

11 Equipment

NOTE: Significant revisions or additions to the previous standards are highlighted in italics.

GENERAL

Designers shall verify that all applicable portions of these standards are incorporated into the project's design, drawings, specifications and final construction. Requests for variances from these standards shall be submitted in writing to the FPD Project Manager, using the KU Standards Variance Request Form found in [Appendix A1.1](#), for review and written approval or rejection as indicated on the form.

RELATED DOCUMENTS & REQUIREMENTS

Refer to the following for requirements that also apply to work of this section.

- ☐ Division 1 - General Requirements; specifically, reference "Design Guidelines – Support Spaces" for additional information regarding design of loading docks, service areas, lecture halls, classrooms, vending areas and other spaces which incorporate equipment.
- ☐ Appendix A1.5 - Classroom Standards
- ☐ EHS website [Laboratory Fume Hoods Specification](#)
- ☐ Division 12 - Furnishings, Laboratory Casework & Equipment
- ☐ *Division 32 - Exterior Improvements: Includes exterior recycle and waste containers.*
- ☐ Sustainability at KU - website: sustainability.ku.edu
- ☐ Definitions: Equipment & furniture have been organized into the following classifications:
 - Fixed Equipment: Items that are specified by the Project Architect as a part of the Construction Documents or attached to the building, such as markerboards, laboratory furniture, carpet, roller shades, casework, auditorium seating, and items requiring mechanical or electrical connections.
 - Movable Equipment: Items that are carried on an equipment inventory and/or have a life expectancy of one year or more. The University will be responsible for purchasing movable equipment and furniture.

AUDIO / VIDEO PROJECTION SYSTEMS – DESIGN GUIDELINES

Refer to [Appendix A1.5 - Classroom Standards](#)

- ☐ It is University policy that faculty should be able to use any A-V multimedia teaching space on campus and find consistent equipment and capabilities at any location.

Special Consultants: Project Designers shall include the services of acoustical, AV and/or lighting consultants as needed to provide the level of design and achieve the functional outcomes outlined in the architectural program, so that each space is properly designed to meet its intended use.

LOADING DOCKS AND EQUIPMENT – DESIGN GUIDELINES

Loading Dock Heights: Verify types of vehicles which will be using loading docks with user groups. Design docks with appropriate height(s), as approved by user groups, FS and FPD.

Dock Levelers: If the range of vehicle heights requires, provide built-in dock plates or levelers that will accept the range of heights required.

Loading Dock Edges: Protect top edges with not less than a 3"x3" steel angle, hot-dip galvanized, embedded in the concrete dock's exposed upper edge, full-width, and with bumpers.

Dumpsters and Recycling Containers: Show location(s) for all trash dumpsters and/or recycling containers that are proposed to be stored near loading docks. Show and identify all units to-scale on site plan construction drawings.

- ☐ *Verify proposed size of dumpsters with FS and City, and confirm that an appropriate, functional driving path of travel, into and out of these areas, has been provided for trucks that are to service these locations.*
- ☐ *Surround the dumpster footprint(s) with 48" high concrete-filled steel bollards along the back and sides, to position them and protect adjacent building walls.*
- ☐ *In addition, if containers are located within the 150' City-KU buffer zone agreement, designers need to comply with City requirements.*

FOOD SERVICE EQUIPMENT – DESIGN GUIDELINES

General: Food service equipment shall meet all the requirements of the National Electrical Code, National Sanitation Foundation and shall be UL listed.

- ☐ Project Designers shall include the services of food service consultants as needed to provide the level of design and achieve the functional outcomes outlined in the architectural program, so that each food service preparation space is properly designed to meet its intended use.
- ☐ Carefully review the requirements for accessibility, especially for reach limitations at self-serve stations. Accessibility shall include the possibility for handicapped employees to work in the food preparation areas.

Catering Kitchens: *Designers shall meet with KU Dining or campus food service partner, FPD and the client group during the program review and early design phases, to confirm the scope and frequency of catering that is anticipated for events within the new facilities.*

- ☐ Designers shall provide appropriately-sized spaces for staging of catering services and shall show all currently proposed or future anticipated serving equipment in the floor plans, with all necessary utility services provided to each item, or roughed-in for extension to future connections.
- ☐ Storage space shall be provided for temporary serving and staging tables, and other related equipment.
- ☐ Separate entrances into catering kitchens or staging areas shall be provided from adjacent corridors, so access to them is not solely through the space served.

VENDING EQUIPMENT – DESIGN GUIDELINES

General: The requirements for vending services shall be reviewed with FPD and Jayhawk Community Partners, who serves as KU's liaison to corporate partnerships.

- ☐ **Minimum Vending Requirements:** *Each building shall have at least one vending machine area. This includes projects that have a snack bar, convenience store or other food service amenity included in the project scope.*
 - ☐ *Each vending area should typically include space for at least two vending machines and associated recycling and waste containers.*
 - ☐ Verify number of location(s) and number of vending machines to be incorporated into new or renovated facilities during the Design Development phase of each project with FPD.
- ☐ **Location:** Show proposed vending machines dashed and to scale on design and construction drawings. Locate machines near main circulation routes and so they are easily identified by building occupants and visitors, but at the same time, the design of vending machine areas shall control noise and light pollution into adjoining spaces.
 - ☐ Do NOT locate vending machines within stairwells, protected horizontal exits or exit passageways.
- ☐ **Installation:** All vending machines shall be mechanically anchored in-place by the vending service provider. Designer shall provide blocking in wall behind or in ceiling / soffit above vending machines, suitable to receive fasteners.
- ☐ **Electrical Power:** Provide appropriate power to each piece of equipment. Include outlets for future equipment, if space allows for future units.
- ☐ **HVAC:** Condition vending areas to maintain constant temperatures and to exhaust excess heat produced by equipment.
- ☐ **IT:** Verify the telecommunication needs that will be required for card pay systems.
- ☐ **Recycling Containers:** Provide space for appropriate recycling containers near vending machines. Show dashed and to scale on floor plans of design and construction drawings if loose units are proposed; containers will be provided by KU. Designers may also detail enclosed cabinets for standard recycling and waste containers within them.

RECYCLING & WASTE HANDLING EQUIPMENT – DESIGN GUIDELINES

General: *Recycling and waste containers shall be incorporated into the design of all new or renovated buildings. KU's goal is to have a recycling container adjacent to each public waste container. Recycling and waste containers shall be located throughout the building during design, and shall be shown on all drawings, in order to coordinate their provision and placement by KU with code-mandated requirements, such as ADA clearances at doors, corridor widths and Fire Marshal prohibitions against loose items being placed in corridors, and similar concerns.*

- ☐ *Separate bins for aluminum, plastic, newspapers, etc. are no longer required.*
- ☐ *Recycling and waste containers shall be provided in each of the following locations, and elsewhere as directed by KU:*

- ☐ Vending and food service areas.
- ☐ Office workrooms or breakrooms, particularly near copiers, printers and kitchenettes.
- ☐ Classrooms, lecture and auditorium spaces, near main entrances.
- ☐ Each exterior entrance, within close proximity to entry doors.
- ☐ Private offices receive small trash bin with recycling sidecar. Refer to user level agreements for maintenance services. [Service Levels | Custodial Services](#)
- ☐ Project Designers shall review floor plans and proposed recycling / waste container locations during the DD phase with FPD and FS custodial manager to confirm the types of containers, quantities and locations.
 - ☐ Built-in cabinets may be used to house simple, loose containers, with doors to access the containers stored within the cabinets. The standard built-in cabinet shall include space for three containers -- one for waste, and two for recycling containers.
 - ☐ Recycling container cabinet lids shall have a 16" long x 2" wide slot with a 5" diameter circular opening at the center of the slot, for single-stream recycling.
 - ☐ Waste container cabinet lids shall have an open 8" square opening.

Recycling and Waste Containers: Loose containers shall be provided by Owner. FS shall procure and install, and shall bill to project as FS support costs. Standard units:

- ☐ 22 Gallon: Busch Systems, "[Smart Sort](#)": 14"W x 15-1/2"D x 26"H (33-1/2"H with lid); approx. \$55 each (shown below left).
- ☐ 25 Gallon: "[Tough Guy](#)" Model #5WYZ1, 16-1/2" square x 27"H; approx. \$54 each (available thru KU Grainger contract).
- ☐ 32 Gallon: Busch Systems, "[Waste Watcher XL series](#)", 15-3/4"W x 20-1/2"D x 30"H; approx. \$70 each (shown below center).
- ☐ Recycling containers shall be blue with a red lid (no signage on back of unit), KU-standard decal on top showing recyclable materials (shown below right).
- ☐ Waste containers adjacent to recycling containers shall be gray with a black lid (no signage on back of unit).



Under-Desk Recycling Container with Waste Side-Car Container (shown below, left):

- ❑ **Recycling Container:** [Tough Guy Model #4UAU5](#); 7 gallon capacity; 14-1/2"L x 10-1/4"W x 15"H; blue polyethylene plastic with 30% recycled content; KU cost is approx. \$2.71 each from Grainger.
- ❑ **Hanging Waste Side-Car Container:** [Busch Systems Model #BC1500-23](#) (body) with BC1500L-23 (lid); 3/4 gallon capacity; black body and lid; KU cost is approx. \$4 each.



- ❑ **Other Waste Container Options:**
 - ❑ **Common Areas** (typically free-standing units, if no other containers are provided): 35 gallon, Rubbermaid Mfr. Model # FG395800GRAY, Grainger #5M825, 20"x20"x28" tall; KU cost is approx. \$210 each (shown above, center).
 - ❑ **Individual Offices:** 7 gallon, Rubbermaid Model #FG295600BEIG, Grainger #4HC00, 15"x11"x15" tall; KU cost is approx. \$12 each (shown above, right).

LABORATORY FUME HOODS – 115313

General: KU has a sole-source negotiated procurement contract in-place for the purchase of fume hoods. *KU's Environment Health & Safety office (EHS) has developed and maintains the KU standard specifications for fume hoods. This specification shall be used on all projects and will govern the design and installation of all fume hoods on KU projects. The KU standard spec shall not be revised by the Project Designer, unless proposed revisions are submitted in writing to EHS, and have been approved in writing by EHS, and copied to the FPD project manager.*

- ❑ **KU Standard Fume Hood Specification:** Project Designers shall incorporate this [specification](#) without edits, except as required to add information specific to each project. Any revisions or deletions to this spec must be reviewed and approved by EHS.
- ❑ **Sole-Source Manufacturer & Model:** [Labconco "Protector XStream" series](#).
- ❑ **Sole-Source Vendor:** [Fisher Scientific](#).
 - ❑ Consult with FPD, EHS and the user group to verify if fume hoods for each project will be purchased through by KU contract and furnished to the Contractor for installation, or by the Contractor from KU's sole source vendor, as part of the construction project.
- ❑ Bid documents shall clearly designate the scope of work to be provided by the Contractor to rough-in and prepare the space for the fume hood installation.
- ❑ The layout of lab equipment shall include accessible, ADA-compliant fume hood stations and sinks in both teaching and research laboratories.

- ☐ Fume Hoods shall not be located adjacent to exits from rooms.
- ☐ Base cabinets for fume hoods are preferred to be Labconco base cabinets.
 - ☐ Base cabinets that match other lab casework within each space may be considered, subject to EHS approval. Coordinate provision of base cabinets for fume hoods with lab casework specified in Division 12.
- ☐ There are manifold gang exhaust systems in most of the campus science buildings and this is the preferred method to take advantage of the energy efficiency from variable volume fume hood operation.
- ☐ Individual and/or isolated or specialty fume hoods may be connected to a single, dedicated exhaust fan for each hood with approval from FPD and EHS. These fume hoods should also be variable volume whenever possible for maximum energy-efficiency.
 - ☐ The preferred laboratory variable volume system is Phoenix Controls, with the control points viewable on the campus JCI Metasys.
 - ☐ See Appendix A23.A2 for a listing of the desired control points.
- ☐ Standby Power: If a fume hood is on a standby power circuit, the makeup air unit serving it shall also be on the same standby power, to avoid the condition when the fume hood could continue to run but the makeup air could be shutdown by a power outage, resulting in collapsed ductwork and a negative air pressure condition that could hold doors closed and compromise code-required exiting.

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