Village of Downers Grove
McCollum Park Flood Control Facility
Case Study

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Presentation Agenda

• Background
• Project Overview
• Hydraulic Design Considerations
• Park Design Considerations
• Challenges
• Results
• Questions?
Background

• Downers Grove
  – Western Chicago Suburb
  – Founded 1832
  – 175 years of development
  – Only 30 years “regulated”

• 2005 Stormwater Master Plan
  – Recommended developing a Watershed Infrastructure Improvement Plan
    • Study and identify stormwater system deficiencies
    • Guide future infrastructure improvements
  – WIIP completed in 2007
Background

- WIIP identified flooding problems Village-wide
- Several problems identified in “subbasin PR B” of Prentiss Creek Watershed
- Street & yard flooding in PR B resulting from:
  - Undersized Sewers
  - Backpitched Sewers
  - Sedimentation
  - Lack of Drainage System
Background

- WIIP recommendations for PR B:

- Upsize Sewer, Eliminate Backpitched Sewer
- Reconstruct with Curb & Gutter
- Upsize Sewer, Eliminate Backpitched Sewer
- Construct Detention Pond
Background

• Needed to find location for new flood storage basin in highly developed (suburban) area
• McCollum Park selected
• Intergovernmental Agreement formed between Village and Park District
  – Village’s Goal: Flood Storage
  – Park District’s Goal: Park Improvements and Amenities
Project Overview

- Multi-Purpose Basin
  - Flood control
  - Stormwater detention of PD’s future improvements
  - Full size regulation soccer field

- Storm sewer modifications
Project Overview

• Park amenities
  – Pedestrian path modifications
  – Relocation of basketball and sand volleyball courts
  – Soccer Field
    • Underdrain
    • Irrigation
    • Lighting
• No “Special Management Areas”
Hydraulic Design Considerations

• Adjacent to 67th Street Trunk Sewer
  – 60-inch storm sewer
  – 10-year capacity
  – Surcharged sewer results in upstream flooding
Hydraulic Design Considerations

- 36-inch overflow pipe at trunk sewer crown
  - Delivers flow > 10-yr into basin
  - Reduces upstream flooding in moderate to large storm events
  - Keeps soccer field dry during small storms
- Backflow preventer on outlet pipe
Park Design Considerations

- **Village / Park District Coordination**
  - Facilitate drainage during storms (incl small events)

- **Underdrain System**
  - Moisture sensors for water conservation

- **Irrigation System**
  - Full size regulation soccer field
Park Design Considerations

- Sand Volleyball, Basketball Courts relocated
- Pedestrian Path improvements
- Lighting
- Bleachers
- Low retaining walls for spectator seating
Challenges

• Layout
  – Existing physical constraints
  – Soccer field size and setbacks

• Grading
  – Grades high enough for underdrain system
  – Grades steep enough for drainage
  – Grades low enough to achieve storage req’ts
Results

- XP-SWMM Dynamic Modeling
- 15.8 ac-ft flood storage
- Expected flood reductions
  - Up to 1.7 ft in PR614
  - Up to 0.6 ft in PR600
- Improved park amenities
Questions?