Built

Buildings

Intent

Buildings located along the riverfront establish the edge of the public realm, becoming a "face" to the individual districts in which they are located. Viewed from the waterscape and other vantage points, they become landmarks that orient visitors and inhabitants. Added together, buildings compose a district with distinctive forms and landmarks.

This section is intended to give guidance when designing buildings and creating master plans for new districts, to create a built edge to the riverfront that complements the natural setting and that in turn, activates and distinguishes the district.

DEFINITIONS

Massing

The volume and shape of a building

Key Concepts

All building and site development should incorporate elements of green-building design. Developers and owners are encouraged to utilize the Leadership in Energy and Environmental Design (LEED) standards as established by the U.S. Green Building Council (USGBC).

Guidelines

Contextual Scale and Massing

1.1 In new districts, a master plan should outline the minimum and maximum requirements for building height and **massing**.

1.2 In dense urban areas, such as the City of Pittsburgh, construct buildings to a minimum of four stories and 60 feet high in districts adjacent to a river, with six to eight stories preferred.

1.3 Design building **massing** with consideration of maintaining views of rivers, key landmarks and architecture, and the vistas and spaces around them. Maximize light and air to open spaces and minimize shadows on adjacent properties and open spaces.

1.4 For individual building projects, identify the height patterns that are present in the district in which they are located. Relate the height of the new development to the height of the surrounding district, and reduce negative impacts on adjacent properties, such as blocking views, casting open spaces into shadow for a significant period of the day, etc. **Schematic illustrations** of the massing of the surrounding district will be required in order to review

the proposal's compatibility with the established district and the overall design goals for the riverfront.

1.5 Due to the Pittsburgh area's varied topography and changing landscape, roofs of buildings in and adjacent to the riverfront are visible from multiple vantage points. Building tops become important landmarks within individual districts, such as the Golden Triangle. Pay careful attention to the design of building tops and roofs, giving a vertical emphasis to those building tops that are viewable from surrounding areas.

Setbacks and Build-to Lines

2.1 In general, build to the property line or an established build-to line of an existing district for all properties located along both perpendicular and parallel connections, with the intention to develop a consistent and continuous urban fabric within districts.

2.2 "Hold the corner" of buildings at intersections, except where open spaces are strategically located.

2.3 In new districts, an individual district master plan should outline the minimum and maximum requirements for building setbacks and build-to lines.

2.4 For individual building projects, identify the setback and build-to patterns that are present in the district in which they are located. The location of structures should work within the established pattern of the district unless this pattern has otherwise been deemed undesirable. **Schematic illustrations** of the massing of the surrounding district will be required in order to review the proposal's compatibility with an established district and overall design goals for the riverfront.

2.5 Development is encouraged to provide outdoor terraces and porches within setbacks as a means for providing semiprivate spaces for building occupants and encouraging use of the riverfront.

Ground-Floor Design

Buildings located in riverfront districts will accommodate a variety of different uses, ranging from public to private.

3.1 Activate the ground floor with different uses and make them adaptable over time.

3.2 Maximize glazing at least 60 percent.

3.3 While publicly oriented uses are generally encouraged along all district edges, there are also many opportunities to create residential communities adjacent to the park.

3.4 Where appropriate, promote **mixed-use districts** by providing a minimum first-floor height of 18 feet to accommodate a wide range of ground-floor uses.

3.5 Where buildings are located adjacent to riverfront roads, locate primary entrances and addresses on the riverfront road.

Schematic illustrations

Help to determine a concept and to present it in a form that achieves understanding and acceptance. Although the design is not entirely represented, the schematic drawings can demonstrate basic spaces, scale, and relationship of components.

Mixed-use districts

Blend a combination of residential, commercial, cultural, institutional, or industrial uses, where those functions are physically and functionally integrated, and that provide pedestrian connections.

Roof terraces and balconies

Outside spaces of a building used for the enjoyment of the occupants that offer views of the surrounding area.

Green roofs

Partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane. They may also include additional layers, such as a root barrier, and drainage and irrigation systems.

FURTHER INFORMATION

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

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3.6 Locate service entrances away from the riverfront and primary connections to the park.

3.7 Where residential uses are located on the ground floor of a building, use terraces and elevation changes to provide semiprivate entrances and outdoor spaces for residents, without impinging on the public nature of the park.

3.8 Where privacy is required, create screening through changes in floor height, landscaped setbacks, or other devices, rather than dark or reflective glazing.

Building Materials

4.1 Compose buildings of materials with a "Pittsburgh palette" to enhance the quality of the riverfront. These materials can include stone, metal, brick, terra cotta, aluminum, glass, and steel, and can be locally sourced in order to meet green building targets. Other materials may be used for trim and detail, but are not encouraged as a primary building material.

4.2 Avoid the use of stucco, EIFS systems, wood and simulated wood products, one-way or mirror glass and spandrel glazing as primary building materials, except when used sparingly or as accent features.

4.3 Encourage the creative uses of materials in order to reflect the overall character of the park and the district.

4.4 Use transparent glazing with minimal tinting in order to provide views from and into buildings. Make ground-floor glazing 100 percent transparent, allowing clear views into and out of buildings.

4.5 Use green building products, as defined by the standards of the USGBC and similar rating systems, whenever possible.

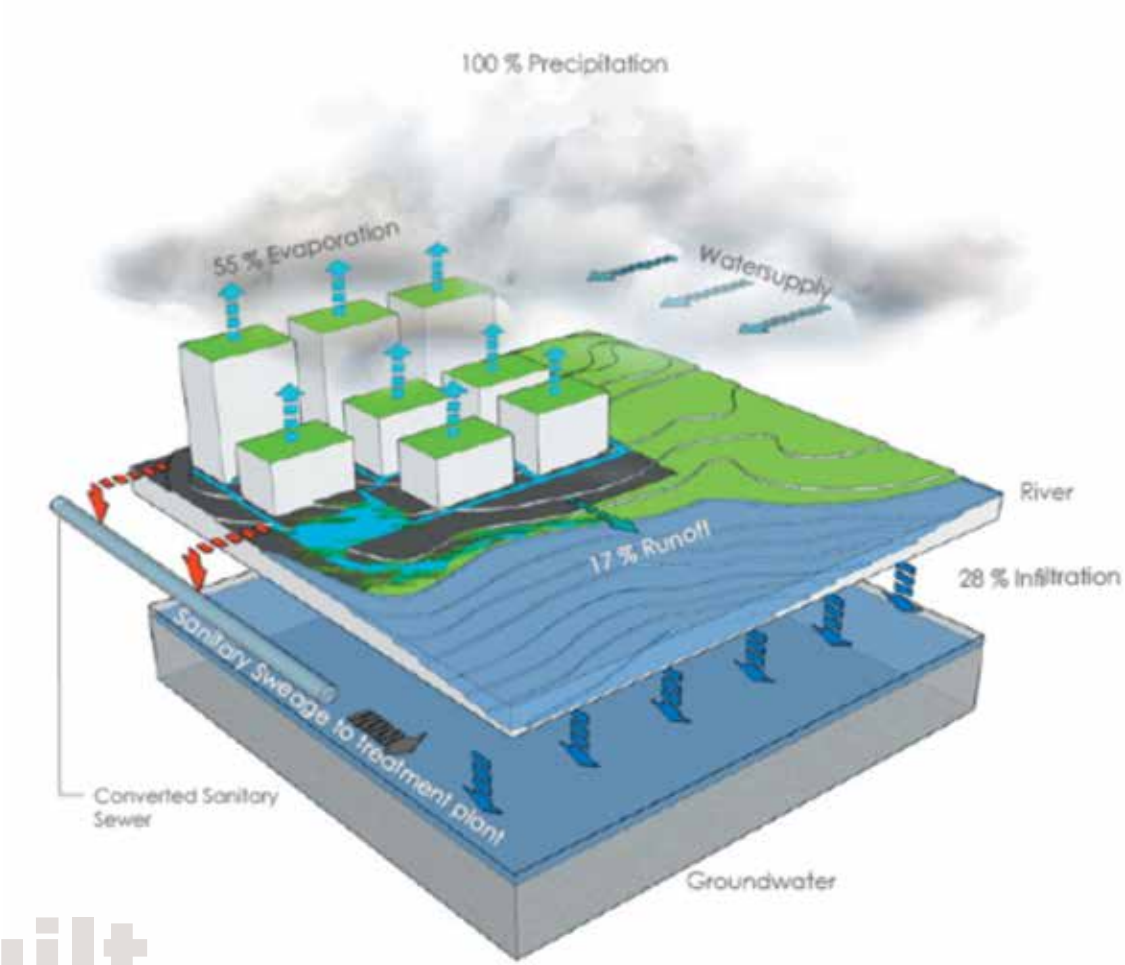
Rooftop Design

5.1 Incorporate **roof terraces and balconies** overlooking the riverfront, for both public and private uses, in buildings located along the riverfront. Where appropriate, provide publicly oriented uses, such as restaurants and cafés, in these locations.

5.2 Create **rooftop gardens** to extend the landscape quality across new and unexpected places in the urban fabric.

5.3 Whenever possible, construct **green roofs** to reduce stormwater run-off, reduce heat island effects and add to the landscape quality of the riverfront.

5.4 Incorporate rooftop mechanical equipment into the building design, and shield it from view.



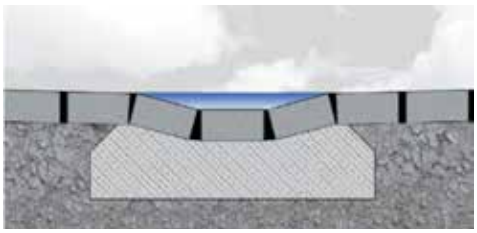
Built

Stormwater

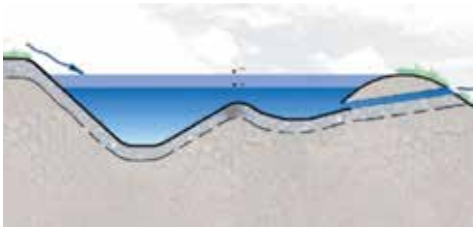
Intent

Simply put, stormwater management is the act of managing the quantity and quality of stormwater. When designed as part of landscapes, roadways, utilities, and rooftops, stormwater management systems can connect the urban environment to the natural environment. Proper stormwater management can aid in preventing myriad problems such as flooding, pollution and groundwater depletion, but in many urban regions only two out of every ten drops of water reach the soil and recharge the aquifer. Before stormwater reaches the ground, it is nearly unpolluted. After landing, it flows and takes in materials, in both dissolved and undissolved forms, from the surfaces on its flow path to the river or groundwater. To reduce these problems, stormwater should be allowed to be retained, cleansed and infiltrated before excess amounts overflow into streams and rivers. The following guidelines are intended to diminish the negative impacts of stormwater on the environment, while restoring the water quality and health of river ecosystems.

Key Concepts

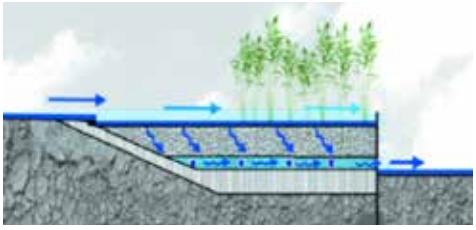


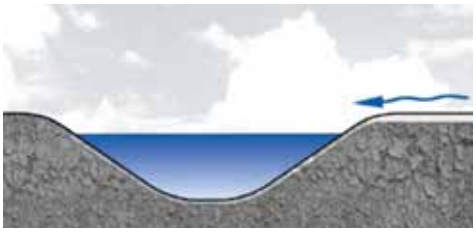
Open Canal: These are used for surface stormwater drainage for roads and parking lots. They can be located on the side, in the center or halfway between surfaces. Advantages include the visibility of the stormwater system, easy maintenance and aesthetic design options for the streetscape. Open canals need to be as shallow as possible to allow for convenient crossing by pedestrians or cyclists.



Sedimentation Basin: These are used to improve stormwater quality and reduce sediment loads. They remove (by settling) coarse to medium-sized sediment from water. Sedimentation basins can take various forms, as permanent systems or as temporary measures to control sediment discharge.

Bioretention Swale: These are **retention** or **detention** basins with a vegetated (i.e., landscaped) surface. Runoff is cleansed as it percolates downward. Different construction elements can be used to direct the inflow of stormwater for cleansing and drainage to reduce the outlet and for emergency overflow.





Vegetated Swale: These are used to remove soil particles and move stormwater through buffer strips and bioretention systems. Swales utilize land flow and mild slopes to convey water slowly downstream. They protect waterways from damage by erosive flows from frequent storm events.

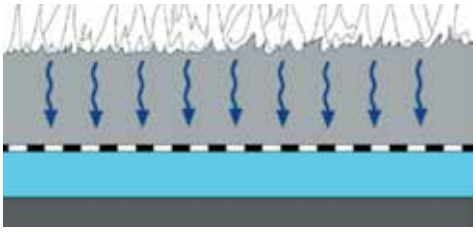
DEFINITIONS

Retention

Water is retained permanently (in a cistern, basin, or wetland) either for later use or until it is dissipated through plant absorption, evaporation, or percolation into the ground.

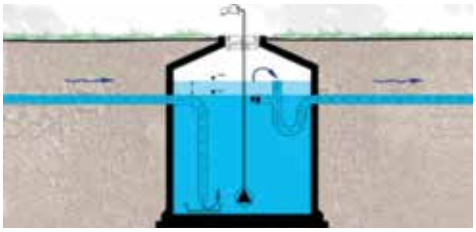
Detention

The temporary storing of rainwater in an on-site facility to release it intermittently later. The flow of water can also be slowed down through a variety of methods, such as draining it through vegetation, increasing the roughness and area, or decreasing the gradient of the runoff surface, etc.

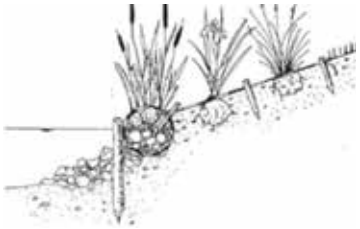


Green Roof: These can be planted partially or completely with vegetation and soil over a waterproofing membrane. Green roofs reduce **stormwater runoff**, keep temperatures down and reduce heat loss and energy consumption in winter.

Underground Substrate Filter: These are box structures, built underground, containing compression-free material that helps to treat organic pollution.



Cistern: These function mainly as rainwater storage and secondly for stormwater detention. The basic storage volume depends on the demand of rainwater use for toilet flushing, irrigation, climatization, or water features.



Bioengineering: Bioengineering seeks to harness the inherent qualities and capabilities of organic matter to replicate natural systems as closely as possible, not only in the use of materials, but also in the methods of construction.

Guidelines

1.1 Stormwater collected from street surfaces and parking lots must be treated prior to its release in order to remove contaminants (heavy metals, fuel, dust, toxic elements, etc.) collected during rainfall. This can be accomplished with integrated stormwater and green infrastructure techniques.

1.2 The flow from combined sewers can be reduced over time if people apply strategies to reduce runoff along the waterfront, and carry that approach upstream throughout the watershed.

1.3 Rainfall runoff from project sites should be captured and held by **vegetative and soil-based systems**, especially for small, frequent rainfalls.

Stormwater runoff

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

Vegetative and soil-based systems

Vegetative areas that have soils engineered in order to retain larger volumes of water for containment. These are sometimes referred to as mini reservoirs, which contain 4- to 8-feet deep swales and use soils to trap pollutants as water is filtered through the system. They use materials, such as lava rock, that have a high porosity to store water. These swales or Bio-Swales can be used in parking lots and other areas with low permeability as a green infrastructure alternative.

Infiltration

The process by which water seeps into the ground, recharging groundwater and aquifers. An added benefit is purification, because water is progressively cleansed as it percolates through layers of sand and soils.

Purification

The process of purifying water pollutants requires a different set of treatments, screening, sedimentation, adhesion, and filtration, biological uptake, and chemical treatment.

Conveyance

This refers to the measure by which runoff water is transported and directed from the point of initial rainfall to final discharge. This is necessary to ensure that water is brought along the right channels to ensure minimum contamination and maximize effective runoff.

1.4 Water should never be conveyed to the river in a pipe or concrete system without the opportunity for capture and treatment, ideally through the use of soil and sunlight.

1.5 When there is a need to convey water, it should happen in open soil and in vegetation systems that slow, absorb, **infiltrate** and clean the water. Water should not be "piped" through the project unless it is buried too deep to reach.

1.6 Open water may not be possible everywhere, but systems that allow water to seep into soils or planting areas can be used even in very structured areas.

1.7 Every opportunity, no matter how small, should be taken to manage stormwater visibly. If possible, people should be able to see and remember the rainfall runoff in a positive way. Even water that comes off roofs can be seen and heard for a moment. Many small things add up to a bigger change.

1.8 Changes away from solid materials and surfaces—green roofs and walls, porous pavements, the removal of pavement—should be encouraged.

1.9 Projects should look beyond their footprint to take the water from uphill—roads, other buildings and paved areas—and reconnect it to the soil and vegetation.

1.10 The path of the combined sewer system should be identified to remind people of where streams are buried and where they reach the river.

FURTHER INFORMATION

For more information on stormwater management, please refer to ***Stormwater Is the Communicator***.

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