**UNIFIED FACILITIES GUIDE SPECIFICATIONS**

**References are in agreement with UMRL dated July 2023**
**********

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DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

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**08/10, CHG 1: 11/18**

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|---|---|
| **USACE / NAVFAC / AFCEC / NASA** | **UFGS-06 41 16.00 10 (August 2010)** |
| | **Change 1 - 11/18** |
| | **----------** |
| **Preparing Activity: USACE** | **Nontechnical Title Revision (August 2015)** |

**UNIFIED FACILITIES GUIDE SPECIFICATIONS**

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**********

SECTION 06 41 16.00 10

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 | (2023) Standard Test Method for Surface Burning Characteristics of Building Materials |
| ASTM F547 | (202) Standard Terminology of Nails for Use with Wood and Wood-Base Materials |

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

| | |
|---|---|
| ANSI/BHMA A156.9 | (2020) 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.**

**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. Sand smooth and apply a clear finish of polyurethane to all exposed and semi-exposed surfaces, whose finish is not otherwise noted on the drawings or finish schedule. 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, furnish all materials, construction methods, and fabrication conforming to and complying with the [premium] [custom] grade quality standards as outlined in NAAWS 3.1, Section for laminate clad cabinets. These standards apply in lieu of omissions or specific requirements in this specification. Contractors and their personnel engaged in the work must 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 must also certify a minimum of ten years Contractor's experience in laminate clad casework fabrication and construction. Provide a list of a minimum of five successfully completed projects of a similar scope, size, and complexity in the quality control statement.

### 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. Include countertops and back splashes where specified. 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. Clearly cross-reference shop drawing casework items to casework items located on the project drawings. Shop drawings will 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 must be third party certified in accordance with ULE Greenguard[ Gold], SCS Scientific Certification Systems Indoor Advantage[ Gold ]or equal. Perform certification annually and keep 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. Ventilate the storage area and do not subject to extreme changes in temperature or humidity.

1.7 SEQUENCING AND SCHEDULING

Coordinate work with other trades. Do not install units in any room or space until painting, and ceiling installation are complete within the room where the units are located. Install floor cabinets before finished flooring materials are installed.

PART 2 PRODUCTS

2.1 WOOD MATERIALS

2.1.1 Lumber

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

b. Standing or running trim casework components, which are specified to receive a transparent finish, must be [_____] hardwood species, plain sawn. AWI grade must be [premium] [custom]. Indicate location, shape, and dimensions 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

Use veneer core hardwood plywood, NAAWS 3.1 Grade AA panels for framing purposes. Indicate nominal thickness of plywood panels in this specification and on the drawings.

2.1.2.2 Particleboard

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

2.1.2.3 Medium Density Fiberboard

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

2.2 SOLID POLYMER MATERIAL

Provide solid surfacing casework components in conformance 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.**

**********

Provide plastic laminates meeting the requirements of ANSI/NEMA LD 3 and ANSI A161.2 for high-pressure decorative laminates. Indicate design, colors, surface finish and texture, and locations on [the drawings] [Section 09 06 00 SCHEDULES FOR FINISHES] [_____]. Submit two samples of each plastic laminate pattern and color. Samples less than 120 by 170 mm 5 by 7 inches in size are not acceptable. Provide plastic laminate types and nominal minimum thicknesses for casework components as indicated in the following paragraphs.

2.3.1 Horizontal General Purpose Standard (HGS) Grade

Provide horizontal general purpose standard grade plastic laminate that is 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

Provide vertical general purpose standard grade plastic laminate that is 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

Provide horizontal general purpose postformable grade plastic laminate that is 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

Provide vertical general purpose postformable grade plastic laminate that is 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.**
**********

Provide horizontal general purpose fire rated grade plastic laminate that is 1.22 mm (plus or minus 0.127 mm) 0.048 inches (plus or minus 0.005 inches) in thickness and a class 1, class A fire rating in accordance with ASTM E84.

2.3.6 Vertical General Purpose Fire Rated (VGF) Grade

Provide vertical general purpose fire rated grade plastic laminate that is 0.71 mm (plus or minus 0.012 mm) 0.028 inches (plus or minus 0.004 inches) in thickness and a class 1, class A fire rating in accordance with ASTM E84.

2.3.7 Cabinet Liner Standard (CLS) Grade

Provide cabinet liner standard grade plastic laminate that is 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 must be 0.51 mm 0.020 inches. Provide backing sheets 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.**
**********

Use thermoset decorative overlays (melamine panels) 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.**

**********

Provide PVC vinyl, [0.5 mm 0.020 inch] [3 mm 0.125 inch] [_____] thick, edge banding for casework doors and drawer fronts. Material width must be [23.8 mm 15/16 inches] [as indicated on the drawings] [_____]. Color and pattern must [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, use a tee-mould anchor type with a [flat] [radiused] [_____] edge profile vinyl edging for countertops. Finished width must be [as indicated on the drawings] [_____]. Indicate color 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 [_____]. Provide hardware conforming to ANSI/BHMA A156.9, unless otherwise noted, and consisting 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. 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. Choose a method from those shown below or permit Contractor option.**
**********

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

2.8 FASTENERS

Provide nails, screws, and other suitable fasteners that are the size and type best suited for the purpose and conforming to ASTM F547 where applicable.

2.9 ADHESIVES, CAULKS, AND SEALANTS

2.9.1 Adhesives

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

2.9.1.1 Wood Joinery

Use Type II for interior use [urea-formaldehyde resin formula] [polyvinyl acetate resin emulsion] [_____] adhesives to bond wood members. Adhesives must 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 must be [a water-based contact adhesive] [_____] [adhesive consistent with AWI and laminate manufacturer's recommendations]. Adhere PVC edgebanding using a polymer-based hot melt glue.

2.9.2 Caulk

Use clear, 100 percent silicone caulk to fill voids and joints between laminated components and between laminated components and adjacent surfaces.

2.9.3 Sealant

Use sealant 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 perform applications required for laminate clad casework components [_____] [as indicated in Section 09 90 00 PAINTS AND COATINGS] [as indicated in Section 09 06 00 SCHEDULES FOR FINISHES]. Indicate color and location 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.**
**********

Reference glass required in laminated casework by type in accordance with Section 08 81 00 GLAZING. Glass must 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

Use [plastic] [metal] [rubber] [_____] material for cutouts with a diameter of [_____] mm inches. Indicate locations 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. Accomplish fabrication and assembly of components at the shop site to the maximum extent possible. Meet or exceed the requirements for AWI [premium] [custom] grade unless otherwise indicated in this specification. Make cabinet style, in accordance with NAAWS 3.1, Section 400-G descriptions, [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

Use frame members that are glued-together, kiln-dried hardwood lumber. Brace top corners, bottom corners, and cabinet bottoms with either hardwood blocks or water-resistant glue and nailed in place metal or plastic corner braces. Construct cabinet components 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. Use the following fabrication method:

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 must 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. Do not expose edge of back 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. Do not expose edge of back 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 are required for all cabinets with backs less than 13 mm 1/2 inch thick. Use strips consisting of minimum 13 mm 1/2 inch thick lumber, minimum 60 mm 2-1/2 inches width; securely attache 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.**
**********

Mount floor cabinets 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]. Provide base assembly components that are [treated lumber] [a moisture-resistant panel product]. Make finished height for each cabinet base [no less than the full height of the installed, specified wall base] [as indicated on the drawings]. Make bottom edge of the cabinet door or drawer face [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

Fabricate door and drawer fronts from [19 mm 3/4 inch medium density particleboard] [19 mm 3/4 inch medium density fiberboard (MDF]. Surface all door and drawer front edges 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

Provide drawer components consisting of a removable drawer front, sides, backs, and bottom. Construct drawer components 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. Set bottoms 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

Fabricate shelving 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]. Finish all shelving top and bottom surfaces with [HPDL plastic laminate] [thermoset decorative overlay (melamine)]. Finish shelf edges 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 is as follows:

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].  Use a moisture-resistant substrate where countertops receive sinks, lavatories, or are subjected to liquids.  Provide substrates that have sink cutout edges and seal with appropriate sealant against moisture.  Do not make joints 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.**
**********

Make front [and exposed side] countertop edges in shapes and to dimensions as shown on the drawings.  Use the following countertop edge material:

2.12.6.1.1  Post Formed Plastic Laminate

Make laminate edge integral with countertop surface.  Make shape and profile [bullnose] [waterfall] [as indicated] [_____] and to dimensions as indicated.

2.12.6.1.2  Hardwood

Indicate species, finish, profile, shape, and dimensions as indicated on the drawings.  Lap hardwood edge over the exposed countertop laminate edge and install flush with the countertop laminate surface.

2.12.6.1.3  Vinyl

Provide vinyl tee-mould edge in shape, thickness, and color as indicated on the drawings.  Lap tee mould edge over the exposed countertop laminate edge and install 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.  Lap laminate edge over countertop laminate and ease to eliminate sharp corners.

2.12.6.2  Laminate Clad Splashes

Countertop splash substrate must be 19 mm 3/4 inch [particleboard] [MDF fiberboard] [veneer core plywood].  Laminate clad backsplash must 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].  Provide and install loose, straight profile side splashes at the time of countertop installation.  Match back and side splash laminate pattern and color to the adjacent countertop laminate.

2.12.7 Laminate Application

Apply laminate to substrates following 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. Machined flush, file, sand, or buff all laminate edges to remove machine marks and ease (sharp corners removed). Clean up at easing must be such that no overlap of the member eased is visible. Perform fabrication in conformance to ANSI A161.2. Provide laminate types and grades for component surfaces 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

Meet the NAAWS 3.1 [premium] [custom] grade requirements for flushness, flatness, and joint tolerances of laminated surfaces.

2.12.8 Finishing

2.12.8.1 Filling

Do not expose fasteners on laminated surfaces. Make all nails, screws, and other fasteners in non-laminated cabinet components countersunk and fill the holes with wood filler consistent in color with the wood species.

2.12.8.2 Sanding

Prepare all surfaces requiring coatings 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 must be in accordance with the finish schedule, drawings and Section 09 90 00 PAINTS AND COATINGS. Paint all cabinet reveals. 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. 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 must 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 must comply with applicable requirements for NAAWS 3.1 [premium] [custom] quality standards. Install countertops and fabricated assemblies level, plumb, and true to line, in locations shown on the drawings. Attach and securely anchor cabinets and other laminate clad casework assemblies 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

Utilize a floor anchoring system [as detailed on the drawings] for [base cabinets] [_____]. Anchoring and mechanical fasteners must not be visible from the finished side of the casework assembly. Attach [cabinet] [_____] assemblies to anchored bases without visible fasteners [as indicated in the drawings]. Where assembly abuts a wall surface, 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

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

### 3.1.2 Countertops

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

### 3.1.3 Hardware

Install casework hardware 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, use plastic or synthetic insertion dowels 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

Accomplish the fitting of doors, drawers and removable panels 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 --