

News to Use

Design Requirements Manual

The formulae $\frac{\partial U}{\partial x_i} + \frac{\partial}{\partial x_j}(\rho U_j) = -\frac{\partial \sigma}{\partial x_i} + \frac{\partial}{\partial x_j}(\mu \frac{\partial U_j}{\partial x_i}) + g_i(\rho - \rho_0)$ for building $\frac{\partial}{\partial x_j}(\rho U_j U_i) = -\frac{\partial \sigma}{\partial x_i} + \frac{\partial}{\partial x_j}(\mu \frac{\partial U_j}{\partial x_i} - \rho U_j^2) + g_i(\rho - \rho_0)$ state of the art $\frac{\partial}{\partial x_j}(\rho U_j U_i) = \frac{\partial}{\partial x_i}(\rho U_i U_j) + \frac{\partial}{\partial x_j}(\rho U_j U_i)$ biomedical research facilities.

'Design Requirements Manual (DRM) News to Use' is a monthly ORF publication featuring salient technical information that should be applied to the design of NIH biomedical research laboratories and animal facilities. NIH Project Officers, A/E's and other consultants to the NIH, who develop intramural, extramural and American Recovery and Reinvestment Act (ARRA) projects will benefit from 'News to Use'. Please address questions or comments to: ms252u@nih.gov

Laboratory Casework Requirements

Laboratory casework is a key element within a research laboratory. All casework must be functional as researchers utilize casework daily. It is critical that casework may be easily cleaned; finishes selected must be able to withstand the cleaning and disinfecting agents used. The type of research being conducted can be a deciding factor for the color and finishes of the benchtop and casework itself. Ex: white materials are easier to see on a black benchtop and red materials are easier to see on a white benchtop.

Casework shall be able to withstand chemicals and penetrating abrasions. Wood casework and shelving (both lumber and facing materials) are more susceptible and not permitted. Metal casework systems shall be provided, unless otherwise required by user's specialized laboratory requirements. Epoxy resin, polycarbonate and stainless steel are acceptable examples for the specialized laboratories. Minimum level of quality of casework shall be established by either the NIH Laboratory Casework Specifications, user requirements, or on a per project basis in coordination with the NIH Project Officer. Long runs of fixed casework shall be minimized. Racked equipment, mobile casework on wheels, or other options that minimize cost and maximize flexibility shall be considered. Fixed casework and countertops shall be sealed to walls and floors during installation to minimize harborage of pests and provide an easily cleaned joint. Refer to NIH Sealant Table. Cabinet installation shall be in accordance with the manufacturer's specifications

Shelving: Metal shelving shall be provided, unless otherwise required by user's specialized laboratory requirements. Shelving height shall not to exceed 2 300 mm (90") for safe reaching height OR height limitations as determined by Division of Fire Marshall, whichever is lower. This requirement also applies to shelving installed as a component of a laboratory casework system. The typical depth of shelves is 300 mm (12"). Shelving depths shall not exceed 355 mm (14") for wall mounted shelving and 450 mm (18") for peninsula shelving.

Anchorage of Shelving: Anchorage of vertical standards carrying shelving brackets shall be capable of safely carrying a

fully loaded wall of shelving. Each shelf shall be capable of supporting a minimum design load of 7.5 kg per 100 mm (4") of shelf length. A fully loaded wall assumes all shelves are loaded to capacity. Anchorage for shelving carrying equipment that exceeds the 23 kg per 100 mm (4") of shelf length loading shall be designed for the specific application.

Plastic Laminate Faced (PLF) Shelves: PLF shelves constructed of a particle board or MDF core material shall be a minimum of 30 mm (1") thick and a solid plywood core shall be a minimum 19 mm (3/4") thick. Shelving shall be faced on all sides and edge banded, including concealed edges. This type of shelving is not permitted in animal research facilities.

Wall Mounted and Peninsula Shelving: An end guard shall be provided for the open ends and backs of all shelves not adjoining a wall. Spacing between vertical supports shall not exceed 1 200 mm (48"). The cantilevered distance between the last support and the end of the shelf shall not exceed 300 mm (12"). Staggered depth shelves (top shelf deeper than lower shelves) are permitted.

Countertops: Countertop materials will vary depending on usage. Traditional materials such as chemical resistant plastic laminates may be appropriate for some applications. When laminates are used, top and bottom surfaces of the substrate shall be faced and all edges banded. Epoxy resin shall apply to most applications where corrosive chemicals are used or where sinks or heavy water usage occurs. Other new materials shall be investigated for cost effectiveness and durability. All counter tops shall have a drip groove beneath the overhang. Stainless steel shall be used for cold rooms, glasswash areas, vivariums and other areas as the program requires.

Countertop Support Spacing: Countertop (bench top) support spacing shall not exceed 1 200 mm (48") without intermediate supports, and shall be designed to accommodate loading of special bench top equipment identified per program requirements.