UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS
08/10, CHG 1: 11/18

****
NOTE: This guide specification covers the requirements for laminate clad architectural casework.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).
****

PART 1 GENERAL

****
NOTE: Designer should require materials, products, and innovative construction methods and techniques which are environmentally sensitive, take advantage of recycling and conserve natural resources.

Executive Order No. 12873, dated 20 October 1993, requires that Federal Agencies use environmentally preferable products and services and implement cost-effective procurement preference programs favoring purchase of these products and services. "Environmentally preferable" products and services are those that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw

materials, components, acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service.

Factors to consider include, but are not limited to:

1) Ease of repairability and high durability. A lesser frequency of replacement reduces landfill (i.e., need for more natural resources and energy) costs.

2) Manufacturer/fabricator programs in place that reduce energy required or re-cycle energy, water, by-products, or waste materials in production methods.

3) Low VOC's and off-gassing in the production, fabrication, assembly, and installation of materials and components.

Evaluation of the sustainable efforts of a manufacturer is subjective. There are no current measurable aspects of a sustainable program for casework materials which easily qualifies or disqualifies a manufacturer or fabricator. The submittal reviewer should use the information provided in the Department of Army ETL 1110-3-491 in conjunction with a common sense approach in making the evaluation.

****

1.1 REFERENCES

****

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

****

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A161.2	(1998) Decorative Laminate Countertops, Performance Standards for Fabricated High Pressure

ASTM INTERNATIONAL (ASTM)

ASTM D1037	(2012) Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
ASTM E84	(2020) Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM F547	(2017) Standard Terminology of Nails for Use with Wood and Wood-Base Materials

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

ANSI/BHMA A156.9	(2015) Cabinet Hardware

COMPOSITE PANEL ASSOCIATION (CPA)

CPA A208.1	(2016) Particleboard
CPA A208.2	(2016) Medium Density Fiberboard (MDF) for Interior Applications

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

ANSI/NEMA LD 3	(2005) Standard for High-Pressure Decorative Laminates

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS	SCS Global Services (SCS) Indoor Advantage

U.S. GREEN BUILDING COUNCIL (USGBC)

LEED BD+C	(2009; R 2010) Leadership in Energy and Environmental Design(tm) Building Design and Construction (LEED-NC)

UL ENVIRONMENT (ULE)

ULE Greenguard	UL Greenguard Certification Program

WINDOW AND DOOR MANUFACTURERS ASSOCIATION (WDMA)

ANSI/WDMA I.S.1A	(2013) Interior Architectural Wood Flush Doors

WOODWORK INSTITUTE (WI)

NAAWS 3.1	(2017; 2018 Errata Edition) North American Architectural Woodwork Standards

1.2 SYSTEM DESCRIPTION

****

NOTE: The term "laminate clad architectural casework" as used herein includes all wood assembly components and specially designed and fabricated custom casework that requires a high pressure decorative laminate finish. This should include such items as restroom vanities, cabinets, and built-in shelving as detailed and located on the drawings. Items such as running trim, moldings, wood railings,and other wood decorative components should be specified in Section 06 20 00 FINISH CARPENTRY. Prefabricated, modular casework and cabinetry should be specified in Section 12 32 00 MANUFACTURED WOOD CASEWORK.

Solid polymer (solid surfacing) components of laminate architectural casework, such as countertops, will be constructed in accordance with Section 06 61 16 SOLID SURFACING FABRICATIONS.

****

Work in this section includes laminate clad custom casework [cabinets] [vanities] [_____] as shown on the drawings and as described in this specification. This Section includes high-pressure laminate surfacing and cabinet hardware. Comply with EPA requirements in accordance with Section 01 33 29 SUSTAINABILITY REQUIREMENTS AND REPORTING. All exposed and semi-exposed surfaces, whose finish is not otherwise noted on the drawings or finish schedule, shall be sanded smooth and shall receive a clear finish of polyurethane. Wood finish may be shop finished or field applied in accordance with Section 09 90 00 PAINTS AND COATINGS.

1.3 SUSTAINABILITY REPORTING

****

NOTE: The bracketed items are representative of LEED material documentation and requirements that may apply to this project. These items should be edited to reflect the project requirements.

****

Materials in this technical specification may contribute towards contract compliance with sustainability requirements. See Section 01 33 29 SUSTAINABILITY REQUIREMENTS AND REPORTING for project LEED BD+C [local/regional materials,] [low-emitting materials,] [recycled content,] [certified wood] [____] [and][rapidly renewable materials] LEED documentation requirements.

1.4 SUBMITTALS

****

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity

or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

****

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Shop Drawings
Installation

SD-03 Product Data

Wood Materials
Wood Finishes
Finish Schedule
Certification

SD-04 Samples

Plastic Laminates
Cabinet Hardware

SD-07 Certificates

Quality Assurance
Laminate Clad Casework

SD-11 Closeout Submittals

LEED Documentation

1.5 QUALITY ASSURANCE

****

NOTE: This specification relies heavily on standards developed by the Architectural Woodwork Institute (AWI), a national not-for-profit organization of manufacturers of architectural woodwork, suppliers to the industry, and design professionals to provide specifications which accurately describe and quantify minimum standards for architectural woodwork.

AWI architectural woodwork quality standards for casework materials and fabrication lists three quality categories: premium, custom, and economy grade. The specifier must judge the level of quality required for the specific end use conditions. The specifier should become familiar with the differences between custom and premium grade quality differences before editing this specification.

To insure suitable durability and appearance it is recommended that either the custom or premium grade quality be selected. Economy grade should only be considered where severe funding limitations dictate this lesser quality be specified. AWI Sections 400G and 400B indicate the differences between grades regarding acceptable materials for substrates and components, fabrication methods, joinery, tolerances, and other factors.

****

1.5.1 General Requirements

Unless otherwise noted on the drawings, all materials, construction methods, and fabrication shall conform to and comply with the [premium] [custom] grade quality standards as outlined in NAAWS 3.1, Section for laminate clad cabinets. These standards shall apply in lieu of omissions or specific requirements in this specification. Contractors and their personnel engaged in the work shall be able to demonstrate successful experience with work of comparable extent, complexity and quality to that shown and specified. Submit a quality control statement which illustrates compliance with and understanding of NAAWS 3.1 requirements, in general, and the specific NAAWS 3.1 requirements provided in this specification. The quality control statement shall also certify a minimum of ten years Contractor's experience in laminate clad casework fabrication and construction. The quality control statement shall provide a list of a minimum of five successfully completed projects of a similar scope, size, and complexity.

1.5.2 Mock-ups

Prior to final approval of shop drawings, provide a full-size mock-up of a typical [vanity] [floor cabinet] [wall cabinet] [_____], including all components and hardware necessary to illustrate a completed unit with a

minimum of one door and one drawer assembly. The completed mock-up shall include countertops and back splashes where specified. The mock-up shall utilize specified finishes in the patterns and colors [as indicated] [as indicated in Section 09 06 00 SCHEDULES FOR FINISHES]. Upon disapproval, rework or remake the mock-up until approval is secured. Remove rejected units from the jobsite. Approved mock-up may remain as part of the finished work. Submit shop drawings showing all fabricated casework items in plan view, elevations and cross-sections to accurately indicate materials used, details of construction, dimensions, methods of fastening and erection, and installation methods proposed. Shop drawing casework items shall be clearly cross-referenced to casework items located on the project drawings. Shop drawings shall include a color schedule of all casework items to include all countertop, exposed, and semi-exposed cabinet finishes to include finish material manufacturer, pattern, and color.

1.5.3 Sustainable Design Certification

****

NOTE: Products meeting the Gold standard will also meet the basic standard. Require Gold when the facility will be used by people sensitive to air quality conditions, such as child development centers and medical facilties.

****

Product shall be third party certified in accordance with ULE Greenguard[Gold], SCS Scientific Certification Systems Indoor Advantage[Gold]or equal. Certification shall be performed annually and shall be current.

1.6 DELIVERY, STORAGE, AND HANDLING

Casework may be delivered knockdown or fully assembled. Deliver all units to the site in undamaged condition, stored off the ground in fully enclosed areas, and protected from damage. The storage area shall be well ventilated and not subject to extreme changes in temperature or humidity.

1.7 SEQUENCING AND SCHEDULING

Coordinate work with other trades. Units shall not be installed in any room or space until painting, and ceiling installation are complete within the room where the units are located. Floor cabinets shall be installed before finished flooring materials are installed.

PART 2 PRODUCTS

2.1 WOOD MATERIALS

2.1.1 Lumber

a. All framing lumber shall be kiln-dried Grade III to dimensions as shown on the drawings. Frame front, where indicated on the drawings, shall be nominal 19 mm 3/4 inch hardwood.

b. Standing or running trim casework components, which are specified to receive a transparent finish, shall be [_____] hardwood species, plain sawn. AWI grade shall be [premium] [custom]. Location, shape, and dimensions shall be as indicated on the drawings.

2.1.2 Panel Products

****

NOTE: The plastic laminate industry recommends using medium density fiber board (MDF) or medium density particleboard as suitable panel substrates. The use of plywood is discouraged whenever possible due to the potential for stress crack, shrink-back, and telegraphing problems.

****

2.1.2.1 Plywood

All plywood panels used for framing purposes shall be veneer core hardwood plywood, NAAWS 3.1 Grade AA. Nominal thickness of plywood panels shall be as indicated in this specification and on the drawings.

2.1.2.2 Particleboard

All particleboard shall be industrial grade, medium density (640 to 800 kg per cubic meter 40 to 50 pounds per cubic foot), 19 mm 3/4 inch thick. A moisture-resistant particleboard in grade Type 2-M-2 or 2-M-3 shall be used as the substrate for plastic laminate covered [countertops] [backsplashes] [_____] [components as located on the drawings] and other areas subjected to moisture. Particleboard shall meet the minimum standards listed in ASTM D1037 and CPA A208.1.

2.1.2.3 Medium Density Fiberboard

Medium density fiberboard (MDF) shall be an acceptable panel substrate where noted on the drawings. Medium density fiberboard shall meet the minimum standards listed in CPA A208.2.

2.2 SOLID POLYMER MATERIAL

Solid surfacing casework components shall conform to the requirements of Section 06 61 16 SOLID SURFACING FABRICATIONS.

2.3 HIGH PRESSURE DECORATIVE LAMINATE (HPDL)

****

NOTE: The grades listed in this paragraph should be edited to include only those grades required for the specific end use of the casework and components. General characteristics and intended end uses are as follows:

Horizontal HGS grade is thicker and therefore the most durable. It is not intended to be post formed to a tight radius.

Vertical VGS grade is thinner and does not have the impact resistance of a horizontal grade.

Horizontal HGP and vertical VGP grades are thinner than their general purpose grade counterparts and are engineered specially for post forming to tight inside and outside bends.

Cabinet liner CLS grade is much thinner than general purpose vertical grade and is intended for light duty use on such surfaces as semi-exposed interior cabinet body and drawer interior surfaces.

Horizontal HGF and vertical VGF grades are specially formulated to provide a Class A flammability rating in accordance with ASTM E84-00a, where required.

Backing sheet BK grade is intended for use on the back side of laminated panels or components to prevent moisture and humidity absorption and minimize warpage, thereby maximizing dimensional stability of the laminated panel substrate material.

****

All plastic laminates shall meet the requirements of ANSI/NEMA LD 3 and ANSI A161.2 for high-pressure decorative laminates. Design, colors, surface finish and texture, and locations shall be as indicated on [the drawings] [Section 09 06 00 SCHEDULES FOR FINISHES] [_____]. Submit two samples of each plastic laminate pattern and color. Samples shall be a minimum of 120 by 170 mm 5 by 7 inches in size. Plastic laminate types and nominal minimum thicknesses for casework components shall be as indicated in the following paragraphs.

2.3.1 Horizontal General Purpose Standard (HGS) Grade

Horizontal general purpose standard grade plastic laminate shall be 1.22 mm (plus or minus 0.127 mm) 0.048 inches (plus or minus 0.005 inches) in thickness. This laminate grade is intended for horizontal surfaces where postforming is not required.

2.3.2 Vertical General Purpose Standard (VGS) Grade

Vertical general purpose standard grade plastic laminate shall be 0.71 mm (plus or minus 0.012 mm) 0.028 inches (plus or minus 0.004 inches) in thickness. This laminate grade is intended for exposed exterior vertical surfaces of casework components where postforming is not required.

2.3.3 Horizontal General Purpose Postformable (HGP) Grade

Horizontal general purpose postformable grade plastic laminate shall be 1.07 mm (plus or minus 0.127 mm) 0.042 inches (plus or minus 0.005 inches) in thickness. This laminate grade is intended for horizontal surfaces where post forming is required.

2.3.4 Vertical General Purpose Postformable (VGP) Grade

Vertical general purpose postformable grade plastic laminate shall be 0.71 mm (plus or minus 0.012 mm) 0.028 inches (plus or minus 0.004 inches) in thickness. This laminate grade is intended for exposed exterior vertical surfaces of components where postforming is required for curved surfaces.

2.3.5 Horizontal General Purpose Fire Rated (HGF) Grade

****

NOTE: Where fire rated assemblies are required, it is important to note that each material, including the finish, substrate, and other component materials

must each be tested separately to conform with the required fire rating. Testing of assemblies as an integral system is not allowed.
****

Horizontal general purpose fire rated grade plastic laminate shall be 1.22 mm (plus or minus 0.127 mm) 0.048 inches (plus or minus 0.005 inches) in thickness. Laminate grade shall have a class 1, class A fire rating in accordance with ASTM E84.

2.3.6 Vertical General Purpose Fire Rated (VGF) Grade

Vertical general purpose fire rated grade plastic laminate shall be 0.71 mm (plus or minus 0.012 mm) 0.028 inches (plus or minus 0.004 inches) in thickness. This laminate grade shall have a class 1, class A fire rating in accordance with ASTM E84.

2.3.7 Cabinet Liner Standard (CLS) Grade

Cabinet liner standard grade plastic laminate shall be 0.51 mm 0.020 inches in thickness. This laminate grade is intended for light duty semi-exposed interior surfaces of casework components.

2.3.8 Backing Sheet (BK) Grade

****
NOTE: All panel substrates not mechanically constrained, should be backed with a laminate manufacturer's backing sheet to minimize moisture absorption and provide substrate stabilization.
****

Undecorated backing sheet grade laminate is formulated specifically to be used on the backside of plastic laminated panel substrates to enhance dimensional stability of the substrate. Backing sheet thickness shall be 0.51 mm 0.020 inches. Backing sheets shall be provided for all laminated casework components where plastic laminate finish is applied to only one surface of the component substrate.

2.4 THERMOSET DECORATIVE OVERLAYS (MELAMINE)

****
NOTE: Thermoset decorative overlays are also called low pressure decorative laminate or melamine. This product is usually pre laminated by thermal fusion to particleboard, medium density fiber board or other cellulosic material to form a part of the manufactured panel. Performance characteristics are equal to a 0.5 mm 0.020 inch thick general purpose grade or liner grade HPDL laminate. Primary use is as an alternate solution for liner grade laminate for cabinet interiors. Drawback lies in limited color availability from most manufacturers compared to HPDL.
****

Thermoset decorative overlays (melamine panels) shall be used for [casework cabinet interior] [drawer interior] [all semi-exposed] [_____] surfaces.

2.5 EDGE BANDING

****

NOTE: PVC edge banding for cabinet door and drawer front edges is a standard, industry-wide approved and widely used alternative to using plastic laminate. Advantages include:

1) A more flexible material for better adhesion to substrate and minimization of delamination problems often occurring with laminate edges.

2) Solid color through the banding eliminates the contrasting dark line at door and drawer edges typically found when plastic laminate is used to finish the edges, especially with light and solid colored laminates.

3) PVC is more durable and less brittle under impact than laminate. Typical installation detail and product standard width allows the PVC edging to overlap the laminate edge on the front and back surfaces of the doors and drawers to protect and minimizes the chance of chipped door edges commonly seen with laminate edged installations.

The most common edge banding is 0.5 mm 0.020 inch in thickness and 24 mm 15/16 inch wide. This edge banding is available in almost all solid colors and many patterns and woodgrains to match all major laminate selections. If matching is desired, recommend coordination and selection during casework design to insure availability.

Edge banding is also available in other thicknesses for more durability, however, color selection is very limited in these greater thicknesses.

****

Edge banding for casework doors and drawer fronts shall be PVC vinyl and shall be [0.5 mm 0.020 inch] [3 mm 0.125 inch] [_____] thick. Material width shall be [23.8 mm 15/16 inches] [as indicated on the drawings] [_____]. Color and pattern shall [match exposed door and drawer front laminate pattern and color] [be as indicated on the drawings] [_____].

2.6 VINYL COUNTERTOP EDGE

Where located on the drawings, vinyl edging for countertops shall be a tee-mould anchor type with a [flat] [radiused] [_____] edge profile. Finished width shall be [as indicated on the drawings] [_____]. Color shall be as indicated on [the drawings] [Section 09 06 00 SCHEDULES FOR FINISHES] [_____].

2.7 CABINET HARDWARE

****

NOTE: To insure a minimum standard quality is met, every attempt should be made to utilize standard

hardware components which can be found in ANSI/BHMA A156.9. Use the ANSI/BHMA numbering system to provide a BHMA number for each component which specifies the product class, base material, type of product, description, and grade.

Specially designed, custom, or proprietary hardware should be thoroughly described and defined in this paragraph.

The basic hardware components listed and described below are not inclusive. The list should be edited to modify, delete, or add hardware components as necessary to provide the specifications required for each end use and casework function.

Hinge type will depend on cabinet construction style requiring flush, inset lipped, or overlay door design, and desired appearance. Wherever possible it is highly recommended that self-closing hinges be utilized to eliminate the need for door catches, latches, or magnets which require constant adjustment and have a high failure rate after extended use.

****

Submit one sample of each cabinet hardware item specified to include [hinges], [pulls], [drawer glides], and [_____]. All hardware shall conform to ANSI/BHMA A156.9, unless otherwise noted, and shall consist of the following components:

2.7.1 Door Hinges

[_____] type, BHMA No. [_____].

2.7.2 Cabinet Pulls

****

NOTE: Cabinet pulls come in a wide variety of styles, finishes, and sizes many of which do not fit a BHMA category. Where a BHMA number is not appropriate, provide a detailed description and commercial model number for reference.

****

[_____] type, BHMA No. [_____].

2.7.3 Drawer Slide

****

NOTE: For drawer stability, superior support, durability, and maximum load capability, only side mounted hinges should be specified. Full extension slides provide maximum utilization of drawer space and aid in cleaning.

Bottom or top center-mounted slides should only be specified where side clearance precludes the use of side-mounted slides.

****

Side mounted [_____] type, BHMA No. [_____] with [full] [_____] extension and a minimum [34 kg 75 pound] [45 kg 100 pound] [_____] load capacity. Slides shall include an [integral] [positive] stop to avoid accidental drawer removal.

2.7.4 Adjustable Shelf Support System

****

NOTE: Two methods for shelf support are approved by AWI. For premium grade AWI requires recessed (mortised) metal shelf standards with snap-in metal clips or multiple drilled holes with metal shelf rests. AWI custom grade allows only multiple drilled holes with shelf rests. Either system is satisfactory depending on the specifier's requirements. Surface mounted metal standards are not approved under AWI premium and custom grades. Specifier shall choose a method from those shown below or permit Contractor option.

****

[Recessed (mortised) metal standards, BHMA No. BO4071, finish: [_____]. Support clips for the standards shall be [open type, BHMA No. B04091] [closed type, BHMA No. B04081], finish: [_____]] [Multiple holes with [metal] [plastic] [wood] pin supports].

2.8 FASTENERS

Nails, screws, and other suitable fasteners shall be the size and type best suited for the purpose and shall conform to ASTM F547 where applicable.

2.9 ADHESIVES, CAULKS, AND SEALANTS

2.9.1 Adhesives

Adhesives shall be of a formula and type recommended by AWI. Adhesives shall be selected for their ability to provide a durable, permanent bond and shall take into consideration such factors as materials to be bonded, expansion and contraction, bond strength, fire rating, and moisture resistance. Adhesives shall meet local regulations regarding VOC emissions and off-gassing.

2.9.1.1 Wood Joinery

Adhesives used to bond wood members shall be a Type II for interior use [urea-formaldehyde resin formula] [polyvinyl acetate resin emulsion] [_____]. Adhesives shall withstand a bond test as described in ANSI/WDMA I.S.1A.

2.9.1.2 Laminate Adhesive

Adhesive used to join high-pressure decorative laminate to wood shall be [a water-based contact adhesive] [_____] [adhesive consistent with AWI and laminate manufacturer's recommendations]. PVC edgebanding shall be adhered using a polymer-based hot melt glue.

2.9.2 Caulk

Caulk used to fill voids and joints between laminated components and between laminated components and adjacent surfaces shall be clear, 100 percent silicone.

2.9.3 Sealant

Sealant shall be of a type and composition recommended by the substrate manufacturer to provide a moisture barrier at sink cutouts and all other locations where unfinished substrate edges may be subjected to moisture.

2.10 WOOD FINISHES

Paint, stain, varnish and their applications required for laminate clad casework components shall be [_____] [as indicated in Section 09 90 00 PAINTS AND COATINGS] [as indicated in Section 09 06 00 SCHEDULES FOR FINISHES]. Color and location shall be as indicated on the drawings.

2.11 ACCESSORIES

2.11.1 Glass and Glazing

****
NOTE: Specifier must select from glass types below or include specifications for other glass type as required for the project.
****

Glass required in laminated casework shall be referenced by type in accordance with Section 08 81 00 GLAZING. Glass shall be one of the following:

a. Type [A] [_____].

b. [Float] [Patterned] glass: [Clear] [pattern] quality.

c. Safety glass: [Clear] [_____]; [heat strengthened] [fully tempered] [laminated] [_____]; [_____] mm inches thick minimum.

d. Wire Glass: [Clear] [_____], polished [both sides] [one side]; [square] [diagonal] [_____] mesh woven stainless steel wire of grid [_____] mm inches size; [_____] mm inches thick.

2.11.2 Grommets

Grommets shall be [plastic] [metal] [rubber] [_____] material for cutouts with a diameter of [_____] mm inches. Locations shall be as indicated on the drawings.

2.12 FABRICATION

****
NOTE: Fabrication as described below is for typical casework cabinetry and restroom vanity construction. Techniques, methods, and materials would also apply to other laminated architectural casework fabrications such as built-in shelving, bookcases, and cafeteria counters. Where one or

more options are shown, all options are acceptable for either AWI premium or custom grade unless other wise noted. The specification should be edited and tailored to describe the particular casework items being fabricated.

Shop fabrication and shop assembly of components should be maximized to the extent possible. Quality of fabrication and installation are generally superior when accomplished in a millwork shop facility as opposed to field work. Field fabrication and assembly should be limited to those assemblies and final adjustments necessary to finish installation of the casework.

****

Verify field measurements as indicated in the shop drawings before fabrication. Fabrication and assembly of components shall be accomplished at the shop site to the maximum extent possible. Construction and fabrication of cabinets and their components shall meet or exceed the requirements for AWI [premium] [custom] grade unless otherwise indicated in this specification. Cabinet style, in accordance with NAAWS 3.1, Section 400-G descriptions, shall be [flush overlay] [reveal overlay] [flush inset without face frame] [flush inset with face frame] [as indicated on the drawings].

2.12.1 Base and Wall Cabinet Case Body

****

NOTE: Specifier must choose a material from those listed below for each component or permit Contractor option.

****

2.12.1.1 Cabinet Components

Frame members shall be glued-together, kiln-dried hardwood lumber. Top corners, bottom corners, and cabinet bottoms shall be braced with either hardwood blocks or water-resistant glue and nailed in place metal or plastic corner braces. Cabinet components shall be constructed from the following materials and thicknesses:

2.12.1.1.1 Body Members (Ends, Divisions, Bottoms, and Tops)

19 mm 3/4 inch [particleboard] [medium density fiberboard (MDF)] [veneer core plywood] panel product

2.12.1.1.2 Face Frames and Rails

19 mm 3/4 inch [hardwood lumber] [panel product]

2.12.1.1.3 Shelving

19 mm 3/4 inch [particleboard] [medium density fiberboard (MDF)] [veneer core plywood] panel product

2.12.1.1.4 Cabinet Backs

6 mm 1/4 inch [particleboard] [medium density fiberboard (MDF)] [veneer

core plywood] panel product

2.12.1.1.5 Drawer Sides, Backs, and Subfronts

13 mm 1/2 inch [hardwood lumber] [panel product]

2.12.1.1.6 Drawer Bottoms

6 mm 1/4 inch [particleboard] [medium density fiberboard (MDF)] [veneer core plywood] panel product

2.12.1.1.7 Door and Drawer Fronts

19 mm 3/4-inch [particleboard] [medium density fiberboard (MDF)] panel product

2.12.1.2 Joinery Method for Case Body Members

****
NOTE: Specifier must choose a method from those listed below or permit Contractor option.
****

2.12.1.2.1 Tops, Exposed Ends, and Bottoms

a. Steel "European" assembly screws (37 mm 1-1/2 inch from end, 128 mm 5 inch on center, fasteners will not be visible on exposed parts).

b. Doweled, glued under pressure (approx. 4 dowels per 300 mm 12 inches of joint).

c. Stop dado, glued under pressure, and either nailed, stapled or screwed (fasteners will not be visible on exposed parts).

****
NOTE: The following method is approved for AWI custom grade only.
****

d. Spline or biscuit, glued under pressure.

2.12.1.2.2 Exposed End Corner and Face Frame Attachment

2.12.1.2.2.1 Mitered Joint

lock miter or spline or biscuit, glued under pressure (no visible fasteners)

2.12.1.2.2.2 Non-Mitered Joint (90 degree)

butt joint glued under pressure (no visible fasteners)

2.12.1.2.2.3 Butt Joint

****
NOTE: This method is approved for AWI custom grade only.
****

glued and nailed

2.12.1.2.3 Cabinet Backs (Wall Hung Cabinets)

****
NOTE: Specifier must choose a method from those listed below or permit Contractor option.
****

Wall hung cabinet backs must not be relied upon to support the full weight of the cabinet and its anticipated load for hanging/mounting purposes. Method of back joinery and hanging/mounting mechanisms should transfer the load to case body members. Fabrication method shall be:

2.12.1.2.3.1 Full Bound

Full bound, captured in grooves on cabinet sides, top, and bottom. Cabinet backs for floor standing cabinets shall be side bound, captured in grooves; glued and fastened to top and bottom.

2.12.1.2.3.2 Full Overlay

Full overlay, plant-on backs with minimum back thickness of 13 mm 1/2 inch and minimum No. 12 plated (no case hardened) screws spaced a minimum 80 mm 3 inches on center. Edge of back shall not be exposed on finished sides. Anchor strips are not required when so attached.

2.12.1.2.3.3 Side Bound

****
NOTE: This method is approved for AWI custom grade only.
****

Side bound, captured in groove or rabbetts; glued and fastened.

2.12.1.2.4 Cabinet Backs (Floor Standing Cabinets)

****
NOTE: Specifier must choose a method from those listed below or permit Contractor option.
****

2.12.1.2.4.1 Side Bound

Side bound, captured in grooves; glued and fastened to top and bottom.

2.12.1.2.4.2 Full Overlay

Full overlay, plant-on backs with minimum back thickness of 13 mm 1/2 inch and minimum No. 12 plated (no case hardened) screws spaced a minimum 80 mm 3 inches on center. Edge of back shall not be exposed on finished sides. Anchor strips are not required when so attached.

2.12.1.2.4.3 Side Bound with Rabbetts

****
NOTE: This method is approved for AWI custom grade only.

****

Side bound, placed in rabbetts; glued and fastened in rabbetts.

2.12.1.2.5 Wall Anchor Strips

Wall Anchor Strips shall be required for all cabinets with backs less than 13 mm 1/2 inch thick. Strips shall consist of minimum 13 mm 1/2 inch thick lumber, minimum 60 mm 2-1/2 inches width; securely attached to wall side of cabinet back - top and bottom for wall hung cabinets, top only for floor standing cabinets.

2.12.2 Cabinet Floor Base

****

NOTE: Care should be taken in the selection of cabinet floor base materials in areas subjected to moisture (for example: adjacent flooring cleaned by wet-mopping or liquid cleaners, and where the finished base material does not provide a moisture barrier. Recommend treated lumber, or panel products specifically engineered to be moisture resistant, be used in these areas.

****

Floor cabinets shall be mounted on a base constructed of [nominal 50 mm 2 inch thick lumber] [19 mm 3/4 inch particleboard] [19 mm 3/4 inch fiberboard] [19 mm 3/4 inch veneer core exterior plywood]. Base assembly components shall be [treated lumber] [a moisture-resistant panel product]. Finished height for each cabinet base shall be [not less than the full height of the installed, specified wall base] [as indicated on the drawings]. Bottom edge of the cabinet door or drawer face shall [be flush with top of base] [extend below the top of the base as indicated on the drawings].

2.12.3 Cabinet Door and Drawer Fronts

Door and drawer fronts shall be fabricated from [19 mm 3/4 inch medium density particleboard] [19 mm 3/4 inch medium density fiberboard (MDF]. All door and drawer front edges shall be surfaced with [high pressure plastic laminate] [PVC edgebanding], color and pattern [to match exterior face laminate] [as indicated on the drawings] [as indicated in Section 09 06 00 SCHEDULES FOR FINISHES].

2.12.4 Drawer Assembly

****

NOTE: Specifier must choose the substrate material from those listed below based on the proposed finish for the component.

****

2.12.4.1 Drawer Components

Drawer components shall consist of a removable drawer front, sides, backs, and bottom. Drawer components shall be constructed of the following materials and thicknesses:

2.12.4.1.1 Drawer Sides and Backs For Transparent Finish

13 mm 1/2 inch thick [solid hardwood lumber] [7-ply hardwood veneer core plywood (no voids), any species]

2.12.4.1.2 Drawer Sides and Backs For Laminate Finish

13 mm 1/2 inch thick 7-ply hardwood veneer core substrate

2.12.4.1.3 Drawer Sides and Back For Thermoset Decorative Overlay (Melamine) Finish

13 mm 1/2 inch thick medium density particleboard or MDF fiberboard substrate

2.12.4.1.4 Drawer Bottom

6 mm 1/4 inch thick [veneer core panel product for transparent or plastic laminate finish] [thermoset decorative overlay melamine panel product]

2.12.4.2 Drawer Assembly Joinery Method

****
NOTE: Specifier must choose a method from those listed below or permit Contractor option.
****

a. Multiple dovetail (all corners) or French dovetail front/dadoed back, glued under pressure.

b. Doweled, glued under pressure.

c. Lock shoulder, glued and pin nailed.

d. Bottoms shall be set into sides, front, and back, 6 mm 1/4 inch deep groove with a minimum 9 mm 3/8 inch standing shoulder.

2.12.5 Shelving

2.12.5.1 General Requirements

Shelving shall be fabricated from [19 mm 3/4 inch medium density particleboard] [19 mm 3/4 inch medium density fiberboard (MDF] [19 mm 3/4 inch veneer core plywood]. All shelving top and bottom surfaces shall be finished with [HPDL plastic laminate] [thermoset decorative overlay (melamine)]. Shelf edges shall be finished in a [HPDL plastic laminate] [thermoset decorative overlay (melamine)] [PVC edgebanding].

2.12.5.2 Shelf Support System

****
NOTE: Specifier must choose a method from those listed below or permit Contractor option.
****

The shelf support system shall be:

2.12.5.2.1 Recessed (Mortised) Metal Shelf Standards

Mortise standards flush with the finishes surface of the cabinet interior side walls, two per side. Pposition and space standards on the side walls to provide a stable shelf surface that eliminates tipping when shelf front is weighted. Install and adjust standards vertically to provide a level, stable shelf surface when clips are in place.

2.12.5.2.2 Pin Hole Method

Drill holes on the interior surface of the cabinet side walls. Evenly space holes in two vertical columns Space the holes in each column at [25 mm 1 inch] [_____] increments starting [150 mm 6 inches] [_____] from the cabinet interior bottom and extending to within [150 mm 6 inches] [_____] of the top interior surface of the cabinet. Drill holes to provide a level, stable surface when the shelf is resting on the shelf pins. Coordinate hole diameter with pin insert size to provide a firm, tight fit.

2.12.6 Laminate Clad Countertops

Construct laminate countertop substrate of 19 mm 3/4 inch [particleboard] [medium density fiberboard (MDF)] [veneer core plywood]. The substrate shall be moisture-resistant where countertops receive sinks, lavatories, or are subjected to liquids. All substrates shall have sink cutout edges sealed with appropriate sealant against moisture. No joints shall occur at any cutouts. A balanced backer sheet is required.

2.12.6.1 Edge Style

****
NOTE: Specifier should select from the general countertop edge types listed below or specify other types as needed.
****

Front [and exposed side] countertop edges shall be in shapes and to dimensions as shown on the drawings. The countertop edge material shall be:

2.12.6.1.1 Post Formed Plastic Laminate

Laminate edge shall be integral with countertop surface. Shape and profile shall be [bullnose] [waterfall] [as indicated] [_____] and to dimensions as indicated.

2.12.6.1.2 Hardwood

Species, finish, profile, shape, and dimensions shall be as indicated on the drawings. Hardwood edge shall overlap the exposed countertop laminate edge and shall be installed flush with the countertop laminate surface.

2.12.6.1.3 Vinyl

Vinyl tee-mould edge shall be in shape, thickness, and color as indicated on the drawings. Tee mould edge shall overlap the exposed countertop laminate edge and shall be installed flush with the countertop laminate surface.

2.12.6.1.4 Plastic Laminate Self Edge

Flat, 90 degree "self " edge. Edge must be applied before top. Laminate edge shall overlap countertop laminate and shall be eased to eliminate sharp corners.

2.12.6.2 Laminate Clad Splashes

Countertop splash substrate shall be 19 mm 3/4 inch [particleboard] [MDF fiberboard] [veneer core plywood]. Laminate clad backsplash shall be [integral with countertop, coved to radius and to dimensions as indicated on the drawings] [loose, to be installed at the time of countertop installation]. Side splashes shall be straight profile and provided loose, to be installed at the time of countertop installation. Back and side splash laminate pattern and color shall match the adjacent countertop laminate.

2.12.7 Laminate Application

Laminate application to substrates shall follow the recommended procedures and instructions of the laminate manufacturer and ANSI/NEMA LD 3, using tools and devices specifically designed for laminate fabrication and application. Provide a balanced backer sheet (Grade BK) wherever only one surface of the component substrate requires a plastic laminate finish. Apply required grade of laminate in full uninterrupted sheets consistent with manufactured sizes using one piece for full length only, using adhesives specified herein or as recommended by the manufacturer. Fit corners and joints hairline. All laminate edges shall be machined flush, filed, sanded, or buffed to remove machine marks and eased (sharp corners removed). Clean up at easing shall be such that no overlap of the member eased is visible. Fabrication shall conform to ANSI A161.2. Laminate types and grades for component surfaces shall be as follows unless otherwise indicated on the drawings:

2.12.7.1 Base/Wall Cabinet Case Body

a. Exterior (exposed) surfaces to include exposed and semi-exposed face frame surfaces: HPDL Grade [VGS] [VGP].

b. Interior (semi-exposed) surfaces to include interior back wall, bottom, and side walls: [HPDL Grade CLS] [Thermoset Decorative Overlay (melamine)].

2.12.7.2 Adjustable Shelving

2.12.7.2.1 Top and Bottom Surfaces

[HPDL Grade HGS] [Thermoset Decorative Overlay (melamine)]

2.12.7.2.2 All Edges

[HPDL Grade VGS] [Thermoset Decorative Overlay (melamine)][PVC edgebanding]

2.12.7.3 Fixed Shelving

2.12.7.3.1 Top and Bottom Surfaces

[HPDL Grade HGS] [Thermoset Decorative Overlay (melamine)]

2.12.7.3.2 Exposed Edges

[HPDL Grade VGS] [Thermoset Decorative Overlay (melamine)][PVC edgebanding]

2.12.7.4 Door, Drawer Fronts, Access Panels

2.12.7.4.1 Exterior (Exposed) and Interior (Semi-Exposed) Faces

HPDL Grade [VGS] [VGP]

2.12.7.4.2 Edges

[HPDL Grade VGS] [PVC edgebanding]

2.12.7.5 Drawer Assembly

All interior and exterior surfaces: [HPDL Grade CLS] [Thermoset Decorative Overlay (melamine)].

2.12.7.6 Countertops and Splashes

All exposed and semi-exposed surfaces: HPDL Grade HGS

2.12.7.7 Tolerances

Flushness, flatness, and joint tolerances of laminated surfaces shall meet the NAAWS 3.1 [premium] [custom] grade requirements.

2.12.8 Finishing

2.12.8.1 Filling

No fasteners shall be exposed on laminated surfaces. All nails, screws, and other fasteners in non-laminated cabinet components shall be countersunk and the holes filled with wood filler consistent in color with the wood species.

2.12.8.2 Sanding

All surfaces requiring coatings shall be prepared by sanding with a grit and in a manner that scratches will not show in the final system.

2.12.8.3 Coatings

Types, method of application and location of casework finishes shall be in accordance with the finish schedule, drawings and Section 09 90 00 PAINTS AND COATINGS. All cabinet reveals shall be painted. Submit descriptive data which provides narrative written verification of all types of construction materials and finishes, methods of construction, etc. not clearly illustrated on the submitted shop drawings. Data shall provide written verification of conformance with NAAWS 3.1 for the quality indicated to include materials, tolerances, and types of construction. Both the manufacturer of materials and the fabricator shall submit available literature which describes re-cycled product content, operations and processes in place that support efficient use of natural resources, energy efficiency, emissions of ozone depleting chemicals, management of water and operational waste, indoor environmental quality, and other production techniques supporting sustainable design and products.

PART 3 EXECUTION

3.1 INSTALLATION

Installation shall comply with applicable requirements for NAAWS 3.1 [premium] [custom] quality standards. Countertops and fabricated assemblies shall be installed level, plumb, and true to line, in locations shown on the drawings. Cabinets and other laminate clad casework assemblies shall be attached and anchored securely to the floor and walls with mechanical fasteners that are appropriate for the wall and floor construction.

3.1.1 Anchoring Systems

3.1.1.1 Floor

[Base cabinets] [_____] shall utilize a floor anchoring system [as detailed on the drawings]. Anchoring and mechanical fasteners shall not be visible from the finished side of the casework assembly. [Cabinet] [_____] assemblies shall be attached to anchored bases without visible fasteners [as indicated in the drawings]. Where assembly abuts a wall surface, anchoring shall include a minimum 13 mm 1/2 inch thick lumber or panel product hanging strip, minimum 60 mm 2-1/2 inch width; securely attached to the top of the wall side of the cabinet back.

3.1.1.2 Wall

[Cabinet] [vanity] [_____] to be wall mounted shall utilize minimum 13 mm 1/2 inch thick lumber or panel product hanging strips, minimum 60 mm 2-1/2 inch width; securely attached to the wall side of the cabinet back, both top and bottom.

3.1.2 Countertops

Countertops shall be installed in locations as indicated on the drawings. Countertops shall be fastened to supporting casework structure with mechanical fasteners, hidden from view. All joints formed by the countertop or countertop splash and adjacent wall surfaces shall be filled with a clear silicone caulk. Loose [back] [side] splashes shall be adhered to both the countertop surface perimeter and the adjacent wall surface with adhesives appropriate for the type of materials to be adhered. Joints between the countertop surface and splash shall be filled with clear silicone caulk in a smooth consistent concave bead. Bead size shall be the minimum necessary to fill the joint and any surrounding voids or cracks.

3.1.3 Hardware

Casework hardware shall be installed in types and locations as indicated on the drawings. Where fully concealed European-style hinges are specified to be used with particleboard or fiberboard doors, the use of plastic or synthetic insertion dowels shall be used to receive 5 mm 3/16 inch "Euroscrews". The use of wood screws without insertion dowels is prohibited.

3.1.4 Doors, Drawers and Removable Panels

The fitting of doors, drawers and removable panels shall be accomplished within target fitting tolerances for gaps and flushness in accordance with

NAAWS 3.1 [premium] [custom] grade requirements.

3.1.5 Plumbing Fixtures

Install sinks, sink hardware, and other plumbing fixtures in locations as indicated on the drawings and in accordance with [Section 22 00 00 PLUMBING, GENERAL PURPOSE] [_____].

3.1.6 Glass

Install glass and glazing in the casework using methods and materials specified in Section 08 81 00 GLAZING in locations as indicated on the drawings.

-- End of Section --