The National Institutes of Health | Division of Technical Resources | Office of Research Facilities

Design Requirements Manual **News to Use**

April 2019

Vol. 02, No. 28

The formulae $\frac{\partial \rho \bar{U}_i}{\partial t}+\frac{\partial}{\partial x_j}(\rho \bar{U}_j \bar{U}_i)=-\frac{\partial \bar{P}}{\partial x_i}+\frac{\partial}{\partial x_j}\left(\mu \frac{\partial \bar{U}_i}{\partial x_j}\right)+g_i(\rho-\rho_0)$ *for building* $\frac{\partial}{\partial x_j}(\rho \bar{U}_j \bar{U}_i)=-\frac{\partial \bar{P}}{\partial x_i}+\frac{\partial}{\partial x_j}\left(\mu \frac{\partial \bar{U}_i}{\partial x_j}-\rho \overline{u_i' u_j'}\right)+g_i(\rho-\rho_0)$ *state of the art* $\frac{\partial}{\partial x_i}(\rho \bar{U}_i \bar{H})=\frac{\partial}{\partial x_i}\left(\lambda \frac{\partial \bar{T}}{\partial x_i}-\rho \overline{u_i' h'}\right)$ *biomedical research facilities.*

DRM Update: Landscaping

The recent DRM update revamps "Section 3.5: Landscaping" with several important changes. These changes apply specifically to the NIH Bethesda campus, but their underlying principles can be applied to other locations. Notably, the specifications for plant replacement and removal have been modified and expanded. The previous edition of the DRM contained no replacement planting requirements for shrubs and groundcover that got removed as part of project demolition. The architect's original landscaping vision is often damaged because of this; the number of bare planting beds on campus has increased because little attention has been paid to replacement plantings in subsequent projects. The DRM update addresses this issue by requiring that all shrub and groundcover be replaced in kind with new nursery grown plants of the same species and quantity. In the case of projects where the site conditions will completely change, an alternative planting plan can be developed for the ORF Landscape Architect's review and approval. In addition, trees shall now only be removed as necessary for the final project rather than strictly for the benefit of temporary construction measures, a topic that the previous edition of the DRM had not addressed. Because of this change, projects should be encouraged to utilize areas that won't require tree removal, or where tree removal is in line with the project's ultimate goal, as places to conduct temporary construction activities.

Minimum plant size and spacing requirements for new plant material have also been added to this update. These requirements are necessary in order to clarify NIH expectations for landscape plantings. In the past, installations of undersized plant material and/or plants spaced too far apart have created a myriad of maintenance problems for the campus grounds crew, such as increased weed pressure, mulch washouts, dry oil, and deer damage. The new requirements are intended to rectify these issues.

The previous DRM edition referenced the old NIH 1:1 Tree Replacement Policy, which stipulated that for every tree removed within the Bethesda enclave, one new tree should be planted as its replacement. Per the old policy, the removal of a mature tree and the removal of a young sapling both required the same replacement. However, large trees are extremely valuable campus assets, especially with regard to environmental functions, and their loss should be appropriately mitigated. Large trees provide exponentially more benefit than small trees because they are better at sequestering carbon, intercepting storm water runoff, transpiring groundwater, and supporting wildlife habitat. Large trees also help promote human health and well-being by providing shade, environmental cooling, and overall greening of the campus. The DRM update includes a revision to the NIH Tree Replacement Policy that bases the ratio of tree replacement on the size of the tree being removed. This removal to replacement ratio is clearly expressed in the newly-added Exhibit 3.1 Tree Replacement Matrix. These new tree replacement requirements will ensure that the campus tree canopy continues to grow, and the removal of large trees will be more effectively deterred or mitigated. For reference, "Exhibit 3.2: Sample Tree Replacement Calculation Charts" was added to better convey how to apply and document the tree replacement requirements in submitted project drawings.

'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:** shawm@nih.gov

Further details on this month's topic are available on the DRM website: DRM Section 3.5 Landscaping
https://www.orf.od.nih.gov/PoliciesAndGuidelines/Pages/DesignRequirementsManual2016.aspx