

SECTION 06 40 00

ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements including but not limited to:
1. Cabinetry.
 2. Countertops.
 3. Standing and running trim.
 4. Cabinet hardware.
 5. Shop finishing of woodwork.
 6. Accessories necessary for a complete installation.

1.2 DEFINITIONS

- A. Architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.3 ACTION SUBMITTALS

- A. Product Data: Technical data including cabinet hardware and accessories, including data for fire retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements and including material descriptions and finishes, general construction, specific modifications, and installation instructions
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large scale details, attachment devices, and other components.
1. Show full size details.
 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 3. Show locations and sizes of cutouts and holes for items installed in architectural cabinets.
 4. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
 5. Apply AWI Quality Certification Program label to Shop Drawings.
 6. Solid Surface and Quartz Agglomerate Showing materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
 - a. Show locations and details of joints, anchors, and supports.

- b. Show direction of directional pattern, if any.
 - c. Indicate sizes, dimensions, sections, and profiles.
- C. Samples: When requested by the Architect, submit full size sample showing specified finishes, hardware, and other components of the work. Full size sample may be retained by the Owner until project completion to verify compliance of installed work with requirements. In addition, submit the following samples for review of grain character, color, and finish:
 1. Lumber with or for transparent finish, not less than 5 inches 125 mm wide by 24 inches (600 mm) long, for each species and cut, finished on 1 side and 1 edge.
 2. Veneer faced panel products with or for transparent finish, 8 inches by 10 inches (200 mm by 250 mm), for each species and cut. Include at least one face veneer seam and finish as specified.
 3. Lumber and panel products with shop applied finish, 50 sq. in. (300 sq. cm) for lumber and 8 inches by 10 inches (200 mm by 250 mm) for panels, for each finish system and color, with 1/2 of exposed surface finished.
 4. Plastic Laminate: 8 inches by 10 inches (200 mm by 250 mm), for each type, color, pattern, and surface finish and specified edge material applied to 1 edge.
 5. Thermoset Decorative Panels: 8 inches by 10 inches (200 mm by 250 mm), for each color, pattern, and surface finish. Provide edge banding on one edge.
 6. Solid surface and materials, 6 inch [150 mm] square.
 7. Corner pieces:
 - a. Cabinet front frame joints between stiles and rails, as well as exposed end pieces, 18 inches (450 mm) high by 18 inches wide by 6 inches deep (450 mm by 50 mm).
 - b. Miter joints for standing trim.
 8. Exposed cabinet hardware and accessories, one unit for each type and finish.
 9. Lumber and Panel Products with Shop Applied Opaque Finish: 5 inches (125 mm) wide by 12 inches (300 mm) long for lumber and 8 by 10 inches (200 by 250 mm) for panels, for each finish system and color. Finish one side and one edge.
 10. Thermoset Decorative Panels: 8 inches by 10 inches (200 mm by 250 mm), for each color, pattern, and surface finish.
 - a. Provide edge banding on one edge.
 11. Corner Pieces:
 - a. Cabinet front frame joints between stiles and rails and at exposed end pieces, 18 inches (450 mm) high by 18 inches (450 mm) wide by 6 inches (150 mm) deep.
 - b. Miter joints for standing trim.
 12. Exposed Cabinet Hardware and Accessories: One full size unit for each type and finish.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Submit data for Installer and fabricator.
- B. Product Certificates: Submit product certificates for:

1. Composite wood and agrifiber products.
2. Thermoset decorative panels.
3. Glass.
4. Adhesives.

- C. Quality Standard Compliance Certificates: AWI Quality Certification Program.
- D. Evaluation Reports: Submit ICC-ES reports for fire retardant treated materials.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
1. Quality Standard: When not specifically exceeded by the scope of this Section, comply with *AWI Architectural Woodwork Standards, 2nd Edition* for grades of architectural woodwork indicated for construction, finishes, installation, and requirements in general when not exceeded in this section.
 - a. Where construction and fabrication requirements are called out within this Section which are above and beyond the AWI standard, all components shall be provided in the manner specified herein. No adjustments by interpretation of AWI standards for construction and fabrication requirements shall be permitted.
- B. Fabricator/Installer Qualifications: Shop having minimum 5 years documented experience who employs skilled workers who custom fabricate products similar to those required and who is a participating member of AWI or WI.
1. Uncertified AWI Fabricator: Shop having minimum 10 years documented experience in the manufacturer of architectural wood work, who employs skilled workers who custom fabricates products, and who certifies in writing the woodwork products comply with AWI Architectural Woodwork Standards.
- C. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence matched wood veneers and transparent finished wood doors that are required to be of same species as woodwork.
- D. Mockups: Build mockups to verify selections, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Build mockups of each type of typical architectural cabinets included in the Work.
 2. Build mockup of each type of counter top included in the Work.
 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Preinstallation Conference: Conduct conference at site.

1.6 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work to support loads imposed by installed and fully loaded cabinets.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver woodwork until painting and similar finish operations that might damage architectural woodwork have been completed in installation areas. Store woodwork in installation areas or in areas where environmental conditions comply with requirements.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 60 degrees F and 90 degrees F (16 degrees C and 32 degrees C) and relative humidity between 43 percent and 70 percent during the remainder of the construction period.
- B. Field Measurements: Where cabinets are 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 cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.
- C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Casework Performance Duty Level: Unless exceeded herein, all casework inclusive to the Project shall meet Duty Level 3, for casework with institutional applications, representing the default performance level for the Project.
- B. Fabricate woodwork in accordance with ANSI A161.1, NEMA LD3, and general static load testing performed and certified as meeting the following:
 - 1. Base Cabinet: Construction/Racking Test, 800 lbs..
 - 2. Cabinet Front: Joint Loading Test, 425 lbs..
 - 3. Wall Cabinet: Static Load Test, 200 lbs.
 - 4. Drawer Front: Joint Loading Test, 300 lbs. .
 - 5. Drawer Construction: Static Load Test, 750 lbs. .
 - 6. Cabinet, Adjustable Shelf Support Device: Static Load Test, 300 lbs..
- C. Shelf Loading: Comply with loading/deflection standards of the Composite Panel Association.

- D. Fire Test Response Characteristics: Where fire retardant materials or products are indicated, provide materials and products with specified fire test response characteristics determined by testing identical products per test method indicated by UL.
 - 1. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials concealed from view after installation.
- E. Accessibility Requirements: Comply with applicable requirements.
 - 1. U.S. Architectural and Transportation Barriers Compliance Board Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) 2010.
 - 2. ICC/ANSI A117.1 Accessible and Useable Building and Facilities.

2.2 MATERIALS

- A. Materials: Provide materials complying with requirements of AWI quality standard for each type of woodwork and quality grade specified.
- B. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural woodwork and quality grade specified unless otherwise indicated.
 - 1. Hardboard: ANSI/AHA A135.4; pressed wood fiber with resin binder, tempered grade, smooth 2 sides, thickness indicated
 - 2. Do not use plain sawn softwood lumber with exposed, flat surfaces more than 3 inches (75 mm) wide.
 - a. Wood Moisture Content: 4 to 9 percent.
 - 3. Composite Wood: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
 - a. Medium Density Fiberboard (MDF): ANSI A208.2, Grade 130, composed of wood chips, minimum 45 lb. medium density, high waterproof resin binders; sanded faces
 - b. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
 - 4. Softwood Plywood: DOC PS 1.
 - 5. Lumber: Comply with applicable provisions for grading and workmanship of AWI Quality Standards, and requirements specified. Provide lumber surfaced 4 sides (S4S) and fabricated to profiles shown. Kiln dry lumber to 19% moisture content.
 - a. Furring, Blocking, Shims: No. 1 Common; Southern Pine.
 - b. Solid Hardwood for Opaque Finish: Plain sawn Yellow Poplar, free from checks, splits, sound knots.
 - 6. Veneer Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.
- C. Plastic Laminate:
 - 1. High Pressure Decorative Laminate: NEMA LD 3; grades required by quality standard.
 - a. Manufacturer and product line as indicated in the Finish Schedule.

2. Thermoset Decorative Panels: Particleboard or MDF 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.
 3. Manufacturers:
 - a. As indicated in the Finish Schedule.
- D. Solid Surface Material: Homogeneous filled plastic resin complying with ICPA SS-1.
1. Manufacturers:
 - a. As indicated in the Finish Schedule.
- E. Quartz Agglomerate Materials: Solid sheets consisting of quartz aggregates bound together with a matrix of filled plastic resin and complying with ICPA SS-1, except for composition.
1. Manufacturers:
 - a. As indicated in the Finish Schedule.
- F. Miscellaneous Materials:
1. Furring, Blocking, Shims, and Nailers: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
 - a. Preservative Treatment: Provide softwood lumber treated by pressure process, AWPA U1; Use Category UC3b.
 - 1) Provide where indicated and where in contact with concrete or masonry.
 - 2) Kiln dry lumber after treatment to a maximum moisture content of 19 percent.
 - 3) Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - 4) Mark lumber with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee's (ALSC) Board of Review.
- G. Fire Retardant Treated Materials:
1. Fire Retardant Treated Materials: Where fire retardant treated materials are indicated, use materials acceptable to authorities having jurisdiction and with fire test response characteristics specified determined by testing identical products per test method indicated by a qualified testing agency.
 - a. Use treated materials that comply with requirements of referenced quality standard. Do not use materials that are warped, discolored, or otherwise defective.
 - b. 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.
 - c. 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.
 2. 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 (3.2 m) beyond the centerline of the burners at any time during the test.

- a. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
 - b. Mill lumber before treatment and implement 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 architectural cabinets.
3. Fire Retardant Particleboard: Made from softwood particles 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 25 or less per ASTM E 84.
- a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Flakeboard Company Limited.
 - 2) SierraPine.
 - b. For panels 3/4 inch (19 mm) thick and less, comply with ANSI A208.1 for Grade M-2 except for minimum properties: modulus of rupture, 1600 psi (11 MPa); modulus of elasticity, 300,000 psi (2070 MPa); internal bond, 80 psi (550 kPa); and screw holding capacity on face and edge, 250 lbf and 225 lbf (1100 N and 1000 N), respectively.
 - c. For panels 13/16 to 1-1/4 inches (20 to 32 mm) thick, comply with ANSI A208.1 for Grade M-1 except for minimum properties: modulus of rupture, 1300 psi (9 MPa); modulus of elasticity, 250,000 psi (1720 MPa); linear expansion, 0.50 percent; and screw holding capacity on face and edge, 250 and 175 lbf (1100 and 780 N), respectively.
4. Fire Retardant Fiberboard: MDF 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.
- a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Panel Source International, Inc.
 - 2) SierraPine.

H. Adhesive:

1. Bonding Plastic Laminate: Resorcinol.
2. Bonding Fire Rated Plastic Laminate: Adhesive tested with plastic laminate for fire rating.
3. Bonding PVC Edges: Hot melt adhesive.

2.3 STANDING AND RUNNING TRIM

A. Opaque Finish:

1. Quality Standard and Grade: AWI Grade: Premium.
2. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

3. Assemble casings in plant except where limitations of access to place of installation require field assembly.
4. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.
5. Wood Species: Quarter sliced Poplar unless otherwise indicated.
6. Provide sizes, shaped and profiles as indicated on the Drawings.

B. Transparent Finish:

1. Quality Standard and Grade: AWI Grade: Premium.
2. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.
3. Assemble casings in plant except where limitations of access to place of installation require field assembly.
4. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.
5. Wood Species and Cut: Quarter Sliced Hard White Maple unless otherwise indicated, stained and finished to comply with the Finish Schedule or selections made by Architect in submittals..
 - a. For all Stair treads and related materials, wood species and cut shall match the adjacent flooring, color and finish. Configure all trim, treads and other components to meet intent as indicated on the Drawings.
- 6.
7. Provide sizes, shaped and profiles as indicated on the Drawings.

2.4 COMPOSITE LAMINATED PANELS, POSTS & UPHOLSTERY SUBSTRATES

- A. Provide shop fabricated composite panels, posts and other items as indicated on the Drawings. Construction and fabrication shall meet the AWI standards indicated for the Work of this Section. Fabricate all units with concealed fasteners and inconspicuous seams, end matched to comply with the requirements of this Section.
- B. Provide concealed anchors for all members sized to 3 times that imposed by overall construction and otherwise in compliance with AWI standards. Regardless of AWI standard, all anchors shall be concealed.
- C. Upholstery: Provide all materials as indicated on the Drawings. Provide substrates fabricated from wood products specified in this Section compatible with AWI standards for the use intended. Utilize hardwood members and doweled construction for substrates subject to live loads.

2.5 CABINETS

- A. Wood Cabinet for Transparent Finish:
 1. Grade: Premium.
 2. Type of Construction: Frameless.

3. Door and Drawer Front Style: Reveal overlay.
 - a. Reveal Dimension: 1/2 inch (13 mm).
 4. Wood for Exposed Surfaces:
 - a. Species and Cut: Quarter Sliced Hard White Maple unless otherwise indicated, stained and finished to comply with the Finish Schedule or selections made by Architect in submittals..
 - b. Blueprint Matching: Comply with veneer and other matching requirements indicated for blueprint matched paneling.
 - c. Grain Direction: Vertically for doors and fixed panels, horizontally for drawer fronts.
 - d. Matching of Veneer Leaves: Slip match.
 - e. Veneer Matching within Panel Face: Balance match.
 - f. Veneer Matching within Room: Provide cabinet veneers in each room or other space from a single flitch with doors, drawer fronts, and other surfaces matched in a sequenced set with continuous match where veneers are interrupted perpendicular to the grain.
 5. Semiexposed Surfaces:
 - a. Surfaces Other Than Drawer Bodies: Same species and cut indicated for exposed surfaces.
 - 1) Edges of Thermoset Decorative Panel Shelves: PVC or polyester edge banding.
 - b. Drawer Subfronts, Backs, and Sides: Solid hardwood lumber, stained to match species indicated for exposed surfaces.
 - c. Drawer Bottoms: Hardwood plywood.
 6. Dust Panels: 1/4 inch (6.4 mm) plywood or tempered hardboard above compartments and drawers unless located directly under tops.
 7. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
 - a. Join subfronts, backs, and sides with glued dovetail joints.
- B. Plastic Laminate Cabinets
1. Grade: Premium.
 2. Type of Construction: Frameless.
 3. Door and Drawer Front Style: Reveal overlay.
 - a. Reveal Dimension: 1/2 inch (13 mm).
 4. High Pressure Decorative Laminate: NEMA LD 3, grades required by quality standard.
 5. Laminate Cladding for Exposed Surfaces:
 - a. Horizontal Surfaces: Grade HGS.
 - b. Vertical Surfaces: Grade HGS.
 - c. Edges: PVC edge banding, 0.12 inch (3 mm) thick, matching laminate in color, pattern, and finish.
 - d. Pattern Direction: Vertically for doors and fixed panels, horizontally for drawer fronts.
 6. Materials for Semiexposed Surfaces:
 - a. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.
 - 1) Edges of Plastic Laminate Shelves: PVC edge banding, 0.12 inch (3 mm) thick, matching laminate in color, pattern, and finish.

- 2) Edges of Thermoset Decorative Panel Shelves: PVC or polyester edge banding.
- 3) For semiexposed backs of panels with exposed plastic laminate surfaces, provide surface of high pressure decorative laminate, NEMA LD 3, Grade CLS.
- b. Drawer Sides and Backs: Solid hardwood lumber finished to match semiexposed surfaces.
- c. Drawer Bottoms: Hardwood plywood finished to match semiexposed surfaces.
- d. Dust Panels: 1/4 inch (6.4 mm) plywood or tempered hardboard above compartments and drawers unless located directly under tops.
7. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High pressure decorative laminate, NEMA LD 3, Grade BKL.
8. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
 - a. Join subfronts, backs, and sides with glued dovetail joints.
9. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - a. Selected by Architect:
 - 1) As indicated in the Finish Schedule

2.6 CABINET HARDWARE AND ACCESSORIES

- A. Specialty Hardware for Wood Veneer or other Cabinets: Provide custom hardware as indicated on the Drawings.
- B. Provide cabinet hardware and accessory materials associated with architectural cabinets.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Accuride International.
 - b. Blum, Julius & Co., Inc.
 - c. CompX International, Inc.
 - d. Doug Mockett.
 - e. Forms and Surfaces.
 - f. Hafele.
 - g. Hettich.
 - h. Ironmonger.
 - i. Knappe & Vogt Manufacturing Company.
 - j. Stanley Hardware.
- C. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 165 degrees of opening.
 1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Salice Wide Angle Hinge with soft-close function.

- b. Nexis hinge system complete with soft close by Grass America, Inc.
- D. Piano Hinge: Continuous hinge, 1-1/4 inch wide brass.
 - 1. Product: Subject to compliance with requirements, provide Stanley Hardware No. STS 311-1/4.
- E. Wire Pulls: Back mounted, solid metal, 4 inches (100 mm) long, 5/16 inch (8 mm) in diameter.
- F. Catches: Magnetic type complying with BHMA A156.9, by Stanley Hardware.
 - 1. SP46 magnetic catch for base and wall cabinets; minimum 6 pound (2.72 kg) pull. Provide top and bottom for tall cabinets.
 - 2. SP45 magnetic catch for pairs of doors; minimum 14 pound (6.03 kg) pull. Provide top and bottom for tall cabinets.
- G. Drawer Slides: BHMA A156.9.
 - 1. Drawer Slide Type No. 1: Full extension slides for box, card file and utility drawers, 75 lb. capacity.
 - 2. Drawer Slide: Type No. 2: Full extension slides for file drawers.
 - 3. Drawer Slide: Full extension slides, easy close; 100 lb capacity.
 - 4. Grade:
 - a. Grade 1: Side mounted extending under bottom edge of drawer.
 - 1) Type: Full extension.
 - 2) Material: Zinc plated steel with polymer rollers.
 - 3) For drawers not more than 3 inches (75 mm) high and not more than 24 inches (600 mm) wide.
 - b. Grade 1HD-100 and Grade 1HD-200: Side mounted; full overtravel extension type; zinc plated steel ball bearing slides.
 - 1) For drawers more than 3 inches (75 mm) high, but not more than 6 inches (150 mm) high and not more than 24 inches (600 mm) wide, provide Grade 1HD-100.
 - 2) For drawers more than 6 inches (150 mm) high or more than 24 inches (600 mm) wide, provide Grade 1HD-200.
 - 3) For computer keyboard shelves, provide Grade 1HD-100.
 - 4) For trash bins not more than 20 inches (500 mm) high and 16 inches (400 mm) wide, provide Grade 1HD-200.
- H. Locks: Six pin tumbler controlling three drawers, US26D chrome plated, masterkeyed and keyed alike. Provide locks where shown on casework elevations.
 - 1. Cabinet Door Lock: BHMA A156.11, E07121.
 - 2. Drawer Locks: BHMA A156.11, E07041.
 - 3. Product: Subject to compliance with requirements, provide one of the following:
 - a. No. 986 by Knape and Vogt.
 - b. National Lock.
- I. Door and Drawer Silencers: BHMA A156.16, L03011.

- J. Hardware Finishes:
 - 1. Exposed Hardware: Provide finish complying with BHMA A156.18 for satin chromium plated finish, BHMA 626 for brass or bronze base; BHMA 652 for steel base.
 - 2. Concealed Hardware: Provide finish complying with product class requirements in BHMA A156.9.
 - K. Shelf Rests: BHMA A156.9, B04013; metal, two pin type with shelf hold down clip.
 - L. Shelf Supports: Knappe and Vogt Model No. 255, zinc plated steel shelf standards with No. 256 shelf supports.
 - 1. Shelf Brackets: Chrome plated steel brackets, Gardner-Vail No. 189 or other approved; 10 inch by 12 inch (250 mm by 305 mm).
 - M. Countertop Support Brackets:
 - 1. Provide a 3- by 3-inch triangular void at the top corner to allow computer cabling and electrical cords to pass through. Supply in equal quantities of lefts and rights.
 - a. Standard Brackets: for all areas unless otherwise noted
 - b. Material; 1/8 IN Steel
 - c. Pre-punched holes for attachment to wall and countertop.
 - d. Capacity; 1750 pounds per pair for 18x18; 2220 pounds per pair for 18x24. Provide units to extend the fullest depth of the countertop application possible.
 - e. Finish; Textured Power Coat
 - f. Color; To be selected by Architect from manufacturer's standard range.
 - g. Basis of Design Products: 18x18 by A&M Hardware for countertops up to 25 IN deep and 18x24 by A&M Hardware for countertops greater than 25 IN and up to 30 IN.
 - N. Deep File Drawers: Furnish Pendaflex file supports as manufactured by Oxford Pendaflex Corporation.
 - O. Slides for Sliding Glass Doors: BHMA A156.9, B07063; aluminum.
 - P. Sliding Door Hardware: Grant Hardware Company No. 1030 sliding door hardware set consisting of 0.050 inch aluminum track, 4 carriers, 1 bottom guide and 2 finger pulls.
 - Q. Door and Drawer Silencers: BHMA A156.16, L03011.
 - R. Countertop Grommets: EDP Grommet, EDP Series, 2-1/2 inches (63mm) hole for 3-1/2 inches (88mm) o.d. grommet, color: black, by Doug Mockett, Inc.
 - S. Seismic Anchorage: Cabinet and adjustable shelf anchorage.
 - 1. Shelf Clips: Haffle Excellent H series.
- 2.7 COUNTERTOPS
- A. Plastic Laminate Countertop:

1. Quality Standard: AWS; Grade: Premium.
 2. High Pressure Decorative Laminate: NEMA LD 3, Grade HGS.
 3. Colors, Patterns, and Finishes: Indicated in Finish Schedule.
 - a. Grain Direction: Parallel to cabinet fronts.
 4. Edge Treatment: 3 mm PVC edging.
 5. Core Material: Particleboard or medium density fiberboard with exterior grade glue.
 6. Core Thickness: 1-1/8 inch (29 mm).
 7. Backer Sheet: Provide plastic-laminate backer sheet, NEMA LD 3, Grade BKL, on underside of countertop substrate.
 8. Paper Backing: Provide paper backing on underside of countertop substrate.
- B. Chemical Resistant, Laminate Countertop: NEMA LD 3, Grade HGP.
- C. Solid Surfacing Countertops: Provide with Integral Sinks where indicated:
1. Solid Surface Material: Homogeneous filled plastic resin complying with ICPA SS-
 2. Solid Surfacing Material Thickness: 1/2 inch (13 mm).
 3. Backing: Provide Exterior softwood plywood complying with DOC PS 1, Minimum Grade C-C Plugged, touch sanded.
 4. Integral Sink Bowls: Comply with CSA B45.5/IAPMO Z124.
 5. Backsplashes and Side Splashes: 4 inches high, for field installation unless integral cove splashes are indicated.
 6. Provide solid surfacing manufacturer's recommended joint adhesive, silicone sealant, fasteners necessary for complete installation.
 - a. Adhesive: Two part adhesive kit to create inconspicuous, nonporous joints.
 7. Provide 4 inch wide solid surface backing reinforcing strips minimum 4 inches wide for full depth of top for all solid surface seams.
 8. For countertop areas with an unsupported length of 30 inches or more, provide full thickness build down for solid surface tops extending the full depth of countertop and 6 inches beyond the support of each side. Adhere to top with continuous film of construction adhesive. No voids shall be present within the build down construction.
 - a. Build down material: Solid veneer core plywood DOC PS 1, Exterior, A-C, sanded, fire retardant treated. Provide construction adhesive recommended by solid surface material manufacturer.
- D. Quartz Agglomerate Countertop:
1. Granite Dimension Stone Standard: ASTM C 615.
 2. Finished Face:
 - a. Polished: Mirror gloss with sharp reflections.
 - b. Honed: Dull sheen without reflections.
 - c. Fine Rubbed: Smooth, free from scratches, no sheen.
 - d. Thermal: A rough finish produced by application of high temperature flame to the stone's surface.

- e. Rubbed: Plane surface, occasional slight trails or scratches.
- f. Sawn: Plane surface, scorings as much as 3/32 inch in depth.
- g. Special Finish: As indicated.

2.8 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Fire retardant treated softwood lumber, kiln dried to less than 19 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. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.
- D. Adhesive for Bonding Edges: Hot melt adhesive.

2.9 FABRICATION

- A. Woodwork Grade: AWS Premium Grade woodwork.
 - 1. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- B. Sand fire retardant treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of Cabinets and Edges of Solid Wood (Lumber) Members 3/4 Inch 19 mm Thick or Less: 1/16 inch (1.5 mm).
 - 2. Corners of Cabinets and Edges of Solid Wood (Lumber) Members and Rails: 1/16 inch (1.5 mm).
- D. 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. Notify Architect seven days in advance of the dates and times architectural cabinet fabrication will be complete.
- E. 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.
- F. Install glass to comply with applicable requirements in Section 08 80 00 and in *GANA Glazing Manual*.

1. For glass in wood frames, secure glass with removable stops.
2. For exposed glass edges, polish and grind smooth.

G. Plastic Laminate Cabinets:

1. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces indicated in Finish Schedule.
2. Provide dust panels of 1/4 inch (6.4 mm) plywood or tempered hardboard above compartments and drawers, unless located directly under tops.
3. Fabrication: Join case body members using concealed dado or dowel methods utilizing glue and pressure. Reinforce dado method with nailing or screws. Mechanical fasteners are not permitted.
 - a. Where plywood is indicated on the Drawings, provide exterior softwood plywood complying with DOC PS 1, Grade B veneer minimum. Where plywood is indicated on the Drawings, do not substitute particleboard or MDF.
 - b. Base Cabinet Bottoms and Subtops: Bottoms, 3/4 inch (19 mm) particleboard with low pressure laminate finish on interior side and phenolic backing sheet on concealed side. Subtops, 3/4 inch (19 mm) particleboard with phenolic backing sheet both sides. Fabricate all base cabinets with subtops.
 - c. Wall Cabinet Tops and Bottoms: Tops, 1 inch particleboard with low pressure laminate finish on interior side and phenolic backing sheet on concealed side. Bottoms, 1 inch particleboard with manufacturer's low pressure laminate finish both sides.
 - d. Cabinet Ends: 3/4 inch (19 mm) particleboard with low pressure laminate finish on interior side and phenolic backing sheet on concealed side. Install high pressure plastic laminate on exposed sides of cabinet ends.
 - e. Cabinet Backs: 1/4 inch (6 mm) hardboard with low pressure laminate finish for standard unexposed backs. Fabricate with continuous hot melt glue joint between sides, tops, bottoms and back on concealed side.
 - 1) Exposed Backs: 3/4 inch (19 mm) particleboard with low pressure laminate finish on interior side and high pressure plastic laminate on exterior, exposed side.
 - f. Cabinet Shelves (Adjustable, Semiconcealed): 3/4 inch (19 mm) particleboard with low pressure laminate finish on both sides. Provide 1 inch particleboard for shelves for unsupported spans over 36 inches.
 - g. Cabinet Doors: 3/4 inch (19 mm) particleboard with high pressure plastic laminate on exterior side and heavy gauge balancing sheet on interior side.
 - h. Drawer Fronts: 3/4 inch (19 mm) particleboard with high pressure plastic laminate on exterior side and heavy gauge balancing sheet on interior side.
 - i. Drawer Construction: 1/2 inch (13 mm) solid hardwood back, sides and subfront; tongued and dadoed into back and subfront, joints glued and pinned; 1/4 inch (6 mm) hardboard bottom tongued and dadoed in all four sides, back, and subfront. Provide additional support with continuous hot melt glue joint on underside of drawers between sides, back, subfront and bottom.
 - 1) Reinforce drawer bottoms as required with spreaders.

- 2) Apply drawer front to subfront in accordance with manufacturer's standard procedures.
- 3) Dividers: 3/4 inch (19 mm) particleboard with manufacturer's low pressure laminate finish on both sides. Secure to inside of cabinet with manufacturer's standard plastic clips.
- 4) Dust Panels: Provide dust panels of 1/4 inch (6 mm) plywood or tempered hardboard above compartments and drawers except where located directly under tops.
- 5) Finish exterior exposed surfaces with high pressure plastic laminate. Laminate plastic to particleboard core with balancing sheet using urea resin formaldehyde glue. Fabricate using cold press method with regulated pressure for minimum 8 hours at minimum 70 degrees F.

H. Countertops: AWS Premium Grade.

1. Fabrication:

- a. Fabricate tops in one piece, unless otherwise indicated. Comply with solid surfacing material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.
 - 1) Fabricate tops with shop applied edges of materials and configuration indicated.
 - 2) Fabricate tops with loose backsplashes for field application.
- b. Drill holes in countertops for plumbing fittings and soap dispensers in shop.

2. Countertop Construction Tolerances:

- a. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/16 inch in 48 inches (1.5 mm in 1200 mm).
- b. Variation from Level: Do not exceed 1/8 inch in 96 inches (3 mm in 2400 mm), 1/4 inch (6 mm) maximum.
- c. Variation in Joint Width: Do not vary joint thickness more than 1/4 of nominal joint width.
- d. Variation in Plane at Joints (Lipping): Do not exceed 1/64 inch (0.4 mm) difference between planes of adjacent units.
- e. Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64 inch (0.4 mm) difference between edges of adjacent units, where edge line continues across joint.

I. Plastic Laminate Countertops:

1. Sand fire retardant treated wood lightly to remove raised grain on exposed surfaces before fabrication.
2. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch (25 mm) over base cabinets. Ease edges to radius indicated for the following:
 - a. Solid Wood (Lumber) Members: 1/16 inch (1.5 mm) unless otherwise indicated.
3. Complete fabrication, including assembly, 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.

4. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
 5. 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.
 6. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, 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.
 - a. Seal edges of openings in countertops with a coat of varnish.
- J. Solid Surface Countertops: Fabricate tops in one piece and in the shop to the greatest extent possible, unless otherwise indicated. Comply with solid surfacing material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing. Comply with manufacturer's written fabrication and installation requirements to uphold warranty, using adhesive in color to match countertop.
1. Fabricate tops with shop applied edges of materials and configuration indicated.
 - a. Edge Profile: Pencil round edge profile; Radius: 1/8 inch (3 mm) unless otherwise noted on Drawings.
 2. Solid surface selections with veining or matrix patterns will require orientation of sheets and configuration of seams based on aesthetic judgment.
 3. Form joints between components using manufacturer's standard joint adhesive with inconspicuous reinforced joints. Provide seam reinforcing strips at seams, whether factory- or field-fabricated.
 - a. Reinforce all seams with solid surface material minimum of 4 inches wide by the full depth of the top adhered together at seaming. Adhere using manufacturer's standard joint adhesive, full coverage.
 4. Locate all joints to be fully supported in all cases by cabinets, support brackets, surrounding construction or other means acceptable to the Architect. Support shall be provided at the joint and for a minimum of 2 inches on each side.
 5. Fabricate tops with loose backsplashes for field application unless Drawings indicate an integral cove splash.
 6. Integral Cove Backsplash: Where integral cove backsplashes are indicated, fabricate top with integral cove splashes per manufacturer's recommended fabrication procedures, assuring inconspicuous seams at all locations.
 7. Backing Materials (Build-Down) and Application:
 - a. Provide ladder-type continuous frame at solid-surface countertops supported by base cabinets:
 - 1) Utilize specified particleboard bulddown unless otherwise indicated.
 - 2) Form ladders from approved backing material cut into 3-inch-wide strips. Utilize single pieces without seams for all lengths up to 8 feet in length.
 - 3) Locate continuous main runner strips (rails) along the front, center (front to back), and back edges of countertops.

- 4) Provide clearance for shrinkage and normal expansion and contraction.
- 5) Where base cabinets and supports exceed in 24-inches width, include additional intermediate stiles so that maximum spacing does not exceed 24 inches.
- 6) Provide intermediate stiles at seams in solid-surface countertop material located directly over countertop support.
- 7) Fabricators Option: Solid Polymer material may be fully adhered to reinforcing strip at seams.
- 8) Overhangs: Utilize full build-down configuration for spans of 30 inches and wider without cabinet support.
- b. Full Build-Down Configuration: Provide at countertops with an unsupported length of 30 inches or more and at all overhangs greater than 4 inches.
 - 1) Fabricate build down from solid veneer core plywood material (not stile-and-rail construction).
 - 2) Extend one-piece, solid backer material, across entire span and over adjacent supports each side. Extend support (load bearing) ends not less than 4 inches over edge of supporting cabinets or similar supports.
 - 3) Adhere to top with continuous film of construction adhesive. No voids shall be present within the build down construction.
8. Provide openings in countertops for plumbing fittings and soap dispensers in shop with approved fabrication methods.
9. Countertop Construction Tolerances:
 - a. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/16 inch in 48 inches (1.5 mm in 1200 mm).
 - b. Variation from Level: Do not exceed 1/8 inch in 96 inches (3 mm in 2400 mm), 1/4 inch (6 mm) maximum.
 - c. Variation in Joint Width: Do not vary joint thickness more than 1/4 of nominal joint width.
 - d. Variation in Plane at Joints (Lipping): Do not exceed 1/64 inch (0.4 mm) difference between planes of adjacent units.
 - e. Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64 inch (0.4 mm) difference between edges of adjacent units, where edge line continues across joint.
10. Integral Sink Bowls: Fabricate and install integral sink bowls in countertops in shop.
11. Repair superficial damage to depth of 0.10 inch (2.5 mm) by sanding or polishing.
- K. Solid Surface Sills: Factory fabricate components to greatest extent practicable to sizes and shapes indicated, in accordance with approved shop drawings.
 1. Templates: Make field scribed, individual templates for each sink and countertop requiring coved back, end, side, and corner splashes.
 2. Form joints between components using manufacturer's standard joint adhesive; without conspicuous joints.
 3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
 4. Cut and finish component edges with clean, sharp returns. Route radii and contours to template. Repair and reject defective and inaccurate work.

5. Thermoforming: Comply with product data from manufacturer.
 - a. Construction molds of plywood in *male/female* sections. Construct molds matching component shape.
 - b. Form pieces to shape prior to seaming and joining.
 - c. Cut pieces to finished dimensions. Sand edges. Remove nicks and scratches.
 - d. Heat entire component. Use material of uniform temperatures between 275 - 375 degrees F. during forming.
 - e. Prevent blistering, whitening and cracking of material during forming.
 6. Repair superficial damage to depth of 0.10 inch (2.5 mm) by sanding or polishing.
- L. Quartz Countertops: Fabricate countertops according to quartz agglomerate manufacturer's written instructions and the AWI/AWMAC/WI Architectural Woodwork Standards.
1. Grade: Premium.
 2. Configuration: As indicated on the Drawings.
 3. Backsplash: Straight, slightly eased at corner.
 4. End Splash: Matching backsplash.
 5. Materials:
 - a. Countertops: 3/4 inch (19 mm) thick, quartz agglomerate with front edge built up with same material.
 - b. Backsplashes: 1/2 inch (12.7 mm) thick, quartz agglomerate.
 6. Fabricate tops with shop applied edges unless otherwise indicated. Comply with quartz agglomerate manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - a. Fabricate with loose backsplashes for field assembly.
 7. Joints: Fabricate countertops without joints.
 8. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
 - a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch (5 mm) into fixture opening.
 9. Counter Mounted Plumbing Fixtures: Make cutouts in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
 10. Installation Materials:
 - a. Adhesive: Product recommended by quartz agglomerate manufacturer.
 - b. Sealant: Silicone sealant, recommended by quartz agglomerate manufacturer.

2.10 SHOP FINISHING

- A. Production finish architectural woodwork at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.

- B. Shop Priming: Shop apply the prime coat including backpriming for transparent finished items specified to be field finished.
- C. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural cabinets, as applicable to each unit of work.
- D. Opaque Finish:
 - 1. Grade: Premium.
 - 2. Finish: System - 8, water-based crosslinking acrylic.
 - 3. Color: Selected by Architect.
 - 4. Sheen: As indicated in the Finish Schedule.
- E. Transparent Finish:
 - 1. Grade: Premium.
 - 2. Finish: System 12, water-based polyurethane over stain.
 - 3. Wash Coat for Closed Grain Woods: Apply wash coat sealer to woodwork made from closed grain wood before staining and finishing.
 - 4. Stain: Indicated in Finish Schedule.
 - 5. Sheen: Satin, 31-45 gloss units measured on 60 degree gloss meter per ASTM D 523 unless otherwise noted.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.
- B. Before installing architectural woodwork, examine shop fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install cabinets to comply with quality standard grade of item to be installed.
- B. Assemble cabinets and complete fabrication at site to extent that it was not completed in the shop.
 - 1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items.
- C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind anchoring.
- D. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be

joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.

1. Secure field joints in plastic laminate countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a constant, heavy clamping pressure at joints.
- E. Fire Retardant Treated Wood: Handle, store, and install fire retardant treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.
- F. Standing and Running Trim: Install with minimum number of joints possible, using full length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches (1500 mm) long, except where shorter single length pieces are necessary from corner to corner or similar.
1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.
 2. Install wall railings on indicated metal brackets securely fastened to wall framing.
 3. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).
- G. Cabinets: Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) using concealed shims.
1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
 2. Install cabinets without distortion so doors and drawers fit openings 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.
 3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with concealed fasteners only
- H. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
1. Install countertops with no more than 1/8 inch in 96 inch 3 mm in 2400 mm sag, bow, or variation from a straight line. Where countertops are unsupported for more than 36 inches, provide full build down in fabrication for support.
 2. Secure backsplashes to tops with concealed metal brackets at 16 inches 400 mm o.c. and to walls with adhesive.
 3. Seal space between backsplash and wall with silicone sealant.
- I. Plastic Laminate Countertops: Install countertops 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 (3 mm in 2400 mm).
1. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

2. Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 3. Seal junctures of tops, splashes, and walls with mildew resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.
- J. Solid Surface Countertops: Install components plumb and level scribed to adjacent finishes. Fabricate with backsplashes. Sand minor scratches and stain.
1. Align solid surfacing material countertops and form seams to comply with manufacturer's written fabrication and installation requirements to uphold warranty, using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface. All joints shall be inconspicuous as reviewed and determined by Architect.
 2. All countertop joints shall be fully supported in all cases by cabinets, support brackets, knee wall construction or other means acceptable to the Architect and in compliance with the manufacturer's fabrication manual. Support shall be provided at the joint and for a minimum of 2 inches on each side.
 3. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
 - a. Provide a solid surface backing plate at all seams, a minimum of 4 inches wide by the full depth of the countertop and adhered to deck with solid surface adhesive.
 4. Set solid surface materials in accordance with approved Shop Drawings. Shim and adjust to locations indicated, with uniform joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerances. Install anchors and attachments indicated or necessary to secure countertops in place.
 5. Where backsplash is indicated, install backsplash and end splash by adhering to wall with water cleanable epoxy adhesive and to countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
 6. Secure top mount sinks/bowls to countertops using manufacturer's recommended adhesives and color matched silicone sealants.
 7. Shop fabricate all tops with undermount or integral bowls, do not fabricate in field.
 8. Keep components clean during installation. Remove adhesives, sealants, and stains. Replace stained components.
 9. Apply sealant to joints and gaps in accordance with manufacturer's fabrication requirements. All sealant joints shall be hairline, equal to or less than 1/8 inch.
 10. Make plumbing connections to sinks in accordance with plumbing requirements.
 11. Protect surfaces from damage. Repair work or replace damaged work that cannot be repaired to Architect's satisfaction.
- K. Quartz Countertops:
1. Install components plumb and level, scribed to adjacent finishes, in accordance with approved shop drawings.
 2. Install countertop with sinks in accordance with manufacturer's printed instructions. Prior to setting tops, apply small bead of adhesive to top edge of base or frame.

- Carefully lower vanity top into position and press firmly into place. Bond sidesplashes to the tops. Tool and seal seams with sealant. Seal joints and tool to a smooth contoured joint. Remove excess sealant.
3. Coordinate plumbing connections to sinks.
 4. Secure countertops to subtops with adhesive according to quartz agglomerate manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with quartz agglomerate manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 5. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
 6. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
 7. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned.
- L. Stainless Steel Countertop: Install components plumb and level, scribed to adjacent finishes, in accordance with approved shop drawings. Keep clean during installation. Remove adhesives, sealants, and other stains. Replace scratched or marred components.
1. Coordinate plumbing connections to sinks.
- M. Closet and Utility Shelving: Cut shelf cleats at ends of shelves about 1/2 inch (13 mm) less than width of shelves and sand exposed ends smooth.
1. Install shelf cleats by fastening to framing or backing with finish nails or trim screws, set below face and filled. Space fasteners maximum 16 inches (400 mm) o.c.
 2. Install shelf brackets according to manufacturer's written instructions, spaced maximum 36 inches (900 mm) o.c. Fasten to framing members, blocking, or metal backing, or use toggle bolts or hollow wall anchors.
 3. Install standards for adjustable shelf supports according to manufacturer's written instructions. Fasten to framing members, blocking, or metal backing, or use toggle bolts or hollow wall anchors. Space fasteners maximum 12 inches (300 mm) o.c.
 4. Install standards for adjustable shelf brackets according to manufacturer's written instructions, spaced maximum 36 inches (900 mm) o.c. and within 6 inches (150 mm) of end of shelves. Fasten to framing members, blocking, or metal backing, or use toggle bolts or hollow wall anchors.
 5. Cut shelves to neatly fit openings with only enough gap to allow shelves to be removed and reinstalled. Install shelves, fully seated on cleats, brackets, and supports.
 - a. Fasten shelves to cleats with finish nails or trim screws, set flush.
 - b. Fasten shelves to brackets to comply with bracket manufacturer's written instructions.
- N. Shop Finishes: Touch up finishing after installation of architectural cabinets. Fill nail holes with matching filler. Apply specified finish coats, including stains and paste fillers to exposed surfaces where only sealer/prime coats are shop applied.

- O. Touch up finishing work. Fill nail holes with matching filler where exposed.
- P. Construction Tolerances:
 - 1. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/16 inch in 48 inches (1.5 mm in 1200 mm).
 - 2. Variation from Level: Do not exceed 1/8 inch in 96 inches (3 mm in 2400 mm), 1/4 inch (6 mm) maximum.
 - 3. Variation in Joint Width: Do not vary joint thickness more than 1/4 of nominal joint width.
 - 4. Variation in Plane at Joints (Lipping): Do not exceed 1/64 inch (0.4 mm) difference between planes of adjacent units.
 - 5. Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64 inch (0.4 mm) difference between edges of adjacent units, where edge line continues across joint.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces. Touch up finishes to restore damaged or soiled areas.
- D. Clean countertops on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION