Green Infrastructure Retrofit and Maintenance Strategies in Indianapolis

Road School 2017
GREEN INFRASTRUCTURE IN INDY

- City of Indianapolis Stormwater Program Overview
- Current Green Infrastructure Inventory
- Current Maintenance Strategy
- Near Eastside Case Study Projects: East 10th Street and Jefferson Avenue
CITY OF INDIANAPOLIS STORMWATER PROGRAM

- MCSWMD Established in 2001
- User fee based
- Assets We Manage:
  - 1000’s of Miles of Pipe and Ditches
  - 100,000+ Inlets and Manholes
  - 2 Dams
  - 35+ Miles of Levee/Floodwall
  - 8 Stormwater Pump Stations
  - 18 Regional Detention Basins
  - Green Infrastructure Installations
GREEN INFRASTRUCTURE HISTORY

• Mayor’s Office Focus on Sustainability
• GI Projects Constructed by Several Entities:
  ➢ DPW Transportation
  ➢ DPW Stormwater
  ➢ DMD
  ➢ Private Entities Seeking Stormwater Credits
• MCSWMD Writes Design Standards
  ➢ 2011 Stormwater Design Manual
  ➢ Green Supplemental Document
GREEN INFRASTRUCTURE IN INDY

- Indy’s Approximate Inventory:
  - Rain Gardens – 19,000 SFT*
  - Constructed Wetlands – 40 Acres
  - Hybrid Ditches – Unquantified
  - Pervious Pavers – 46,000 SFT
  - Porous Concrete – 7,100 SFT
  - Porous Concrete Curb – 1,000 LFT
  - Porous Asphalt – 31,000 SFT

*Indianapolis Cultural Trail Rain Gardens Not Included
GREEN INFRASTRUCTURE O&M STRATEGY

• City Crews
  ➢ Quarterly Sweeping of Paver Installations
  ➢ Do not work with Rain Gardens

• 3-Year O&M from Original Contractor
  ➢ Some projects include O&M for first 3 years

• Contracted Services
  ➢ Currently 7 Sites Under Contract for O&M
  ➢ 19,000 SFT worth of Rain Gardens
  ➢ Average Annual Cost is ~$5/SFT
  ➢ Includes 7-8 Site Visits Each Growing Season
GREEN INFRASTRUCTURE O&M STRATEGY

- **Public-Private Partnerships**
  - Mixed Success
  - Enforcement language is helpful in MOU

- **Endowment**
  - Indianapolis Cultural Trail: A Legacy of Gene & Marilyn Glick

- **Private**
  - All GI on Private Property
  - Hybrid Ditches Mowed by Residents

- **No O&M Plan**
  - Porous Asphalt and Concrete
  - Long Term O&M Not Well Coordinated
  - Experiment Cleaning Porous Asphalt this Spring
THE NEAR EASTSIDE OF INDY

- Quality Of Life Plan
- Promise Zone federal designation
EAST 10TH STREET GREEN INFRASTRUCTURE HISTORY

TIF/Housing TIF Funding Mechanism
Super Bowl Legacy Project
POGUES RUN WATERWAY

- Combined sewer issues on Pogues Run
EAST 10TH STREET RAIN GARDENS

• Stormwater Functionality
• Safety and Aesthetics
• Maintenance
RAIN GARDEN RETROFIT

- Goals: simple, beautiful, functional, serve as redevelopment tool
- Future maintenance assumptions: easy to maintain by volunteers
- In-depth project understanding - through public outreach and being “on the ground”
RAIN GARDEN RETROFIT

- Maintenance driven design
- Design elements
- Price and Schedule
EAST 10TH STREET TODAY

- Goals: simple, beautiful, serve as redevelopment tool
EAST 10th STREET TODAY

- Goals: simple, beautiful, serve as redevelopment tool
EAST 10TH STREET TODAY

- Goals: improved stormwater functionality
EAST 10TH STREET TODAY

• Goals: improved safety
MAINTENANCE + PERCEPTIONS

• Reconnecting to Our Waterways (ROW) Greenspace Maintenance Training
• Adopt-A-Block Program
• Neighbors, Business Owners, Corporate Sponsors
A HOLISTIC APPROACH

- Maintenance events used to train individuals in best maintenance practices
- Partnership with local Marion County Corrections reentry program
- Few(er) barriers to entry into a growing field
CHALLENGES

- Water main break
- Distracted driving = vehicles in rain gardens
- Securing planters
- Sediment clean out sizing
LESSONS LEARNED

- Plant selection - tried and true, hardy, simple, plants that don’t look like weeds
- Volunteer maintenance model
- Public outreach and communication is critical
- P3s beyond initial funding
JEFFERSON AVENUE RAIN GARDENS

- Inconsistent Plant Establishment
- Erosion on Slopes and Under Sidewalks
- Clogged Curb Turnouts
- Residents Concerned About Safety Due to Steep Slopes

Summer 2013 ~2 Years After Construction
JEFFERSON AVENUE RAIN GARDENS

• Original Design Lessons Learned
  - 2:1 Too Steep, Soil Will Erode
  - 12" SHELF good idea, unsure if implemented
JEFFERSON AVENUE RAIN GARDENS

• 2014 Retrofit
  ➢ Regrading
  ➢ Replanting
  ➢ $24,000
JEFFERSON AVENUE RAIN GARDENS

- Ongoing Challenges
  - Sidewalk Undermining
  - Debris Build Up at Curb Turnouts

- Next Steps…TBD
  - Retrofit #2
  - Fill In Most Problematic
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