

# News to Use

## Design Requirements Manual

The formulae  $\frac{\partial U_i}{\partial x_i} + \frac{\partial}{\partial x_i}(\rho U_i) = -\frac{\partial p}{\partial x_i} + \frac{\partial}{\partial x_i}(\mu \frac{\partial U_i}{\partial x_i}) + s_i(\rho - \rho_s)$  for building  $\frac{\partial}{\partial x_i}(\rho U_i) = -\frac{\partial p}{\partial x_i} + \frac{\partial}{\partial x_i}(\mu \frac{\partial U_i}{\partial x_i} - \rho u_i^2) + s_i(\rho - \rho_s)$  state of the art  $\frac{\partial}{\partial x_i}(\rho U_i) = \frac{\partial}{\partial x_i}(\lambda \frac{\partial T}{\partial x_i} - \rho u_i^2)$  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'.

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## Wall Protection

**M**any areas of laboratory buildings are subject to heavy traffic, including loading docks, service corridors and vivariums. Other areas have less intensive traffic but are still subject to damage. All areas should be designed with appropriate wall protection.

Before wall protection is selected the wall itself should be designed to withstand day-to-day wear typical for the area. Concrete block walls should be considered in areas subject to heavy wheeled traffic and impact, including shipping and receiving, loading docks, service corridors and vivariums. High-impact, fiberglass-reinforced gypsum board should be used in frame walls. Gypsum board selection must also address moisture, ratings and other concerns. Walls can be finished with impact-resistant fiber-reinforced high-performance paint as an additional level of protection.

Wall protection is especially important in vivariums, containment labs, clean rooms and other specialty areas where the integrity of the finish is crucial. Wall protections should be designed as part of an overall materials and finish protection strategy, including kick plates, guards and jamb protection on doors. Wall construction, including steel stud gauge strapping and bracing, shall be designed for both the installation of wall protection and potential impact loading.

Wall protection should be seen as an opportunity to enhance the aesthetics of a space, and materials, colors and detailing should be carefully selected. Material must be appropriately durable for the anticipated level of wear. Wall protection in containment areas and vivariums must be completely sealed. Wood and porous materials are not appropriate in most laboratory or clinical areas.

### Corner Guards

Corner guards protect outside corners, which are the most vulnerable part of the wall. Corner guards are usually installed immediately above the base, and can be partial or full wall height.

**Surface-applied Guards** are metal or vinyl 'L' profile guards adhered or fastened directly to the gypsum board. Stainless steel is an appropriate material for most clinical and containment spaces.

**Two-part guards** are decorative plastic guards on a retainer assemblies which are mechanically fastened to the gypsum board. Two-part guards are less durable but more decorative than surface-applied guards.

**Flush guards** are two-part guards with a retainer assembly installed in the plane of the gypsum board layer, so that the finished guard surface is flush with the finished wall surface. This is a relatively high-cost installation appropriate for highly visible public areas.

### Sheet Wall Protection

Sheet wall protection is a layer of vinyl, fiber reinforced plastic (FRP) or similar durable material adhered to the wall surface. Sheet protection can be installed in conjunction with corner guards and wall protection rails or by itself. Sheets can be installed as a partial height wainscot or full height. Sheets are available in a range of thicknesses and colors and can be smooth or textured.

### Wall Protection Rails

**Crash Rails** are stainless steel or aluminum rails which standoff of the walls with intermittent standoff brackets. Crash rails provide high-levels of protection from heavy wheeled traffic and are usually used in shipping and receiving areas, vivariums and service corridors. Because they stand off the walls corridor they effectively narrow the corridor, so corridor widths must increase accordingly. Crash rails are often installed at multiple heights to protect from carts, pallet jacks, wheeled equipment and other items.

**Wall Guards** are a decorative plastic guard cover installed on a mounting base which is screwed to the wall. Wall guards are available in a number of sizes, profiles and colors. Although wall guards protect the walls from impact, they can themselves be damaged, and should only be used in low and medium traffic areas. A guard assembly installed at the appropriate height and with the appropriate rounded gripping surface can also function as a handrail in corridors and ramps. An appropriately designed guard can function as a chair rail in a conference room.

**Custom Guards** can be made of any durable material attached directly to the wall or on stand-off brackets. Guards can be made of wood, metal, acrylic or other appropriately durable material.

