



Character

Landscape



Intent

Landscape encompasses the natural and built forms that help to define riverfronts. From riparian zones to landscaped trails and streets to gardens and parks, the landscape element has a critical role in stabilizing riverbanks, providing habitat, and creating enhanced open space. Landscape also forms special places by linking the rivers to the network of streets and buildings, often providing the defining characteristics of a place. Landscape provides the contrast between the strong forms of the built environment and the natural forms of its setting that are most memorable and inspiring. The following guidelines are intended for developments seeking to manage the delicate balance between the built and natural environment.

Key Concepts

- Riverbanks are a crucial interface for river hydrology, riparian support systems and waterfront activities. A range of riverbank conditions are represented in Southwestern Pennsylvania, from hard-edged conditions (seawalls, slag piles, bridge abutments, riprap) to soft edges (shallow banks with floodplain vegetation, steep banks with planted vegetation, mown and trampled earth banks with invasive vegetation).
- Hard river edges can be a significant concern because they disrupt the natural fluctuations of water that support a riparian plant environment. Commercial barge and recreational boat traffic contribute wave action against the shoreline, making it more difficult for young vegetation to establish at the immediate river edge.
- Invasive vegetation is a relatively recent problem for rivers. Japanese knotweed, Tree of Heaven, and other opportunistic plant species are multiplying on the river edges at a significantly greater rate than **native species**. This is resulting in decreased species richness, decreased biodiversity and less resilient ecosystems.
- Plant native or non-invasive species throughout the river corridors. Native species are preferred for the river-edge landscapes because of their adaptation to the local environment, response to flood conditions, and biodiversity enhancement.

DEFINITIONS

Native species

Its presence in a region or ecosystem is the result of only natural processes, with no human intervention



- With people living, working and playing closer to the rivers, there is a natural tendency toward removal of trees and vegetation in order to give better views of the river. The unintended consequences of this removal are the degrading of the riverfront ecology, a decrease in the effectiveness of stormwater management, and bank instability.

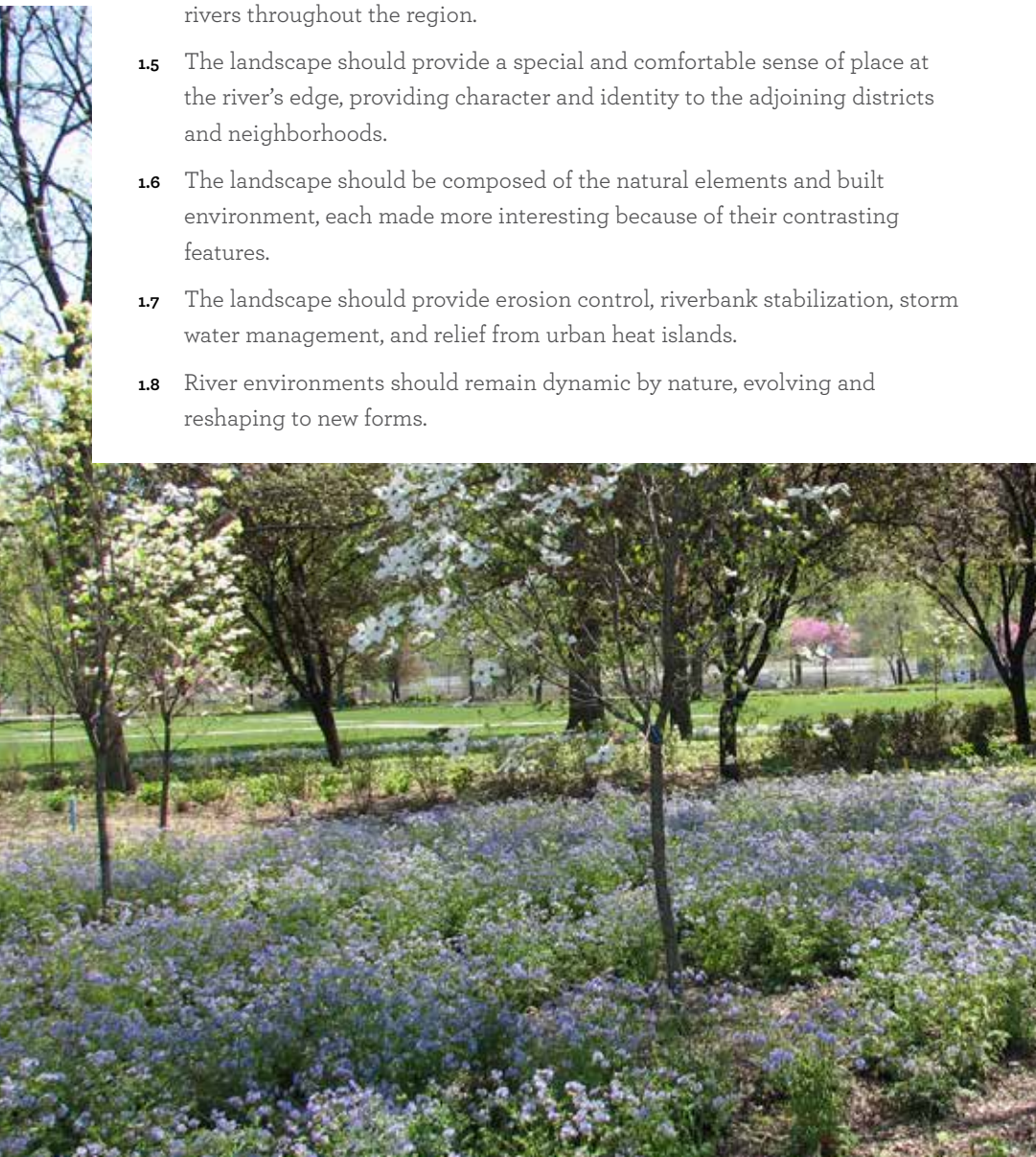
Guidelines

Landscape Goals

- 1.1 The landscape should be shaped by the topography that historically defined the natural and urban form.
- 1.2 The landscape should contribute to a **biologically diverse** network of open-space corridors to support and enhance the wildlife habitat and plant communities of Western Pennsylvania.
- 1.3 The landscape should consist of a primarily native species palette.
- 1.4 The landscape should build on the identity and visibility of the region's rivers and establish a coherent, recognizable system of places along the rivers throughout the region.
- 1.5 The landscape should provide a special and comfortable sense of place at the river's edge, providing character and identity to the adjoining districts and neighborhoods.
- 1.6 The landscape should be composed of the natural elements and built environment, each made more interesting because of their contrasting features.
- 1.7 The landscape should provide erosion control, riverbank stabilization, storm water management, and relief from urban heat islands.
- 1.8 River environments should remain dynamic by nature, evolving and reshaping to new forms.

Biological diversity

The diversity, or variety, of plants and animals and other living things in a particular area or region.



Project Guidelines

Stormwater runoff

Water from rain or melting snow that “runs off” across the land instead of seeping into the ground.

Green reinforced surface treatments

Planted treatments placed along hard surfaces. They may not have the complexity of a soil-based system to retain large volumes of water but, if extended over long distances adjacent to roadways and trails, will provide an accumulated stormwater capture and filtration benefit.

Turf reinforcement mats

Non-biodegradable materials that provide erosion protection and accelerate vegetative growth. Their open-weave construction allows for maximum root and stem entanglement, thereby increasing the vegetation’s ability to withstand higher flow velocities and shear stresses.

Canopy trees

Trees that are specifically grown for their canopy. A common term for canopy trees is shade trees. A canopy is the outer layer of the tree’s leaves, and shade trees have a dense canopy that blocks out the light.

- 2.1 Hire a landscape architect to help in determining how the river edge should be landscaped and designed.
- 2.2 Train landscapers to work with living systems. It is important that training rely on accurate field observation and data collecting. Training should also be comprehensive, incorporating horticulture and ecology.
- 2.3 On riverfronts, plantings should be directly related to the slope of the land; a slope of 2:1 needs to be 100 percent planted, a slope of 3:1 can handle a mix of plantings and open areas and a 4:1 slope is desired for establishment of native species plantings.
- 2.4 Replace paved surfaces and lawns with plants and porous materials—plants can play a significant role in decreasing **stormwater runoff** and improving water quality. Replacing lawns with native meadow, shrub, and tree plantings will decrease the amount of both runoff and pesticides. Plants along a riverbank not only reduce the velocity of surface runoff but also purify the groundwater before it reaches the river by absorbing nutrients.
- 2.5 If possible, address the condition of land adjacent to the riverfront, such as industrial sites, combined sewers overflows (CSOs), or impervious paving before committing to a full-scale planting effort along the banks.
- 2.6 Address structural conditions, such as collapsing banks, before planting. Where possible, use **green reinforced surface treatments**, rather than non-living materials.
- 2.7 Use lightweight, root-breathable bioengineered walls planted with seed, live stakes, and **turf reinforcement mats** to increase erosion resistance and encourage sediment deposition on banks
- 2.8 Accept the possibility of occasional damage by ice and flooding. Incorporate break-away and tie-in points to manage potential losses.
- 2.9 Maintain **canopy trees** along the entire riverbank to the fullest extent possible. Develop a diverse hierarchy of landscape cover types—forests are the preferred restoration target because they have the most biomass and therefore the greatest capacity to restore the environment.
- 2.10 Implement or strengthen landscape requirements in local zoning ordinances.
- 2.11 Ensure that river-edge management is adequately budgeted. Maintenance budgets need to incorporate all new and existing projects. Riverfront projects are susceptible to damage from flooding and commercial activities, as well as more typical wear and tear from public use.

Invasive Species Management

- Avoid use of invasive species in landscapes. Although many states list ornamental species as invasive plants, local nurseries might still sell them to the public.
- Minimize disturbance and revegetate disturbed areas. First and foremost, protect intact native plant communities.
- Plant canopy trees. By planting disturbed areas with native species quickly after a disturbance occurs, invasives can be kept in check more easily.
- Monitor the property regularly for invasive species, and when they do appear, remove them quickly before they have a chance to become established.
- Fertilize minimally—or not at all. Overfertilization increases weed numbers and increases nutrient loads in runoff.

Disturbance

A temporary change in average environmental conditions that causes a pronounced change in an ecosystem.

FURTHER INFORMATION

For more useful information about the creation and management of river landscapes, please read through the ***Landscape Management Guidelines***.

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Types of Landscape

Forest (>50 percent canopy cover)

Continuous canopy with layers—plant wherever possible; provides shade, recreation, riparian habitat, stormwater and erosion control, flood mitigation and water quality treatment

Woodland (<50 percent canopy cover)

Open canopy with tall grasses—plant wherever views are desired through trees; provides most benefits of forest and may be more acceptable in developed areas

Shrub Land

Mixed species of varying heights—plant to protect steep slopes and as natural fences for pedestrian/bicycle traffic control

Meadow

Warm season grasses and wildflowers—plant as a means of managing large open areas; provides riparian buffers and habitat for small mammals, insects and birds

Lawn

Plant on relatively flat slopes and active recreation zones only; separate lawns from river edges with riparian buffer

Character

Public Art

DEFINITIONS AND USEFUL TERMS

Expert review panel

Generally composed of no fewer than three and no more than five professionals selected on the basis of their expertise relative to the specific goals and objectives of the project

Intent

Public art has the power to connect people to the riverfront. Great public art enhances, energizes and defines its surroundings, generating civic pride and cultural identity. For public art to make a meaningful contribution, there must be a commitment to uncompromising standards of quality. The artwork must embody the vital identity and values of the riverfront, elevate the experience of the visitor, and bolster a distinctive sense of place.

Using a variety of media and textures, artists can create landmarks and visual experiences, distinguishing the viewpoints and drawing people to them. Public artwork should provide cohesiveness to the trails and pathways and expand opportunities for pedestrians to recognize, appreciate and celebrate the importance of the river. This section will provide guidance in developing strategies for artist selection, appropriate implementation of artwork into riverfront parks, and maintenance of public artwork.

The Pittsburgh Urban Redevelopment Authority published a document in 2010 that provides information about providing public art in developments. This resource should be consulted when adding public art to a riverfront project.

Key Concepts

Temporary Art

Programming temporary art provides a unique platform for the public to experience contemporary art. It allows for the realization of a diversity of experimental projects by both established and emerging artists that serve to advance the understanding and appreciation of the river. Temporary art invites a range of media, including digital, mechanical, musical, literary and performance art. Participatory community events such as, a floating parade and the Riverlife Festival are among the limitless possibilities.



Maintenance Considerations

Long-term survival of outdoor artworks along the river is affected not only by proximity to the water, but by climate, use of the site, adjacent buildings, trees, roads and sidewalks. It is important to determine who will use the area—pedestrians and pets, cyclists, skateboarders, etc.—and how it will be used.

The survival of outdoor artwork depends on the nature of its construction, the environment it is exposed to and the maintenance it receives. To anticipate and limit future maintenance needs, consult with professional curators whose technical understanding of materials and fabrication processes are invaluable during the artwork review process.

Guidelines

Project Management

Professional project management is critical to the successful implementation of public art projects. A project manager should:

- 1.1 Coordinate the interests and needs of a multitude of participants, including peer professionals, community members, and other stakeholders to ensure that the full potential of the public art project can be realized.
- 1.2 Facilitate the artist and artwork selection and approval processes, including the approvals of local regulatory and review bodies.
- 1.3 Manage the design, fabrication, and installation of public artwork.
- 1.4 Anticipate, plan for and implement the complex layers of competing schedules, information requirements, budgets and programmatic needs.
- 1.5 Negotiate agreements and develop consensus around highly complex issues and situations.
- 1.6 Oversee gifts of artwork and memorials for placement in parks.
- 1.7 Provide guidance on the incorporation of public art into development projects.

Expert Review

Expert review of public art projects should benefit the implementation of public art projects in the following ways:

- 2.1 Advocate for the inclusion of public art in all infrastructure projects.
- 2.2 Recommend a pool of potential artist selection panel members.
- 2.3 Act as a liaison to the individual artist selection panels.
- 2.4 Review and take action on the artist selection panel recommendations.
- 2.5 Review design milestones for any given project.

Open competition

Initiated by circulating an announcement with information about the project budget, site and other parameters for the desired artwork, and calling for artists to submit proposals. Any artist may apply.

Invitational competition

Frequently used as an alternative to an open competition.

Nomination process

Nominations of appropriate and qualified artists are solicited from a select number of expert and well-informed arts and design professionals.

Request for qualifications

Asks artists to send in qualifications to be reviewed by the selection panel but does not ask for a specific proposal to be submitted. The selection of an artist on the basis of a request for qualifications takes place when a project is in its earliest stage of design.

Request for Proposals

Asks artists to submit qualifications as well as a proposal for a specific site. The selection of artwork on the basis of a site-specific proposal is appropriate for existing sites, or when the design of a construction project has evolved to a point where there is adequate information to develop a responsible proposal. Various artists may respond to the stated project goals and specific conditions of the site. The selection panel weighs the artistic merits of several concepts, thoroughly exploring the questions of feasibility and budget.

FURTHER INFORMATION

More detailed information and building design guidelines can be found within the *Three Rivers Park Public Art Strategy*, and *Add Value Add Art* by the Urban Redevelopment Authority and the Office of Public Art.

riverlifepgh.org/resources

Maintenance Considerations

The maintenance needs of the artwork should be kept reasonable and should be adequately managed following these guidelines:

- 3.1 Prepare for ongoing maintenance requirements and cost.
- 3.2 If possible, make sure that there is provision for maintenance funds or a maintenance agreement by the donor.
- 3.3 Establish artwork installation and removal specifications.
- 3.4 Get written permission from the artist or artist's estate for a qualified conservator to conserve the artwork when necessary.

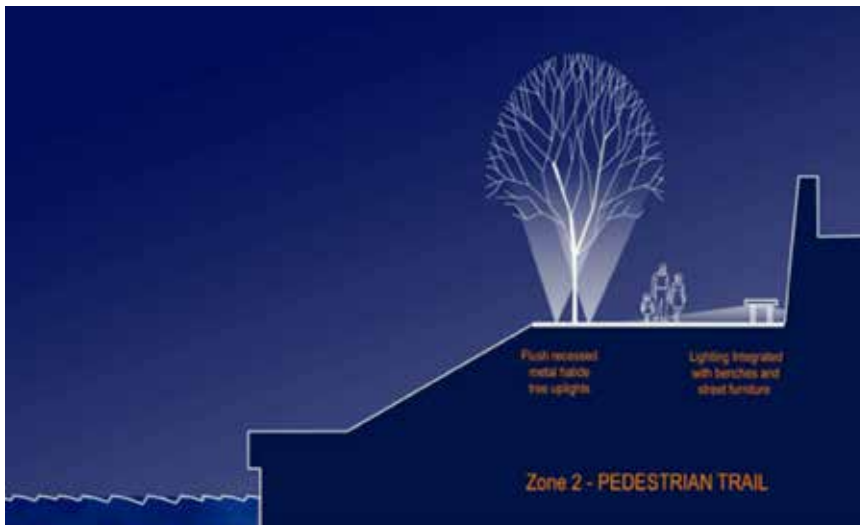


Character

Lighting

Intent

Lighting has the power to ensure that the public realm remains safe, comfortable and engaging after dark. Night lighting can help transform a foreboding space or a dark building into effective markers, ensuring that people feel comfortable moving through the park. Effective lighting will clearly identify a destination as well as exit and entry points from the river. This section is intended to provide guidance and concepts to create a successful lighting strategy for a district or for an individual project application.



DEFINITIONS AND USEFUL TERMS

Direct Energy Use

The use of optically efficient lighting that directs light onto the required area with minimal light spill is a part of good lighting practice.

Embodied energy of the installation

A life cycle assessment examines the total environmental impact of a material or product through every step of its life—from obtaining raw materials (for example, through mining or logging) all the way through manufacture, transport to a store, use in the home, and disposal or recycling.

Light spill and light pollution

The use of exterior artificial lighting can cause light pollution. Light pollution principally occurs as sky glow, light trespass, and glare. Direct upward light from exterior lighting installations causes sky glow. Glare is caused by the uncomfortable brightness of a light source viewed against a darker background. Light trespass is defined as light spilling beyond the boundary of a property or area to be illuminated.

Key Concepts

- **Brightness and Contrast:** Too much light is frequently projected onto buildings, destroying any appreciation of the architecture by washing out the details. Lower light levels can often be more revealing and sympathetic.
- **Environmental Effects:** There are a number of environmental factors that can be positively impacted by exterior lighting with regard to **direct energy use**, visual impact, **light spill and light pollution**, and effects on flora and fauna.
- **Visual Impact:** The appearance of lighting equipment during the daytime can be an unsightly obstacle and can have a significant impact on local views. Lighting equipment mounted on building facades without due consideration of the architecture can be unsightly.
- **Reducing Crime and Fear of Crime:** Carefully applied exterior lighting can have a positive actual and perceived effect on safety. Expenditure on good lighting in a public realm is a more effective means of increasing safety than an equal expenditure on electronic surveillance equipment.

Guidelines

Lighting Bridges

- 1.1 A detailed lighting design for a bridge should illuminate and enhance the essential character of the structure. To do this, all light sources must be concealed from view as much as is possible.
- 1.2 Avoid glare for pedestrians on the bridge and for those viewing the structure from a distance.
- 1.3 Dark painted bridges can be difficult to illuminate with projected light. In these instances, consider delineating the essential structural elements with lines of light.

Lighting Structures

- 2.1 Lighting should be considered at a very early stage in the project planning to ensure that exterior lighting schemes are designed as part and parcel of the new development, rather than as an afterthought.
- 2.2 Light only buildings and structures of sufficient merit or where lighting enhances the ambience of the immediate surroundings. Take into account the existing lighting of adjacent buildings and be considerate of the total lighting effect on an area. Do not illuminate buildings or structures where residential spaces will be compromised by intrusive lighting.
- 2.3 Ensure that exterior lighting installations avoid visual clutter without glare, are discreet, and do not compromise the architectural integrity of the structure.

- 2.4 Existing structures and buildings will require particular care in product selection to make sure that the illumination and fixtures are respectful of the building's architectural character while lit and during daylight.

Lighting Landscapes

- 3.1 Not all elements of the landscape need to be directly illuminated.
- 3.2 The lighting design should seek to strike a balance between light and shadow, creating a balanced overall composition and avoiding too much lighting (glare) and too little lighting (for safety considerations).
- 3.3 Lighting has the opportunity to enhance views and vistas and to reveal different perspectives for those experiencing the park as pedestrians, by car, or from the water.

Lighting Fountains and Water Features

- 4.1 Lighting design for water features and fountains is a specialized task, often undertaken by manufacturers or suppliers, who have practical experience creating lighting effects that are most compatible with different types of water displays.
- 4.2 All equipment must be watertight and fully submersible.
- 4.3 The location of the light fixtures in relation to water jets and cascades is critical. Light from underwater fixtures will be refracted or reflected depending on the angle of incidence of the light beam. Bubbles and particles in the water may also affect the light.

Lighting Art Installations

- 5.1 Art installations provide an opportunity to integrate lighting in a stand-alone project, on both large and small scales.
- 5.2 The lighting scheme for artwork should be approved by the artist and project managers to ensure that the lighting is appropriate and sensitive within the context of the park.
- 5.3 Operational costs should be considered as part of the artwork project scope.

Design

- 6.1 Provide adequate light, with even distribution and a suitable **color**, in order to enhance the form and character of the outdoor environment.
- 6.2 Utilize indirect lighting wherever possible.
- 6.3 Reveal hazards such as stairs and changes in level. Illuminate dark and potentially dangerous areas.
- 6.4 Accommodate opportunities for entertainment and leisure after dark. Often a small amount of light can fulfill these needs.
- 6.5 Effect lighting on a large scale, highlighting individual buildings and features. The best results may be achieved when individual schemes within a district are coordinated together by the same team of professionals.

Scale

Relates to perceived size of structures, buildings, and spaces relative to other forms and to people when viewed at night. The more diffuse and general the lighting is, the easier it will be to assess the relative scale of objects and structures.

Rhythm

The spacing of individual illuminated elements, lighting columns, and pools of light are perceived as rhythms. Wider spacings between fixtures and lit surfaces will elicit a subdued response from the viewer. An awareness of the rhythms created by artificial lighting should be considered during design development.

Emphasis

Selective lighting can enhance attractive features and conceal unattractive ones.

Color

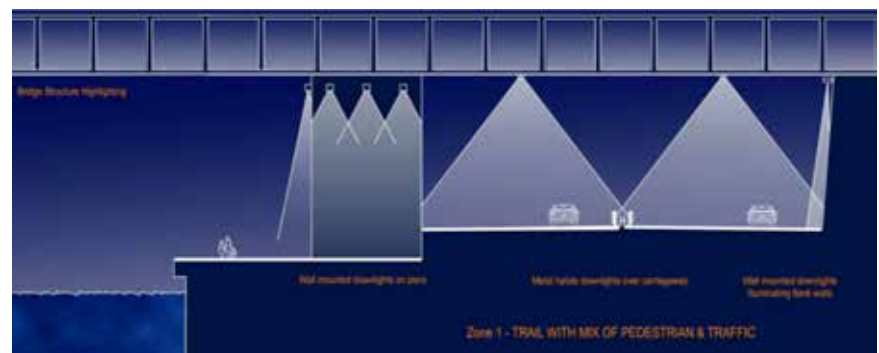
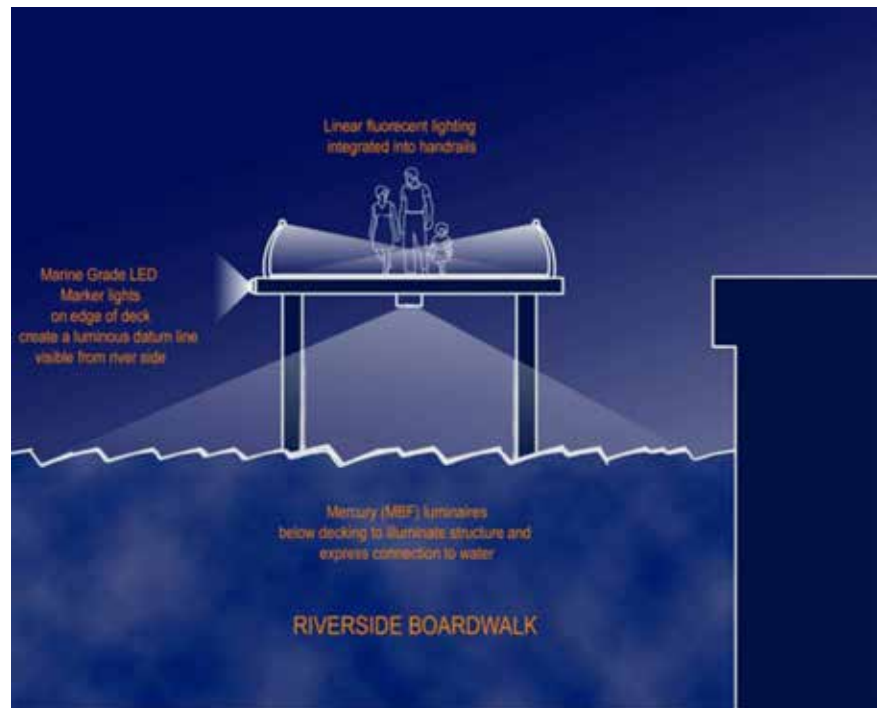
The color appearance of a light source or illuminated surface will be seen as either "warm" or "cool." Lamps with a low correlated color temperature are "warm" and those with a high correlated color temperature are "cool."

Sustainability

- 7.1 All fixtures should utilize energy-efficient technologies.
- 7.2 The environmental impact of exterior lighting needs to be considered at the very beginning of the design process to balance energy conservation with proper lighting for the highest possible efficiency.
- 7.3 Lighting efficiency maximizes sustainability and minimizes long-term costs, particularly for a large-scale project.

Build Quality

- 8.1 All exterior light fixtures need to be robust, particularly in the “marine” environment.
- 8.2 Working samples of proposed lighting types should always be tested and approved before equipment is finally chosen. Ideally, an on-site lighting trial should take place before any final decisions are made.
- 8.3 The number of light sources and types of fixtures available to lighting designers are constantly changing. Care should be taken to ensure that the most current and most efficient options on the market are considered.



Light Spill and Light Pollution

- 9.1 Ensure that all exterior lights are designed and installed so that light is emitted in a downward direction, rather than horizontally or upward.
- 9.2 Ensure that the correct amount of light is provided in order to avoid light pollution.
- 9.3 Make sure that exterior lighting is timed to shut off consistently when it is no longer needed.

Installation, Operation and Maintenance

- 10.1 The cost of most urban exterior lighting projects represents a low level of capital expenditure that results in a large return in terms of added value to property development, improved public realm spaces, and increased safety.
- 10.2 Factor in capital costs to include design fees, installation, fixtures, control equipment, meters and housing.
- 10.3 Factor in operating costs to include electricity, replacement lamps, routine maintenance and inspection, and installation and removal of temporary and seasonal lighting displays.

FURTHER INFORMATION

More detailed information and building design guidelines can be found within the *Three Rivers Park Lighting Strategy*.

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Five Factors to Consider When Selecting Light Sources:

Efficacy: The output of the lamp in relation to its energy usage, measured in lumens per watt. This is often the principal consideration for reasons of economy.

Lamp Life: The average life of a lamp in a large installation. The figures quoted by lamp manufacturers are to "50 percent failure." Lamp life has a significant impact on maintenance costs.

Color Appearance: An assessment of what the color of the light source appears to be. This is important in considering the overall effect of the lighting.

Color Rendering: The ability of the light source to render colors accurately. Although less important in exterior lighting, poor color rendering can have a deadening effect on an area. Good color rendering light sources have Ra >80 or below to Group 1A, 1B or 2A.

Lamp Shape and Coating: The shape of a light source will dictate much of the light design. A phosphor coating will change the quality of the light.