardware

- a) Hardware used for construction of Product covered within the scope of this standard shall adhere to the requirements set forth in applicable ANSI/BHMA Standards (latest edition).
- b) This standard has adopted ANSI/BHMA Standards (latest edition), Grade 2, as the default minimum requirement for casework hardware.
- c) Hardware types used for the same purpose, within the scope of this standard, shall be consistent throughout a project.
- d) Manufacturer/supplier shall furnish hardware as required to provide a complete casework assembly without impairment of the cabinet's structural integrity and/or functionality.
- e) 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 when using pocket hardware.

3.2.5.2 Hardware, Drawers

- a) Closing stops shall be provided at the rear of drawer sides unless the drawer slides contain integral stops that prevent the drawer face from impacting the cabinet body.
- b) When design permits, and 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 beyond the cabinet body.
- 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. File drawers require clear interior height sufficient for hanging file folder tabs. File direction at the option of the manufacturer/supplier.
- e) Stands or rails for file drawer systems shall be at option of the manufacturer/supplier and, where legal-sized drawers are provided, the drawer system shall accommodate both legal-sized files and letter-sized files.

3.2.5.3 Hardware, Locks and Latches

- a) Locks shall be furnished and located as indicated in the contract documents only if specified.
- b) Locks shall be keyed differently and/or master keyed only if specified.
- c) Strike plates are required for installed locks and latches only if specified.

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3.3 Structural

3.3.1 Product Performance Requirements

- a) Manufacturer/supplier’s documented fabrication methodologies shall include joinery, material, and component details that have been tested in conformance with AWI Test Methodologies referenced within this standard. Testing shall be conducted by laboratories holding ISO 17025 accreditation or operating under an equivalent quality management system recognized by AWI.
- b) In the absence of testing, manufacturer/supplier may defer to AWI’s Tested and Approved Methods and Materials for Casework Construction, available at www.gotoawi.com/standards
- c) Load values expressed within this standard are specific to referenced laboratory tests conducted in accordance with AWI Test Methodologies. **These load values do not suggest service loads nor shall they be construed as suggesting normal casework usage loads.**
- d) Construction methods and materials shall be consistent throughout the project.
- e) Cabinet units which will receive sinks or appliances may be modified as needed, 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 Methodologies 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) For the purposes of sections 3.3.3.1, 3.3.3.2, 3.3.3.3, 3.3.5, and 3.3.6 of this standard, the following terms are referenced only as used within the context of the cited test methodologies:
 - 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 Methodologies. **These load values do not suggest service loads nor shall they be construed as suggesting normal casework usage loads.**

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

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

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

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

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 Methodologies. **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 the AWI WC-1 Wall Cabinet Assembled Unit Test Methodology:

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

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

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

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 Methodologies. **These load values do not suggest service loads nor shall they be construed as suggesting normal casework usage loads.**

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

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

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

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

3.3.4 Drawers

- a) Load values expressed within this standard are specific to referenced laboratory tests conducted in accordance with AWI Test Methodologies. **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 the AWI DB-1 Drawer Bottom Compression Test Methodology:

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

- c) Minimum performance requirements according to the AWI DF-1 Drawer Front Tension Test Methodology:

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]	

- d) 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 Methodologies. **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 the AWI SS-1 Shelf Suspension Test Methodology:

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]

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- 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 center line of the shelf rests shall not be less than 60% of the overall shelf's depth.

3.3.5.2 Shelves, Maximum Allowable Length

- a) The maximum allowable length for an adjustable shelf shall be determined by the shelf material's modulus of elasticity (MOE). (See Figure 87)
- b) This standard allows a calculated deflection for adjustable shelves at 6.4 mm [.250"] based on the following formula.

$$L = \frac{(DEWt^3)/(0.1563s^4)}{W/144}$$

L = lbs/SF of linear uniformly distributed load

D = deflection (inches)

E = MOE - (psi)

t = thickness (inches)

W = width (front to back) of shelf (inches)

s = span of shelf (inches)

- c) Manufactures/suppliers shall use the formula above and associated table (See Figure 87) to determine acceptable structural material.

3.3.6 Hardware

- a) Hardware 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 wider than 610 mm [24"] and less than 762 mm [30"]	68 kg [150 lbs.]
Lateral file drawers wider than 762 mm [30"]	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.

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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) In relation to this standard, aesthetic performance refers to and is an evaluation of surfaces that will be exposed or semi-exposed following installation.
- b) The three levels of aesthetic grades are Premium, Custom, and Economy:

Premium Grade	Custom Grade	Economy Grade
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

- c) Surface terminology category examples may be found in section 5.3 (See also, [Figure 86](#))
- d) When this standard is referenced within the contract documents, and no aesthetic grade is specified, Product shall be executed in accordance with and meet Custom grade requirements.
- e) Unless otherwise specified, 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)
- f) Unless otherwise specified or noted within this standard, vertical surfaces with a defined grain and/or directional pattern shall be applied and assembled with grain or pattern oriented vertically.
- g) At exposed exterior surfaces, exposed fasteners are not permitted except at access panels.
- h) 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

- i) When fastener provision is countersunk, fasteners shall be countersunk.
- j) Final adjustments for gaps, flushness, and alignment shall be in accordance with the AWI 0620 - Finish Carpentry/Installation Standard (latest edition).
- k) Semi-exposed surfaces require consistent color or species to be used throughout entire project.

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- l) At semi-exposed surfaces, matching exposed surface is only required if so specified.
- m) Concealed surface materials shall be at the option of the manufacturer/supplier.

3.4.1 Base, Wall, and Tall Cabinets

3.4.1.1 Face Frame Construction

- a) At face frame casework, exposed fastening:

Premium	Custom	Economy
Is not permitted	May be face nailed	May be face nailed

- b) Grain shall run vertically on stiles and horizontally on rails.
- c) Horizontal reveal 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 reveal 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 interior 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

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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 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) Exposed fasteners are not permitted, except at access panels.
- g) 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, visible joints are not permitted at exposed or semi-exposed interiors where panels intersect.
- c) At semi-exposed surfaces, vinyl overlay is permitted in cabinet backs if matched in color to other semi-exposed materials.

3.4.1.6 Toe Kicks, Bases, and Sleepers

a) At the option of the manufacturer/supplier, 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 a maximum of 2 mm [.078"] at their intersection with vertical components (See [Figure 27](#)) and shall be uniform throughout the room.
- c) At 3 mm [.118"] thick edgebanding, radiused, beveled, or square edges and ends (See [Figure 28](#)) are permitted for horizontal and vertical components.
- d) At 3 mm [.118"] thick edgebanding, radiused, beveled, or square edges are permitted provided that the core of the square edge component is not visible and that the "V" or gap that is formed where a component with a square end meets

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a component with a radius (See Figure 29) is uniform throughout the room and does not exceed:

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

- 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) Sheet and laminated lumber panels shall be permitted to move, float, expand, or contract as a result of ambient humidity changes.

3.4.1.8 Decorative Laminate Casework

- a) Material, pattern, and color shall be as specified and, if not specified, shall be of manufacturer/supplier's choice.
 b) Decorative laminate 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 Casework

- a) Require HPDL or TFL of specified color or pattern.

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3.4.1.10 Exposed Interior Surfaces, Decorative Laminate Casework

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 in color, grain, or pattern	HPDL or TFL compatible to exposed exterior surface in color, grain, or pattern	HPDL or TFL at the option of the manufacturer/supplier

3.4.1.11 Semi-Exposed Surfaces, Decorative Laminate Casework

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

3.4.1.12 Transparent Finish Casework

a) Unless otherwise specified, Product shall be finished with a finishing technology (See AWI Finishing Standard, current edition) of the manufacturer/supplier’s choice.

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 in color and grain	Solid stock and/or veneer shall be compatible in color
Veneer shall be compatible in 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 B

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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	At the option of the manufacturer/supplier

3.4.1.16 Opaque Finish

a) Unless otherwise specified, Product shall be finished with a finishing technology (See AWI Finishing Standard, current edition) of the manufacturer/supplier’s choice.

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

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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 Semi-Exposed 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 the 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.

3.4.2.1 Doors, Hinged

- a) Flush overlay is the default for either frameless or face frame casework.
- b) At exposed knuckle hinges, defaulting to reveal overlay is at the option of the manufacturer/supplier.
- c) At reveal overlay, the reveal shall be determined by the hinge clearance requirements (See [Figure 35](#)).
- d) When adjacent and exposed, hinges shall align horizontally.
- e) In flush overlay construction, 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

- f) In reveal overlay construction, 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 faces of sliding doors shall be of the same thickness and material as the exterior faces.

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- 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 surface 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) Stiles shall run the full height of the door.
- c) Rails, including top, intermediate, and bottom, shall run between stiles.
- d) Grain or directional pattern shall run vertically on stiles and horizontally on rails.
- e) 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

- f) 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 in color	Solid stock and veneer panel shall be compatible in color
Veneer panel shall be compatible in color with solid stock		

- g) Flat panels shall be a minimum of 6.4 mm [.250"] thick.

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h) At flat panels:

Premium	Custom	Economy
Solid lumber panels are not permitted	Edge glued solid lumber is permitted if at least 12.7 mm [.500"] thick and is 350 mm [13.75"] wide or less	Edge glued solid lumber is permitted if at least 12.7 mm [.500"] thick and is 350 mm [13.75"] wide or less

i) At raised panels:

Premium	Custom	Economy
Solid lumber panels are not permitted	Edge glued solid lumber is permitted for panels 350 mm [13.75"] wide or less	Edge glued solid lumber is permitted for panels 350 mm [13.75"] wide or less

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

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

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

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

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

3.4.2.4 Doors, Glazed

a) When machining a door with glass cut-out, minimum clearance shall be 9.5 mm [.375"] between hardware machining and glass cut-out.

b) At opaque finish and decorative laminate doors, stops shall be synthetic or solid stock 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 are: (See [Figure 32](#)).

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

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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 Overlay

a) When veneer cores are specified for doors, they may be susceptible to warp and shall not be subject to warp/flatness 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 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 lumber is not permitted at doors, except at stile and rail doors.

3.4.3 Drawers

- 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 Sections 3.4.3 through 3.4.3.4.
- b) Drawer boxes (including trays and sliding bins) of solid wood or veneer are required to be finished with a finishing technology (See AWI Finishing Standard, current 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](#)).

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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 with box system at the option of the manufacturer/supplier.

3.4.3.3 Drawer Fronts and False Fronts

- a) Horizontal grain for solid wood drawer fronts is permitted.

3.4.3.4 Drawer Fronts, Stile and Rail

- a) Grained or patterned faces on drawer fronts shall run either vertically or horizontally at the option of the manufacturer/supplier for the entire project. (See [Figure 18](#) and [Figure 19](#))

3.4.4 Shelves

- a) Grain or directional pattern of the surface shall run 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

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- 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 extend vertically to within 152.4 mm [6"] of the interior top and bottom of the cabinet shelf space, and be recessed in a plow, slightly proud of the face with the core not exposed.
- d) 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 Cut-Outs

- a) Cut-outs shall have a minimum 6.4 mm [.250"] radius.
- b) At cut-outs and corresponding access panels creating a reveal greater than 3.2 mm [.125"], edges shall be painted or edgebanded.

3.4.6.3 Scribes, Fillers, and Closure Panels

- a) Aesthetic requirements of installed scribes, fillers, and closure panels shall be in accordance with ANSI/AWI 0620 - Finish Carpentry/Installation (latest edition).
- b) Casework shall be scribed to finished walls and/or ceilings using integral scribes, scribe fillers, or scribe moulding at voids between cabinets and adjacent walls or ceilings.
- c) Scribes and fillers shall be a minimum of 6.4 mm [.250"] thick.
- d) Voids at top and bottom of cabinet shall have closure panels. Voids exceeding the allowances indicated below in width shall have closure panels a minimum of 6.4 mm [.250"] thick (See [Figure 41](#) and [Figure 42](#)).

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- e) Scribe fillers (See [Figure 8](#)) or scribe mouldings (See [Figure 9](#)):

Premium	Custom	Economy
Maximum installed width of scribe fillers shall be 50.8 mm [2"]	Maximum installed width of scribe fillers shall be 76.2 mm [3"]	Not required
Scribe moulding not permitted	Maximum installed width of scribe moulding shall be 76.2 mm [3"]	

- f) For scribe allowance options, see [Figure 10](#).
- g) Material shall match exposed surfaces and be furnished by the manufacturer/ supplier.
- h) Fillers at inside corners where two elevations of casework meet shall be equal in width and not wider than 76.2 mm [3"], unless required for hardware clearance during operation. At transparent finished material, the selection of material at exposed surfaces shall meet requirements for color and grain as outlined in the AWI Finishing Standard (current edition).

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 to the exposed exterior surface	Edgebanded with material compatible to the exposed exterior surface	At the option of the manufacturer/supplier

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

Premium	Custom	Economy
Material and color to match the exposed exterior surface	Material and color to match 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, dados or lock joints shall:

Premium	Custom	Economy
Not run through the edgebanding	Not run through the edgebanding	No requirement

- 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 manufacturer's choice.
- b) PVC and ABS shall be well matched to the exposed face.
- c) PVC and ABS edgebanding thicker than 1 mm [.039"] shall be radiused or beveled on edges and corners.
- d) HPDL edgebanding shall match 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 surfaces.
- b) Exposed edges shall be edgebanded with solid wood, veneer, or veneer tape a minimum of .5 mm [.018"] thick to match the exposed exterior surface.
- c) Veneer tape edgebanding thicker than 1 mm [.039"] be shall be radiused or beveled on edges and corners.
- d) Finger joints in veneer tape used as edgebanding are permitted.

3.4.8 Edges, Doors

- a) At edgebanding thickness less than 6.4 mm [.250"], the sequence of applying edgebanding shall be at the option of the manufacturer/supplier.
- b) Wood edgebanding thickness greater than or equal to 6.4 mm [.250"] on face shall be mitered.

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- 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 polished	Exposed edges flat ground

3.4.9 Edges, Drawers

3.4.9.1 Edges, Drawer Fronts and False Fronts

- a) At edgebanding thickness less than 6.4 mm [.250"], the sequence of applying edgebanding shall be at the option of the manufacturer/supplier.
- b) Wood edgebanding thickness greater than or equal to 6.4 mm [.250"] on face 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.

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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		

3.4.9.3 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.

3.4.9.5 Edges, Decorative Laminate Drawer Boxes

- a) Top edges of drawer box shall be edgebanded.
- b) Edgebanding shall match drawer box color.

3.4.9.6 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

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3.4.10.2 Edges, Pullout Shelves

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

3.4.11 Tolerances

3.4.11.1 Machining, Exposed and Semi-Exposed Surfaces

- a) Machining rules for exposed and semi-exposed surfaces shall comply with smoothness requirements.
- b) Sharp edges shall be eased.
- c) Flat wood surfaces which can be sanded require a minimum of:

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

- d) 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

- e) Turned wood surfaces require a minimum of:

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

- f) Visible sanding marks, excluding turned surfaces, shall be inconspicuous.
- g) Tear out, nicks, or hit or miss machining is not permitted.
- h) Glue or filler shall be inconspicuous and match the adjacent surface for smoothness.

3.4.11.2 Machining, HPDL, PVC, and Prefinished Wood

- a) HPDL, PVC, and prefinished wood 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

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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 Maximum Uniform Gap Variance, Reveal Overlay Frameless

- a) In reveal overlay frameless construction, 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 9.6 mm 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 Maximum Uniform Gap Variance, Flush Overlay Frameless

- a) In flush overlay frameless construction, 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"].

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- 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 9.6 mm 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 Maximum Uniform Gap Variance, Reveal Overlay Face Frame Construction

- a) In reveal overlay face frame construction, 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 Maximum Uniform Gap Variance, Inset Face Frame Construction

- a) At inset face frame construction, 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 Flatness and Warp

- a) Flatness and warp of cabinet doors (See Figure 5-E) shall not exceed the grade tolerances indicated below in the diagonal or width and/or length as a linear ratio.

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- b) Flatness of installed and removable sheet products (See [Figure 5, E](#)), including doors, shall not exceed the following per lineal 305 mm [12”]:

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

- c) Flatness and warp tolerances of cabinet doors shall not exceed a maximum of 6.4 mm [.250”] in any single door.
- d) Measurements for flatness and warp shall be taken on the concave face of the panel.

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4.0 Figures / Illustrations

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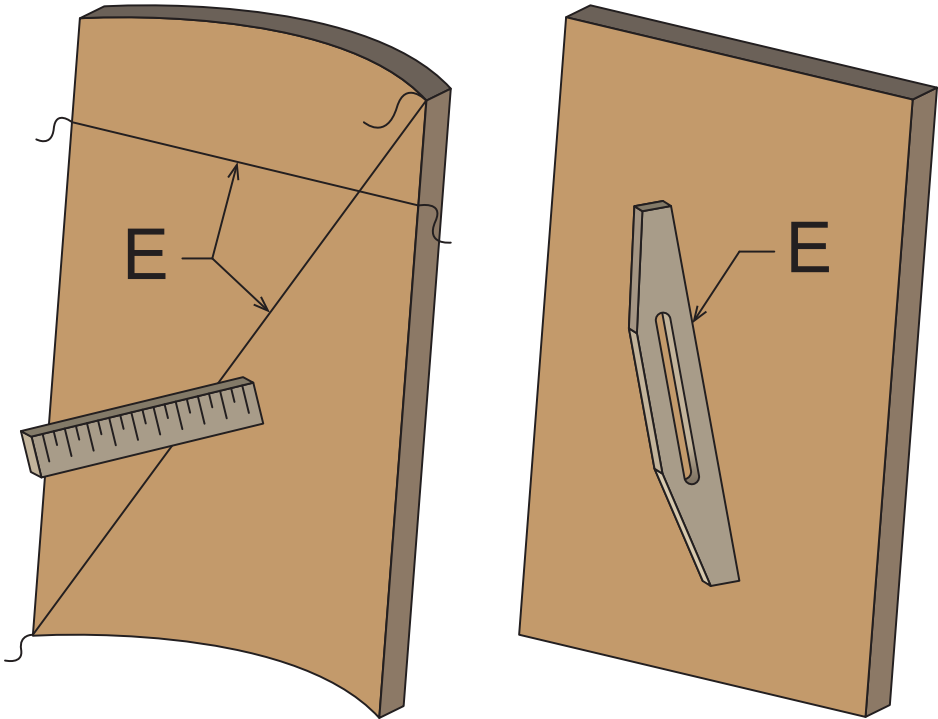


Figure 5 - Compliance Testing Measurement

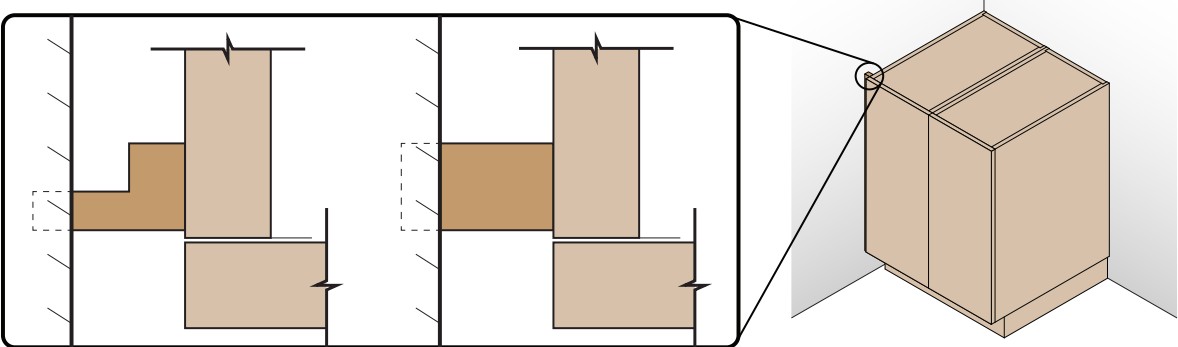


Figure 8 - Scribe Filler

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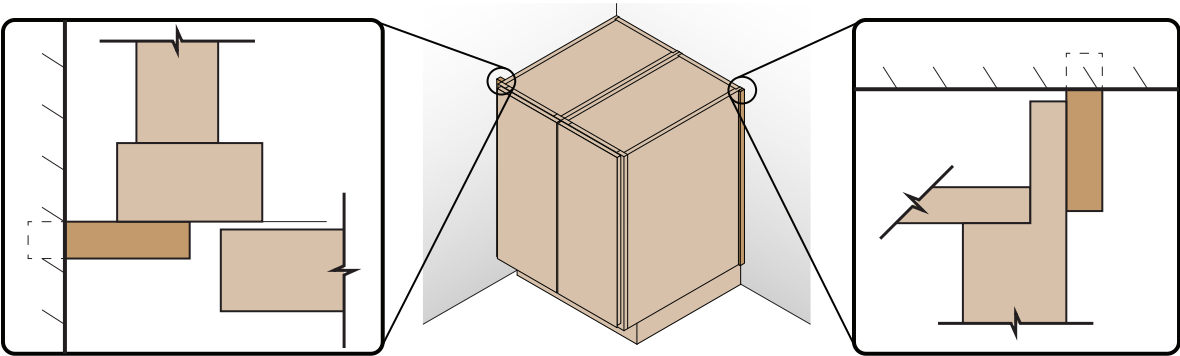


Figure 9 - Scribe Moulding

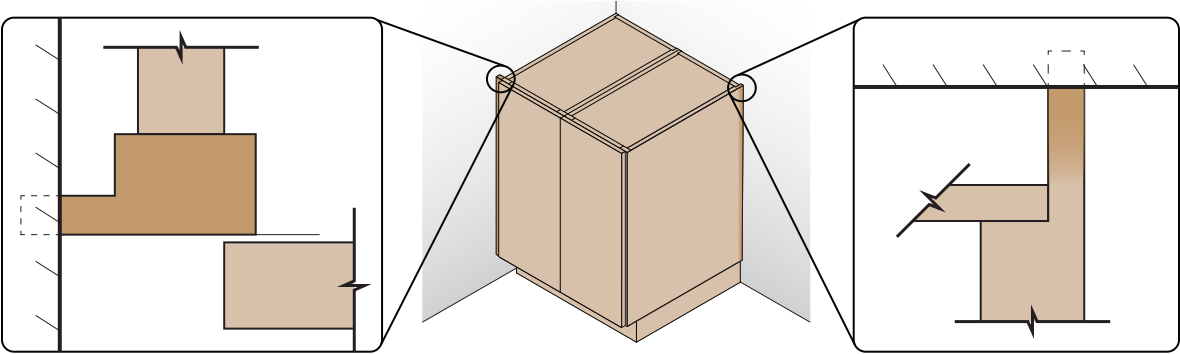


Figure 10 - Scribe Allowance

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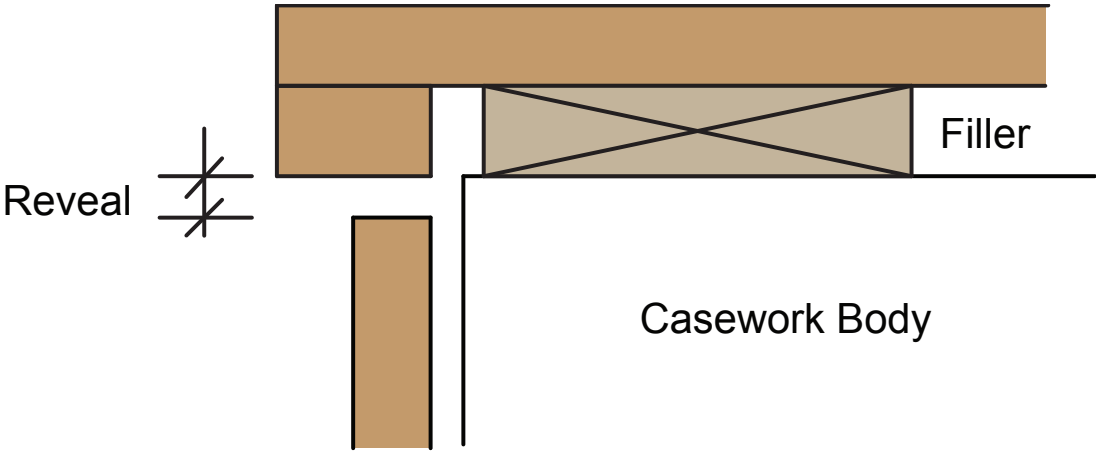


Figure 15 - Frameless Construction Reveal

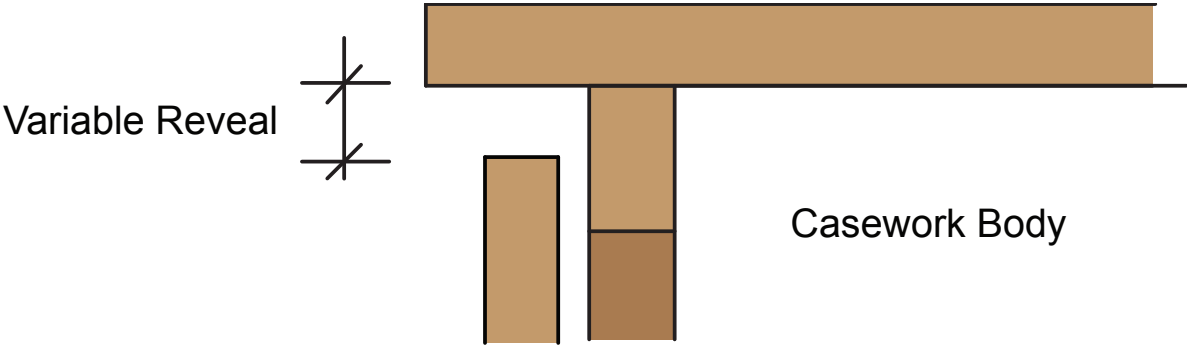


Figure 16 - Face Frame Construction Reveal

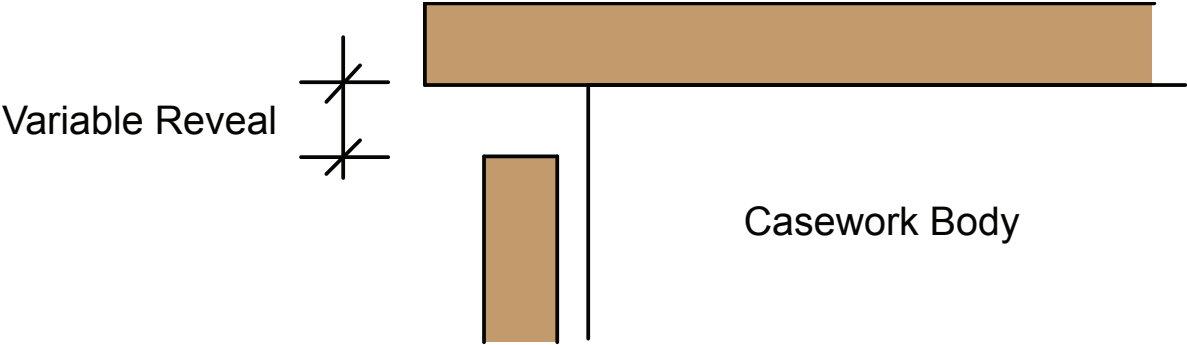


Figure 17 - Laboratory Application Reveal

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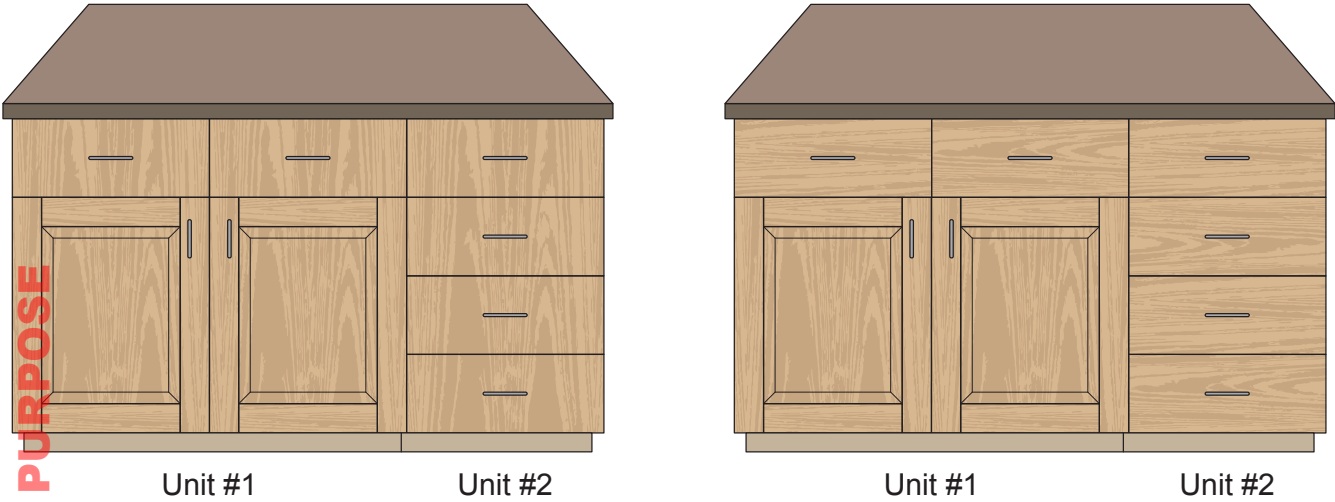


Figure 18 - Grain Layout, Stile and Rail 1

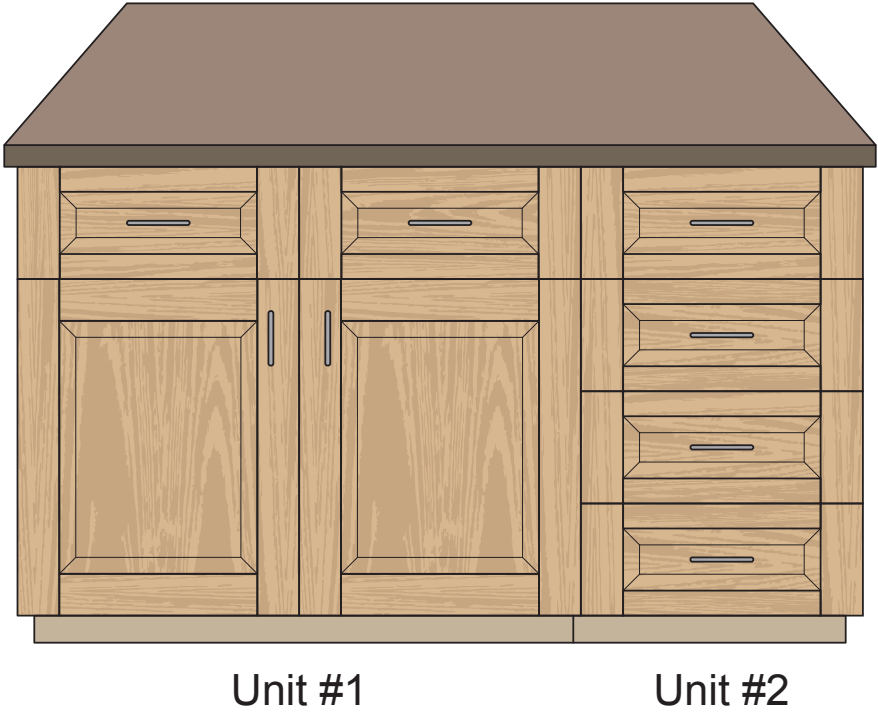


Figure 19 - Grain Layout, Stile and Rail 2

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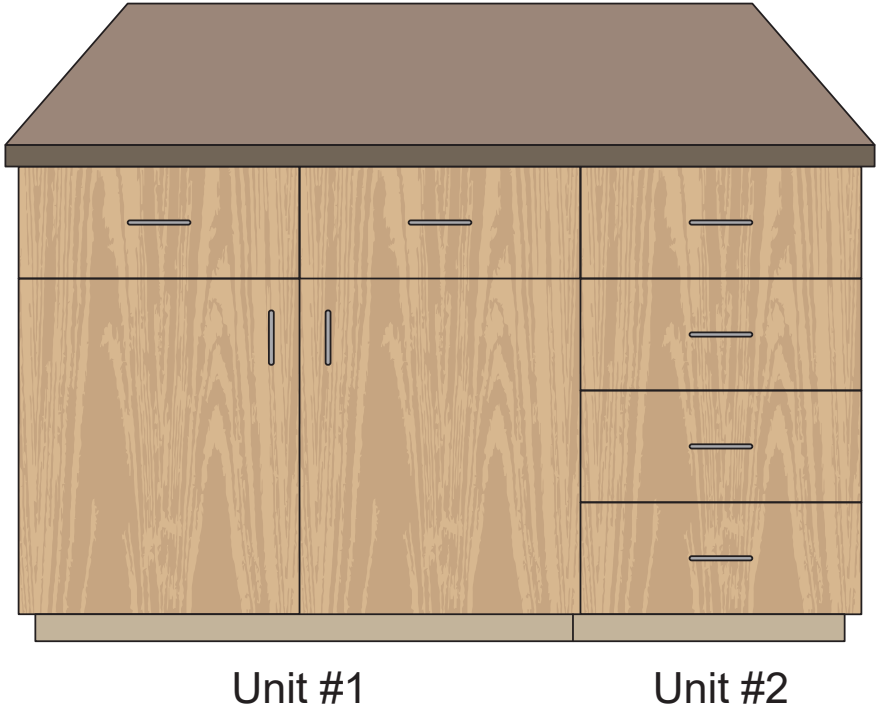


Figure 20 - Grain Layout, Flush Panel, Premium Grade

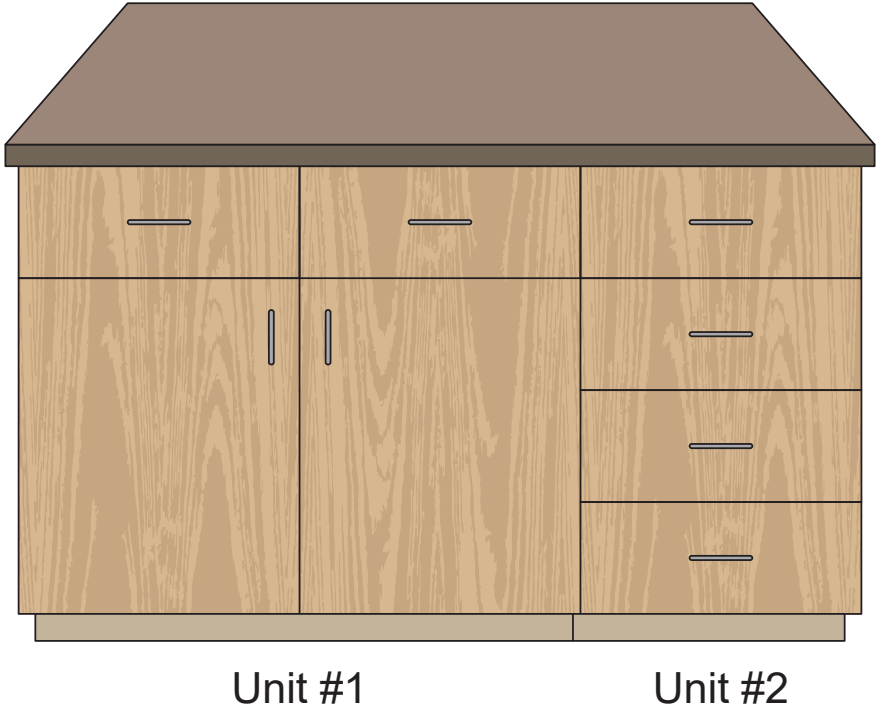


Figure 21 - Grain Layout, Flush Panel, Custom Grade

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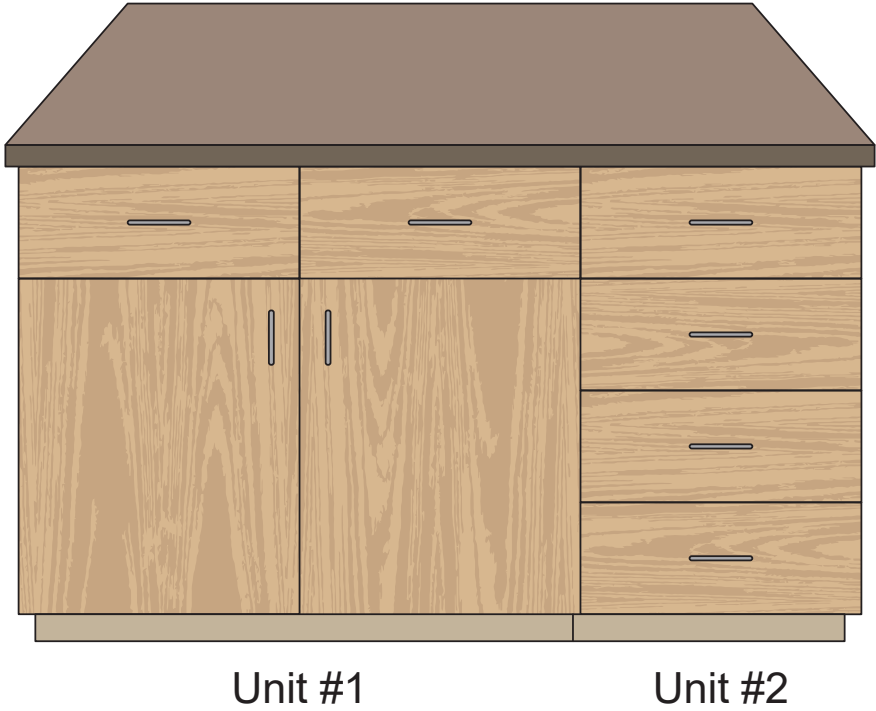


Figure 22 - Grain Layout, Flush Panel, Economy Grade

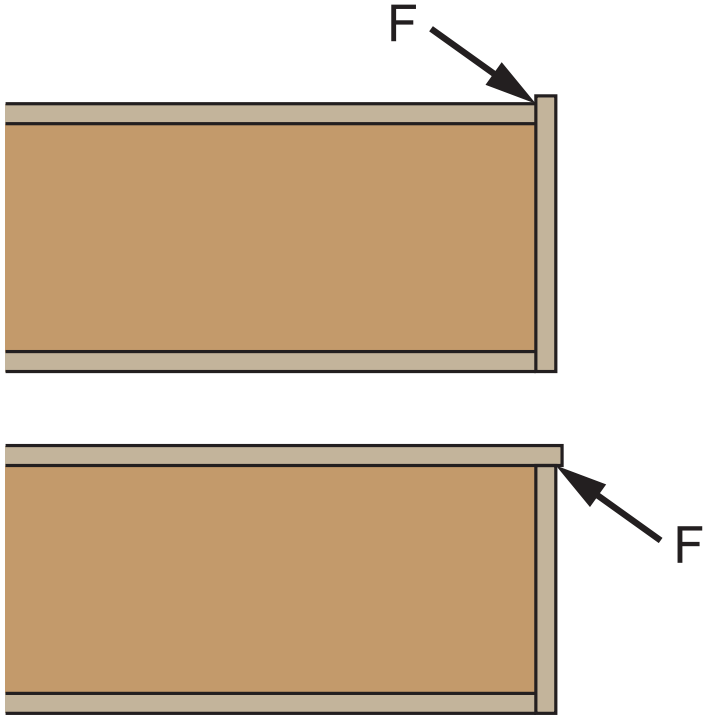


Figure 23 - Overlap

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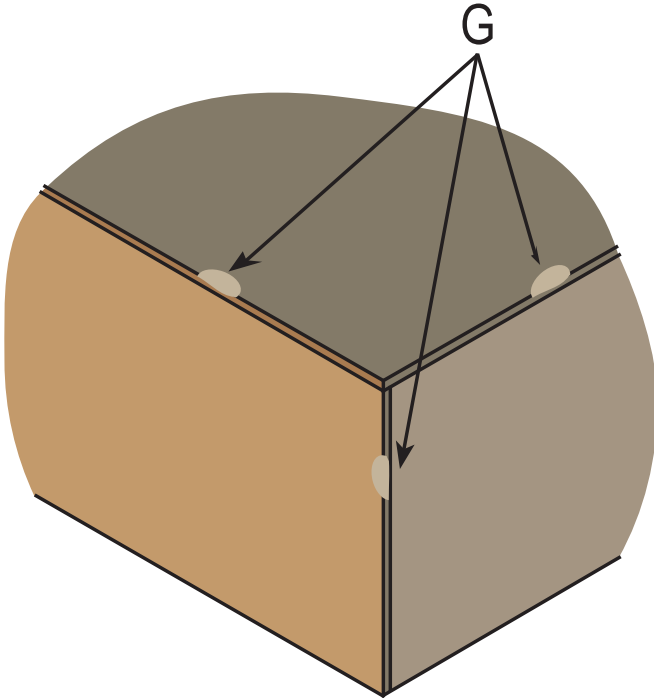


Figure 24 - Chip-Out

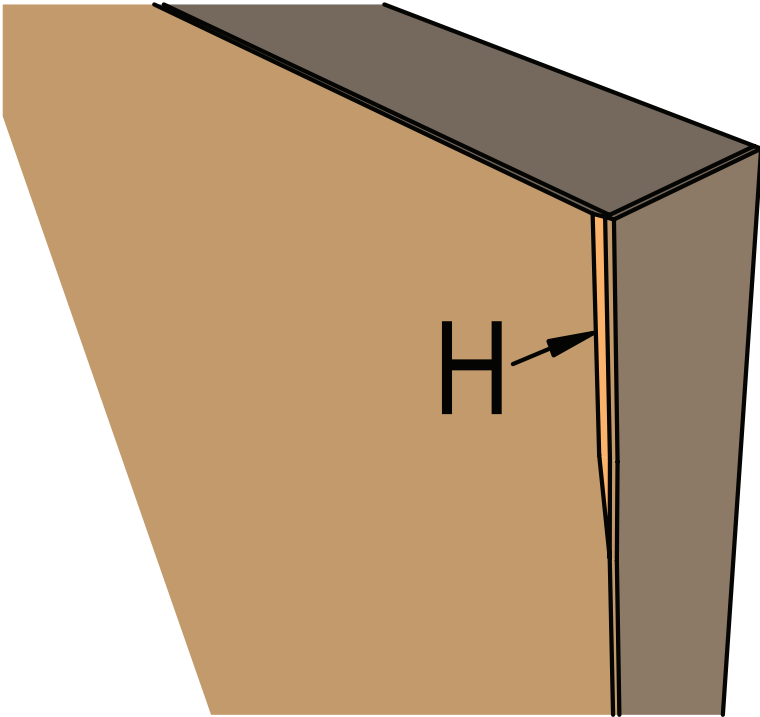


Figure 25 - Over-Filing / Over-Machining

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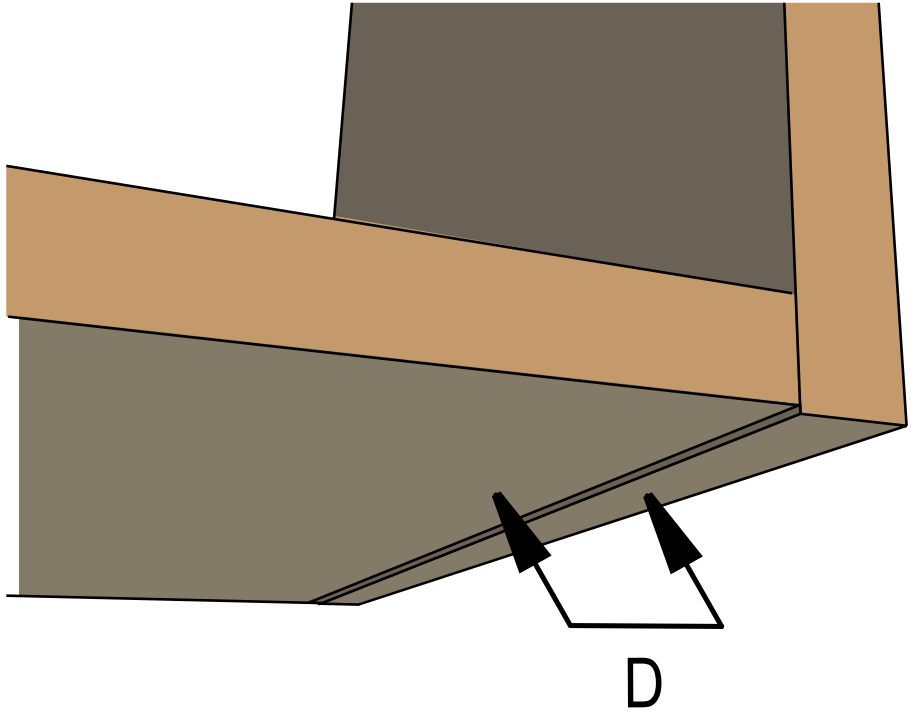


Figure 26 - Flushness Variations, Exposed and Semi-Exposed

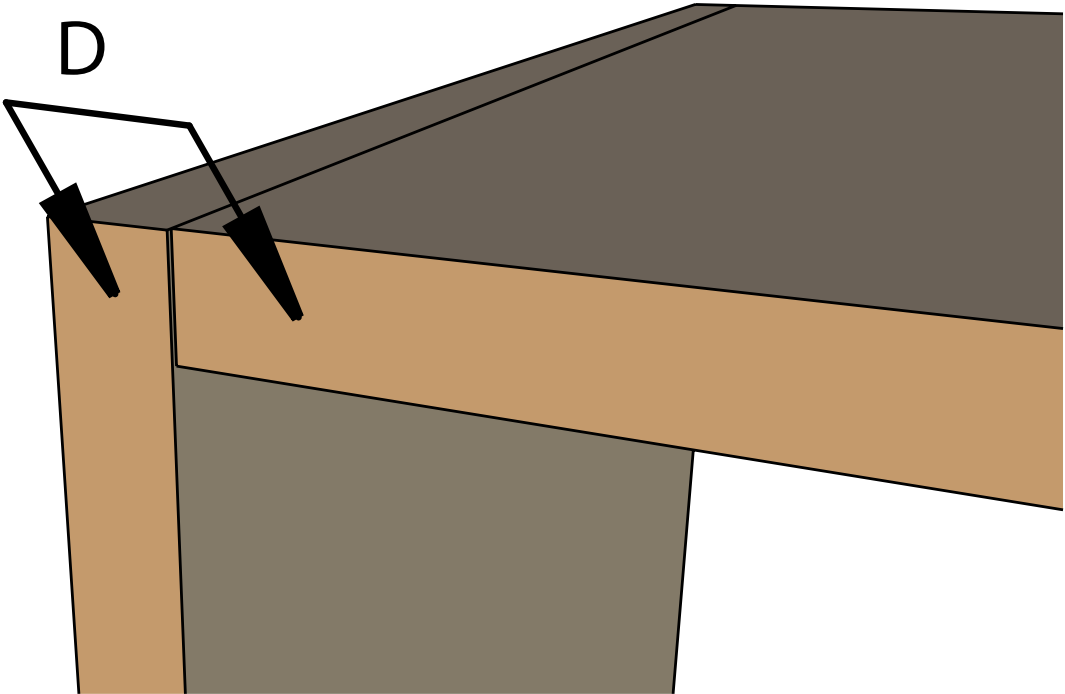


Figure 27 - Flushness, Fixed Horizontal

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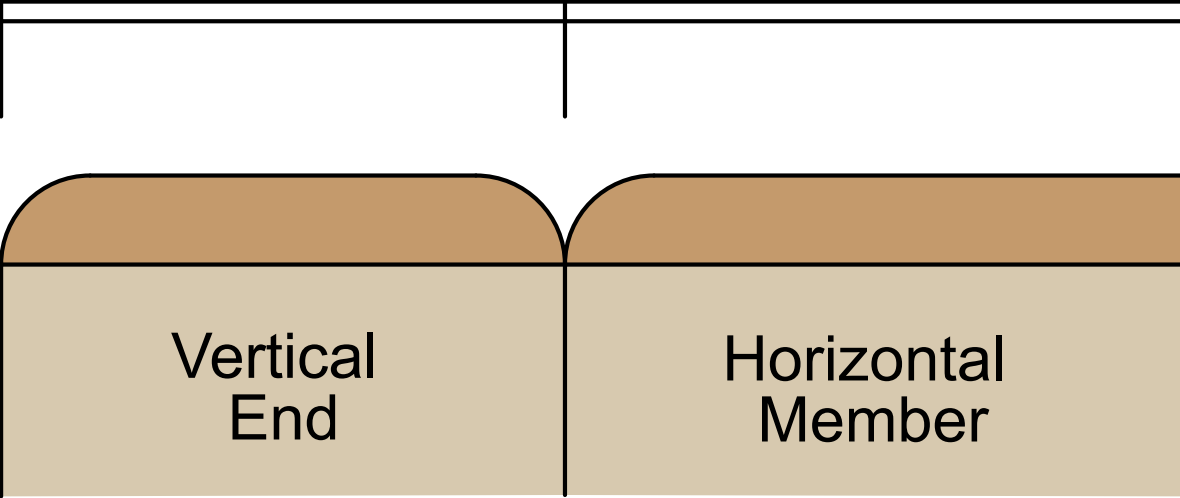


Figure 28 - Radius, Beveled, or Square Edges

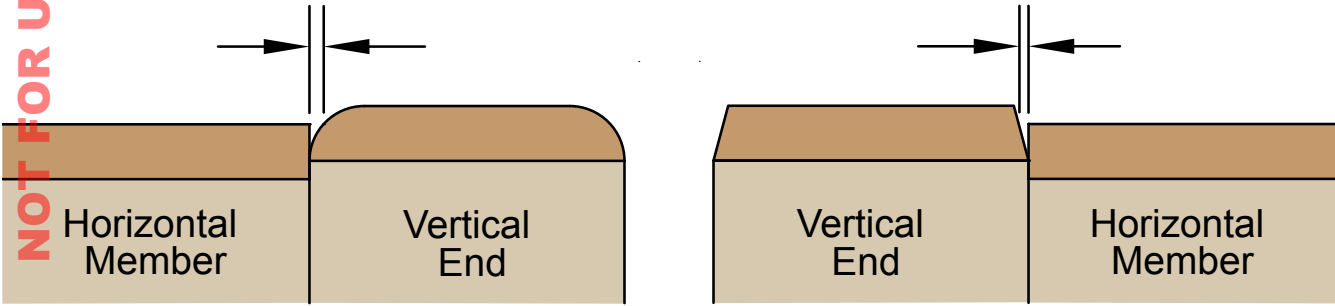


Figure 29 - Radius and Square Edges

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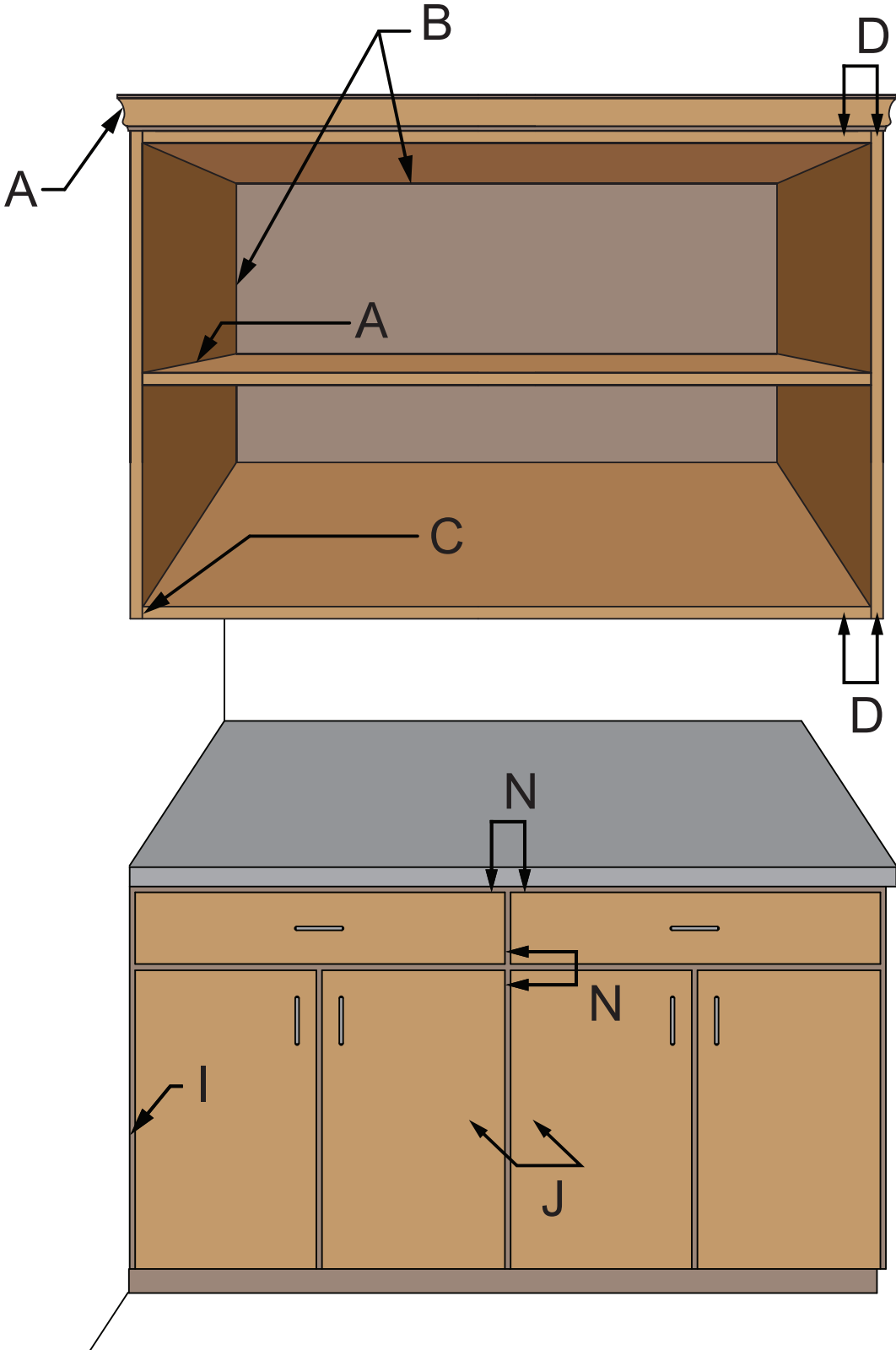


Figure 30 - Gaps and Flushness, Casework

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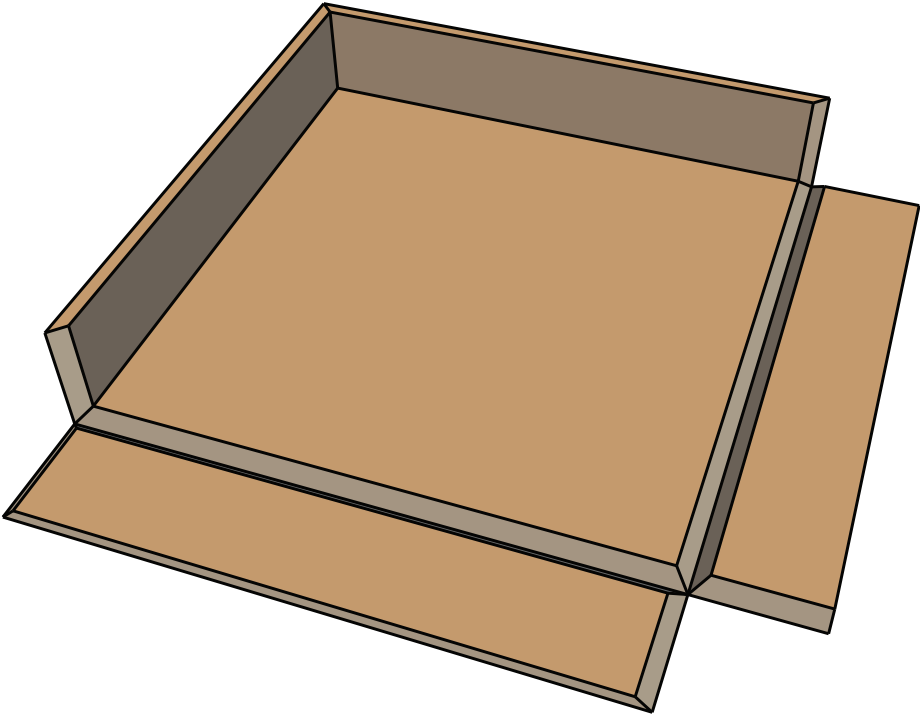


Figure 21 - Miter Folding

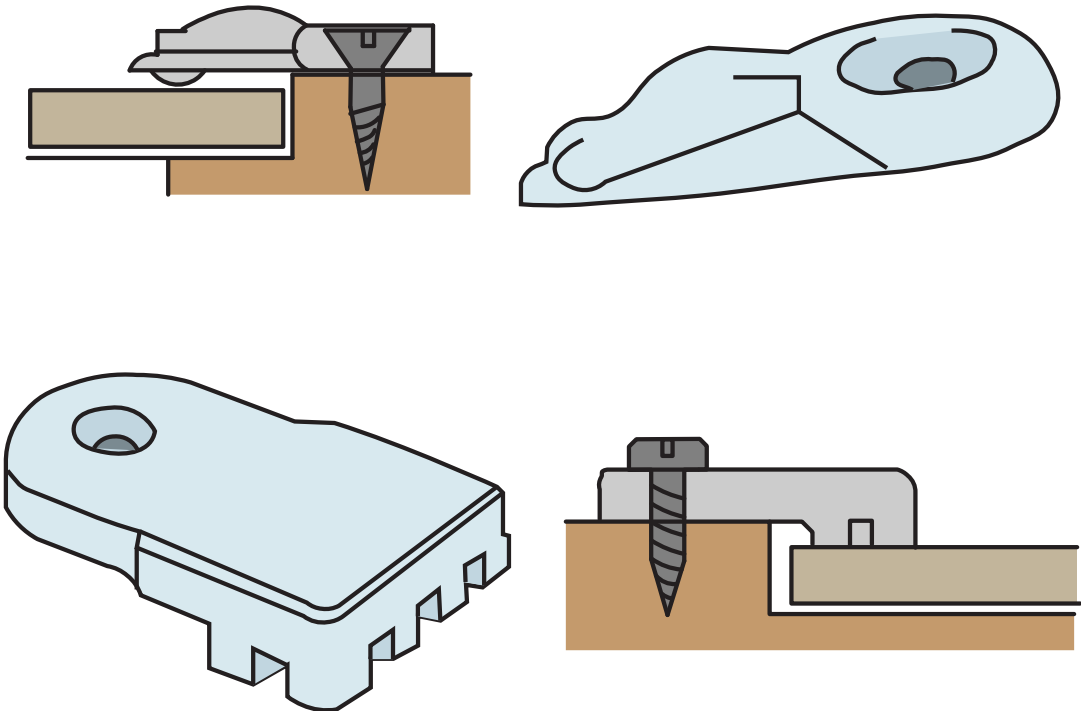


Figure 32 - Glass Clips

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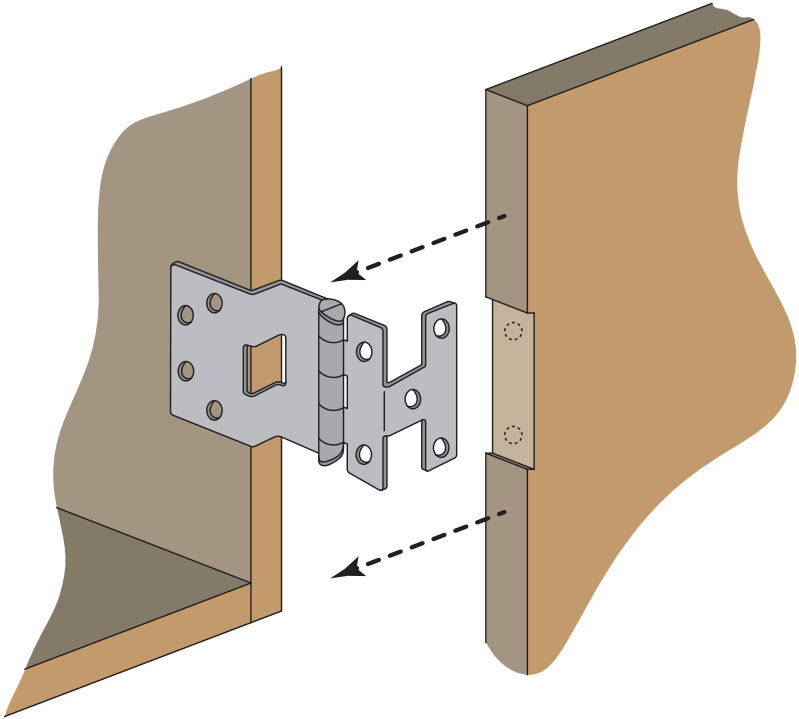


Figure 33 - Wrap-Around Hinges, Flush Overlay

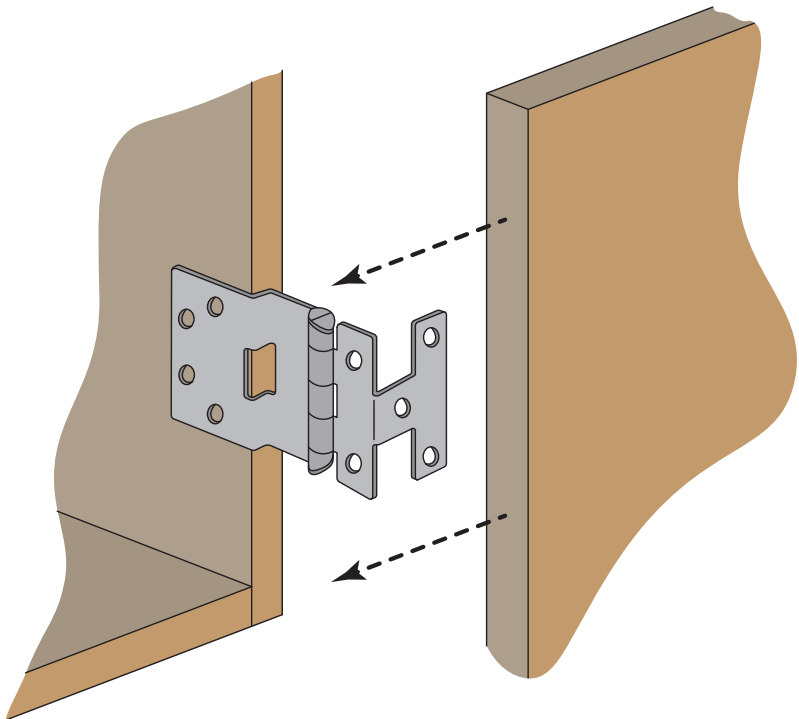


Figure 34 - Wrap-Around Hinges, Reveal Overlay

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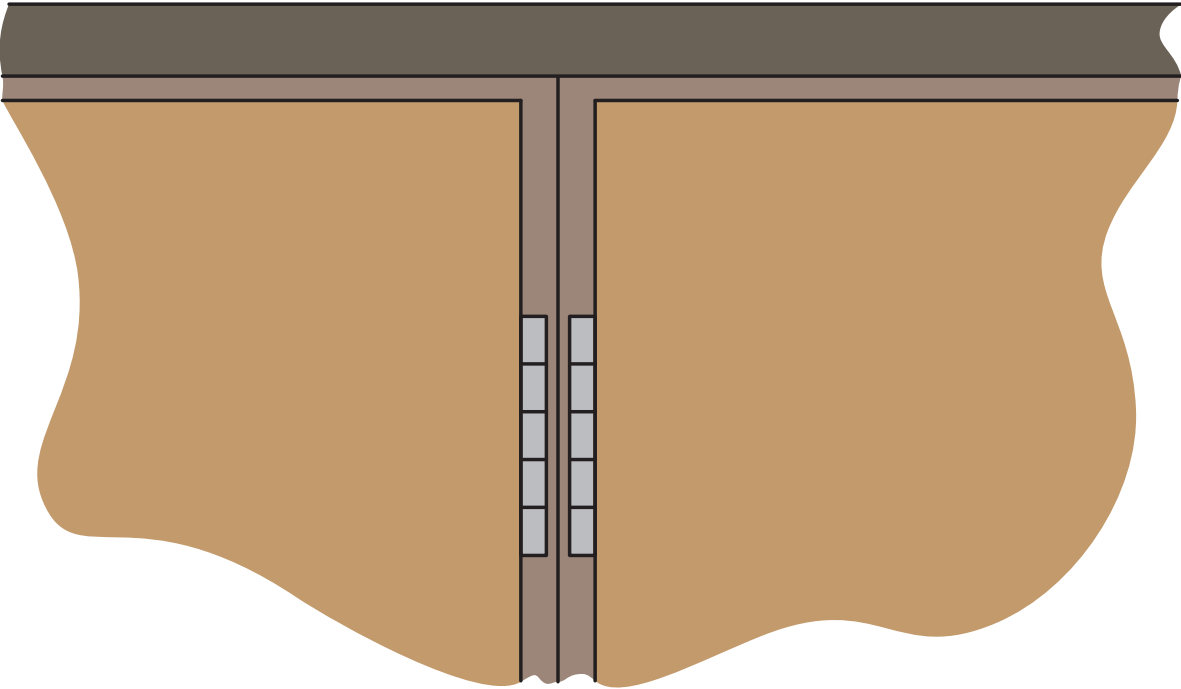


Figure 35 - Reveal, Hinge Overlay

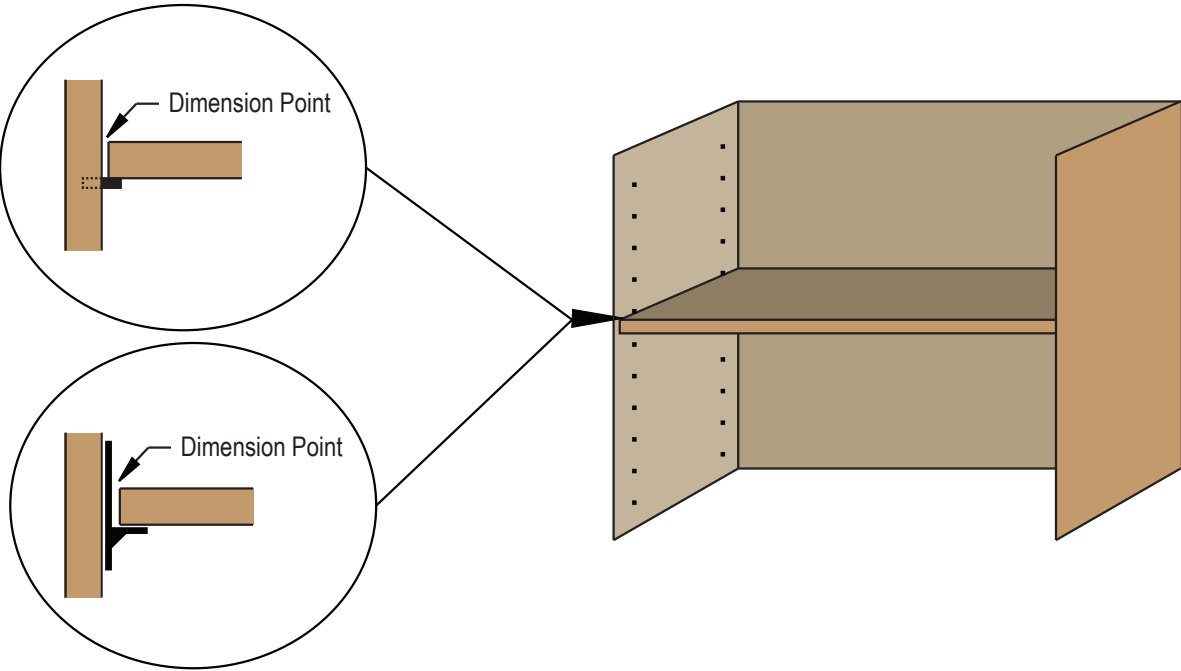


Figure 36 - Adjustable Shelves

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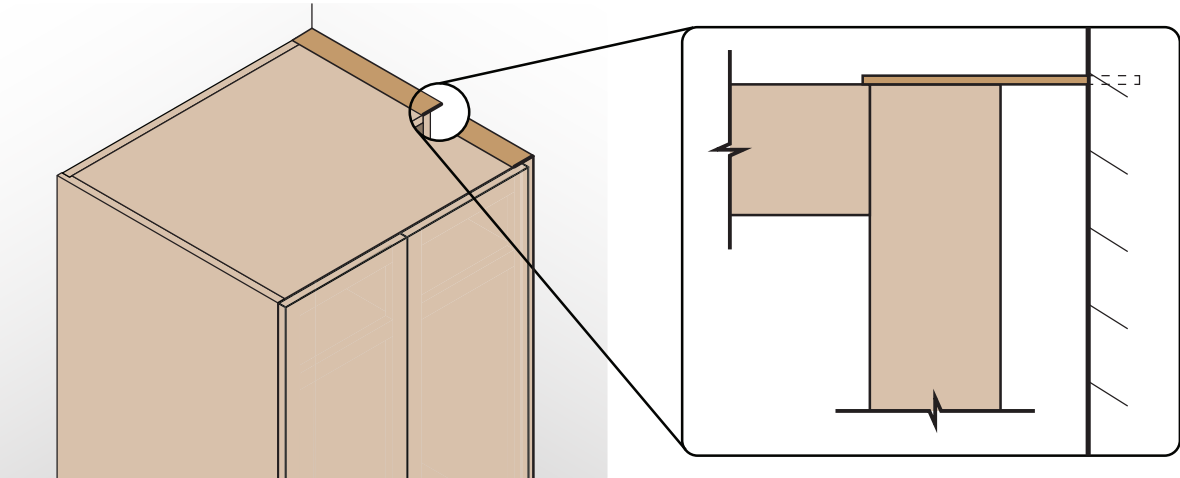


Figure 41 - Closure, Laminate

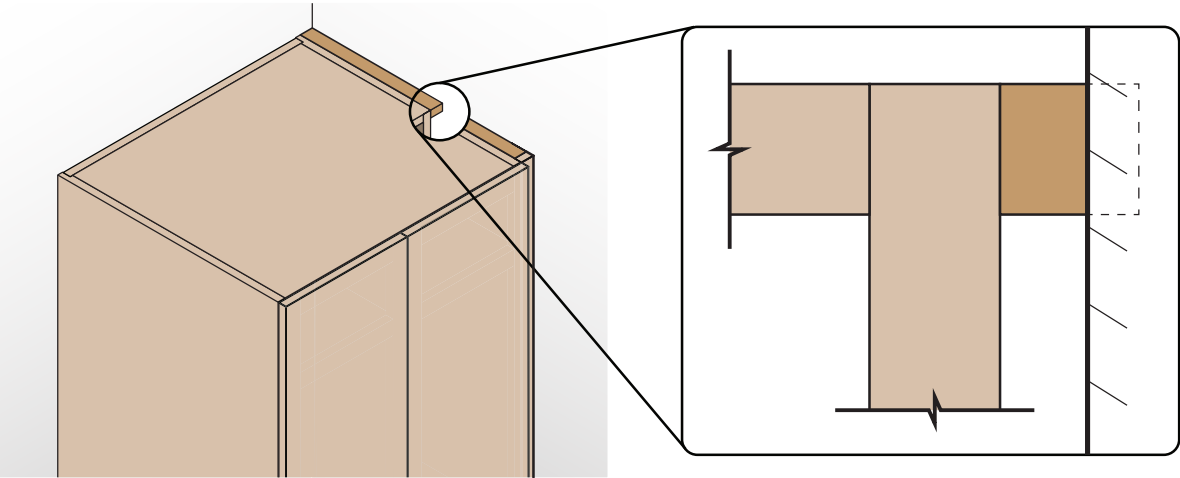


Figure 42 - Closure, Filler

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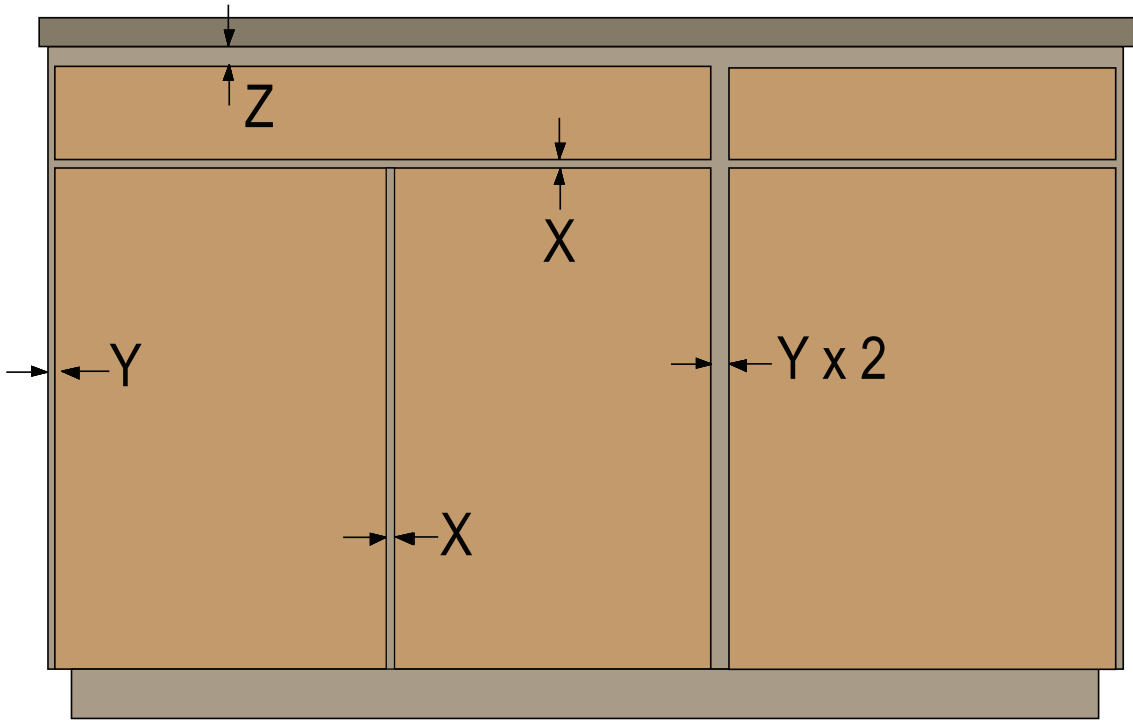


Figure 43 - Gaps, Reveal Overlay Frameless

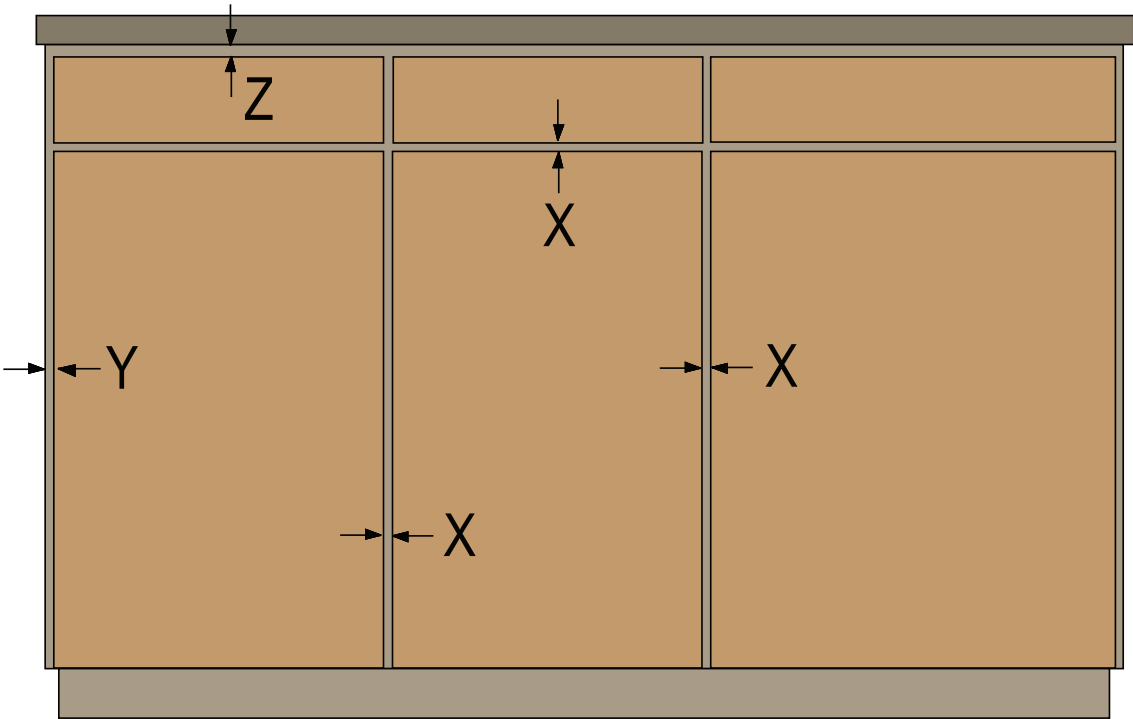


Figure 44 - Gaps, Flush Overlay Frameless

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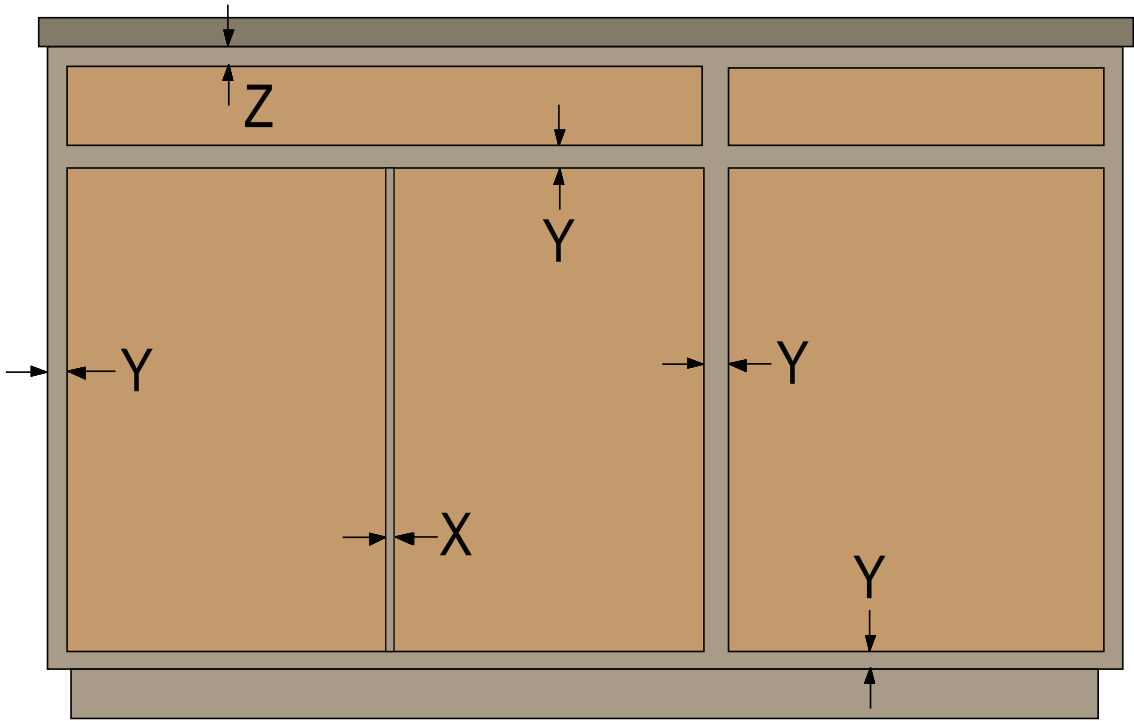


Figure 45 - Gaps, Reveal Overlay Face Frame

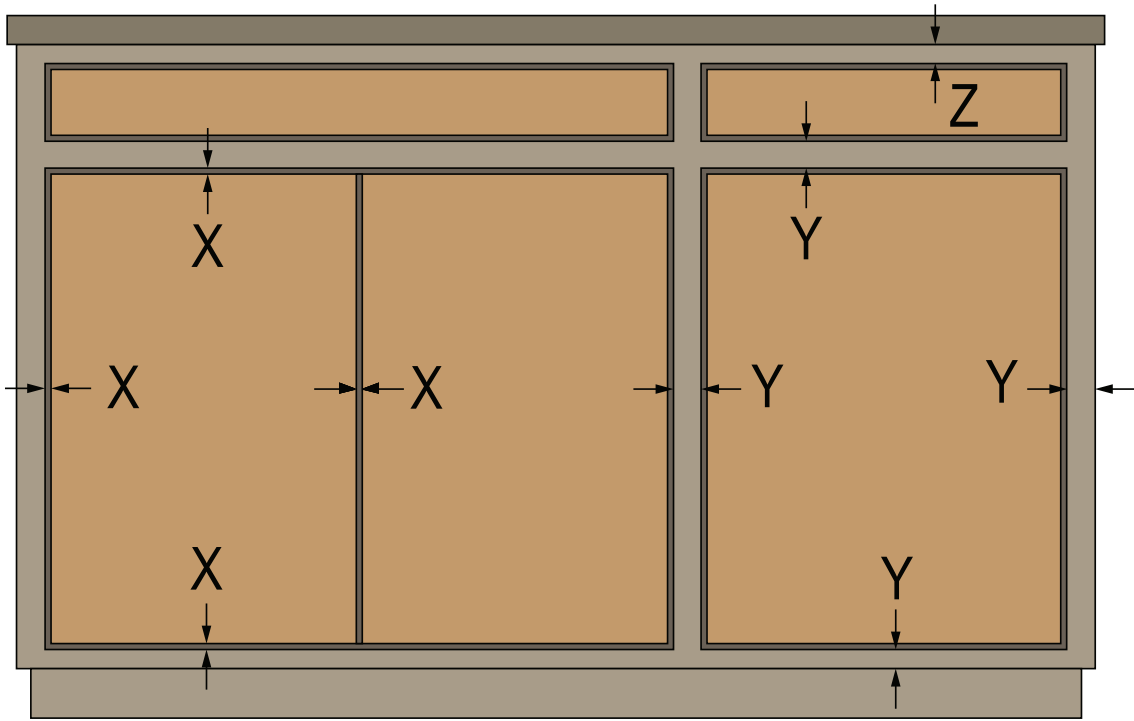


Figure 46 - Gaps, Inset Face Frame

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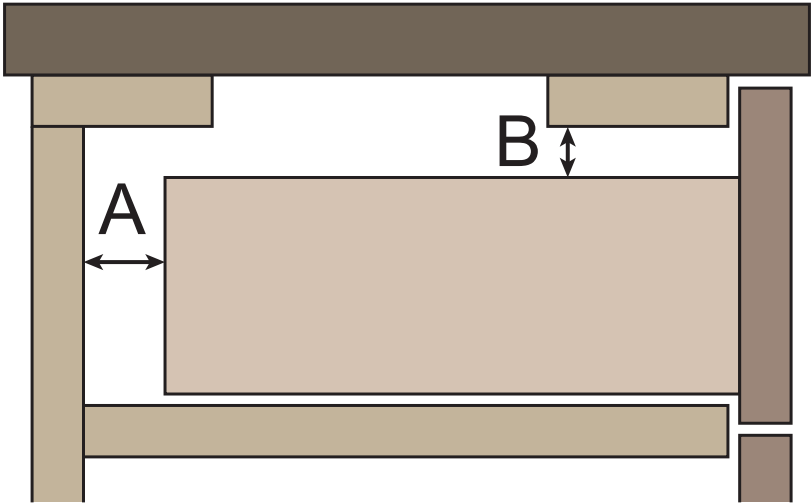
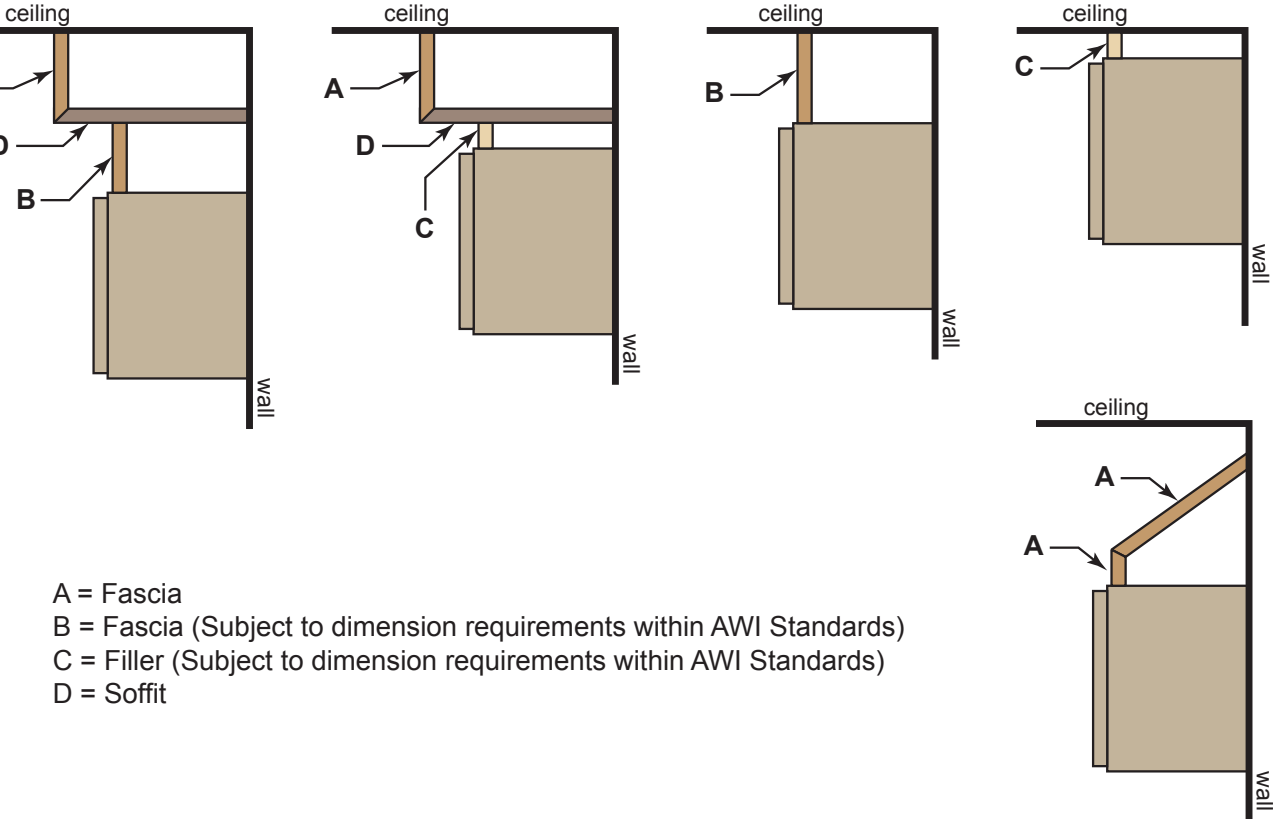


Figure 72 - Drawer Gaps



- A = Fascia
- B = Fascia (Subject to dimension requirements within AWI Standards)
- C = Filler (Subject to dimension requirements within AWI Standards)
- D = Soffit

Figure 85 - Soffit, Fascia, and Filler

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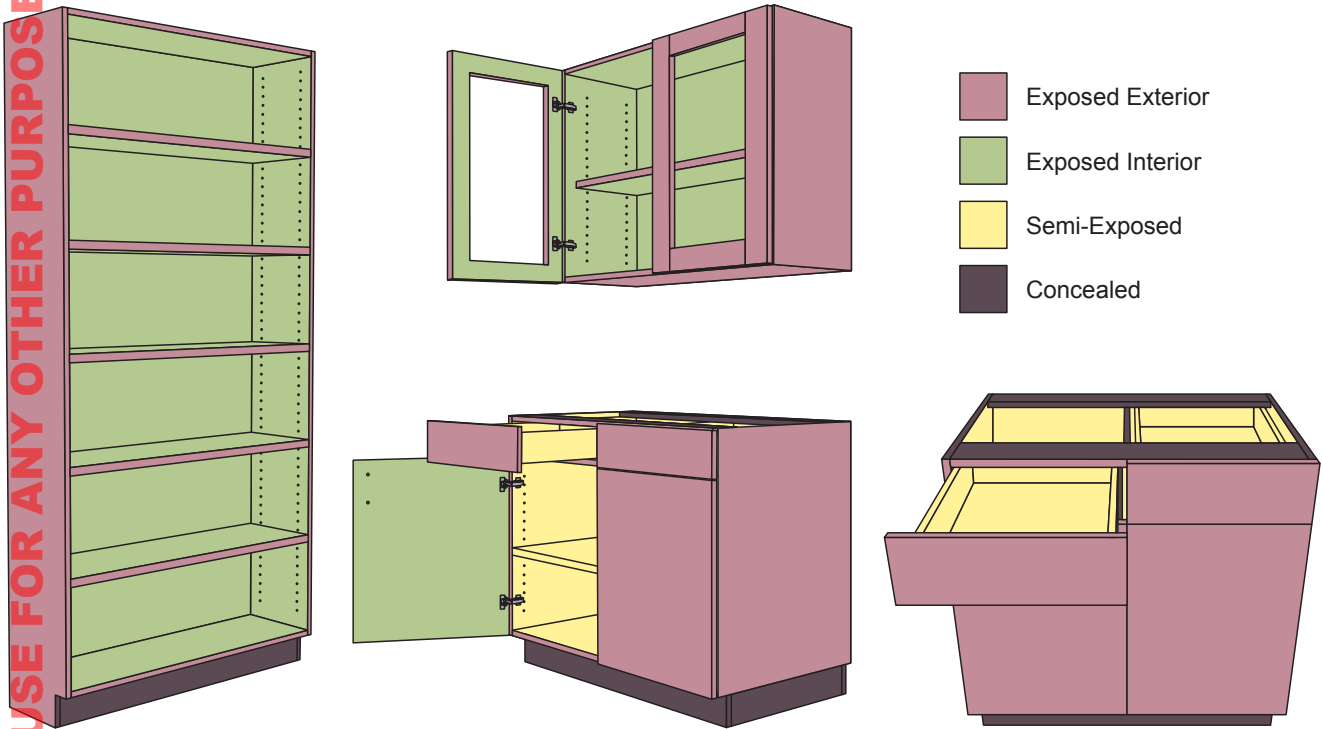


Figure 86 - Casework Surfaces

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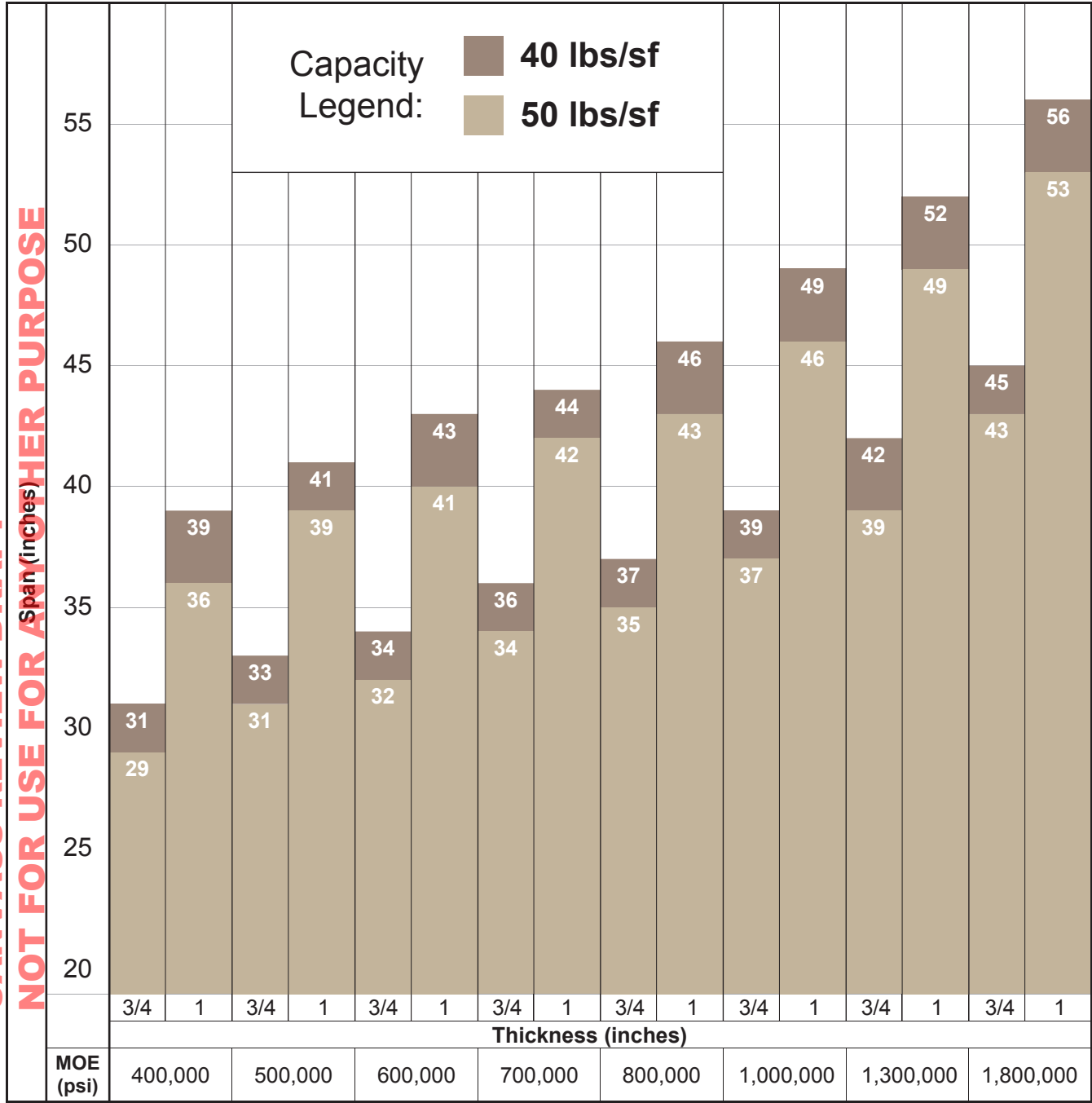


Figure 87 - Maximum Allowable Adjustable Shelf Lengths for MOE Values

5.0 Supplemental Information

5.1 Glossary

- a) The Architectural Woodwork Institute Glossary can be found at:
<http://gotoawi.com/standards/glossary.html>

5.2 Design Professional Responsibilities

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

5.2.1 Requirement Specifications

- a) Glass type, thickness, and edge treatment of glass shelving
- b) Door and drawer front Interface style.
- c) Door and drawer front edge profile.
- d) Toe kick finish.
- e) Grain direction, if other than vertical.
- f) Interior clearance.
- g) Seismic fabrication and/or installation.
- h) Flame spread rating.
- i) Moisture resistance.
- j) Insulation from adjacent heating and cooling sources.
- k) Hardware.
- l) Laboratory features, such as:
 - Pipe chase allowance and/or removable backs behind base cabinets.
 - Removable top at countertop splash.
 - Moisture resistant base.
 - Chemical resistant finish or surfaces.

5.2.1.1 Wood Casework

- a) Species of veneer.
- b) Method of slicing (plain, quarter, rift, or rotary).
- c) Matching of veneer leaves (book, slip, or random).
- d) Matching of veneer leaves within the face of a cabinet unit.
- e) Matching between doors, drawers, and adjacent panels (non-sequenced, sequenced, or blueprint).
- f) End matching.

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- g) Grain direction, if other than vertical.

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:
- Shelves, including edgebanding.
 - Divisions and partitions (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

- a) 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 and partitions (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.

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5.3.4 Concealed

- a) Defined as those exterior or interior surfaces that are covered or not normally exposed to view, including:
- Toe spaces, unless otherwise specified.
 - 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 countertops, 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.

5.4 AWI Performance Duty Level Typical Applications

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

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