FACILITIES & OPERATIONS
ARCHITECTURE, ENGINEERING AND CONSTRUCTION
UNIVERSITY OF MICHIGAN

DESIGN GUIDELINE 4.4.1
LANDSCAPE

Scope

Design guidelines for landscape considerations that reinforce a consistent appearance for campus streets, walks, open spaces and plantings and support university sustainability goals. This includes design requirements for new plantings, maintenance-priority levels across campus, soil preparation, pavement treatment, safety and security issues, plant selection and use of native or near native plants.

Related Sections

U-M Design Guideline Sections:
6.0 DG 013639 Tree Preservation
6.0 DG 310000 Site Requirements
6.0 DG 312500 Soil Erosion and Sedimentation Control
6.0 DG 328400 Irrigation
U-M Master Specification Sections:
MS 7.0 015639 Temporary Tree and Plant Protection
U-M Master Detail:
9.0 329300 Aluminum Edging
9.0 Civil Details (Standard details for paver on concrete base or paver on pervious concrete with concrete band/curb, planting details)
Related Documents
U-M Tree Preservation Policy
Maintenance Priority System Campus Map
LEED Reference Guide for Green Building Design and Construction
Southeast Michigan Council of Governments Low Impact Development Manual
Arbor Day Foundation
City of Ann Arbor Invasive Plants
City of Ann Arbor Forestry's Trees and Development

Design Requirements

In general, plantings should be used to:

- Enhance the campus tree canopy
- Accentuate key focal points, including campus gateways, nodes, building facades and entrances and special exterior features such as artwork installations
- Define special areas such as plazas and seating/gathering points

- Buffer unattractive views to service areas, dumpsters and mechanical equipment
- Create green buffer zones between parking areas and campus
- Control pedestrian access and circulation as needed
- Achieve sustainable design goals such as water conservation, storm water filtration and absorption, urban heat sink reduction and energy savings with the appropriate use of plants.

The Design Professional (DP) shall consult with Campus Planning (CP) for guidance for the landscape design including to determine appropriate function, scale and acceptable maintenance level. Planting designs should reflect the institutional scale of the campus and the particular setting in which they are located. Landscape plantings should be designed for maximum effect with limited maintenance, emphasizing broad sweeps of similar material. Areas of high visibility, such as the Central Campus Diag, should have a rich palette of native plants; areas of lower visibility, such as service docks, should minimize the use of turf grass by using native grasses and plantings.

Detailed and complex plantings should be reserved for courtyards and other areas of smaller scale. High maintenance planting displays should be limited to high visibility areas where such maintenance is warranted. Grounds Services (Grounds) has developed a maintenance priority system and corresponding campus maps based upon the levels of maintenance supported across campus. Consider the priority level of maintenance intensity for the landscape space being designed:

Level One Priority: Landscape spaces of high-visibility and high pedestrian traffic with the greatest visual impact that usually include public green spaces, plazas and gateways. These areas are typically iconic spaces comprised of complex foundation plantings and a high number of perennial beds, ornamental trees and shrubs. A moderate amount of special paving materials are featured and automatic irrigation is available. Landscape beds are weeded, edged and top dressed with shredded bark mulch annually.

Level Two Priority: Landscape spaces of moderate visibility and pedestrian traffic that typically include courtyards and building envelopes. Maintenance activities occur less frequently in these areas, which are comprised of moderate amounts of ornamental trees and shrubs, perennial beds and foundation plantings. Lawns are supported by automatic irrigation and planting beds are typically equipped with couplers or hose bibs nearby. A minimal amount of specialty paving materials are featured in these areas. Landscape beds are weeded, edged monthly and top dressed with shredded bark mulch biannually.

Level Three Priority: Landscape spaces of moderate to low visibility and pedestrian traffic that typically include campus perimeters and parking and service areas. Maintenance activities occur less frequently in these areas, which are typically comprised of minimal ornamental trees and shrubs, foundation plantings and perennial beds. Little to no irrigation and specialty paving can be found in these areas which largely consist of open lawn areas and landscape beds that are weeded monthly, not edged and top dressed with bark mulch every three years.

Conservation of the mature and healthy native flora is essential in areas of campus where mature vegetation stands remain. Native vegetation should be used where additional plant materials are

needed to highlight the natural edge.

The university is committed to using native or near native plantings whenever possible to protect and enhance the integrity of native plant communities, and to reduce the amount of water used for irrigation, maintenance requirements and chemical treatments. Consider rainwater gardens or similar, to assist with storm water management and create cross-functional landscapes. Review the overall aesthetic intent of the site design inclusive of hardscape, softscape and furnishings, etc. with CP for approval.

Avoid plantings within parking lot islands where heat and snow removal activities prohibit healthy growth. Instead, emphasize perimeter landscape treatments to buffer views and to provide shade. Ensure thoughtful snow storage design and site location, and carefully consider the impact on planting areas. Avoid planning for snow storage in storm water basins.

Reduce the amount of manicured lawn in favor of landscaping with native plants and groundcovers. The site's soil type, soil fertility and topology will guide plant selection and performing a soil survey is necessary.

Use of edging can be a site-specific design decision and is especially useful for planting beds where groundcover is used. It is also helpful to utilize edging to separate lawn areas from adjacent stone maintenance areas. In general, landscape beds with a natural edge are preferred except in Level One Priority maintenance areas. When edging must be used to maintain a defined planting bed edge, black anodized aluminum edging (3/16" thick by 4" high) should be specified unless noted otherwise on drawings. See Aluminum Edging Detail

Consult with Grounds to review needs for irrigation systems and related design. See 6.0 DG 328400 Irrigation for more information.

Soil Preparation

Soils specified for a project site should be locally available and supplied from off-site sources unless noted otherwise. If existing on-site soils do not meet specifications for planting, amendments will be required. If off-site topsoil does not meet specifications for planting, blended soils are required.

Prior to soil installation, existing subgrade should be prepared by scarification to a minimum depth of 12". Areas subject to construction access roads, laydown areas, staging or other construction operations should be ripped and scarified to a minimum depth of 24". Designers should specify the desired option for subgrade preparation and general instructions based on site specifics – it is preferred not to give the contractor the option to select any of the alternates, as they are not equal treatments. If different treatments are required, sub-grade and topsoil shall be mixed to reduce drastic soil horizons by preventing two very different soil textures from laying late on top of each other without being blended somewhat. At a minimum, specify mixing soils by scarifying the subsoil of the subgrade to a depth of 3-6" with the teeth of the back hoe or loader bucker, tiller or other suitable device immediately prior to installing the topsoil.

In lawn areas, new topsoil installation depth will be 6" and in planting beds 12". Ensure final grade is down 1" from finish grade.

When existing soil consists of compacted subsoil because of previous grading, filling or dynamic or static compaction forces, it should be modified to support proposed plantings. The method of modification (soil fracturing, soil ripping or soil trenching) shall be determined by the designer of record based upon constraints of the site and project budget. Note that the modification alternatives are not equal treatments and should be directed by design rather than contractor. If different treatments are appropriate for different locations on the same project, be clear on the drawings the extent of each treatment. Include a project specific soil specification for detailed requirements.

Paving Treatment

Landscape should be complimentary and compatible with existing and proposed adjacent pavement systems, including pervious pavement. Avoid adjacent landscape treatments in which the selected plantings, corresponding maintenance requirements or migrating mulch would reduce permeability of adjacent paving systems.

Paving and concrete scoring patterns for new walkways should be designed to be consistent with adjacent walks and university standards. Standard campus arterial walkways should be designed to accommodate anticipated volume of pedestrian traffic and typically be consistent with a minimum 8' wide concrete walk consisting of a standard 8' x 8' tooled joint scoring pattern.

Design of pavement treatments in high pedestrian traffic areas, facility doorways and in patient care areas should be deliberate to avoid future trip hazards and pavement system settlement. Maintenance of pavement systems should be a factor in designs. Designs varying from the typical campus standard should be discussed in advance with the Campus Planner. Paving designs should be considerate of and coordinate with existing and proposed site features, landscaping and utilities.

When pavers are specified, utilize university standard details for paver on concrete base or paver on pervious concrete with concrete band/curb.

Existing Landscape Materials

Consider the impact of new construction/renovations on existing landscape materials. Avoid damage to significant vegetation by careful routing of walkways, placement of parking lots and utilities and incorporating existing specimen trees. Utilize robust tree protection during construction to prevent damage to existing landscape material.

Security and Safety Issues

Plantings shall be designed to provide open and unobstructed views and to eliminate concealment opportunities. For personal safety and security considerations, avoid planting arrangements that create zones of entrapment, limit visual access into gathering spaces or along walkways or otherwise

impede visibility from public view. Always consider a given plant's mature state when developing plant spacing diagrams – the spacing of new plants should be no less than 3/4 the mature spread of the plant.

Deciduous trees should be selected that, when mature, provide views beyond at a height of 6' to 7' from the ground plane to the canopy. Evergreen, ornamental or shade trees with lower canopy heights should not be used adjacent to walks, vehicular and bike parking areas or building entrances.

Shrubs that are proposed adjacent to walks, vehicular and bike parking areas or building entrances should generally be less than 36" tall at mature height. Larger shrubs should be restricted to areas where they will not limit visual access or should be used in arrangements that do not create large masses. Designs shall incorporate trimming or removal of shrubs that screen or limit views. Plantings that are intended to be hedges should be selected so that mature heights do not exceed 36".

Existing trees should be scheduled for trimming to remove any branches that impede adequate lighting or obstruct views between the grounds and the canopy. New trees and shrubs should not be planted adjacent to proposed or existing light poles to avoid disrupting light levels.

Consider the use of skateboard deterrents at walls, stairs, ramps, curbs, rails and benches. Edges of hardscape site elements should be protected by including skateboard deterrents either integral to the form of the concrete or metal deterrents installed on the edge surface.

Retaining walls should not be higher than 18" from grade to top of slope; otherwise, a handrail will be required. Screen walls should be placed so as to not impede visibility of vehicles.

Plant Selection

Plants will be selected to thrive in the conditions of the site. Consider the cultural and maintenance requirements for each plant before locating on a planting plan. Soil type, soil pH, topology, water requirements, sun/shade requirements, hardiness, disease resistance and maintenance requirements will guide plant selection. Use proper planting methods as recommended in U-M planting details and online through the Arbor Day Foundation.

The Design Professional's (DP) site designer/AEC DM should consult with Grounds regarding plant selections. A list of invasive species to avoid can be found online from the City of Ann Arbor. Submit for review a plant list of hardy materials with an emphasis on native plants.

In general, removing and/or planting trees or significant vegetation within the City of Ann Arbor's right-of-way (ROW) is not allowed. However, if approved, the DP must use the City of Ann Arbor's approved plants list when specifying planting plans within the ROW. In addition, they must work with the University Forester for any proposed tree removals. Tree value costs for trees removed both on campus and within the public ROW will need to be factored into the project budget. See the U-M Tree Preservation Policy and City of Ann Arbor Forestry's Trees and Development web site for specific details and other public ROW requirements.

Include the following installation requirements in the specifications:

- Perform a thorough weeding before planting the native vegetation. Adequate stabilization will be necessary to help establish the new plantings.

- Remove invasive species when encountered. Hand removal should be implemented wherever possible. (Note: Burning may be utilized for large areas where absolutely necessary. This must be discussed with the DM during design.)