

# Case Studies: Storm Water Management

## OSBORNE AND COMER ALLEYS Over-The-Rhine Neighborhood of Cincinnati, Hamilton County

**Date Completed:** 2010

**Description:** Historic granite pavers and clay bricks were reused in combination with a sand, gravel and aggregate to reconstruct Osborne and Comer Alleys. The reconfigured pathways percolate between 45 to 270 inches of rainwater an hour, reducing demands on the sewer system.



**Project Size:** 5,320 square feet of permeable brick pavement.

*Below: The Over-the-Rhine Neighborhood in Cincinnati  
(photo: Aaron Renn, The Urbanophile)*



## ENABLED IMPACT PROJECT FACT SHEET

### PROJECT: OSBORN AND COMER ALLEYS

PROJECT PARTNER: CINCINNATI DEPARTMENT OF TRANSPORTATION ENGINEERING

PROJECT STATUS: Complete

CSO BASIN(S): No. 431A and No. 666

WATERSHED: South Branch Mill Creek



#### PROJECT LOCATION

These two separate projects are located in downtown Cincinnati, Ohio, directly north of Washington Park in Cincinnati's Over the Rhine neighborhood. The alleys are bound by West 14th on the south and West 15th Street on the north. Comer Alley is east of Osborn Alley.

#### SITE DESCRIPTION

**Project size/setting:** The total area of the two project sites is approximately 0.12 acres in an urban residential/commercial area.

**Drainage area to green infrastructure:** 5,320 square feet. Building downspouts and surrounding impervious area are routed to drain to the pervious paver systems in Osborn Alley. Surface runoff drains to the Comer Alley project.

#### GREEN INFRASTRUCTURE FEATURES

Unusually sandy/permeable soils underlie the entire site which provide the opportunity to use permeable pavers for onsite stormwater management. Local field tests indicate percolation rates ranging from 45 to 270 inches per hour in shallow soils. The alleys were constructed by salvaging, cleaning, and re-using historic clay bricks and granite pavers.

#### Permeable Pavers

The permeable pavement system designs include 5-inches of washed No. 57 aggregate below a 2- to 3-inch layer of Number 8 washed gravel as the setting bed, another 8 inches of an existing gravel/sand base maintained in its current condition, and reuse of the existing clay bricks and granite pavers. Both the Comer Alley and Osborn Alley permeable pavement systems cover a combined total of 5,320-square feet (2,660-square feet per alley).

#### MSD FUNDING

Design \$9,000

Construction: \$54,000

Education and Signage: \$4,500

MSD funded 73% of the total construction cost for these projects.

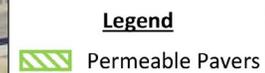
#### PROJECT BENEFITS

The project goal is to demonstrate the use of permeable paving in a highly visible urban setting. The estimated annual volume of captured runoff is 150,000 gallons<sup>1</sup> with a construction cost per captured gallon of \$0.36.



#### MONITORING

Seasonal site inspections will be conducted quarterly to assess long-term viability of the green controls and to identify potential operation and maintenance issues. Site visits will also be conducted after high intensity wet weather events to assess performance of the controls and, where appropriate, overflow structures.





**ENABLED IMPACT PROJECT FACT SHEET**

**PROJECT: OSBORN AND COMER ALLEYS**

**PROJECT PARTNER: CINCINNATI DEPARTMENT OF TRANSPORTATION ENGINEERING**



***Lesson Learned: Traditional pavers can be reused as permeable pavers.***

Provided the design includes a gravel sub base, the pavers are washed appropriately and proper spacing is applied to allow for infiltration, existing traditional pavers can be reused as permeable pavers.



Existing pavers prepared to be reused as a porous pavement system.



Newly installed porous paver alley.

For more information about Project Groundwork, the Enabled Impact Program, or this project please email MaryLynn Lodor, Environmental Programs Manager at: [MaryLynn.Lodor@cincinnati-oh.gov](mailto:MaryLynn.Lodor@cincinnati-oh.gov) .

***Developers/Clients/Owners:***

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**Metropolitan Sewer District of Greater Cincinnati (MSDGC)**  
1600 Gest St.  
Cincinnati, OH 45204  
[www.msdbg.org](http://www.msdbg.org)

**Cincinnati Department of Transportation and Engineering (CDOTE)**  
801 Plum St.  
Cincinnati, OH 45202  
[www.cincinnati-oh.gov/dote/](http://www.cincinnati-oh.gov/dote/)

***Designers/Consultants:***

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**CDM Smith**  
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**Bergmann Associates**  
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*Historic Brick Pavers in Comer Alley*  
*(photo: Maya & Michael, VisuaLingual [www.visualingual.com/](http://www.visualingual.com/))*

**Project Cost:** \$92,465

**Funding Sources & Incentives:**

- Metropolitan Sewer District of Greater Cincinnati: \$67,500 - 73% of total construction costs provided through a Green Demonstration Program grant source.
- Construction - \$54,000
- Education and Signage - \$4,500
- Design - \$9,000

**Additional Support:**

- CDM Smith: provided overall program management of the Green Demonstration Program, in which the project was constructed; which included application review and approval, project management, management of construction oversight, and acted on behalf of MSDGC throughout the project.

**Maintenance Cost:** The projects are maintained by CDOTE; existing operation & maintenance costs have not been provided to MSDGC.

**Applicable Zoning Regulations:** None

**Lessons Learned:** Traditional brick pavers can be reused as permeable pavers, provided the design includes a gravel sub-base, the bricks are washed appropriately, and proper spacing is applied to allow for infiltration.

**Additional Comments:** Design review (performed by Strand Associates) suggests a potential combined annual stormwater capture volume of 0.39 MG on an annual basis based on a typical year rainfall.