

**NORTHEAST OHIO REGIONAL SEWER DISTRICT  
2016 GREEN INFRASTRUCTURE GRANT FOR THE  
COMBINED SEWER AREA**

**APPLICATION**

**Applicant Information**

Organization: Western Reserve Historical Society

Name and Title of Executive Officer: Mary Thoburn, CPA, Sr. V. P.

Address: 10824 East Boulevard

Cleveland, OH 44106

Phone: 216-721-5722 ext 1104

Email: mthoburn@wrhs.org

Name and Title of Project Manager: Mary Thoburn, CPA, Sr. V. P.

Address: Same as above

Phone: Same as above

Email: Same as above

**Project Information**

Title of Project: Sustainable Landscape Improvements  
Phase 2

Address of Project: Same as above.

**NORTHEAST OHIO REGIONAL SEWER DISTRICT**  
**2016 GREEN INFRASTRUCTURE GRANT FOR THE**  
**COMBINED SEWER AREA**

|                                      |                 |
|--------------------------------------|-----------------|
| Parcel Numbers:                      | 12017006        |
| Watershed of Project:                | Doan Brook      |
| Green Infrastructure SCM's Proposed: | Pervious Pavers |
| Project Start Date:                  | June 2016       |
| Project End Date:                    | September 2016  |
| Total Project Cost:                  | \$265,000       |
| Grant Request:                       | \$195,000       |

**Green Infrastructure SCM's Data**

|  |      |
|--|------|
| Square Footage of each SCM(s):               | 6300 |
| Total Drainage Acres Treated by each SCM(s): | .42  |
| Pre-Construction Impervious Acres:           | .26  |
| Post-Construction Impervious Acres:          | .02  |
| Change in Impervious Acres:                  | .24  |
| Impervious Acres Draining to each SCM(s):    | .02  |

**NORTHEAST OHIO REGIONAL SEWER DISTRICT**

**2016 GREEN INFRASTRUCTURE GRANT FOR THE  
COMBINED SEWER AREA**

\*Pre-Construction – Average Annual Runoff (in) of  
Total Drainage Area Treated:

17.99

\*Post-Construction - Average Annual Runoff (in) of  
Total Drainage Area Treated:

3.62

Annual Runoff Reduction (g/yr.): 163,887 (Runoff  
Reduction (in) / 12 x Treated Drainage Area (acre) x 325,851.433 = gal/yr.)

*\*Analysis using the US EPA Stormwater Calculator ver.1.1*

<http://www2.epa.gov/water-research/national-stormwater-calculator>

# **NORTHEAST OHIO REGIONAL SEWER DISTRICT**

## **2016 GREEN INFRASTRUCTURE GRANT FOR THE COMBINED SEWER AREA**

### **INTRODUCTION**

Founded in 1867, Western Reserve Historical Society (WRHS) is the oldest cultural institution in Cleveland. With five sites across a four-county area of Northeast Ohio, WRHS is the trusted steward of Northeast Ohio's documented and material history. WRHS tells the story of Cleveland and Northeast Ohio through experiential programming and groundbreaking exhibitions. WRHS engages the community in the history of Cleveland and the American experience through its Library and Museum collections that together represent one of the country's finest collections of documents and artifacts relating to Northeast Ohio and the United States.

The Cleveland History Center (CHC) is home to the Library and Archives, the Crawford Auto Aviation Museum, the Chisholm Halle Costume Wing, the Euclid Beach Park Grand Carousel, the historic Bingham-Hanna and Hay-McKinney Mansions, and Museum Galleries for permanent and rotating exhibits. WRHS's nearly eight acres in the heart of University Circle is known for its architectural, artifact, and archival treasures.

The CHC is an eclectic campus, comprised of a mix of historic structures, museum galleries, and modern buildings and grounds tied together over the last 85 years. The CHC Transformation is a multi-year, capacity-building capital project that will upgrade the CHC to a museum that provides modernized, welcoming facilities for the public, along with improved access to historic landscapes and urban green space within a walkable and accessible University Circle community. It is a key part of the "WRHS 150" strategic plan which seeks to create a more open and accessible museum, a more active role for WRHS in the community, and improved financial stability for the institution.

This project is the second phase of exterior improvements identified in the WRHS "Sustainable Landscape Plan" and represents the organization's long-term commitment to environmentally sensitive and sustainable design. WRHS has already demonstrated that commitment by successfully completing green infrastructure improvements in 2015, implementing an array of storm water control measures as part of the first phase of the "Sustainable Landscape Plan." WRHS and NEORS both were awarded University Circle Incorporated's "Building the Circle" award for green infrastructure projects in November, 2014.

## PROJECT SUMMARY

The Western Reserve Historical Society (WRHS) is in the process of upgrading the visitor arrival experience to the facility. This effort presents an opportunity to implement Storm Water Control measures that will impact over 11,000 square feet of existing impervious pavement. The attached '**Phase 2 Project Area – Existing Conditions**' and accompanying photographs illustrate the extent of the project and the existing conditions.

Storm Water Control measures will be utilized, as follows:

### **Pervious Pavements**

This SCM will be installed in place of the existing impervious entry drive and pedestrian areas.

### **Removal of Impervious Pavement**

This phase includes the removal of 10,450 square feet of impervious asphalt and concrete at the East Boulevard entrance.

### **Site Conditions**

This entire site sits on a layer of pervious sand. The average coefficient of soil permeability of the in-situ soil on an immediately adjacent site is 0.030 feet per minute. Based on that we believe we can rely on exfiltration to handle the quantity of water required to be infiltrated within 48 hours. The potential for ground water pollution is also very low.

The attached '**Phase 2 Project Area**' depicts the location and extent of the Storm Water Control Measures.

## VISIBILITY AND PUBLIC OUTREACH

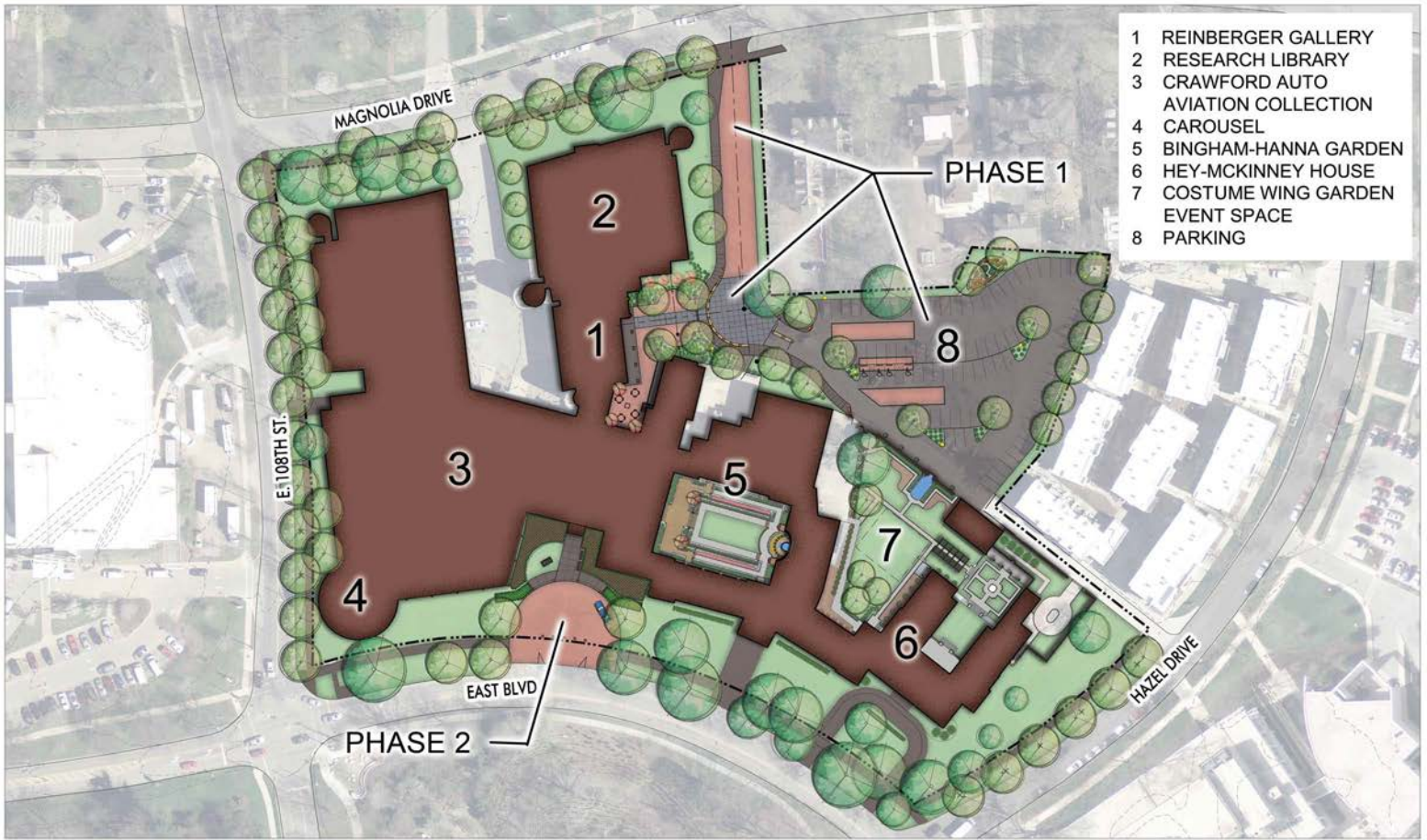
WRHS's milestone sesquicentennial celebration in 2017 presents a unique opportunity to reintroduce itself to the community. The East Boulevard entrance is the "face" of the Cleveland History Center, and the gateway to other University Circle institutions and Wade Oval. This "front door" needs to be welcoming and accessible to visitors and the public, and is integral to the WRHS "Sustainable Landscape Plan."

The "front door" of the History Center on East Boulevard will be made more accessible and welcoming to the public. The front entry circle off East Boulevard will be redesigned and resurfaced for easier automotive and pedestrian access, again incorporating green infrastructure. This will create a vibrant, welcoming space that can be used by WRHS as well as for University Circle community events.

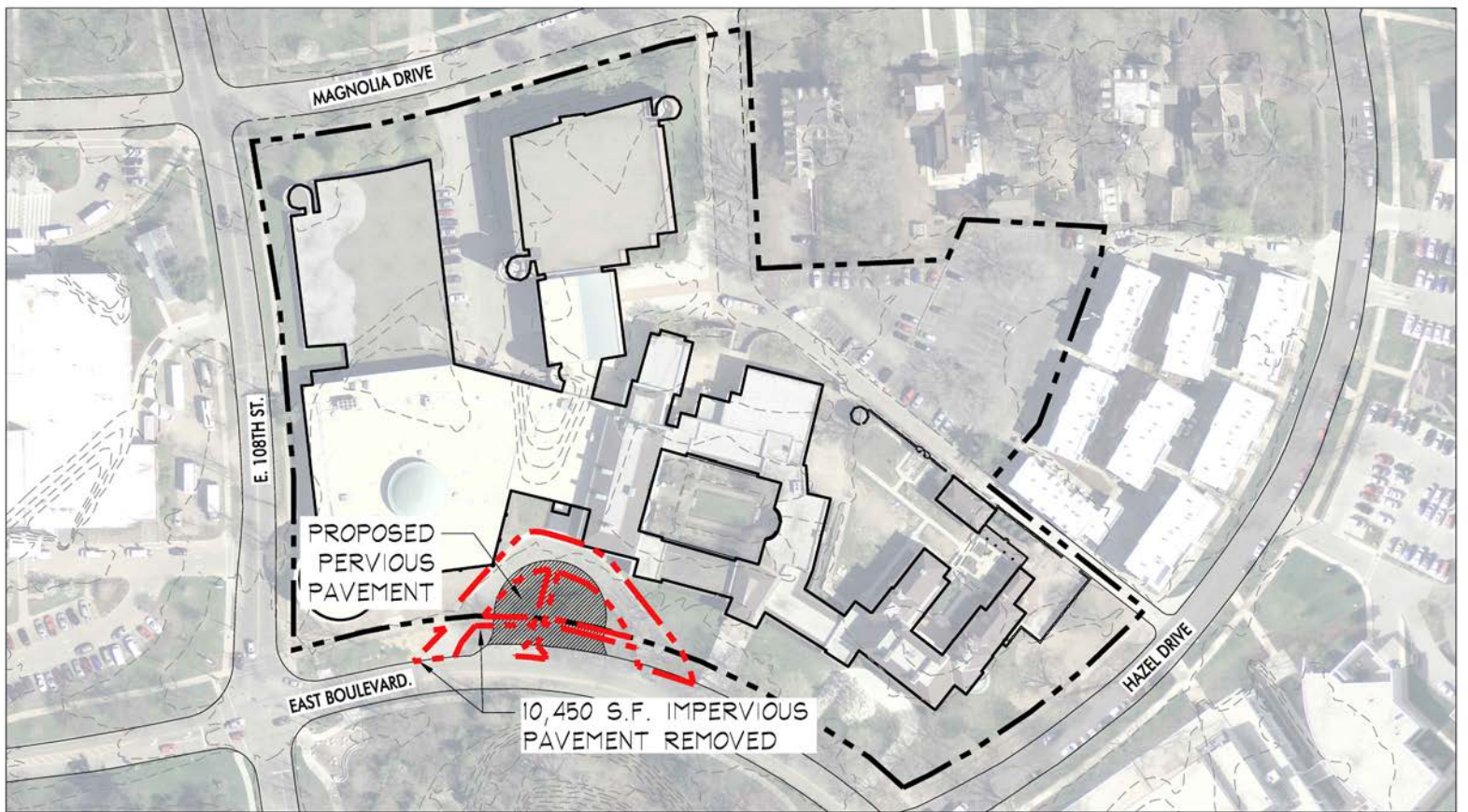
WRHS's Youth Entrepreneurship Education (YEE) multi-year continuum, in partnership with the Cleveland Metropolitan School District (CMSD), addresses a community need by introducing every CMSD 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> grade student to the region's rich entrepreneurial spirit through place based field experiences at WRHS's CHC and Hale Farm & Village locations. WRHS serves about 45,000 northeast Ohio students annually; with 10,000 of those students taking part in the YEE based initiatives.

A large percentage of CMSD students are school-dependent, meaning that the school system is their sole resource to provide the experiential learning that is essential to understanding the world. Students need experiences in and outside of the classroom to build the background knowledge, vocabulary, and connection to community that leads not only to academic strength, but to a strong sense of self, and help students evolve the ways that they understand their role in the community and the world at large. The field experiences provide real-life examples of Northeast Ohio people who used available resources,

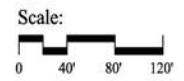
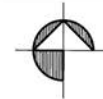




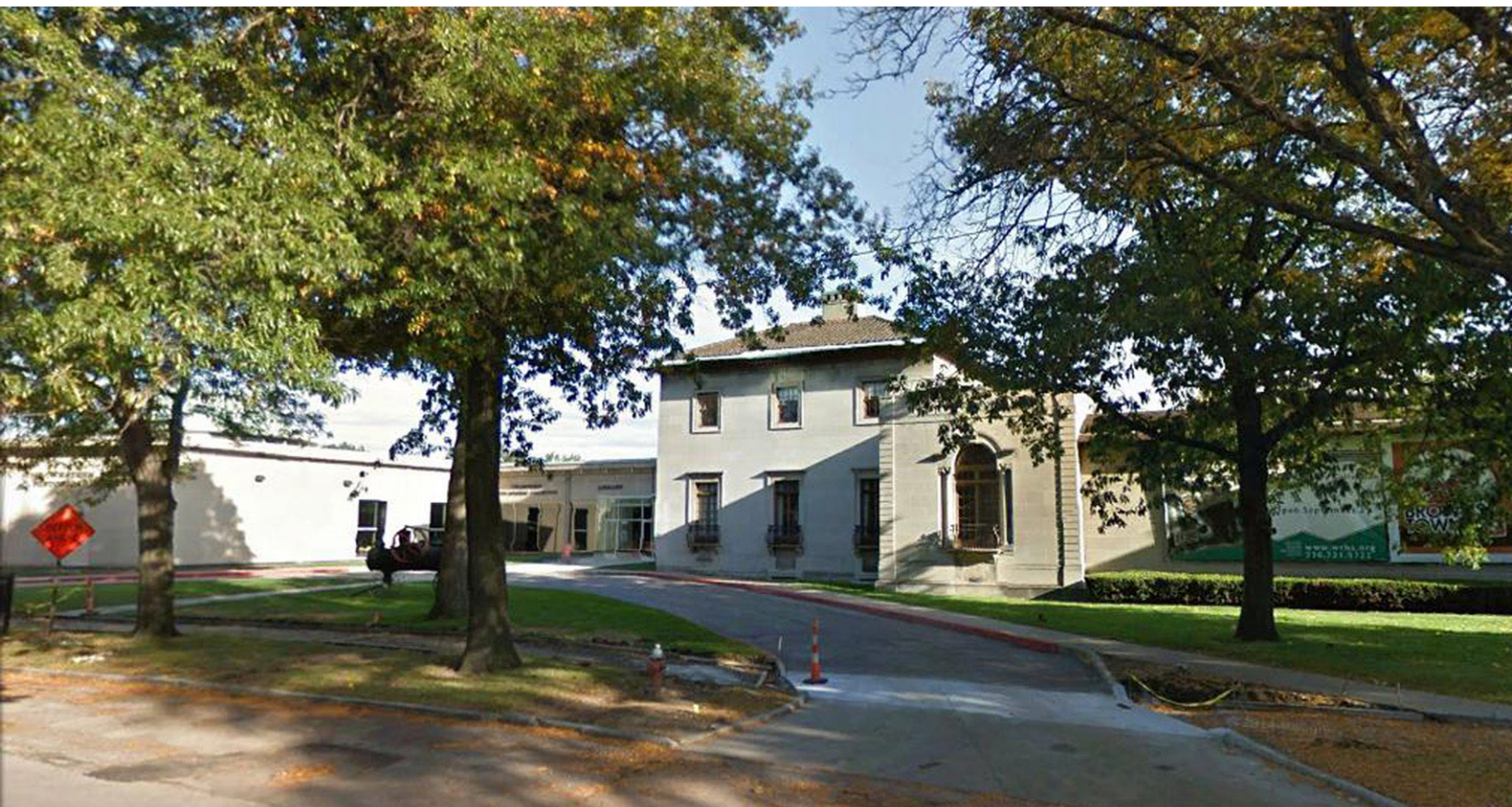
**MASTER PLAN**  
 WESTERN RESERVE HISTORICAL SOCIETY



**PHASE 2 PROJECT AREA - EXISTING CONDITIONS**  
WESTERN RESERVE HISTORICAL SOCIETY

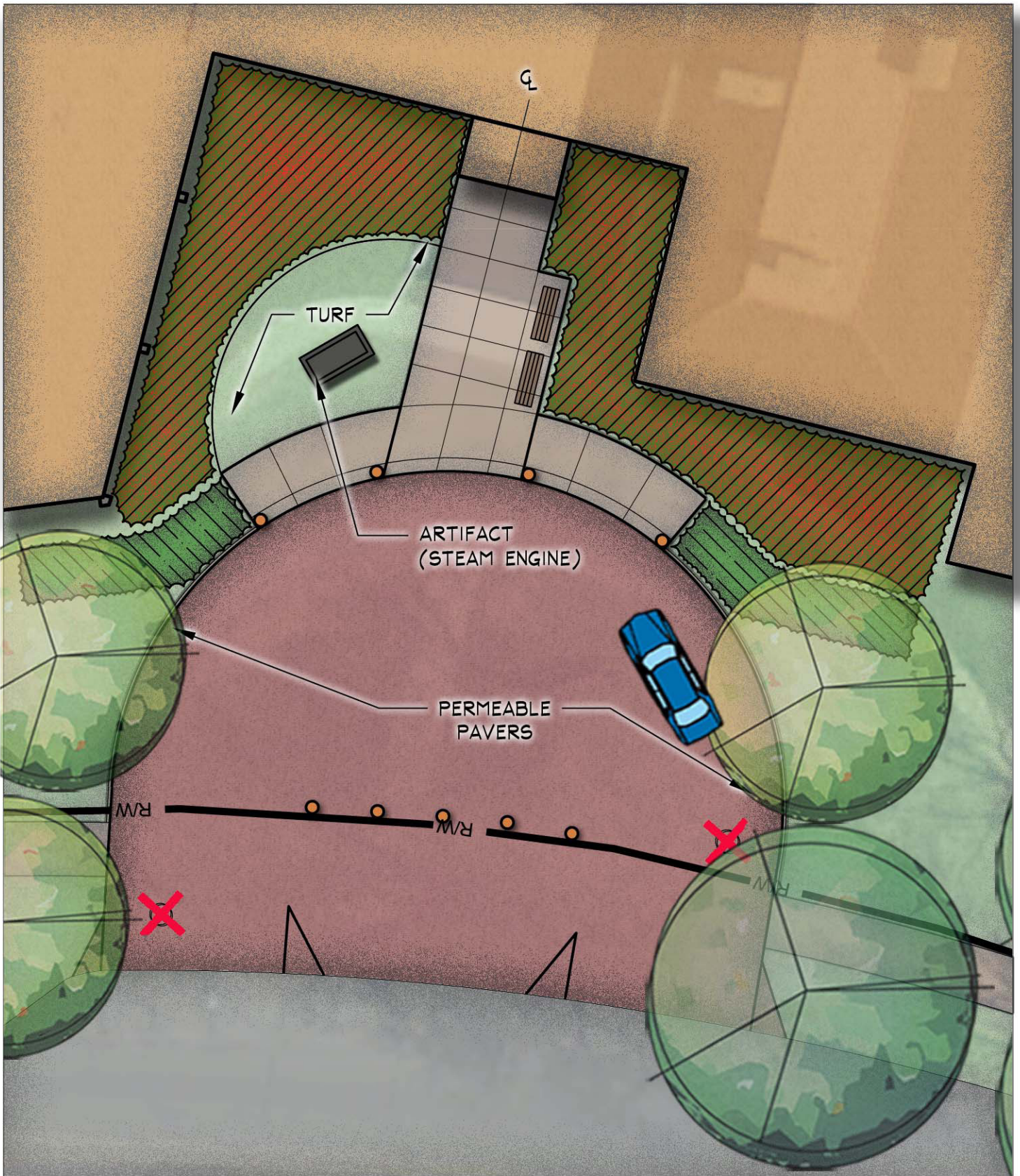




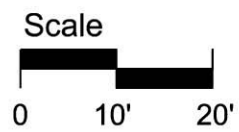
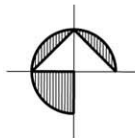


## EXISTING CONDITIONS





**EAST BOULEVARD ENTRY**  
 WESTERN RESERVE HISTORICAL SOCIETY





ingenuity, and perseverance to meet community and national needs, and create pride for Cleveland. WRHS will also demonstrate to these students a commitment to stewardship of the land, and our critical environmental needs as well.

In addition, more than 45,000 guests visit the Cleveland History Center annually. Tourism to the region continues to grow and is a major economic driver. In 2014, the Ohio Department of Travel & Tourism reported 200 million visitors to the state, and Destination Cleveland reported over 16 million to Cuyahoga County. This project will directly benefit a cultural district that sees over 3 million visitors a year, and supports 1,827 businesses and 82,611 jobs with \$3.378 billion in direct and indirect annual earnings to Cuyahoga County residents. University Circle is responsible for \$14 billion in direct and indirect economic output every year, and is the fastest growing employment district in Northeast Ohio.

Every visitor to the Cleveland History Center will be exposed to visible green infrastructure from our main two entry points, with interpretive signage explaining the benefits of storm water control, and a fact sheet available at our admissions desk.

## **ABILITY TO PROVIDE LONG TERM MAINTENANCE**

The Cleveland History Center site consists of nearly 8 acres, all which is owned and controlled by WRHS. WRHS will provide on-going maintenance, the cost of which will be incorporated into the annual operating budget of the organization. WRHS will celebrate its 150<sup>th</sup> anniversary in 2017, and just concluded the sixth consecutive year with an operating budget surplus.

## **TASKS AND DELIVERABLES**

**Submit NEORSD Grant Application December 21, 2015**

**Grant Notification Date (Estimated) April, 2016**

**Design Development Documents May, 2016**

**Construction Dwgs/Bid Documents June, 2016**

**Bids Due July, 2016**

**Begin Construction August, 2016**

**Complete Construction November, 2016**

**LETTERS OF SUPPORT - attached**

## **BUDGET SUMMARY**

The following 'Phase 2 Project Budget' is a detailed list of all items to be included in the project. Professional services are being provided by **Behnke Associates**, Landscape Architects and Planners, 1215B W 10<sup>th</sup> Street, Cleveland, Oh. Phone 216-589-9100

**NORTHEAST OHIO REGIONAL SEWER DISTRICT**

**2016 GREEN INFRASTRUCTURE GRANT FOR THE  
COMBINED SEWER AREA**

If an engineer's estimate is included with the application, indicate which line items are included in the GIG request.

**Green Infrastructure Project Budget**

| <b>GIG Project Income</b>  | <b>Anticipated<br/>(include date)</b>                         | <b>Committed as<br/>of 12/21/2015</b> | <b>Total</b>     | <b>Line Item Description</b> |
|--|---|---------------------------------------|------------------|------------------------------|
| Northeast Ohio Regional Sewer District   | \$195,000 (4/16)  |                                       | \$195,000        | *                            |
| Foundations  | \$ 60,000 (4/16)  |                                       | \$ 60,000        |                              |
| Government Grants or Contracts   |   |                                       |                  |                              |
| Organizational Budget (i.e.: individual contributions, fundraising events/products, membership/fees/earned income, endowed income) |   |                                       |                  |                              |
| In-kind Support  | \$ 10,000   | \$ 10,000                             | \$ 10,000        | Project Management           |
| Other  |   |                                       |                  |                              |
| <b>TOTAL</b>   | <b>\$265,000</b>  | <b>\$ 10,000</b>                      | <b>\$265,000</b> |                              |
| <b>GIG Project Expenses</b>  | <b>Northeast Ohio<br/>Regional Sewer<br/>District Request</b> | <b>Other<br/>Funding</b>              | <b>Total</b>     | <b>Line Item Description</b> |
| Professional Services  |   |                                       |                  | *                            |
| Labor  |   |                                       |                  | *                            |
| Materials  |   |                                       |                  | *                            |
| Equipment Rental   |   |                                       |                  | *                            |
| Plants   |   |                                       |                  | *                            |
| Other  |   |                                       |                  | *                            |
| <b>TOTAL</b>   | <b>\$195,000</b>  | <b>\$ 70,000</b>                      | <b>\$265,000</b> | <b>*</b>                     |



## I. EAST BOULEVARD ENTRY

| ITEM                  | QUAN | UNIT | UNIT COST                         | TOTAL COST | NEORS      |
|-----------------------|------|------|-----------------------------------|------------|------------|
| 1 GENERAL CONDITIONS  | 1    | LS   | \$ 20,000                         | \$ 20,000  | \$ 14,000  |
| 2 DEMOLITION          | 1    | LS   | \$ 20,000                         | \$ 20,000  | \$ 14,000  |
| 3 PERVIOUS PAVERS     | 6300 | SF   | \$ 20                             | \$ 126,000 | \$ 126,000 |
| 4 TACTILE PAVERS      | 130  | SF   | \$ 25                             | \$ 3,250   |            |
| 5 CONCRETE CURB       | 120  | LF   | \$ 27                             | \$ 3,240   | \$ 3,600   |
| 6 CONCRETE WALK       | 1200 | SF   | \$ 10                             | \$ 12,000  |            |
| 7 ARTIFACT RELOCATION | 1    | LS   | \$ 2,500                          | \$ 2,500   |            |
| 8 TOPSOIL AND SEED    | 7000 | SF   | \$ 0.50                           | \$ 3,500   |            |
| 9 PLANTING            | 1    | LS   | \$ 15,000                         | \$ 12,000  |            |
| 10 INTERPRETIVE SIGN  | 1    | LS   | \$ 2,500                          | \$ 2,500   | \$ 2,500   |
|                       |      |      | SUBTOTAL                          | \$ 204,990 | \$ 160,100 |
|                       |      |      | FEES/CONTINGENCIES                | \$ 50,000  | \$ 34,900  |
|                       |      |      | TOTAL                             | \$ 254,990 | \$ 195,000 |
|                       |      |      | OWNER CONSTRUCTION ADMINISTRATION | \$ 10,000  |            |
|                       |      |      | GRAND TOTAL                       | \$ 264,990 |            |



CITY OF CLEVELAND  
**Office of the Council**

[www.clevelandcitycouncil.org](http://www.clevelandcitycouncil.org)

**Kevin Conwell** COUNCIL MEMBER, WARD 9

December 18, 2015

Ms. Kelly Falcone-Hall  
President/CEO  
Western Reserve Historical Society  
10825 East Boulevard  
Cleveland, OH 44106

Dear Ms. Falcone-Hall:

Thank you for informing me of your proposed submission to the Northeast Ohio Regional Sewer District Grants Program for a 2016 Green Infrastructure Grant for the Combined Sewer Area. As I understand it, the NEORSRD program is designed to fund projects that visibly demonstrate on-site stormwater control measures using green infrastructure.

As a cultural institution focused on education, the Western Reserve Historical Society is ideally suited to leverage this grant into educational programming opportunities that meet the goals of your organization and NEORSRD, and to bring greater visibility to water conservation issues in Northeast Ohio.

As such, I express my unqualified support for your East Boulevard Entrance Green Infrastructure project.

Sincerely,

Councilman, Ward 9  
Cleveland City Council

# National Stormwater Calculator Report

## Site Description

WRHS

| Parameter                      | Current Scenario  | Baseline Scenario |
|--------------------------------|-------------------|-------------------|
| Site Area (acres)              | N/A               | N/A               |
| Hydrologic Soil Group          | A                 | A                 |
| Hydraulic Conductivity (in/hr) | 4.0               | 4.0               |
| Surface Slope (%)              | 2                 | 2                 |
| Precip. Data Source            | CLEVELAND WSFO AP | CLEVELAND WSFO AP |
| Evap. Data Source              | CLEVELAND WSFO AP | CLEVELAND WSFO AP |
| Climate Change Scenario        | None              | None              |
| % Forest                       | 0                 | 0                 |
| % Meadow                       | 0                 | 0                 |
| % Lawn                         | 40                | 40                |
| % Desert                       | 0                 | 0                 |
| % Impervious                   | 60                | 60                |
| Years Analyzed                 | 20                | 20                |
| Ignore Consecutive Wet Days    | False             | False             |
| Wet Day Threshold (inches)     | 0.10              | 0.10              |

| LID Control         | Current Scenario | Baseline Scenario |
|---------------------|------------------|-------------------|
| Disconnection       | 0                | 0                 |
| Rain Harvesting     | 0                | 0                 |
| Rain Gardens        | 0                | 0                 |
| Green Roofs         | 0                | 0                 |
| Street Planters     | 0                | 0                 |
| Infiltration Basins | 0                | 0                 |
| Porous Pavement     | 0                | 80 / 100          |

% of impervious area treated / % of treated area used for LID

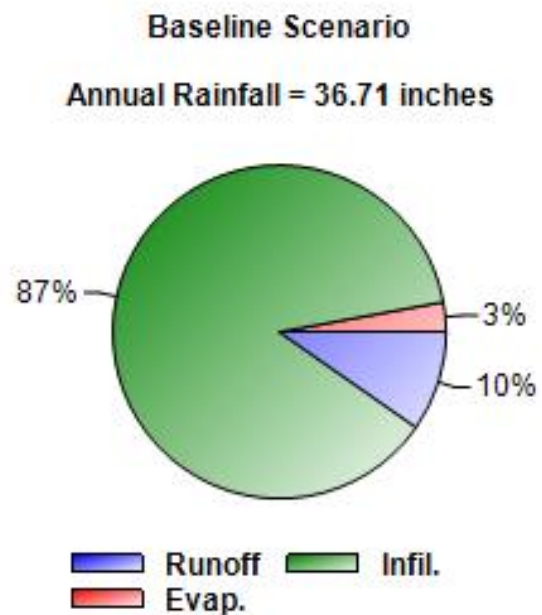
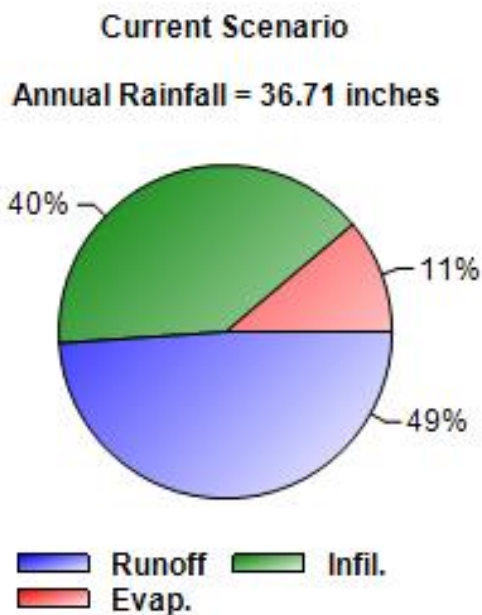


# National Stormwater Calculator Report

## Summary Results

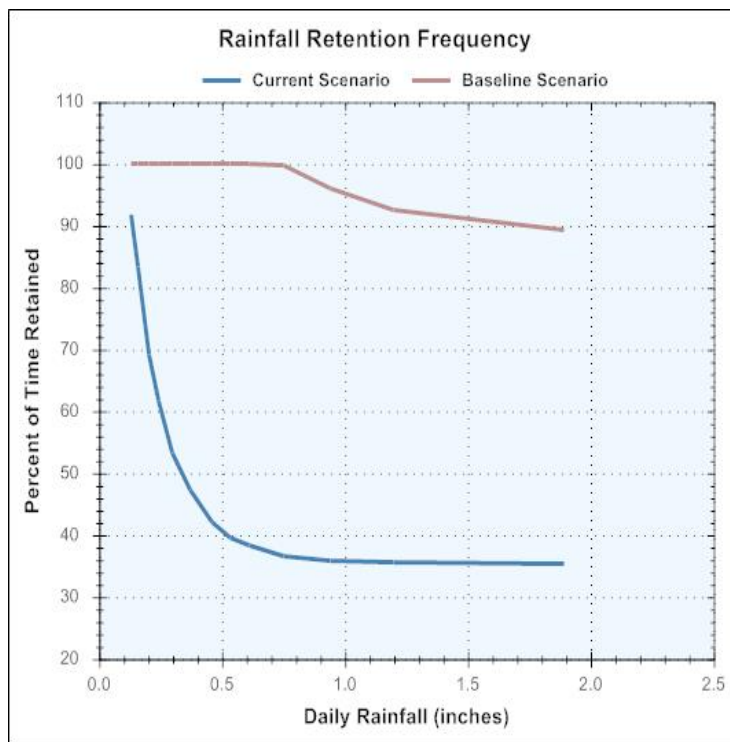
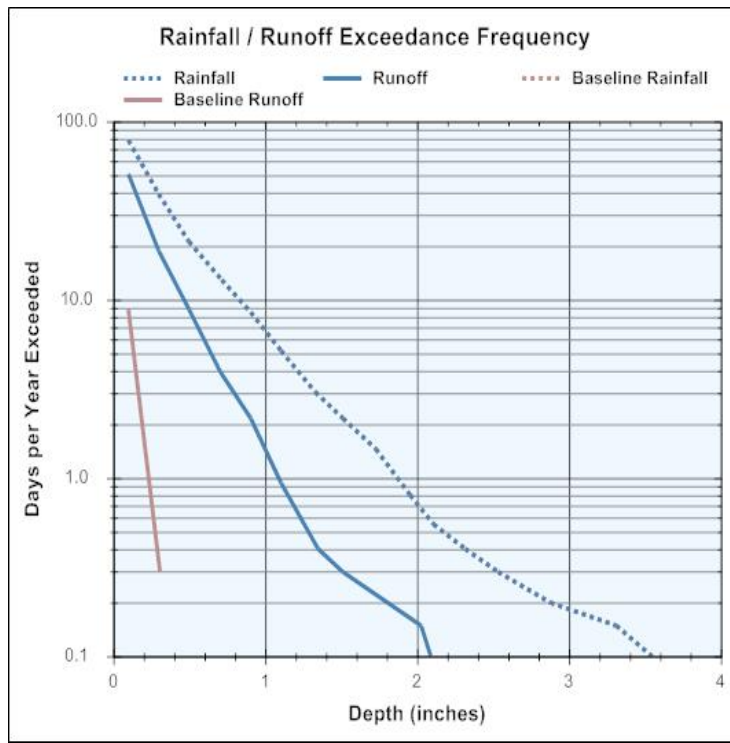
WRHS

| Statistic                            | Current Scenario | Baseline Scenario |
|--------------------------------------|------------------|-------------------|
| Average Annual Rainfall (inches)     | 36.71            | 36.71             |
| Average Annual Runoff (inches)       | 17.99            | 3.62              |
| Days per Year With Rainfall          | 78.05            | 78.05             |
| Days per Year with Runoff            | 50.52            | 8.89              |
| Percent of Wet Days Retained         | 35.28            | 88.60             |
| Smallest Rainfall w/ Runoff (inches) | 0.16             | 0.76              |
| Largest Rainfall w/o Runoff (inches) | 0.29             | 0.94              |
| Max. Rainfall Retained (inches)      | 1.46             | 3.13              |



# National Stormwater Calculator Report

WRHS



# National Stormwater Calculator Report

WRHS

