



Creighton Prep Bioretention & Permeable Pavement

72nd & Western Ave, Omaha, NE

City of Omaha Stormwater Program & Creighton Prep

SITE AND PROJECT SUMMARY

This large demonstration project began as an idea by Creighton Prep faculty who wanted to create a rain garden on their campus. The project gained support from the school and was embraced by student groups who wanted to be involved with the project, including the Creighton Prep Science Club, Creighton Prep Junior Green Jays, and the Architecture Club. Construction for this project began in May of 2014 and was completed later that fall.

During the design phase, the project design team and the City of Omaha met regularly with the Architecture Club to teach them about stormwater, green infrastructure, and to work with them on the design of the project. Their work culminated into a comprehensive project they entered into a design competition.

The bioretention system was designed to capture the first ½ inch of runoff from the surrounding area. There are two main points of flow into the bioretention systems, one entering

from the west through a storm sewer that collects runoff from the main parking lot and athletic fields. The other from the east, a permeable patio area (Norma's Garden), which collects runoff from the adjacent athletic fields. Once the bioretention system reaches capacity, excess runoff can flow to an area inlet, on the east end of the system, which drains back into the storm sewer.

The circular permeable paver patio and adjacent seating wall provide an excellent overlook area for the bioretention system. Educational signage has been installed around the patio area and includes information about the type of vegetation selected for the project, overall design features for bioretention systems, and how green infrastructure works.

Monitoring equipment has been installed throughout the bioretention system to assess its performance with respect to storage capacity, stormwater volume reduction, infiltration rates, and plant performance.

PROJECT DETAILS

	BIORETENTION SYSTEM	PERMEABLE PAVEMENT
System Footprint	5,720 ft ²	1,130 ft ²
Contributing Area	Approximately 2.7 acres	
Design Volume	5,400 ft ³	
Percent Impervious (%)	Approximately 50%	Approximately 10%
Predominant Soil Types	Silty Clay (Type C)	Silty Clay (Type C)
Underdrain	4" perforated PVC pipe w/limestone & open weave geotextile separation	4" perforated PVC pipe w/ washed limestone
Pre-Treatment System	Permeable patio (East) & manhole sump w/Envirohood (West)	None
Outlet Control	4" Slide-Gate Valve	None

COSTS		MONITORING	METHOD
Design	\$21,865.00	Weather Conditions	Rain gauge
Construction	\$142,087.00	Inflow	Isco 2150 Area Velocity Sensor & Module (2015)
Construction Oversight	\$1,238.00	Outflow	Isco 2150 Area Velocity Sensor & Module (2015)
Plants	\$19,993.00	Infiltration	Stilling Wells w/ Global Water WL16 Pressure Transducer & Data Logger
Total	\$185,183.00	Water Quality	Isco 6712 Sampler

DESIGNED BY	CONSTRUCTED BY	MONITORING/ ASSESSMENT BY	MAINTENANCE BY
Lamp Ryneason & Associates	Next Phase Environmental, Inc.	City of Omaha & Burns and McDonnell	Creighton Prep

SITE LOCATION – N 72nd St & Western Ave



SUMMER 2015



PHOTOS



PROJECT LAYOUT

