Growing Green Infrastructure Symposium

Integrating Green Infrastructure Into Existing Communities

November 17, 2011
Syracuse, NY

Barton & Loguidice, P.C.
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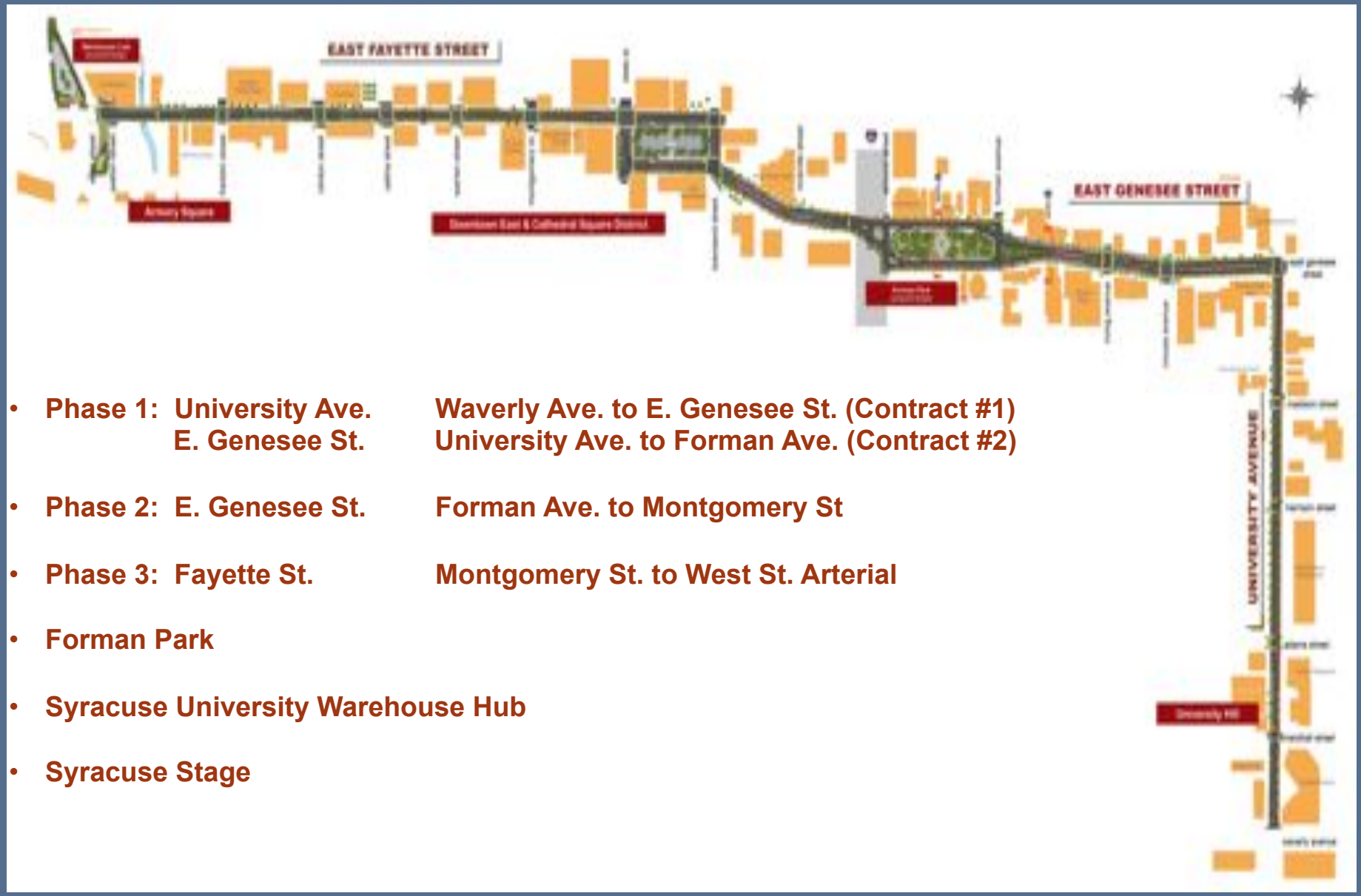
Presentation Topics

Considerations for integrating green infrastructure in urbanized areas and the public right-of-way?

- Scoping
- Design
- Construction

The Connective Corridor



- **Phase 1: University Ave.** — Waverly Ave. to E. Genesee St. (Contract #1)
  E. Genesee St. — University Ave. to Forman Ave. (Contract #2)
- **Phase 2: E. Genesee St.** — Forman Ave. to Montgomery St
- **Phase 3: Fayette St.** — Montgomery St. to West St. Arterial
- **Forman Park**
- **Syracuse University Warehouse Hub**
- **Syracuse Stage**

Connective Corridor Green Partners

- City of Syracuse
- Syracuse University
- Onondaga County “Save The Rain” Program
- CH2M Hill
- Barton & Loguidice, P.C.
- OLIN

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Scoping Phase

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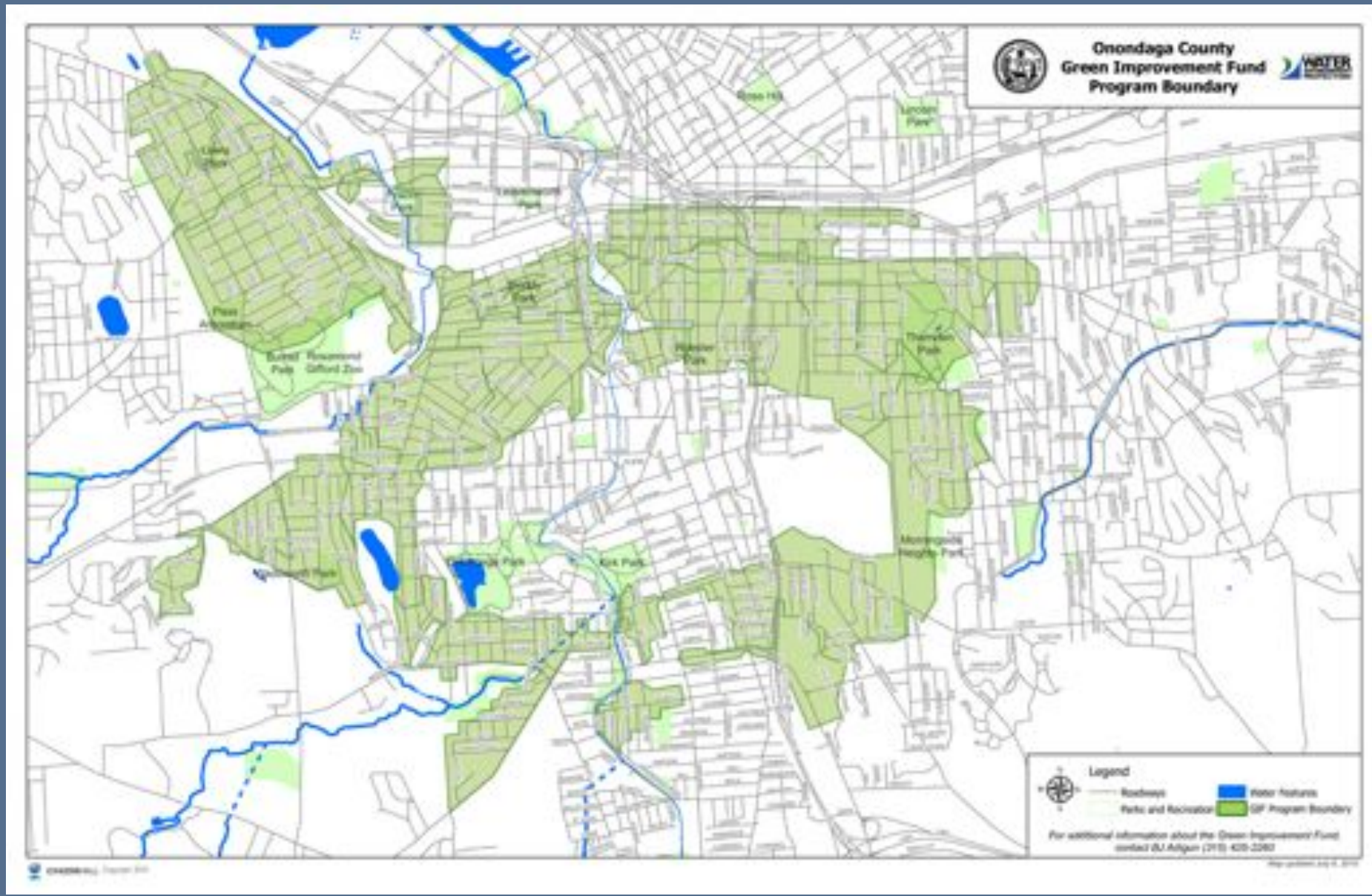
Challenges in Scoping

- Establish Need
- Funding
- Maintenance

Establish Need

- Required by Regulation
- Source Reduction vs. End Pipe Treatment
- Community Driven to be Green
- Environmental Benefits

County Green Improvement Fund



Maintenance Challenges

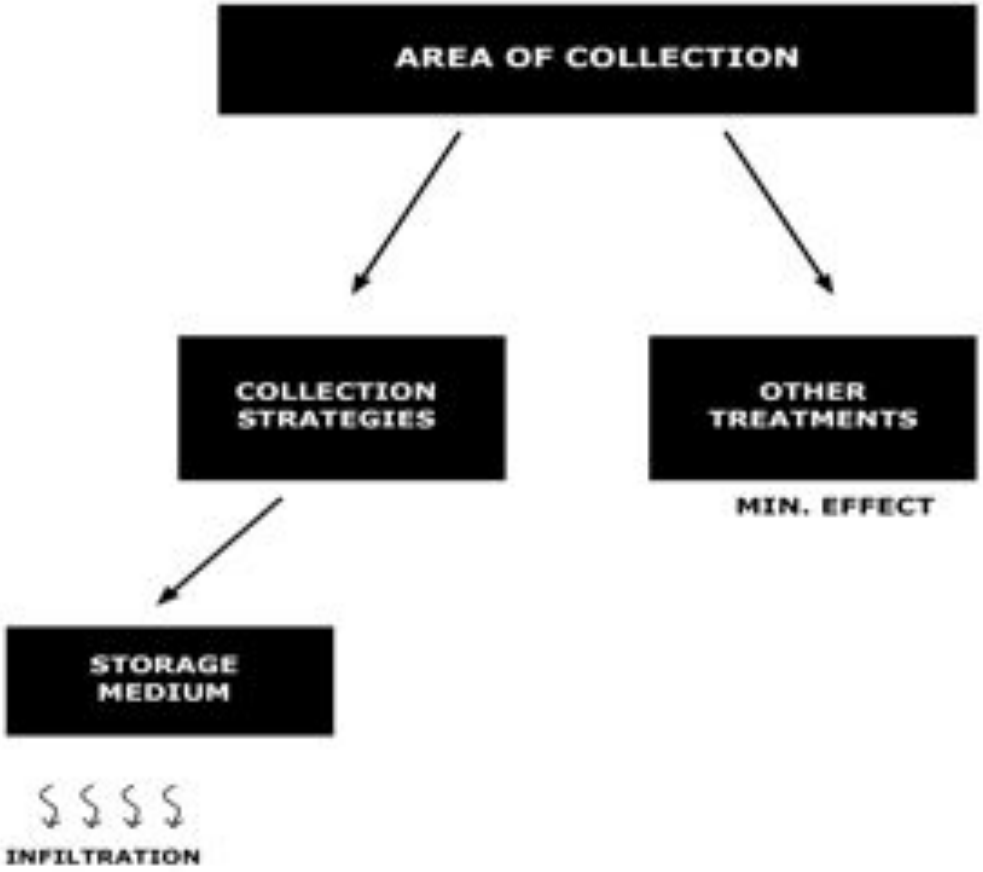
- Available Equipment/Manpower
  - Vacuuming Porous Pavements
  - Cleaning Catch Basin Filters
  - Landscape Maintenance
- Schedule of Maintenance
- Maintenance Funding (Post Construction)

Design Phase

Green Infrastructure Project Design

- Basis of Design
- Capture First Inch of Rainfall
- Existing & Proposed Contributing Drainage Areas
- 10:1 Maximum Ratio (Infiltration/Storage Areas)

Stormwater Management

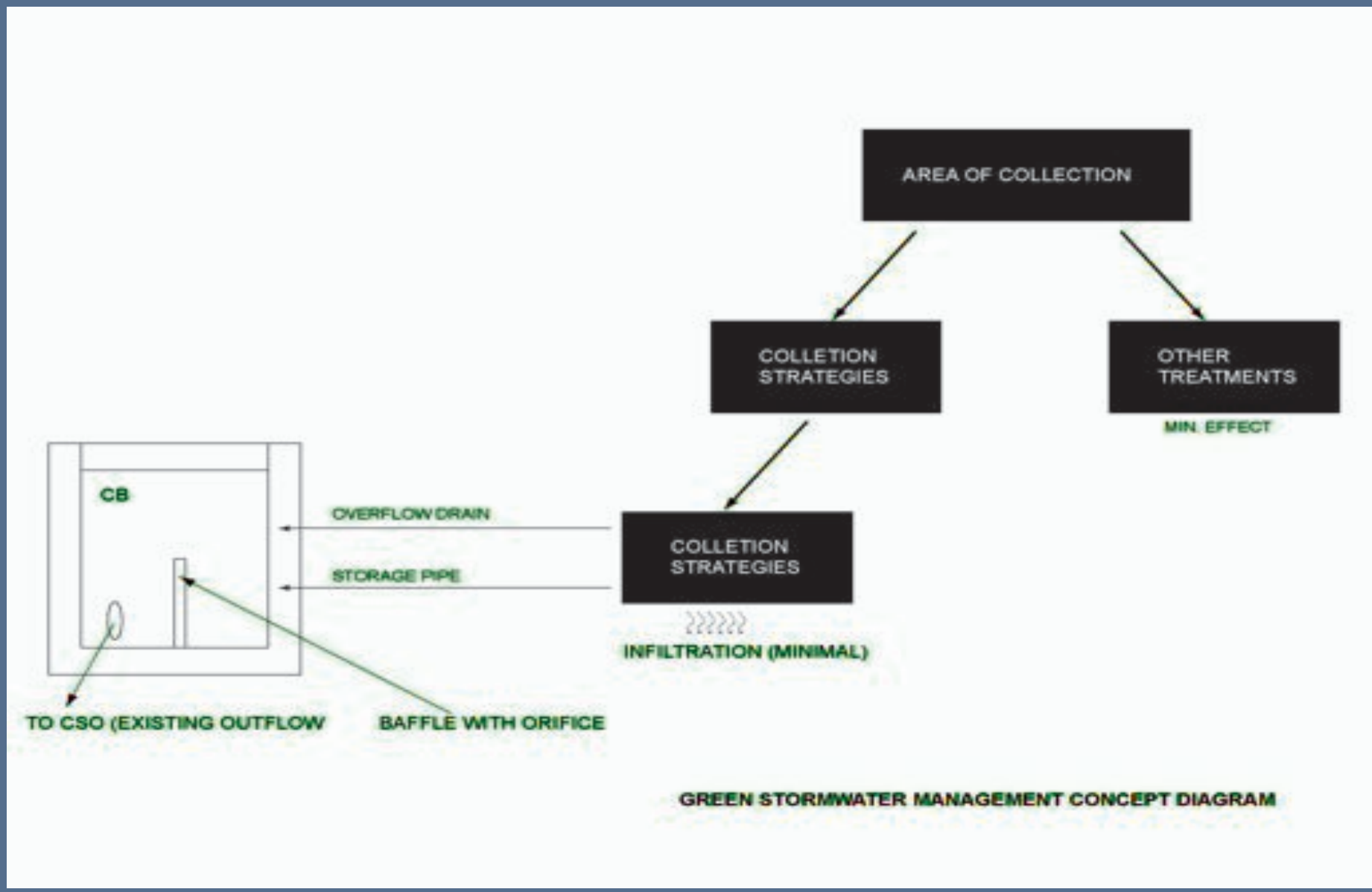


GREEN STORMWATER MANAGEMENT CONCEPT DIAGRAM

Soil Infiltration Testing

- NYSDEC Stormwater Management Design Manual
- Representative Testing along Corridor
- Average Infiltration Rate Very Low (0.42 In./Hr.)
- Urban Fill/Clay Soil = Poor Infiltration
- A Modified Plan Needed

Modified Stormwater Management



Modified Stormwater Management

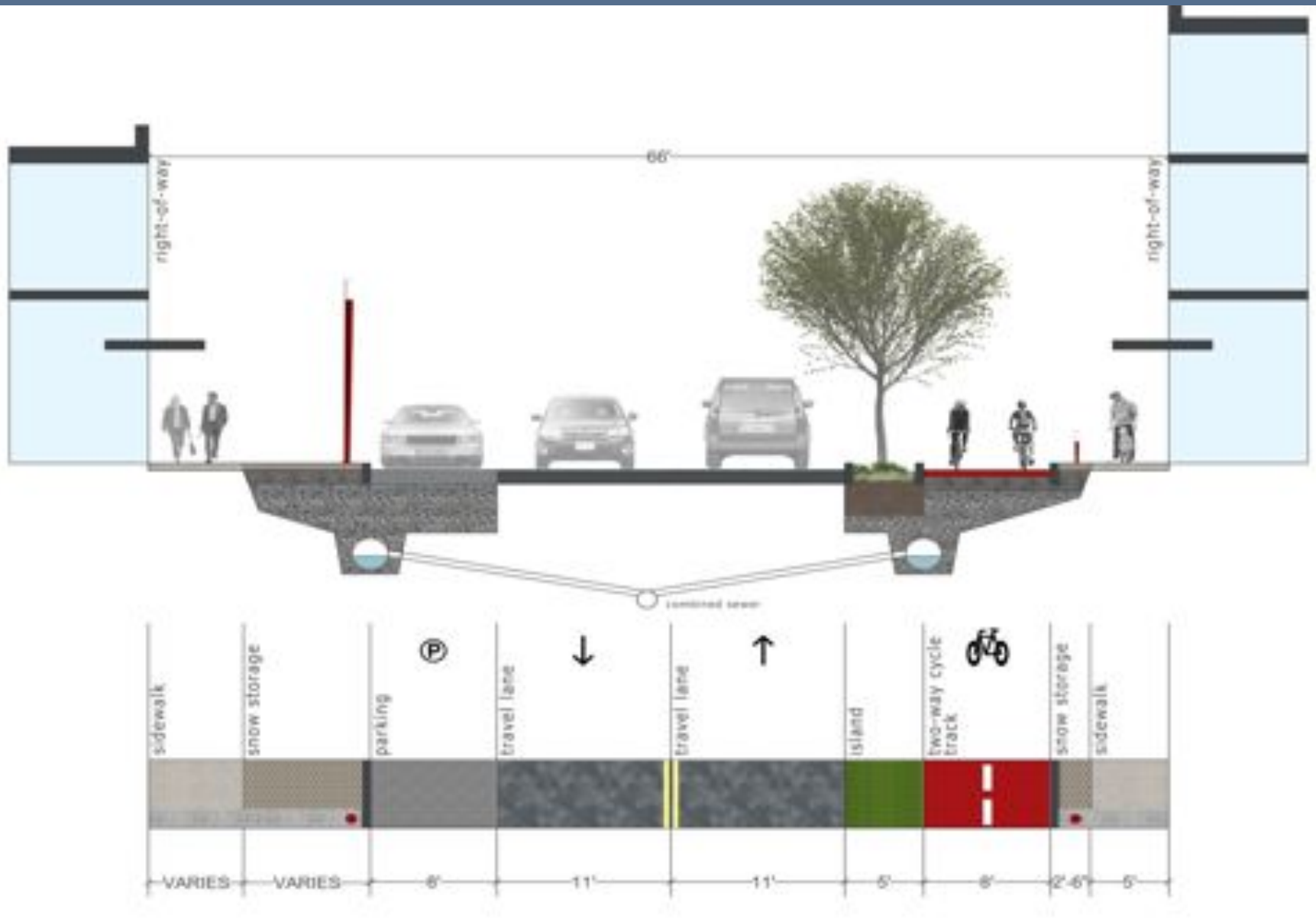
- Controlled release back to combined sewer at a rate of 0.05 CFS per Acre of contributing drainage area

- Minimal subsurface soil infiltration added benefit

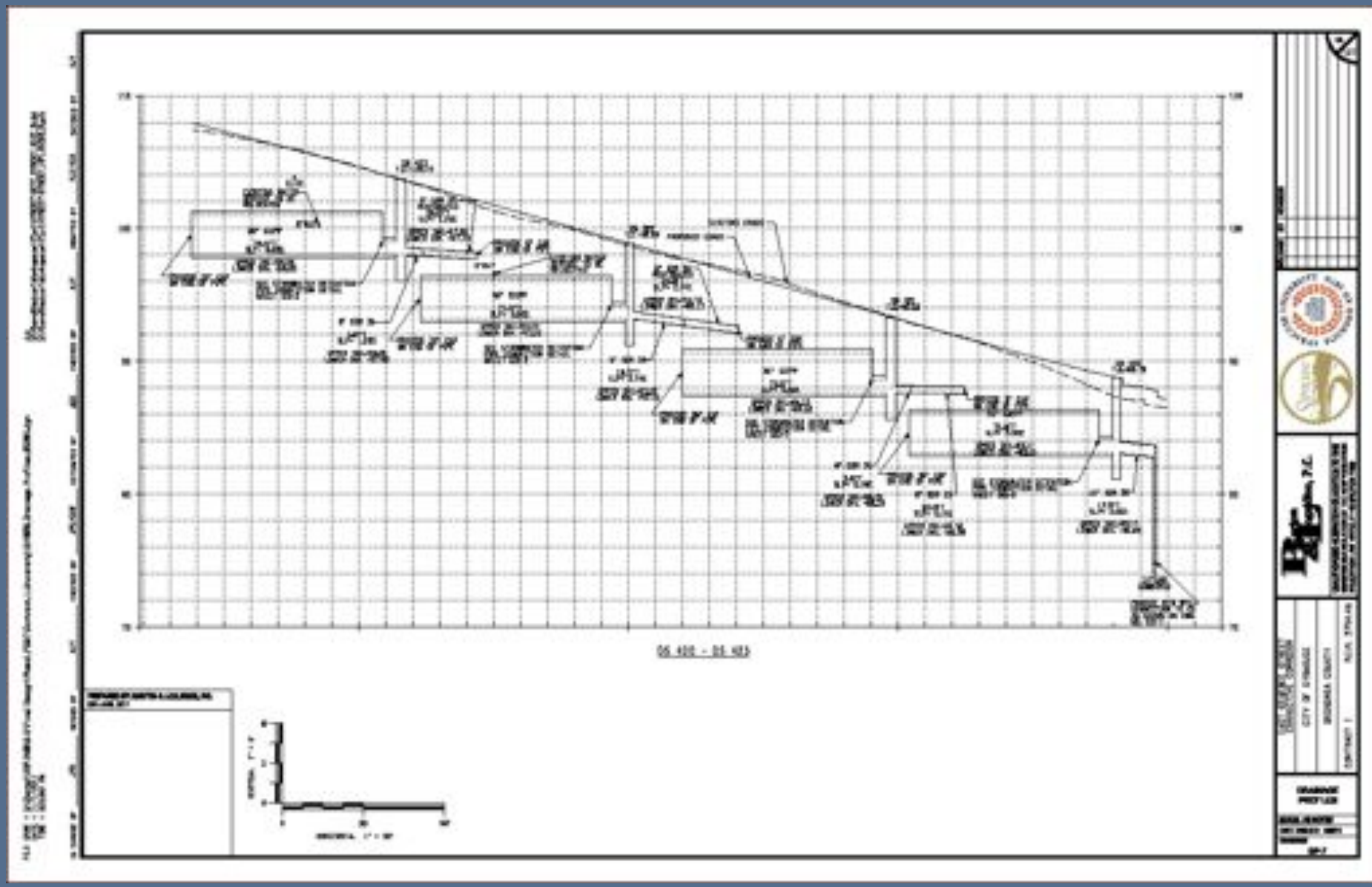
Other Design Challenges

- Utilities (Above and Below Ground)
- Grades
- Right-Of-Way
- Underground Vaults
- Proximity to Building Entrances
- Street Intersections
- Traffic Loading
- Maintenance

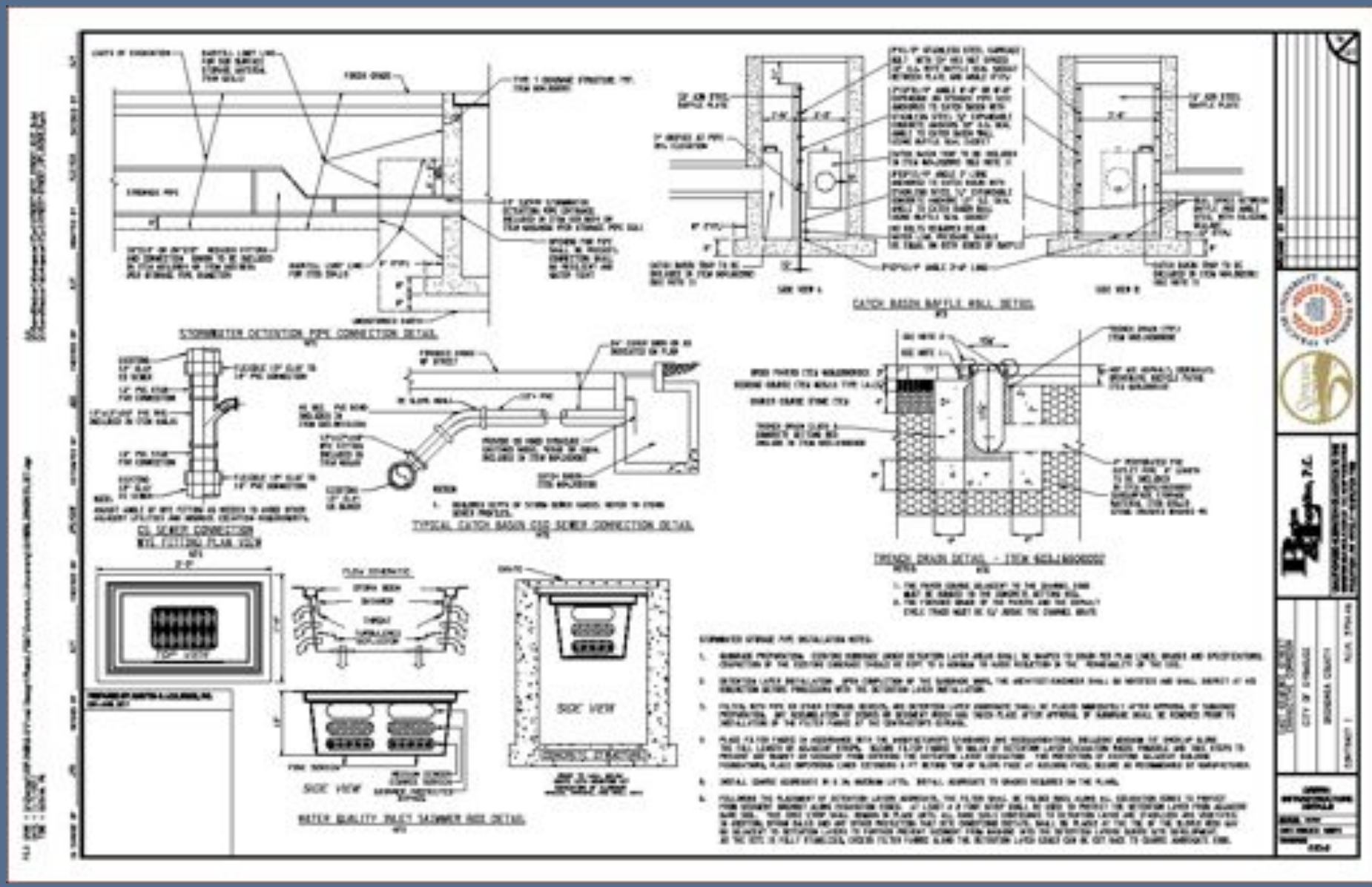
Typical Section



Stormwater Profile



Stormwater Details



Construction Phase

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Construction Challenges

- Utility Conflicts
- Material Control
  - Storage Stone (Sieve Analysis, Void Ratio)
- Green Infrastructure Installation Details
  - Relationship with Standard Construction Procedures
- Work Zone Traffic Control
  - Trench Depths

Utility Conflicts

Utility Conflicts

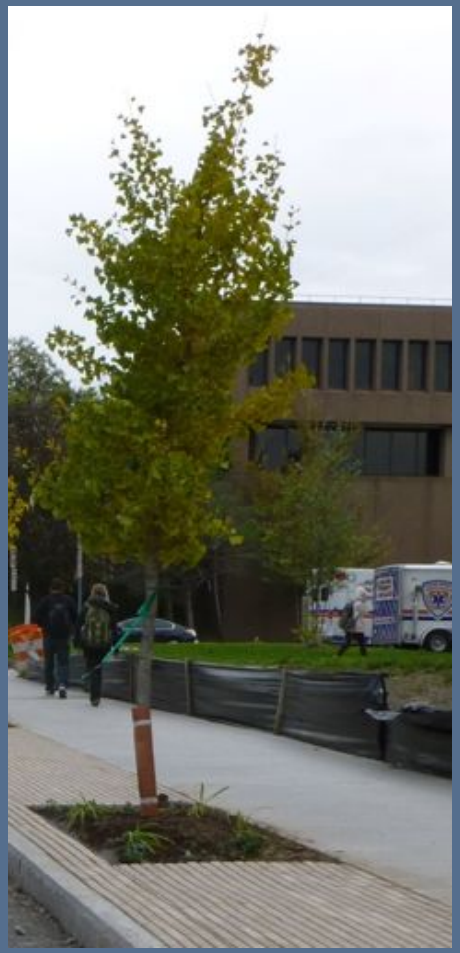
Combined Sewer Connection

Green Infrastructure Methods/Materials

- Silva Cell (Suspended Pavement Soil System)
- Washed # 3A Storage Stone (NYSDOT Standards)
- Rain Gardens

Green Infrastructure Methods/Materials

- Permeable Pavers
- Porous Concrete
- Tree Pits/Plantings



36 Inch Storage Pipe

36 Inch Storage Pipe/Stone

Permeable Pavers

Permeable Pavers

- GeoWeb – Load Support at Driveways

Work Zone Traffic Control

- Porous Concrete Placement
- Storage Pipe Trench Depths
- Combined Sewer Connection Depth
- Pedestrian Safety

Final Project

University Ave. (Phase 1, Contract 1)

University Ave. (Phase 1, Contract 1)

University Ave. (Phase 1, Contract 1)

University Ave. (Phase 1, Contract 1)

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