# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 and 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

A. Section Includes:
1. Wood veneer wall paneling.
2. Wood veneer architectural cabinets.
3. Wood veneer glass door display casework.
4. Wood benches and booths.
5. Wood furring, blocking, shims, and hanging strips for installing millwork, unless concealed within other construction before cabinet installation.
6. Shop finishing of architectural woodwork.

B. Related Requirements:
1. Section 018113 “Sustainable Design Requirements.”
2. Section 061052 "Miscellaneous Carpentry" and section 092216 “Non-Structural Metal Framing” for furring, blocking, shims, and hanging strips required for installing casework and concealed within other construction before cabinet installation.
3. Section 081416 “Flush Wood Doors” for wood doors for matching finish.
4. Section 123661 “Solid Surfacing Countertops.”
5. Section 125219 “Upholstered Seating” for upholstered cushions.
6. Section 265100 “Interior Lighting” for lighting integrated into casework.

## 1.3 REFERENCES

A. Minimum standards for work in this section shall be in conformity with the “Architectural Woodwork Standards (AWS), latest edition, published jointly by the Architectural Woodwork Institute, the Architectural Woodwork Manufacturer’s Association of Canada, and the Woodwork Institute. The “Architectural Woodwork Standards” are hereafter referred to as the AWS.

## 1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

## 1.5 ACTION SUBMITTALS

A. Product Data: For each type of product, including high-pressure decorative laminate and cabinet hardware and accessories.
1. Provide documentation of no added urea formaldehyde particle board and MDF.
2. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. LEED Submittals: Credits MRc4, EQc4.1, and EQc4.4. Refer to Section 018113 “Sustainable Design Requirements” for additional submittal requirements.

C. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Submit shop drawings in conformance with the requirements of the AWS.
2. Show details full size.
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections. Indicate locations of concealed blocking and reinforcement on shop drawing elevations.
4. Show locations and sizes of cutouts and holes for electrical switches and outlets and other items installed in architectural plastic-laminate cabinets.
5. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
6. Apply WI Certified Compliance Program label to Shop Drawings.

D. Samples for Verification:
1. Lumber for transparent finish, not less than 5 inches wide by 12 inches long, for each species and cut, finished on one side and one edge.
2. Veneer leaves representative of and selected from flitches to be used for transparent-finished casework.
3. Plastic laminates, 8 by 10 inches, for each type, color, pattern, and surface finish, with one sample applied to core material and specified edge material applied to one edge.
4. Thermoset decorative panels, 8 by 10 inches, for each color, pattern, and surface finish.
5. For each species and cut of lumber and panel products with non-factory-applied finish, with 1/2 of exposed surface finished, 50 sq. in. for lumber and 8 by 10 inches for panels.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and fabricator.

B. Woodwork Quality Standard Compliance Certificates: WI Certified Compliance Program certificates.

C. Product Certificates: For each type of product.

D. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: Chain-of-custody certified shop that employs skilled workers who custom-fabricate FSC products similar to those required for this Project and whose products have a record of successful in-service performance. Shop shall be a licensee of WI's Certified Compliance Program. Shop shall have not less than 5 years of production experience similar to this Project whose qualifications indicate the ability to comply with the requirements of this Section.

B. Installer Qualifications: Licensee of WI's Certified Compliance Program and maintains FSC chain of custody requirements.

C. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having

jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockups of typical architectural wood casework and display case as shown on Drawings.
   2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

E. Quality Standard: Unless otherwise indicated, comply with “Architectural Woodwork Standards” for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
   1. Before delivery to the jobsite the woodwork supplier shall provide a Woodwork Institute Certified Compliance Certificate indicating the millwork products being supplied and Certifying that these products fully meet the requirements of the Grade or Grades specified.
   2. Each elevation of casework and each laminated plastic top shall bear a Woodwork Institute Certified Compliance Label.
   3. At completion of installation the woodwork installer shall provide a Woodwork Institute Certified Compliance Certificate indicating the products installed, and Certifying that the installation of these products fully meets the requirements of the Grade or Grades specified.
   4. All fees charged by the Woodwork Institute for their Certified Compliance program are the responsibility of the millwork manufacturer and/or installer and shall be included in their bid.
   5. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with such selections and requirements in addition to the quality standard.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver casework until painting and similar operations that could damage woodwork have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

B. Deliver materials only when the project is ready for installation and there is a clean storage area on site.
   1. Delivery of architectural millwork shall be made only when the area of operation is enclosed, all plaster and concrete work is dry and the area broom clean.
   2. The work area shall be well ventilated and protected from direct sunlight, excessive heat, rain or moisture.

1.9 FIELD CONDITIONS

A. Environmental Limitations with Humidity is Not Controlled during Occupancy: Do not deliver or install casework until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Environmental Limitations with Humidity Controlled during Occupancy: Do not deliver or install casework until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between percent range recommended by AWS during the remainder of the construction period.

C. Field Measurements: Where casework is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before being enclosed, and indicate measurements on Shop Drawings.

D. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.10 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL CABINET FABRICATORS

A. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of architectural wood casework and woodwork.

2.2 ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural wood casework indicated for construction, finishes, installation, and other requirements.
   1. Provide certificates from WI certification program indicating that woodwork, including installation, complies with requirements of grades specified.
   2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

2.3 MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
   1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.

B. Certified Wood: Woodwork shall be produced from wood certified as "FSC Pure" or "FSC Mixed Credit" according to FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship," and FSC STD-40-004, "FSC Standard for Chain of Custody Certification."

C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
   1. As indicated by laminate manufacturer's designations. Refer to Material Finish Schedule on Drawings.

D. Lumber: As required by the AWS for the grade specified grade and its use.
   1. Exposed and Semi Exposed Wood: Species and cut as indicated or as selected by architect.

E. Glass: Refer to Material Finish Schedule on Drawings and Section 088000 “Glazing.”
   1. Provide fully tempered glass, unless noted otherwise.

F. Veneer: As required by the AWS for the grade specified and its use.
   1. Species and Cut: As indicated or as selected by Architect.

G. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

H. Interior and exterior use of hardwood plywood, particleboard, and MDF composite wood products shall meet the requirements for formaldehyde as specified in ARB’s Air Toxics Control Measure for Composite Wood (17 CCR 93120).

I. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
   1. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no added urea formaldehyde.
   2. Softwood Plywood: DOC PS 1, medium-density overlay, made with binder containing no added urea formaldehyde.
   3. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.

J. LEED Materials: Credits MRc4, EQc4.1, and EQc4.4. Refer to Section 018113 “Sustainable Design Requirements” for additional material requirements.

## 2.4 WOOD CABINETS FOR TRANSPARENT FINISH

A. Grade: AWS Premium.

B. Certified Wood: Wood shall be produced from wood certified as "FSC Pure" or "FSC Mixed Credit" according to FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship," and FSC STD-40-004, "FSC Standard for Chain of Custody Certification."

C. Type of Construction: AWS Type A, Frameless.

D. Cabinet and Door and Drawer Front Interface Style: Flush overlay.

E. Wood for Exposed Surfaces: Select White Maple, Grade AA, quarter sliced.
   1. Grain Direction: Vertically for drawer fronts, doors, and fixed panels, unless noted otherwise.
   2. Matching of Veneer Leaves: Book match.
   3. Veneer Matching within Panel Face: Running match.
   4. Veneer Matching within Room: Sequence match.

F. Exposed Interior Surfaces: Match exposed exterior surfaces.

G. Semiexposed Surfaces: Provide surface materials indicated below:
   1. Surfaces Other Than Drawer Bodies: Same species and cut indicated for exposed surfaces.
   2. Drawer Sides and Backs: Solid hardwood.
   3. Drawer Bottoms: Vener core plywood to match sides.

H. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

I. Core: Medium-Density Fiberboard.
   1. If a Class A or Class B flame spread and smoke development rating is required use fire retardant particle board.

J. Cross Bands: If a Class A or Class B flame spread and smoke generation rating is required provide a wood veneer cross band between the core and the face veneer, and between the core and the balance veneer.

2.5 WALL PANELING, BENCHES, SEATING AND DISPLAY CASEWORK

A. Grade: AWS Premium Grade.

B. Bench, Paneling and Display Casework Veneer: Select White Maple, Grade AA, quarter sliced.

C. Exposed Surfaces: Species and cut as indicated or as selected by architect.
   1. Matching:
      a. Veneers to be selected from the same flitch, and sequence matched throughout the elevation.
      b. Lumber: Compatible in color and grain with the adjacent veneer.

D. Core: MDF, unless noted otherwise.
   1. If a Class A or Class B flame spread and smoke development rating is required use fire retardant MDF.

E. Wood Trim:
   1. Grade: AWS Premium Grade
   2. Species and Cut: As indicated or as selected by Architect.
   3. Matching: All elements in an elevation shall be well matched for color and grain. Elements in the same room shall be compatible in color and grain.

F. Concealed Surfaces: Balance veneer of compatible species and thickness as the exposed face.

G. Cross Bands: If a Class A or Class B flame spread and smoke generation rating is required provide a cross band between the core and the face veneer, and between the core and the balance veneer.
   1. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.6 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
   1. Use treated materials that comply with requirements of referenced woodworking standard. Do not use materials that are warped, discolored, or otherwise defective.
   2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
   3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

B. Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
   1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
   2. For items indicated to receive a stained or natural finish, use organic resin chemical formulation.
   3. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.

C. Fire-Retardant Fiberboard: Medium-density fiberboard panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less per ASTM E 84.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Panel Source International, Inc.; Pyroblock Platinum.
      b. SierraPine; Medite FR.

2.7 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Section 087111 "Door Hardware."
   1. Provide hardware indicated on drawings. For hardware not indicated, see below.

B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 135 degrees of opening, self-closing.
   1. Manufacturers: Subject to compliance with requirements, provide hinges from one of the following:
      a. Hafele America Co.
      b. Blum Inc.
      c. Hettich America

C. Wire Pulls: Back mounted, matte finish, solid metal, stainless steel, 5 inches center to center, 0.5 inch in thickness, square U-shaped.
   1. Basis-of-Design Products: Subject to compliance with requirements, provide the following:
      a. Product # 100.45.051 from Hafele America Co.

D. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.

E. Shelf Rests: BHMA A156.9, B04013; metal.

F. Drawer Slides: BHMA A156.9.
   1. Manufacturers: Subject to compliance with requirements, provide hinges from one of the following:
      a. Accuride Drawer Slides
      b. Knape & Vogt.
   2. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides.
   3. Grade 1HD-200 at Trash Container Drawer: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides.

G. Aluminum Slides for Sliding Glass Doors: BHMA A156.9, B07063.

H. Door Locks: BHMA A156.11, E07121.

I. Drawer Locks: BHMA A156.11, E07041.

J. Door Silencer: BHMA A156.16, L03011.

K. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
   1. Satin Stainless Steel: BHMA 630.

L. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

M. Grommets: minimum 2-inch OD and as indicated on Drawings, molded-plastic grommets and matching plastic caps with slot for wire passage.

1. Color as selected by Architect.

N. Glass Display Cabinet Adjustable Shelving System: Aluminum VT-DF Level Adjustable Shelving System by Sugatsune, or equal. Provide complete system.

O. Glass Display Cabinet Door Hinges: Richelieu Hardware; Riveo Prime Design Hinge, Heavy-Duty or equal.
1. Provide number of hinges required by door weight and glass thickness.
2. Finish: Brushed Nickel 195.

P. Glass Display Cabinet Door Locks: Richelieu Hardware; Double Glass Door Lock with Universal Key (D032017) or equal.
1. Finish: Match glass door hinge finish.
2. Keys: Provide owner with minimum of three keys per lock.

2.8 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesives: Do not use adhesives that contain urea formaldehyde.

D. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.
1. Adhesive for Bonding Edges: Hot-melt adhesive.

E. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with current south coast AQMD limits for VOC content.

2.9 FABRICATION

A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

B. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
1. Corners of Cabinets: 1/16 inch unless otherwise indicated.

C. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

D. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

E. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

2.10 SHOP FINISHING

A. General: Finish architectural wood casework at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.
   1. Finish all products to the greatest extent possible before delivery to the job site.
   2. After Installation touch up and repair damaged finish.

B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural wood casework, as applicable to each unit of work.
   1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of casework.

C. Transparent Finish:
   1. Grade: AWS Premium.
   2. Finish: System 11, catalyzed polyurethane, unless noted otherwise.
   3. Finish at Solid Wood Benches: System 5, conversion varnish, clear.
      a. Sheen: 20-30 gloss units measured on 60-degree gloss meter per ASTM D 523.
   4. Staining: Not required, unless noted otherwise.
   5. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition casework to average prevailing humidity conditions in installation areas.

B. Before installing casework, examine shop-fabricated work for completion and complete work as required.

3.2 INSTALLATION

A. Grade: Install casework to comply with same AWS grade as item to be installed.

B. Assemble casework and complete fabrication at Project site to the extent that it was not completed in the shop.

C. Install casework level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut casework to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor casework to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
   1. For shop finished items use filler matching finish of items being installed.

F. Casework: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
   2. Maintain veneer sequence matching of cabinets with transparent finish.
   3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

G. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
   1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are applied in shop.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective items, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean all on exposed and semiexposed surfaces.

3.4 PROTECTION

A. Protect installed products from damage from weather and other causes during construction.

B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.
   1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION