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**SECTION 12 32 16**  
**MANUFACTURED PLASTIC LAMINATE CLAD CASEWORK**

**PART-1 GENERAL**

**1.1 SUMMARY:**

- A. This Section includes high-pressure laminate casework, countertops, sink assemblies and items of equipment, most of which are identified by the "Basis of Design" manufacturer's name as referenced in this Section, with all accessories and other appurtenant parts and components required to provide a complete, finished and operating installation, except for such services or work hereinafter specifically mentioned as furnished under other Sections. Work also includes, but is not limited to:
1. High pressure laminate casework, including miscellaneous countertops.
    - a. High pressure laminate-clad sink cabinets with sinks.
      - 1) The term "equipment" includes, but is not limited to, casework, components, accessories, etc. that are a part of this Section.
      - 2) Each item of equipment shall be furnished of size, design, construction, and function, and be complete with other components and accessories as are listed or indicated in the referenced "Basis of Design" manufacturer's specifications or catalog data, current at time of bidding, as "standard" or otherwise furnished with that particular model mentioned herein or on drawings. Each item shall, in addition, be furnished with such optional accessories, special features, or modifications as are further herein specified or called for on the drawings.
    - b. Provide equipment, complete with sinks, and where indicated as part of sink assemblies, faucets, bubblers, baskets, strainers and tailpieces, and with all appurtenances and accessories that are incidental and necessary to the finished installation and intended use. Provide rough-in dimensions to the Plumbing and Electrical Contractors.
      - 1) Provide all cutting of casework and equipment as needed for service lines and electrical devices, including those provided by the Plumbing and Electrical Contractors. Cutting shall be properly coordinated and performed in a workmanlike manner.
      - 2) Except where other finish trim is provided, or requirement for trim is waived by Architect, provide chrome-plated escutcheons at each exposed or semi-exposed pipe penetration of the casework and equipment of this Section.
    - c. Included in the Work of this Section shall be all casework and equipment of this category so identified by the "Basis of Design" manufacturer's name as referenced in this Section. Work includes, but is not limited to:
    - d. High-pressure laminate casework.
    - e. Cabinets for reception desk in lobby.
    - f. Countertops that are floor- and/or wall-supported but which are not otherwise supported by casework.
      - 1) High-pressure laminate countertops and shelving in all other areas not otherwise specified.

**1.2 RELATED REQUIREMENTS:**

- A. Plumbing Contractor shall stub utility supply piping through the floor or wall where required and provide each stubbed out line with a shut-off valve. Plumbing Contractor shall provide all sink waste piping, including traps and trap tailpieces, interconnecting supply piping from service fittings to points of final connection with building service systems at stubbed ends, faucets for integral bowl sinks, and individual fixture stops for water faucets. Plumbing Contractor shall make all final connections for service and waste piping.
- B. Electrical Contractor shall provide power wiring and final power connections. Electrical Contractor shall provide electrical convenience outlets on casework or equipment if noted as "by E.C."
- C. Section 12 36 00 - Countertops.

### 1.3 **REFERENCE STANDARDS**

- A. AWI/AWMAC/WI (AWS): Architectural Woodwork Standards; 2014.
- B. AWI (QCP): Quality Certification Program; current edition at [www.awiqcp.org](http://www.awiqcp.org).
  - 1. AWMAC (GIS): Guarantee and Inspection Services Program; current edition at [www.awmac.com/gis.php](http://www.awmac.com/gis.php).
  - 2. AWMAC/WI (NAAWS) <<http://www.naaws-committee.com/>> - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
  - 3. BHMA A156.9: American National Standard for Cabinet Hardware; 2010.
  - 4. GSA CID A-A-1936: Adhesive, Contact, Neoprene Rubber; Revision A, 1996.
    - a. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2009.
    - b. NEMA LD 3: High-Pressure Decorative Laminates; 2005.
    - c. UL (DIR): Online Certifications Directory; current listings at [database.ul.com](http://database.ul.com).
  - 5. WI (CCP): Certified Compliance Program (CCP); current edition at [www.woodworkinstitute.com/certification](http://www.woodworkinstitute.com/certification).
    - a. WI (CSIP): Certified Seismic Installation Program (CSIP); current edition at [www.woodworkinstitute.com](http://www.woodworkinstitute.com).
    - b. WI (MCP): Monitored Compliance Program (MCP); current edition at [www.woodworkinstitute.com/certification](http://www.woodworkinstitute.com/certification).
  - 6. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
  - 7. ANSI A208.1 - American National Standard for Particleboard; 2009.
  - 8. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
    - a. AWI (QCP) - Quality Certification Program; current edition at [www.awiqcp.org](http://www.awiqcp.org).
    - b. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
    - c. AWMAC (GIS) - Guarantee and Inspection Services Program; current edition at [www.awmac.com/gis.php](http://www.awmac.com/gis.php).
  - 9. BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2010 (ANSI/BHMA A156.9).
  - 10. GSA CID A-A-1936 - Adhesive, Contact, Neoprene Rubber; Federal Specifications and Standards; Revision A, 1996.
    - a. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; Hardwood Plywood & Veneer Association; 2009 (ANSI/HPVA HP-1).
    - b. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.

- c. NHLA G-101 - Rules for the Measurement & Inspection of Hardwood & Cypress; National Hardwood Lumber Association; 2011.
- 11. PS 1 - Structural Plywood; 2009.
- 12. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2010.
  - a. WI (CCP) - Certified Compliance Program (CCP); current edition at [www.woodworkinstitute.com/services](http://www.woodworkinstitute.com/services).
- 13. AA. WI (MCP) - Monitored Compliance Program (MCP); current edition at [www.woodworkinstitute.com/services](http://www.woodworkinstitute.com/services).

#### **1.4 SUBMITTALS:**

- A. See Section 01 33 00 - Submittal Procedures.
- B. Product Data: For cabinets, related equipment, countertops, cabinet hardware, core materials, laminates, sinks and accessories.
- C. Submit documentation for VOC content of interior field-applied applications of adhesives and sealants.
- D. Submit documentation for composite wood products installed in the building interior certifying no added ureaformaldehyde products were used.
- E. Shop Drawings: For cabinets and countertops. Include plans, elevations, sections, details, and attachments to other work. Show materials, finishes, filler panels, other trim, hardware, edge and backsplash profiles, cutouts for plumbing fixtures, and methods of joining countertops.
  - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
    - a. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
    - b. Include certification program label.
    - c. Show typical cabinet construction for each type of cabinet.
  - 2. Show all related equipment, including sinks and fittings. Indicate locations and types of service fittings, together with associated service supply and waste connection.
  - 3. Include details of utility spaces showing supports for conduits and piping.
    - a. Finish information shall indicate laminate grade and thickness for each surface.
  - 4. Indicate locations of blocking and other supports required for installing casework.
    - a. Show adjacent walls, doors, windows, other building components, and other laboratory equipment. Indicate clearances from above items.
  - 5. Include coordinated dimensions for equipment specified in other Sections.
    - a. If shop drawings are prepared and submitted prior to field verification of dimensions and conditions, indicate which dimensions and/ or conditions require field verification.
- F. Coordination Drawings:
  - 1. Within 45 days after Award of Contract, submit to the Architect equipment rough-in drawings showing the precise location and size of each utility service (i.e., water, electric, et al.) required to each piece of equipment.
  - 2. Coordination drawings shall also show any additional framing, reinforcement, or other constructional requirements which must be built into the work or otherwise provided to accommodate the equipment in its final location.
    - a. Such drawings shall be submitted in at least eight copies. Any additional costs incurred due to the nonsubmission of such rough-in drawings within the time allotted shall be borne by

this Contractor.

- G. Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available for each type of material exposed to view.
  - 1. Samples for Verification: Upon request of Architect, submit samples of cabinets or components.

#### **1.5 QUALITY ASSURANCE:**

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
  - 1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
  - 2. Quality Certification: Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section.
    - a. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
    - b. Provide designated labels on shop drawings as required by certification program.
    - c. Provide designated labels on installed products as required by certification program.
      - 1) Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
    - d. Arrange and pay for inspections required for certification.
    - e. Replace, repair, or rework all work for which certification is refused.
- B. Installer Qualifications: Manufacturer's authorized personnel who are trained and approved for installation of units required for this Project.
  - 1. Product specifications incorporated herein are used to establish the quality intended and required for the various items of casework and equipment included in this Section.

#### **1.6 DELIVERY, STORAGE, AND HANDLING:**

- A. Do not deliver casework until painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store under cover only in areas whose environmental conditions meet requirements specified in "Project Conditions" Article below.
- B. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

#### **1.7 PROJECT CONDITIONS:**

- A. Field Measurements: Carefully check all dimensions and conditions in the field that may affect fabrication, layout or installation of casework. Perform field verification of conditions before fabrication and indicate measurements on Shop Drawings.
- B. Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Provide fillers and scribes to allow for trimming and fitting.
- C. Countertops: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.
- D. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

- E. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is completed, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels through remainder of construction period as recommended by manufacturer.

**1.8 COORDINATION:**

- A. Coordinate layout and installation of metal framing and reinforcement in gypsum board assemblies for support of casework.

**1.9 WARRANTY:**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of manufactured wood casework that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
    - a. Delamination of components or other failures of glue bond.
    - b. Warping of components.
    - c. Failure of operating hardware.
    - d. Deterioration of finishes.
  2. Warranty Period: Two years from date of Substantial Completion.

**PART-2 PRODUCTS**

**2.1 CASEWORK MANUFACTURERS:**

- A. Basis of Design: Provide Stevens, Advantage Tradition 1100 Series cabinets. Subject to compliance with requirements, provide products by one of the following except where otherwise specified:
1. Case Systems
  2. Mastercraft Woodworking Co.
  3. Wood-Metal Industries, Div. of Wood-Mode, Inc.
  4. Approved manufacturer that is AWI Certified.
  5. Quality Standard: Premium Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
  6. Deviations in the materials or construction of casework to that indicated herein are subject to Architect's review and approval prior to receipt of bids. After Award of Contract, deviations will only be considered at Architect's and Owner's discretion, and may be considered a substitution.

**2.2 MATERIALS:**

- A. WOOD MATERIALS - GENERAL:
1. Low-Emitting Materials: Provide manufactured casework made with adhesives and composite wood products containing no added urea formaldehyde.
  2. Particleboard: Core material that meets or exceeds the performance requirements for ANSI A208.1 M3 Standards. Density shall be no less than 47 lbs. per cu. ft. typical, and 50 lbs. per cu. ft. for instrument storage cabinets. Moisture Content shall be 8% maximum.
    - a. Medium Density Fiberboard (MDF): Conform to A208.2 and meet the following performance requirements:
      - 1) Screw Holding, Face 355 lbs.
      - 2) Screw Holding, Edge 300 lbs.

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- 3) Modulus of Rupture 4,500 psi
  - 4) Modulus of Elasticity 500,000 psi
  - 5) Internal Bond 100 psi
  - b. High-Pressure Laminate: Conforming to NEMA LD-3 standard.
    - 1) Manufacturer: Wilson Art or Formica or Nevamar (Architect's choice, not manufacturer's standard).
    - 2) Counter Tops: HGS Grade, 0.048 in. minimum thickness with textured finish.
    - 3) Other Exposed Surfaces: VGS Grade, 0.028 in. minimum thickness.
    - 4) Balanced Sheets: CLS Grade.
    - 5) Provide heavy gauge natural colored backing sheet for balanced construction.
    - 6) Colors: For exposed surfaces, colors shall be selected by Architect from laminate manufacturer's full range of solids, patterns and wood grains.
  - 3. Polyester Laminate:
    - a. Thermosetting acid resistant polyester resin impregnated laminate, permanently bonded to substrate.
      - 1) Polyester laminate to be 9 to 11 mills in thickness, 62% resin content, colorfast, and putty in color.
      - 2) The following agency requirements, standards, and tests shall apply:
        - (a) U.S. Federal F.S.L. P-508
        - (b) ASTM D-1300-53T
        - (c) U.S. Food & Drug Section 175.300
        - (d) NEMA LQ1
        - (e) NEMA LD3
        - (f) White or Putty colored polyester laminate for semi-exposed cabinet interiors behind doors and drawers.

### **2.3 HARDWARE SHALL BE OF INSTITUTIONAL TYPE:**

- A. Pulls: Pulls for doors and drawers shall be steel wire with satin chrome epoxy powder coated finish, 4" long, 5/16" diameter, 1-5/16" projection. Provide two pulls for drawers over 24 in. wide.
    - 1. Drawer Slides: Drawers shall operate on heavy-duty, 3-part progressive opening full-extension drawer slides with a minimum dynamic (operating) load rating of 100 lbs. and static load rating of 150 lbs.
      - a. At file drawers, slides shall be full-extension 3-part progressive opening. Provide body mounted molded rails for hanging file system for legal or letter size as indicated by Basis-of-Design cabinet manufacturer's model number. Cutting or machining of drawer body/face not allowed.
      - b. Hinges: Tight pin, five-knuckle institutional type with hospital corners, and capable of swinging 270 degrees. Hinge attached to door with five screws, and to cabinet with minimum of three screws. Hinges shall be satin chrome epoxy powder coated steel.
  - B. Door Catches: Magnetic loaded type engaging on metal stop. Provide for all doors; doors over 48 in. high shall have catches at top and bottom. Roller type catch for mobile cabinets.
  - C. Provide removable file holder hardware, suitable for Pentaflex hanging folders, on edges of file drawers. Coordinate for appropriate width of drawer and height of sides.
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- D. Drop-in Sink Assemblies: Provide sinks, faucets and associated appurtenant components as indicated. Unless otherwise indicated, sinks shall be minimum 18-gauge, Type 302, 18-8 stainless steel with self-rimming edge, sound-deadening coating on underside, and of sizes and single or double compartment as indicated on Drawings. Sinks shall be complete with cup strainer, outlet, tailpiece, traps (solids interceptor, as noted), and other trim as called for on the Drawings. Sinks at ADA locations shall include insulation kits to protect the user, if piping is exposed.

## **2.4 TYPICAL CABINET CONSTRUCTION:**

- A. Definition of Surface Exposure:
1. Exposed Surfaces:
    - a. Surfaces visible when drawers (if any) and opaque doors (if any) are closed.
    - b. Surfaces visible when behind clear glass doors.
    - c. Bottoms of cabinets if 42 in. or more above finish floor.
    - d. Tops of cabinets if less than 72 in. above finish floor.
  2. Interior surfaces of all open cabinets.
    - a. Semi-Exposed Surfaces:
      - 1) Surfaces which become visible when opaque doors are open or drawers are extended, including backs of doors.
      - 2) Bottoms of cabinets more than 30 in., but less than 42 in. above finish floor.
      - 3) Tops of cabinets 72 in. or more above finished floor when visible from an upper level.
    - b. Concealed Surfaces:
      - 1) Surfaces not normally visible after installation.
      - 2) Bottoms of cabinets less than 30 in. above finish floor.
      - 3) Tops of cabinets 72 in. or more above finish floor and not visible from an upper level.
      - 4) Web frames, dust panels, stretchers, blocking, and backs behind drawers.
  3. Style of Construction: Flush overlay.
  4. Edging shall be continuous, PVC solid, high-impact, purified, color-through, acid-resistant, pre-lamination primed edging, and machine-applied with hot melt adhesives, no substitute. Edging to be oversized for panel thickness, then automatically trimmed inside/outside length-radiused for uniform appearance full and exact board coverage, buffed and corner radiused for consistent design. Panel corners to be machined to a minimum 1/4 in. radius. Color shall be selected from manufacturer's full range by Architect.
    - a. Door/Drawer-Front edging to be 3mm PVC.
    - b. Cabinet end panel, top, bottom, and shelf edge, to be 3 mm PVC for open shelving units and flat edge PVC to match cabinet interiors elsewhere.
    - c. Interior dividers and top of drawer body to be 0.02 PVC to match cabinet interior surface color.
    - d. Door/Drawer front spacer rail shall be 1 mm PVC.
- B. Finishes of Surface other than Edges:
1. Exposed Surfaces: High-pressure laminate.
  2. Semi-Exposed Surfaces: Manufacturer's option high-pressure laminate, cabinet liner, polyester or melamine laminate panels.
  3. Box Construction Details:

- a. Full sub-top for all base cabinets.
  - b. Door and Drawer Front Rails: 3/4 in. thick x 6 in. deep (front-to-back) x width of door or drawer, provide intermediate supports for cabinets with multiple doors or drawers.
  - c. Cabinet Backs: Core material of 3/8 in. particleboard.
    - 1) Dividers: Core material of 1/2 in. particleboard.
    - 2) Cabinet Side/End Panels: Core material minimum 3/4" thick particleboard.
  - d. Tops and Bottoms (core material thickness):
    - 1) Wall Cabinets: 1 inch.
    - 2) Other Locations: 3/4 inch.
4. Drawer Construction:
- a. Drawer fronts shall be applied to separate drawer body component sub-front.
  - b. Drawer sides shall be dadoed and glued to receive front and back, machine squared, and held under pressure while hot melt glued and pinned together. Drawer sides and back shall be no less than 70 percent as high as drawer front. Back of drawer body shall be no more than 1 inch from back of cabinet when drawer is closed, unless otherwise shown on Drawings.
  - c. Drawer bottom to be housed (dadoed) into front, sides, and back. Joint between drawer body and drawer bottom shall receive continuous bead of adhesive for sealing and rigidity. Reinforce drawer bottoms with 1/2 in. thick x 4 in. long intermediate underbody stiffeners, hot melt glued and fastened; one at 24 in., two at 36 in., and four at 48 in.
  - d. Paper storage drawers shall be fitted with full width hood at back.
5. Shelf Construction: Particleboard core material shall be 3/4-inch thick for shelves 24 inches or less in length, and 1-inch thick for shelves greater than 24 inches but 42 inches or less in length.
- a. Adjustable Shelf Supports: Twin-pin anti-tipping supports that permit the shelves to easily snap into place and to easily slide out from the front. Design shall include slot for ability to mechanically attach shelf to clip. Load rating shall be minimum 300 lbs. each.
6. Countertops and Splashes: See Section 12 36 00 - Countertops.
7. Blind or dead corner voids, where tall or upper wall cases terminate short of the wall, shall be closed-off at the top with closure pieces matching the cases.
8. Furnish and install all fillers, blank fronts, and matching casework indicated on the drawings, required to finish wall-to-wall banks of units, or otherwise required to finish the work.

### **PART-3 EXECUTION**

#### **3.1 EXAMINATION:**

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcement, and other conditions affecting installation and performance of casework and related equipment installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION:**

- A. Workmen: Install casework under the supervision of the manufacturer's representative with factory-trained mechanics authorized by manufacturer.



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- B. Install casework plumb, level, straight and true; shim as required, using concealed shims. Install without distortion so doors and drawers fit openings and are aligned. Where abutting other finished work, apply filler strips and scribe for close, accurate fit, with fasteners concealed where practical.
    - 1. Securely anchor in place.
    - 2. Cut and fit work to accommodate sinks, fittings, pipes, ducts, etc.
      - a. Install all items complete.
  - C. Install casework and countertops level and plumb to a tolerance of 1/8 inch in 8 feet.
  - D. Service Fittings: Comply with requirements of Division 22 for installing water service fittings. Install fittings according to approved Shop Drawings and manufacturer's written instructions. Bed bases and flanges countertop-mounted fittings in sealant recommended by manufacturer of sink or countertop material. Securely anchor fittings, piping, and conduit to casework, unless otherwise indicated.
  - E. Install other equipment and accessories according to approved Shop Drawings and manufacturer's written instructions. Securely fasten in place to supporting substrates.

### **3.3 ADJUSTING, CLEANING AND PROTECTING:**

- A. Repair or remove and replace defective work as directed on completion of installation.
- B. Adjust casework and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.
- C. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- D. Remove all cartons, debris, sawdust, scraps, etc. Leave casework free from defects and ready for Owner's use.
- E. Protection: Provide 6-mil plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at minimum of 48 inches o.c. Unless otherwise instructed by Architect, remove protective covering immediately prior to Substantial Completion.

**END OF SECTION 12 32 16 12 32 16**