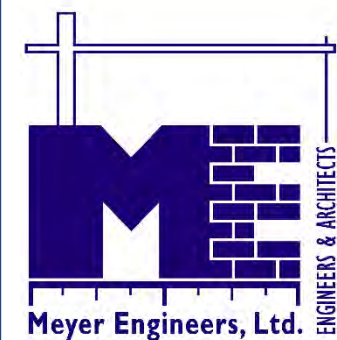




Oak Park

Stormwater Management & Flood Mitigation Project



AGENDA

PROJECT OVERVIEW

EXISTING CONDITIONS

30% DESIGN

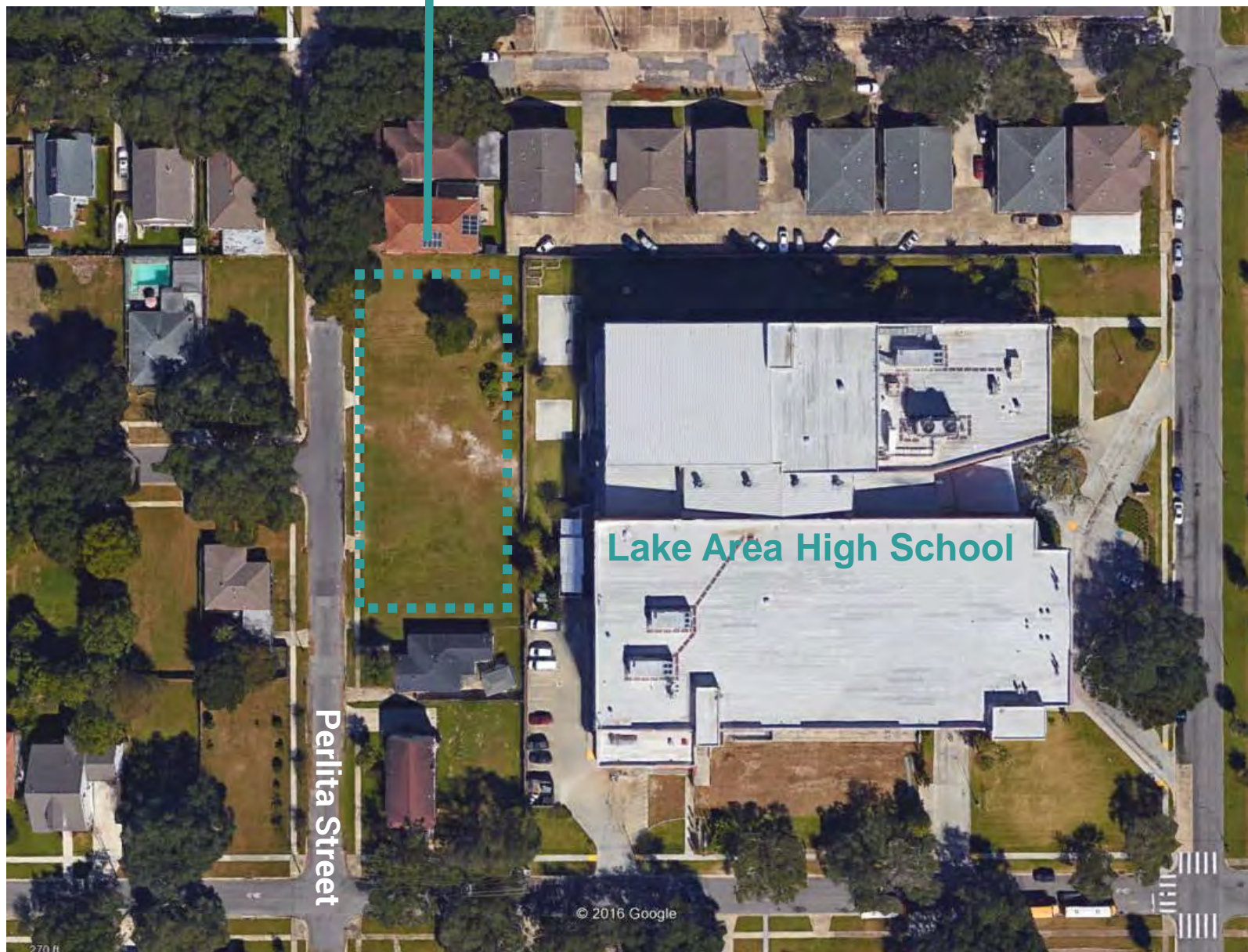
PROJECT BENEFITS

NEXT STEPS

Q&A

PROJECT OVERVIEW

PROJECT OVERVIEW: LOCATION, PURPOSE, TIMELINE



Transforms five vacant NORA-owned parcels on Perlita Street, and a portion of the adjacent public right-of-way (ROW) into a **stormwater management feature that reduces flood risk**

Location: Mid-block on the east side of Perlita Street, adjacent to Lake Area H.S., with Aviators Street to the north and Madrid Street / Burbank Drive to the south

Project Timeline: Finalized **30% design**, currently in **60% design**

- September 2018 – 90% design
- October 2018 – Design Completion
- 2018-2019 – Construction

Project Site : 27,720 square feet or .64 acres

PROJECT CONTEXT: RELATED PROJECTS AND FUNDING SOURCE



- The Oak Park project is part of the City's work to create the Gentilly Resilience District. Other projects the City is undertaking in Gentilly can be seen on the map to the left. Oak Park is #9 on the map.
- The Oak Park project is funded by FEMA's Hazard Mitigation Grant Program (HMGP). This program funds projects that reduce flooding and does not emphasize other related benefits.
 - This means that in order to make sure benefits are greater than costs, the Oak Park project has to manage enough water to keep nearby houses and cars from flooding.

Source: New Orleans Office of Resilience and Sustainability

EXISTING CONDITIONS

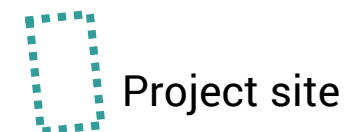
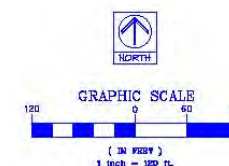
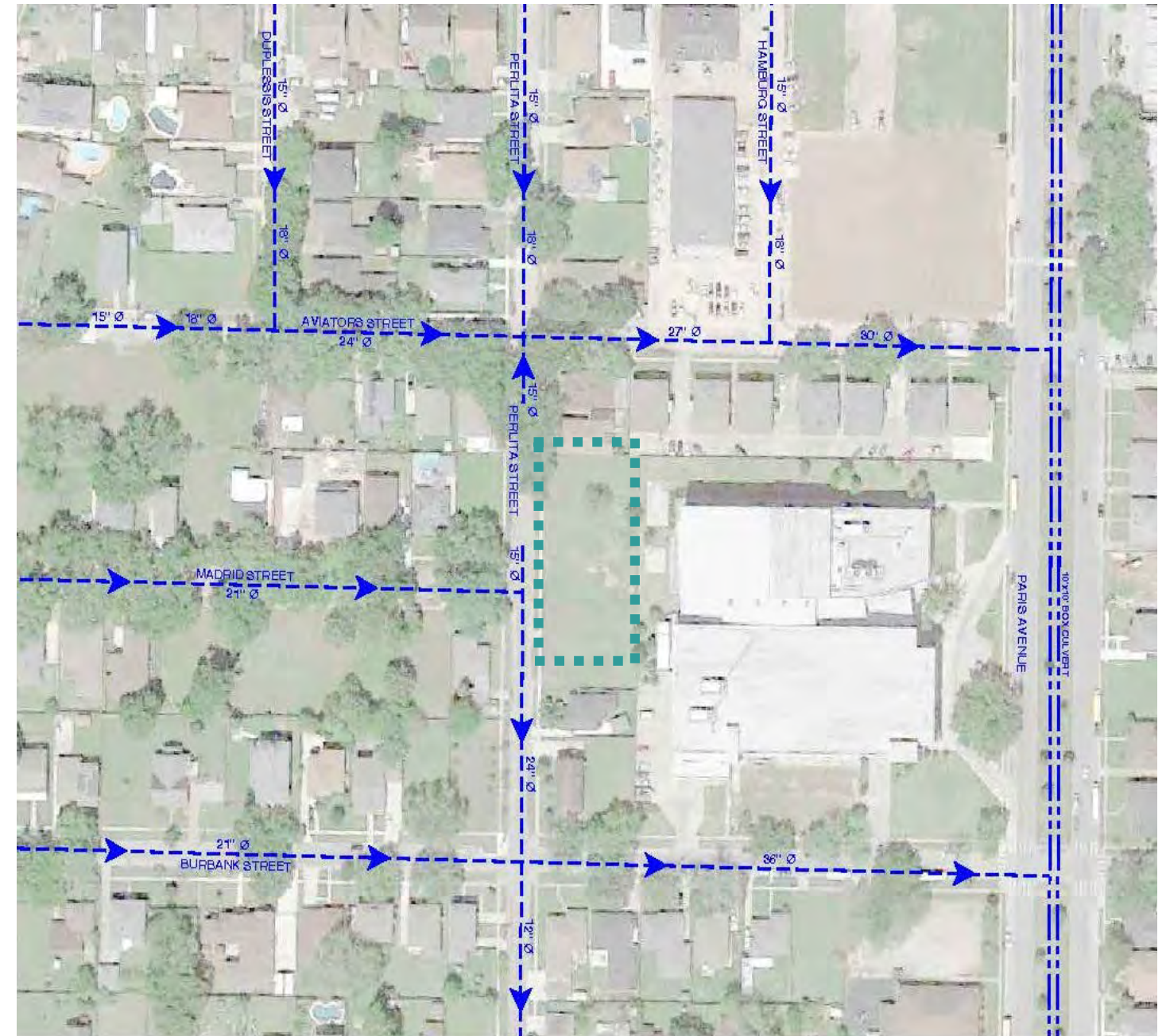
EXISTING SITE



Five contiguous vacant parcels behind Lake Area High School

EXISTING DRAINAGE

- Existing drainage system consists of curb and gutter on the street with curb inlets and subsurface drain lines ranging from 15" to 36" in diameter. The area drains toward a **large culvert under Paris Avenue**.
- Existing system can only accommodate the **100% annual chance (1 year) flood**
 - Normal rainfall events will overflow the stormwater system and flood the streets
 - Goal is to decrease flooding during a much more severe 10-year, 24-hour storm event (8.5 inches of rain)



Existing Drainage

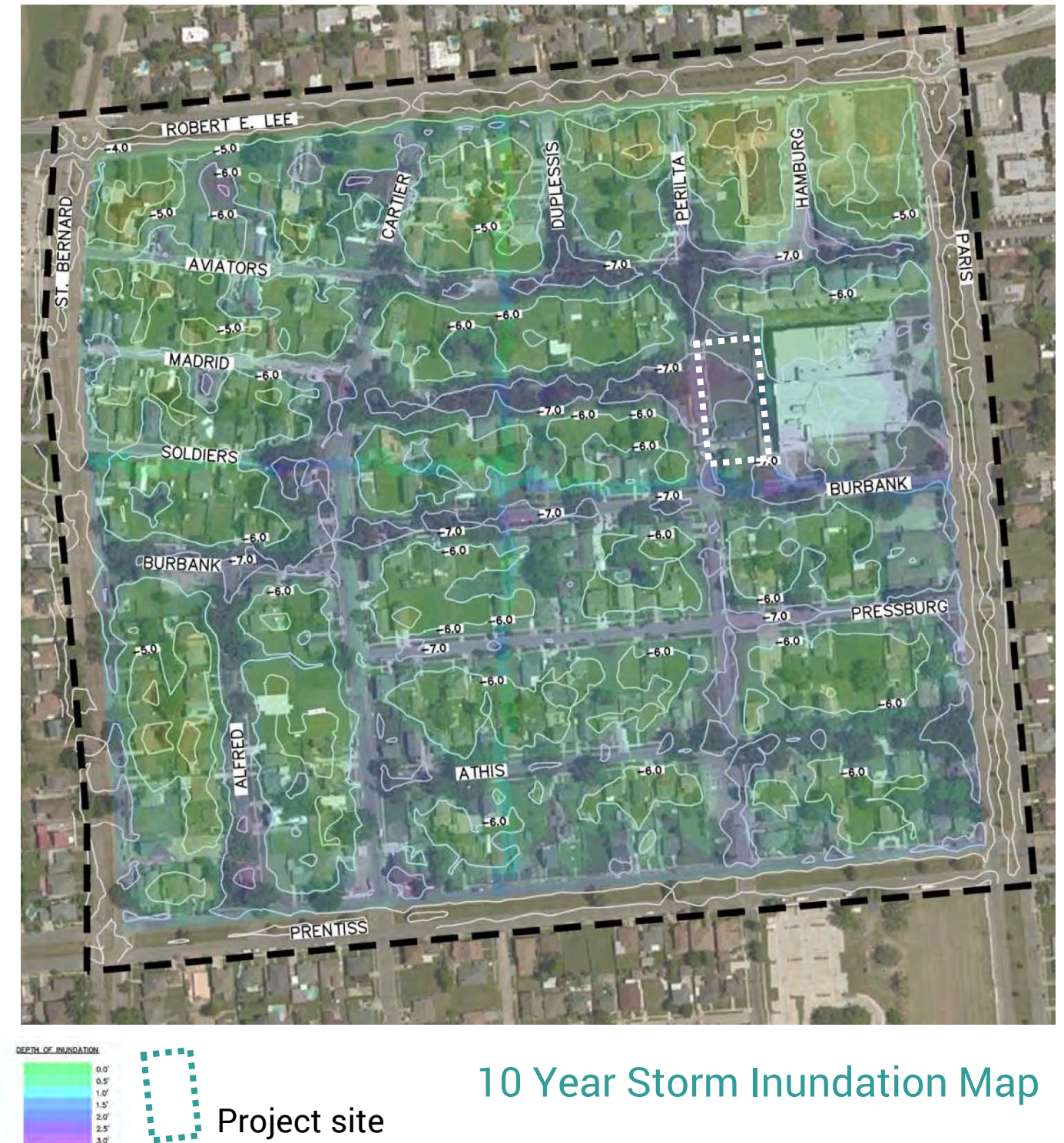
EXISTING FLOODING CHALLENGES

History of Flooding

- Neighborhood was heavily affected by flooding in 1995, 1998, and 2005 (Hurricane Katrina)

Modeled Flooding

- The team modeled street flooding under the existing conditions for a 2 year, 5 year, and 10 year storm
- **2 year Storm Conditions:** Flooding encroaches past the street onto surrounding properties at Burbank Street and Cartier Street intersection and near Madrid Street
- **10 year Storm Conditions:** Entire street in the benefit area experiences flooding that encroaches onto properties
 - Lake Area High School is particularly affected, compromising access to the school



10 Year Storm Inundation Map

30% DESIGN

PREFERRED 30% DESIGN OPTION



Project team tested several design scenarios and settled on the Preferred Option that reduced flooding most.

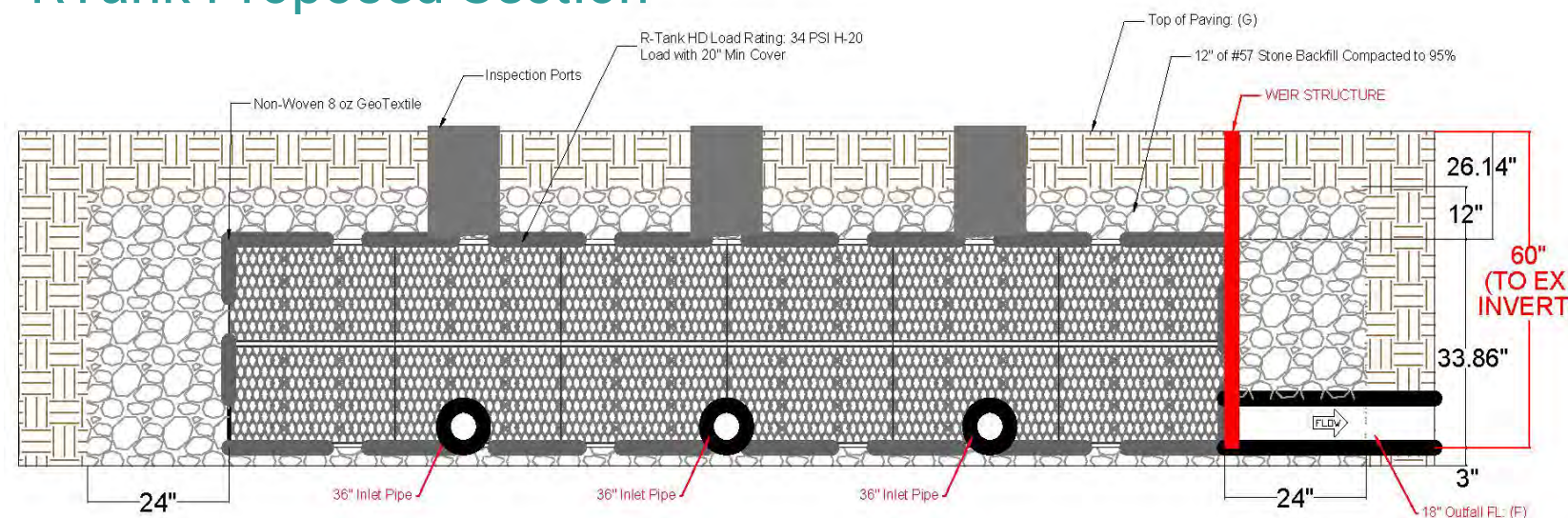
- **RTank:** Large, permeable storage tank
 - A large storage tank below the NORA lots stores water and allows infiltration due to its permeable base and sides
 - The RTank will eventually drain into a new manhole on Aviators Street
- **Bioswale:** A bioswale in the roadway on Perlita Street will complement the RTank with additional water storage capacity and will provide visible surface infrastructure that allows educational opportunities related to green infrastructure.
- **Pervious Paving:** Pervious paving covers a one-way Perlita Street between Madrid and Aviators Street, adjacent to the bioswale

KEY DESIGN ELEMENT: RTANK SYSTEM

RTank Installation Image



RTank Proposed Section



- **RTank:** Large, permeable storage tank
- The RTank system is constructed using “Double Module” units, each measuring 15.75” wide x 28.15” long x 33.86” deep and having an individual storage volume of 8.24 CF.
- The 225’-2.40” x 95’-9.75” RTank system is composed of 7008 of these units giving it a total storage volume of **57,748 CF**.
- The RTank system is estimated to have a 40-year useful life by its manufacturer.

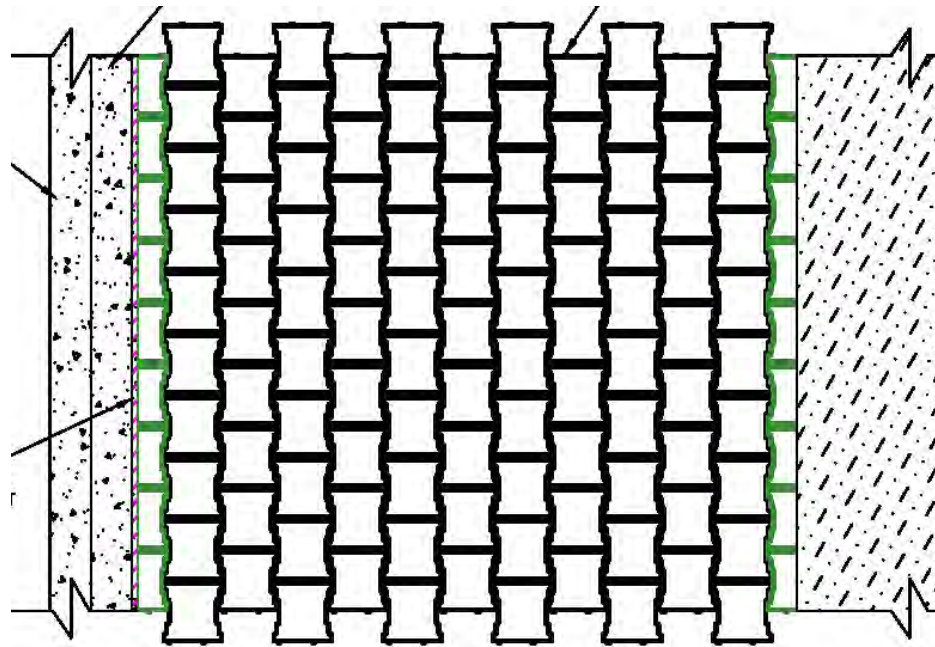
KEY DESIGN ELEMENT: PERVIOUS PAVING

PaveDrain Installation Image



- **PaveDrain:** Interlocking pervious pavement blocks installed above geogrid and aggregate form a one-way travel lane of Perlita Street between Madrid and Aviators Streets
- High infiltration rate due to interlocking design that is not easily clogged
- Estimated storage capacity of **1,283 CF**

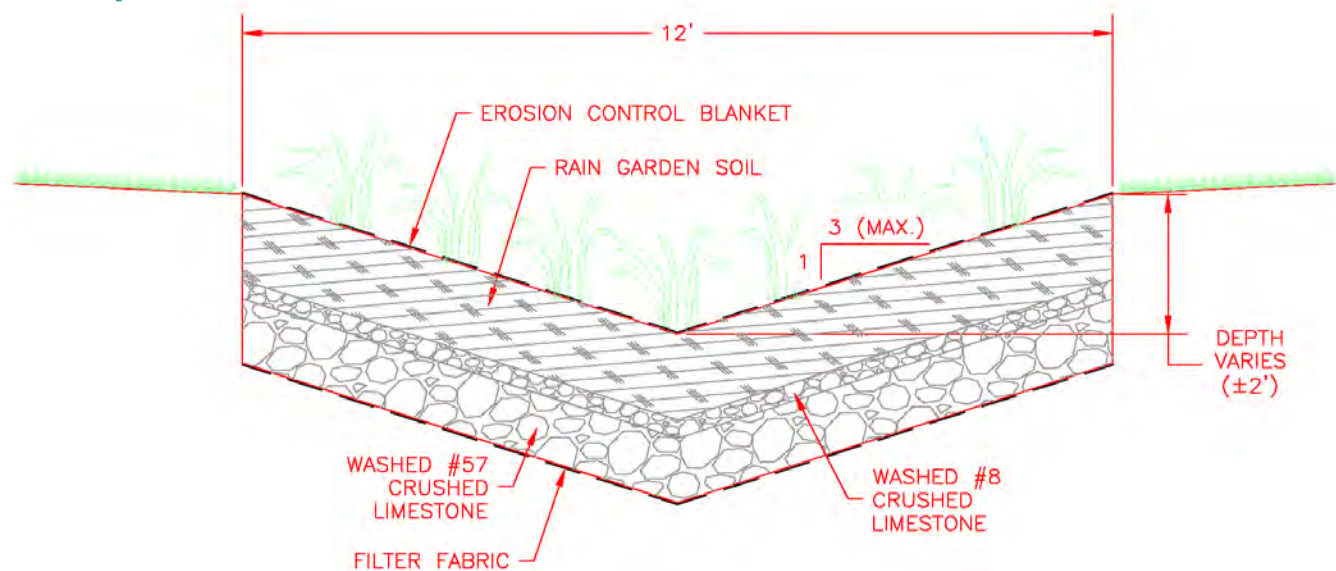
PaveDrain Standard Detail



Source: PaveDrain

KEY DESIGN ELEMENT: BIOSWALE

Proposed Bioswale Section



Bioswale Example



- **Bioswale:** Green infrastructure element that incorporates plantings, bioretention soils, and an aggregate base to improve water quality and provide storage during storm events.
- A 12' wide bioswale takes up a former travel lane on Perlita Street between Madrid and Aviators Streets, adjacent to the proposed pervious paving.
- The proposed bioswale has an estimated total storage volume of **4,122 CF**.
- The bioswale can be planted with turf for ease of maintenance, or with native plants as shown in the example image at left.

PROJECT BENEFITS

FLOODING REDUCTION: 10 YEAR STORM

- The **Benefit Area** of the project includes 209 structures: among these are single-family homes, Lake Area High School, and commercial properties along Robert E. Lee Boulevard.
- Project reduces average flooding in Benefit Area by **5 ¾ inches**: Under existing conditions, the average flood depth is **1.14 feet**. The Preferred Option reduces flooding in the benefit area **to 0.66 feet**.
- Project reduces average flood duration by **1 hour 20 min**: Average flood duration is reduced by over an hour, so streets are safe to drive sooner.



	Minor Reduction: 0 - 0.29 ft reduction (0" - 3.5")
	Substantive Reduction: 0.3 - 0.39 ft reduction (3.6" - 4.7")
	Significant Reduction: 0.4 - 0.59 ft reduction (4.8" - 7.1")
	Highly Significant Reduction: 0.6 - 1 ft reduction (7.2" - 12")

FLOODING REDUCTION BY BLOCK

Block	Street	Bounding Street 1	Bounding Street 2	Preferred Option		Preferred Option		Preferred Option	
				2-year, 24-hour Storm		5-year, 24-hour Storm		10-year, 24-hour Storm	
				Reduction in Flood Depth (ft)	Reduction in Duration of Water in Street (hr)	Reduction in Flood Depth (ft)	Reduction in Duration of Water in Street (hr)	Reduction in Flood Depth (ft)	Reduction in Duration of Water in Street (hr)
1300-1328	Aviators	St Bernard	~	0	0.48	0.02	0.48	0.02	0.48
1330-1364	Aviators	~	~	0	0.00	0	0.48	0.1	0.48
1370-1399	Aviators	~	Cartier	0	0.00	0.04	0.48	0.2	0.48
1400	Aviators	Cartier	~	0	0.48	0.24	0.96	0.44	1.44
1410-1424	Aviators	~	~	0.12	1.92	0.48	2.40	0.68	2.40
1432-1448	Aviators	~	Duplessis	0.38	2.40	0.6	2.88	0.78	2.88
1456-1499	Aviators	Duplessis	Perlita	0.68	2.88	0.92	2.88	0.94	3.36
1500-1532	Aviators	Perlita	Hamburg	0.68	2.88	1	2.88	0.98	2.88
1540-1599	Aviators	Hamburg	Paris	0.24	1.44	0.54	1.92	0.78	1.92
1300-1372	Madrid	St Bernard	~	0.02	0.48	0.04	0.96	0.16	0.96
1380-1399	Madrid	~	Cartier	0	0.48	0.14	0.96	0.34	0.96
1400	Madrid	Cartier	~	0.06	0.48	0.28	0.48	0.46	0.96
1410-1434	Madrid	~	~	0.18	0.96	0.42	1.44	0.58	1.44
1442-1480	Madrid	~	~	0.32	0.96	0.58	1.44	0.76	1.44
1488-1499	Madrid	~	Perlita	0.76	2.40	1.08	2.40	0.86	2.88
1300	Soldiers	St Bernard	~	0	0.48	0	0.48	0	0.48
1300-1352	Soldiers	~	~	0	0.00	0	0.48	0.06	0.48
1360-1399	Soldiers	~	Cartier	0	0.48	0.06	0.96	0.24	0.96
1400-1428	Burbank	Cartier	~	0.04	1.44	0.22	1.44	0.42	1.92
1434-1472	Burbank	~	~	0.08	1.44	0.32	1.92	0.5	2.40
1480-1499	Burbank	~	Perlita	0.2	1.92	0.44	1.92	0.6	2.40
1500-1526	Burbank	Perlita	~	0.58	2.88	0.5	2.40	0.62	2.40
1534-1599	Burbank	~	Paris	0.44	1.92	0.46	1.92	0.58	1.92
1400-1436	Pressburg	Cartier	~	0	0.48	0.16	0.48	0.38	0.48
1444-1476	Pressburg	~	~	0	0.48	0.28	0.48	0.48	0.48
1484-1499	Pressburg	~	Perlita	0.1	0.48	0.42	0.96	0.56	0.48
1500	Pressburg	Perlita	Paris	0.2	0.48	0.46	0.96	0.56	0.48
1400	Athis	Cartier	Perlita	0.08	0.48	0.22	0.48	0.4	0.00
1500	Athis	Perlita	Paris	0.12	0.48	0.46	0.96	0.56	0.96
1400-1440	Prentiss	Cartier	~	0	0.00	0.02	0.96	0.18	0.96
1446-1499	Prentiss	~	Perlita	0	0.00	0.18	0.96	0.46	0.96
1500	Prentiss	Perlita	Paris	0	0.00	0.2	0.96	0.6	0.96
				0.17	0.99	0.34	1.31	0.48	1.37

ADDITIONAL PROJECT BENEFITS

1. Reduce repetitive losses: A repetitive loss multifamily property on Aviators Street will **see one foot of reduction** in street flooding.
2. Reduce losses at other properties: **94 properties in the Benefit Area** are estimated to be less than 0.5 feet above grade and may benefit.
3. Increase access to the neighborhood, services, and jobs for residents by reducing impassable streets: The reduction of flooding depth and duration will allow residents the ability to get to work and access services.
4. Increase access to Lake Area High School: Flooding around the school will decrease by nearly 10 inches, allowing increased access to the school for teachers and students.



Multifamily repetitive loss property on Aviators

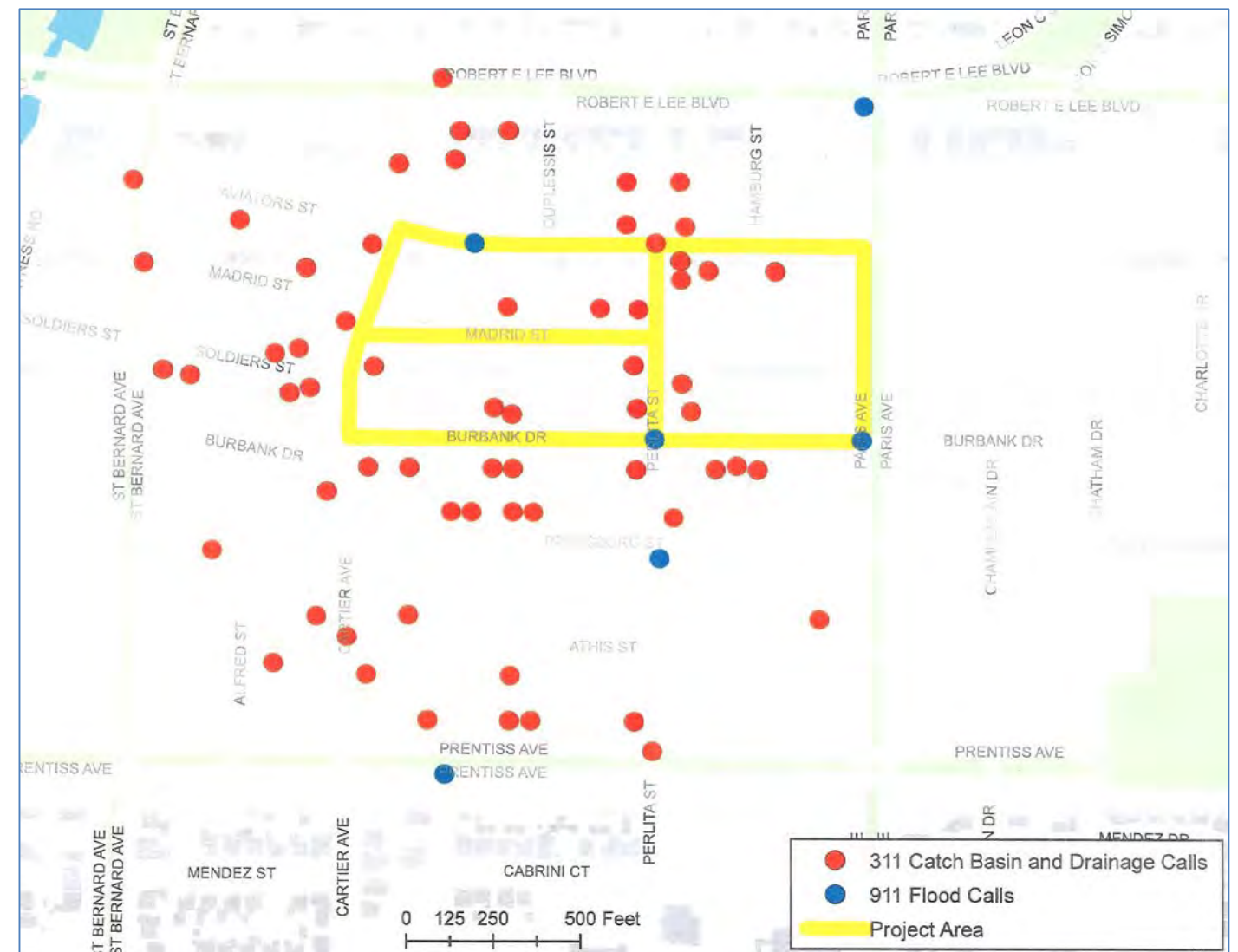
ADDITIONAL PROJECT BENEFITS

5. **Reduce car flooding losses:** With the preferred option **84 cars** are estimated to be saved from flooding; a conservative estimate of \$5,000 value per car means **avoiding approximately \$420,000** in damages.

6. **Reduce 311 and 911 calls for service:** Six 911 flood related calls were recorded in the first nine months of 2017 alone; decreased flooding will help residents feel safer in their neighborhood.

7. **Provide educational benefits:** The surface bioswale will provide opportunities for education related to green infrastructure, flooding, and local habitat and ecology.

8. **Provide ecosystem services:** The project will enhance water quality by filtering water, and provide habitat for pollinators with native plants.



311 and 911 calls related to flooding and drainage

BENEFIT-COST RATIO

Based on the flooding reductions and other benefits enumerated in the 30% design report, the project achieved a FEMA benefit-cost ratio of 1.4.

NEXT STEPS

NEXT STEPS

- Re-do H/H modeling with new, calibrated model provided by City
- Continue toward 60% design.
- Potential alterations to green infrastructure components in order to coordinate with adjacent FEMA-funded roadway replacement work.



THANK YOU | QUESTIONS