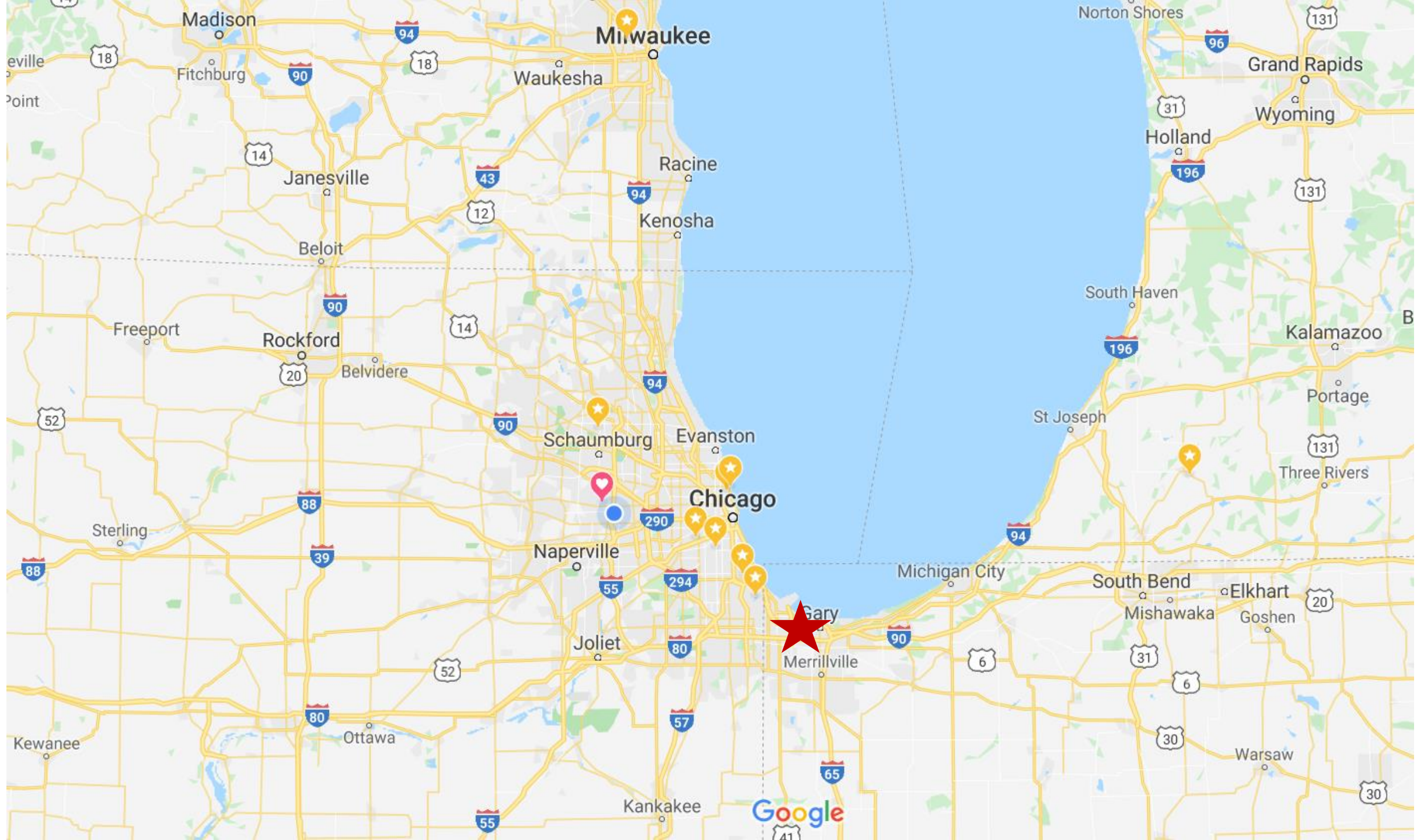


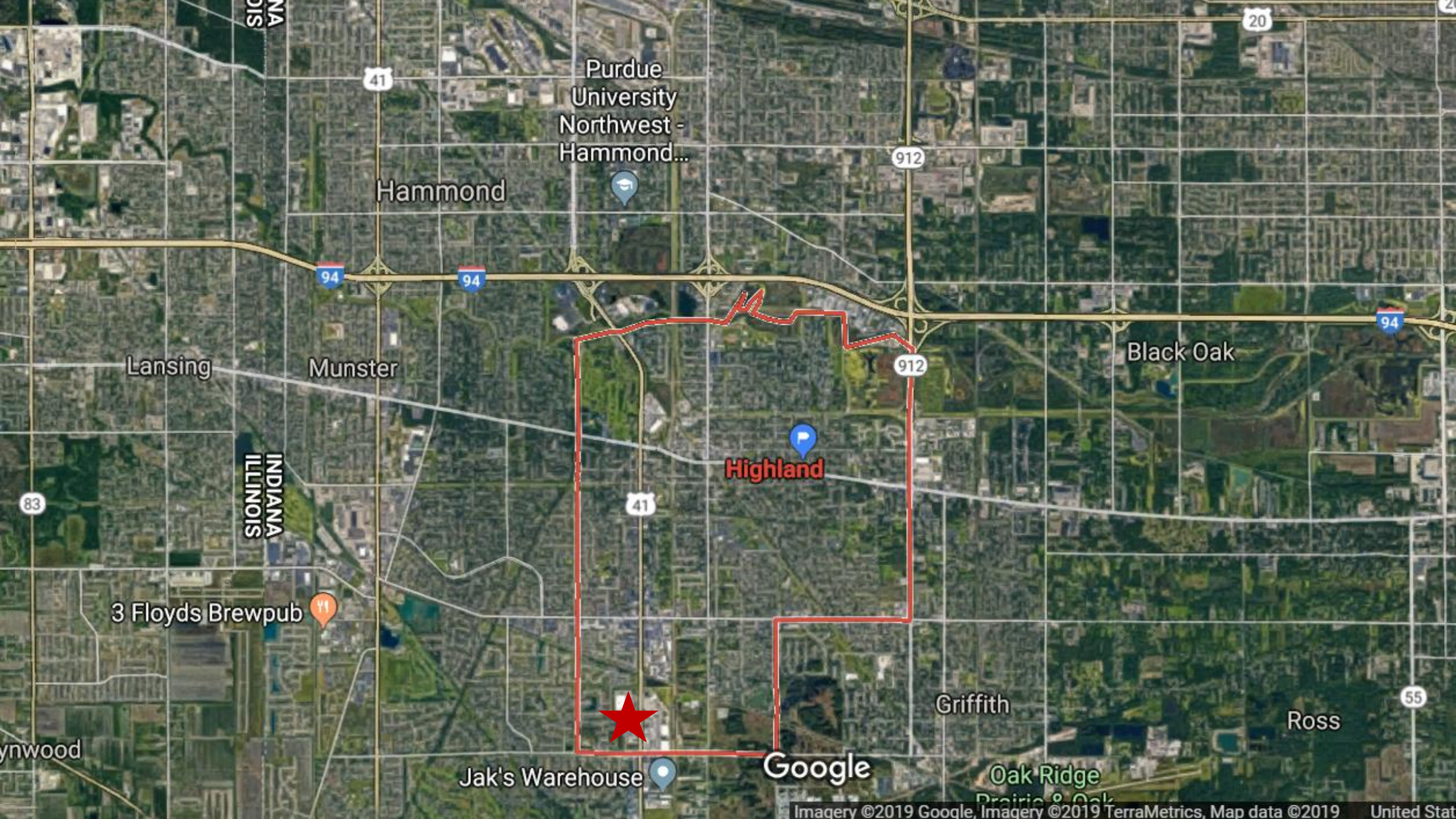
Cardinal Campus Planned Development

Highland, Indiana

ECT – Chicago/Lombard

ECT Environmental
Consulting &
Technology, Inc.





Jak's Warehouse

Google

An aerial photograph of a large, rectangular property outlined by a yellow dashed line. The property is densely wooded with green trees and has a few small buildings and a swimming pool visible within. The property is bordered by a residential neighborhood on the left, a commercial area with large buildings on the right, and a multi-lane road at the bottom. The Google logo is visible at the bottom center.

Google

Project Number:161211

Client Name:GG Indiana Holdings

Boring Number: B1

Page: 1 of 1

Date: 10/28/16

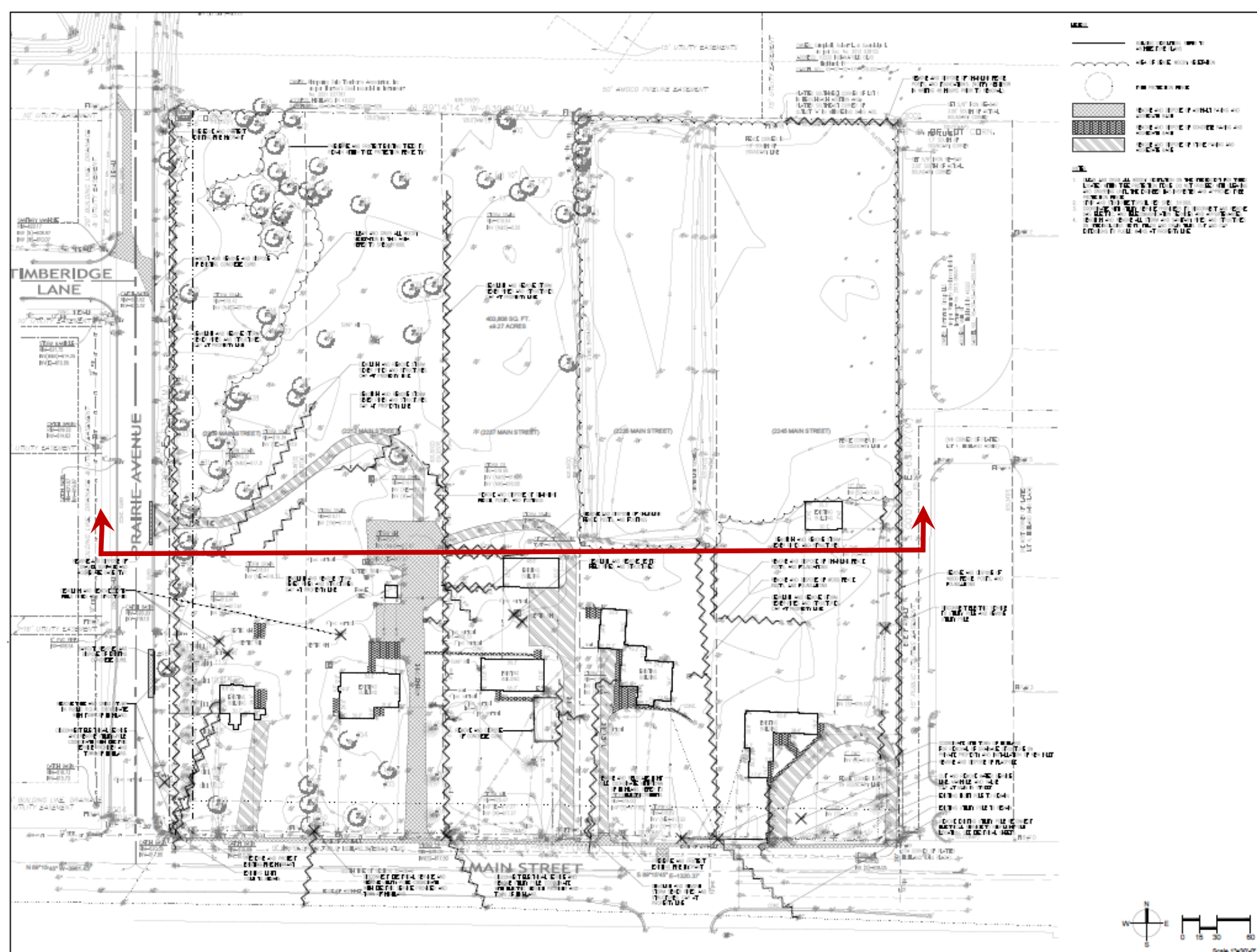
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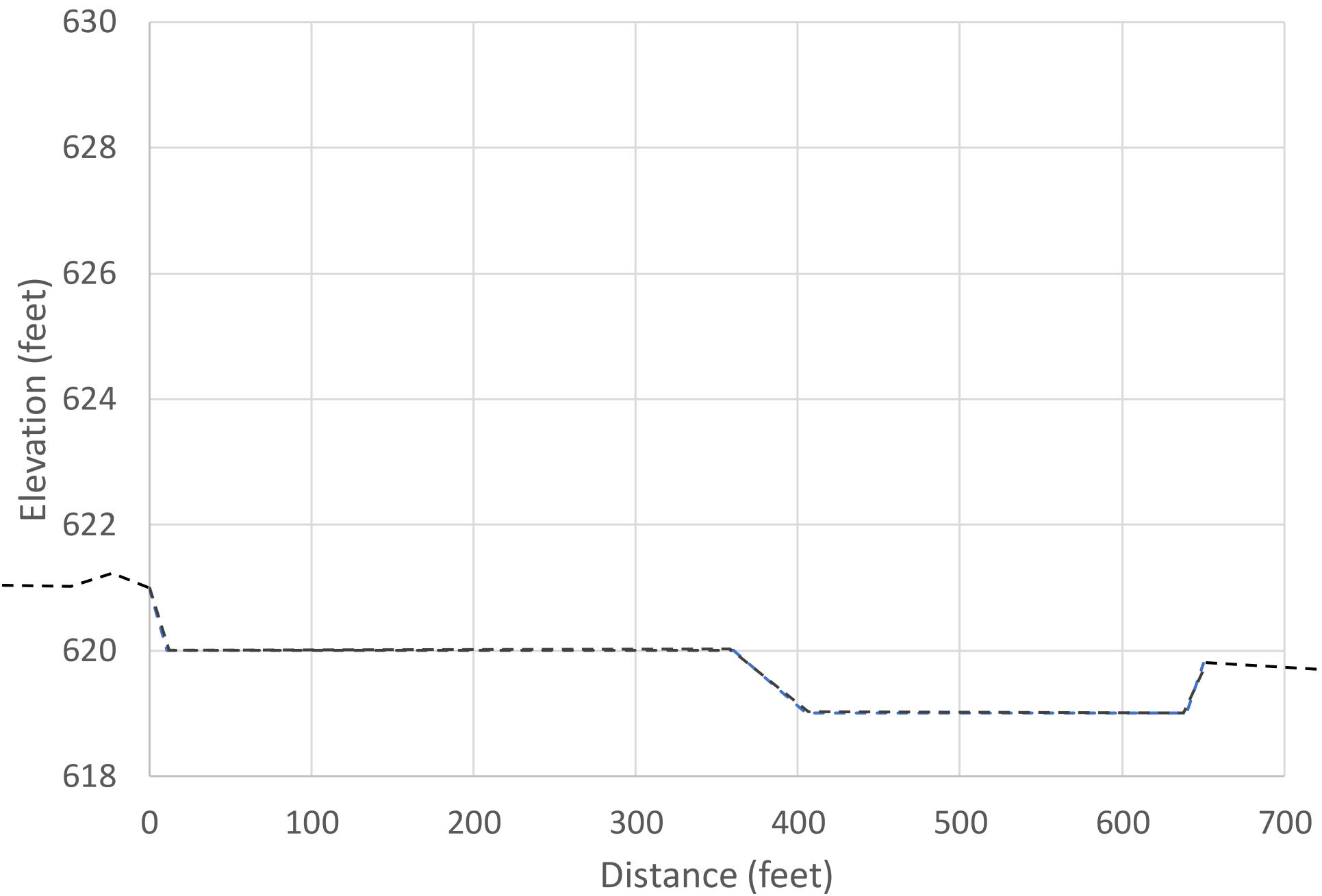
Finish:

Address: NEC Main St. & Prairie Ave., Highland, IN

Boring Location: See Map

Geotechnical Sample Number	Sample Type	Sample Recovery (Inches)	Depth (Feet)	Detailed Soil and Rock Description:	"N" Blow Count	"Qp" Calibrated Penetrometer (TSF)	"Qu" Unconfined Compression (TSF)	"w _c " Moisture Content (%)	"γ _d " Dry Density (PCF)	Compaction (%)	PID (PPM)	Remarks: Blow Counts
				Surface Elevation								
1	AS	--	0.0'	2" Topsoil	--	--	--	6	--	--	--	--
2	SS	18"	2.0'	Medium Dense Brown to Gray Sand, Trace Silt and Gravel [SP-SM]	11	--	--	12	--	--	--	3 4 7
3	SS	18"	4.0'		13	3.5	3.2	16	111	--	--	6 6 7
4	SS	22"	6.0'	Brown/Gray/Black Silty Clay, Trace Sand and Gravel	42	4.5+	7.1	14	--	--	--	11 18 24
5	SS	24"	8.0'	Very Tough to Hard Gray Silty Clay, Trace Sand and Gravel [CL]	24	--	--	9	--	--	--	10 12 12
			10.0'									
			12.0'									
			14.0'	Gray Coarsely Sand, Trace Silt [SC]								







MAP SCALE 1" = 500'

0 500 1000 FEET

0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0138E

FIRM

FLOOD INSURANCE RATE MAP

LAKE COUNTY, INDIANA

AND INCORPORATED AREAS

PANEL 138 OF 480

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DYER, TOWN OF	180128	0138	E
HIGHLAND, TOWN OF	185176	0138	E
MUNSTER, TOWN OF	180139	0138	E
SCHERERVILLE, TOWN OF	180142	0138	E

Notice to User: The Map Numbers shown below should be used when placing map orders; the Community Numbers shown above should be used on insurance applications for the subject community.

MAP NUMBER

18089C0138E

EFFECTIVE DATE

JANUARY 18, 2012

Federal Emergency Management Agency

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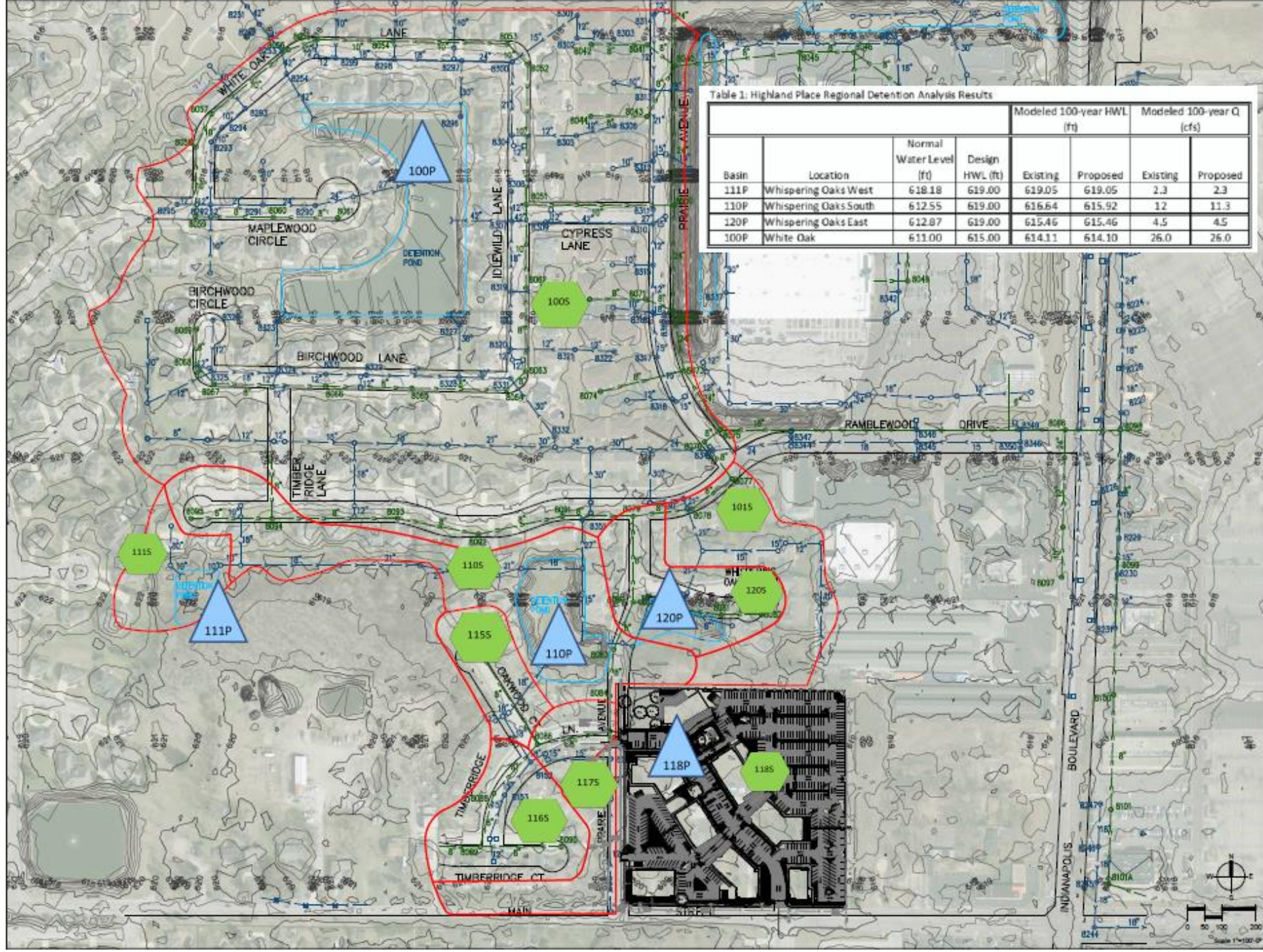


Table 1: Highland Place Regional Detention Analysis Results

Basin	Location	Normal Water Level (ft)	Design HWL (ft)	Modeled 100-year HWL (ft)		Modeled 100-year Q (cfs)	
				Existing	Proposed	Existing	Proposed
111P	Whispering Oaks West	618.18	619.00	619.05	619.05	2.3	2.3
110P	Whispering Oaks South	612.55	619.00	616.64	615.92	12	11.3
120P	Whispering Oaks East	612.87	619.00	615.46	615.46	4.5	4.5
100P	White Oak	611.00	615.00	614.11	614.10	26.0	26.0

Landmark Engineering
 Consulting Engineers
 401 W. J. Center Road
 Lombard, Illinois 60148
 630.953.3000
 630.953.3001 Fax
 www.landmark-eng.com

Client:
 Highland Place PUD
 Address Line 1:
 Address Line 2:
 Address Line 3:
 Address Line 4:
 Address Line 5:

HIGHLAND PUD
Regional Stormwater Analysis

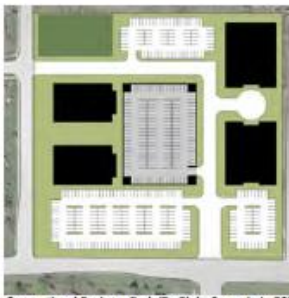
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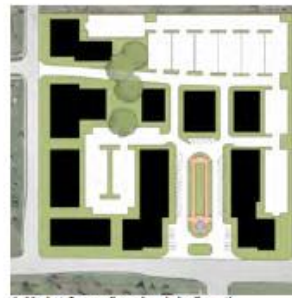
B-3 GENERAL BUSINESS DISTRICT WOULD ALLOW OVER 2 MILLION SQUARE FEET OF BUILDING (FAR 5)



Conventional Office Park Development (by-right scenario)



Conventional Business Park (By-Right Scenario in B3)



1. Market Square (based on Lake Forest)



2. Woodstock Square (based on Courthouse Square)



3. Veterinaire Square



4. Park & Plaza



5. Crescent Street



6. Water Street



7. Arbor Preserve



8. Arbor Preserve 2.0



9. Highland Square



10. Greet Lawn



11. Hotel Square



12. Highland Place



13A.



13B.



13C.



14A.



14B.



15A.



15B.

Testing Alternatives



TIMBERIDGE LN

PRAIRIE AVE

E 53RD / MAIN ST

CREEK DR

GARDENS

3 STORY
HOTEL

"FOUNTAIN
SQUARE"

2 STORY
OFFICE

2 STORY
OFFICE

PERMEABLE
PAVING

2 STORY
OFFICE

2 STORY
OFFICE

2 STORY
OFFICE

2 STORY
OFFICE

2 STORY
OFFICE

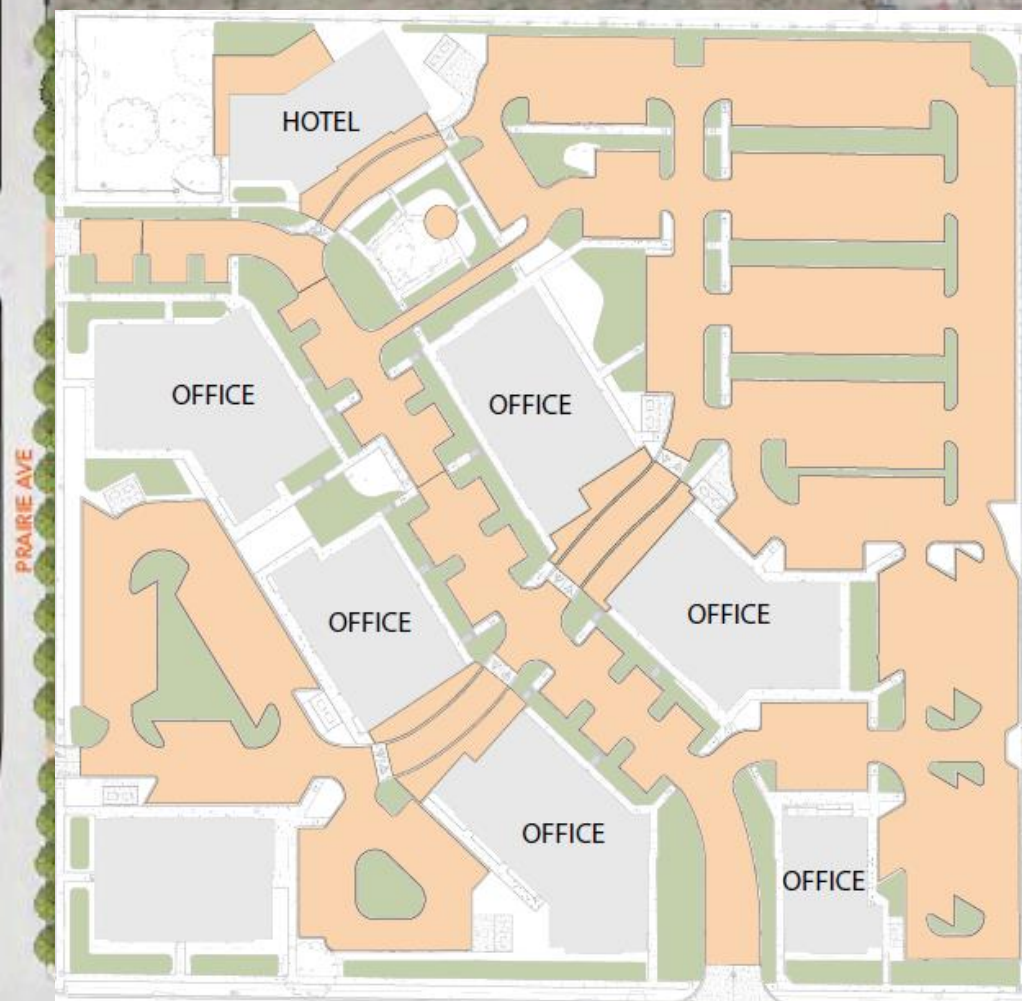
LEGEND



PERMEABLE PAVING



BIORETENTION AREAS



HOTEL

OFFICE

OFFICE

OFFICE

OFFICE

OFFICE

OFFICE

TIMBERIDGE LN

PRAIRIE AVE

E 53RD / MAIN ST

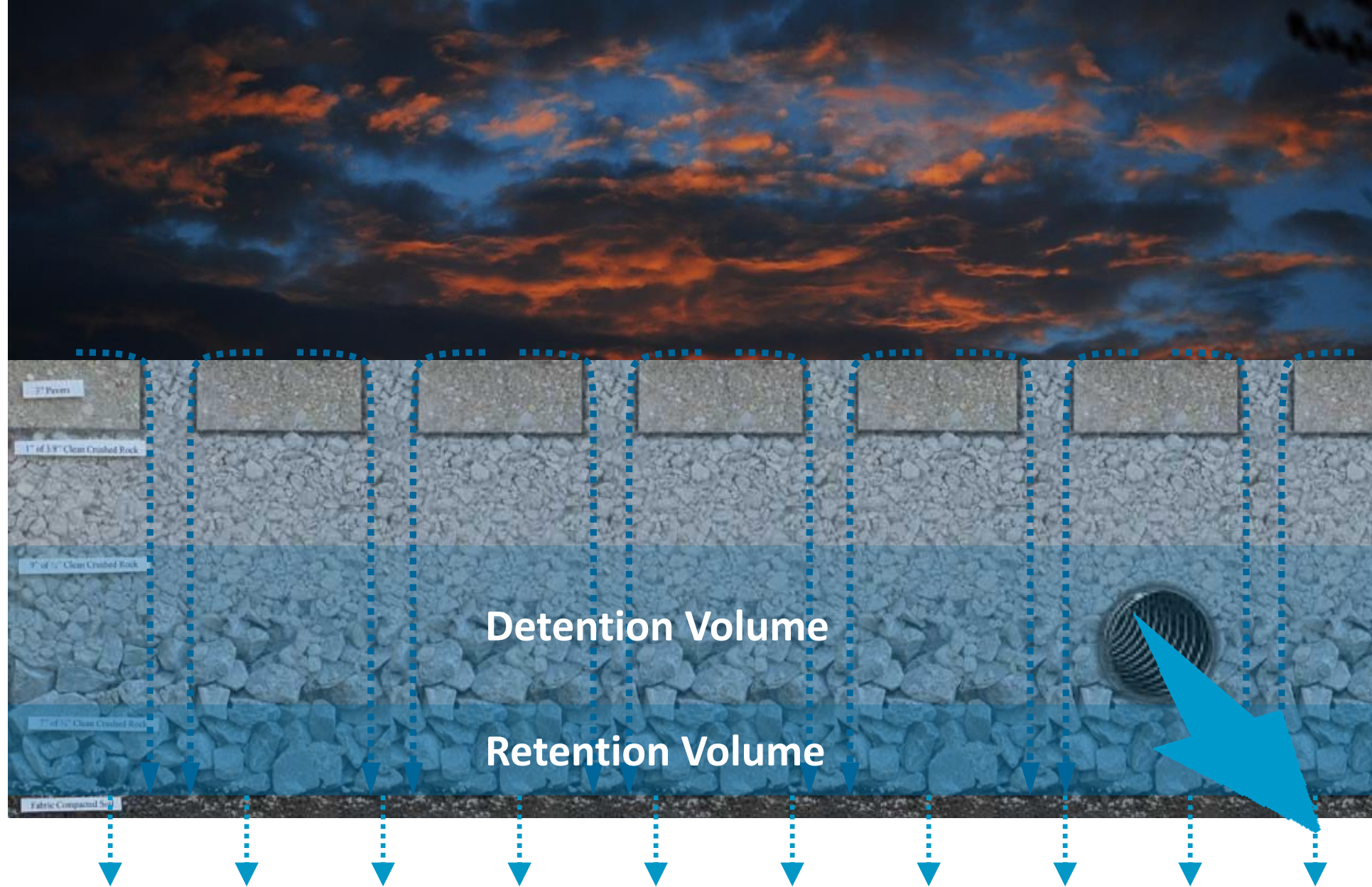
CREEK DR

LEGEND

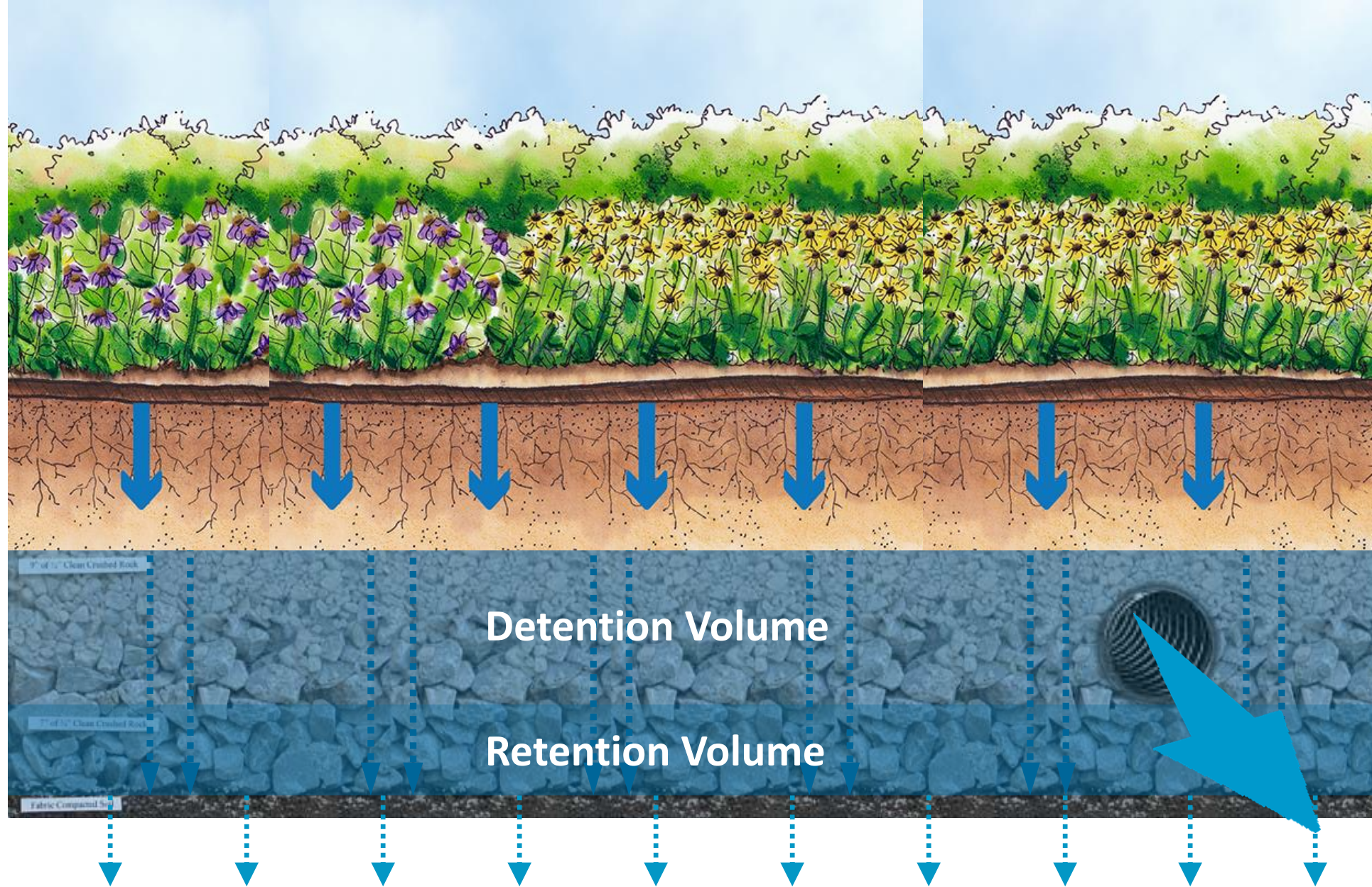
- PERMEABLE PAVING
- BIORETENTION AREAS



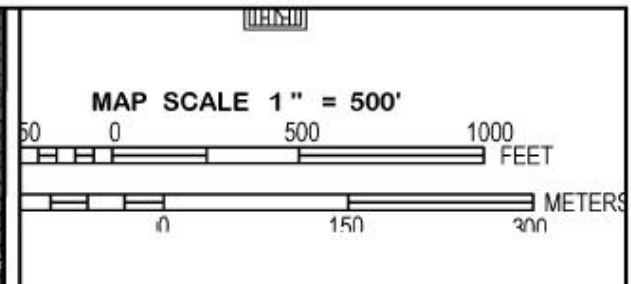




Porous Pavement: Infiltration (Retention) and Detention Capacity



Bioretention: Infiltration (Retention) and Detention Capacity



NFIP

PANEL 0138E

FIRM

FLOOD INSURANCE RATE MAP

LAKE COUNTY,
INDIANA

AND INCORPORATED AREAS

PANEL 138 OF 480

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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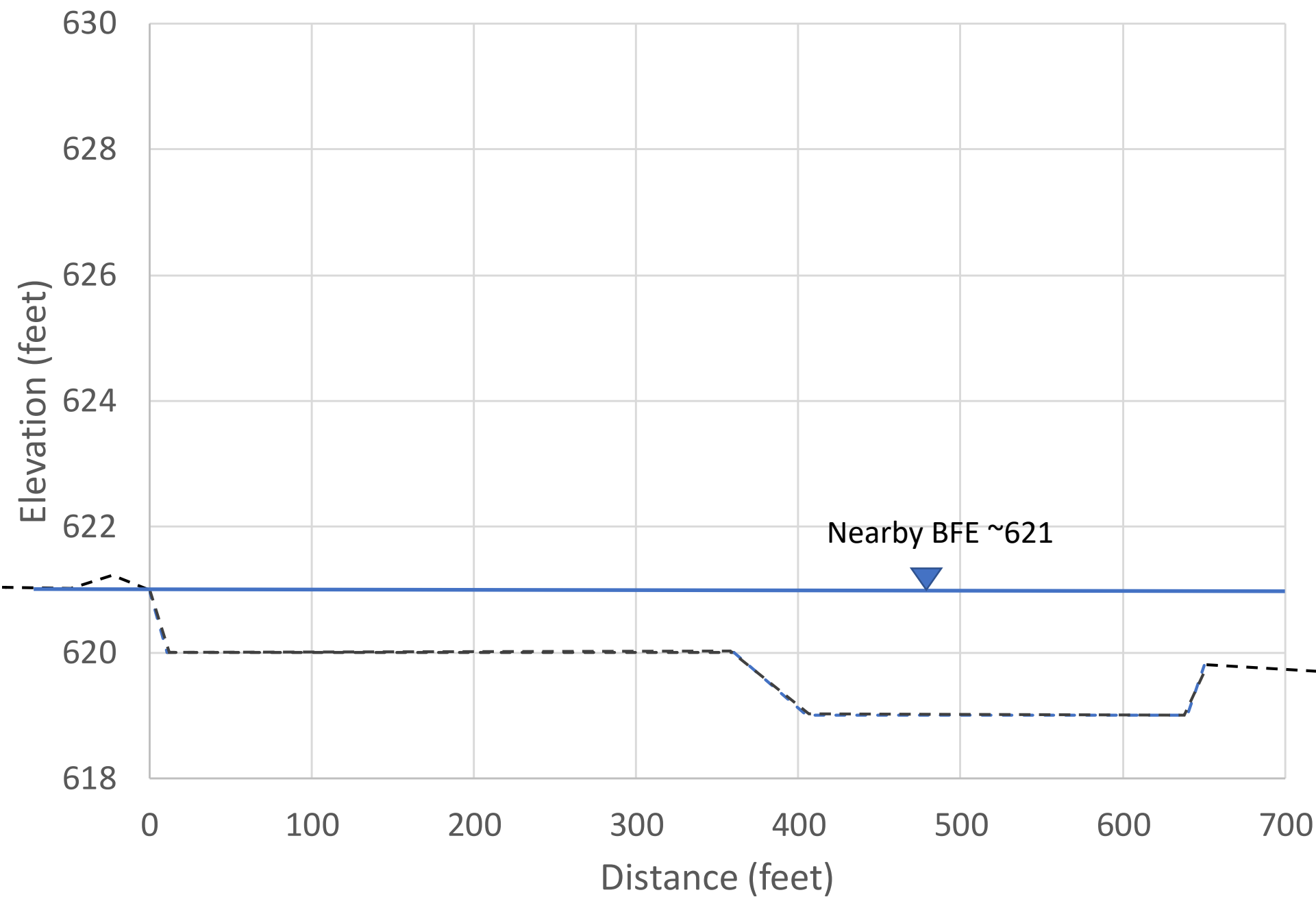


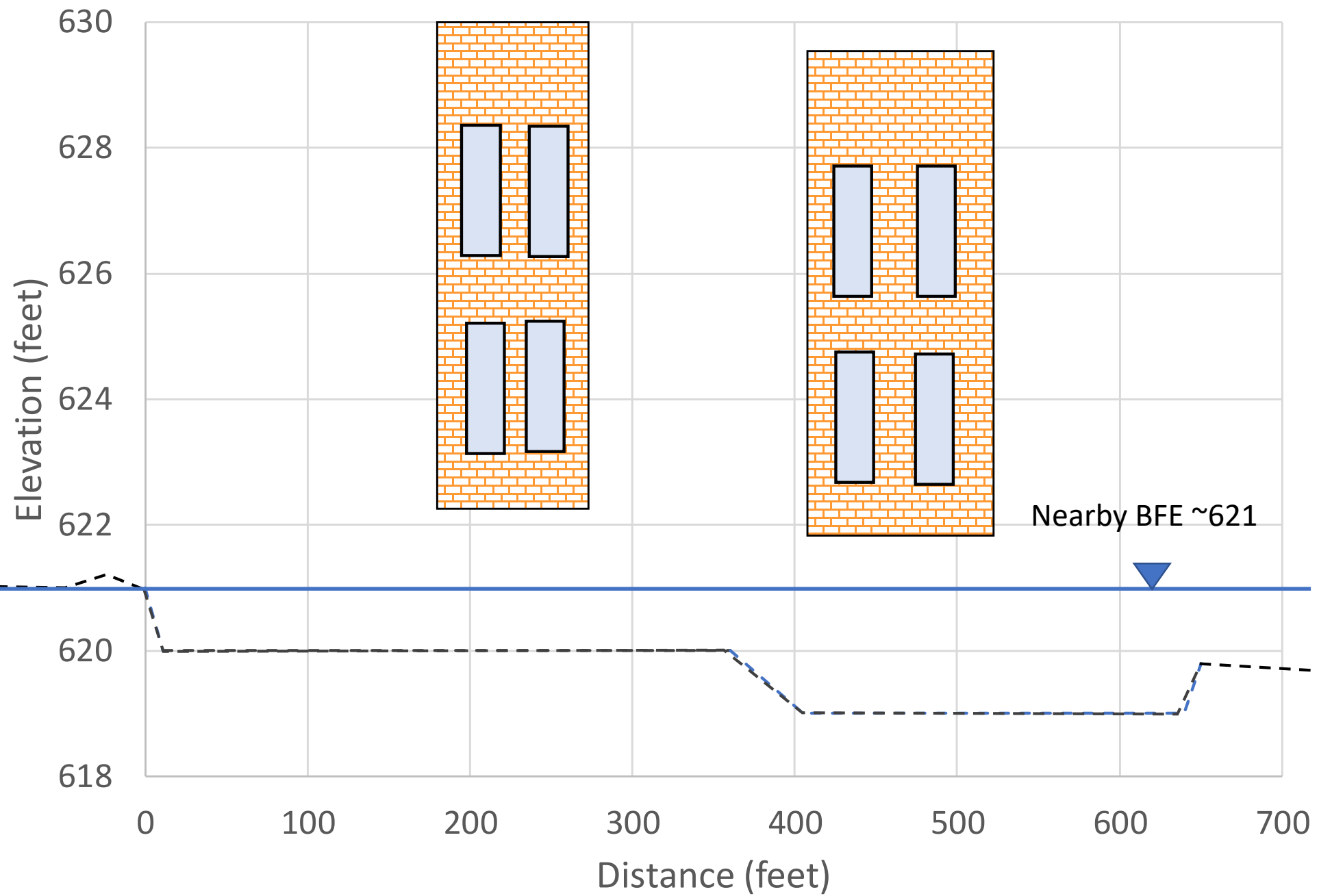
MAP NUMBER
18089C0138E

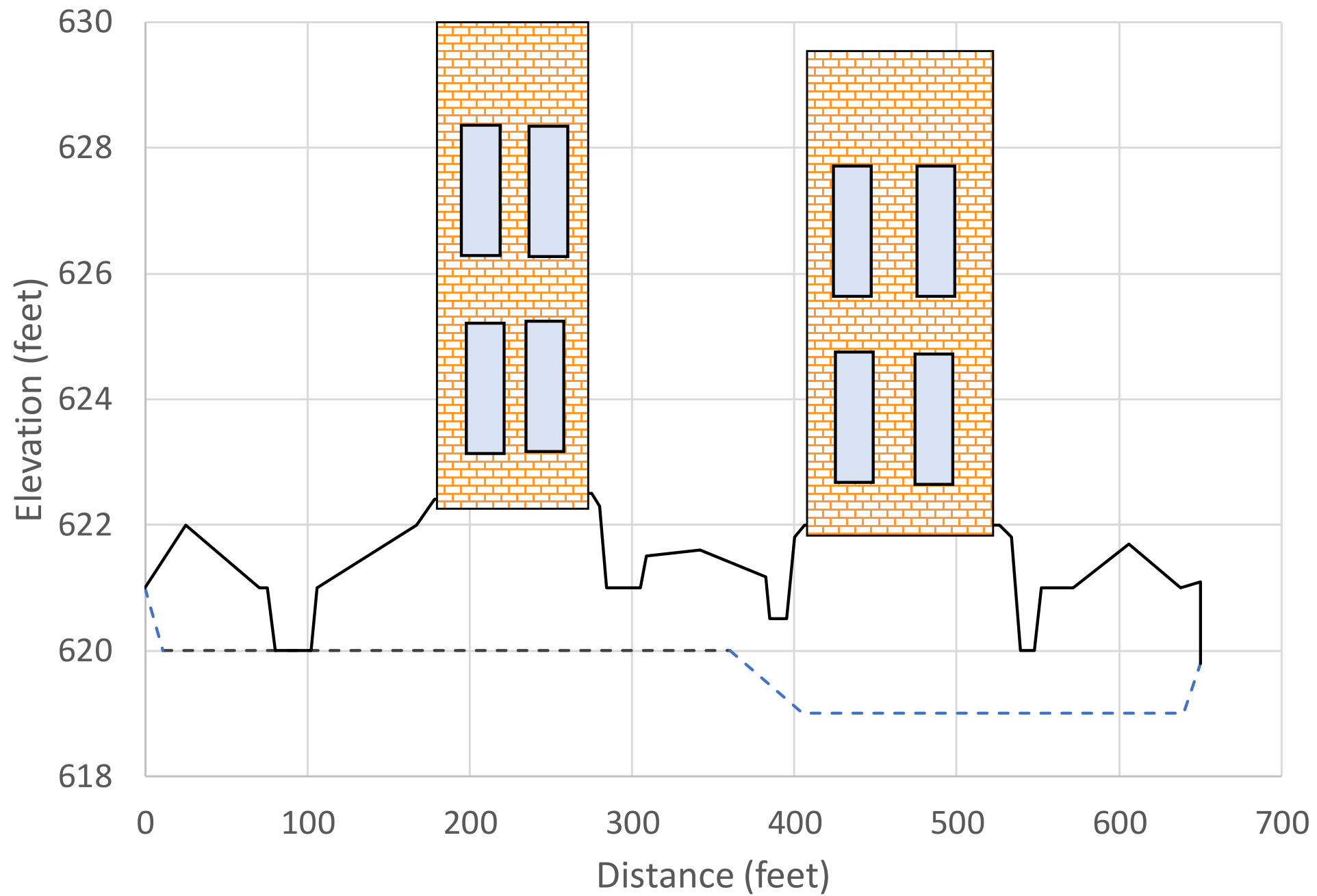
EFFECTIVE DATE
JANUARY 18, 2012

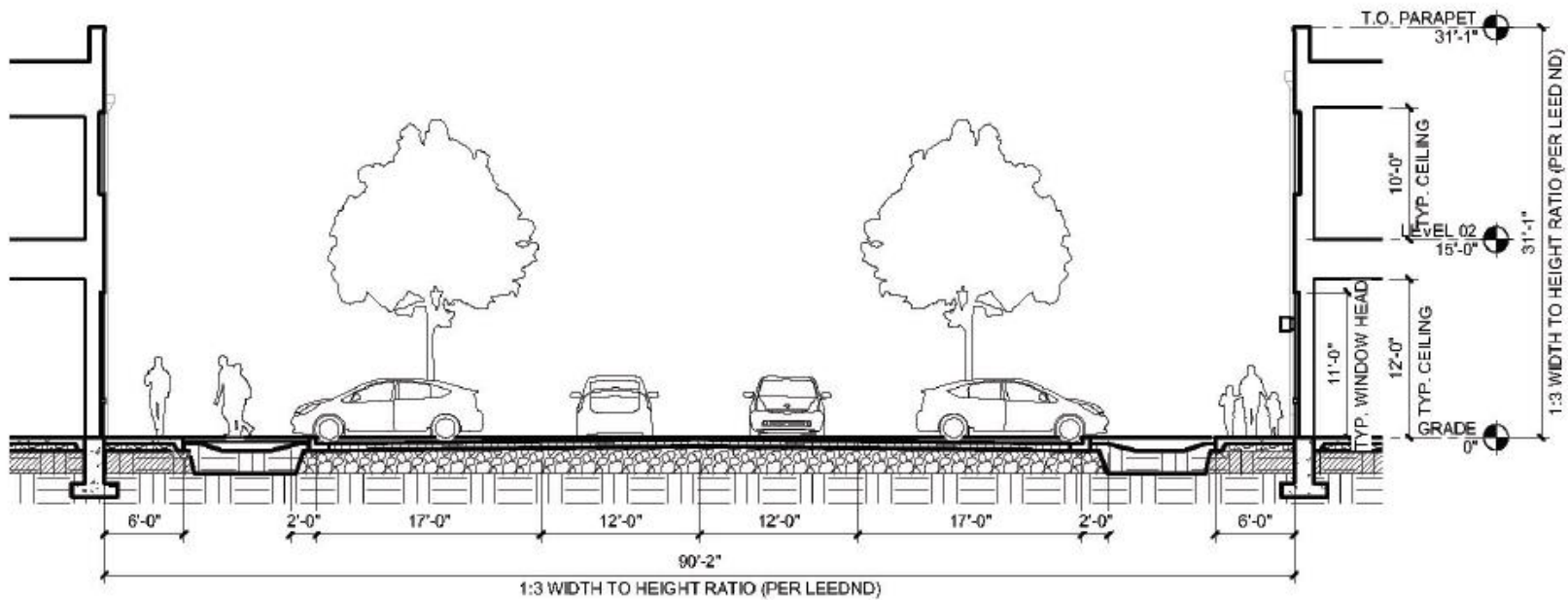
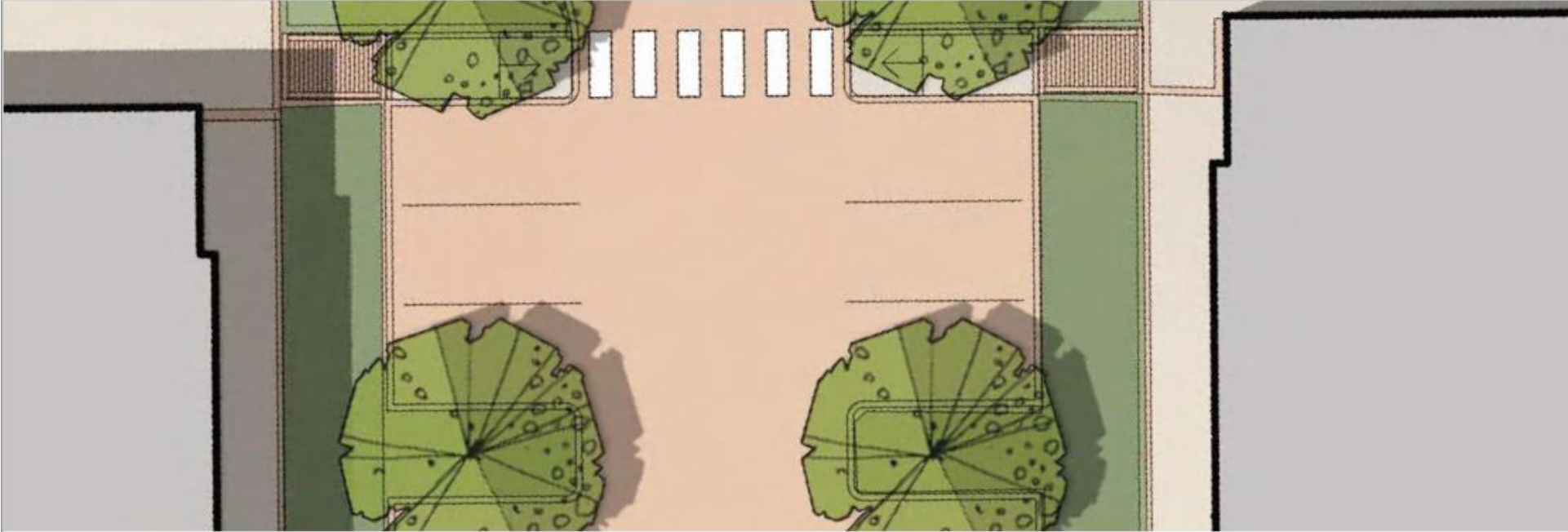
Federal Emergency Management Agency

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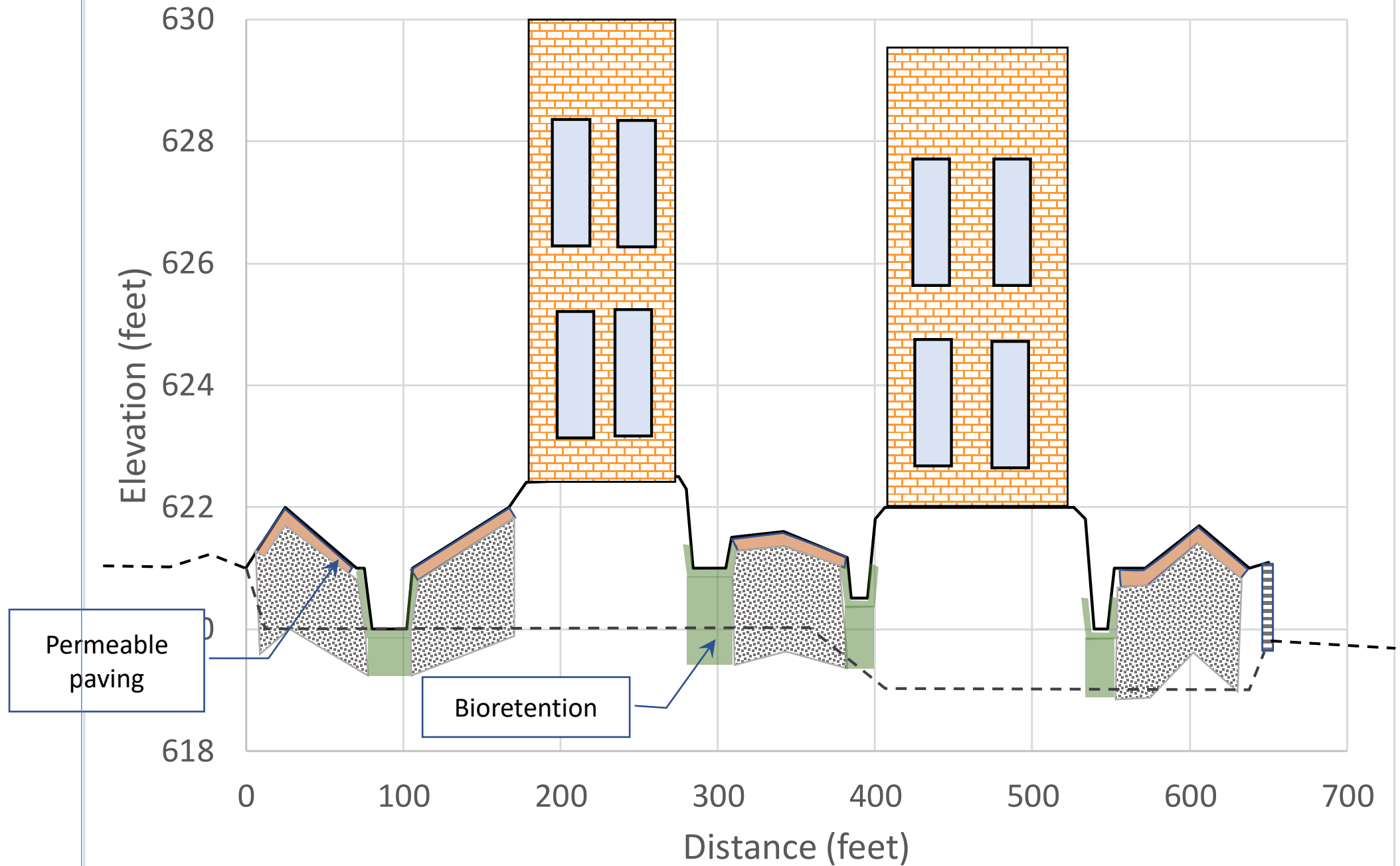




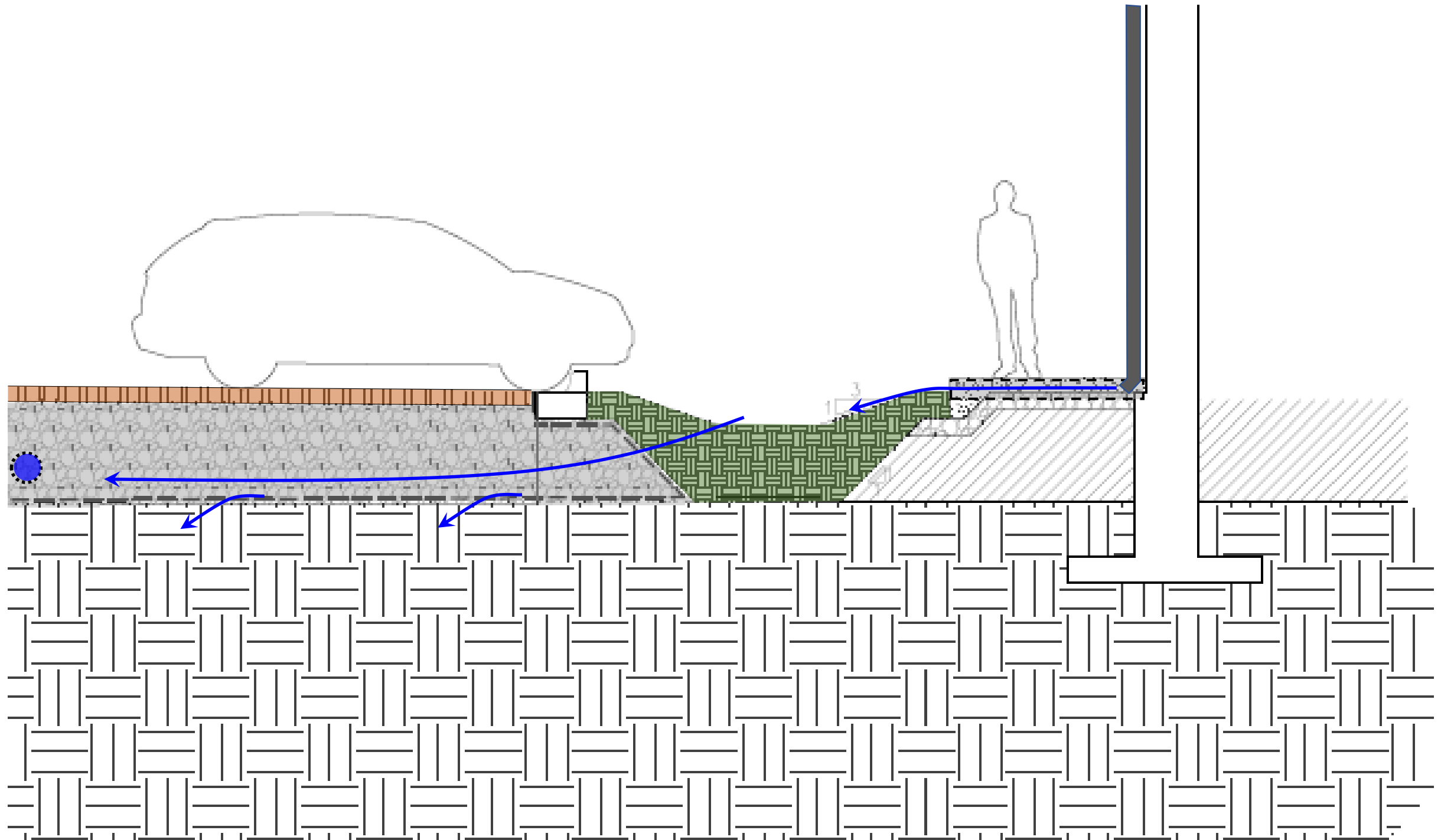




2 STREET SECTION - PLUM CREEK DR. (NEW)
1" = 10'-0"

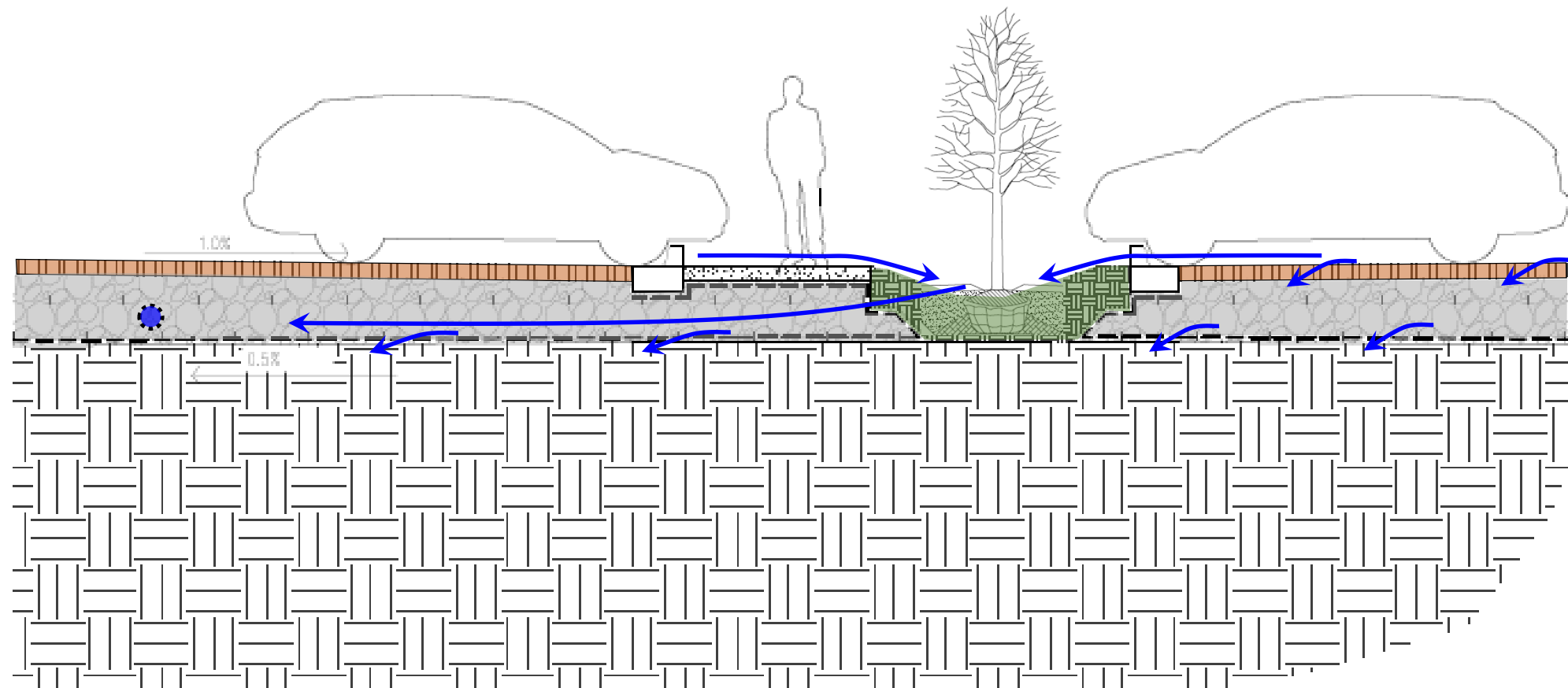


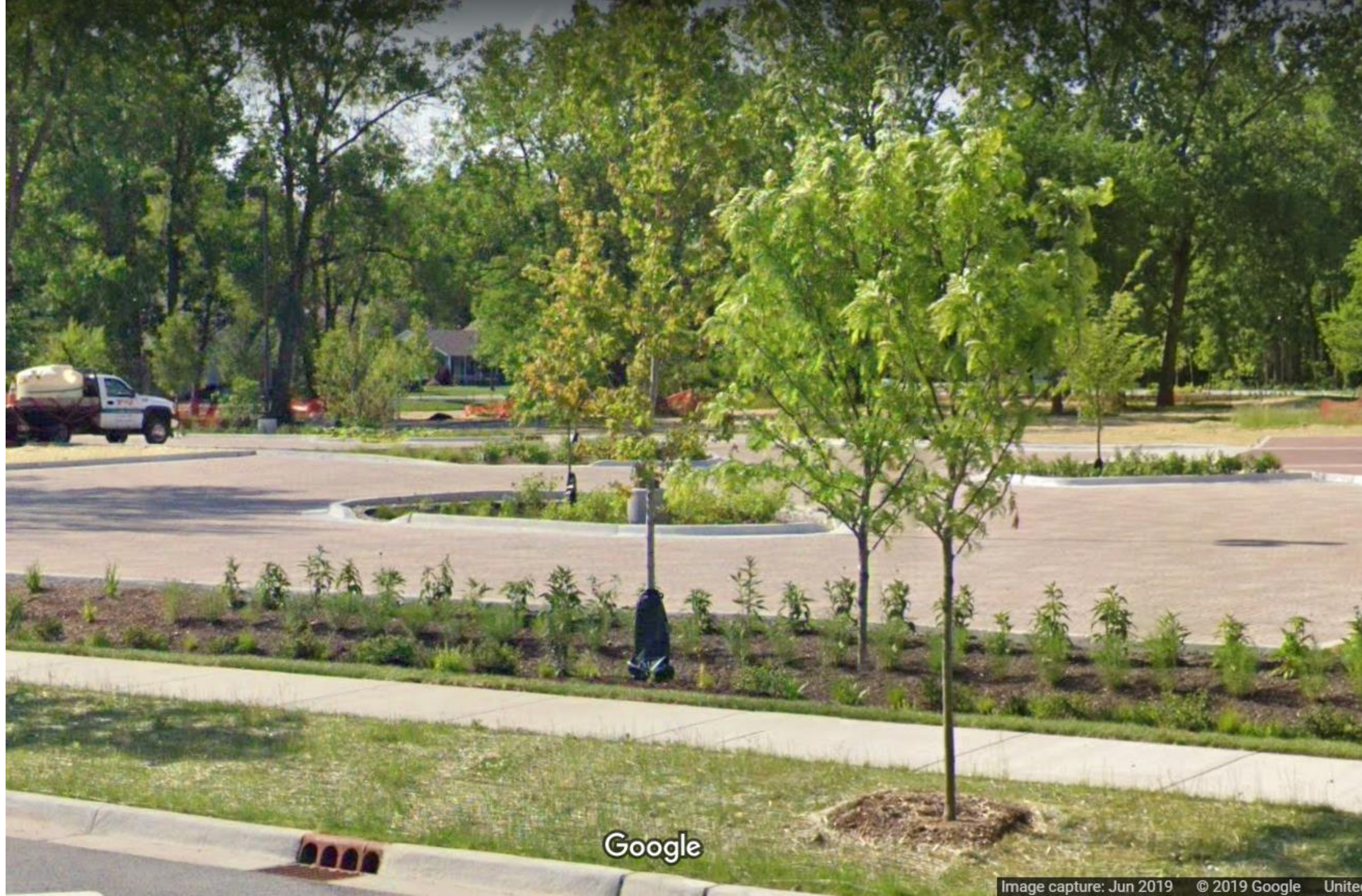






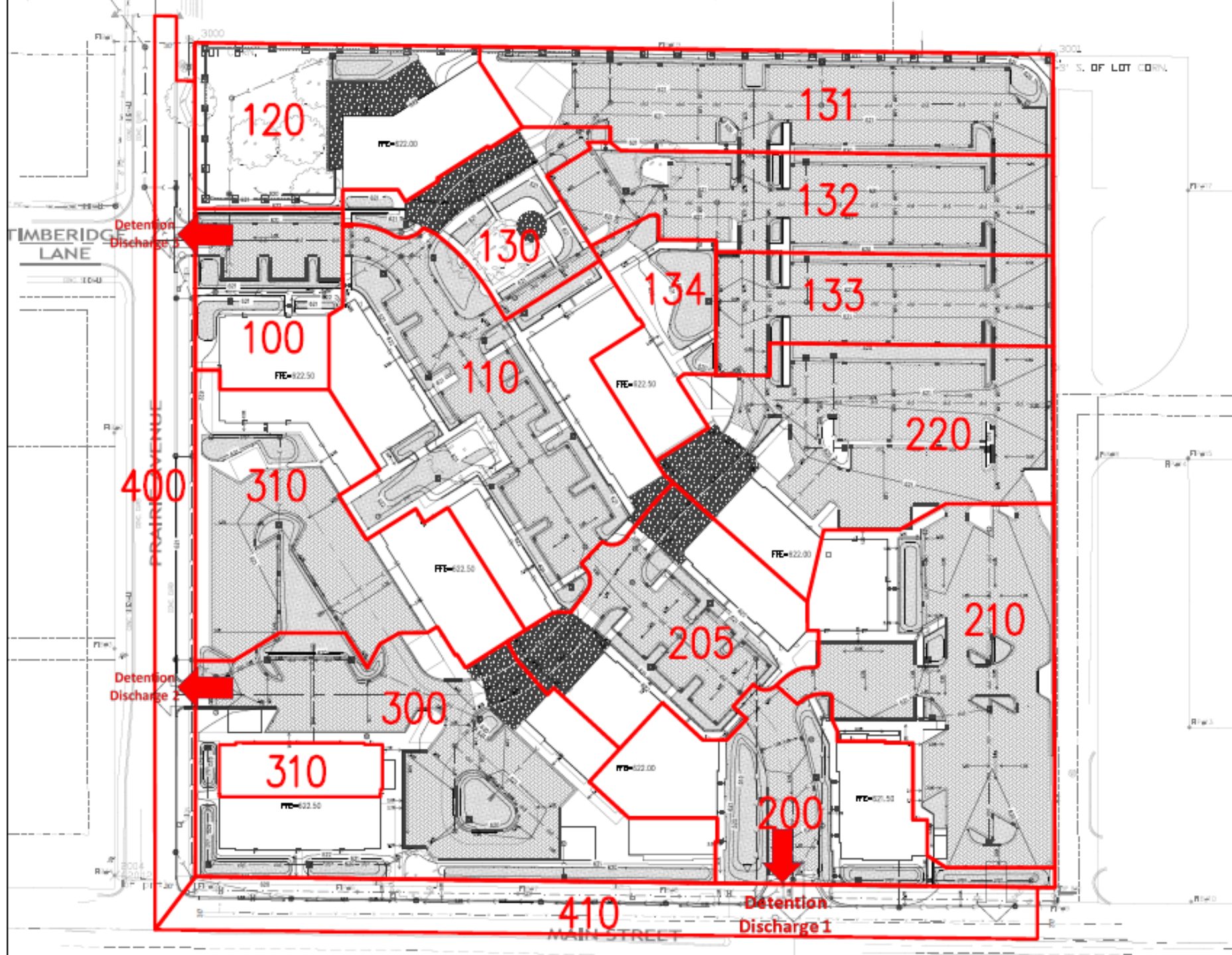


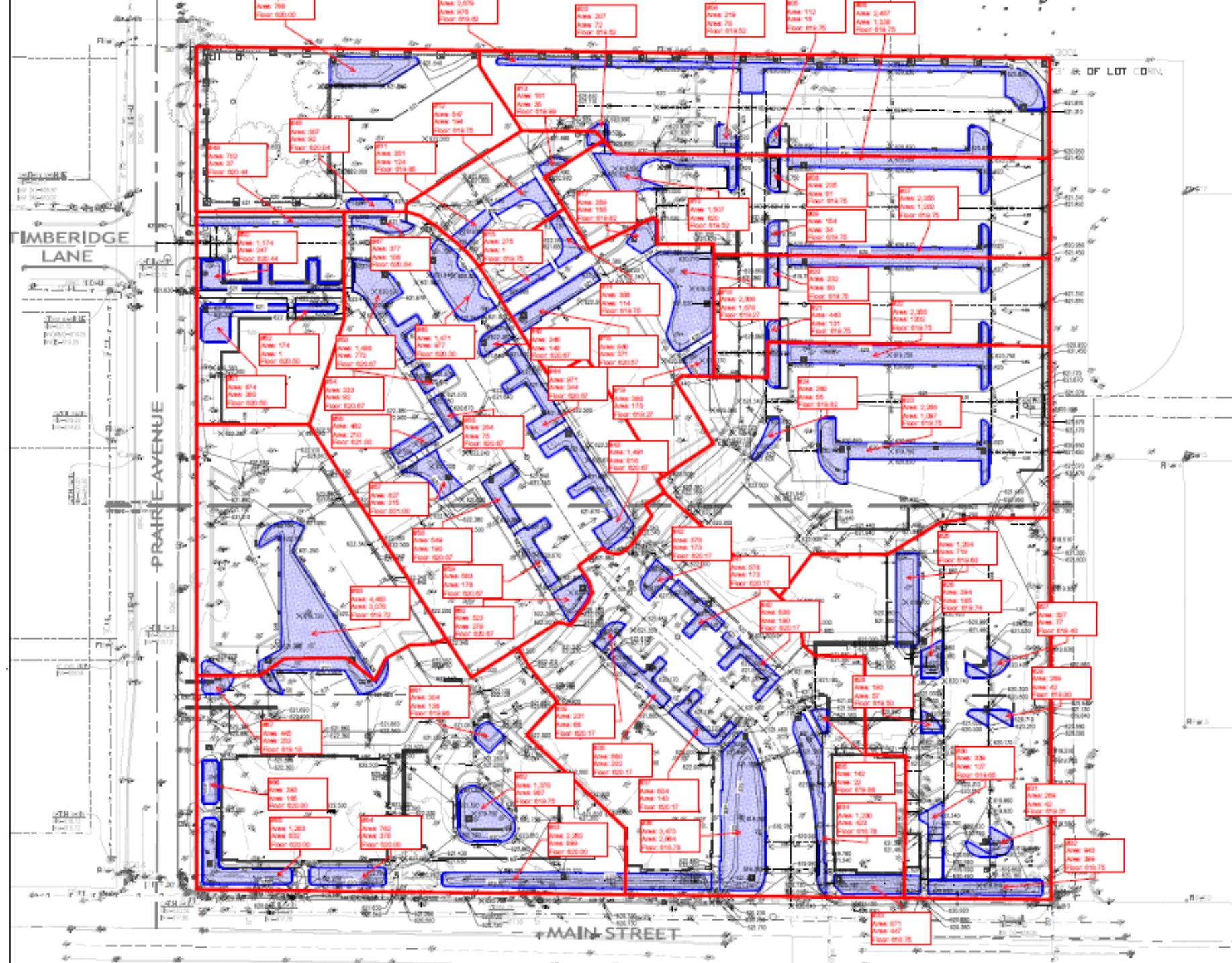




Google







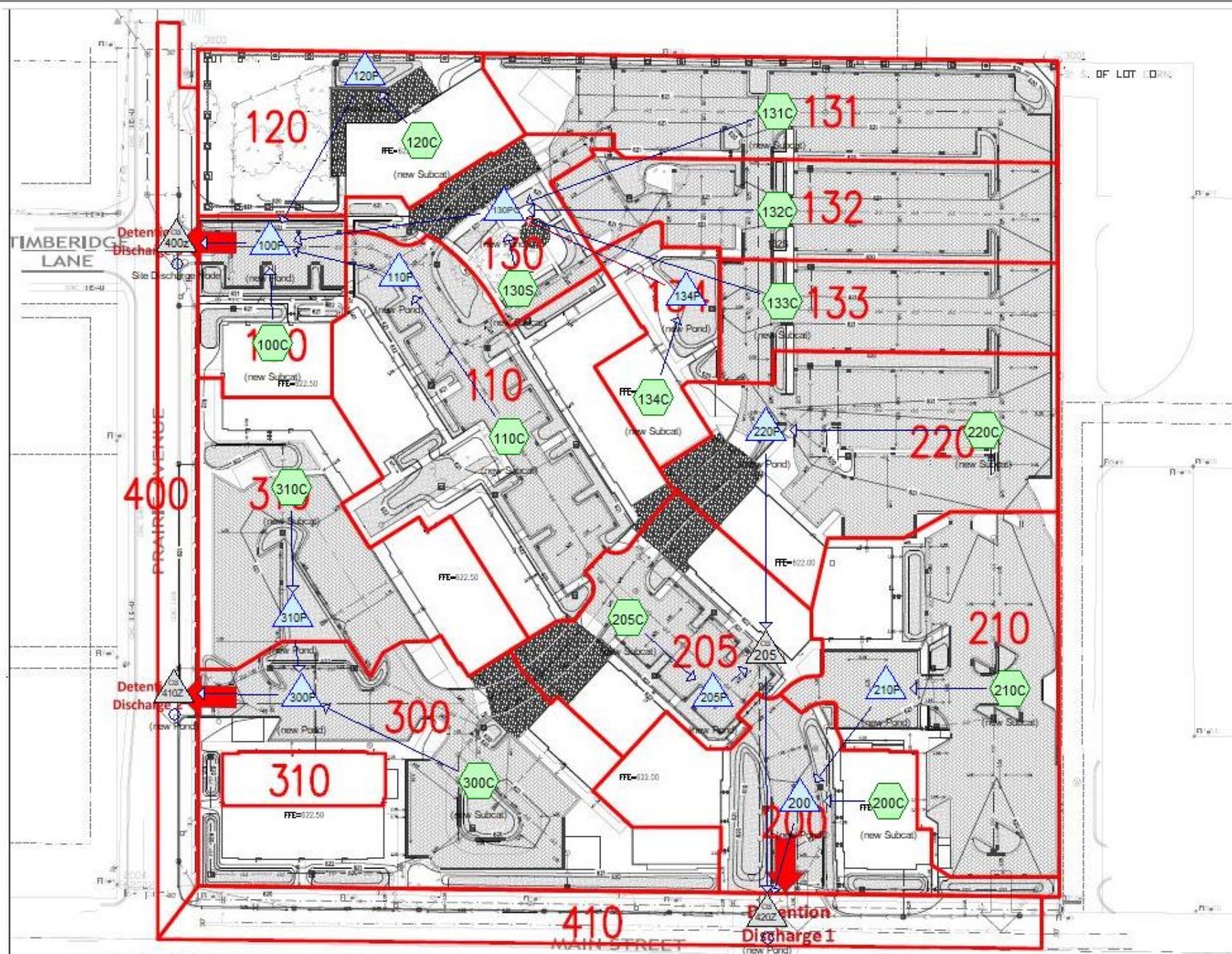


Table 1: Highland PUD Stormwater System Design

Pond	OCS	Drainage Area (ac)		Gravel Thickness (in.)	Provided Storage (AF)	Outlet Control	Design HWL	100- Year	
		Pond	Cumulative					HWL (ft)	Q (cfs)
220	OCS-7	0.83	-	24	0.41	0.8" orifice	620.33	620.02	0.02
205	OCS-6	0.58	-	36	0.30	0.8" orifice	620.75	620.24	0.03
210	-	0.91	-	24	0.41	6" pipe	619.38	619.17	0.11
200	OCS-5	0.59	1.50	36	0.19	1.8" Orifice	619.36	619.14	0.14
Location Site Total*		-	2.90	-	1.31	-	-	-	0.19
410C	-	0.58	-	-	-	-	-	-	0.5
420Z***	-	-	3.48	-	-	-	-	-	0.66
310P	-	0.89	-	24	0.27	8" pipe	620.36	620.31	0.19
300P	OCS-8	1.11	2.00	24	0.34	3.2" orifice	620.36	620.29	0.35
Location Site Total*		-	2.00	-	0.61	-	-	-	0.35
Project Site Total**		-	4.90	-	1.92	-	-	-	0.53
410Z***	-	-	-	-	-	-	-	-	0.95
130	OCS-4	2.25	-	24	1.06	1.0" Orifice	620.33	620.00	0.03
120	OCS-3	0.58	-	24	0.06	2.1" Orifice	619.38	618.98	0.19
110	OCS-2	1.08	-	36	0.41	2.5" Orifice	621.25	621.05	0.12
100	OCS-1	0.32	1.40	36	0.10	1.5" Orifice	620.85	620.72	0.14
Location Site Total*		-	4.22	-	1.63	-	-	-	0.36
Project Site Total**		-	9.12	-	3.55	-	-	-	0.89
400C	-	0.44	-	-	-	-	-	-	0.40
400Z***	-	-	10.14	-	-	-	-	-	1.67

400C and 410C flows are unrestricted runoff from Prairie Avenue and Main Street ROW, respectively

* Total drainage area and flow at the site discharge point

** Cumulative drainage area, detention storage, and flow from the site discharging to the ROW storm sewer

*** Total discharge in the ROW storm sewer including both site and ROW runoff

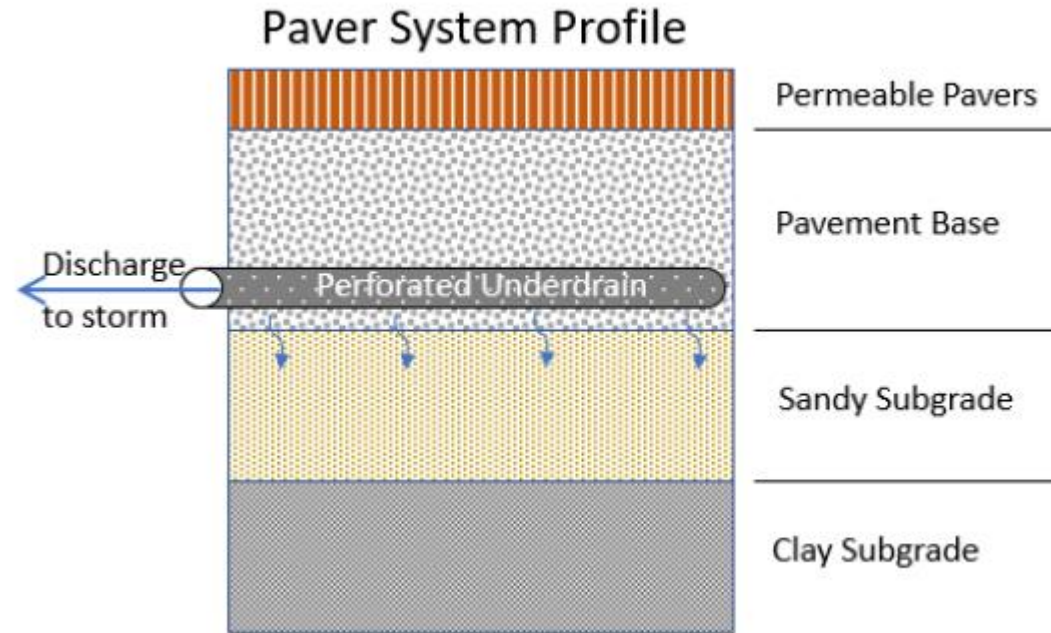
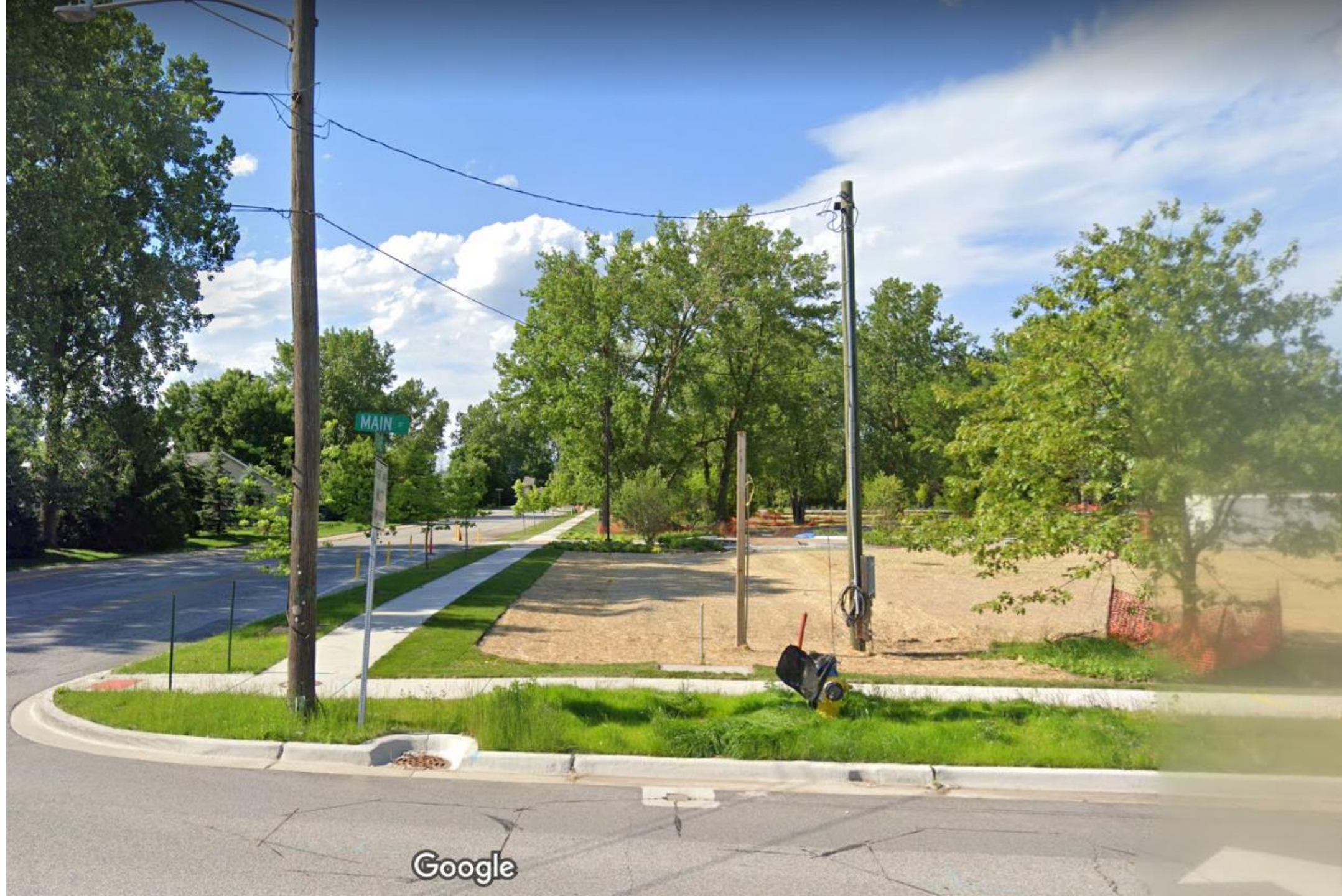


Table 3: Highland PUD LEED Modeling results*

Event	Rainfall (inches)	Pre-Development		Proposed Conditions	
		Runoff Volume (inches)	Peak Flow (cfs)	Runoff Volume (inches)	Peak Flow (cfs)
1.5-inch, 24-hour	1.5	0.01	0.01	0	0
1-Year, 24-hour	2.42	0.17	0.34	0.07	0.04
2-Year, 24-hour	2.89	0.32	0.89	0.19	0.13
100-Year, 24-hour	7.12	2.79	3.84	3.00	0.89

* Modeling results for 9.12 acre project area Excluding Main Street and Prairie Avenue





Google







































Cardinal Campus Phase 2

An aerial photograph of a modern, multi-story office building with a flat roof covered in solar panels. The building is surrounded by lush green trees and a parking lot filled with cars. A road with a crosswalk is visible in the foreground. The overall scene is bright and sunny, suggesting a clear day.

Questions

Tom Price, Environmental Consulting & Technology
TPrice @ECTinc.com