# Green Infrastructure Strategies + Typologies

## Networked Right-of-Way Green Infrastructure: Street Creeks

Networked right-of-way green infrastructure uses the street system itself as a connected stormwater landscape. Rather than treating each inlet, bump-out, planter, or rain garden as an isolated facility, this typology links those elements together along the natural slope of the street. Runoff is intercepted from curbs, sidewalks, intersections, and roadway surfaces, then conveyed through a sequence of visible or partially visible green-gray infrastructure elements before reaching a larger downstream storage, infiltration, or treatment area.

The concept is sometimes described as a "street creek" because it reintroduces a simplified version of a headwater drainage network into the urban right-of-way. Water is not merely removed from the street as quickly as possible; it is slowed, routed, filtered, and made legible. Green inlets, stormwater curb extensions, linear planters, trench drains, stone runnels, cascades, and subsurface conveyance can work together as a distributed system. Each block contributes a manageable amount of runoff, while the full network behaves like a small urban watershed.

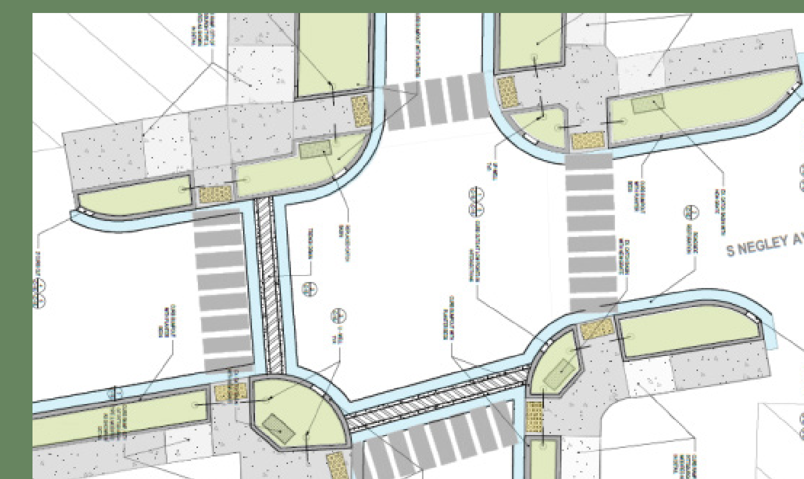
This approach is especially useful where public streets drain toward a park, plaza, trail corridor, vacant lot, or other civic landscape that can serve as the downstream stormwater node. The right-of-way system can reduce peak flows, improve water quality, add planting and shade, calm traffic, and create a more intuitive public understanding of where stormwater goes. In this way, the street becomes more than transportation infrastructure: it becomes a visible ecological connector between the neighborhood and its receiving landscape.

### Design Considerations

- Coordinate curb extensions, planters, and surface conveyance with traffic patterns, ADA access, utilities, crossings, snow removal, and maintenance needs.
- Provide clear overflow routes so larger storms bypass safely without flooding travel lanes, sidewalks, or adjacent properties.

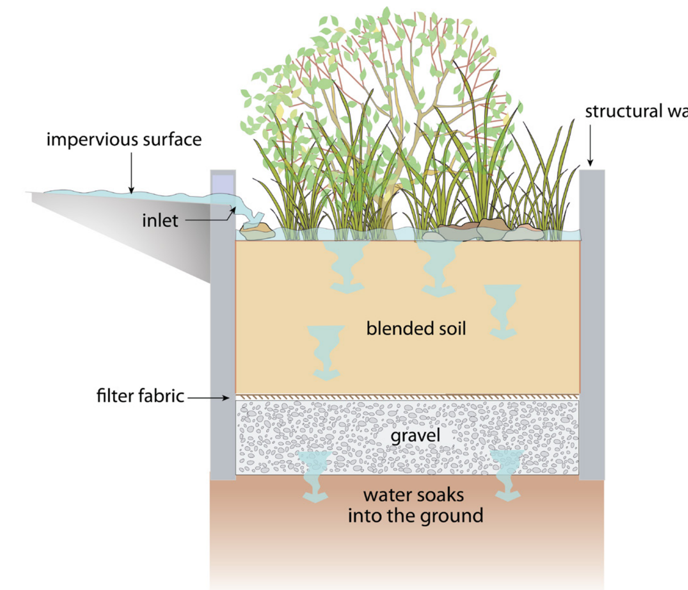
### Project Applicability

The entirety of the Project Area 4 (ECS GSI) and Project Area 5 (Overton GSI) have effectively been designed a networked "street creek" concepts - a natural fit for the topography and historic drainage patterns in these neighborhoods.  See the plan rendering in subsequent report sections for layout, locations and extents.




# Curbed Stormwater Planter

Curbed stormwater planters at street intersections not only serve as traffic calming and pedestrian safety measures, but they also introduce an opportunity to collect, store and treat rainwater. Constructed with engineered soil and walled to allow for temporary ponding, these bioretention areas feature flood and drought-tolerant plants to absorb a portion of the stormwater volume captured during rain events while also being low maintenance during dry weather.




## Design Considerations

- When redesigning an intersection to include a curb extension, the designer is to consider the current road conditions, only reallocating road space where traffic patterns and use allow. Considerations should be taken for subsurface conditions in the project area. Existing utility information should be well understood so as to avoid any potential conflicts within bioretention area.
- Changes to the road configuration and planting selection shoud consider the locality's road maintenance regime.

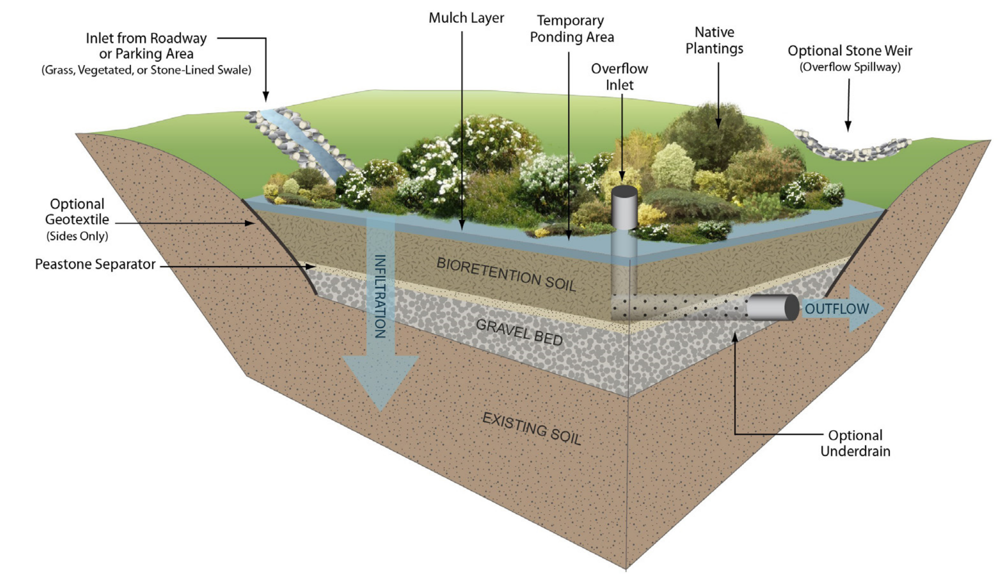
## Project Applicability

Curbed stormwater planters are proposed along Milton Street, Henrietta Street and Laclair Avenue within Project Area 4 (ECS GSI), and along Overton Street, Macon Street and Laclair Avenue in Project Area 5 (Overton GSI). See the plan rendering in subsequent report sections for layout, locations and extents.

# Green Infrastructure Strategies + Technologies

## Rain Gardens and Bioswales

Bioretention swales can be constructed along the street right-of-way in order to reintroduce surface infiltration space for runoff in an area that is otherwise impervious. A bioswale is a gently graded, vegetated depression into which street runoff would be directed via curb cuts, drains or pipes. The flat bottom of the swale would promote infiltration of rainwater into the native soil. Thus, widening the swale ultimately increases the infiltration volume achieved. Overall, when space allows for them, bioswales offer a solution for low to moderate flows of runoff.




### Design Considerations

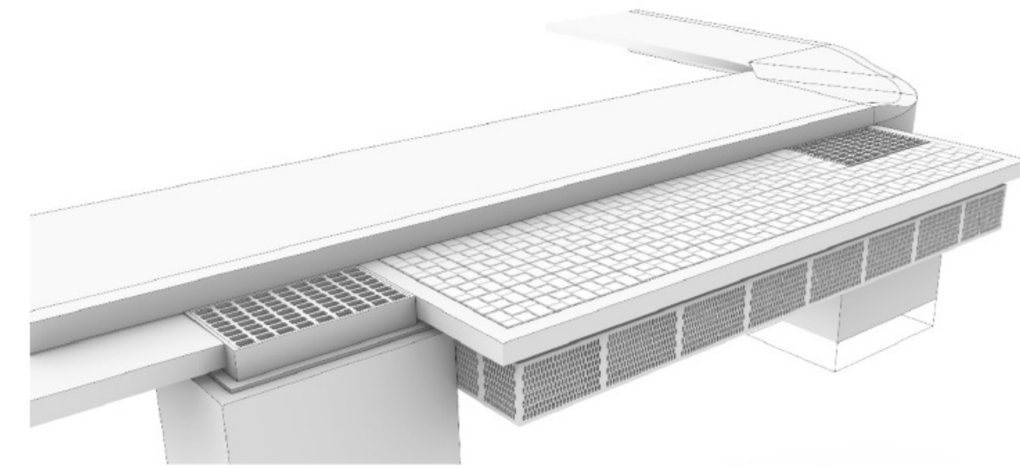
- When planning for a bioretention swale, the designer should be mindful of current sidewalk conditions, only reallocating sidewalk space where appropriate.
- Considerations should be taken for subsurface conditions in the project area. Existing utility information should be well understood so as to avoid any potential conflicts within the infiltration area.
- The sides of the graded area should have a slope no steeper than 3:1, and the flat bottom no narrower than 12".

### Project Applicability

Rain gardens and bioswales are proposed at the Biddle Street Parking, capturing runoff from the surface for treatment and volume reduction during rain events. See the plan rendering in subsequent report sections for layout, locations and extents.

# Porous Gutter Strip / Parking Lane

The integration of porous pavers or pavement along the gutter line of a road would prove beneficial in scenarios where adequate stormwater conveyance cannot be achieved with superficial gutter enhancement alone. By allowing stormwater to infiltrate through the porous media along the gutter, the volume of water conveyed on the street surface is then greatly reduced, as is the rate at which the stormwater ultimately flows into the sewer system. The width of the porous strip could vary case by case, as could the subsurface gravel depth.

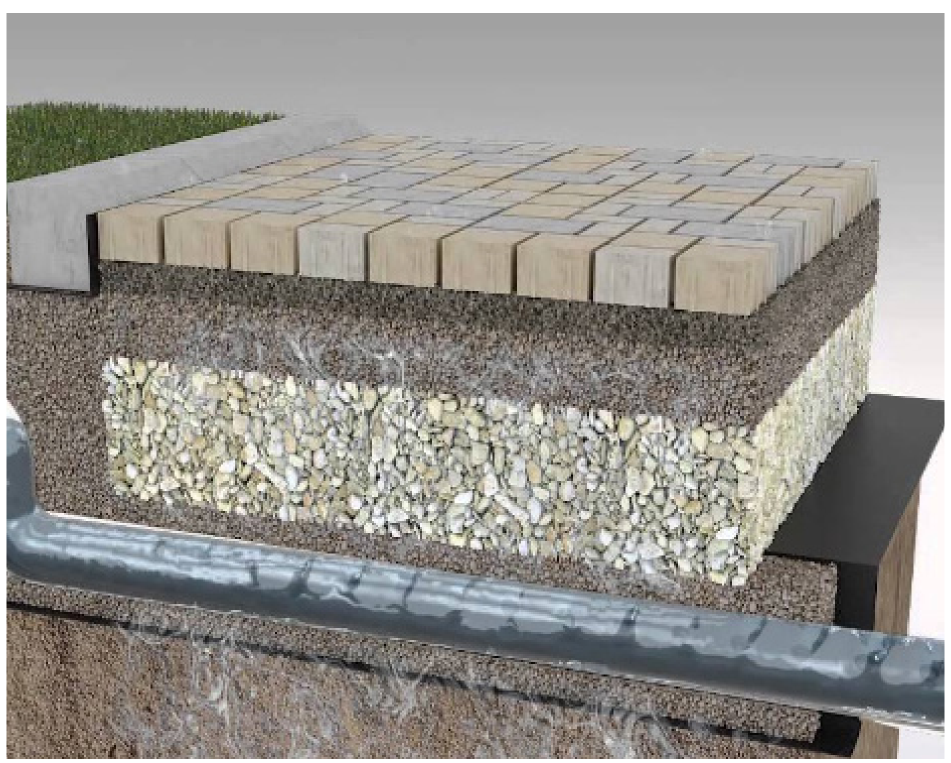


## Design Considerations

- When designing a porous gutter strip, considerations should be taken for subsurface conditions in the projet area, existing utility information should be well understood so as to avoid any potential conflicts.
- Porous material selection shall be mindful of the locality's road maintenance regime.

## Project Applicability

Porous gutter strips / parking lanes are proposed along Milton Street, Henrietta Street and Laclair Avenue within Project Area 4 (ECS GSI), and along Overton Street, Macon Street and Laclair Avenue in Project Area 5 (Overton GSI). See the plan rendering in subsequent report sections for layout, locations and extents.



# Green Infrastructure Strategies + Technologies

## Green Alley

The "greening" of an alley could greatly help alleviate the amount of stormwater that accumulates superficially on roads that are otherwise typically not well maintained and do not have proper drainage infrastructure in place. Very commonly, alleyways are not designed or maintained to the same standards as higher-volume streets. Thus, overtime, they are prone to degrade in ways that allow for insufficient and problematic drainage patterns. By introducing improvements such as an inverse crown, a pervious surface, and even subsurface storage, these alleys will control the runoff during storm events to reduce the burden on the sewer infrastructure as well as the infrastructure at the street-level.

### Design Considerations

- When designing a green alley, considerations should be taken for subsurface conditions in the project area. Existing utility information should be well understood so as to avoid any potential conflicts.
- Porous material selection shall be mindful of the locality's road maintenance regime.

### Project Applicability

A portion of Gamma Way at the intersection with Henrietta Street within Project Area 4 (ECS GSI) is proposed to be green alley. See the plan rendering in subsequent report sections for layout, locations and extents.


Alley with impermeable pavement and poor drainage.




Alley incorporating green alley principles.

# Subsurface Storage

Subsurface storage provides stormwater detention, retention, or infiltration below paved areas, lawns, planting beds, or other usable surface spaces. These systems may be constructed using open-graded stone, modular storage grids, arch chambers, or similar structures, depending on site constraints, loading requirements, maintenance needs, and available depth.

This typology is useful where surface space is limited but stormwater volume control is still needed. Runoff is typically routed through pretreatment, stored underground, and then released through an outlet control, infiltrated into suitable soils, or conveyed to a downstream drainage system. Because the storage is below grade, the surface can often remain available for recreation, parking, streetscape improvements, or other site uses.

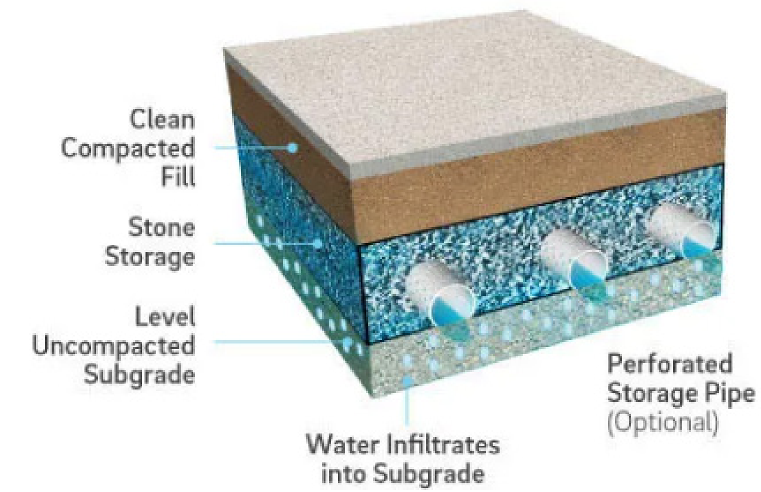
## Design Considerations

- Evaluate storage volume, available footprint, depth, groundwater, soil conditions, and utility conflicts to confirm the system can meet stormwater goals within the available subsurface space.
- Coordinate access, inspection, pretreatment, and sediment management so the system can be maintained regardless of whether storage is provided by stone, grid chambers, or arch chambers.
- Provide clear inlet, outlet, and overflow controls so the system fills, drains, and bypasses safely without causing surface flooding or impacts to adjacent structures.

## Project Applicability

Except where geotechnical, environmental, or ecological concerns exists, subsurface storage if feasible at any of the proposed projects areas.  Budget and regulatory requirements often dictates the sizing, with the upstream contributing drainage area volume during large storm events, as an upward bound.

Stone Storage




Chamber Storage