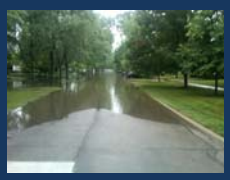
Village of Winnetka

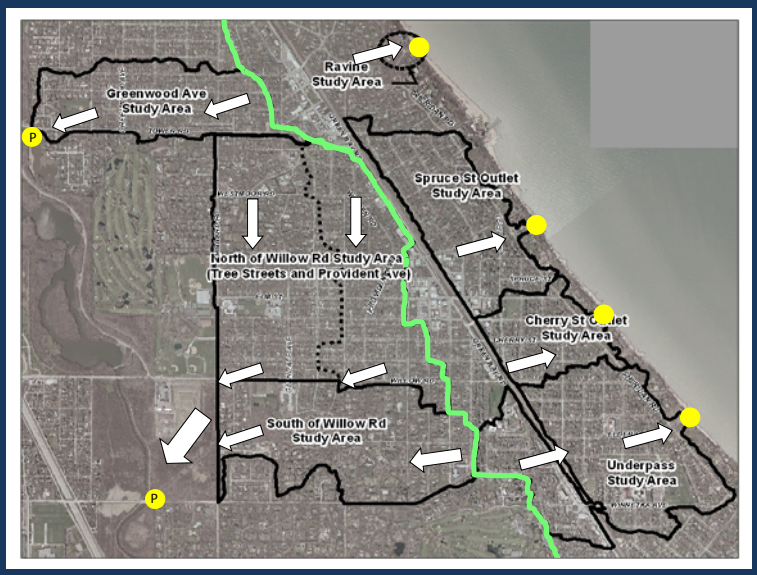
Willow Road Tunnel Feasibility

September 11th , 2012



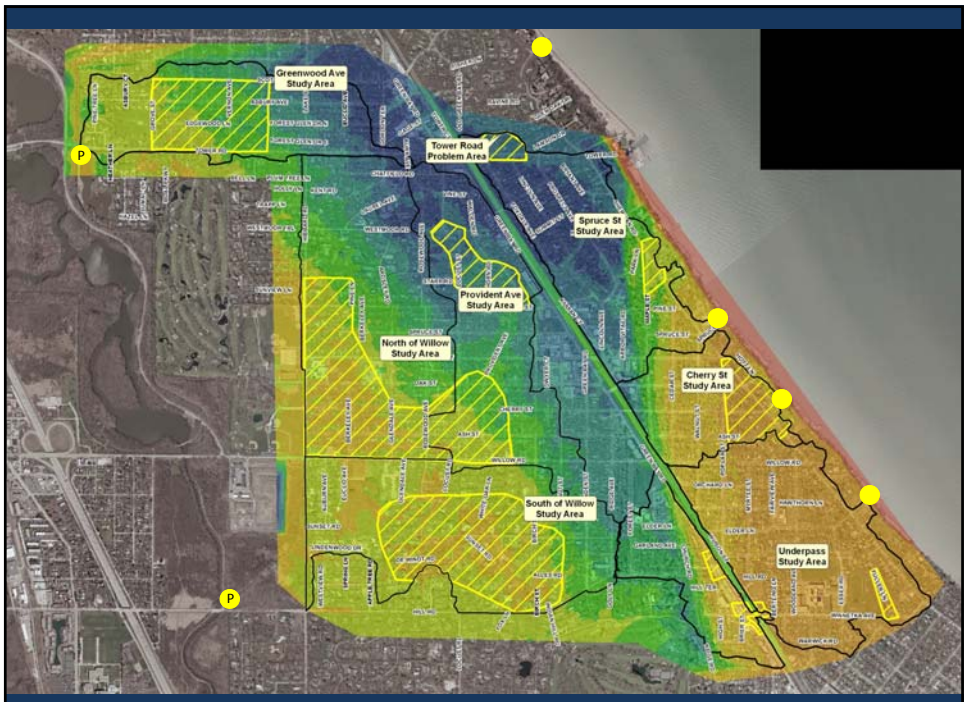
Christopher B. Burke Engineering, Ltd.
(CBBEL)

Study Areas



Background

- Study areas throughout the Village were delineated and analyzed by outlet
- Concept improvements were designed and evaluated for each study area
- Proposed improvements
  - Increase storm sewer sizes
  - Additional storm sewers
  - Stormwater storage
  - BMPs

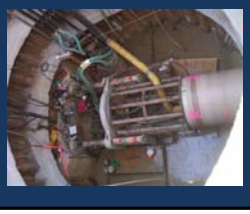


Project Purpose

- Reduce flooding in multiple study areas using one solution
- Combine sewer improvements into one main outlet to Lake Michigan
- Eliminate detention storage on Park District and CCFPD property
- No pumping required
- Cost savings ~ $8 to 10 million

Project Description

- 8-foot diameter storm sewer underneath Willow Rd from Glendale Ave to Lake Michigan with a section of tunneling
- Lateral sewers to benefit additional study areas
- Water quality and energy dissipation structures



Project Schematic

Areas Benefitted

- North of Willow Rd
- South of Willow Rd
- Provident Area
- Cherry St Outlet
- Underpass
- Area F?

Project Feasibility (Soils and Outfall Design)

- Soil borings
  - 4 borings taken with no rock encountered
  - Data indicates tunnel construction is possible
- Outfall Evaluation by Baird
  - 5 options identified
  - Energy dissipation and erosion control
  - Water quality
  - Constructability and cost

Project Feasibility (Permitting)

- IEPA
  - Must meet Clean Water Act standards
  - First flush would continue to drain to Skokie River
- USACE
  - Work within the ordinary high water mark of Lake Michigan
- IDNR
  - Watershed diversion
- NCCSWCD
  - Erosion control plans during construction
  - Required for USACE permit
- MWRDGC
  - New outfall

Project Feasibility (Railroad and Utility)

- New sewer will cross under the Union Pacific Railroad at Green Bay Rd
  - Casing required with 4.5 feet of clearance
  - Concept design provides 18 feet of clearance
- Utility conflicts are expected but not believed to be insurmountable

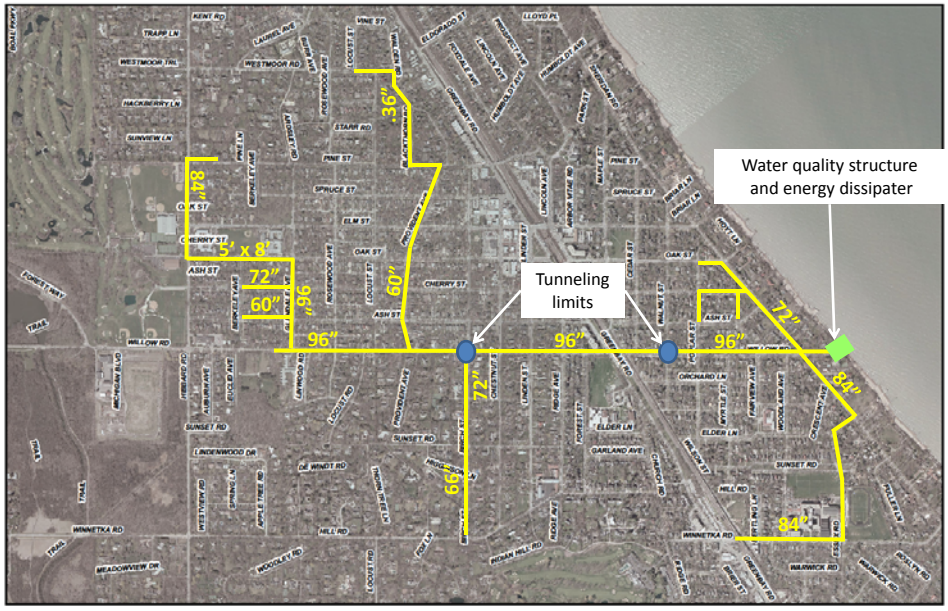
Project Cost

Item	Initial Cost Estimate	Revised Cost Estimate
Storm Sewer, 24" to 96" (open cut)	$6,635,000	$6,635,000
Storm Sewer, 96 (tunneled)	$8,250,000	$9,540,870
Trench Backfill	$2,981,250	$2,981,250
Pavement Restoration	$2,649,975	$2,649,975
Energy Dissipater	$50,000	$140,000
Water Quality Structure	$94,000	$94,000
Other Construction Items	$2,460,000	$2,460,000
Traffic Control & Layout	$1,500,000	$1,500,000
Utility Relocations	$0	$200,000
Contingency	$4,924,045	$4,763,176
Engineering & Permitting	$2,954,427	$3,169,177
Project Management	$0	$464,464
Total Estimated Project Cost	$32,498,697	$34,597,912

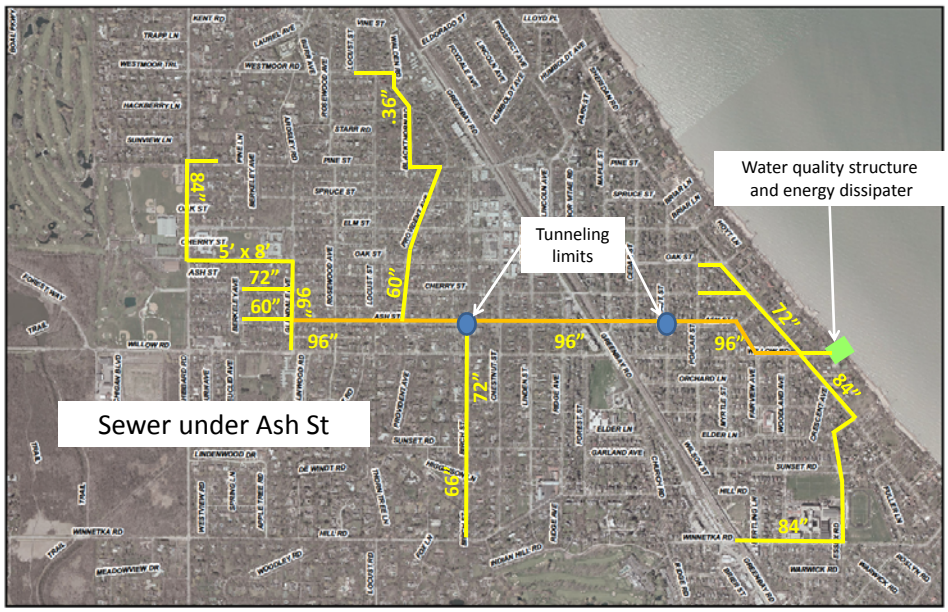
Project Cost

- Concept cost estimates
  - Tunneling and outfall structures refined
  - Contingency on tunneling portion reduced
- Comparisons
  - Individual projects $42 million
    - Does not include land acquisition
  - Tunnel project $35 million
  - Possible savings of $7 million with tunnel
  - Tunnel does not require intergovernmental land transfers

Proposed Route



Alternate Route to Reduce Costs



Project Timeline

Project Stage	(months)
Feasibility	Complete
Indentify alternate routes	2
Identify financing	4
Contract with design engineer	2
Preliminary design engineering	8
Permitting	14
Final engineering	4
Bid contract and award	2
Construction	24-30

- Total project time is 60-66 months

Conclusions and Recommendations

- Project is feasible
  - Will benefit 5+ study areas
  - Challenges can be overcome
- Project timeline
  - 30 months for permitting and engineering
  - 24-30 months for construction
- Project cost is $34.6 million
  - Potential to be reduced using an alternate route

Questions ?