Drainage Pump Station 01 Watershed

Phase I: Stormwater Parks and Lots

Resilience Project Design Review Committee Presentation

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CDM Smith

Agenda

- Project Background
- Stormwater Management Strategy
- Proposed Green Infrastructure
- Proposed Drainage System Upgrades
- Historic Impact Issues
- Construction Probable Costs and Challenges
- Anticipated Project Benefits
- Operations & Maintenance of Upgrades
- Questions / Discussions

Project Background

Project Scope

Mission Statement:

"The team will utilize appropriate application of green and gray infrastructure technology to improve the ability of the project area to manage stormwater effectively through the use of available public spaces and strategic pipe upgrades to develop a project which achieves a Benefit Cost Ratio (BCR) of 1.0 or greater."

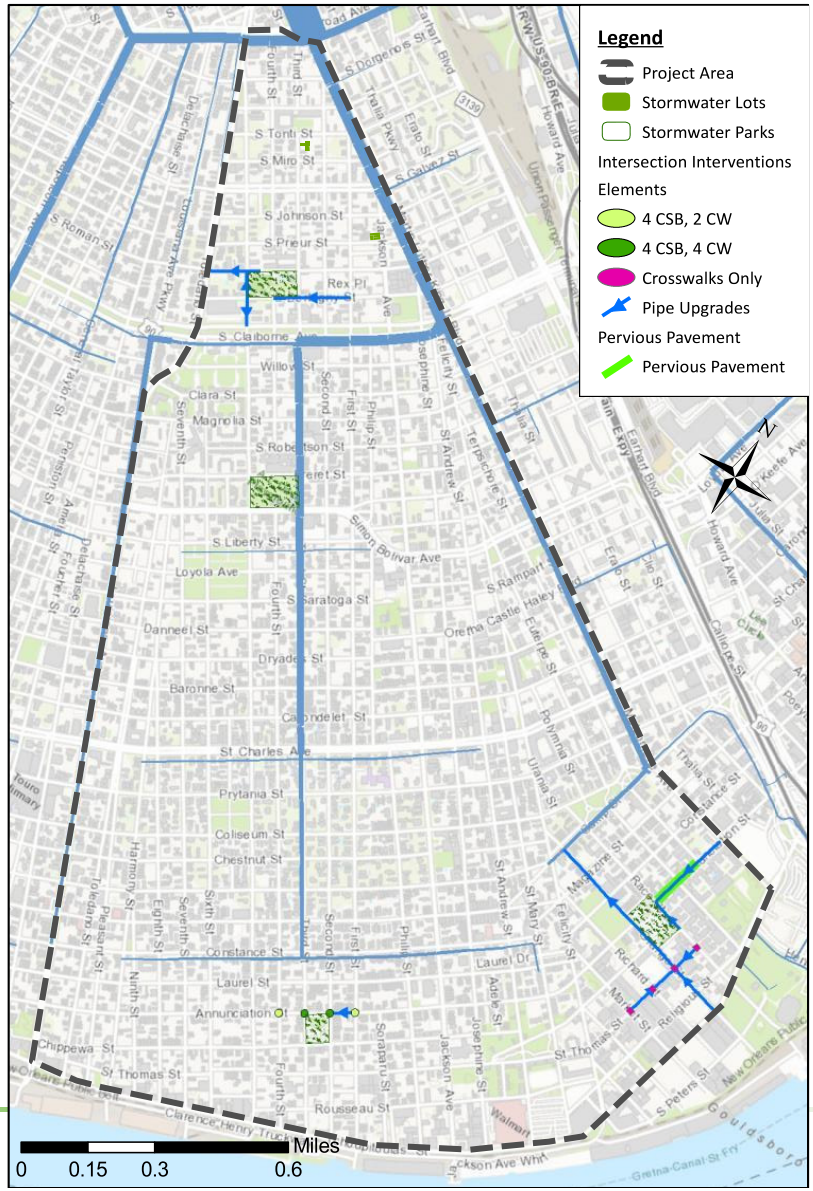
- Identify current flooding depths & locations for various design storms
- Recommend & design flood reduction interventions
- Determine impacts of proposed interventions
- Enhance public landscape & park amenities
- Develop probable construction costs

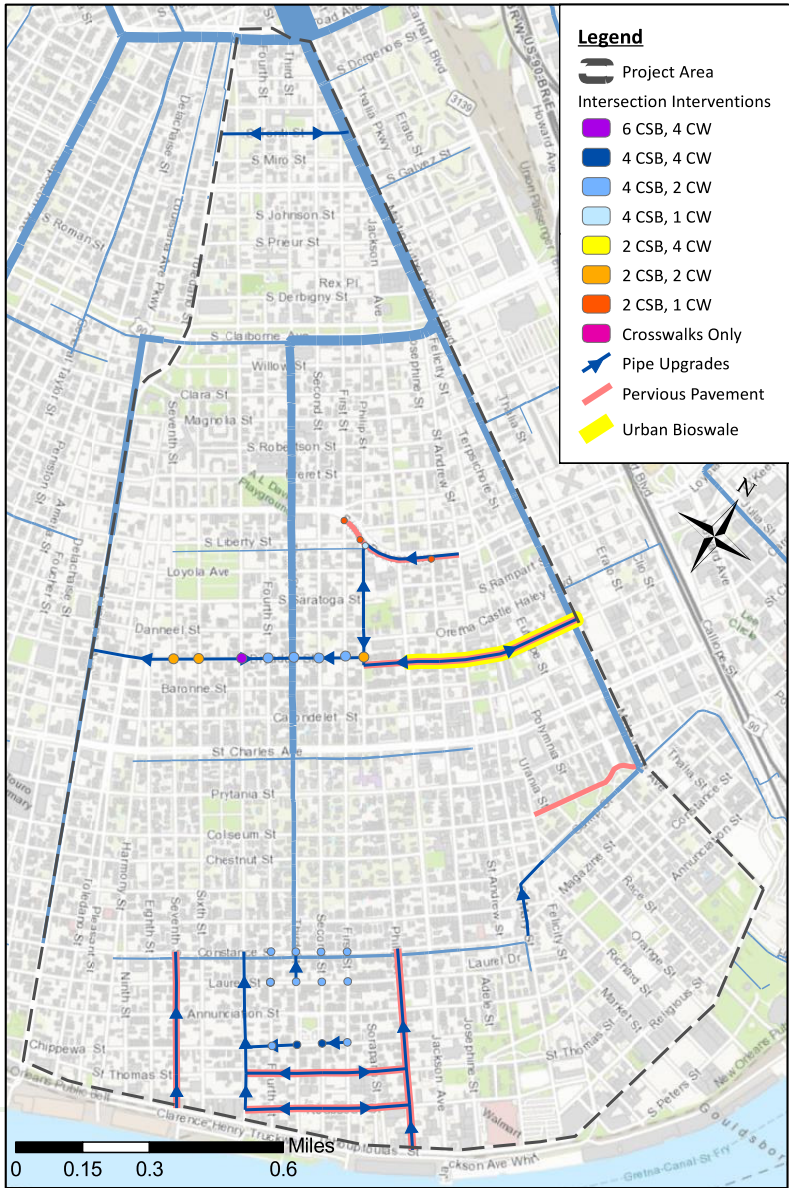
Project Area

- Project Boundaries
  - Toledano/Louisiana, Broad, Melpomene/MLK, Tchoupitoulas
- Encompasses all or part of 8 Uptown neighborhoods
- Nearly 1,800 acres
- Phase I
  - Stormwater Lots
  - Stormwater Parks
  - Corner Street Basins (Associated with Burke Stormwater Park)
  - Pipe Installations and Upgrades (Associated with Stormwater Parks)

Project Phasing

- Phase 1: Stormwater Parks and Lots
- Phase 2: Additional Improvements (Draft – not finalized)





Stormwater Management Strategy

Flooding Potential

- High level of imperviousness
- Undersized primary stormwater management system Localized
- Model showed localized flooding during 1-year & 2-year storms
- Model showed wide spread flooding during 5-year & 10-year storms
- DPS 01 is downstream limited to 5,800 cfs, but even the full capacity (7,200 cfs) inadequate for flood control in this watershed

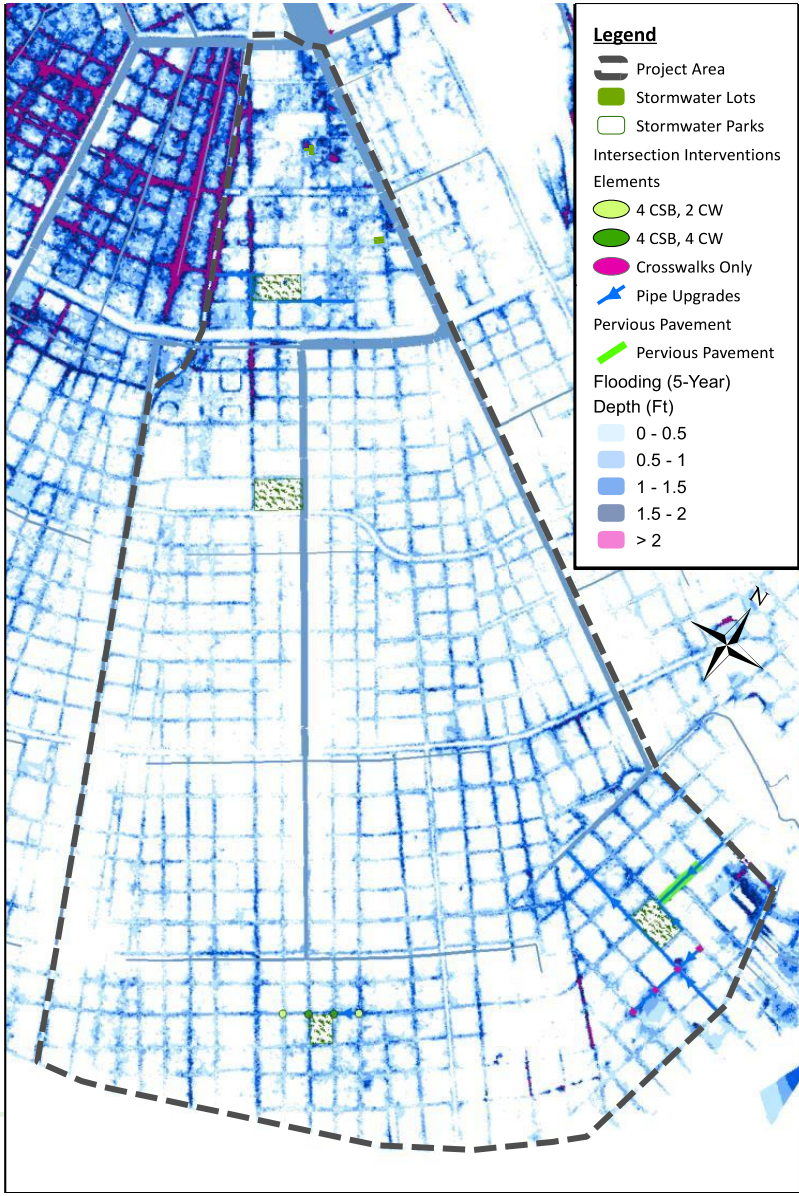


Figure: Existing Flooding in 5-year Design Storm

Damages to Properties & Infrastructure

- Flooded Buildings
- Inaccessible Properties
- Impassable Roads
- Citizens at Risk

Design Storm	Buildings in Flooded Areas	Parcels in Flooded Areas	Miles of Flooded Roadways
1-Year Storm	597	1032	5.0
2-Year Storm	1517	2594	15.0
5-Year Storm	3148	4847	35.7
10-Year Storm	4375	6285	54.3
100-Year Storm	6825	7800	77.7

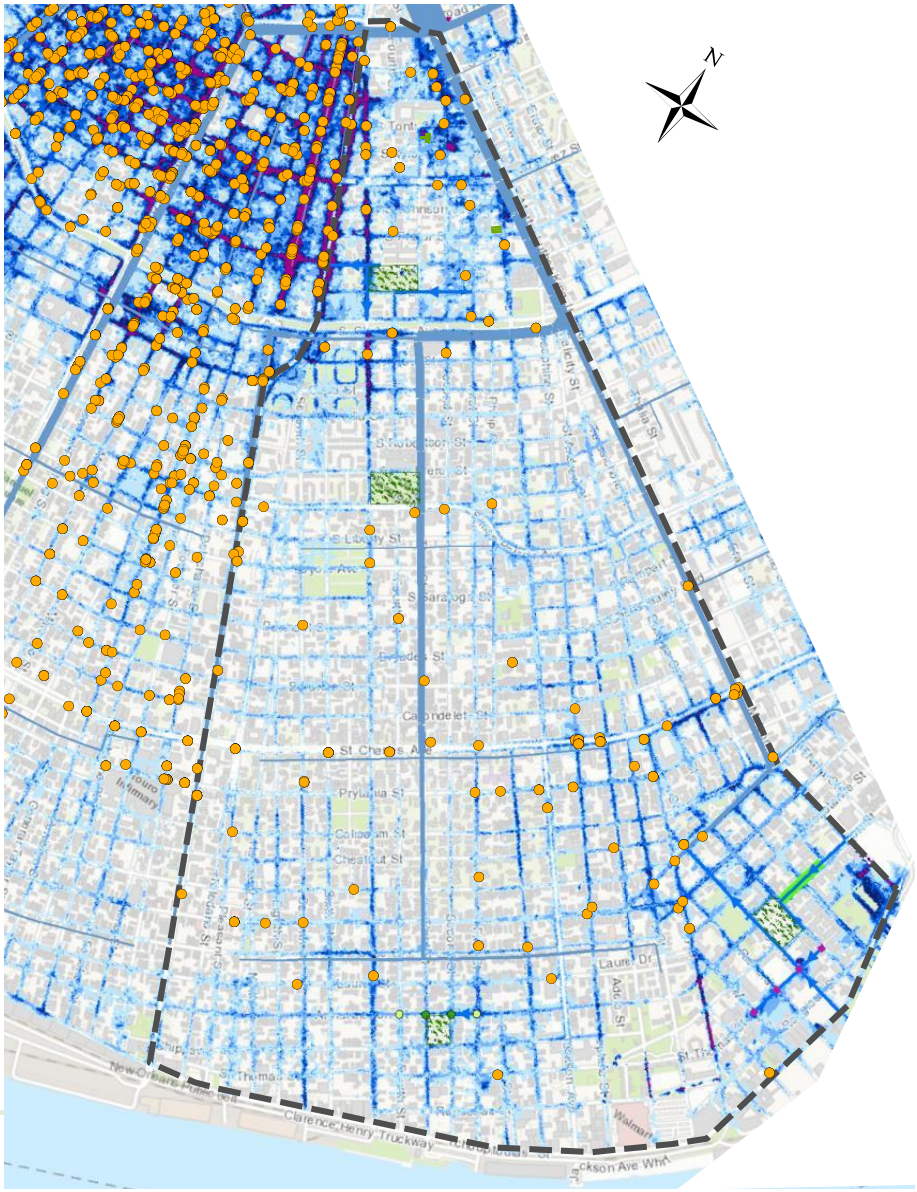
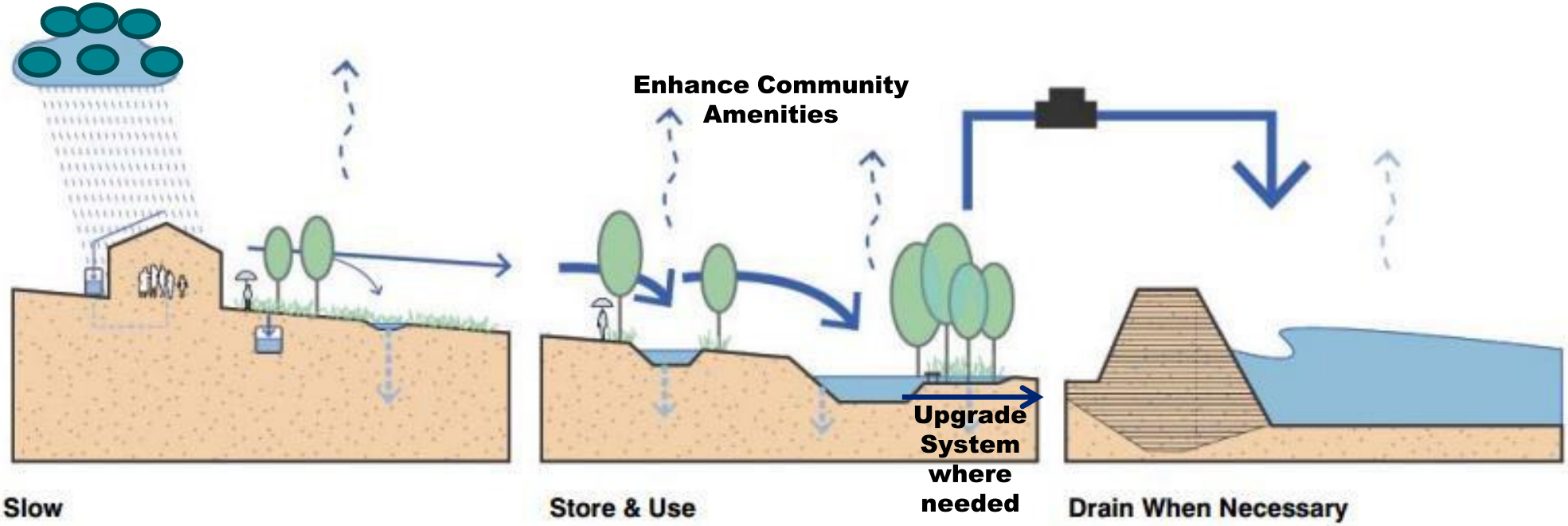


Figure: Structures with Repetitive Loss

Stormwater Management Strategy



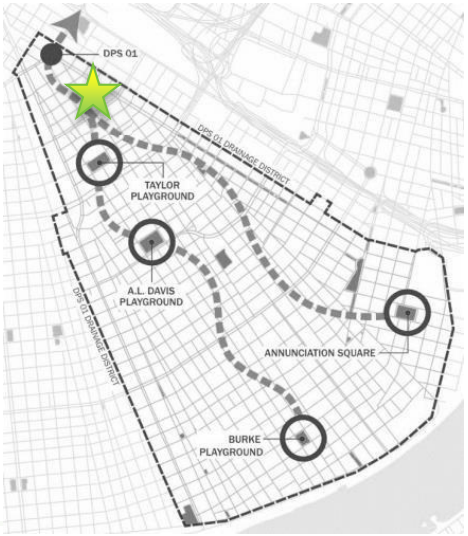
Proposed Improvements

- Install subsurface storage
- Provide surface level detention
- Create pathways for drainage

Proposed Green Infrastructure

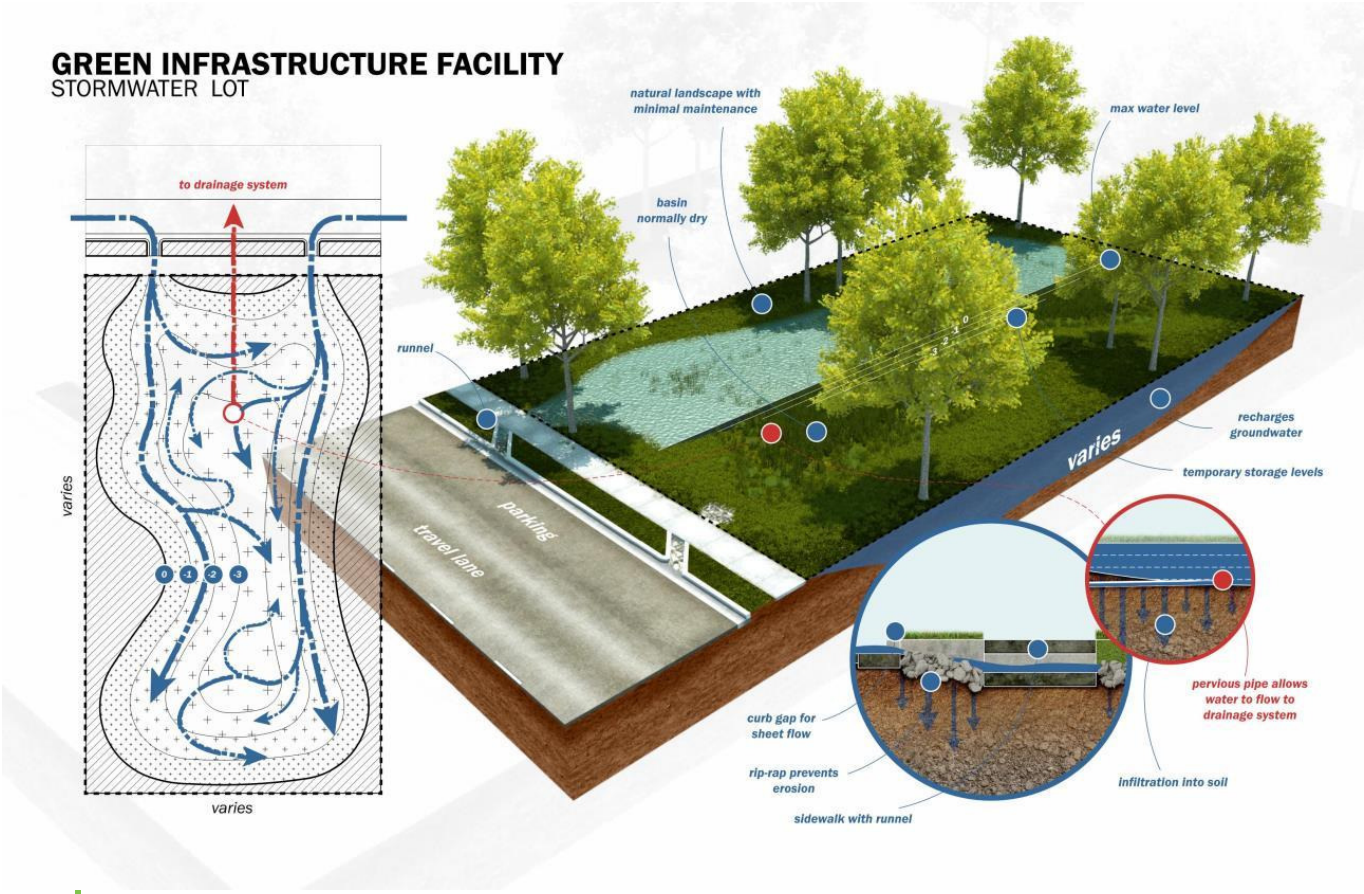
Stormwater Lots

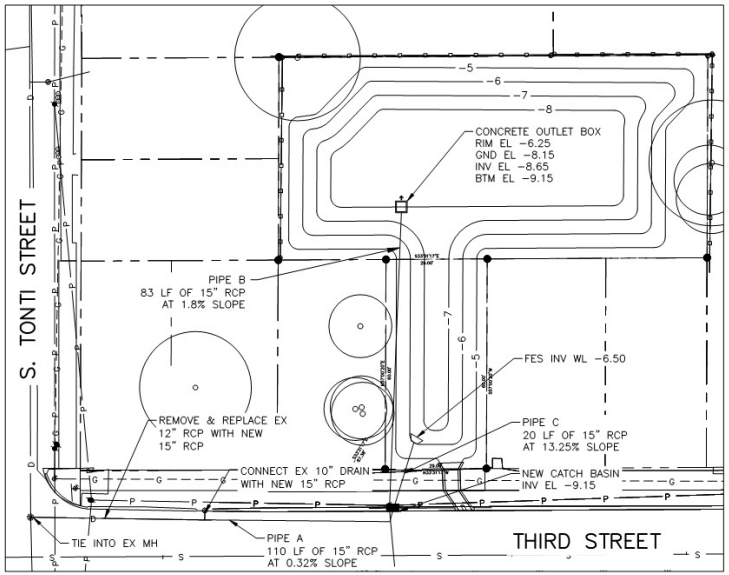
- Lot 1
  - Location: 3621 Third Street
  - Storage Capacity: 12,170 CF
  - Cost: $105,400
  - Unit Cost: $8.66 per CF
- Lot 2
  - Location: 3200 Jackson Avenue
  - Storage Capacity: 26,800 CF
  - Construction Cost: $90,250
  - Unit Cost: $3.37 per CF

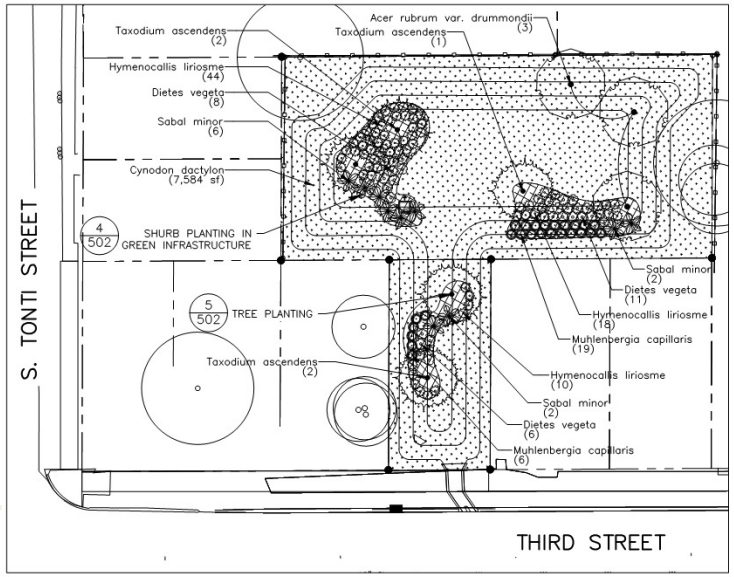


Stormwater Lots

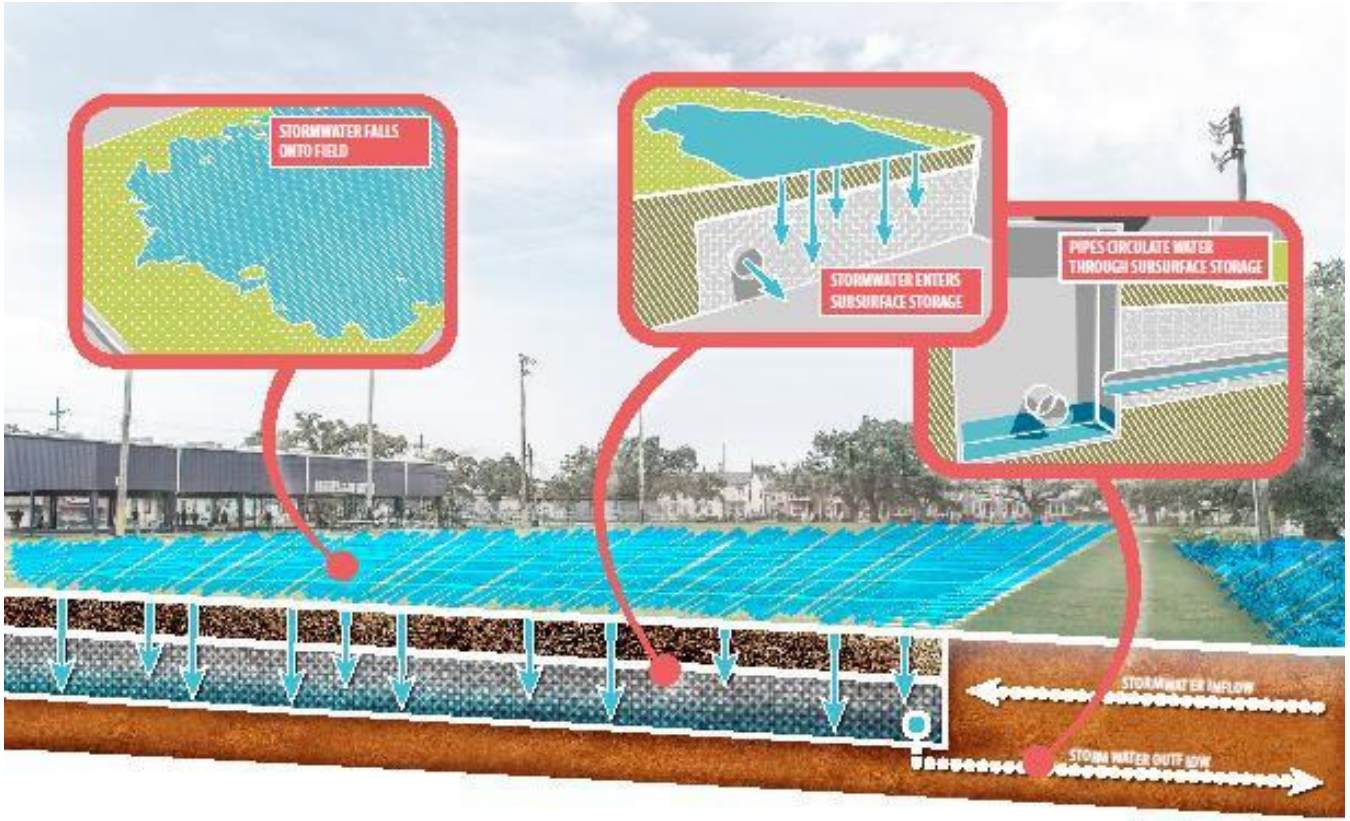
3621 3rd Street







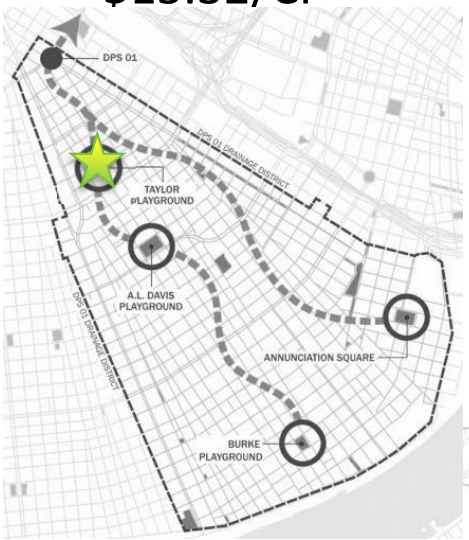
Stormwater Parks

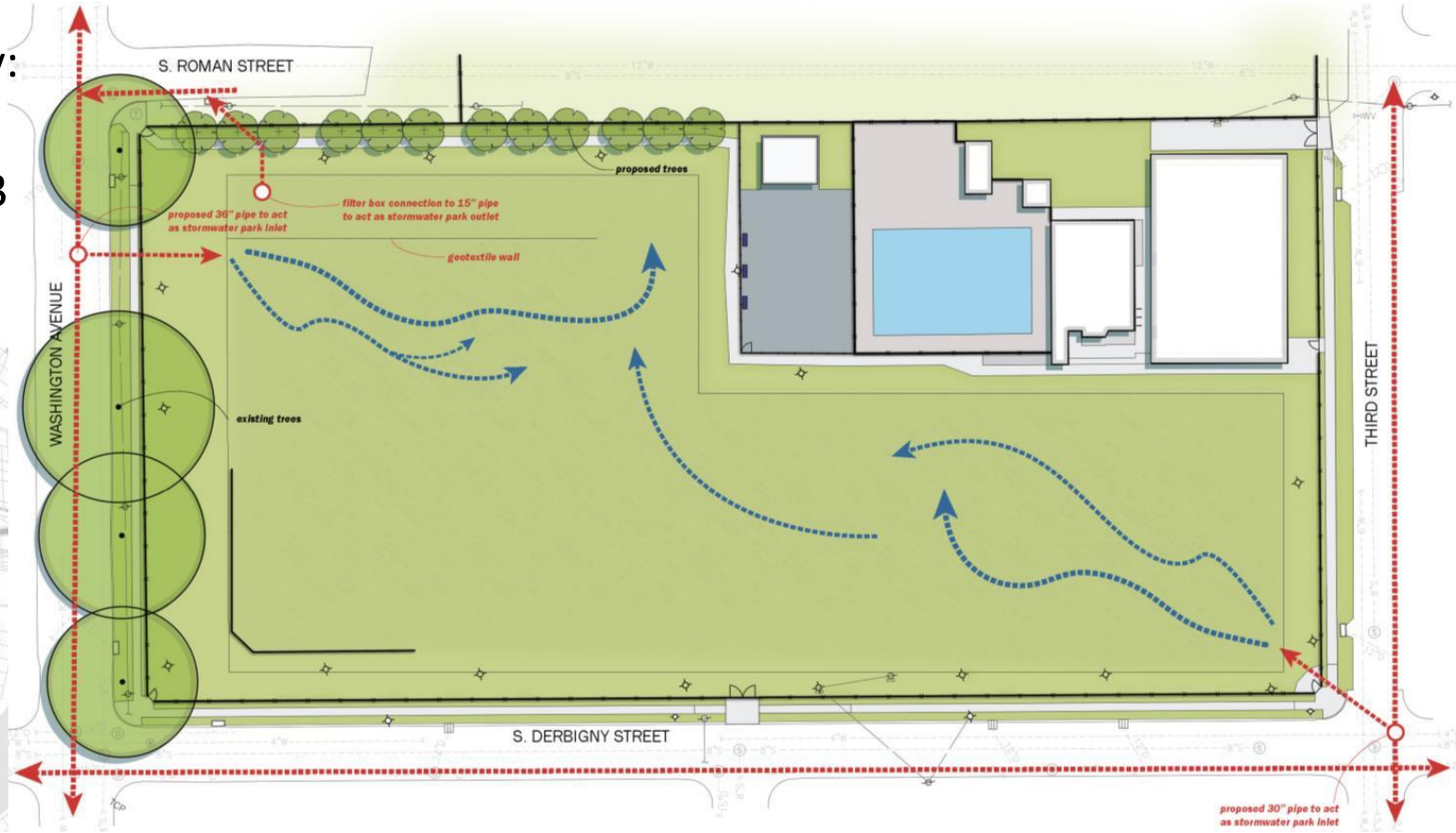


- Taylor Playground
- A.L. Davis Park
- Burke Park
- Annunciation Square

Taylor Playground

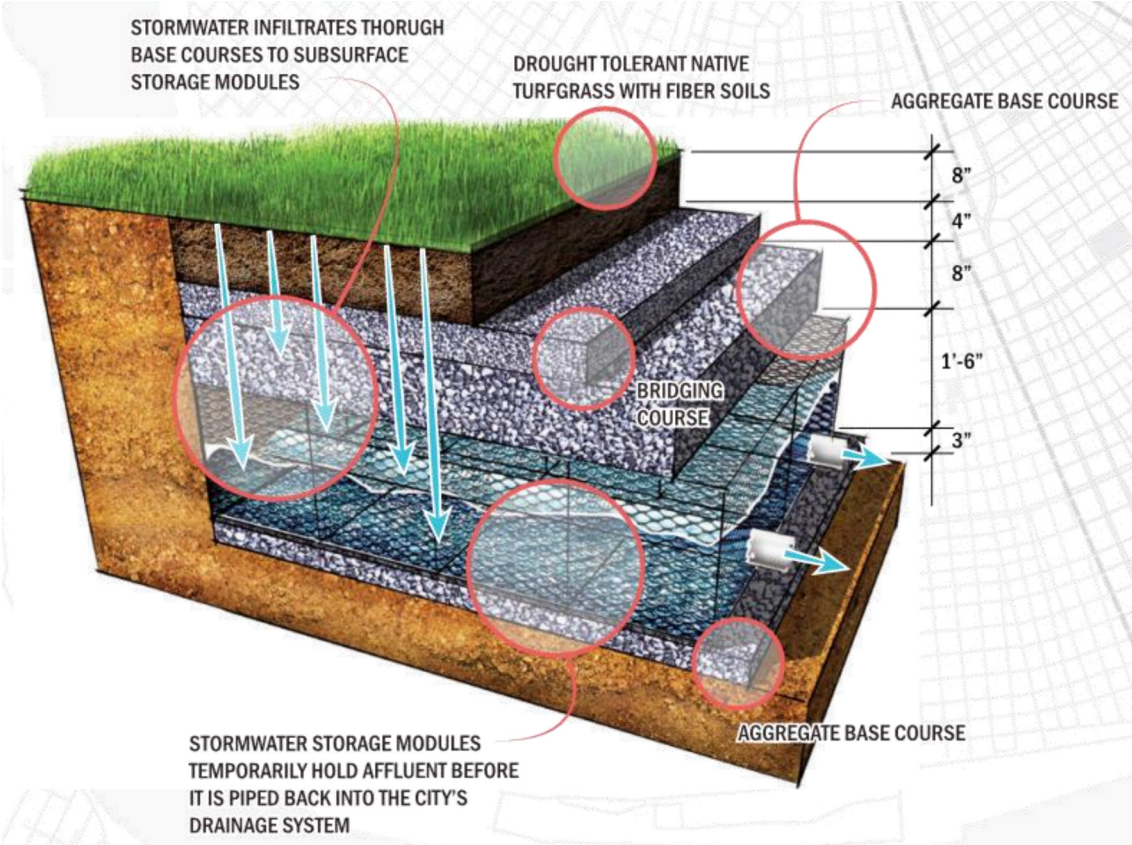
- Storage Capacity: 301,985 CF
- Cost: $4,627,623
- Unit Cost: $15.32/CF





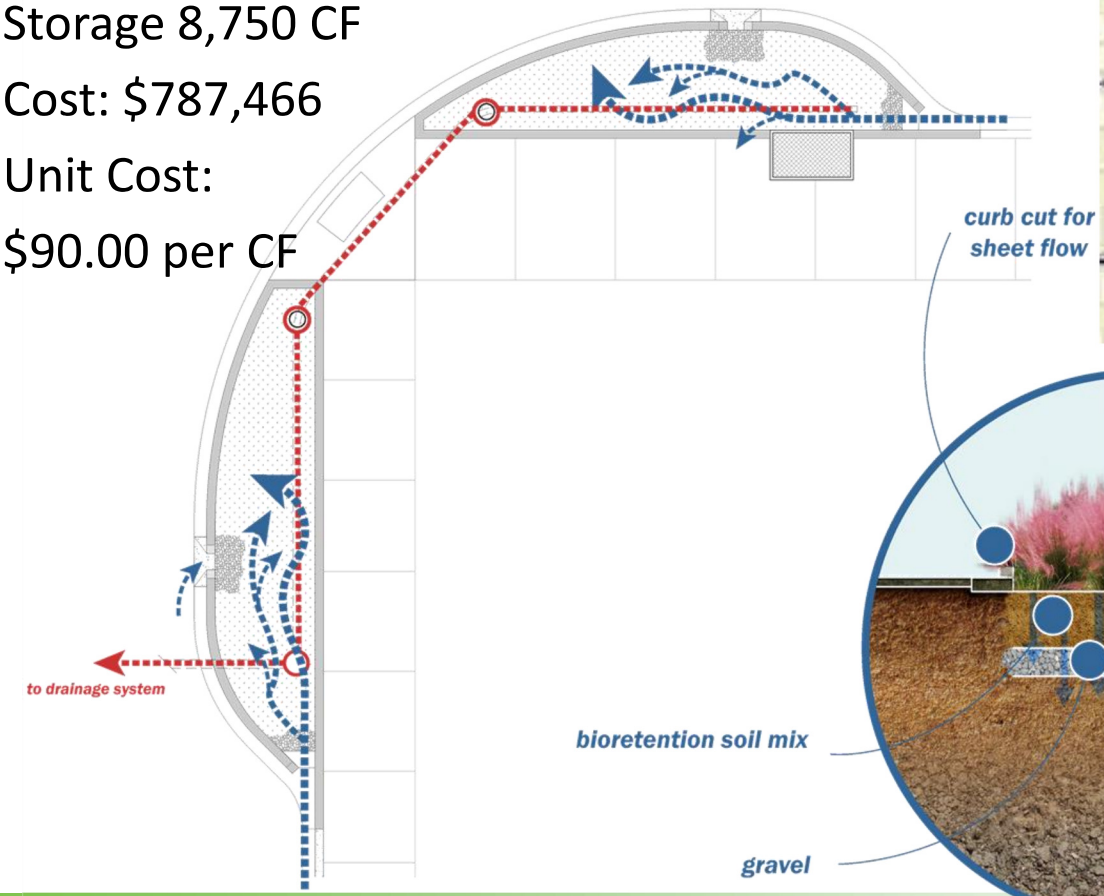
Stormwater Park Summary

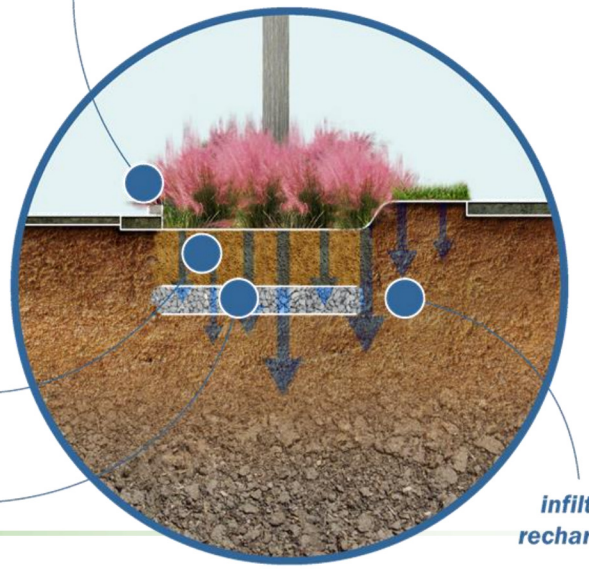
- A.L. Davis
  - Storage Capacity: 248,040 CF
  - Cost: $3,984,322
  - Unit Cost: $16.06 per CF
- Burke Park
  - Storage Capacity: 103,805 CF
  - Cost: $1,433,867
  - Unit Cost: $13.81 per CF
- Annunciation Square
  - Storage Capacity: 253,780 CF
  - Cost: $3,281,992
  - Unit Cost: $12.93 per CF



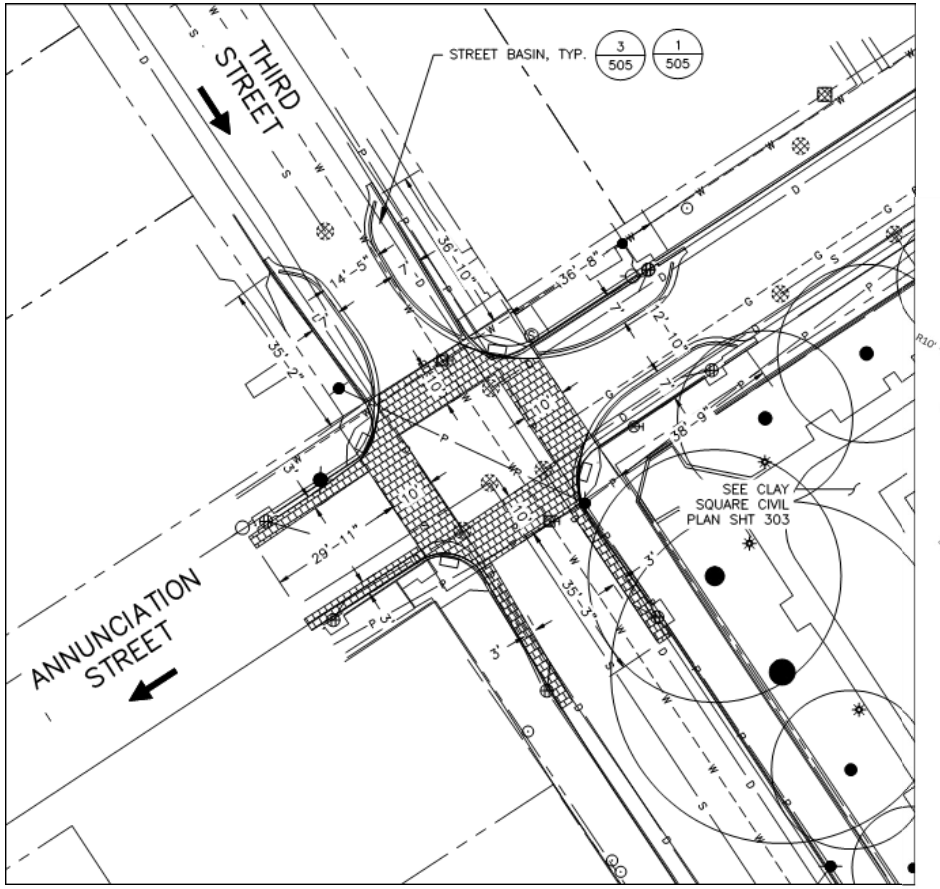
Green Intersections - Annunciation

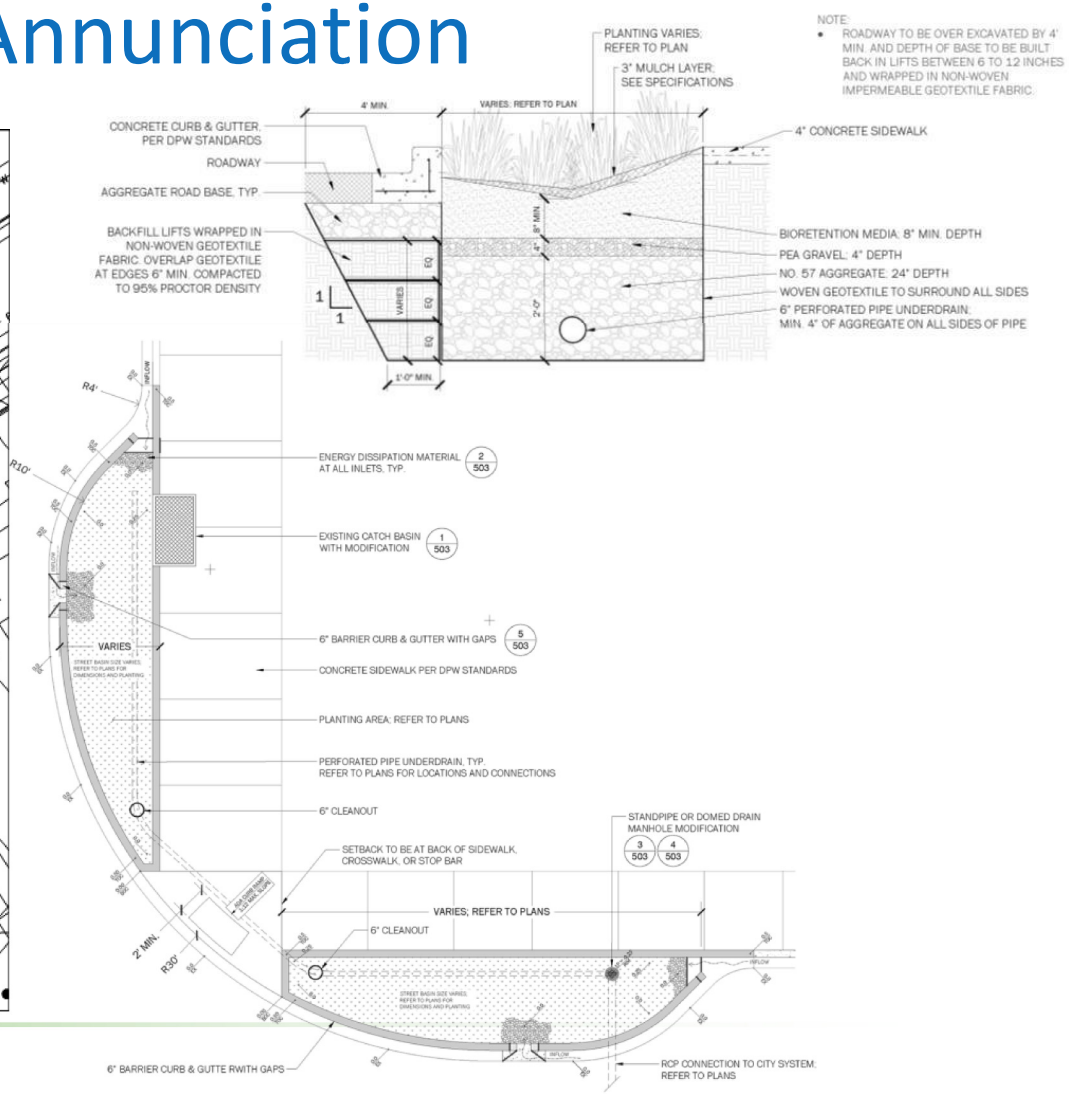
- Storage 8,750 CF
- Cost: $787,466
- Unit Cost:
- $90.00 per CF





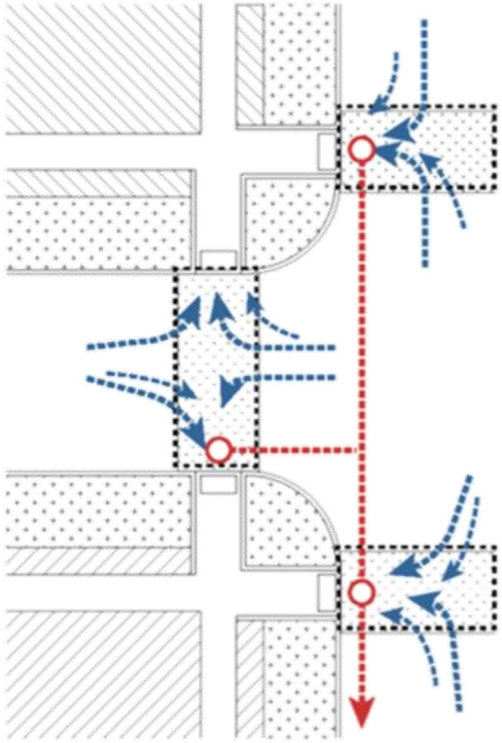
Green Intersections - Annunciation

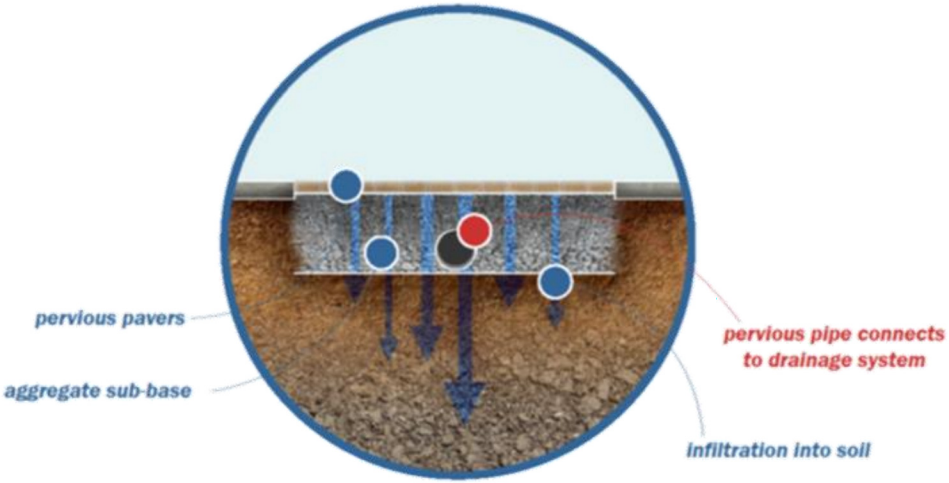




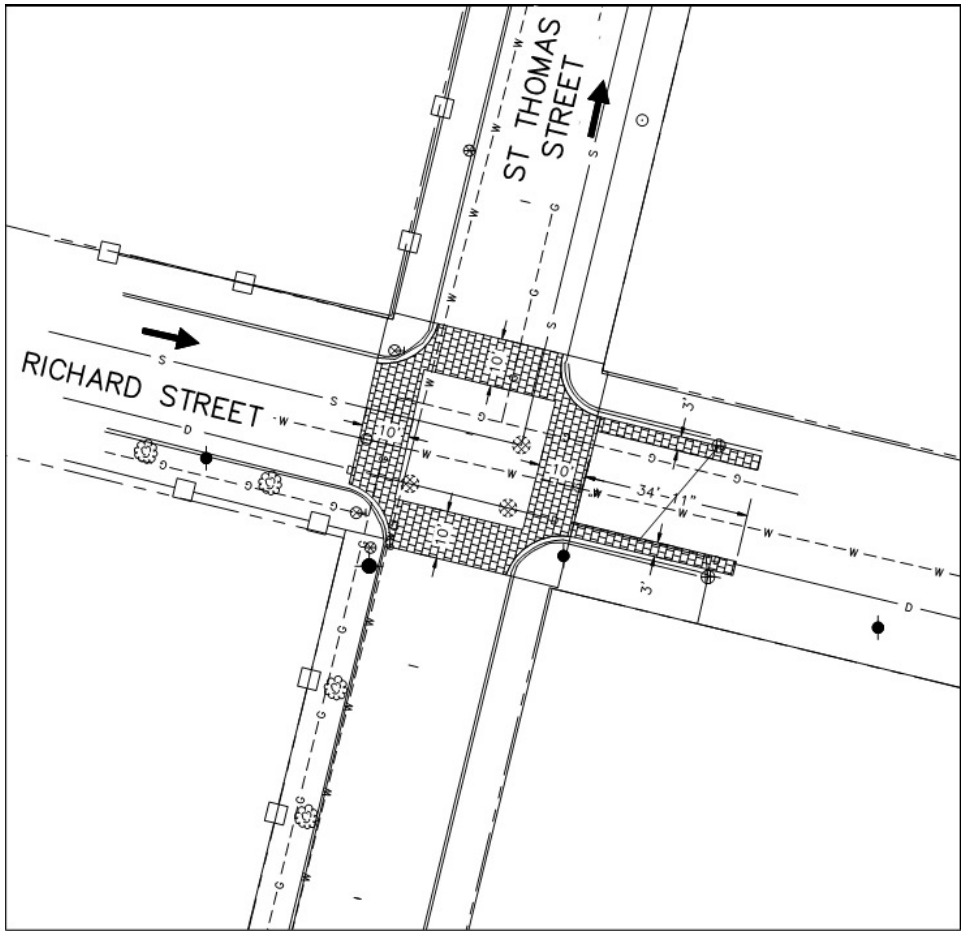
Green Intersections – St. Thomas

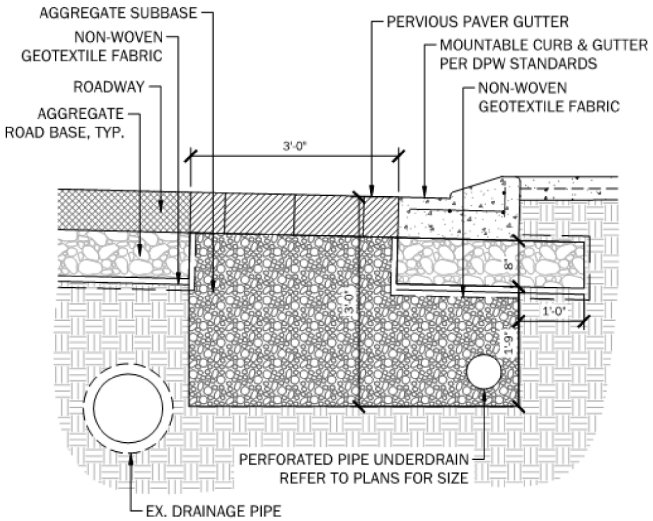
- Storage 4,780 CF
- Cost: $535,332
- Unit Cost:
- $112 per CF

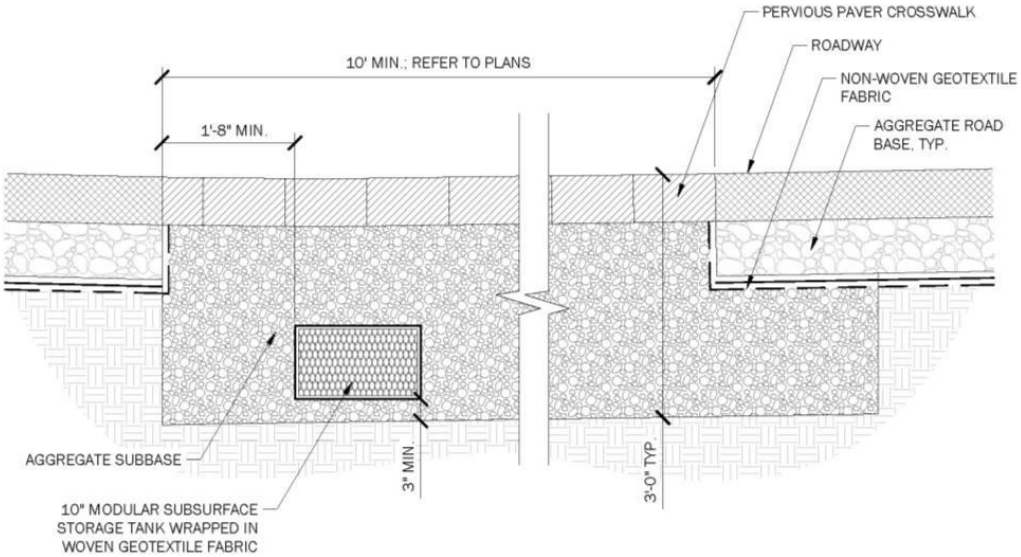




Green Intersections – St. Thomas

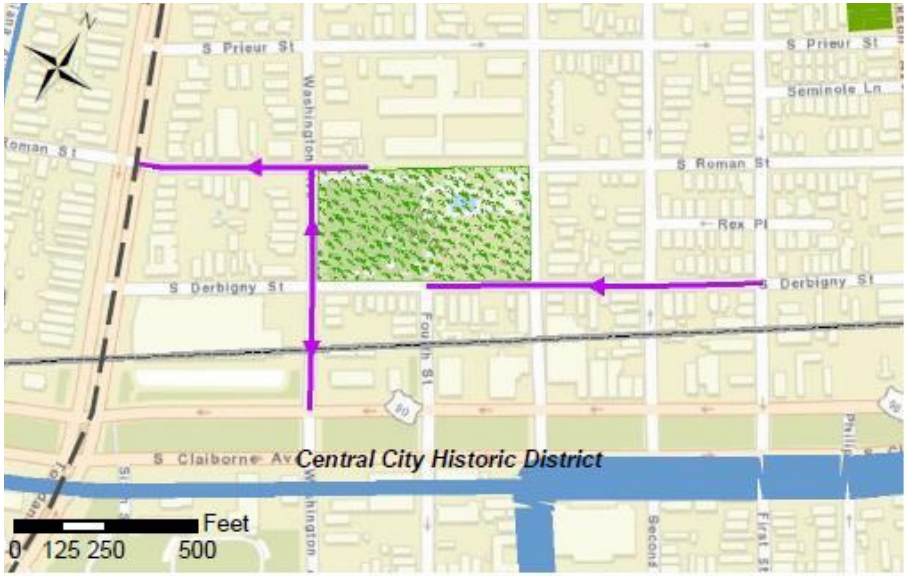






Proposed Drainage System Upgrades

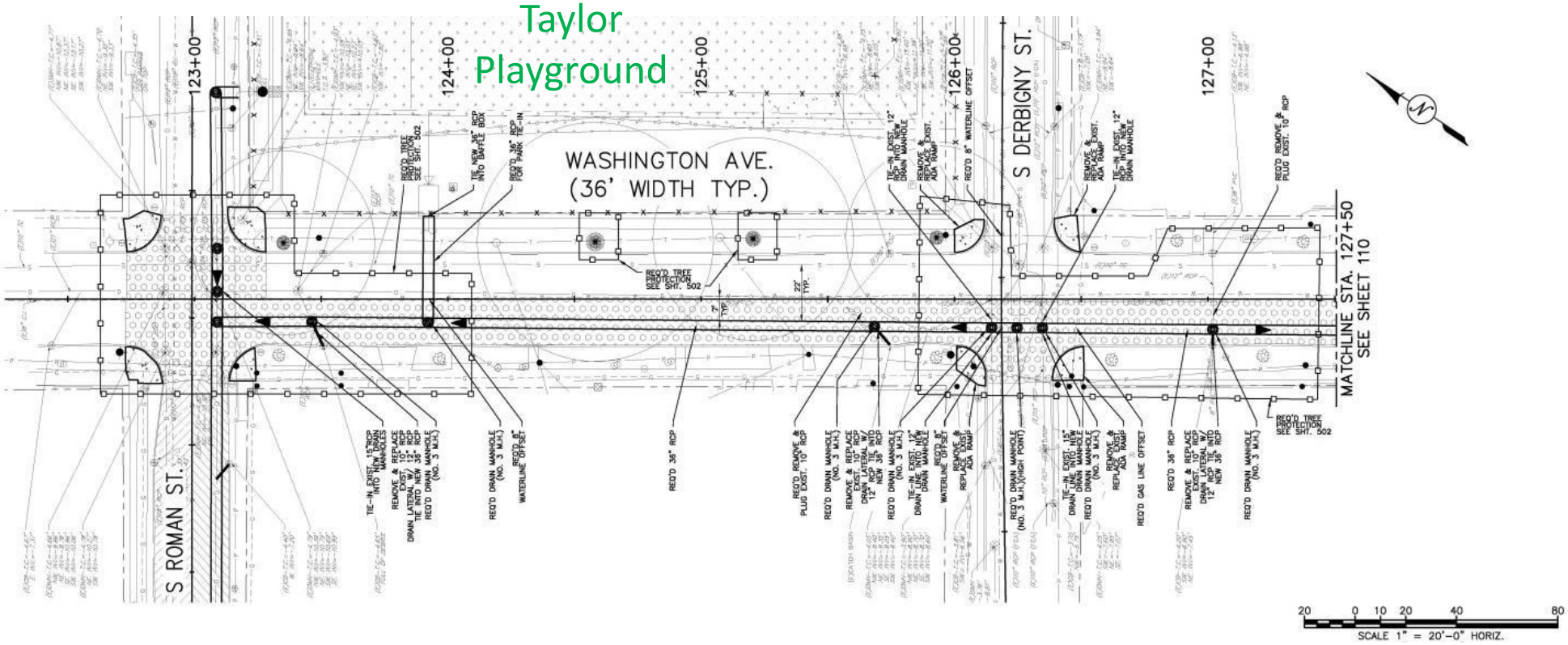
Stormwater Park Association Pipe Upgrades



- Taylor Playground
  - S. Roman Street
  - Washington Avenue
  - S. Derbigny Street

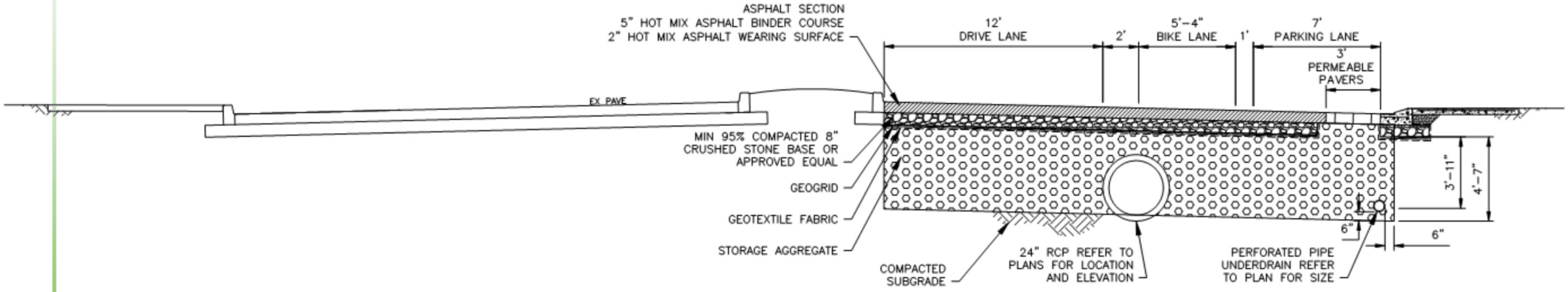
- Annunciation Park
  - Annunciation Street
  - Race Street
  - St. Thomas Street
  - Orange Street

Pipe Installations and Upgrades



Annunciation Street (at Annunciation Park)

- Full width subsurface storage
- Permeable Pavers act as a continuous inlet along gutter
- Geotextile will surround most of the storage area to protect structures and roadway



TYPICAL ASPHALT ALTERNATE ROADWAY SECTION
(ANNUNCIATION STREET AT RACE STREET)
SCALE: NTS

Historic Impact Issues

- Historic Buried Streetcar Lines
- Buried Cobblestones
- Historic Neighborhoods
  - Central City Historic District
  - Garden District
  - Lower Garden District
  - Irish Channel Area Architectural District

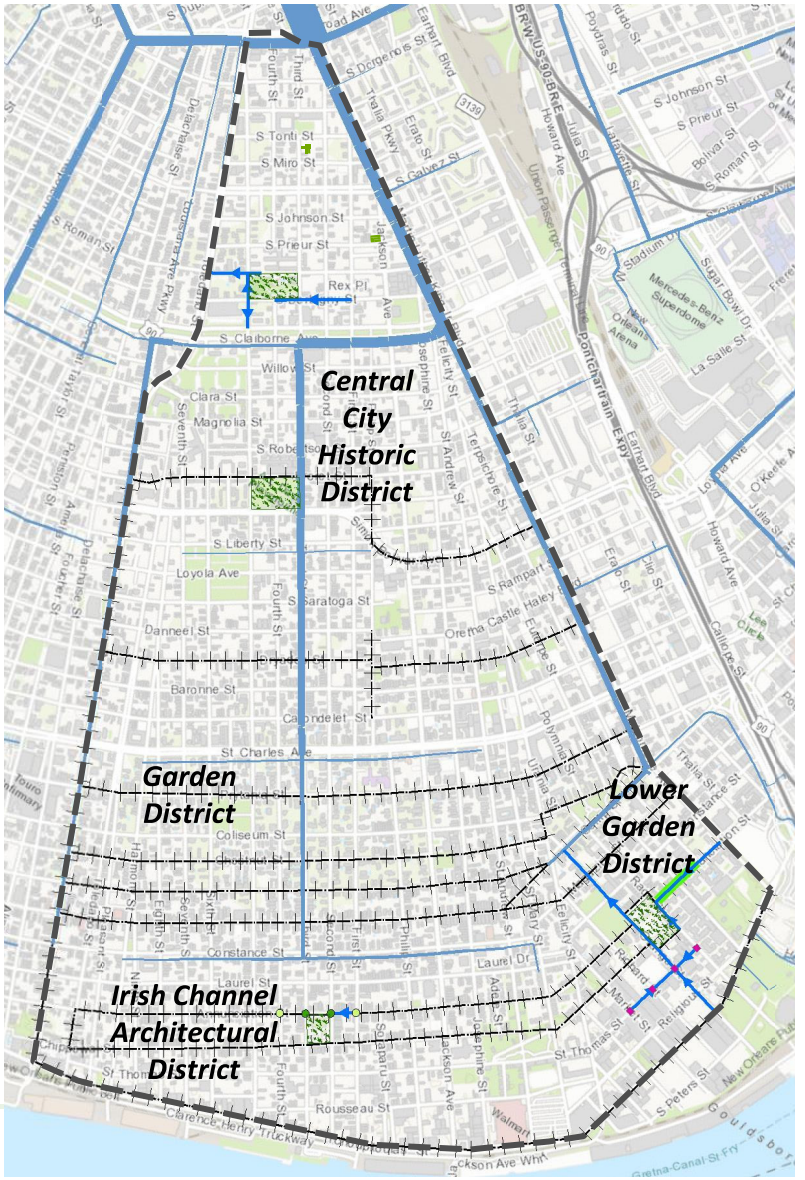


Figure: Historic Street Car Locations

Construction
Probable Costs and Challenges

Probable Construction Costs – Phase 1

Stormwater Lots:	$195,684	($6.02 per CF)
Stormwater Parks:	$13,327,804	($14.68 per CF)
Green Intersections:	$1,322,798	($97.77 per CF)
Drainage Pipe Upgrades:	$10,997,290	($1,070 per LF)
Total:	$25,843,576	

Design & Construction Challenges

- Tight construction site in various neighborhoods
- Dense underground utilities
- Construction close to residences
- Periodic road closure
- Conflict with historic elements
- Festivals & events in parks during potential construction period

Anticipated Project Benefits

Anticipated Benefits – Both Phases

- Reduced flooding risk across all modeled storm events
- Improved water quality discharged from the area
- Reduced imperviousness cover

2-Year Storm

Legend

- Project Area
- Stormwater Lots
- Stormwater Parks

Intersection Interventions Elements

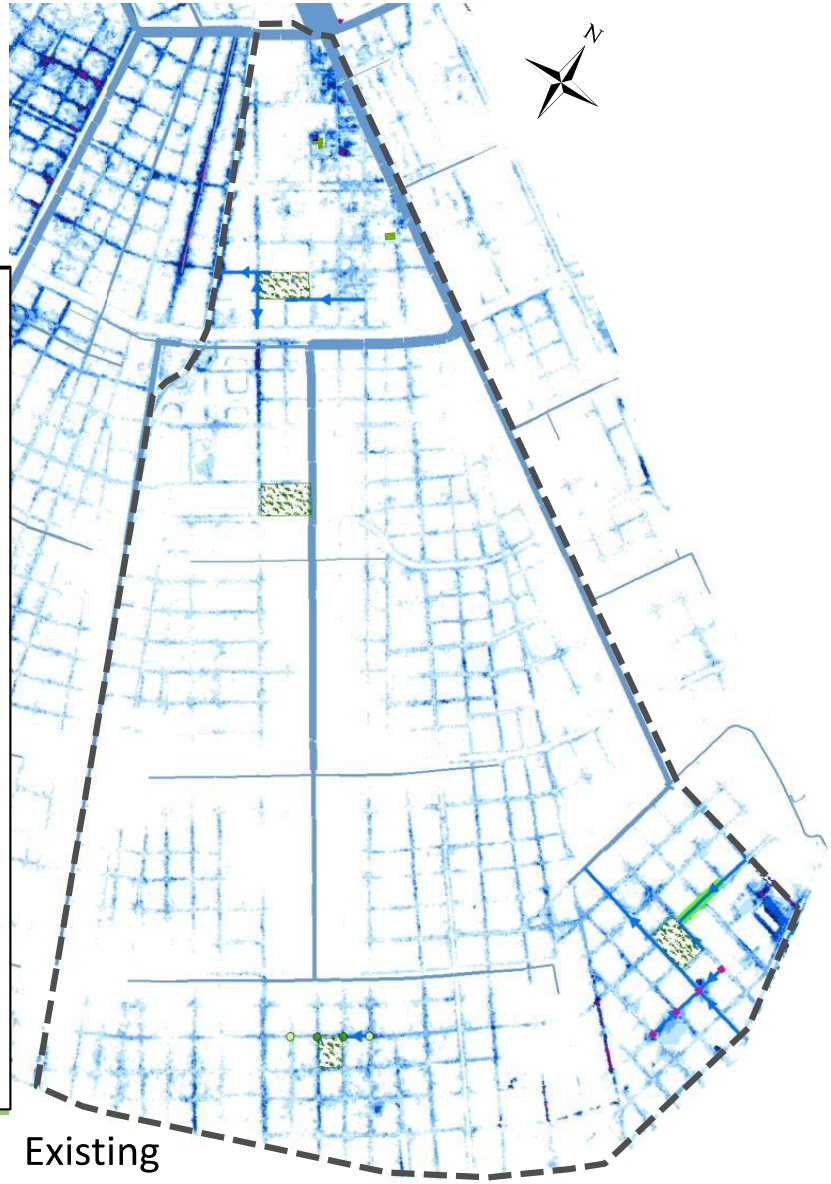
- 4 CSB, 2 CW
- 4 CSB, 4 CW
- Crosswalks Only
- Pipe Upgrades

Pervious Pavement

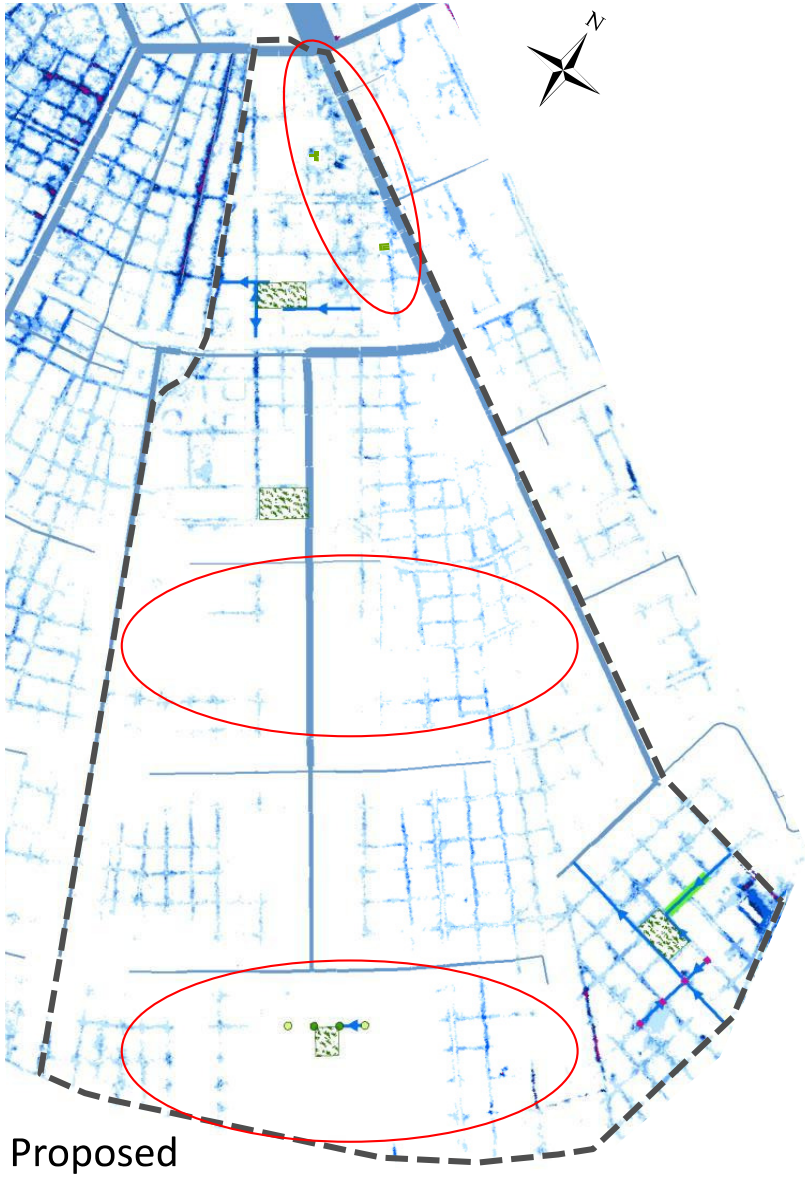
- Pervious Pavement

Flooding (2-Yr Imp) Depth (Ft)

- < 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- > 2



Existing



Proposed

5-Year Storm

Legend

- Project Area
- Stormwater Lots
- Stormwater Parks

Intersection Interventions Elements

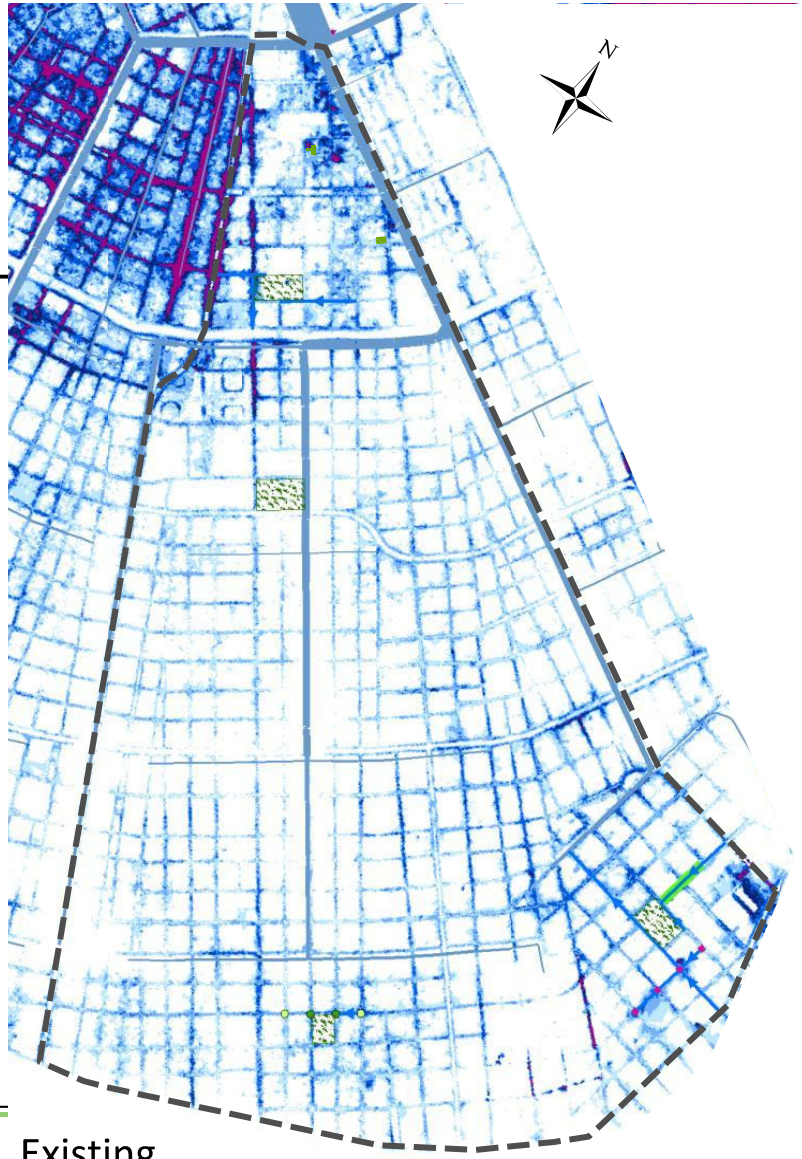
- 4 CSB, 2 CW
- 4 CSB, 4 CW
- Crosswalks Only
- Pipe Upgrades

Pervious Pavement

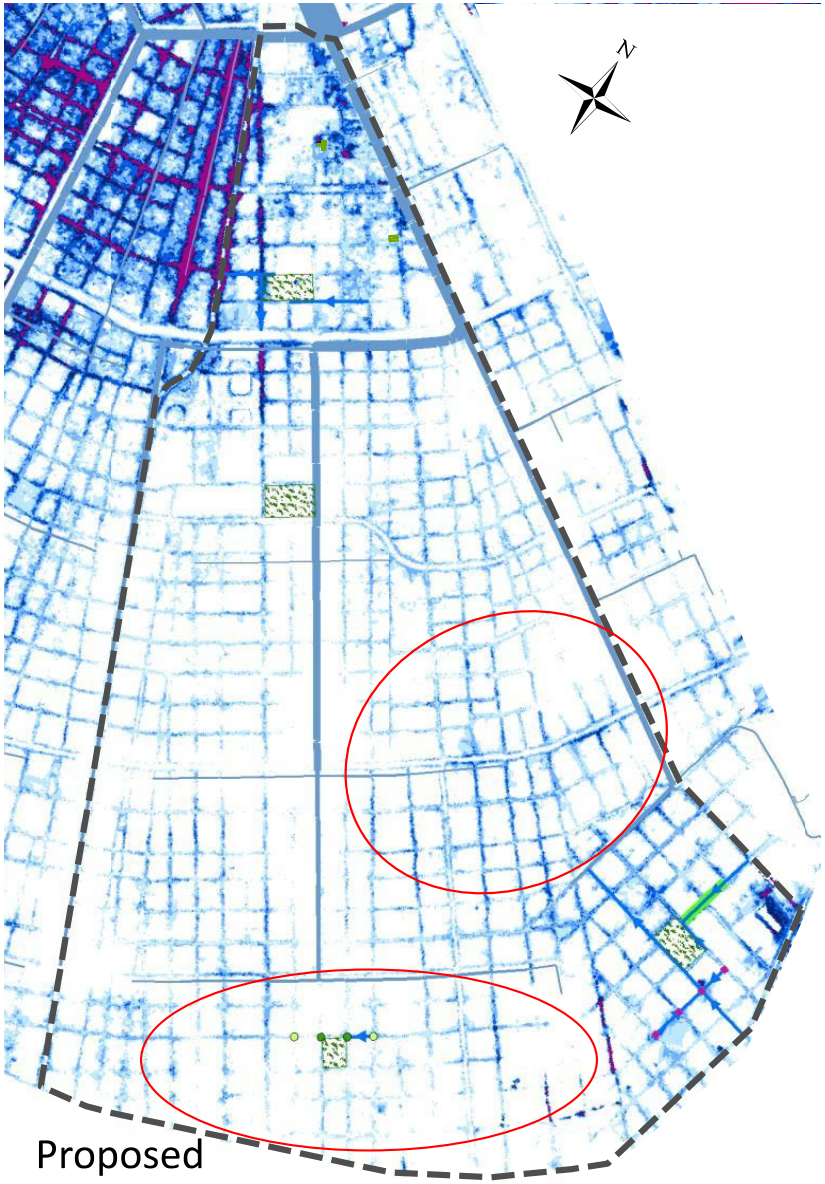
- Pervious Pavement

Flooding (5-Year) Depth (Ft)

- < 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- > 2



Existing



Proposed

Operations & Maintenance

Recommended Maintenance

- Modular Tank
  - Life Expectancy: 50 years
  - Pre-Treatment baffle box
  - Regular inspection and removal of sediment using vacuum truck
- Regularly remove trash and onsite debris from stormwater lots
- Regular weeding and mowing of lots and parks
- Visual inspection for damage and other blockages on inlets
- Refer PDR Chapter 6 for detailed maintenance guidance

Questions/Discussion