Queen City Avenue Sewer Separation Projects

Delivery of a Large Diameter Storm Sewer Incorporation Sustainable Solutions Within and Integrated Wet Weather Strategy for Lick Run

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Agenda

- MSDGC Wet Weather Strategy
- Lick Run Watershed
- Queen City Avenue Sewer Separation Phase 1 and 2
  - Pipe Material
  - Utility Coordination
  - Maintenance of Traffic
- Lessons Learned
MSDGC WET WEATHER STRATEGY
The Metropolitan Sewer District of Greater Cincinnati (MSDGC) is under a USEPA consent decree to minimize discharges from its combined sewer system (CSS).

USEPA has mandated that MSDGC reduce the 14 billion gallons of combined sewer overflow (CSO) that annually discharge from the CSS.

MSDGC’s Wet Weather Strategy (WWS) incorporates several projects to meet this goal.
Cincinnati’s Challenges
- Top 5 CSO Discharger in the USA
- Federal Consent Decree
- Service Rate Increases
- Invest over a Billion Dollars in the next 10 years
- *Project Groundwork* - remove 2 Billion Gallons in Lower Mill Creek Watershed by 2018
  - *Use Innovative Techniques*
  - *Community Revitalization – Jobs and Business Growth*
  - *Economic - Social – Environmental Benefits*
Thought Provoking Questions
- What if a sewer project could be more than a sewer project?
- What if a sewer project could be a strategic investment?

Catalyst for…..
- Community Transformation
- Regional Model for watershed management/community planning
- National Model for GI –Local Green Building Opportunities
- Doing more than reducing CSO
- Created new assets and community investment
- Model for 21st Century Sustainable Community
Project Groundwork Options

*Gray Infrastructure Approach*

- Deep Underground Tunnel
- High Rate Treatment Facilities
- Limited Water Quality Benefits
- Series of Large Separate Storm Sewers & Open Paved Channels
- Restricted Use of Open Space because of underground infrastructure
- Public Safety Concerns
Project Groundwork Options

- **Gray/Green Watershed – Based Approach**
  - Leveraged Approach - Use Innovative Techniques
  - CSO Solutions as Community Amenities
    - Community Revitalization – Jobs and Business Growth
    - Economic - Social – Environmental Benefits
  - Natural Streams – Water Quality Features
  - Separate Storm Sewers - CSO Separation
LICK RUN WATERSHED
Lick Run Watershed

Lick Run Watershed Master Plan
METROPOLITAN SEWER DISTRICT of greater CINCINNATI
May 2012
Objective - Natural Stream Reconstruction

- 10 miles of Storm Sewer Separation
- 1 mile of Combined Sewer Improvements
- 3 miles of “Daylighting” new stream
- 18 ac-ft of Stormwater Detention / WQ Outlets
- 4 Structural BMPs - in-line Vortex Separators
QUEEN CITY AVENUE SEWER SEPARATION PHASE 1 AND 2
DESIGN CONSTRAINTS | Winding Corridor
DESIGN CONSTRAINTS

Narrow Corridor
- Relocating 8”, 24”, and 36” water mains
- Relocating 8”, 24”, and 36” water mains
Multiple Utilities

- Cincinnati Bell
- City of Cincinnati Traffic
- Duke Energy Gas & Electric
- Greater Cincinnati Water Works
- Sprint
- Time Warner Cable
Queen City Avenue

- Major thoroughfare to the West side of Cincinnati
- Coordination with CDOTE
- Proposed sewer was offset 5’ from face of curb to allow
DESIGN OPTIONS | Pipe Material

HOBAS vs Reinforced Concrete Pipe
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### Pipe Fittings

#### Table: Design Options

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2. Prefabricated Miter
Construction Progress
Construction Progress
Construction Progress
LESSONS LEARNED

- Understanding Client Goals
- Be adaptive to Change
- Communications and Documentation
- “Think outside the Box” for Design Options
- Utility relocations after Start of Construction is a Schedule Killer and Costly
Queen City Avenue
Sewer Separation Projects:
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QUESTIONS?
Valley Conveyance System 8,700 ft of hybrid SW conveyance system of open channel & subsurface box conduit:
5,600 ft daylighting as partial open conveyance system; Enhanced floodplain features; Water quality features; Waterway outfall feature at Mill Creek

Queen City Phase 1 - 2,600 ft of Separate storm sewers
Queen City Avenue Phase 2 - 6,200 ft of Separate Storm; 1,500 ft of combined sewers: Structural separator BMP (vortech unit)

Sunset Avenue -10,400 ft of Separate Storm: 0.5 ac-ft detention basin (DB21)

Wyoming and Minion Avenues 2,600 ft of Separate storm sewers; 1,400 ft of combined sewers

Quebec Road 8,500 ft of Separate storm sewers; Structural separator BMP (vortech unit); 2,800 ft of natural conveyance system; 2.5 ac-ft detention basin (DB7); 4.0 ac-ft detention basin (DB9); 8.6 ac-ft detention basin (DB10)

Quebec Heights Phase 1 - 1,300 ft of Separate storm sewers; 5,600 ft of natural conveyance; 2.4 ac-ft detention basin (DB17)

Quebec Heights Phase 2 - 1,500 ft of Separate storm sewers

Harrison Avenue Phase A -(in CONSTRUCTION) 3,900 ft of Separate storm sewers; Structural separator BMP (vortech unit)
Harrison Avenue Phase B 1,900 ft of Separate storm sewers
State Avenue 2,800 ft of Separate storm sewers; 300 ft of combined sewers
White Street 6,200 ft of Separate storm sewers; 400 ft of combined sewers; Structural separator BMP (vortech unit)
Rapid Run Park Source Control 2,000 ft of Separate storm sewers; 1,400 ft of natural conveyance along Rapid Run Park