

# *Bedrock Earthscapes, LLC*

## Sustainable Earthcare

*Enriching life through  
improving our environment.*



# Environmental Stewardship

- Responsibly use only what we need, and ensure there is enough for future generations
- Good stewardship is good business
- There is a triple bottom line to good stewardship:
  - Lower cost
  - It is good for the environment
  - It demonstrates organizational commitment to Corporate Social Responsibility



# Promoting sustainable site practices has a triple bottom line!

- Economic:
  - ***Good stewardship makes good business sense*** for individuals and for our community.
- Environmental:
  - ***Sustainable practices are the way of the future.***
  - They enhance biodiversity, and support LEED and emerging stormwater Best Management Practices (BMPs).
- Social:
  - Sustainable site practices ***demonstrate Corporate Social Responsibility in a highly visual manner.***

**A bit of background regarding:  
water,  
soil,  
plants,  
and people.**

**Today's systems are broken, but we  
have the technology to fix it.**

# The Botanical Law

**“Plants Grow in Habitats to Which They are Adapted”**



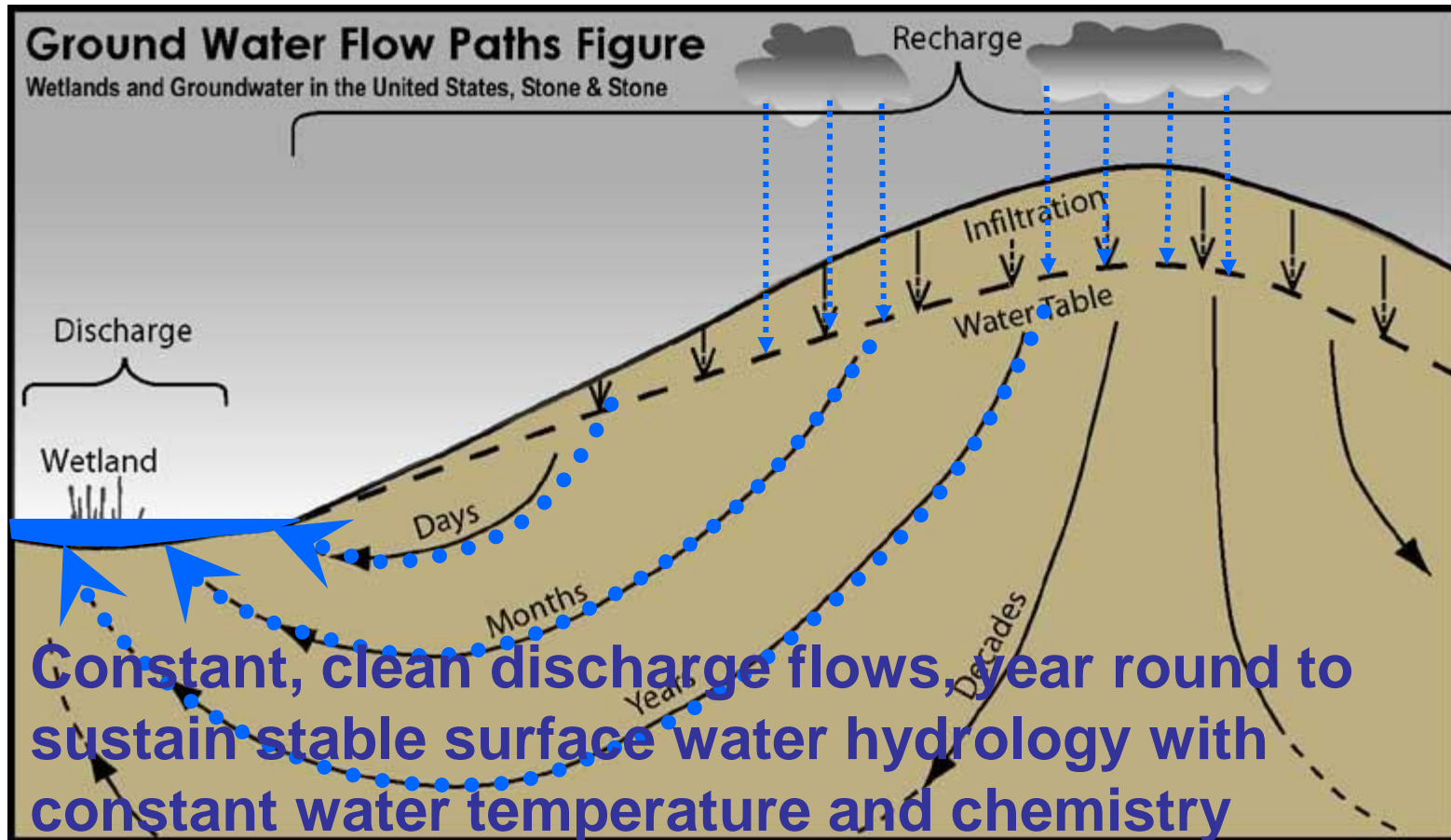
# Soil

- True or False?
  - Native plants will grow where typical landscape plants will not.
  - Lime or sulfur is used to “adjust” soil pH?
- Consider the physical, chemical and LIVING portion of the soil
  - Sand, silt, clay, organic matter, compaction
  - Soil test results
  - Do soil inoculants work?

# Historical Patterns of Hydrology

Recharge Zone: Uplands

Discharge Zones: Lowlands- rivers, streams, ponds, wetlands

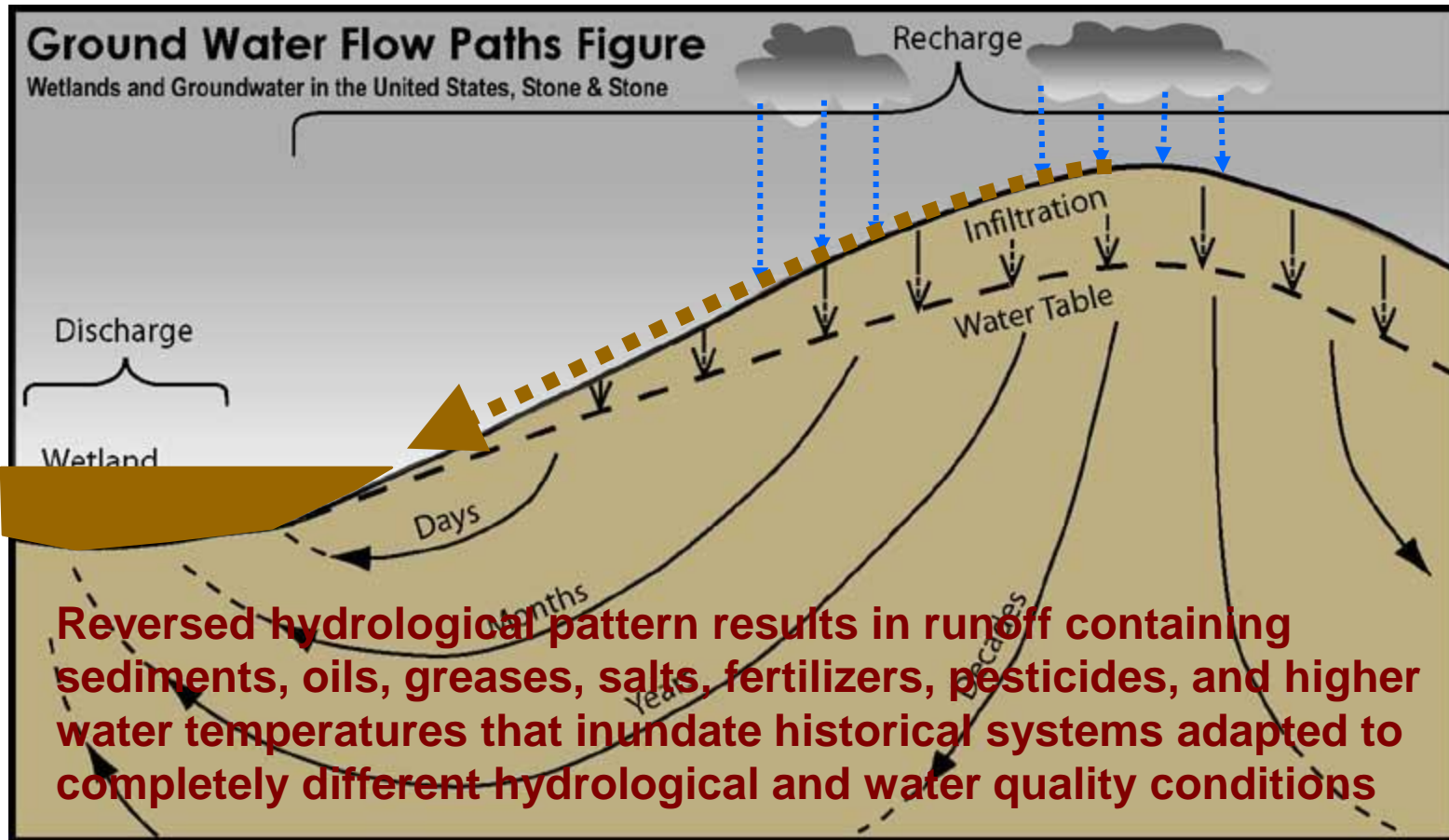




# Contemporary Hydrology

Upland becomes discharge zone

Natural wetlands are expected to function as recharge zones

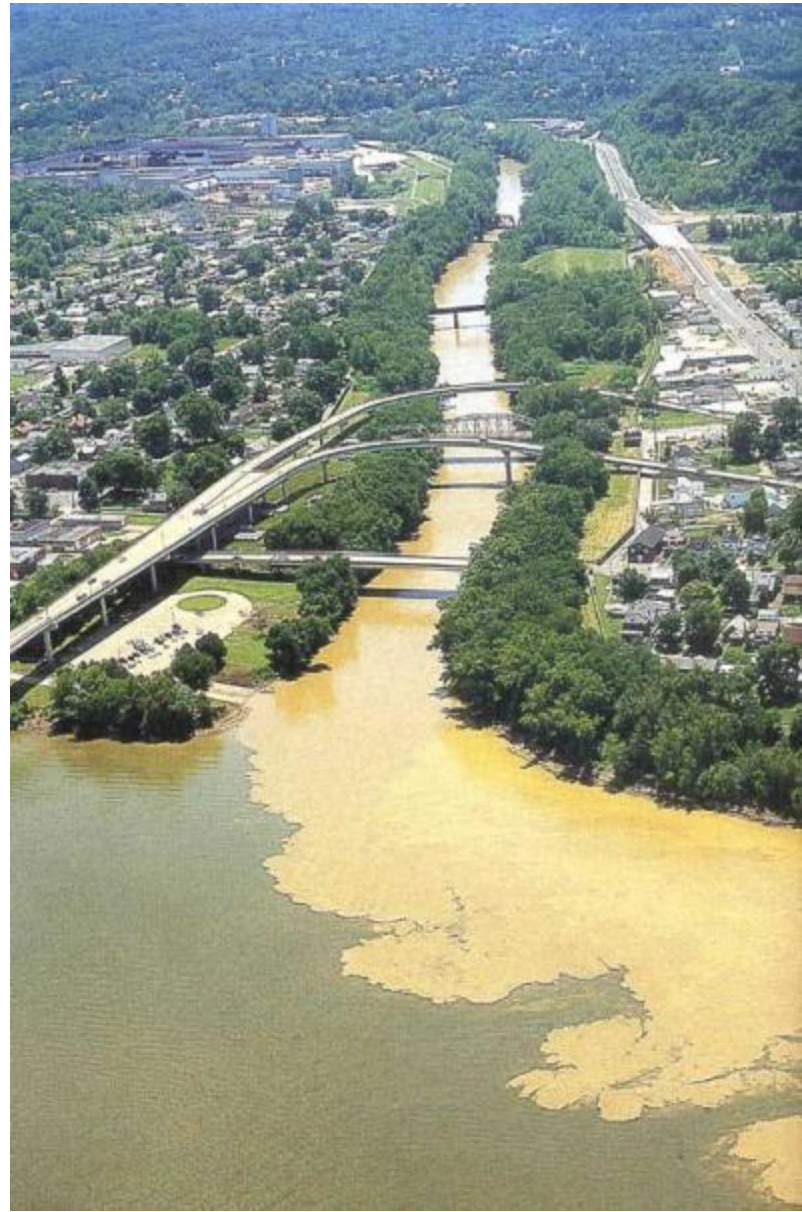




Today's practices are  
destroying  
our  
environment







causing severe flooding and erosion

**In contrast to conventional storm water management approaches based on *collection and conveyance*, sustainable water resource management strategies are based on decentralized, integrated systems design:**

- **Capture rainfall, diffuse flow, cleanse, and absorb water on-site.**
- **Restore historically stable patterns of infiltration and groundwater dominated hydrology.**

# Applications for Sustainable Site Practices



**Sustainable site practices are today's technology, but a best kept secret!**



# **What are Sustainable Site Practices?**

- **Native Landscape Systems**
- **Bio-swales**
- **Porous Paving**
- **Rain Gardens**
- **Cisterns & Rain Barrels**
- **Naturalized Retention**
- **Green Roofs & Green Walls**
- **Edible Landscapes**

# Native Landscape Systems



# **Pick the solution to meet your needs.**

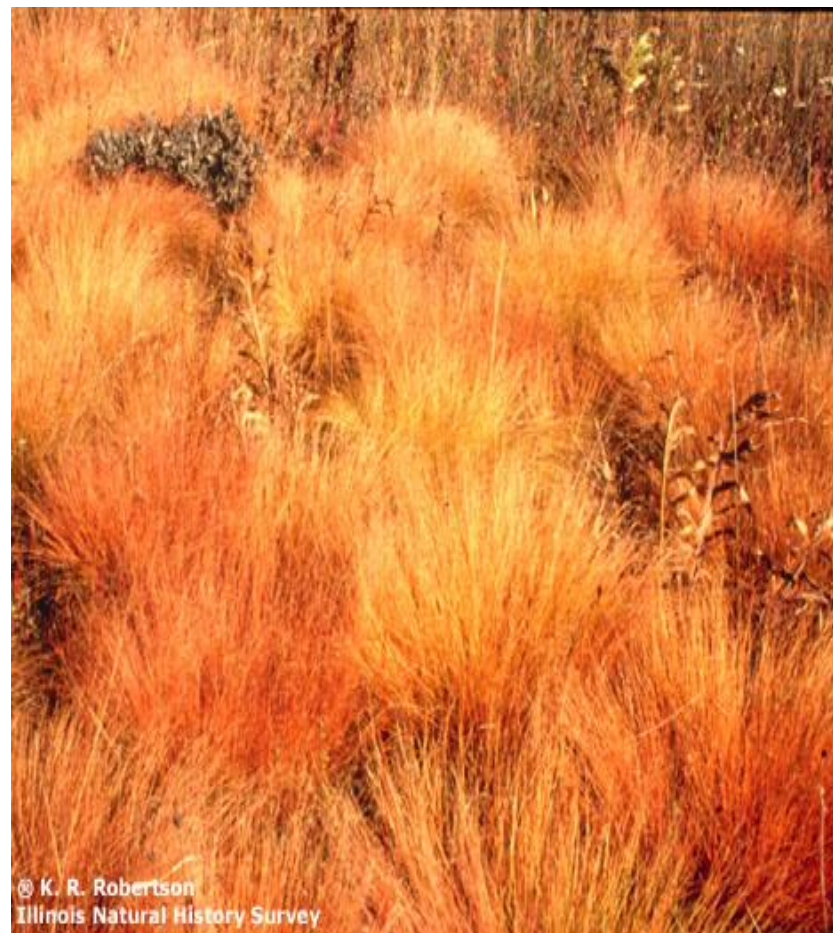
## **A continuum of choices:**

- **Mowed turf lawn**
- **No-mow turf**
- **Hardy adapted perennials in bed areas**
- **Native plants in structured garden plantings**
- **Native gardens in less structured plantings**
- **Native grass areas**
- **Mixed native forb (flowers) planting**
- **Low profile mixed prairies**
- **Tallgrass mixed prairies**





**Native plants in structured plantings**



**Low profile native grasses**





## Low profile mixed prairie plantings







**Native forb (flowers) dominated plantings**



## **Tall grass prairie plantings**



## Parking Lot Island Native Forb Planting – 1<sup>st</sup> Year



# Site stewardship

While not glamorous, routine site stewardship (maintenance) is necessary to create and maintain a healthy native planting. The photos below show landscapes at various stages of site stewardship.





Wetland in early summer and the same area burned in November.



Fire is an important tool in natural area stewardship. It helps control invasive and non-native plants, while encouraging native species to thrive.

# No cost conversion of turf to native plantings

- Use the existing turf care budget for two years to pay for the conversion.
- Third year maintenance expense drops as much as 60-80% on converted areas.





# Typical Turf and Hardscape Example





# Using Integrated Site Strategies







# Sustainable Earthscape Concept Details

# Integrated Green Site Strategies

Replicate natural hydrology and provide multiple benefits on all land use surfaces:

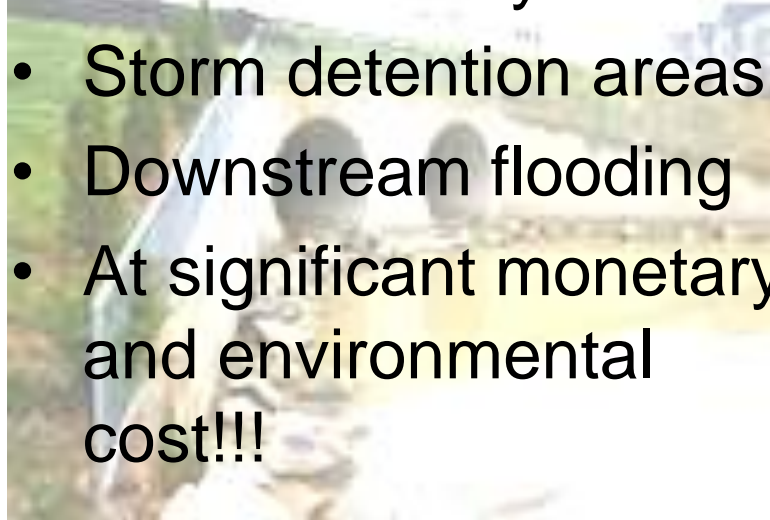
- **Porous pavement systems**
- **Bio-retention systems**
- **Native landscape systems**
- **Rainwater harvesting and re-use**
- **Green roof systems**
- **Other site elements- energy, wastewater, etc.**



# Rain Water: waste product or valuable resource?

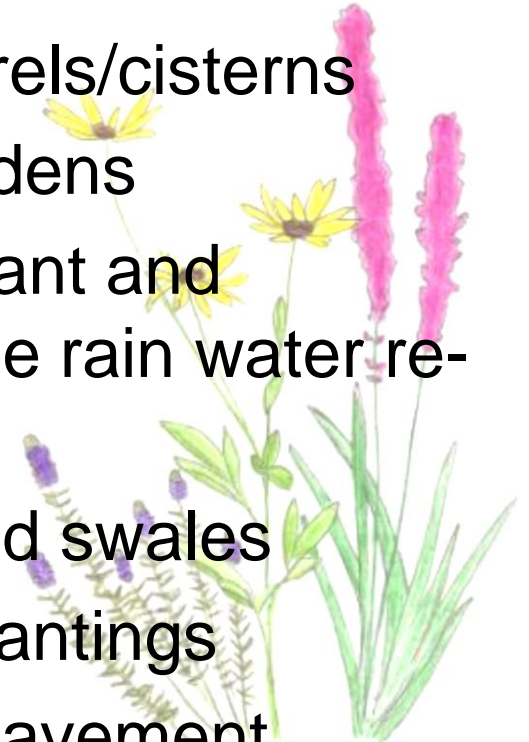
## Collect and convey it VS

- Roof gutters
- Downspouts
- Underground pipes
- Storm water systems
- Storm detention areas
- Downstream flooding
- At significant monetary and environmental cost!!!



## Use it where it falls

- Roof overhangs/green roof
- Rain barrels/cisterns
- Rain gardens
- Edible plant and landscape rain water re-use
- Vegetated swales
- Native plantings
- Porous pavement

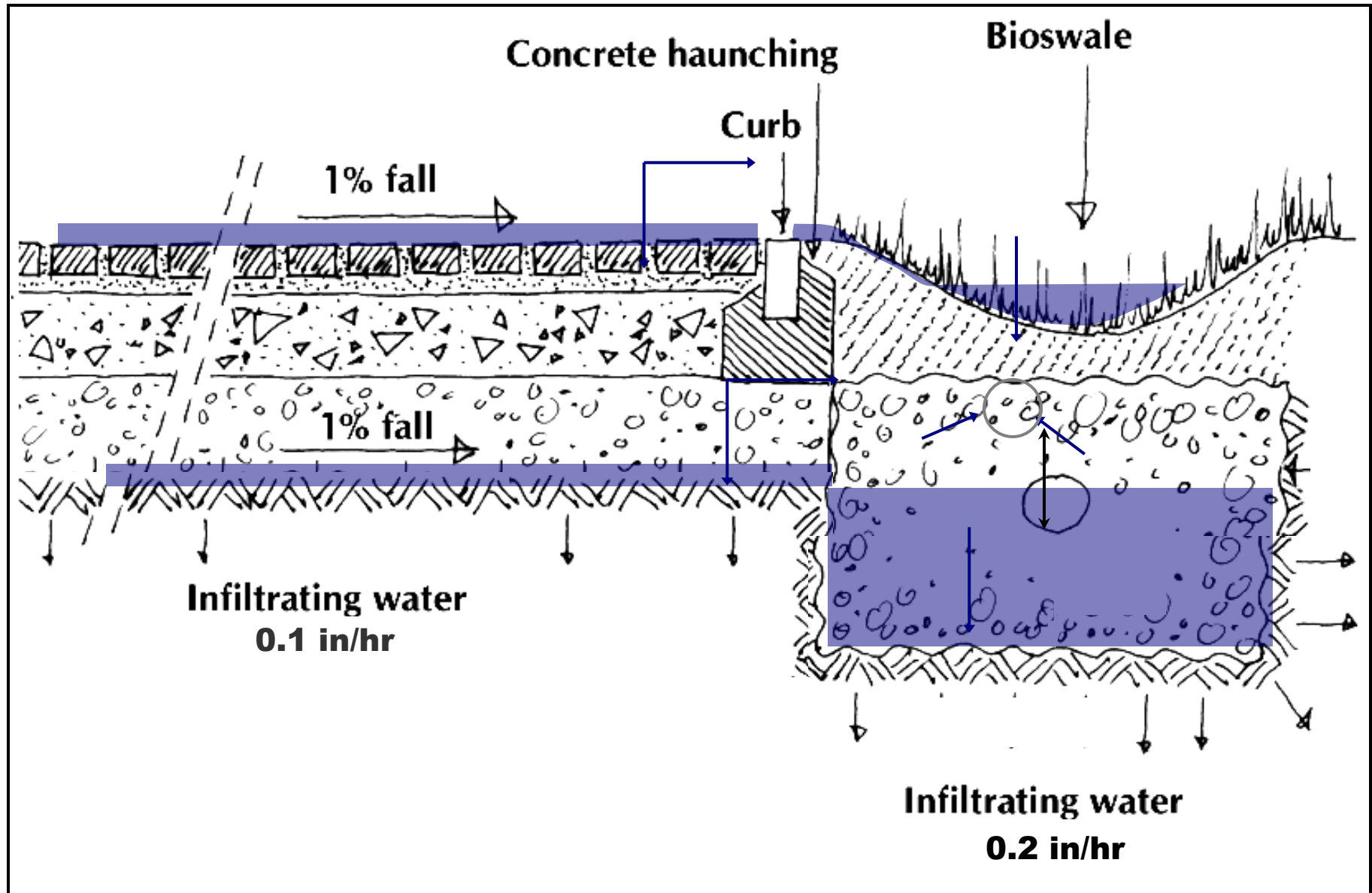


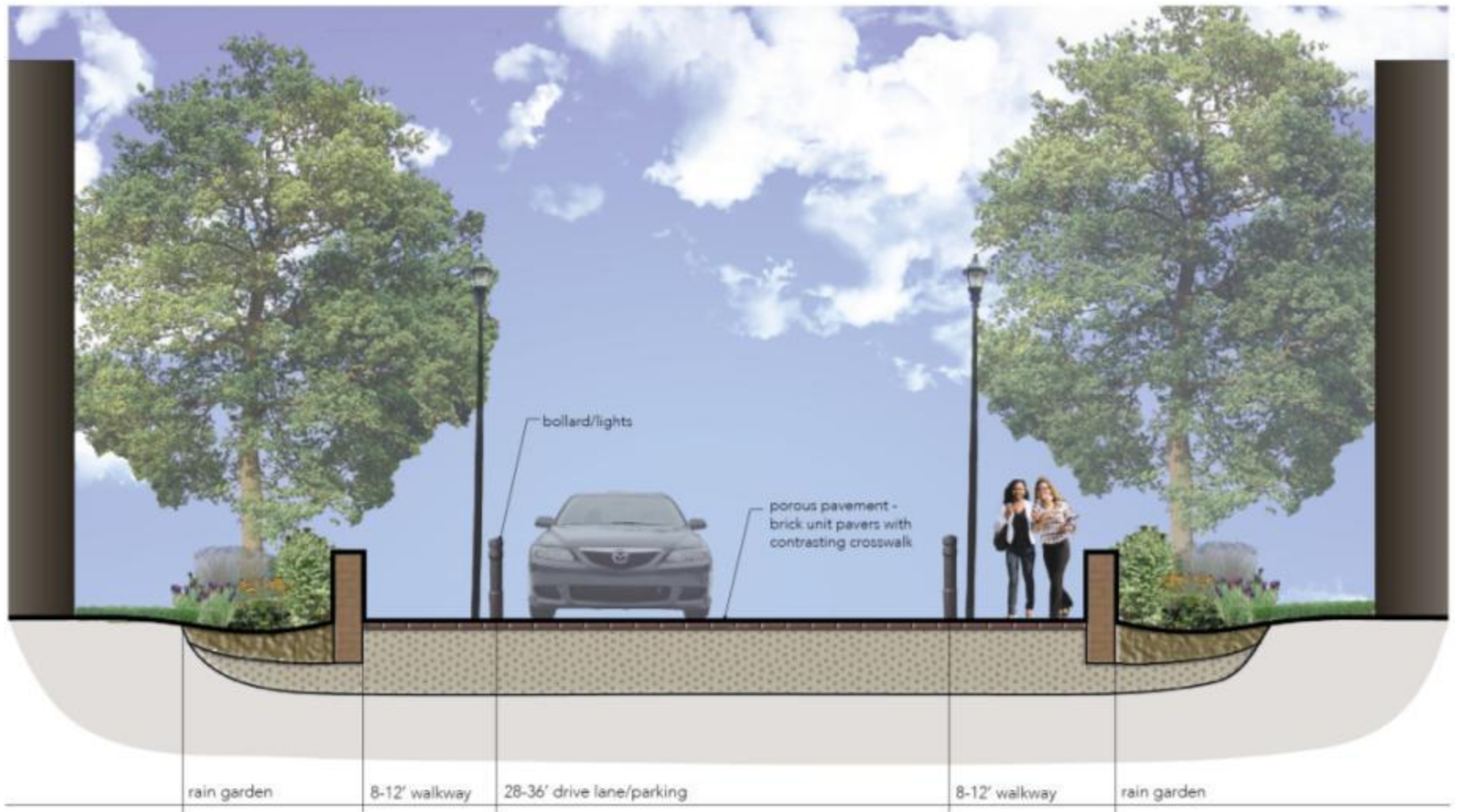


# Porous Pavements



# Porous Pavement with Bio-swales/ Rain Gardens





# Porous Street Concept- Section



# Bio-swales



# **Bio-swale Costs & Benefits**

- **Typical unit costs**
  - **Traditional curb and gutter: \$40-50 per linear foot (USEPA)**
  - **Bio-swale with infiltration trench: \$20 - \$30 per linear foot (CDF)**
- **Less expensive than curb and gutter (and pipe)**
- **Provides an additional water quality benefit**
- **Bio-swales with infiltration trenches combine detention/retention and conveyance**

# Rain Gardens



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

Drainage coming from the neighboring property in the winter photo on the left. On the right is a new rain garden in the low area one month after establishment with native plugs.



During the growing season, this new rain garden will absorb most of the surface runoff in this low area. Clay tiles previously in this area were removed.



**Rain gardens** can help intercept and reduce site runoff.

- They can also help solve the problem of low, wet areas in your landscape, turning them into attractive gardens that help improve our environment.
- Keeping rain water on our sites, where it falls, is the first step in preventing flooding further downstream. If we each keep all rain from 1" or less rainfalls on our site, we can eliminate 80% of today's flooding problems.

# Cisterns and Rain Barrels



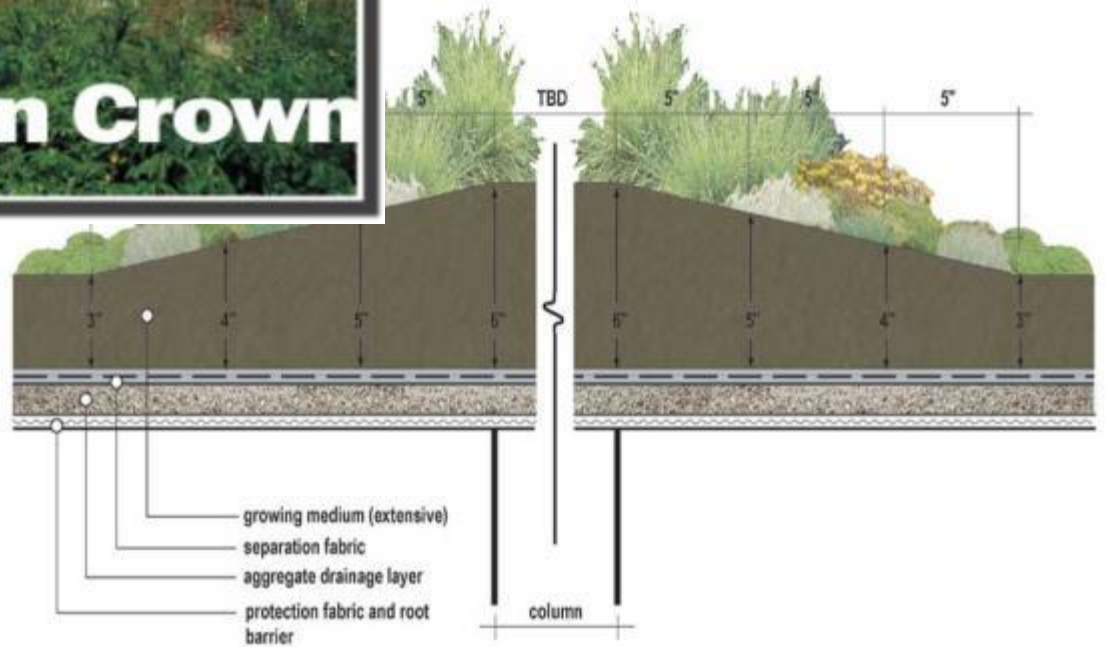
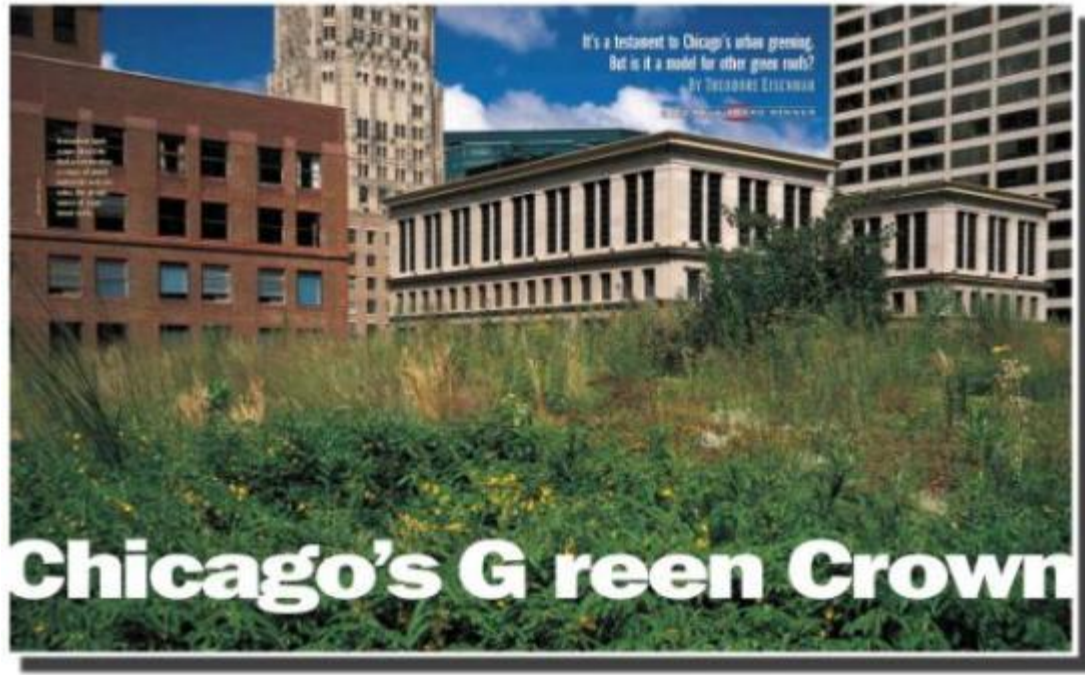
Chicago Center for Green Technology

# Naturalized Retention



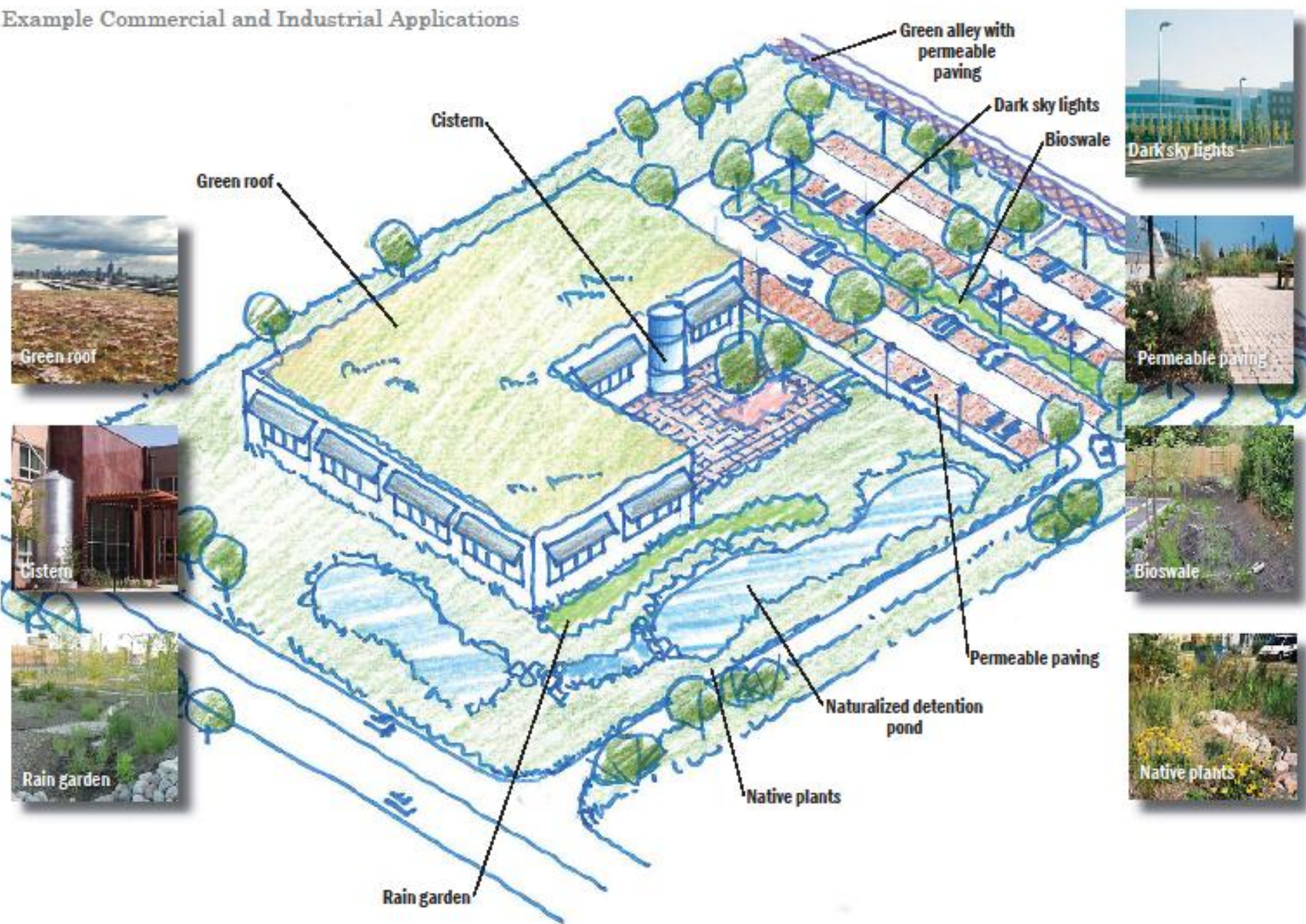


# Green Roofs



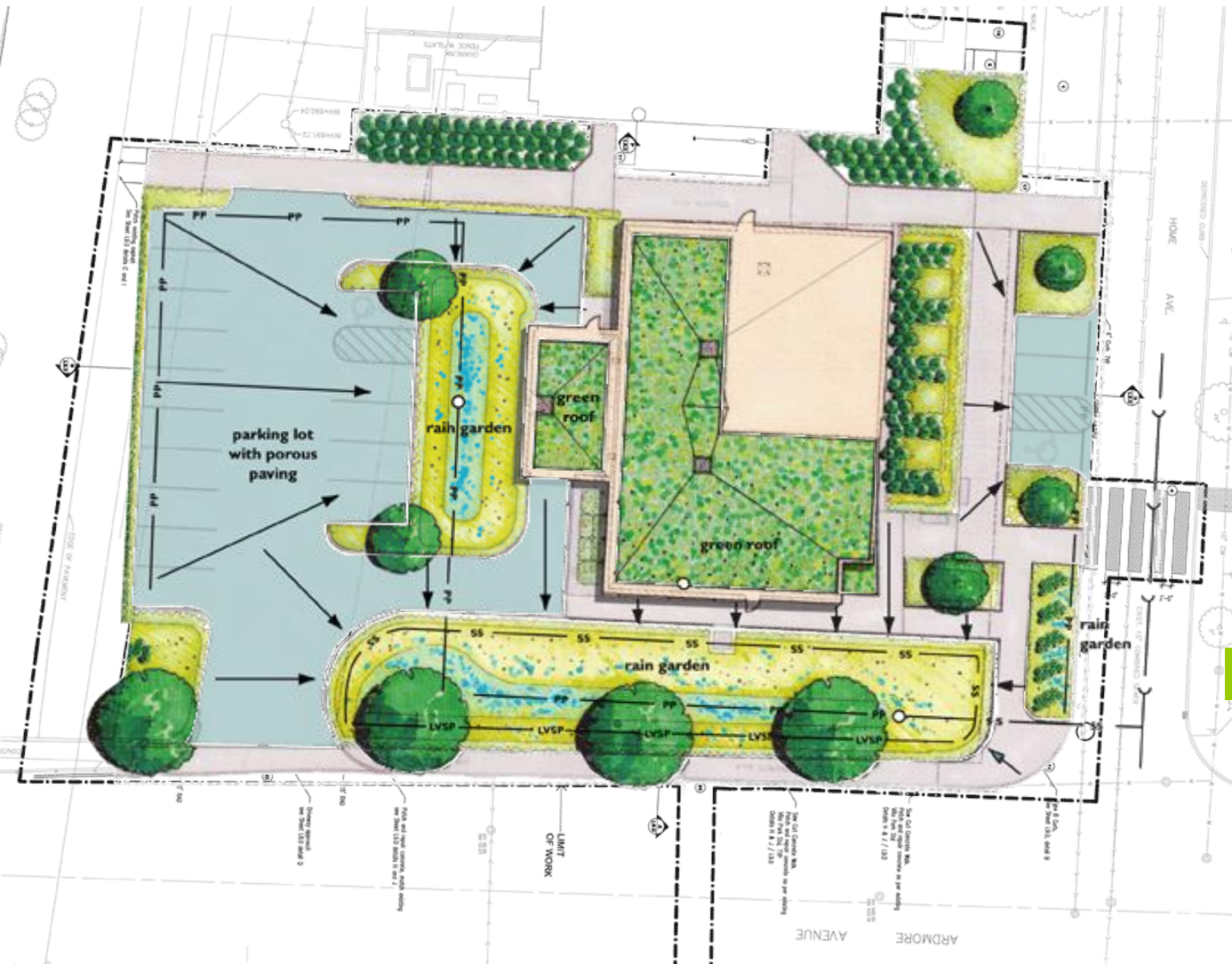


## Example Commercial and Industrial Applications





**Field Tested Permeability Rate for Site: 0.3 in/hr**  
**Allowable release rate: 0.1 cfs/acre**  
**Site: 0.72 acres**



**Green Roofs**  
**Porous Pavement**  
**Rain Gardens**



# Sustainable Sites for Residential Applications



# Sustainable Landscape Benefits

- Runoff reduction and enhanced infiltration
- Water quality enhancement
- Air quality enhancement
- Eliminate need for irrigation and chemicals
- Promote groundwater recharge
- Reduction of conventional stormwater infrastructure
- Enhance bio-diversity and habitat quality
- Pleasing aesthetic throughout the year
- Opportunities to promote education and awareness
- Long Term Maintenance Cost Reduction

(Up to 80% Annual Maintenance cost savings after establishment !!!)

# Solutions

## The infrastructure is in place

- National initiatives
- Regional planning
- County Best Management Practices
- Forest Preserves
- Community level awareness and implementation
- Educate/legislate/enforce

## Will you do your part?

- At your place of work?
  - Triple bottom line benefits
    - Lower costs
    - Environmentally beneficial
    - Demonstration of Good Corporate Stewardship
- At home?
  - Simple and attractive water collection and landscape changes



# Roosevelt University – Robin Campus

- Reflect the mission and values of Roosevelt University
- Transform not only the campus but the curriculum
- Unique and innovative solutions
- Integrate at multiple levels
- Demonstrate grand concepts in practical, localized ways

# Roosevelt University – Robin Campus

- Contextual issues
- Desire site features
- Academic applications

# Roosevelt University Schaumburg Campus Sustainable Landscape Plan

Prepared by: Bedrock Earthscapes, LLC and Conservation Design Forum

N Meacham Road

McConnor Parkway

Potential Urban Agriculture Plots

Leisure Space  
Composting Site

Open Water

Potential Orchard

No curb

Future Raingarden

Future Cistern

N Roosevelt Blvd

Potential Future Baseball Field

Potential Native Demonstration Bed

## Legend

- |  |   |
|--|---|
|  Prairie Plantings  |  Ornamental Grasses:<br><i>Little Bluestem</i> |
|  Bioswale Plantings   |  Urban Agriculture Plots                       |
|  Ornamental Native Beds                                       |  Turf Grass                                    |
|  Native Grass Mix:<br><i>Little Bluestem, Sideoats, Grama</i> |  No-Mow Turf Grass                             |
|  Ornamental Grasses:<br><i>Prairie Dropseed</i>               |  Courtyard                                     |
|  |  Permeable Parking Lot                         |





# *Bedrock Earthscapes, LLC*

- Over 35 years of Grounds and Landscape Management experience
- Current focus on sustainable earthcare practices
- *Enriching life through improving our environment.*
- Supporting customers with
  - Professional institutional site consultation
  - Natural areas restoration and stewardship

