Design Guideline 123553
Laboratory Casework

Scope

Includes laboratory casework, countertops, service fixtures, and related items.

Related Sections

U-M Design Guideline Sections:

DG SBA 5.12 Laboratory Design and Safety

DG 115313 Laboratory Fume Hoods, BSC's, Specialty Hoods and Acid Flammable Cabinets

U-M Master Specification Sections: (A digitally accessible version is pending; please email AEC-Digital Accessibility Support if assistance is needed)

MS 115313 - Laboratory Fume Hoods
MS 123553 - Laboratory Casework
MS 260513 - Medium, Low and Control Voltage Cables
MS 262726 - Wiring Devices
MS 265100 - Interior Lighting

Reference Documents:

SEFA 8 - Casework Recommended Practice

Design and Installation Requirements

General:

- Design overall lab layout, provide details, and select materials to facilitate cleaning and decontamination. Review specific requirements and potential 3rd party regulations with Design Manager and OSEH.
- Review laboratory casework / countertop material compatibility with planned chemical usage.
- Review anticipated shelf and casework load requirements.

Casework:

- Specify laboratory grade, SEFA tested, wood or metal casework. Both fixed and flexible systems are acceptable. Select in conjunction with the Design Manager based on the following considerations:
    - Specific user or 3rd party requirements
    - Ease of matching casework selections in future renovations
    - Materials and finishes of existing casework in other areas of existing buildings.
- Fixed casework:
    - Specify secure anchorage to substrate.

    - Specify closed toe kicks, continuous filler panels, closed back panels, and other details to eliminate openings and cavities that could harbor pests.
    - Scribe to adjacent construction for cleanable joints.
- Flexible casework: Configure casework to allow sufficient mobility for cleaning.

Hardware:

Specify manufacturer's standard commercial quality, corrosion resistant, heavy duty hardware and as follows:

- Standard surface mounted pulls.
- Full extension, linear ball bearing slides rated at 100 pounds minimum that allow drawer removal without the use of tools.
- Heavy duty shelf clips. Surface mounted metal support strips and clips are not acceptable.

Finish:

- Specify SEFA certified finishes unless chemicals used in the project dictate more stringent finish requirements.
- All surfaces exposed to view shall be finished.

Miscellaneous Fillers, Base and Scribes

Specify fillers at gaps between individual cabinets, and between walls and cabinets. Include removable closure panels at back surface of all knee spaces to conceal pipe spaces. Fillers and scribes should match adjacent materials and finishes.

Coordinate extent of flooring and applied base with resilient flooring specifications.

Countertops

- Specify impervious countertops with appropriate characteristics for research needs and as follows:
    - Epoxy Resin: Specify where chemical and heat resistance are needed.
        - 1 inch minimum thickness with 2" overhang from face of cabinet body. Include drip edge
    - Chemically resistant solid phenolic: Specify where a reduced chemical resistance is acceptable and on site fabrication or reduced weight is needed. Before specifying, review impacts to future lab adaptability with the Design Manager.
    - Stainless Steel: Specify where seamless surfaces are required, such as processing areas for highly radioactive materials or surgical suites.
    - Acid resistant plastic laminate: Specify only in dry labs with no sinks or chemical use. Before specifying, review impacts to future lab adaptability with the Design Manager.
- Do not specify solid surface, hardwood, or other top materials unless approved by the Design Manager.

Shelves and Shelf Supports

- Specify 1" minimum thickness impervious shelving materials with appropriate characteristics for research needs.
    - Epoxy Resin: Specify where chemical resistance is paramount. Epoxy shelves are heavy and not needed in most laboratories. Storage of toxic and corrosive liquids is not

permitted above the benchtop.
    - Chemically resistant solid phenolic: Specify where a reduced chemical resistance is acceptable and/or there is a need for reduced weight or on site fabrication.
    - Chemically resistant plastic laminate: Specify only where limited chemical resistance and durability is acceptable and as approved by the Design Manager. Provide edge banding on all edges.
- Design shelving systems to withstand expected loading and in configurations that promote safe use.
    - Do not specify laboratory shelving installed higher than 6'-6" or 30" below finished ceilings, whichever is lower.
    - Notch shelves around standards to eliminate spaces between shelves and adjacent surfaces. A 1" high raised retaining lip on the rear edge may be specified in lieu of notched shelves.
- Design shelving systems to maximize flexibility within both the individual lab and the overall building. Consider the following:
    - Provide consistent shelf lengths of 30" or 36" to maximize interchangeability in the lab.
    - New buildings: Consider the ability to obtain additional components for future modifications.
    - Existing buildings: Provide support systems consistent with building standards.

Accessories

Sinks

Select sink materials that match countertop materials, unless research processes are incompatible.

- Do not specify epoxy resin sinks where thermal shock from dry ice or liquid nitrogen is expected.

Mechanical Service Fittings

Show and specify mechanical service fittings such as sinks, faucets, gas, vacuum and air outlets, and similar devices as part of Section 123553, for installation by plumbing trades.

Fittings for water, gas, air, vacuum and similar services should be brass, with at least 81 percent copper content.

Water fixtures should always be specified with integral vacuum breakers in every application. Integral vacuum breakers are available for almost all types of fittings, however, in the rare case where integral vacuum breakers are not available for a required fitting, provide in-line type units.

For deionized or reverse osmosis water outlets, specify a material that matches the distribution piping material. Consider chrome plated brass with a lining material matching the distribution piping material, for outlets likely to be abused. Recirculating type faucets should normally be specified for very high purity DI applications (≥10 mega ohm-cm).

Electrical Service Fittings

For modular casework systems, specify electrical service fittings (outlets, switches, and similar devices) as part of Section 123553, for installation by electrical trade. Comply with associated electrical master specification sections and preferred manufacturer list. For fixed casework systems, specify electrical service fittings as part of divisions 26 and 27.

Coordinate locations of electrical/data outlets, surface raceway, lighting, and similar electrical items with casework layout. Consider the following:

- Equipment layout and impact to cord length and configuration
- Ground fault circuit interrupter receptacles, as required by code.
- Task lighting to reduce the need for artificial ambient lighting and to lessen shadows on the work-surface.
- Consider a continuous dual channel raceway for future flexibility.