

SECTION 07050 – PLAZAS AND DECKS
CONSTRUCTION STANDARD

PART 1: GENERAL

1.01 Scope of standard

The scope of this standard includes recommendations for the design and maintenance (retro-fit) of plazas and decks over occupied space(s). In general, plazas and decks over occupied space are not recommended.

1.02 Related Standards

A. Structural Systems (currently The University of Texas Office of Facilities Planning and Construction *Owner's Design Guidelines*, Section K, Structural Criteria).

1.03 General Requirements

A. All plazas and decks situated over occupied space(s) shall have a redundant, bi-level drainage system to protect the occupied space(s) from water infiltration and damage.

1. The primary drainage system shall be at the top wearing surface exposed to weather and traffic.

2. Secondary drainage shall be provided below the wearing surface, at the membrane level, to drain any moisture that infiltrates down below the primary level protection at the wearing surface. The secondary drainage shall be provided by a pre-fabricated drainage grid, paver pedestals, or other method as required to provide free flow to the drains at the secondary level.

B. It is preferable to select a system that allows water to flow both on top of and below the wearing surface. Two systems that can be used separately or in a hybrid system are as follows:

1. An open joint system generally consists of individual paver units supported on pedestals with approximate 0.25 inch gaps between units.

2. A closed joint system generally consists of concrete surfaces or individual paver units with gaps filled with porous grout or sand, or the individual paver units placed in a lean mortar setting bed.

C. Paver units are preferable to large, monolithic concrete sections because pavers enhance drainage at the secondary level and long-term maintenance is simplified due to accessibility of the substrate (both the structural deck and the waterproofing system).

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- D. Provide a sloped substrate to insure adequate drainage at both the primary and secondary levels. Tapered insulation, sloped structural deck, variable pedestal heights, or other method(s) shall be used to accomplish this goal.
- E. THE DESIGN OF PLAZAS AND DECKS SITUATED OVER OCCUPIED SPACE(S) SHOULD BE CONSIDERED EARLY IN THE DESIGN DEVELOPMENT OF A PROJECT SINCE THE EFFECT ON THE STRUCTURAL DESIGN AND OVERALL COST CAN BE SIGNIFICANT. The following items shall be considered in the design of plazas and decks situated over occupied space(s):
1. Slope of the structural deck (or if it currently is, in retro-fit applications).
 2. Slope or contour of the wearing surface (or if it currently is, in retro-fit applications).
 3. True clearance available between the substrate and the bottom of the wearing surface. At new conditions, this clearance should be optimized to assure proper drainage at the secondary level. In retro-fit applications, limitations may dictate the design of the overall system.
 4. Type of drainage system and the limitations on drainage capacity.
 5. Flashing at drains, rising walls, light pole supports, expansion joints, or any other feature that could effect overall adequacy of the drainage system.
 6. Traffic and site feature loadings, as well as any possible pedestrian hazards caused by gaps between pavers, etc.
 7. Aesthetics.
- F. Walking surfaces shall be designed to be nominally level. Abrupt changes in elevation of walking surfaces shall not exceed ¼ inch. The slope in the direction of travel shall not exceed 1 in 20. The slope perpendicular to the direction of travel shall not exceed 1 in 48.

PART 2: PRODUCTS

2.01 Secondary Drainage Details

- A. Secondary drainage shall be accomplished through the specification of one of the products indicated herein.

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- B. Insulation boards shall be a high density type that does not absorb moisture, have drainage slots scored in two directions into the bottom surface, and is able to withstand the superimposed loads without deflection, with resulting cracking, of the wearing surface.

2.02 Membrane

- A. A liquid-applied membrane completely adhered to the substrate will isolate leaks at their source and provide an easier way to trace locations requiring maintenance.
- B. The membrane shall be a hot-applied, rubberized compound dispersed in asphalt with mineral fillers.
- C. In high stress areas (rising wall flashings, penetrations, etc.) provide fabric reinforcing.

2.03 Paver System

- A. The paver support system shall consist of one of the following types, depending on the needs for maintenance, accessibility, and loadings:
 - 1. Individual pedestals constructed from high density polyethylene or blocks of high density foam board. Variable height pedestals may be required to provide the proper slope at the primary drainage level.
 - 2. Continuous support on a pre-fabricated drainage grid. Pre-fabricated drainage grids allow for fast and efficient drainage of water at the membrane level.
 - 3. Continuous support on a 1-2 inch pea gravel setting bed.
 - 4. Continuous support on high density insulation board (approximately 100-125 psi compressive strength) with drainage slots scored in two directions into the bottom surface.
 - 5. Rigid supports fabricated from precast masonry units. This method of support is recommended in areas where pavers could be subjected to high density loading.
- B. Where smaller poured concrete sections are required and the resulting system is closer in nature to a paver system than to a purely monolithic system, the support system shall consist of one of the following types, depending on the needs for maintenance, accessibility, and loadings:
 - 1. Continuous support on a pre-fabricated drainage grid.

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2. Continuous support on high density insulation board (approximately 100-125 psi compressive strength) with drainage slots scored in two directions into the bottom surface.
3. Continuous support on a 1-2 inch pea gravel setting bed.
4. The method specified shall provide for proper placement of the concrete without blocking flow of water to or through the secondary drainage level.

2.04 Monolithic Concrete System

- A. Paver systems are preferred. However, in the following cases a monolithic concrete system may need to be utilized:
 1. Insufficient clearance to allow for the required clearance between the wearing surface and the substrate (structural deck).
 2. The required finish contour of the plaza or deck will not accommodate a paver system.
- B. Where a monolithic system is required, the monolithic concrete sections shall be designed in such sizes as to be removable for future repair of the substrate, including jointed, sealed sections with lifting inserts, or other method as may accomplish this goal.
- C. Where applicable and cost effective, a combination of paver support systems and monolithic support systems may be considered to minimize the amount of monolithic concrete.

PART 3: EXECUTION

3.01 Membrane

- A. The membrane shall be constructed in the field by spreading the hot rubberized liquid over the structural deck to form a continuous, monolithic, seamless membrane completely adhered to the substrate.

3.02 Detailing

- A. Detailing shall be in strict conformance with the manufacturer's technical literature for the respective products.

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- B. Any products used shall conform to the waterproofing manufacturer's recommendations and shall be supplied and installed in such a manner so as not to void or reduce the anticipated warranty. It is recommended that approval of the overall proposed design be obtained from the prospective waterproofing manufacturer(s) during the design development and final design processes.

END OF STANDARD 07050