DESIGN GUIDELINE 321000
WALKS, ROADS AND PARKING PAVING

Scope

Scope: Paving for walks, roads and parking.

Related Sections

U-M Design Guidelines
6.0 DG310000 Site Requirements
6.0 DG312500 Soil Erosion and Sedimentation Control
3.1 Sustainable Design and LEED Requirements

Related Documents
Southeast Michigan Council of Governments Low Impact Development Manual
LEED Reference Guide for Green Building Design and Construction

Design Requirements

All work within City of Ann Arbor street right-of ways shall be in accordance with the current version of the City's standards and requirements. During design, the A/E shall submit plans and specifications to the City for review and approval. This process should be completed prior to the issuance of 100% CD's.

All materials, equipment and construction for bituminous and concrete pavements shall be in accordance with the current version of the Michigan Department of Transportation Standard Specifications for Construction. No welded wire fabric shall be used in sidewalk construction.

In order to promote infiltration and an even distribution of storm water flow, impervious surfaces should be minimized. The A/E should evaluate the site for potential pervious pavement/infiltration opportunities early in the design process. Consult with the U-M Design Manager and Campus Planning to determine the appropriate paving materials for each project.

Pervious Pavement Installation Requirements

Pervious pavement should not be located on top of recent fill or compacted areas, unless adequate under drainage is provided. Traffic type, pavement use, and type of loading should be considered in design, for example, dumpsters should not be located on porous pavement due to concentrated point load while emptying the dumpster.

Properly sized infiltration beds and under drains in locations with poorly drained soils should be incorporated. All porous paving installations should include an overflow system. This could consist of bleed-out pipes connected to sumps or outfalls into an unconventional or conventional storm water system.

Utilize perforated pipes along the bottom of the filter bed to evenly distribute runoff. Infiltration areas should be located within the immediate project areas in order to control runoff at its source. Install compatible plantings adjacent to the pervious pavement that do not block the porosity.

Soil type (infiltration rate) and amount of water stored will determine the depth of the pervious pavement system. Frost depth should also be considered and the minimum filtration bed depth should increase accordingly.

"Vacuuming" the pavement should occur annually in order to keep the porous system operating at its potential.

Systems

- Porous concrete: Pervious pavement should be underlaid with a stone sub-base. Installation methods and outcomes should be carefully observed where grading requirements are stringent.

- Porous asphalt: Pervious asphalt should be placed directly on the stone sub-base in a single layer and rolled into a finished surface. This system is best used for parking lots, walkways, and in natural areas.

- Porous concrete unit pavers/paver blocks: This system is best used in high-visibility areas such as courtyards and plazas, as well as sites containing heavy loads, such as parking lots, service areas and low-speed drives. Accessible ramps within porous paver areas should use standard concrete to achieve and maintain the required grade.

Impervious Concrete Installation Requirements

Concrete shall consist of air entrained Portland Cement with a total air content of not less than 4 percent but not more than 7 percent. Cement content shall be a minimum of 6 sacks per cubic yard. Concrete shall contain polypropylene fibrillated fibers at a volume of 1.5 pounds per cubic yard

All regular sidewalks shall be 8 feet wide and 8 inches thick, and all steps and stairs eliminated if at all possible to facilitate cleaning and snow removal.

Paved areas at building entrances shall be adequate to accommodate refuse containers.

Where possible, impervious surface drainage should be directed to water receiving landscape areas such as lawns and planted areas.

Quality Acceptance Test

Minimum concrete 28 day compressive strength shall be 4000 psi.

Slump shall be not more than 4 inches, or less than 1 1/2 inches, as determined by the slump cone test specified in ASTM C-143.

Cleanup Requirements

Concrete and asphalt work (including cutting, grinding, drilling, and hyro-demolition) washout cannot be discharged into storm drains, catch basins or to the sanitary sewer system. Direct the Contractor to utilize proper disposal and washout practices and to perform washing of concrete trucks in designated areas or offsite.