

Bard



THE BARD REGIONAL GREEN INFRASTRUCTURE DEMONSTRATION PROJECT



Funding by the NYS Environmental Facilities Corporation

Bard



Bard



Bard

General Contractor Costs: 78%

Engineering & Landscape Architecture: 11%

\$832,000

GC Broken down:

SITE PREPARATION AND DEMOLITION: 20%

DRAINAGE: 6%

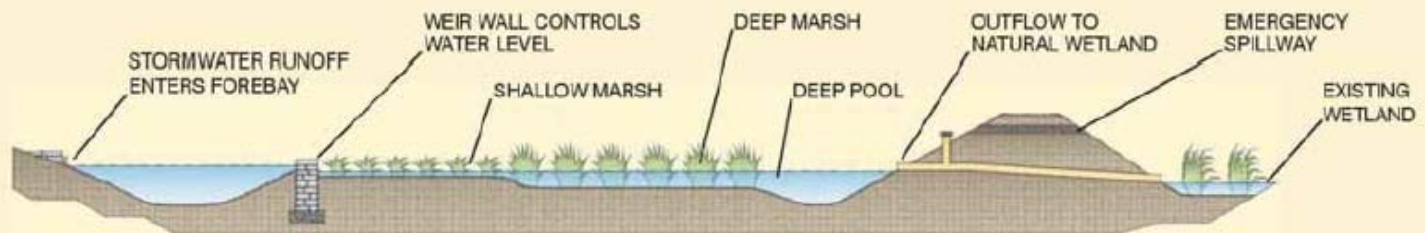
SITE IMPROVEMENTS (asphalt, pavers, curbs, lights, weir wall, signage, bioswale, bio retention, gravel path, spillway, guiderail, cross walks): 56%

LANDSCAPE (trees, shrubs, grasses, phrag barrier, goose netting): 18%

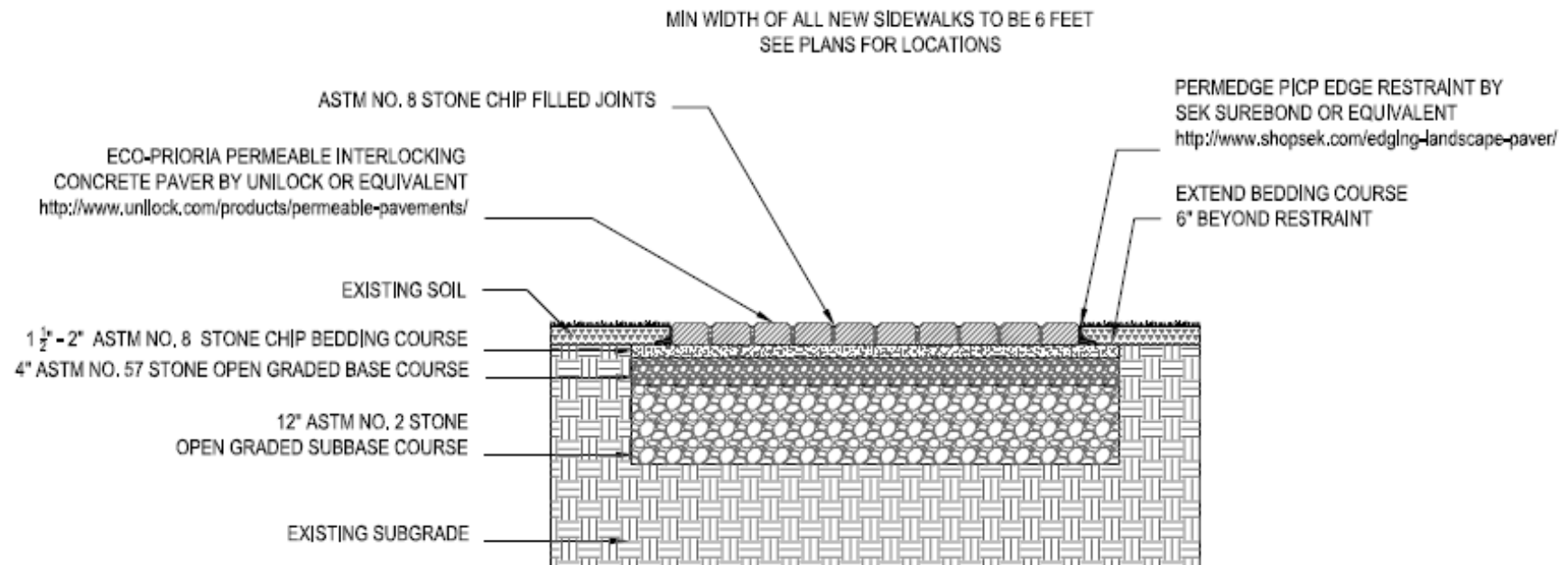
The Constructed Wetland



Cross Section of a Constructed Wetland



Illustrations by Restaino Design Landscape Architecture, PC



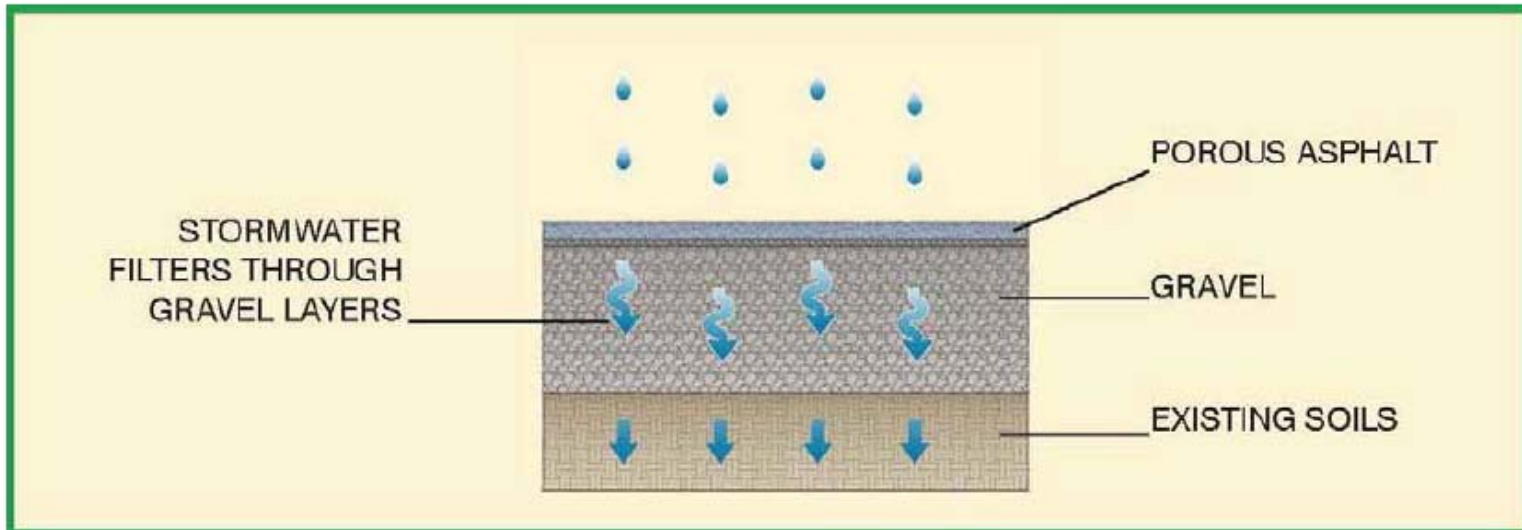
PERMEABLE PAVING SIDEWALK DETAIL

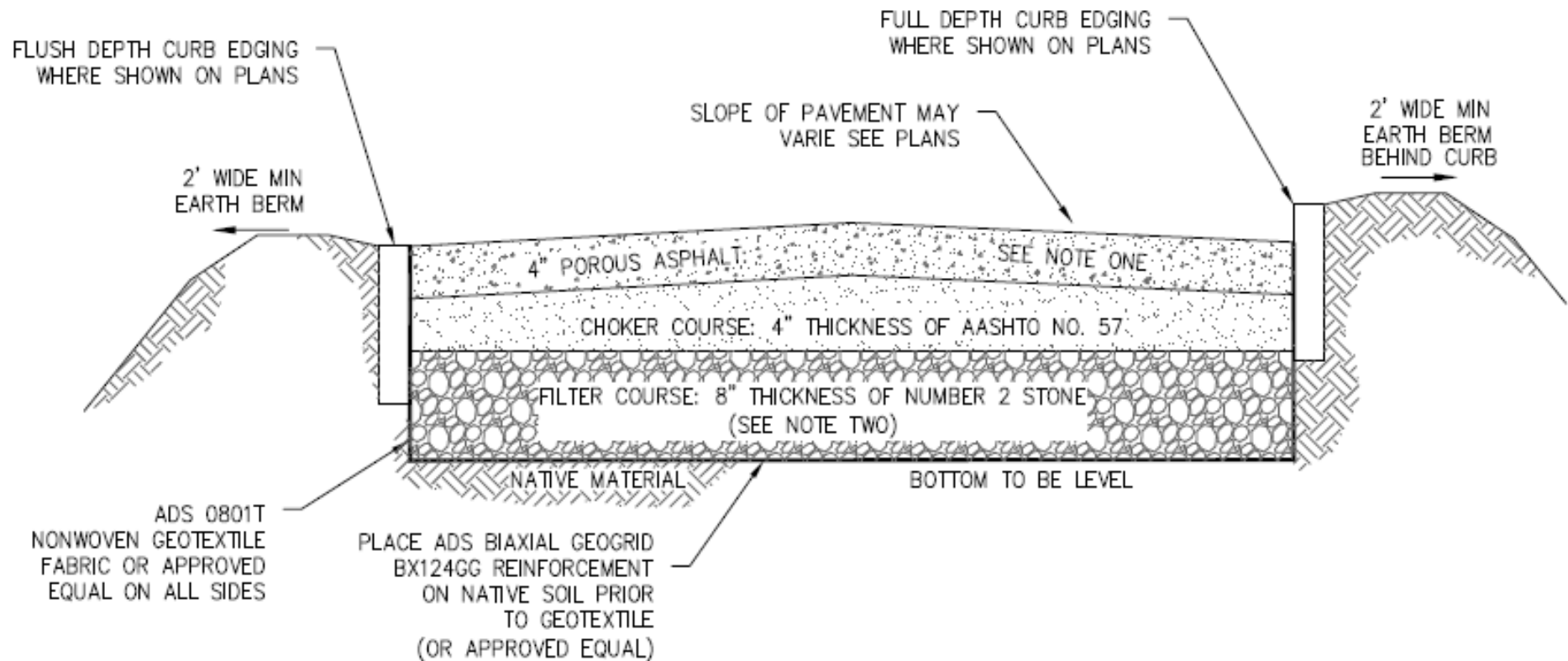
NOT TO SCALE

Bard

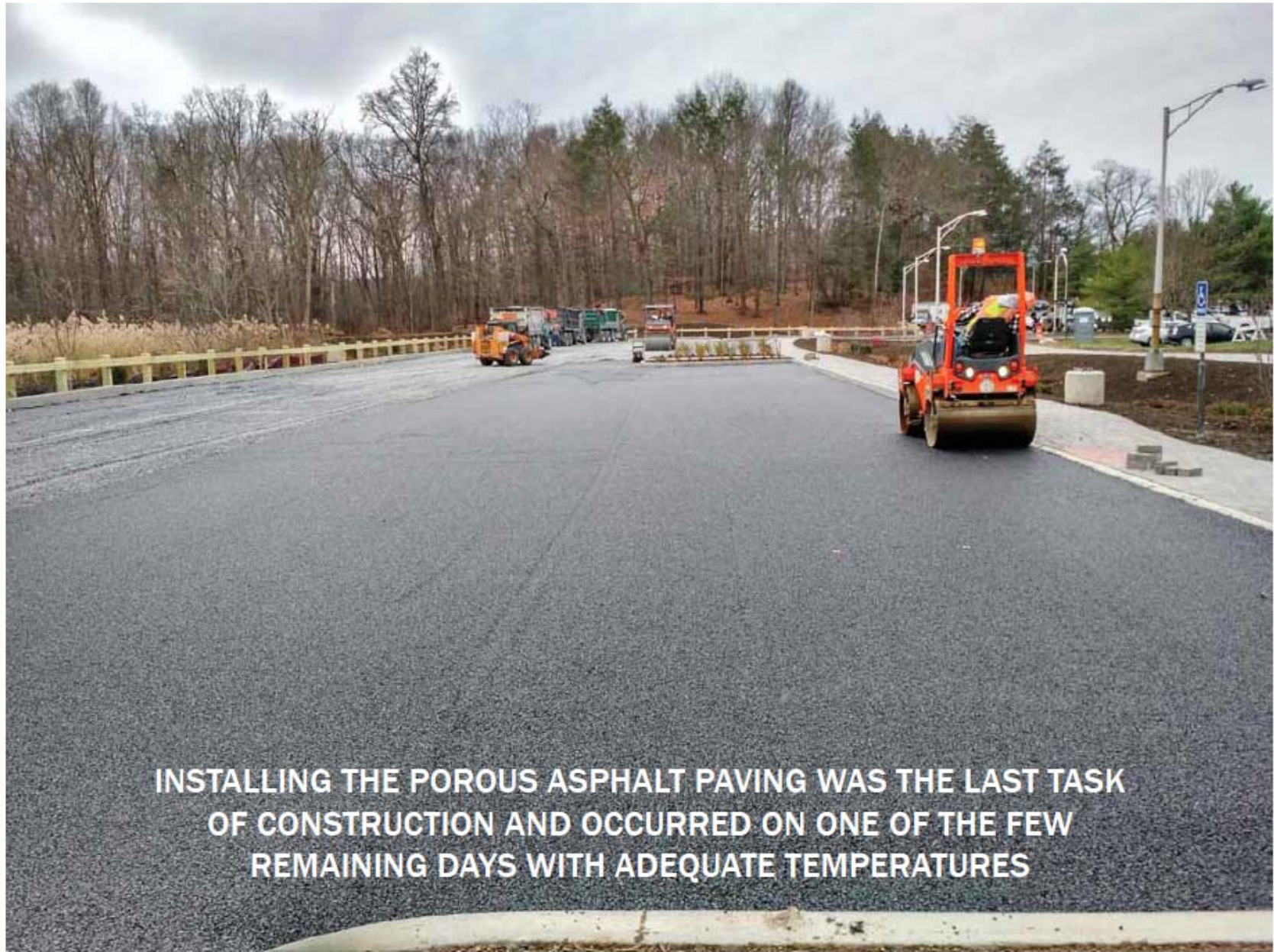


POROUS ASPHALT PARKING AREA





Porous Asphalt Pavement Detail (1 of 2)



INSTALLING THE POROUS ASPHALT PAVING WAS THE LAST TASK OF CONSTRUCTION AND OCCURRED ON ONE OF THE FEW REMAINING DAYS WITH ADEQUATE TEMPERATURES

Bard



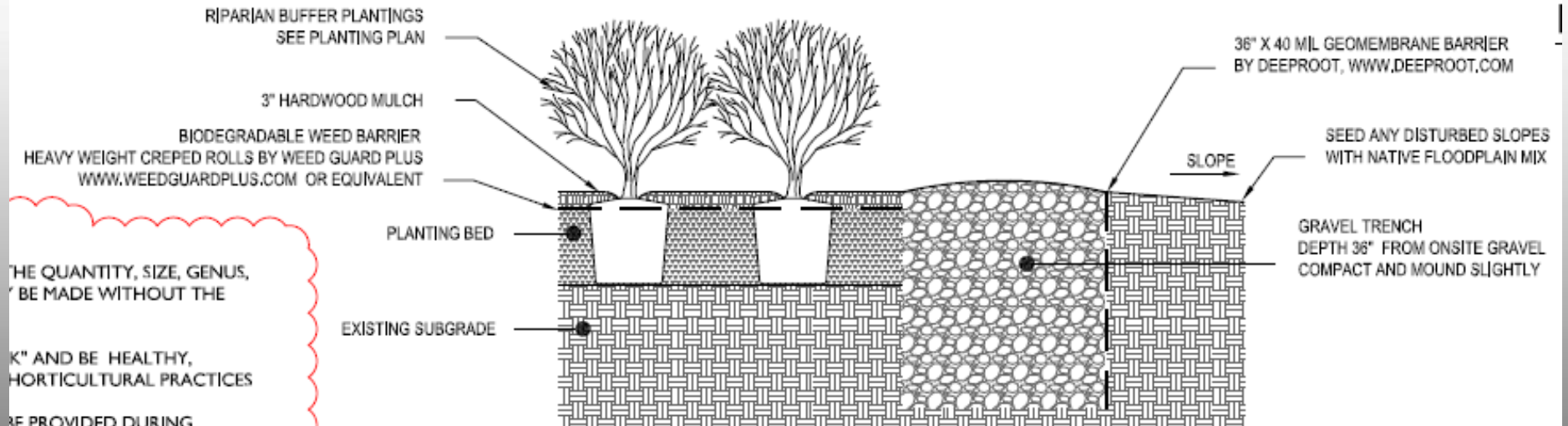
3, TUCK AND PIN EDGES INTO GRADE

- 3" PREPARED SEEDBED
- EXISTING SUBGRADE

PHRAGMITES REMOVAL SPECIFICATIONS:

BEFORE ANY CONSTRUCTION BEGINS, ALL PHRAGMITES OCCURRING WITHIN THE CONSTRUCTION SITE SHALL BE IDENTIFIED AND MARKED BY THE CONTRACTOR WITH THE LANDSCAPE ARCHITECT AND/OR BARD HORTICULTURIST. ALL PARTS OF THE PHRAGMITES OCCURRING WITHIN THE CONSTRUCTION SITE SHALL BE COMPLETELY REMOVED INCLUDING THE SURROUNDING SOIL THAT MAY HARBOR ANY RHIZOMES, ROOTS OR ANY PART OF THE PHRAGMITES PLANT. THE SOIL AND ALL PARTS OF THE PHRAGMITES PLANT SHALL BE BAGGED OR COVERED WITH 3 MIL PLASTIC AND TRANSPORTED TO THE BARD RECYCLING SITE SO THAT NO PART OF THE PLANT (INCLUDING SEEDS) ARE SPREAD. THE CONTRACTOR SHALL INSURE THAT ALL NEW SOIL BROUGHT ONTO THE SITE SHALL NOT INCLUDE INVASIVE WEEDS, SEEDS OR ROOT PARTS AND THAT THE AREA TO BE PROTECTED BY THE "PHRAGMITES BARRIER" IS FREE AND CLEAR OF PHRAGMITES BEFORE INSTALLING THIS BARRIER.

US
SUPPLEM



THE QUANTITY, SIZE, GENUS,
BE MADE WITHOUT THE
K" AND BE HEALTHY,
HORTICULTURAL PRACTICES
BE PROVIDED DURING
OOD CONDITION AFTER ALL
IF PLANTING IS DELAYED MORE
THE LANDSCAPE ARCHITECT
SATISFACTORY OR DEFECTIVE
MOVE REJECTED TREES OR

PHRAGMITES BARRIER - DETAIL

NOT TO SCALE

Bard



Bard



Bard

Olin Parking Lot in the Curriculum

Possible transfers of water
bacteria to air

Influence on coliforms
(bacterial contaminants) and
turbidity in parking lot run-off

Permeable pavement, polarized
light and insect traps



The Sites

Bioswale #2



Turtle Pond



Marsh Stream



EUS221 Water Projects Transformers Team: Investigating Filtering Functions of Permeable Pavement

Melissa Guevara, Yue Jiao Wan, and Clara Duman

The project to replace the Olin Parking Lot with a permeable paver lot has been years in the making. The new 75-space parking lot was designed to allow for multiple forms of water filtration. The project uses porous asphalt, porous paver walkways, a constructed wetland, bioretention and bioswales to filter 10 acres of run-off from the surrounding areas as well as any rain or snow melt that falls directly on the permeable surfaces.

Our research was based on testing three different areas in this system to investigate the effectiveness of the newly constructed parking lot and bioswales in filtering out different pollutants, including Nitrogen, Phosphorus, Lead, and bacteria. This study's first data collection occurred on March 5th, 2015 and will continue until early May 2015.



Wendi collecting samples from the Marsh Stream on a rainy day



Readings from the YSI



Clara getting the YSI readings from Bioswale #2



Teamwork!

In the Lab



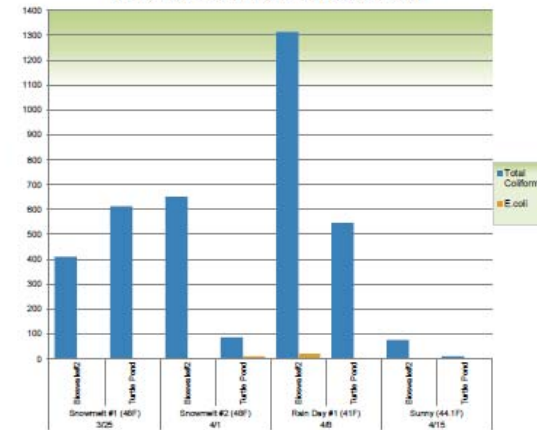
Samples from each site; notice the difference in turbidity (suspended materials in water) as water moves through the system



Coliform Samples after incubation: yellow indicates the presence of Coliforms

Preliminary Data

Presence of Total Coliform & E.coli



Some initial data on concentration of bacteria (cfu/100ml) present in the waterways. We are interested in determining whether or not biological processes are occurring within the Bioswales to reduce the amount of Total Coliforms and *E. coli* delivered to the Saw Kill watershed. Sources for these bacteria include animal waste and soil run-off. Coliforms were detected in higher concentrations on days with heightened flow (snowmelt/rain), and it does appear that the movement of water from the Bioswale to the turtle pond reduces coliform concentrations. Future sampling will allow us to look into this further.

Bard

