Public Partnerships, Permits, and a Parking Lot:
Underground Detention in Glenview

James Tigue, PE, CFM – Village of Glenview
Matt Moffitt, PE, CFM, CPESC – Baxter & Woodman
Village of Glenview

- Three primary watersheds
- 48 sub-watersheds
- 60% of Village built to old standards
  - No stormwater detention
  - No overland flow paths
  - Limited conveyance

- Clayey soils
- Flat terrain
History of Flooding

2008 Flooding Event

- Flooding in 1987: View on right is of the back nine holes of the Valley Lo golf course.
Stormwater Task Force Creation

- 16 area residents
- 14 public meetings
- Very public and active engagement

Created the Village’s Flood Risk Reduction Program
  - Approved August 2010
  - Identified $125M of local infrastructure projects
  - Updated in 2013
Bonnie Glen Subdivision
Existing Conditions
Proposed Conditions
Getting Ready for the Project

✓ Drainage Study
✓ Conceptual Project
✓ School Board buy in
✓ Board Approval
✓ Funding Allocated
✓ Design Team given go ahead in late 2016 for construction summer 2017
STANDARD PROJECT AT START

• Detailed XPSWMM Model
• Preliminary Design of Sewer and Basin
• Utility/Private Property Coordination
• Overland Flow Routes
• NO PERMITS!
### Detention Analysis

#### Flood Conditions and Alternatives

<table>
<thead>
<tr>
<th></th>
<th>2 Year</th>
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<th>5 Year</th>
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<tr>
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<td>Street/Rim Elevation</td>
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<td>Lyons School Detention - 5 ac-ft</td>
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<td>2.7</td>
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</table>

|                        |        | Lyons School Detention - 4 ac-ft |        | Lyons School Detention - 3 ac-ft |        | Change from Existing to Proposed |        |
|                        |        | 634.9     | 631.9  | 630.1     | 631.2   | 635.1     | 635.1   |
| Change from Existing to Proposed | 0.6    | 1.7       | 0.3    | 2.6       | 3.0     | 0.4       | 1.0     |

|                        |        | Lyons School Detention - 3 ac-ft |        | Change from Existing to Proposed |        |
|                        |        | 634.9     | 631.9  | 630.2     | 632.7   | 634.5     | 634.5   |
| Change from Existing to Proposed | 0.6    | 1.6       | 0.3    | 2.6       | 3.0     | 0.4       | 1.0     |

#### Flood Elevations for Various Flood Events

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<th></th>
<th>100 Year</th>
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<td>Change from Existing to Proposed</td>
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<td>0.3</td>
<td>0.3</td>
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</table>

|                        |        | Lyons School Detention - 4 ac-ft |        | Lyons School Detention - 3 ac-ft |        | Change from Existing to Proposed |        |
|                        |        | 635.3     | 635.3  | 634.6     | 635.6   | 635.9     | 635.1   |
| Change from Existing to Proposed | 0.5    | 0.4       | 0.3    | 0.3       | 0.2     | 0.2       | 0.1     |

|                        |        | Lyons School Detention - 3 ac-ft |        | Change from Existing to Proposed |        |
|                        |        | 635.4     | 635.4  | 634.7     | 635.7   | 635.9     | 635.9   |
| Change from Existing to Proposed | 0.4    | 0.4       | 0.2    | 0.2       | 0.2     | 0.2       | 0.1     |
Stakeholder Negotiations

- Raleigh Road Residents
- Old Village Hall Site
- Condo property
- Lyon Elementary School
Stakeholder Negotiations

- StormTrap schematic for preliminary plans:
  - Top elev. at ~ 633 ft
  - Bottom at ~ 627 ft
  - 8 ft tall
  - The school wants to keep the StormTrap as far south as possible. Need approximately 5 ac-ft of storage.

- Proposed outlet connection.

- Proposed 30" storm sewer connection.

- 10 ft of separation between StormTrap and existing storm sewer. Existing sewer is 30" in diameter.
School Negotiations

- Fix Front Ponding
- Fix Sidewalk Ponding
- Brand New Parking Lots
Parking Lot Reconstruction

While we’re at it, maybe just a few changes....

- LED Lights
- Remove Islands
- Improve Bus Lanes
- Add Pick up/Drop off Lanes
- Include Green Infrastructure
- Increase Stall Count
- Option for Overflow Parking
Parking Lot Reconstruction

- LED Lights
- Remove Islands
- Improve Bus Lanes
- Add Pick up/ Drop off Lanes
- Include Green Infrastructure
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- Option for Overflow Parking

The Village and the School District Entered into an IGA for a 50/50 Cost Share
New and Improved Parking Lot
New and Improved Parking Lot

Improvements Required Expanding Parking Lot Pavement And Relocating A Permitted Basin

Appearance Commission

Plan Commission

Zoning Board of Appeals

School Board

WMO PERMIT (Legacy SPO Permit)
New and Improved Parking Lot
## 1999 Sewerage System Permit

### Schedule A

**Basic Information**

1. **Name of Project**: Lyon School
2. **Appurtenances**
   - Siphon
   - Drop Manholes
   - Street Crossing
3. **Receiving Sanitary Sewer System**
   - System that project will connect to:
     - Existing
     - Proposed Under Construction (MWRCOC Permit #)
   - Let owners of all sewers to project to MWRCOC Interceptor: Village of Clewiston

### Schedule D

**Detention**

5. **Design Storm Frequency**
   - 1-Year 1.32
   - 1-Year 0.52
   - 2-Year 0.27

### Notes

- **No Watershed Exhibits**
- **Compliance**
  - [Checklist and calculations provided]

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Utilize MWRDGC’s requirements (SPO) as modified by the rainfall frequencies set forth in Bulletin 70
Amended SPO calculations for Site Runoff Requirements and Release Rate

New WMO calculations for Site Volume Control (VC) Requirements
Pavement Development

<table>
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<tr>
<th>AREA TYPE</th>
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<tr>
<td>TOTAL DEVELOPMENT AREA</td>
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<td>Pervious to Impervious</td>
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<tr>
<td>Maintenance (Pavement Repaving)</td>
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</table>

**Detention and Retention Summary**

- Retention Volume Required = 0.030 ac-ft
- Retention Volume Provided = 0.031 ac-ft
- Detention Volume Required = 0.414 ac-ft
- Less Provided Retention = 0.383 ac-ft
- Detention Volume Provided = 0.383 ac-ft
Segmented Vault
Regional Flood Control

- 12” with Backflow Preventer
- 4.0 acre-feet regional detention
- 45”x29”
Local Detention

Bypass Routing

Site Volume Control
(0.03 acre-feet)
Local Detention - Local Runoff Control

- Local Drainage Routing
- Runoff Control Outfall
- Local Drainage to 0.41 AC-FT Detention
- Local Drainage Routing through VC
Final Stats

- 4.41 AC-FT Stormwater Detention
- 0.03 AC-FT Stormwater Retention
- New and Improved Parking Lot
- EOPC $3.155M ($598k for parking lot reconstruction)
- Pirtano Construction $3.061M
Lessons Learned

• Meet with Partners (School District, MWRD) early and often

• Document Everything

• You must paint the whole picture – backed with documentation

• Walk the reviewer through the whole process

• Don’t assume consistent reviewing staff
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