



DIVISION 12

WOOD CASEWORK

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes supplying wood casework; countertops; casework hardware and service fittings and outlets.
- B. Plumbing Contractor shall install all sinks, faucets, strainers, tailpieces, traps, bubblers, gas cocks and valves and trim furnished by the casework supplier; Plumbing Contractor shall provide all labor to interconnect these items and connect these items to building systems.
- C. Electrical Contractor shall install electrical equipment (variable voltage panels, etc.) furnished by the casework supplier as specified. Electrical Contractor shall provide all labor to interconnect these items with the building systems. Electrical boxes, plates and wiring devices shall be provided by the electrical contractor. The casework contractor will provided the appropriate cutouts as noted on the approved shop drawings.
- D. HVAC Contractor shall install all mechanical devices furnished by the casework supplier as specified. HVAC Contractor shall provide all labor to interconnect these items to the building systems.
- E. If fume hoods are included as part of the casework contract the fume hood motor / fan assemblies, ducting, dampers and control devices shall be provided by the HVAC or other designated contractor(s) per the mechanical specifications. The casework contractor only if shown on approved shop drawings shall provide fan switches.
- F. Calibration and balancing of fume hoods is the responsibility of the HVAC contractor.
- G. Furnish and place appliances, which are explicitly included in the casework, contract where noted on architectural drawings.
- H. The HVAC, Plumbing and Electrical Contractors shall extend building utilities to and connect appliances.
- I. Work shall be conducted in accordance with General Conditions, Supplementary Conditions, Division 1 and the requirements of this Section.
- J. Related Sections:
 - 1. Section 07900 - Joint Sealers.
 - 2. Section 09650 - Resilient Flooring: Base material.



3. Section 11600 - Laboratory Equipment.

1.02 REFERENCES

- A. American National Standards Institute (ANSI).
- B. Architectural Woodwork Institute (AWI): Architectural Woodwork Quality Standards Illustrated, latest edition.
- C. National Electrical Manufacturers Association:
 - 1. NEMA LD 3 - High Pressure Decorative Laminates.
- D. Composite Panel Association Buyer's & Specifier's Guide

1.03 DESIGN REQUIREMENTS

- A. Manufacturers shall be members of AWI, have established quality control criteria
- B. Casework shall meet or exceed load tests as outlined in ANSI A161.1.
- C. Manufacturers shall comply, per architect's specification, with special requirements related to the Americans with Disabilities Act, 28 CFR Part 36, ADA Standards for Accessible Design.
- D. Items shall suit space conditions and where equipment is intended to occupy fixed locations, the physical conditions, roughing-in, etc., of the building are to control the absolute sizes and arrangements.
- E. Project Standard:
 - 1. Stock numbers of items of equipment, as indicated on Equipment Schedules, have been selected from one manufacturer's catalog for design purposes only.
 - 2. Items of equipment by approved manufacturers (other than the Project Standard) need not be identical to the items indicated, however, they must satisfy the same requirements, provide the same facilities (doors, drawers, etc.) and fulfill the same functions as the specified items.
 - 3. Where items of equipment by approved manufacturers (other than Project Standard) are not of the same lengths as the items indicated, adjust equipment layouts as follows:
 - a. Where items of equipment are against the wall and confined by walls at both ends.
 - 1) Add a filler panel, and/or
 - 2) Increase the length of one or more units, and/or
 - 3) Add an additional item of equipment.



- b. Where items of equipment are freestanding or are not confined by walls at both ends, adjust as above, except that overall length need only be approximate.
4. Materials used by all manufacturers must meet the requirements of these specifications; it is understood that the manufacturers vary in joinery; these specifications describe the construction offered by the first-named manufacturer.
5. It is intended that wood dowels shall secure cabinet body components and glue, but the use of concealed interlocking mechanical fasteners as approved by AWI 1600B-S-1600B-S-4.A especially designed for use with particleboard shall be acceptable.
6. Where items of equipment by approved manufacturers (other than the Project Standard) necessitate changes in mechanical or electrical services, said changes shall be the Contractor's responsibility and shall be coordinated and accomplished at no additional cost to the Owner.

1.04 SUBMITTALS

- A. Section 01600 - Product Requirements: Submittal requirements.
- B. Shop Drawings:
 1. Indicate casework locations, large-scale plans, elevations, cross sections, rough in and anchor placement dimensions, tolerances and clearances required.
 2. Include utility rough-in dimensions.
- C. Product Data:
 1. Submit component dimensions, configurations, construction details, joint details, and attachments, utility and service requirements and locations.
 2. Include associated components, including grommets, sink, sink fittings, appliances, fume hoods and other items as indicated on drawings.
 3. Include manufacturer's literature.
- D. Samples (per architect's request):
 1. Wood samples
 2. Finish samples
 3. Edge banding
 4. Hinges
 5. Pulls
 6. Louvers
 7. Grommets
- E. Sample Unit:
 1. When requested by the Architect, submit full-size cabinet, as herein specified.
 2. Submitted cabinets may be used in the Project.
- F. Coordination Submittals:



1. Copy same submittals to other trades and other Prime Contractors who have connecting or adjacent Work for coordination review and for locating their Work connected to or adjacent to the equipment specified herein.

G. Provide test results per ANSI A161.1.

1.05 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten years experience.

B. Mockup (per architect's request):

1. Section 01400 - Quality Requirements: Mockup requirements.
2. Construct full size mockup including base and upper cabinet, complete with drawers, door and adjustable shelf.
3. Locate where directed by Architect.
4. Incorporate accepted mockup as part of Work.

1.06 DELIVERY, STORAGE AND HANDLING

A. Provide warranty for manufactured product.

B. Accept casework on site; inspect on arrival for damage.

C. Store and handle casework in manner to prevent damage and deterioration.

D. Provide packaging such as cardboard or other containers, separators, banding, spreaders and paper wrappings to protect metal items.

E. Store casework in a protected dry area, provided by the owner, away from direct sunlight, with temperature 70 degrees F (+/- 10) and relative humidity of 25–50%. Casework shall be stored elevated above moisture contact. Storage area must be isolated from outside weather conditions. Casework shall be installed only in areas where temperature and humidity are maintained within the above-stated range. Storage and installations in conditions other than those stated above will void all product warranties.

F. All cabinets to be complete with hardware attached (or provided loose where not practical to ship attached) with all necessary scribes, fillers and molding; all items to be marked on outside of packaging for identification.

G. Protect exposed finish surfaces by suitable means.

H. Coordinate size of access and route to place of installation.



1.07 SEQUENCING AND SCHEDULING

- A. Coordinate casework installation with location and installation of service utilities.
- B. Sequence installation to accommodate required utility connections.

1.08 WARRANTY

- A. The manufacturer shall guarantee the casework against defects in materials and workmanship for a period of one year from date of acceptance.
- B. Warranty shall cover the repair or replacement, at the manufacturer's discretion of defective material.
- C. Non-manufactured components and accessories, such as faucets, fittings and fume hoods, shall be covered by the specific manufacturer's warranty.

PART 2 PRODUCTS

2.01 Manufacturers

- A. Project Standard:
- B. Drawings and standards for casework and equipment are based on wood casework as manufactured by Wood-Metal Industries, 100 East Sherman Street, Selinsgrove, PA 17870, (570) 374-1176.
- C. The specifications outline a quality standard necessary for required performance. Only products, which meet or exceed these standards, shall be considered acceptable.
- D. Acceptance of a bid for the required materials does not indicate product acceptance. All manufacturers must meet minimum construction requirements, must submit necessary materials and documentation for approved substitution and must revise their construction as necessary to meet the standards set forth herein.

2.02 Materials

- A. Wood and plywood grains, hues and matching will vary according to species, seasonal harvesting, manufacturing process and geographic origin. Visible surfaces of installed products shall be in conformance with industry-accepted standards.



- B. Red oak shall be considered the standard wood species. Hard maple shall be considered an alternate species and may be provided, when specified, at additional cost.
- C. Lumber - All lumber used for cabinet and case exteriors and exposed interiors shall be of selected northern grown hardwood, sound and free from checks and harmful case hardening. Lumber for interior construction shall be unselected as to grain and color. Lumber shall be properly air-dried, scientifically kiln dried in manufacturer's own controlled kilns, and then tempered to optimum moisture content (6-8%) prior to fabrication. All lumber on exposed surfaces shall be of the highest grade hardwood selected for grain and color
- D. Plywood (for exposed surfaces)
 - 1. Oak plywood faces shall be plain sliced grade A and shall meet the definition set forth in ANSI/HPVA HP-1-2004.
- E. Plywood (for unexposed surfaces)
 - 1. Plywood for unexposed surfaces shall have sound hardwood veneer face and may have color streaks and variations. Appearance shall be consistent with grade 2.
- F. Hardboard
 - 1. Hardboard is full tempered 2 sides, consisting of steam-exploded wood fibers highly compressed into a hard, dense, ¼" thick, homogeneous sheet using natural resins and other added binders.
- G. Particleboard
 - 1. Particleboard shall be commercial-industrial with a nominal 47 pound per cubic foot density.
- H. Plastic Laminate
 - 1. High-pressure plastic laminate shall be nominally 0.028" in thickness and shall meet the current NEMA LD-3 standard for vertical grade, GP-28 laminate.

2.03 Hardware

- A. Hinges (options)
 - 1. Standard hinges for wall cabinets, base cabinets and tall cabinet doors shall be of the heavy-duty, wrap around, institutional type with five knuckles, non-removable pin and rounded ends. Hinges for overlay door construction shall be 2-¾" high by .095" thick and hinges for lipped radius construction shall be 2-½" high by .072 thick. Hinge swing shall be 270 degrees. Hinges shall be finished in colors selected from the manufacturer's standard colors.
 - 2. Offset kitchen cabinet type, plain butt hinges or hinges with removable pins will not be acceptable.



3. Hinge screws shall be concealed when door is closed.
 4. Doors less than 40- $\frac{1}{4}$ " high shall have 2 hinges and those 40- $\frac{1}{4}$ " high and over shall have three hinges.
 5. Optional concealed hinges shall be available with either 120 or 170-degree swing (per project specification).
 6. Optional semi-concealed three knuckle hinges shall be available.
 7. The number of semi-concealed or concealed hinges shall vary according to the door height as follows: 10- $\frac{1}{2}$ " – 34- $\frac{1}{2}$ " door height: 2 hinges, over 34- $\frac{1}{2}$ " – 52- $\frac{1}{2}$ " door height: 3 hinges, over 52- $\frac{1}{2}$ " – 70- $\frac{1}{2}$ " : 4 hinges, over 70- $\frac{1}{2}$ " : 5 hinges.
- B. Pulls
1. Standard pulls shall be satin aluminum bent wire style with 4" centers.
 2. Optional extruded aluminum and plated wire pulls with 4" centers shall be available.
 3. Sliding doors shall have a brushed steel recessed pull.
 4. Optional three-point latching handles shall be available in dull-chrome or black finish. Three-point locking handles, when provided, shall be installed in the field to prevent shipping damage to casework.
- C. Drawer Slides
1. Standards slides shall be single extension, bottom-mounted, epoxy powder-coated with positive in stop, out-stop and out keeper, lift-out disconnect, stay-closed design. Slides shall have captive nylon rollers both front and rear, 100 pound load rating and manufacturer's lifetime warranty
 2. File and paper storage drawers shall have full extension, 3-part, progressive opening slide, with 100 pound load rating, zinc-coated or epoxy-coated at manufacturer's option.
- D. Catches
1. Catches shall be double-action, spring tension, nylon roller catch.
 2. On all tall cases, catches shall be heavy-duty nylon roller type.
 3. Catches shall not be mounted when self-closing hinges are specified.
 4. Optional magnetic catches with door-mounted strike plate shall be available.
- E. Adjustable Shelf supports
1. Shelf supports shall be twin-pin design with anti-tip up shelf restraints for both $\frac{3}{4}$ " and 1" thick shelves, and provide slot to mechanically fasten shelf to clip. Load rating shall be minimum 300 pounds per shelf support.
 2. An optional single-pin, "L" bracket metal shelf support shall be available with or without vinyl coating.
 3. Optional surface-mounted, steel shelving standards with adjustable shelf support clips shall be available.
- F. Locks



1. Locks shall be of a removable core design with 5-disk tumbler. Cabinets to be keyed alike per room, each room keyed differently and master-keyed, unless otherwise noted on drawings.
2. Two keys shall be provided per lock.
3. A maximum of six master keys shall be provided when requested.

2.04 Miscellaneous Components

- A. Louvers and grills shall be provided as specified on the drawings. Manufacturer's standard grills shall be installed on both sides of door openings to provide a uniform appearance. Punched metal louvers with exposed sharp edges shall not be permitted.
- B. Tote trays shall be tan colored, high-impact, polystyrene with aluminum cardholders.
- C. Grommets with covers shall be provided where shown on drawings.
- D. Base molding is to be provided by others.

2.05 Construction

- A. General Construction
 1. This specification is based on an industry-standard red oak cabinet construction. An optional maple construction shall also be available (subject to price adjustment). Unless specifically noted otherwise, a maple specification may be established by simply substituting the word (maple) for the word (oak) throughout the specification.
 2. Top frames, tops, bottoms, intermediate rails, fixed partitions and fixed shelves where applicable to be glued, doweled and screwed to cabinet sides. Cabinets shall be clamped under pressure to insure joint integrity and unit squareness.
- B. Counter Tops
 1. Laminate Counter Tops:
 - a. Decorative surface to be PF42 or GP 50 high pressure plastic laminate which meets or exceeds performance standards set by National Electrical Manufacturers Association (NEMA LD3-2000), as amended, for Class 1 applied with water resistant glue over 1" thick particleboard.
 - b. Underside shall be properly balanced with heavy gauge backing sheet.
 - c. Provide tops in as long as practical continuous lengths.
 - d. Provide field glued splines and mechanical fasteners at joints.
 - e. The backsplash shall not be the post-formed cove type.
 - f. Backsplashes will be mechanically fastened.
 - g. Backsplash bottom and corner joints will be continuously sealed with silicone sealant.



- h. Factory applied tops on mobile cabinets and other specialty cabinets shall be $\frac{3}{4}$ " thick particleboard with plastic laminate top surface and balanced with phenolic backer sheet or equivalent. All edges to have PVC edge band (selected from manufacturer's standard color offering) applied with hot melt adhesive.
- 2. Molded Epoxy Resin Tops:
 - a. Molded epoxy resin tops shall be molded from a modified epoxy resin that has been specially compounded and cured to provide the optimum physical and chemical resistance properties required of a heavy-duty laboratory tabletop.
 - b. Tops and curbs shall be a uniform mixture throughout their full thickness, and shall not depend upon a surface coating that is readily removed by chemical and/or physical abuse.
 - c. Tops and curbs shall be non-glaring and black in color. Tabletops shall be 1 inch thick, unless otherwise shown on the Drawings, with drip grooves provided on the underside at all exposed edges.
 - d. Further, all exposed edges except as indicated below, shall be eased at front top edge and at vertical corners.
 - e. 4" curbs shall be the same thickness as the tops, bonded to the surface of the top to form a square joint.
 - f. Provide drop-in sinks.
 - g. Sink cutouts shall be machined to accommodate sink lips.
- 3. Stainless Steel:
 - a. Equipment herein specified, when constructed of more than one piece and/or sheet of metal, shall be continuously butt-welded, ground and polished smooth; field joints shall be as few as possible.
 - b. Welded parts shall be homogeneous, non-porous, and free from pits, cracks, imperfections or discolorations.
 - c. Welding shall be electric process, with joints ground and polished smooth.
 - d. The welding rods used shall be of the same composition as sheets of parts welded.
 - e. Counter tops and like items, unless otherwise specified, shall be Type 304 with number 4 finish.
 - f. Tops shall be reinforced on bottom side with hat channels and coated with sound deadening material.
 - g. Field joints in tops shall be bolted where tops exceed length of available sheets and/or where building access does not permit the top to be brought into the building in one piece.
 - h. Backsplashes:
 - 1) Form on three sides of, and integral with, counter top of 14-gauge stainless steel with corners formed with a $\frac{3}{4}$ " radius, both horizontal and vertical.
 - 2) Provide $\frac{3}{4}$ " return down backside.
 - 3) Close ends of side splashes with $\frac{3}{4}$ " radius.
 - i. Integral Sinks:



- 1) Sinks shall be constructed of 14-gauge stainless steel with corners formed with a $\frac{3}{4}$ " radius, both horizontal and vertical; sink sizes established on the drawings to be inside measurements.
 - 2) Partitions between sink compartments shall be double walled with $\frac{3}{4}$ " radius corners, $\frac{3}{4}$ " radius top edges, welded in place, ground smooth and polished.
 - 3) Fronts, bottoms and back of multiple compartment sinks shall be one piece with no overlapping joints or open crevices.
 - 4) Bottom of each compartment shall be molded at drain opening at center.
 - 5) Where sinks occur in counter tops, they shall be entirely welded to the countertops with welds ground smooth and polished, with no trace of welding left, to give the appearance of one continuous piece.
 - 6) Counter tops are to have a stainless steel backsplash 4" high.
 - 7) Provide appropriate number of holes for specified faucets and drains.
4. Hard Wood Tops:
- a. Wood tops shall be 1- $\frac{1}{4}$ " minimum thickness and shall be built up of maple strips laminated together with a durable finish.

2.06 FABRICATION

A. Base Cabinets:

1. Sides shall be $\frac{3}{4}$ " thick 7-ply hardwood plywood, exposed surfaces faced with oak hardwood veneers and unexposed surfaces with sound hardwood veneer faces. A $\frac{3}{8}$ " oak hardwood nosing shall be applied to the exposed front edge. When adjustable shelves are required, sides to be bored with 5-mm holes on 32-mm centers to accept shelf support clips.
2. Top assembly shall consist of a horizontal frame with pinned mortise and tenon joints and be secured to cabinet sides with multiple 8-mm hardwood dowels, glued and screwed. The front rail shall be $\frac{3}{4}$ " thick x 2- $\frac{3}{4}$ " deep oak with side rails $\frac{3}{4}$ " thick x 1- $\frac{3}{4}$ " deep and a $\frac{3}{4}$ " thick x 1- $\frac{3}{4}$ " deep back rail.
3. Intermediate rails shall be $\frac{3}{4}$ " thick x 2- $\frac{3}{4}$ " deep oak and be secured to cabinet sides with 8-mm hardwood dowels on 32-mm centers, glued and screwed.
4. Security panels, if specified, shall consist of (1) a horizontal frame with mortise and tenon joints and a $\frac{1}{4}$ " thick panel. Front rail shall be $\frac{3}{4}$ " thick x 2- $\frac{3}{4}$ " deep oak with side rails $\frac{3}{4}$ " thick x 1- $\frac{3}{4}$ " deep and a $\frac{3}{4}$ " thick x 1- $\frac{3}{4}$ " deep back rail or (2) [to be used at factory discretion] a $\frac{3}{4}$ " thick 7-ply hardwood plywood panel with hardwood veneer faces. A $\frac{3}{8}$ " oak hardwood nosing shall be applied to the exposed front edge. Both the frame and solid panel to be secured to cabinet sides with multiple 8-mm hardwood dowels glued and screwed.
5. Bottoms shall be $\frac{3}{4}$ " thick 7-ply hardwood plywood, exposed surfaces faced with oak hardwood veneers and unexposed surfaces with sound hardwood veneer faces. A $\frac{3}{8}$ " oak hardwood nosing shall be applied to the exposed front edge. Bottom shall be secured to cabinet sides with multiple 8-mm hardwood dowels, glued and screwed.



6. Backs shall be ¼" thick tempered hardboard, trapped inside grooves, secured with mechanical fasteners and sealed with hot melt adhesive.
7. External hanger rails, 1" thick and a minimum of 3" high, shall be mechanically fastened to both sides and top or bottom.
8. Toe space shall be 4" high x 3-¼" deep with plywood Toe board ¾" thick x 4" high, secured between cabinet sides with 8-mm hardwood dowels and attached to bottom panel with hot melt adhesive.

B. Wall Cabinets:

1. Sides shall be ¾" thick 7-ply hardwood plywood, exposed surfaces faced with oak hardwood veneers and unexposed surfaces with sound hardwood veneer faces. A 3/8" oak hardwood nosing shall be applied to the exposed front edge and .020 oak veneers applied to the top and bottom edge. When adjustable shelves are required, interiors of side panels shall be drilled with 5 mm holes on 32 mm centers to accept shelf support clips.
2. Top shall be 1" thick 9-ply hardwood plywood. Exposed surfaces faced with oak hardwood veneers and unexposed surfaces with sound hardwood veneer faces. A 3/8" oak hardwood nosing shall be applied to the exposed front edge. Panel to be secured to cabinet sides with multiple 8-mm hardwood dowels, glued and screwed.
3. Bottoms shall be 1" thick 9-ply hardwood plywood. Exposed surfaces faced with oak hardwood veneers and unexposed surfaces with sound hardwood veneer faces. A 3/8" oak hardwood nosing shall be applied to the exposed front edge. Bottom is full depth with rabbet cut into rear edge to conceal back and external hanger rail and is secured to cabinet sides with multiple 8-mm hardwood dowels, glued and screwed. Underside of bottom is considered unexposed and shall be surfaced with sound hardwood veneer faces.
4. Backs shall be ¼" thick tempered hardboard, trapped inside grooves, secured with mechanical fasteners and sealed with hot melt adhesive.
5. External hanger rails, 1" thick and a minimum of 3" high, shall be mechanically fastened to sides, top and bottom.

C. Tall Cabinets:

1. Sides shall be ¾" thick 7-ply hardwood plywood. Exposed surfaces faced with oak hardwood veneers and unexposed surfaces with sound hardwood veneer faces. A 3/8" oak hardwood nosing shall be applied to the exposed front edge. When adjustable shelves are required, interiors of side panels shall be drilled with 5mm holes on 32mm centers to accept shelf support clips.
2. Top shall be 1" thick 9-ply hardwood plywood. Exposed surfaces faced with oak hardwood veneers and unexposed surfaces with sound hardwood veneer faces. A 3/8" oak hardwood nosing shall be applied to the exposed front edge. Panel to be secured to cabinet sides with multiple 8-mm hardwood dowels, glued and screwed.



3. Bottoms shall be $\frac{3}{4}$ " thick 7-ply hardwood plywood, exposed surfaces faced with oak hardwood veneers and unexposed surfaces with sound hardwood veneer faces. A $\frac{3}{8}$ " oak hardwood nosing shall be applied to the exposed front edge. Bottom shall be secured to cabinet sides with multiple 8-mm hardwood dowels, glued and screwed.
 4. Backs shall be $\frac{1}{4}$ " thick tempered hardboard, trapped inside grooves, secured with mechanical fasteners and sealed with hot melt adhesive.
 5. External hanger rails, 1" thick and a minimum of 3" high, shall be mechanically fastened to both sides, top and bottom.
 6. Toe space shall be 4" high x $3\text{-}\frac{1}{4}$ " deep with plywood toe board $\frac{3}{4}$ " thick x 4" high, secured between cabinet sides with 8mm hardwood dowels and attached to bottom panel with hot melt adhesive.
- D. Sink Cabinets:
1. Sink cabinets shall be constructed with a vertical high head rail at both the front and rear of the cabinet. A false drawer head will be applied over the front high head rail.
 2. A fixed bottom and removable back shall be provided for all sink cabinets.
- E. Special Purpose Cabinet Backs:
1. Optional exposed exterior backs to be $\frac{3}{4}$ " thick 7-ply hardwood plywood, exposed surfaces faced with oak veneer and unexposed surfaces with sound hardwood veneer faces.
 2. Optional removable backs, where specified, shall be $\frac{1}{4}$ " tempered hardboard and be attached to cleats secured to the cabinet sides and bottom. Back panels shall be secured in place with pan head screws.
 3. Optional $\frac{1}{4}$ " thick hardboard with finished surface of wear-resistant oak reversed grain vinyl is available.
- F. Drawers and doors:
1. Drawer head style (SELECT ONE)
 - a. Overlay Square Edge $\frac{3}{4}$ " thick particleboard faced on both sides with oak hardwood veneer. 3mm oak edge banding applied to all four edges with hot melt adhesive. Grain direction shall be horizontal.
 - b. Overlay Radius Edge $\frac{3}{4}$ " thick oak lumber core cross-banded and faced on both sides with oak hardwood veneer. Front edges (top, bottom, both sides) shall be consistently radius. Grain direction shall be horizontal.
 - c. Overlay Plastic Laminate-nominally $\frac{3}{4}$ " thick particleboard with high-pressure decorative plastic laminate of the selected color on the face and neutral colored high-pressure plastic laminate on the rear face. 3mm PVC, of the selected color applied with hot melt adhesive to all four edges and machine eased to remove sharp corners. Grain direction (if applicable) shall be horizontal.
 - d. Embassy Raised Panel $\frac{3}{4}$ " thick solid edge-glued oak with machined profile on all four edges. Grain direction shall be horizontal.



- e. Embassy Recessed Panel $\frac{3}{4}$ " thick solid edge-glued oak with machined profile on all four edges. Grain direction shall be horizontal.
 - f. Lipped Radius Edge $\frac{3}{4}$ " thick oak lumber core cross-banded and faced on both sides with oak hardwood veneer. Front edges (top, bottom, both sides) shall be consistently radius. Back of drawer, head shall be rabbeted to permit the rabbeted section of the drawer head to recess into the cabinet body. Grain direction shall be horizontal.
2. With the exception of the lipped radius edge style, drawer sides, back and fronts shall be $\frac{1}{2}$ " thick solid oak. Top edges shall be radius and free of rough edges.
 3. A separate drawer head (of the style selected) shall be applied to the front of the drawer box.
 4. Lipped radius edge style drawer sides and back shall be $\frac{1}{2}$ " thick solid oak. The drawer head shall be of solid oak lumber core, faced with oak hardwood veneers and be $\frac{3}{4}$ " thick. The back edges shall be dovetailed to accept the drawer sides and become part of the drawer body. A three-sided drawer box (2 sides and back) shall be dovetailed directly to the rear of the drawer head. The drawer bottom shall be trapped in sides, back and head of the drawer.
 5. Drawer boxes shall be assembled with glued dovetail construction at all four corners.
 6. Drawer bottoms shall be $\frac{1}{4}$ " thick tempered hardboard and trapped in grooved drawer box.
 7. Underside of drawer to be secured with mechanical fasteners and sealed with a continuous bead of hot melt adhesive to enhance drawer integrity.
 8. Reinforce drawer bottoms with a hardwood front-to-back intermediate underbody stiffener, hot melt glued and fastened; one above 24" and two at 42" and wider.
 9. Provide clip and rail hanging file system for legal or letter size as indicated by manufacturer's model number.
 10. Door style (PER DRAWER HEAD SELECTION ABOVE)
 - a. Overlay Square Edge-Doors shall be particleboard faced on both sides with oak hardwood veneer. 3mm oak edge banding applied to all four edges with hot melt adhesive. Grain direction shall be vertical. Nominal finished door thickness for base and wall cabinets shall be $\frac{3}{4}$ ". Nominal door thickness for tall cabinets shall be 1-1/16".
 - b. Overlay Radius Edge-Doors shall be particleboard banded on all four edges with solid oak and faced on both sides with oak hardwood veneer. Front edges (top, bottom, both sides) shall have a consistent radius. Grain direction shall be vertical. Nominal finished door thickness for base and wall cabinets shall be $\frac{3}{4}$ ". Nominal door thickness for tall cabinets shall be 1-1/16".
 - c. Overlay Plastic Laminate-nominally $\frac{3}{4}$ " thick particleboard with high-pressure decorative plastic laminate of the selected color on the face and neutral colored high-pressure plastic laminate on the rear face. 3mm PVC, of the selected color applied with hot melt adhesive to all four edges and machine eased to remove



- sharp corners. Grain direction (if applicable) shall be vertical. Nominal finished door thickness shall be $\frac{3}{4}$ ".
- d. Embassy Raised Panel-Door shall consist of a solid oak frame (nominally 2- $\frac{3}{4}$ " wide) around the perimeter of the door. Grain shall be parallel to the edges of the door and the frames shall be securely joined at all four corners. The outside perimeter shall be edged in the same profile as the matching drawer head style. A separate $\frac{3}{4}$ " thick solid edge-glued oak insert panel shall be inserted into the doorframe and secured with mechanical fasteners through hardwood stops. Insert panel shall be machined with a concave profile and the face of the panel shall extend $\frac{1}{4}$ " beyond the face of the doorframe with machined profile on all four edges. Grain direction of the insert panel shall be vertical. Nominal overall door thickness shall be 1".
 - e. Embassy Recessed Panel- Door shall consist of a solid oak frame (nominally 2- $\frac{3}{4}$ " wide) around the perimeter of the door. Grain shall be parallel to the edges of the door and the frames shall be securely joined at all four corners. The outside perimeter shall be edged in the same profile as the matching drawer head style. A separate $\frac{1}{4}$ " thick oak plywood insert panel shall be inserted into the doorframe and secured with mechanical fasteners through hardwood stops. Insert panel shall be flat and the face of the panel shall be recessed $\frac{1}{4}$ " into the face of the doorframe. Grain direction of the insert panel shall be vertical. Nominal overall door thickness shall be $\frac{3}{4}$ ".
 - f. Lipped Radius Edge- Doors shall be particleboard, banded on all four edges with solid oak and faced on both sides with oak hardwood veneer. Front edges (top, bottom, both sides) shall be consistently radius. Back of door shall be rabbeted to permit the rabbeted section of the door to recess into the cabinet body. Grain direction shall be vertical. Nominal finished door thickness for base and wall cabinets shall be $\frac{3}{4}$ ". Nominal door thickness for tall cabinets shall be 1-1/16".
11. Special Door styles
- a. Sliding doors shall have a composite bottom track and top guide. Rollers shall be routed into bottom of door. Top of door shall be rabbeted to fit in top guide. Doors over 48" in height shall have an overhead aluminum track and bottom guide.
 - b. Framed doors, for glazed panels or tack board inserts, shall consist of a solid oak frame (nominally 2- $\frac{3}{4}$ " wide) around the perimeter of the door. Glazed panels shall be $\frac{1}{4}$ " thick tempered safety glass. Base and wall cabinet doors shall be nominally $\frac{3}{4}$ " thick. Tall cabinet doors shall be nominally 1-1/16" thick.
 - c. Sliding glass doors shall be $\frac{1}{4}$ " thick tempered safety glass, fitted into top and bottom aluminum tracks. Bottom tracks shall have rollers for smooth operation.
12. Adjustable Shelves:
- a. Shelves less than 30" in width shall be $\frac{3}{4}$ " thick. Shelves 30" and wider shall be 1" thick.



- b. Exposed shelves shall be hardwood plywood, surfaces faced with oak hardwood veneers.
 - c. Non-exposed shelves shall be hardwood plywood, surfaces faced with sound hardwood veneers.
 - d. A 3/8" oak hardwood nosing shall be applied to the exposed front edge.
 - e. Shelves shall be full depth and adjustable on 32-mm centers.
13. Fixed Shelves:
- a. Exposed shelves shall be hardwood plywood, surfaces faced with oak hardwood veneers.
 - b. Non-exposed shelves shall be hardwood plywood, surfaces faced with sound hardwood veneers.
 - c. A 3/8" oak hardwood nosing shall be applied to the exposed front edge.
 - d. All non-supported fixed shelves and exposed shelves shall be 1" thick.
 - e. All supported fixed shelves shall be 3/4" thick.
 - f. Shelves shall be full depth and be secured to cabinet sides or partitions with multiple 8-mm hardwood dowels, glued and screwed.

2.07 FINISH AND PERFORMANCE REQUIREMENTS

- A. Finish shall be a synthetic water-white alkyd aminoplast conversion coating specially formulated for commercial applications
- B. All surfaces shall be prepared by a thorough sanding and sealing prior to staining.
- C. A pigmented stain shall be hand wiped on wood components
- D. Finish shall be tested according to the chemical tests defined by SEFA.
- E. Test Procedure
 - 1. Sample substrate will be Oak veneer without stain underneath the coating. Panels to be finished according to finishing supplier's guidelines and in accordance to casework manufacturer's standard procedures. Obtain one sample panel measuring 14" x 24" (355.6mm x 609.6mm). The received sample to be tested for chemical resistance as described herein. Place panel on a flat surface, clean with soap and water and blot dry. Condition the panel for 48-hours at 73° +/- 3°F (23° +/- 2°C) and 50 +/- 5% relative humidity. Test the panel for chemical resistance using forty-nine different chemical reagents by one of the following methods.
 - a. Method A - Test volatile chemicals by placing a cotton ball saturated with reagent in the mouth of a 1-oz. (29.574cc) bottle and inverting the bottle on the surface of the panel.
 - b. Method B - Test non-volatile chemicals by placing five drops of the reagent on the surface of the panel and covering with a 24mm watch glass, concave side down.



2. For both of the above methods, leave the reagents on the panel for a period of one hour. Wash off the panel with water, clean with detergent and naphtha, and rinse with deionized water. Dry with a towel and evaluate after 24-hours at 73° +/- 3°F (23° +/- 2°C) and 50 +/- 5% relative humidity using the following rating system.
 - a. Level 0 - No detectable change.
 - b. Level 1 - Slight change in color or gloss.
 - c. Level 2 - Slight surface etching or severe staining.
 - d. Level 3 - Pitting, cratering, swelling, or erosion of coating. Obvious and significant deterioration.
3. Test No. Chemical Reagent Test Method
 - 1) Acetate, Amyl A
 - 2) Acetate, Ethyl A
 - 3) Acetic Acid, 98% B
 - 4) Acetone A
 - 5) Acid Dichromate, 5% B
 - 6) Alcohol, Butyl A
 - 7) Alcohol, Ethyl A
 - 8) Alcohol, Methyl A
 - 9) Ammonium Hydroxide, 28% B
 - 10) Benzene A
 - 11) Carbon Tetrachloride A
 - 12) Chloroform A
 - 13) Chromic Acid, 60% B
 - 14) Cresol A
 - 15) Dichlor Acetic Acid A
 - 16) Dimethylformamide A
 - 17) Dioxane A
 - 18) Ethyl Ether A
 - 19) Formaldehyde, 37% A
 - 20) Formic Acid, 90% B
 - 21) Furfural A
 - 22) Gasoline A
 - 23) Hydrochloric Acid, 37% B
 - 24) Hydrofluoric Acid, 48% B
 - 25) Hydrogen Peroxide, 30% B
 - 26) Iodine, Tincture of B
 - 27) Methyl Ethyl Ketone A
 - 28) Methylene Chloride A
 - 29) Mono Chlorobenzene A
 - 30) Naphthalene A
 - 31) Nitric Acid, 20% B
 - 32) Nitric Acid, 30% B



- 33) Nitric Acid, 70% B
 - 34) Phenol, 90% A
 - 35) Phosphoric Acid, 85% B
 - 36) Silver Nitrate, Saturated B
 - 37) Sodium Hydroxide, 10% B
 - 38) Sodium Hydroxide, 20% B
 - 39) Sodium Hydroxide, 40% B
 - 40) Sodium Hydroxide, Flake B
 - 41) Sodium Sulfide, Saturated B
 - 42) Sulfuric Acid, 33% B
 - 43) Sulfuric Acid, 77% B
 - 44) Sulfuric Acid 96% B
 - 45) Sulfuric Acid (77%) and Nitric Acid (70%), equal parts B
 - 46) Toluene A
 - 47) Trichloroethylene A
 - 48) Xylene A
 - 49) Zinc Chloride, Saturated B
4. Acceptance Level
- a. Results will vary from manufacturer to manufacturer. Laboratory grade finishes should result in no more than four Level 3 conditions with a cumulative score not to exceed 35. Suitability for a given application is dependent upon the chemicals used in a given laboratory.

2.08 PLUMBING FIXTURES

A. Stainless Steel Sinks and Miscellaneous Fittings:

1. Project Standard: Sinks and fittings are based upon products manufactured by Just Manufacturing Company, 9233 King Street, Franklin Park, Illinois 60131.
2. The specifications outline minimum material and construction standards.
3. Only products meeting or exceeding this minimum standard shall be acceptable.
4. The receiving of a bid does not necessarily indicate the manufacturer's standard product is acceptable.
5. Acceptable Alternative Manufacturer:
 - a. Elkay Manufacturing Company, 2222 Camden Court, Oak Brook, IL 60521, (708) 574-8484

B. Epoxy Resin Sinks and Miscellaneous Fittings:

1. Project Standard: Sinks and fittings are based upon products manufactured by The Durcon Company, Inc., 1255 South Mill Street, Plymouth, Michigan 48170.
2. The specifications outline minimum material and construction standards.
3. Only products meeting or exceeding this minimum standard shall be acceptable.
4. The receiving of a bid does not necessarily indicate the manufacturer's standard product is acceptable.



5. Acceptable Alternative Manufacturer: Epoxyn Products, P.O. Box 232, 206 Allison Drive, Taylor, TX 76574, (512) 352-5591

C. Faucets and Fixtures:

1. Project Standard: Faucets and fixtures are based upon products manufactured by Chicago Faucet Company, 2100 Clearwater Drive, Des Plaines, Illinois 60018.
2. The specifications outline minimum material and construction standards.
3. Only products meeting or exceeding this minimum standard shall be acceptable.
4. The receiving of a bid does not necessarily indicate the manufacturer's standard fixtures shall be acceptable.
5. Acceptable Alternative Manufacturers (prior to bidding):
 - a. WaterSaver Faucet Company, 701 West Erie Street, Chicago, IL 60610, (312) 666-666-5500
 - b. Wolverine Brass Company, 2951 Highway 501 East, Conway, SC 29526, (800) 944-944-9292
 - c. Chicago Faucet Company, 2100 Clearwater Drive, Des Plaines, IL 60018, (847)803-5000

D. Fume Hoods:

1. Project Standard: Fume hoods are based upon products manufactured by Air Master Systems Corporation, 6480 North Center Drive, Muskegon, Michigan 49441.
2. The specifications outline minimum material and construction standards.
3. Only products meeting or exceeding this minimum standard shall be acceptable.
4. The receiving of a bid does not necessarily indicate the manufacturer's standard fixtures shall be acceptable.
5. Acceptable Alternative Manufacturers:
 - a. Labconco Corporation, 8811 Prospect Avenue, Kansas City, MO 64132, (800) 821-821-5525
 - b. BMC, 2835 Maffett St., Muskegon, MI 49444, (231)-733-1206
 - c. Iroquois, 2176 E. Laketon Ave., Muskegon, MI, 49442, (800)-206-0099

2.09 COLORS

- A. Selected by the architect from the manufacturer's standard color selection. Color selection shall include no less than ten standard colors.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install casework, components and accessories under manufacturer representative's supervision whenever possible, using skilled labor especially trained for this work. Cabinets are to be installed in a professional and industry-accepted manner, including all



scribes, moldings and necessary trim, complete and in operating condition according to outlined plans and specifications.

- B. Set casework items plumb and square, securely anchored to building structure.
- C. Furnish casework complete with trim strips, fillers, backs, etc., as may be required; all cutouts required for trim, sinks, etc., shall be made by the casework supplier.
- D. Unless noted otherwise, furnish all sinks, faucets, bubblers, baskets, tailpieces, traps and gas cocks as shown on approved shop drawings for installation and hook-up by Plumbing Contractor.
- E. Fume hoods and exhaust booths shall be pre-plumbed and pre-wired.
- F. The HVAC Contractor shall provide exhaust fans and motors.
- G. Field touch-up blemishes to original finish as approved and accepted by the Architect.
- H. Discard or remove and replace damaged members.

3.02 ADJUSTING

- A. Adjust doors, drawers, hardware and other moving or operating parts to function smoothly.
- B. Adjustable shelves shall be installed consistent with the shop drawings.

3.03 CLEANING

- A. All packaging material and installation-related debris shall be placed in an owner-provided dumpster on the construction site. The work area shall be left broom clean.
- B. Installer shall remove all pencil marks, adhesive and sawdust resulting from this work.
- C. Plastic laminate casework shall be cleaned inside and out to remove the installation related dust and debris.

3.04 PROTECTION OF INSTALLED CONSTRUCTION

- A. Protection of installed casework shall be the responsibility of the general contractor or owner's representative. The owner's representative shall provide materials and labor.

END OF SECTION