

ReNewark-The Renovation of Newark's Downtown Infrastructure

June 2015

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prime

Imagine the result



 ARCADIS

Health & Safety Moment

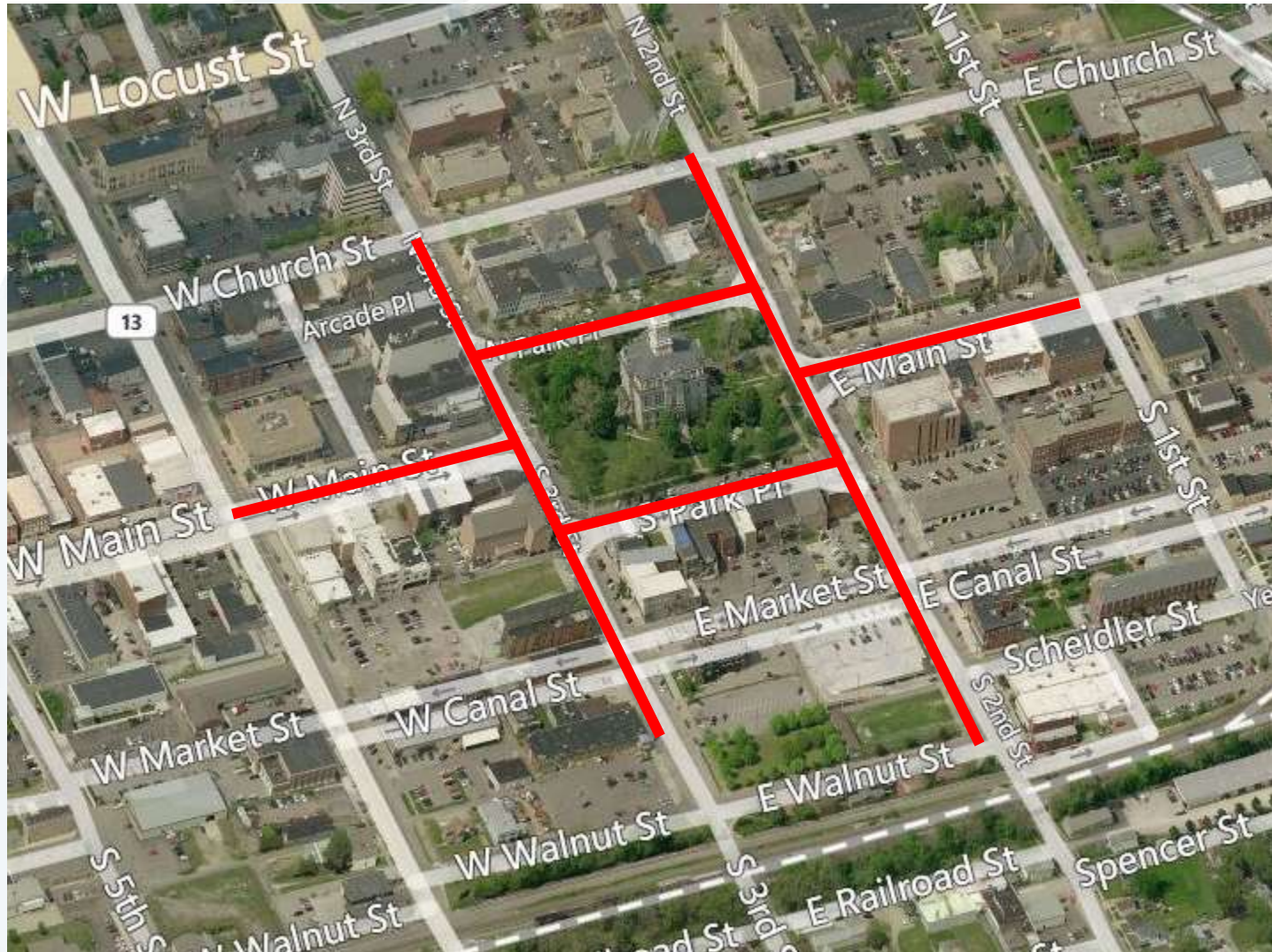


Background - Newark, Ohio

- City population: 47,500
- Historic downtown center - Courthouse Square
- Near confluence of North Fork and South Fork Licking Rivers - site of ancient Hopewell mounds



Background - Project Location



Background – Downtown Buildings

- The downtown area is primarily composed of commercial and government buildings.
- Buildings in downtown Newark date to the mid 1800s.

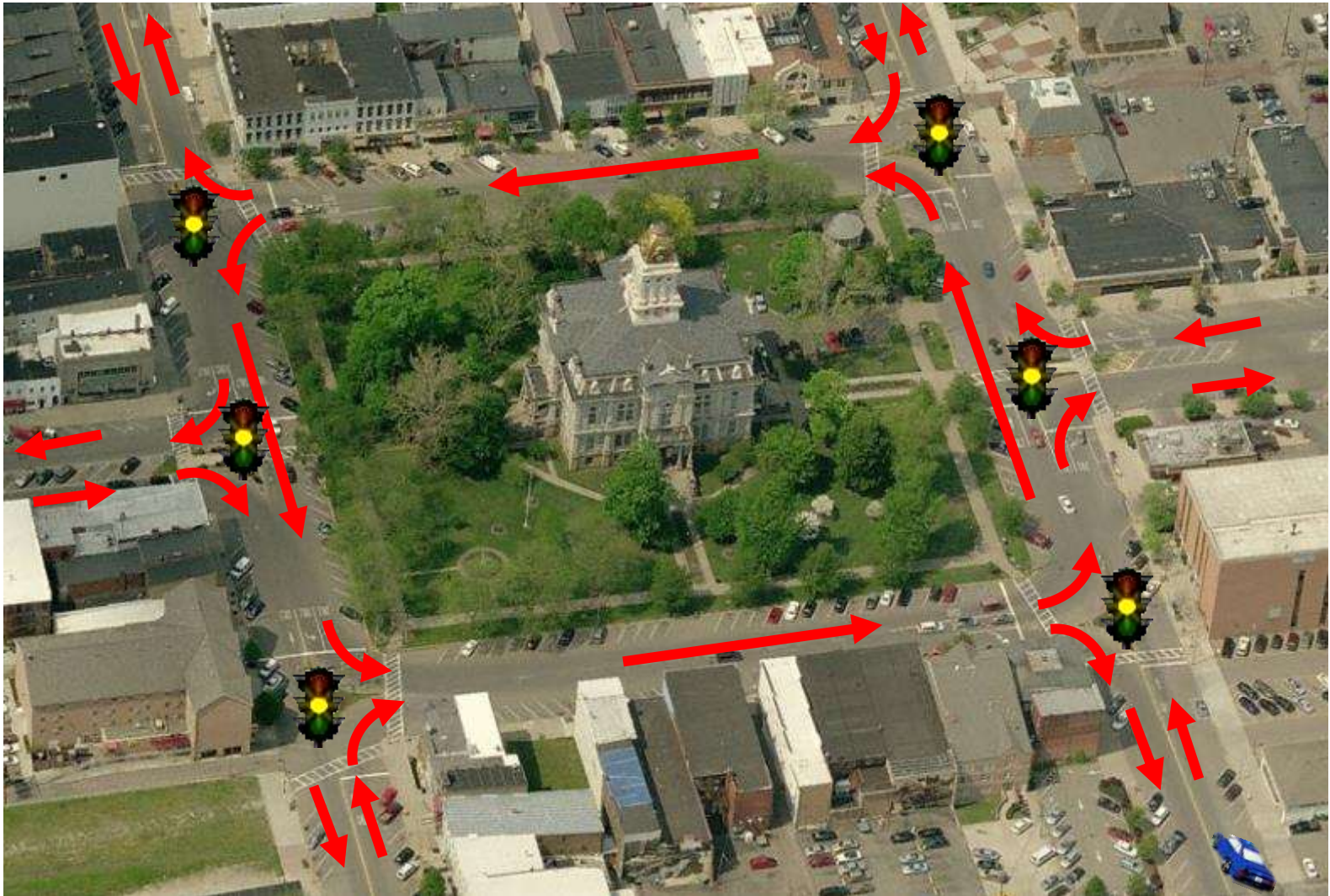


Background - Existing Infrastructure

- Nearly 100% impervious area, except for courthouse lawn.
- Streets are paved-over brick and in need of rehabilitation.
 - Former canals and interurban tracks under the pavement
 - Confusing traffic pattern
- Frequent water main breaks in areas with cast iron pipe installed in early 1970s

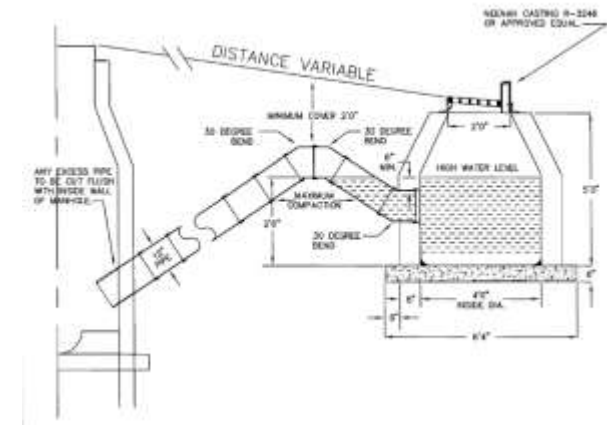


Background - Existing Street layout



Background - Existing Infrastructure

- Combined Sewer system
 - Brick
 - Clay
 - Pipe sizes: 8" – 48"
- Sewer structure is failing in several places—missing bricks, collapses, etc.
- Trapped curb inlets



Background – Recent Sewer Projects

- Long Term Control Plan
 - Raccoon Creek Interceptor Sewer
 - CSO 1006, 1013, and 1008 revisions
 - Licking River Interceptor Sewer
 - High rate treatment upgrades at WWTP

The Concept

- Provide separate storm and sanitary sewers
- Replace cast iron water pipes
- Reduce sewer overflows with green infrastructure
- Improve downtown traffic pattern



Project Drivers

- Separate sewers as part of larger sewer separation effort – reduce overflows
- Beautify downtown
- Good timing for the project
- Available funding

Project Partners



Preliminary Field Investigations

- Sewer video/dye testing



Preliminary Field Investigations

- Dye Testing Results



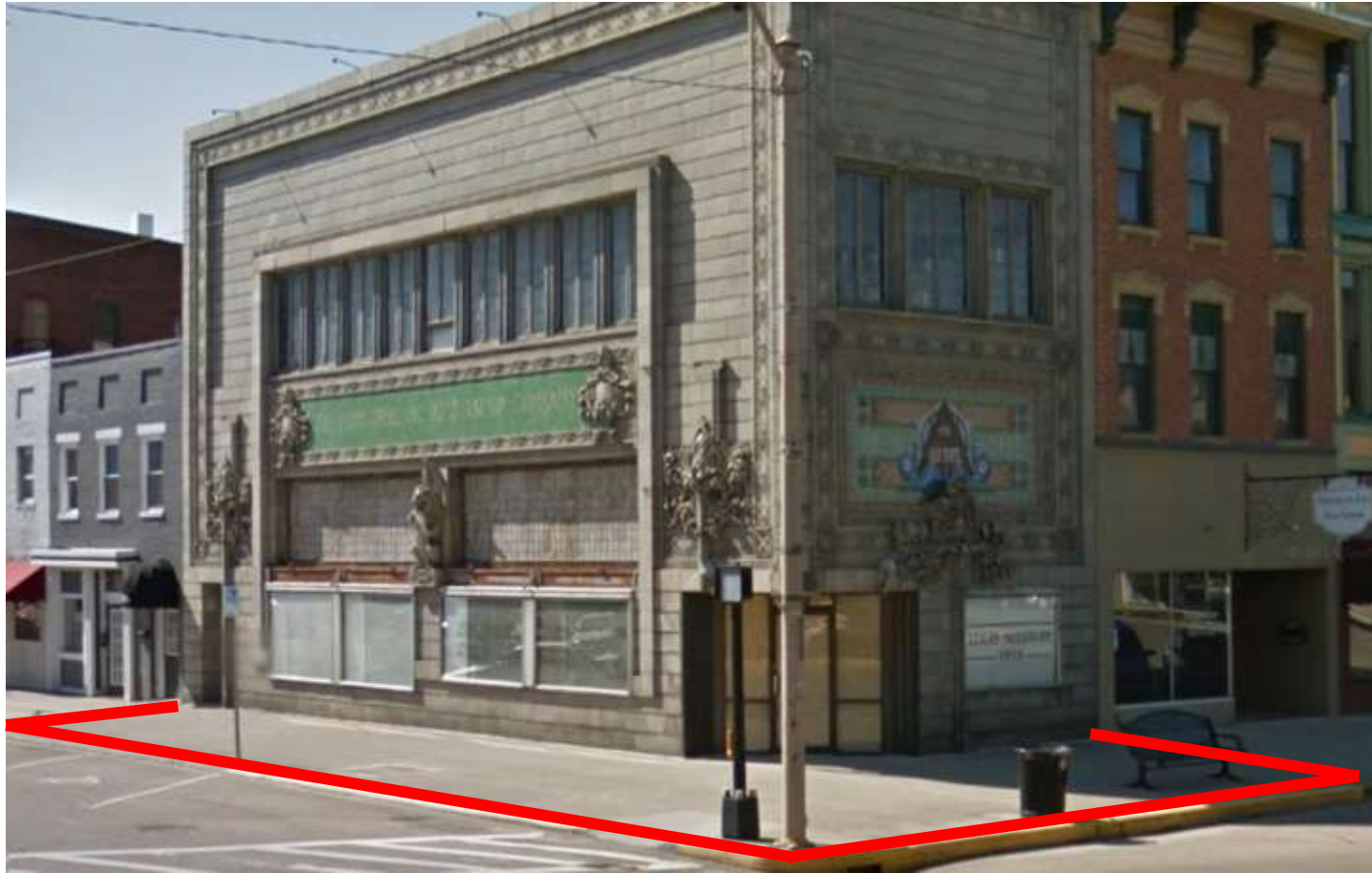
Preliminary Field Investigations

- Basement Investigations
 - Basements in several historic buildings extend under the sidewalk
 - Coal storage
 - Deliveries
 - Additional usable space
 - Evaluated for structural integrity



Preliminary Field Investigations

- Basement Investigations



Preliminary Field Investigations

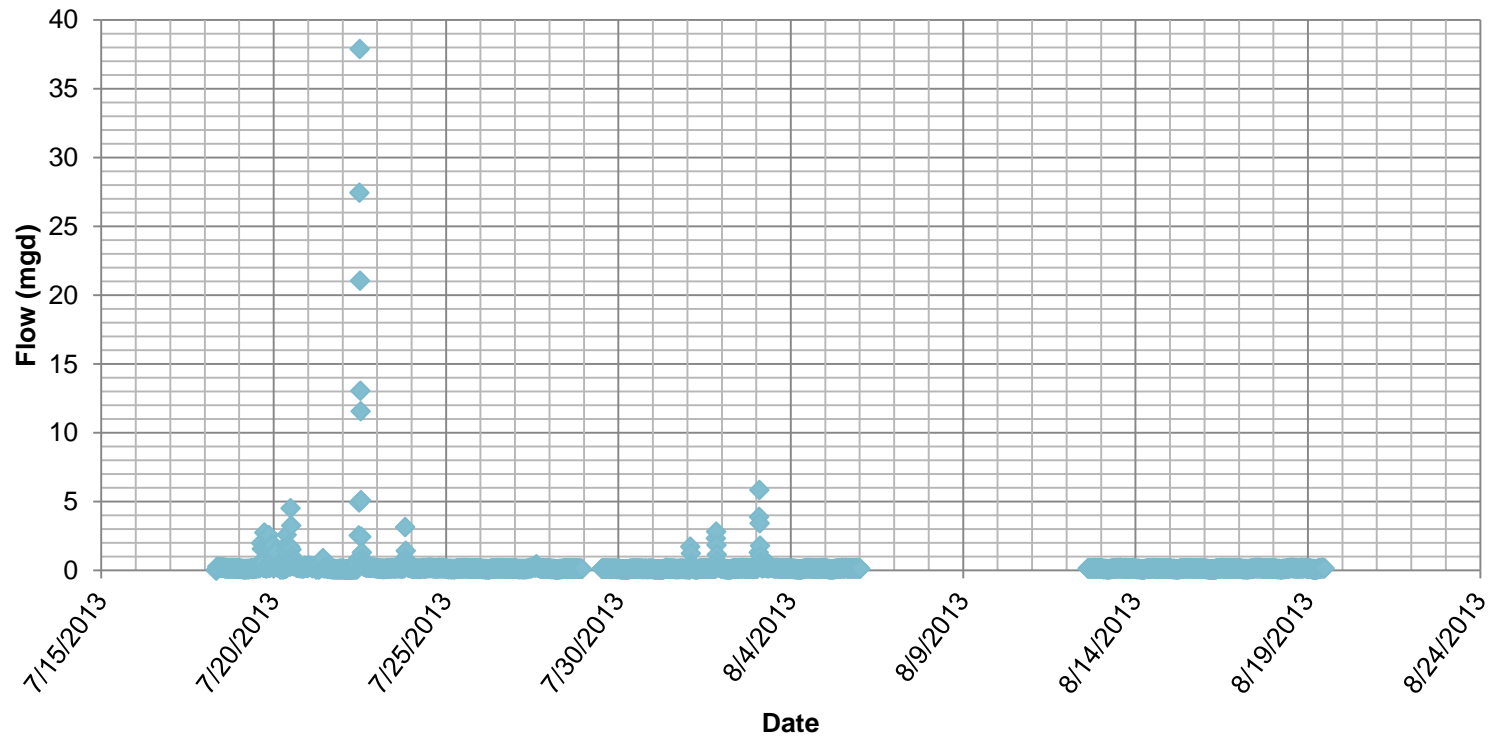
- Basement Investigation Results



Preliminary Field Investigations

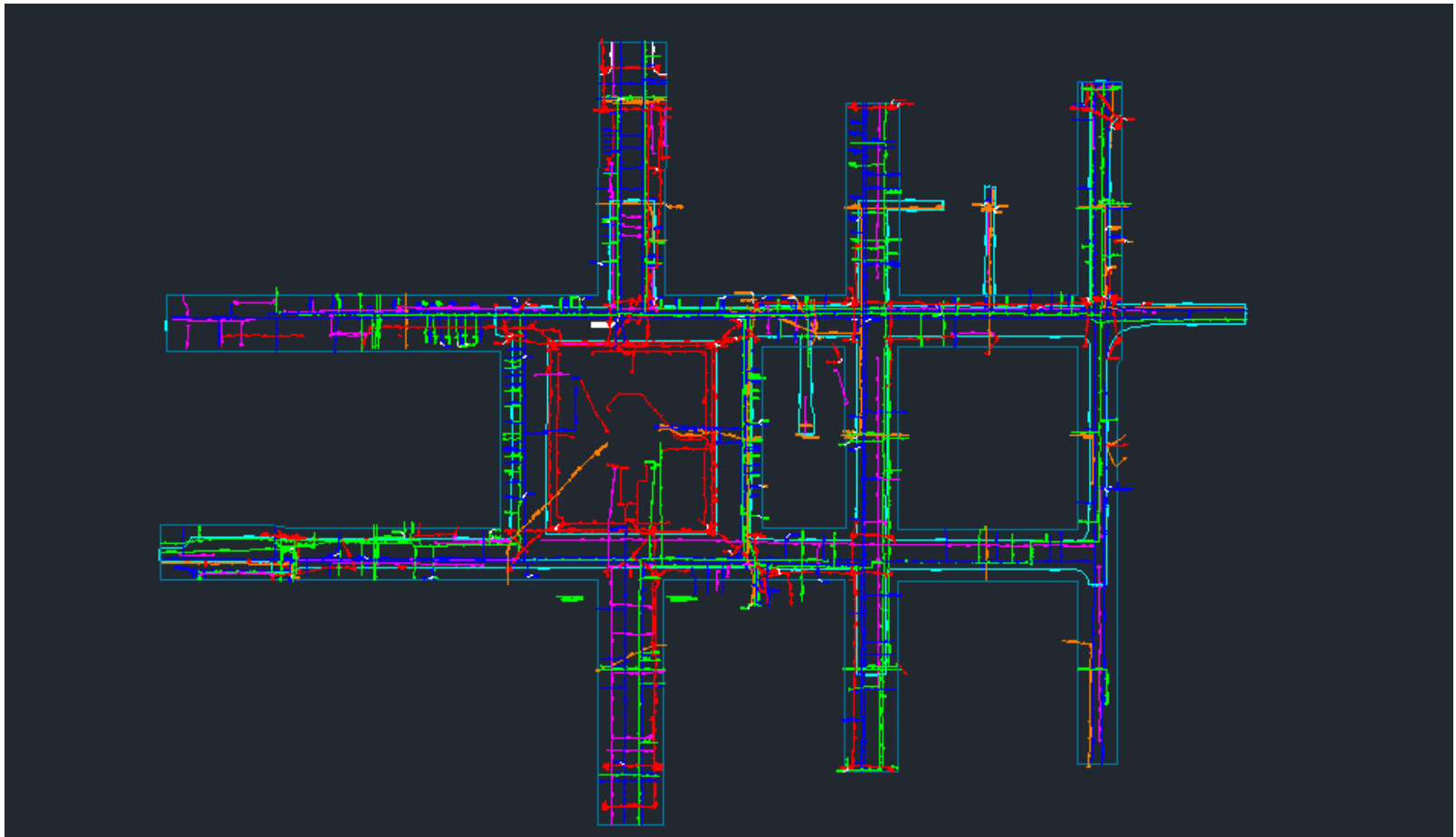
- Flow monitoring

H24 Flow Data



Preliminary Field Investigations

- Surface and Buried Utility Survey



Preliminary Field Investigations

- Soil Borings



Design

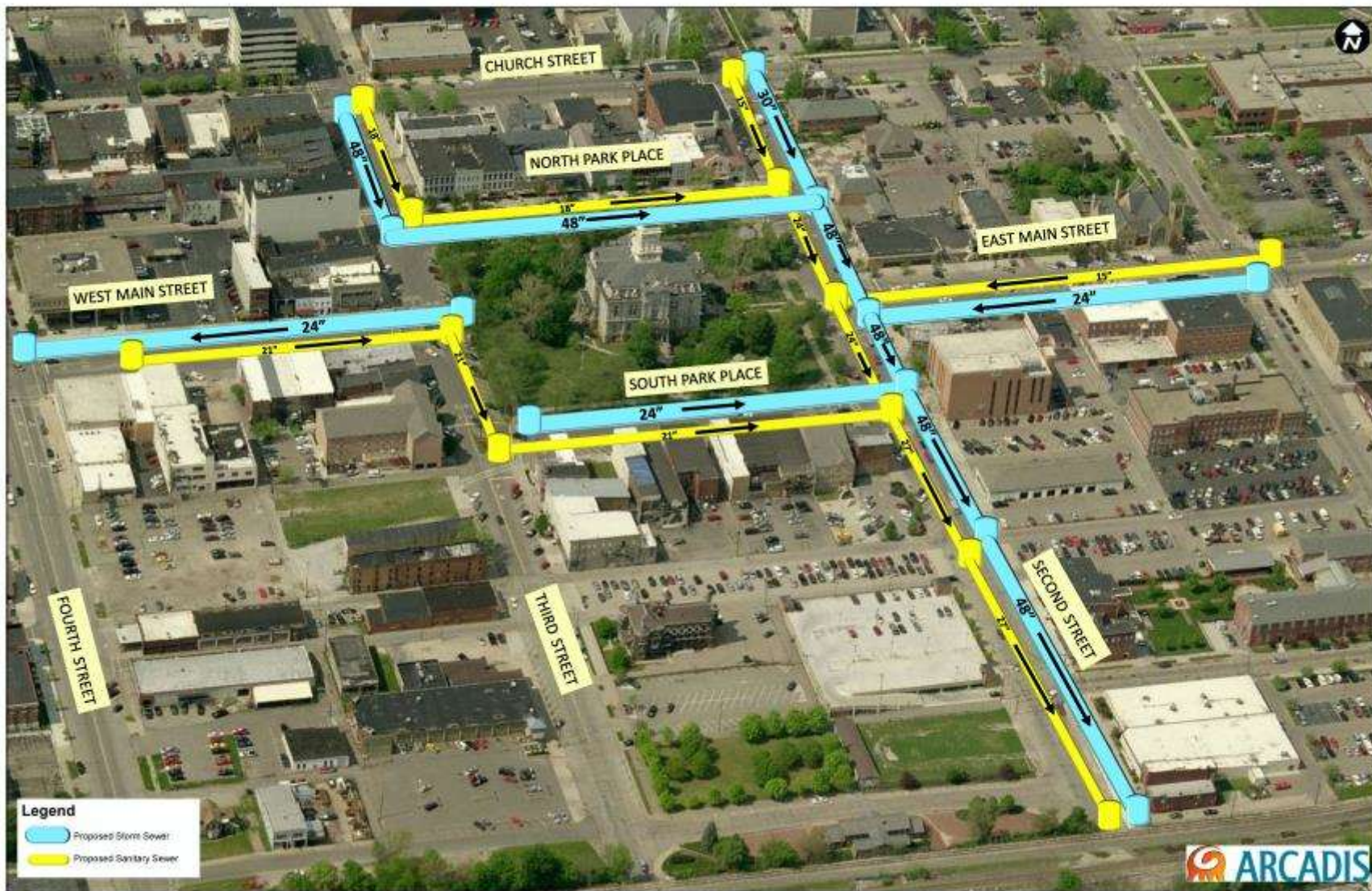
- Design Components:
 - Storm and sanitary sewers
 - Water mains
 - Sewer laterals and water service lines
 - Curb inlets
 - Roadway design
 - Green infrastructure

Design – Sewers: Replace or Rehab?

- Considerations:
 - Condition of existing brick sewer
 - Capacity/route of existing sewer
 - Constructability of a new separate sanitary sewer while maintaining existing sewer as storm sewer



Design – Sewer Separation Strategy

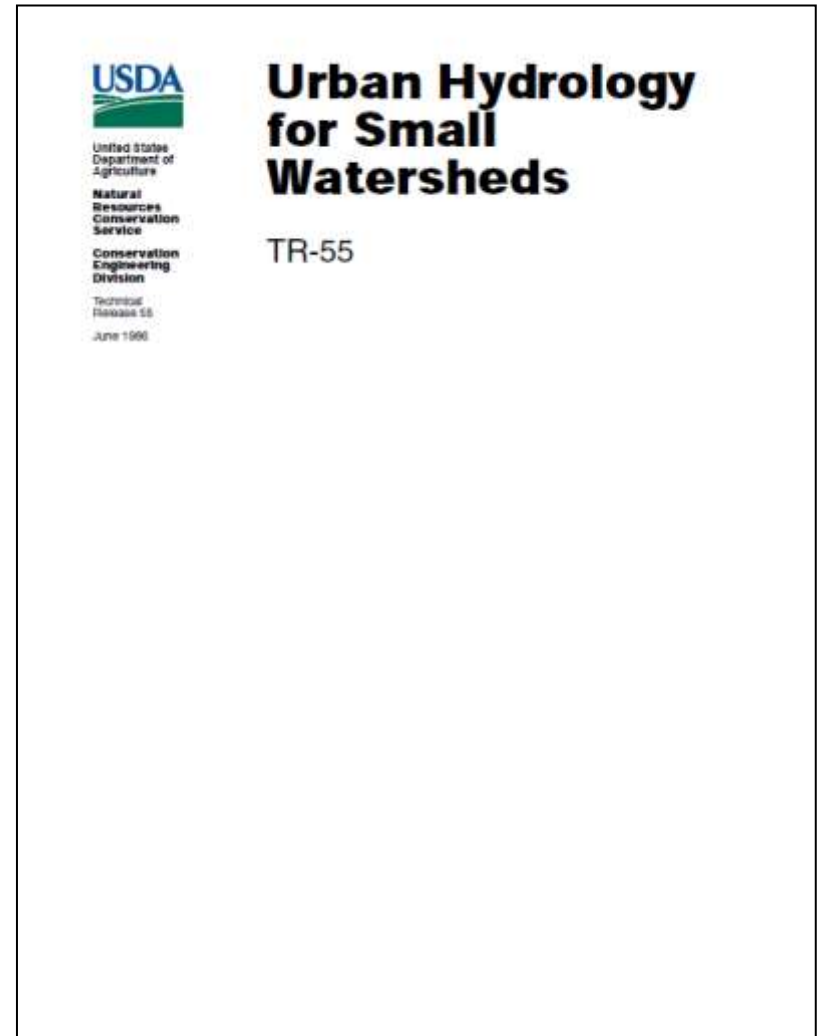


Design – Sewersheds: The Big Picture



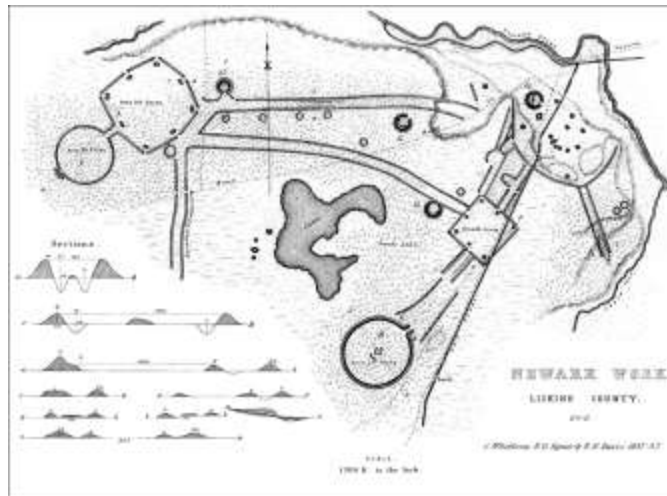
Design – Storm Sewer Sizing

- The USDA Technical Release 55 (TR-55) method was used to determine stormwater runoff flow rate
 - More accurate for larger watersheds than the Rational Method
 - Uses curve numbers, time of concentration, flow length, etc.



Design – Archeological Considerations

- Hired cultural resources management firm
 - Background research
 - Develop plan for potentially encountering significant artifacts
 - Dig archeological test pits as construction progresses



Design – Permitting

- Ohio EPA Division of Surface Water
 - Sewer installation/separation
- Ohio EPA Division of Drinking and Ground Waters
 - Water line upgrades
- Ohio Historic Preservation Office
 - Approval of work adjacent to historic buildings and in potential archaeology site

Design – Roadway Layout



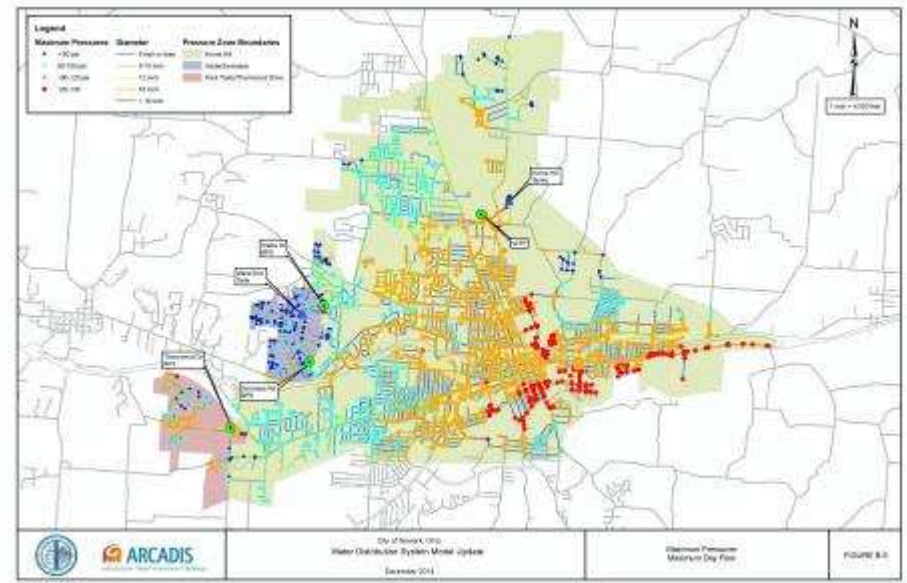
Design – Movement Monitoring

- Buildings adjacent to the excavation are being monitored for movement by a third party.
 - Ensure that buildings are not damaged
 - Protects property owners and contractor/city



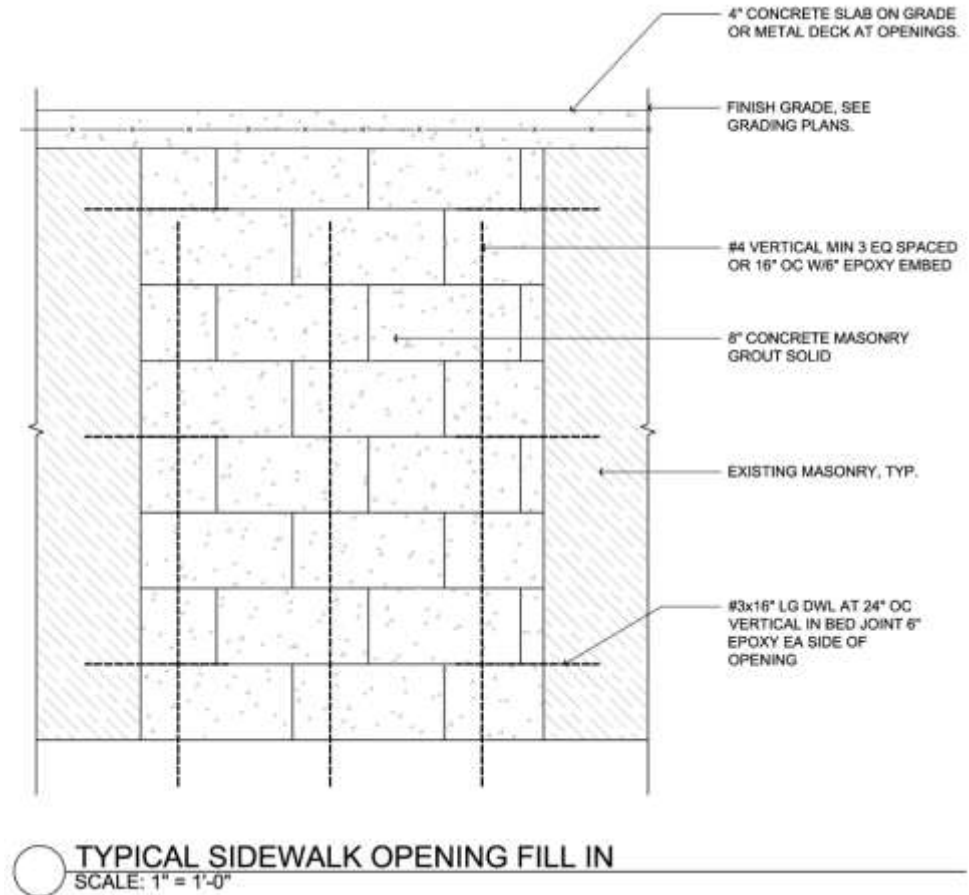
Design – Water Model

- A computer-based distribution system model was used to properly size replacement water pipes.
 - Simplify two-pipe system to a single-pipe system
 - Designed to meet fire flow demand



Design – Basements Under Sidewalks

- How will basements under sidewalks be dealt with?
 - Most openings will be blocked off and cavities filled with gravel
 - Some will remain with access to basements
 - Property owner's choice



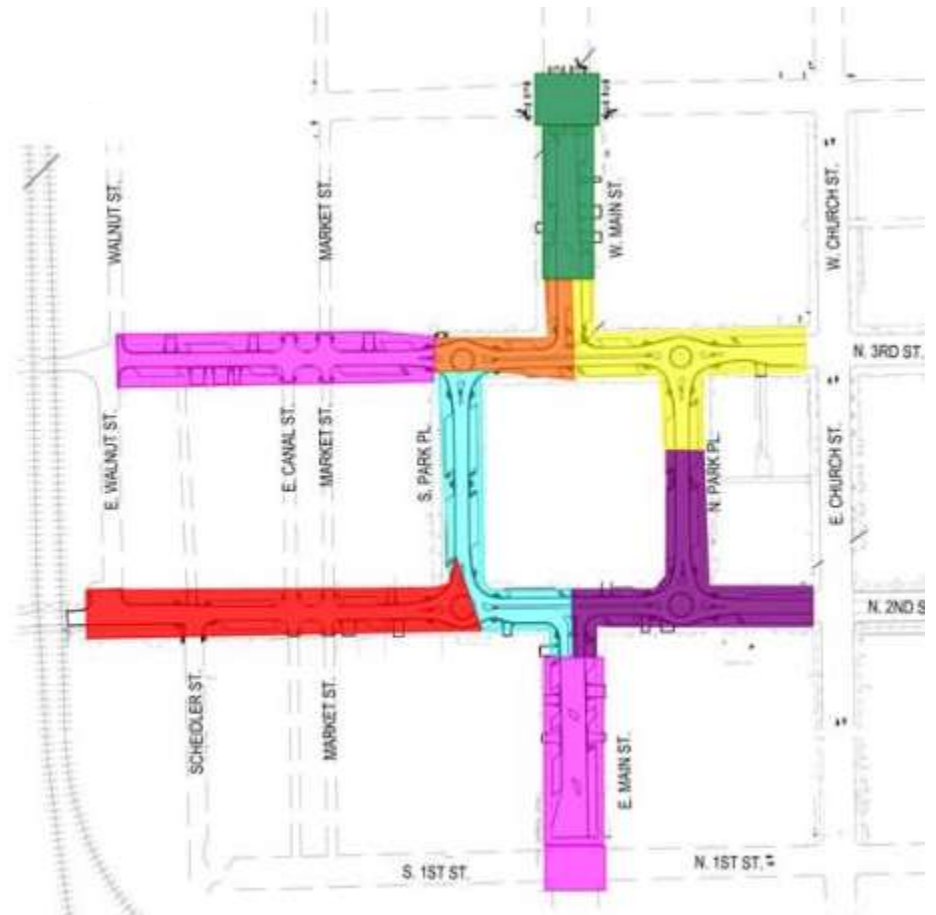
Design – Reuse of brick pavers

- Brick Pavers under existing road to be salvaged
- Pavers will be reused to make center of the new roundabouts



Design – Maintenance of Traffic

- Project will be completed in phases
 - Allow continued access to businesses
 - Allow for traffic flow downtown



Funding Sources

- Ohio EPA Water Pollution Control Loan Fund
 - Low-interest loan covering costs associated with sewer improvements and replacement
- Ohio Water Development Authority's Alternative Stormwater Infrastructure Loan Program
 - Low-interest loan used to cover costs associated with green infrastructure improvements

Construction Update – Progress

- Construction began March 2015
 - Construction started at the downstream end of the sewer main trunk and is progressing upstream.



Construction Update – Bypass Pumping

- Bypass pumping peak capacity: 17,000 gpm



Bypass pumping suction lines



Bypass pumping discharge lines

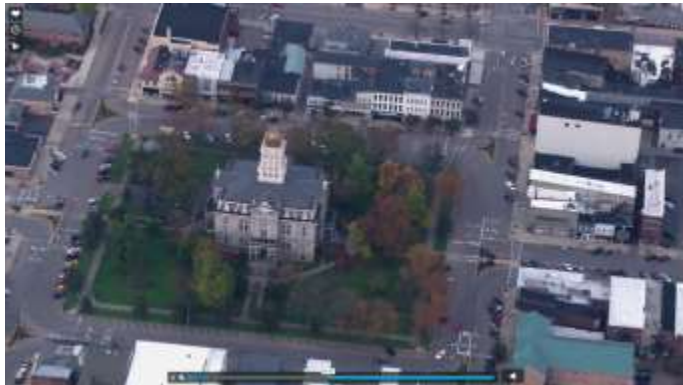
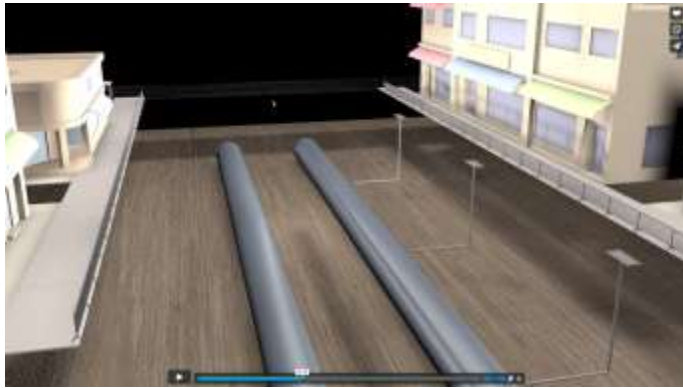
Construction Update – Communication

- WeDigNewark.com
 - Information about the project and schedule
 - Maps of current construction and available parking areas
 - Periodic construction recap videos
 - Contact information for any questions about the project
 - Email updates



Construction Update – Communication

- WeDigNewark.com video screenshots



Construction Update – Buried Treasure



Old hand-blown glass bottle



Sandstone blocks from old canal bridge foundation

Imagine the result

