Blueprint Lessons Learned
Ohio Stormwater Conference
May 11, 2018
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Agenda

- Blueprint Columbus
- Lessons Learned
 - Planning and Design
 - Communication
 - Construction
 - Costs







Blueprint Columbus

- Integrated Plan approved by Ohio EPA December 2015
- Addresses the source of sanitary overflows and basement backups: I/I
- Over 18,000 acres planned
- 7 projects have been designed and are constructed/under construction
- 5 subsequent areas of design are underway







Blueprint Program



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Green Infrastructure is Needed



Image of Downer's Grove, IL neighborhood flooding after I/I work











Blueprint Planning

- Project sequencing for minimum customer disruptions
 - Construction of GI first
 - Combining lateral lining and roof redirection
 - Voluntary sump pump installations throughout program
- Sump pump pilot testing
 - Vacant homes utilized
 - Several configurations tested
- Carefully consider construction sequencing







Blueprint Planning

- Roof Redirection Pilot
 - Great coordination with contractor for public outreach
 - Residents happy with the work and restoration
 - Considering seasonality of construction to maximize restoration success
 - Contractors CCTV downspout leaders then mark up drawings to show proposed improvements







Blueprint Planning

- Lateral Lining Pilot
 - Minimal disruption, installation from mainline
 - Cleanouts only installed at locations for air testing
 - Liner testing results are higher than specified
 - Lined laterals and mainlines have shut off I/I
- Pilots can help gain insight to performance and construction
- Efficient communication with residents through contractor during the private property work is critical







- **Neighborhood Variability** •
 - Housing Density
 - **Occupancy Rates** —
 - Neighborhood Involvement —
 - Topography

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- Existing infrastructure —
- No two neighborhoods are the same







- Area Information
 - Parking
 - Trees
 - Fences
 - Driveways
 - Intersections
 - Utilities
- All of these (and more) impact location of GI







- Maximize Utilization of Available Data
 - LIDAR data
 - Detailed site survey
 - Critical data for modeling
 - CCTV
- Creation of detailed modeling guidelines
- Streamline the process, understand what the project needs to move forward







- Standardization of drawings
 - Internal reviews
 - Contractor bidding
- Design Guideline documents
- Design coordination meetings including all teams
- Consistency can ease reviews and will help lower costs in the long-run







Communication

- Customer communication and education
 - Social media (area dependent)
 - CAP Meetings
 - Door-to-door
 - Public Meetings
 - Not well attended in the beginning
 - When construction was eminent 200 people showed up, 10% upset, most curious
 - People are not concerned unless it impacts their property
- Should have kicked outreach into a higher gear initially









Communication

- Need to promote the positive
 - Friends of Blueprint initiative
- Need to address the truly unhappy
- Take care of complaints, but need to spend more effort on the successes







Communication – Voluntary Sump Pump Programs

- Clintonville
 - Goal of 750 volunteers
 - 200+ installations
- Planning for additional outreach and education
- Social media will be utilized to help solicit volunteers
- Volunteers must qualify









Construction

- Communication
- Basin winterization
- Fallow basin periods
- Trees

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• Storage and laydown areas

Hazen

- Infiltration testing
- Permeable Pavers

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Construction - Communication

- Resident Field Liaisons onsite
- Weekly Construction Update Emails to provide regular updates on the project and activities
 - Updates and Announcements also pushed out on social media
- Social Media monitoring to proactively identify issues or opportunities for education







Construction – Basin Winterization

- Due to construction timing basin winterization was necessary
- Evaluated best practices/standards
- Revise Supplemental Specs to include provisions
- Include quantities in plans (straw matting, straw wattles, etc.)







Construction – Fallow Basin Periods

- Basins constructed in spring were allowed to lay fallow until fall, this caused complaints, but was not prohibited by the specifications
- Require stabilization with straw matting, etc. within 2 weeks unless planted
- Contractor to maintain free of weeds, trash, debris, etc.
- Ensure inspectors are enforcing current Maintenance during Construction specifications







Construction - Trees

- Do not rely on 25% of root zone rule in siting basins, use arborist to review trees
- Consider trees in water service relocations
- Consider specs that require hydro-excavation
- Consider use of directional boring
- Include plan quantities for pruning/tree protection
- Review all trees and conflicts ahead of time
- Ensure tree protection is put in place as per plan







Construction – Storage and Laydown Areas

- ROW was able to be used for laydown area, with approval
- Laydown areas should be identified in plans, evaluate the use of alleys
- Ensure that laydown areas are reviewed, approved, inspected, and documented







Construction – Infiltration Testing

• Infiltration rate tested

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- Some short-circuiting observed
- Ensure backfill materials are compacted to specification
- Take measures to stop shortcircuiting

Hazen



Construction – Permeable Pavers

- Deep excavations are required, maintaining access is difficult
- Need to ensure alternate (alley) access is available
- Avoid deep cut pavement sections that can damage utilities
- Consider driveways
- Avoid or mitigate infiltration to adjacent structures









Construction – Permeable Pavers

- Pay items:
 - Pedestrian safety fencing
 - Materials for maintaining driveway access
- Review site access and site use plans (access, phasing, noise, safety)
- Enforce all safety and access items







Program Cost

- Green Infrastructure bids are coming in close to engineer's estimates
 - \$30.3M, 7 projects
- Sump pumps have been close to the original planning-level costs \$6500/home
- Downspout redirection and lateral lining project bids
 - \$5.6M, 1 project so far
- Continue to analyze affordability











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