

Case Studies: Storm Water Management

OSBORN 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 Osborn 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 gallons¹ with a construction cost per captured gallon of \$0.36.



Project Location

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.



Legend

Permeable Pavers

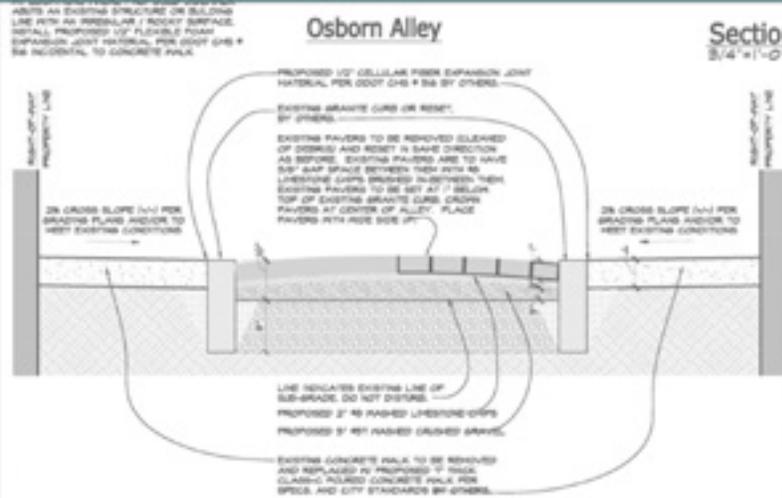
ENABLED IMPACT PROJECT FACT SHEET

PROJECT: OSBORN AND COMER ALLEYS

PROJECT PARTNER: CINCINNATI DEPARTMENT OF TRANSPORTATION ENGINEERING



Osborn Alley Paver Design Schematic



Section - Sidewalk, Granite Curb & Pavers Reset

Section
3/4" = 1'-0"

3
2

Pervious Paver Alley Construction



Comer Alley Construction



Comer Alley Construction



Comer Alley Permeable Pavers

Comer Alley Paver Design Schematic



Osborn Alley Construction



Osborn Alley Construction



Comer Alley Construction Complete

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.

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.

Developers/Clients/Owners:

Metropolitan Sewer District of Greater Cincinnati (MSDGC)
1600 Gest St.
Cincinnati, OH 45204
www.msdbg.org

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

Designers/Consultants:

CDM Smith
8805 Governor's Hill Drive, Suite 305
Cincinnati, OH 45249
www.cdmsmith.com

Bergmann Associates
4512 Dressler Rd. NW
Canton, Ohio 44718
www.bergmannpc.com

Strand Associates
615 Elsinore Place, Suite 320
Cincinnati, OH 45202
www.strand.com

Historic Brick Pavers in Comer Alley
(photo: Maya & Michael, VisuaLingual 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 CDM Smith; 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.