

WOOD, PLASTICS & COMPOSITES

This section of the Washington University School of Medicine (WUSM) Design Standards addresses the following requirements for Wood, Plastics & Composites and its application in WUSM projects:

**MISCELLANEOUS ROUGH CARPENTRY
FINISH CARPENTRY
INTERIOR ARCHITECTURAL WOODWORK
MOBILE LABORATORY CASEWORK
METAL LABORATORY CASEWORK
WOOD LABORATORY CASEWORK**

A Design Finishes Meeting shall be conducted to review all finish carpentry and casework layout and material selections during the Design Development Phase of the project. Preview options with WUSM Senior Planner / Project Manager prior to this meeting.

References:

[AWI Premium Grade Standards](#)

Standards References:

[ACCESSIBILITY](#)

[ENVIRONMENTAL HEALTH & SAFETY](#)

MISCELLANEOUS ROUGH CARPENTRY

DESIGN GUIDELINES

1. IT Rooms shall receive fire-retardant treated plywood equipment backing panel on all walls.
2. Concealed blocking for support or attachment of other construction shall be fire-retardant treated dimension lumber or boards.

PRODUCT REQUIREMENTS

1. Equipment backing panels shall be DOC PS 1, Exposure 1, C-D Plugged, fire retardant treated, minimum 1/2-inch thick.
2. Concealed blocking shall be Construction grade, fire-retardant treated, dimension lumber or boards.

INSTALLATION

1. Equipment backing panels shall extend from 24-inches above floor to 96-inches above floor. Fire retardant marking shall not be painted over.

FINISH CARPENTRY

DESIGN GUIDELINES

1. Wood paneling and standing and running trim (wood base, wood door frames, wood casings, wood chair rails, etc.) shall be by exception only.

PRODUCT REQUIREMENTS

1. All interior architectural woodwork shall comply with AWI premium grade standards.
2. Wood paneling and standing and running trim shall be shop finished so as to require only minimal touch-up in the field.
3. Exotic species of wood shall be considered on a case by case basis. Buildings with established standards shall be maintained.
4. Hardwoods (yellow poplar) that are less expensive shall be used for opaque finishes or concealed locations. MDF shall not be used for standing and running trim.
5. Blocking shall be fire treated wood or plywood. Metal flat straps and backing plates, minimum 16 gauge, shall be by exception only.

INSTALLATION

1. Standing and running trim shall be installed with the minimum number of joints practical, using full length pieces from maximum lengths of lumber available. Joints in adjacent and related standing and running trim shall be staggered. Returns and outside corners shall be mitered and inside corners shall be coped. End-to-end joints shall be scarfed.
2. Install finish carpentry level, plumb, true, and aligned with adjacent materials.
3. Scribe and cut finish carpentry to fit adjoining work.

INTERIOR ARCHITECTURAL WOODWORK

DESIGN GUIDELINES

1. Casework for non-medical areas (break rooms, kitchenettes, coffee areas, and copier areas) shall be plastic laminate. Wood casework shall be by exception only.
2. Countertops with sinks shall be solid surface material. Splashes shall match. Sinks shall be undercounter mount.
3. Countertops without sinks shall be plastic laminate. Splashes shall match.
4. Lavatory counters in restrooms shall be solid surface material. Splashes shall match. Lavatories shall be undercounter mount or integral with countertop.
5. Window stools shall be solid surface material.

PRODUCT REQUIREMENTS

1. All interior architectural woodwork shall comply with AWI Premium Grade Standards.
2. Cabinet construction shall be flush overlay.
3. Interior cabinet shelves shall be 1-inch thick. Shelves over 36-inches to be 5/4-inch thick.
4. Substrates shall be minimum 3/4-inch MDF or plywood. Particleboard shall not be used for substrates. Substrates shall contain no formaldehyde.
5. Grain direction shall run vertically for all doors and drawers on wood casework.
6. Plastic laminate shall be HPDL, horizontal surfaces HGS and vertical surfaces VGS, smooth finish. Textured finish laminate shall be by exception only depending on environment and use.
7. Vinyl edging on cabinets shall be 3-mm PVC banding.
8. Interior finish of open cabinets shall match exterior of cabinets.
9. Solid surface material shall be light-colored Corian or approved equal.
10. Hardware:
 - a. Hinges shall be frameless concealed (European Type), 100 degrees of opening. Provide stops or limit chains to prevent door swing from damaging adjacent walls or casework.
 - b. Pulls shall be back mounted, wire pulls 4-inch long, 5/16-inch diameter. Other types of pulls shall be by exception only.
 - c. Drawer glides shall be heavy duty, side mounted, full extension type.
 - d. Locks only as requested by end users.
11. Base cabinets shall be 34-inches standard counter height with or without sink area. If undercounter appliances are approved on project, raise portion of casework to counter height of 36-inches if possible to allow for standard appliance heights. Sloped access panel is standard at all accessible sink locations.
12. Upper cabinets shall be no more than 84-inches above floor. Upper cabinets in clinical areas shall have sloped tops or soffits to ceiling to avoid storing supplies on top of cabinets.
13. Cabinet doors shall be of reasonable widths (typically 18-inches or less).

14. Window stools shall have a minimum face edge of 3/4-inch.
15. Blocking shall be fire treated wood or plywood. Metal flat straps and backing plates, minimum 16 gauge, shall be by exception only.

INSTALLATION

1. Install woodwork level, plumb, true, and straight to a tolerance of 1/8-inch in 96-inches.
2. Scribe and cut woodwork to fit adjoining work.

MOBILE LABORATORY CASEWORK

DESIGN GUIDELINES

1. Mobile laboratory casework may be used in open research laboratories requiring flexibility, as determined by Project Manager.
2. Mobile laboratory casework may consist of modular metal mobile laboratory cart "C" framework with suspended wood cabinetry components or metal 4 leg tables with loose wood cabinetry components with finished tops and without wheels. Ceiling inset utility service carriers shall be provided for power and lab gasses.
3. Laboratory casework components may include, but are not limited to, utility space framing, reagent shelves, work surfaces, service carriers for power and lab gases, sinks, fittings, fixtures, drying racks, and shelving standards and brackets.

PRODUCT REQUIREMENTS

1. Casework and work surfaces shall pass applicable minimum design load tests published in SEFA.
2. Casework shall be manufactured in accordance with the latest edition of SEFA 8 AWI Section 01600-Division A-Laboratory Grade, Type I (multiple supporting units).
3. Acceptable manufacturer's shall include:
 - a. Bedcolab
 - b. Kewaunee Scientific Corporation
 - c. Mott Manufacturing LTF
4. Casework:
 - a. Doors and drawers shall be full overlay.
 - b. Grain of face veneers shall run continuously vertical in door and drawer stacks and align from drawer to drawer or door to drawer from same piece of veneer.
 - c. Rails shall be solid wood closely matching face grain.
 - d. Doors and drawers shall be edge-banded with 3-mm thick solid wood of same species as face veneer.
 - e. Particle board shall be used by exception only and must be urea-formaldehyde free.

- f. Drawers shall have either solid hardwood sides or 9-ply plywood, clear of voids, with sides dovetailed to front.
 - g. Pull boards (bread boards) shall be provided per design.
5. Hardware:
- a. Finish shall be satin stainless steel.
 - b. Hinges shall be 5-knuckle.
 - c. Catches shall be magnetic.
 - d. Pulls shall be stainless steel wire pulls.
 - e. Drawer slides shall be rated for 100 lb. at full extension.
 - f. Locks shall only be provided as requested by end users.
6. Open Shelves:
- a. Seismic restraints consisting of stainless steel bars shall be provided on the top at the front of open shelves.
7. Work Surfaces:
- a. Bench tops shall be 1-inch Trespa TopLab Plus. Color shall be black. Other colors by exception only. Preferred at all laboratories using chemicals and required in laboratories of Biohazard Level 2 or 3. Bench tops shall be impervious to water and resistant to acids, alkalis, organic solvents, and moderate heat. 1-inch epoxy resin shall be by exception only.
8. Utility Service Carrier:
- a. Screw disconnects. Quick disconnects by exception only.
9. Service Fittings:
- a. Fittings shall be either Water Saver or Chicago Faucet.
 - b. Typical fittings shall be gas, air, and vacuum. Gas and air shall only be provided as requested by end users.
 - c. Valves shall have serrated hose ends.
10. Reference [ENVIRONMENTAL HEALTH & SAFETY](#) regarding further requirements for specific laboratory types.

INSTALLATION

- 1. Align doors and drawers and plumb bench tops.

METAL LABORATORY CASEWORK

DESIGN GUIDELINES

1. Metal laboratory casework may be used in research laboratories of high abuse, special environmental conditions of high moisture or chemical resistance, and other special conditions requiring durability and imperviousness as determined by Project Manager.
2. Metal laboratory casework shall be used in cold rooms.
3. Laboratory casework components may include, but are not limited to, utility space framing, reagent shelves, work surfaces, service carriers for power and lab gases, sinks, fittings, fixtures, drying racks, and shelving standards and brackets.

PRODUCT REQUIREMENTS

1. Casework and work surfaces shall pass applicable minimum design load tests published in SEFA
2. Acceptable manufacturer's shall include:
 - a. Bedcolab
 - b. Hamilton Laboratory Solutions, LLC.
 - c. Kewaunee Scientific Corporation.
 - d. Mott Manufacturing Ltd
3. Casework:
 - a. Doors and drawers shall be full overlay.
 - b. Color shall be white. Other colors by exception only.
 - c. Removable panels and fillers shall be provided as required.
4. Hardware:
 - a. Finish shall be satin stainless steel.
 - b. Hinges shall be 5-knuckle.
 - c. Catches shall be magnetic.
 - d. Pulls shall be stainless steel wire pulls.
 - e. Drawer slides shall be rated for 100 lb. at full extension.
 - f. Locks shall only be provided as requested by end users.
5. Open Shelves:
 - a. Seismic restraints consisting of stainless steel bars shall be provided on the top at the front of open shelves.
6. Work Surfaces:
 - a. Bench tops shall be 1-inch Trespa TopLab Plus. Color shall be black. Other colors by exception only. Preferred at all laboratories using chemicals and required in laboratories of Biohazard Level 2 or 3. Bench tops shall be impervious to water and resistant to acids, alkalis, organic solvents, and moderate heat. 1-inch epoxy resin shall be by exception only.
7. Service Fittings:
 - a. Fittings shall be either Water Saver or Chicago Faucet.

- b. Typical fittings shall be gas, air, and vacuum. Gas and air shall only be provided as requested by end users.
8. Sinks:
 - a. Sinks shall be epoxy resin or stainless steel.
9. Reference [ENVIRONMENTAL HEALTH & SAFETY](#) regarding further requirements for specific laboratory types.

INSTALLATION

1. Align doors and drawers and plumb bench tops.

WOOD LABORATORY CASEWORK

DESIGN GUIDELINES

1. Wood laboratory casework may be used in research laboratories as determined by Project Manager.
2. Laboratory casework components may include, but are not limited to, utility space framing, reagent shelves, work surfaces, service carriers for power and lab gases, sinks, fittings, fixtures, drying racks, and shelving standards and brackets.

PRODUCT REQUIREMENTS

1. Casework and work surfaces shall pass applicable minimum design load tests published in SEFA
2. Casework shall be manufactured in accordance with the latest edition of SEFA 8 AWI Section 01600-Division A-Laboratory Grade, Type I (multiple supporting units).
3. Acceptable manufacturer's shall include:
 - a. Bedcolab
 - b. Kewaunee Scientific Corporation
 - c. Mott Manufacturing Ltd
4. Wood species, cut, match of veneers, and finish shall be confirmed with Project Manager.
5. Casework:
 - a. Doors and drawers shall be full overlay.
 - b. Grain of face veneers shall run continuously vertical in door and drawer stacks and align from drawer to drawer or door to drawer from same piece of veneer.
 - c. Rails shall be solid wood closely matching face grain.
 - d. Doors and drawers shall be edge-banded with 3-mm thick solid wood of same species as face veneer.
 - e. Particle board shall be used by exception only and must be urea-formaldehyde free.
 - f. Drawers shall have shall have either solid hardwood sides or 9-ply plywood, clear of voids, with sides dovetailed to front.

- g. Pull boards (bread boards) shall be provided per design.
 - h. Removable panels and fillers shall be provided as required.
6. Hardware:
- a. Finish shall be satin stainless steel.
 - b. Hinges shall be 5-knuckle.
 - c. Catches shall be magnetic.
 - d. Pulls shall be stainless steel wire pulls.
 - e. Drawer slides shall be rated for 100 lb. at full extension.
 - f. Locks only as requested by end users.
7. Open Shelves:
- a. Seismic restraints consisting of type 304 stainless steel bars shall be provided on the top at the front of open shelves.
8. Work Surfaces:
- a. Bench tops shall be 1-inch Trespa TopLab Plus. Color shall be black. Other colors by exception only. Preferred at all laboratories using chemicals and required in laboratories of Biohazard Level 2 or 3. Bench tops shall be impervious to water and resistant to acids, alkalis, organic solvents, and moderate heat. 1-inch epoxy resin shall be by exception only.
9. Service Fittings:
- a. Fittings shall be either Water Saver or Chicago Faucet.
 - b. Typical fittings shall be gas, air, and vacuum. Gas and air shall only be provided as requested by end users.
10. Sinks:
- a. Sinks shall be epoxy resin or stainless steel.
11. Reference [ENVIRONMENTAL HEALTH & SAFETY](#) regarding further requirements for specific laboratory types.

INSTALLATION

- 1. Align doors and drawers and plumb bench tops.