



The Existing Plaza

Considerations for repair or replacement

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BY ADDING FUNCTIONAL SPACE TO THE BUILDING EXTERIOR, PLAZAS PROVIDE INVITING AREAS THAT EXTEND BUILDING USE THROUGHOUT THE DAY AND EVENING. AS THE NEEDS OF THE OWNER AND OCCUPANTS CHANGE, PLAZA REHABILITATION CAN INCORPORATE NEW AMENITIES AND LANDSCAPE ELEMENTS TO ADAPT TO BUILDING USE, WITH SITE FEATURES ANTICIPATING AND RESPONDING TO THE DEMANDS OF MANAGEMENT AND TENANTS. IN SOME CASES, OWNERS LOOKING TO MAXIMIZE THE VALUE OF THEIR PLAZAS MAY CHOOSE TO UNDERTAKE A MAJOR RECONFIGURATION, INCORPORATING AMENITIES THAT CREATE A STRIKING APPEARANCE AND IMPROVE FUNCTIONALITY.

Plazas are often public spaces, and they form a significant part of the building's visual impact. Landmark buildings and well-trafficked thoroughfares need to respond not only to the demands of occupants, but also to the larger interests of the community. A plaza restoration must therefore consider the historic significance of the design, if applicable, along with the functional requirements of the space, maintenance demands on building staff, cost, and longevity of the materials and systems selected. With the right balance of sensitivity to surrounding structures and consideration for public use, the prudent owner can achieve a plaza rehabilitation as eye-catching as it is practical.

Restoring a landmark plaza

Preservation, restoration, rehabilitation, or renovation: depending on the design intent, plaza projects fall

within one of these categories. The choice of how to approach a plaza overhaul affects the scope, construction, use, and cost of the project, so it is important to identify the limitations and opportunities inherent in each of these strategies. For a plaza with historic or landmark status, proper stewardship may dictate preservation, and, if necessary, restoration to promote the longevity of what is likely an important community asset.

According to the Secretary of the Interior's *Standards for the Treatment of Historic Properties*, "preservation" is the process of sustaining the form, integrity, and materials defining the overall historic character of a property. This may include elements such as walkways and paths, lighting, vegetation, and water features. "Restoration" builds on this idea by reconstructing missing historic features and removing those elements that are historically inaccurate or were added at a later time. The scope of such projects is generally dictated by the plaza condition—extensively deteriorated elements are afforded isolated replacement, while the plaza is preserved and protected as a whole.

Strict adherence to the tenets of preservation and restoration, however, often gives way to the realities of modern life. Compromises may need to be made to accommodate code compliance, current design standards, and the wellbeing of the public.

The ability of a historic plaza to meet the needs of its users safely and effectively must be considered. A plaza is a prominent feature that can serve as the main entrance to a building, as a courtyard linking one building to the next, or as a destination in and of itself. In all these cases, it must be designed to accommodate the movement of people. As such, safety and liability are important considerations for any property owner. Modernization of certain elements is therefore unavoidable, particularly where accessibility is concerned. Older structures frequently lack the most basic of accessibility provisions. Most notably, ramps are generally absent from older plazas and must be constructed as a counterpoint to the original stairs. Without artful detailing and placement, adding ramps—large and prominently located structures—can adversely impact the character of an existing plaza.

Other concerns for historic and landmark plaza restoration include availability of original materials, slip resistance, waterproofing and drainage design, and energy performance and illumination output of existing lighting units.



A plaza project offers the opportunity to enhance the stature of a property and raise its value to the community. Several factors must be taken into account.

Responding to code requirements

A review of even a relatively young plaza can reveal an array of deficiencies with respect to current building codes and design standards. For instance, walking surfaces need to be slip-resistant with minimal slope (though some slope is important for drainage), stairs require code-compliant handrails, and changes in level demand appropriate guardrails. Accordingly, paving systems, lighting, railings, and stairs are among elements commonly improved through rehabilitation—they are next on the list of plaza strategies.

Rehabilitation can improve and enhance a plaza through repair, alterations, and additions, while preserving those portions or features conveying cultural and architectural value. Rehabilitating select elements provides the owner latitude to upgrade features of the plaza affecting safety, accessibility, durability, upkeep, and cost while maintaining—or enhancing—utility and architectural appeal.

Redefining the plaza space

Why limit the scope to repair or compliance-oriented upgrades? A plaza is an important asset and provides a clean canvas on which to compose a seemingly endless array of possibilities. Through renovation, a plaza can be transformed into a vibrant community center or an intimate outdoor living room. It can provide program space for events or an efficient and attractive pedestrian traffic route; it can serve as an open park or a formal grove. Ultimately, plaza renovation provides an opportunity to increase both



Code-compliant accessibility features, like ramps and handrails, can be added to historic plazas without compromising aesthetics.

REHABILITATION DESIGN CONSIDERATIONS

Rehabilitation presents an occasion for improvements. The following is a list of common features or elements typically considered as part of a plaza project, with design considerations for each:

- accessibility—ramps, railings, handrails, and tactile paving;
- cost—construction, operating, maintenance, and life cycle;
- drainage—reduced puddles/ice;
- insulation—lower utility costs and condensation;
- materials—condition, durability, maintenance, slip resistance, and cost;
- nuisance—skateboard deterrents and bird control;
- plantings—maintenance, irrigation, and leaf removal;
- security—lighting, cameras, and fencing;
- snow/ice treatment—chemical, hydronic/electric heat, and snow storage or disposal;
- stairs—code requirements and handrails;
- sustainability—materials, operations, embodied energy, durable design, and longevity; and
- waterproofing—membranes, subsurface drainage, and leak detection/vector mapping.

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the stature of the property within the community and the value of the property to the owner.

Renovation projects begin with identification of program requirements. How will the space be used? Will it be public or private? What type of image is being portrayed? What level of maintenance is acceptable? What is the budget? These are just some of the considerations that must be examined to realize a plaza's full potential.

Program space, or plaza areas serving specific functions, should be considered early, such that

planned activity forms a seamless and integral part of the plaza design. Program space can be used for public gatherings ranging from "Taste of the City"-type dining and announcements to fundraisers, ceremonies, performances, assemblies, or any number of events, whether intimate or sizable. Visibility from the street, access, lighting, electrical outlets, audiovisual connections, tent tie-downs, and even provision for discretely located port-o-lets are assets during large events and major oversights when omitted.

When configuring plaza areas and selecting plantings and lighting, the design professional should consider shade, sunlight, and the plaza's location relative to the building, all of which affect the climate of the space. To manage pedestrian traffic, arrangement of planters, permanent seating, and other hardscape and landscape features can be used to encourage movement from one area to the next, creating inviting spaces for people to congregate as well as corridors for passage. Seating can also be removable to respond to changing functional requirements and accommodate special events.

Lighting extends the use of the plaza into evening, when illumination is necessary for safety and security. Low-radiance, low-angle light fixtures may be selected to limit light pollution, where feasible.

Plaza renovation also affords the chance to reconfigure the space to reduce maintenance demands. With fewer large, featureless pavement areas, a well-designed plaza can minimize the work of snow removal and the liability of slippery surfaces.

Plazas as vegetated roofs

For plazas over occupied space, an important design option is the vegetated roof—plantings atop the waterproofing system. In retrofit applications, this addition offers many benefits:

- cooler climate—in cities, vegetated roofs reduce the heat island effect, keeping buildings and their surroundings cooler and cutting down on energy consumption;
- stormwater control—plants and growing media filter pollutants and reduce stormwater runoff, decreasing loads on drains and sewers and cutting down on flooding;
- noise reduction—beyond providing a thermal buffer, the insulating properties of plants and growing media tend to reduce ambient noise within the building;

VEGETATED ROOFS AND CODE REQUIREMENTS



Existing plaza.



After renovation of plaza to a vegetated roof system.

With careful planning, owners of existing plazas can use code requirements to their advantage in incorporating sophisticated planting designs impossible on an ordinary roof.

Code requirements for live load are different for plazas than for roofs. Regardless of a plaza's actual use, current code anticipates the potential for large loads due to crowds or events, and requires a high live load capacity for the structure (typically 4.8 kPa [100 psf]). Roofs, conversely, are not expected to receive such loading, so the code stipulates a far smaller live load capacity (typically 0.96 to 1.44 kPa [20 to 30 psf]).

If a plaza area is converted to a vegetated roof, the reduction in live load may be used advantageously to permit a more robust planting assembly, provided people are kept off the vegetated areas. Heavier, more substantial plantings and decorative features impossible on a roof may be employed in a plaza installation thanks to the structural capacity inherent to the existing plaza deck.

However, such repurposing of plaza space requires the new planting beds be protected from incidental use that could bring the total load above structural capacity. Installation of fences, railings, and/or gates must clearly indicate to pedestrians these areas are off-limits.

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- aesthetics—by limiting pavement and hardscape, vegetation at the plaza level enhances and softens the view, providing a pleasant environment for building users and others in the community;
- snow and ice management—in cold climates, converting portions of a plaza to a vegetated roof reduces the total area requiring snow removal in the winter, saving maintenance costs and reducing liability; and
- corporate or institutional image—a 'green' roof visibly affirms the owner's commitment to sustainable design, which can be deemed just as important as the environmental benefits themselves.

There are two types of vegetated roofs—intensive and extensive—the choice of which is usually dictated by the weight-bearing limitations of the structure. Intensive roofs are thicker, heavier, and generally higher-maintenance; they can include lawn grasses, larger shrubs, and even small trees. Despite the advent of light engineered growing media, the weight of these systems can be substantial. Extensive roofing systems, in contrast, are thin and relatively lightweight; however, these systems usually sustain only small hardy plants, such as sedum and mosses.

Before adding vegetated areas over occupied space, there are many considerations to evaluate, the most immediate and limiting typically being the load-carrying capacity of the plaza deck. In terms of structural considerations, though, vegetated roofs in a plaza setting have significant advantages over their counterparts on the rooftop. These assemblies—even extensive ones—are heavy compared with traditional roofs, and this extra weight can limit their use on existing buildings.

Typically, this limitation is not a problem for plazas. The weight of extensive vegetated roofs is comparable to that of many plaza paving systems, so ounce-for-ounce replacement of pavers with plants and growing media is often possible. Additionally, plazas must be designed for large potential live loads from vehicles and crowds; once converted to a vegetated assembly, that area must sustain only the occasional gardener or two. By restricting access, the design professional may convert the excess live loadbearing capacity into additional support capability for plantings.

Being several stories off the ground, the benefit of a vegetated roof atop a building is it can be designed to be more or less self-sustaining. Requiring only occasional weeding and fertilizing, an extensive roof is low-maintenance, but it can become an unattractive

An underused plaza at this public university showed signs of age and wear (left). After renovation, it became a varied program space that incorporates plantings, solar lighting, and durable materials (right).



SKATEBOARD DETERRENCE



Wide, faceted joints and grooves in sitting walls can help prevent skateboarding along the edge.

Skateboard use on plaza fixtures, including benches and pavers, causes damage and poses safety concerns. Fortunately, there are products and design elements that can be incorporated into the plaza to discourage unwelcome skateboarding activity.

Wide joints in the paving system, along with rough pavement sets, deter skateboarders by creating ruts in the surface. Rather than long, smooth edges, it is best to opt for faceted sitting walls, or install edge-applied brackets and obstructions to eliminate clear runs. The configuration of plaza elements may also be arranged to remove potential locations for jumps.

Remedial measures for existing plazas need to be undertaken with consideration for aesthetics, as well as compliance with building code and with the *Americans with Disabilities Act (ADA)*. For instance, protruding knobs or blocks installed on handrails may be dangerous to those using the stairs, as loose handbag straps can become entangled in the projecting elements. Before taking action to stop skateboard use, check with a design professional or local building official for guidance.

With proactive measures, the broken concrete, skid marks, and crumbling masonry that are the hallmarks of skateboard activity can become a thing of the past, without any compromising of safety or appearance.

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jumble of desiccated plant matter during the drier summer months. To avoid having a plaza that looks more brown than green, irrigation measures must be incorporated into most plaza landscape designs.

The most attractive plaza vegetated roofs employ a combination of both intensive and extensive roofing systems. Taller, decorative intensive plants and grasses can be strategically located within a mosaic carpet of extensive plantings to provide the appearance of a lush and vibrant meadow.

Waterproofing and drainage

Whether preservation, restoration, rehabilitation, or renovation, all plaza projects need to consider water management. Water is the single largest source of plaza deterioration and premature failure—without appropriate provision for water protection and drainage, even the most visually arresting of plazas becomes a source of ongoing problems.

Adequate pitch to drains is necessary for the integrity and longevity of a plaza. Without sufficient slope, water will pond, causing staining, deterioration, safety concerns, and maintenance issues. Depending on the climate, porous paving materials without adequate drainage can retain water and undergo freeze-thaw damage, including heaving, cracking, and displacement. Installation of bi-level drains and appropriate substrate slope facilitate removal of water at the plaza level, as well as at the surface of the waterproofing membrane.

There are many different waterproofing systems, including loose-laid and self-adhered membrane assemblies. Self-adhered systems, which are bonded to the structure below, include cold-applied membrane waterproofing, urethane systems, and hot-applied membrane systems. Loose-laid waterproofing offers the advantage of ease of installation and is forgiving of surface preparation

deficiencies; however, a properly installed, fully adhered system prevents moisture from traveling beneath the membrane. Provided the membrane is applied at the minimum thickness recommended by the manufacturer, hot-applied systems may be preferable for continuous plaza waterproofing, due to their resiliency.

For large plaza areas, expansion joints are necessary to absorb expansion and contraction of paving materials and prevent cracking. The design

professional should position these flexible joints at the high point on the plaza deck. A watertight connection keeps moisture intrusion from causing building component deterioration and leaks into occupied spaces.

Fixed site features, such as planters or fountains, present additional challenges to drainage and waterproofing. These features may make the drainage pattern more complex; double-checking slope and proper detailing of the system can prevent problems with safety and maintenance.

SEVEN TIPS FOR FOUNTAINS AND PLANTERS



Planters and fountains present challenges to drainage/waterproofing.

1. Protect planter waterproofing with a concrete or masonry lining where frequent planting replacement is anticipated.
2. Position fountain drains so that they are readily accessible to maintenance personnel.
3. Place electrical outlets and panels in a convenient location, where maintenance staff will not need to trudge through plantings or stretch around barriers to reach them.
4. Include appropriate fall protection for maintenance activity. Planters at the edges of an elevated plaza may look nice, but if safety harness tie-ins and other provisions are not included in the design, the beds will not be maintained—or they will require the added expense of rental equipment.
5. Consider the location of plaza features relative to areas below. Fountains and planting beds should not be positioned above mechanical or electrical rooms, and drain cleanouts should not be located in occupied spaces.
6. Mark pavers over elements that will need to be accessed by using a discreet, water-jetted symbol to ensure that they are easily identified by maintenance personnel.
7. Locate planters and fountains away from expansion joints. An expansion joint crossing through a planter or fountain not only is apt to leak, but also makes maintenance and upkeep even more complicated.

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Anticipating maintenance needs

When redesigning an existing plaza, maintenance demands should be considered as part of the design process, rather than as an afterthought. With advance planning, owners and facility managers can streamline plaza upkeep and reduce the time and expense of future repairs.

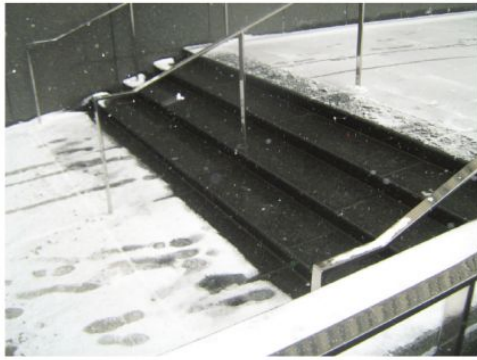
In northern climates, snow removal can be a major challenge. Labor, equipment, and materials like de-icing chemicals and sand represent a significant expense. Installing a snow-melt system as part of a plaza rehabilitation project can decrease the effort of snow and ice management over the life of the plaza.

Planting beds add to the plaza aesthetic, but they require thought and care. Selection of plantings should consider the plaza climate, location, and orientation if plants are to thrive. It is also important to consider the cost and labor involved to trim and maintain plants, and to supplement beds with annual flowers, as desired. Each fall, irrigation systems must be winterized and inspected.

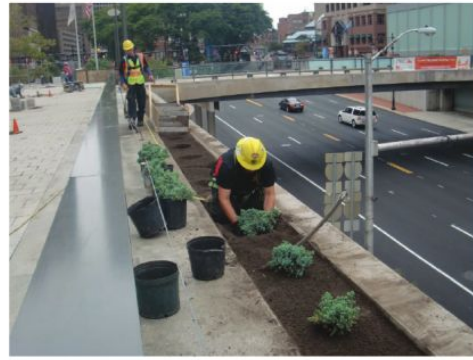
Periodically, lighting fixtures will need attention and light bulbs will need to be replaced, so fixtures should be accessible to maintenance personnel. The plaza paving must be able to accommodate aerial lifts if required to service lighting. As days get shorter, timer systems must be monitored to ensure lighting is on and adequate for safety.

Whether plant matter, litter, or accumulated sand and salt, debris inevitably collects in certain locations and needs to be removed. Drains must be routinely cleaned and inspected, and displaced and damaged pavers should be reset or replaced as needed.

A maintenance plan can help keep all these tasks in order. This includes a master list of items for staff that should be done daily, weekly, monthly, seasonally, and annually. For a restored or renovated plaza, the design professional can tailor a maintenance program to meet the demands of specific features, fixtures, and landscape elements.



For certain locations, a snow-melt system can ease winter storm management and improve safety.



One can plan ahead for planter care/upkeep by installing linear fall protection lines for safety harness tie-ins.

Aesthetics and performance

Whether restoring a landmark plaza to its original grandeur or reconfiguring an outdated design to meet changing needs, a plaza project presents an opportunity to make a statement. The experience of plaza users acts as a prelude to their encounter with adjacent buildings, and the features and ambiance of the plaza should complement the character of the facility, while responding to the needs of occupants and the larger community.

By providing accessible, convenient ramps, stairs, and passageways, the owner underscores a

commitment to civic responsibility, while safe and code-compliant pedestrian traffic management brings peace of mind. Beyond the basics, landscape features like vegetated roof areas, planters, and fountains add interest and encourage appropriate use of plaza spaces.

An attractive plaza is a valuable amenity—one acting as a showpiece for the building. With the right design approach and attention to detail, a well-planned plaza project can create a functional and appealing space that provides dependable performance well into the future.

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ADDITIONAL INFORMATION

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Abstract

Plazas are often public spaces, and they form a significant part of the building's impact. Landmark buildings and well-trafficked thoroughfares need to respond not only to the demands of occupants, but also to the larger interests of the community. A plaza restoration must therefore consider the historic

significance of the design, if applicable, along with the functional requirements of the space, the maintenance demands on building staff, the cost, and the longevity of the materials and systems selected. With the right balance of sensitivity to surrounding structures and consideration for public use, the prudent owner can achieve a plaza rehabilitation that is as eye-catching as it is practical. This article takes a particular look at issues related to drainage and waterproofing.

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