

**STORMWATER
MANAGEMENT REPORT**



**NEW CONSTRUCTION OF A FOUR-STORY
RESIDENTIAL/COMMERCIAL BUILDING
FOR CONIFER REALTY, LLC
BLOCK 1332 LOT 55**

CITY OF CAMDEN

CAMDEN COUNTY, NEW JERSEY

**PROJECT NUMBER 4774-1
July 15th, 2024**

PREPARED BY:

KELLER ENGINEERS OF NEW JERSEY, LLC
35 KINGS HIGHWAY EAST, SUITE 120
HADDONFIELD, NJ 08033

SAMIR D. MODY, P.E.

NEW JERSEY PROFESSIONAL ENGINEER
LICENSE NO. 24GE03945800



PREPARED FOR:

CITY OF CAMDEN
520 Market Street
City Hall, Room 224
P.O. Box 95120
Camden, NJ 08101-5120

TABLE OF CONTENTS

PROJECT NARRATIVE

INTRODUCTION

STORMWATER MANAGEMENT DESIGN

1. GENERAL PROJECT DESCRIPTION
2. STORMWATER DESIGN ANALYSIS SUMMARY
3. STORMWATER MANAGEMENT DESIGN PARAMETERS
4. CONCLUSION
5. REFERENCES

APPENDIX A: LOCATION MAP

APPENDIX B: RUNOFF CALCULATIONS

TABLE 5-1: COUNTY-SPECIFIC, NEW JERSEY 24-HOUR RAINFALL FREQUENCY DATA

TABLE 5-3: RUNOFF COEFFICIENT FOR THE RATIONAL METHOD
PRE & POST DEVELOPMENT RUNOFF CALCULATIONS

APPENDIX C: LAND COVER MAPS

PROJECT NARRATIVE

I. INTRODUCTION

Conifer Realty LLC plans to construct a new mixed-use, four-story residential and commercial building at 1301 Haddon Avenue, Camden, New Jersey 08104 (see Appendix A: Location Map). The property, which is currently vacant and covers approximately 0.71 acres, is designated as Block 1322, Lot 55, and falls within the C2/R2 zoning district under the Gateway Redevelopment Plan.

Site improvements include converting the vacant lot into a site suitable for the proposed project. The development will feature commercial spaces on the ground floor and residential units above, including a full parking lot to supply the residents. The project will include the necessary utility connections to support the building by utilizing the existing City of Camden stormwater lines on both frontages of the lot (Mechanic Street & Liberty Street).

The project site is not located within any floodplain or wetland zones, as confirmed by the maps provided by FEMA and the National Wetlands Inventory. This ensures that the site is free from flood and wetland-related development restrictions.

II. STORMWATER MANAGEMENT DESIGN:

1. GENERAL PROJECT DESCRIPTION

The construction of a 4-story building, a parking lot, one (1) new access driveway off Mechanic Street, and utility laterals.

- Total Lot Area: ~0.71 acres
- Total Project Impervious Area (Pre): 0 square feet
- Total Project Impervious Area (Post): ~30,850 square feet
- Total Project Disturbed Area: ~30,850 square feet

2. STORMWATER DESIGN ANALYSIS SUMMARY

EXISTING DRAINAGE CONDITIONS

The property is currently vacant and overgrown, previously used for commercial purposes (dry cleaner and automotive service). The site is primarily covered with grass and remnants of previous structures. Weeds have grown up across portions of the site.

The United States Department of Agriculture Natural Resources Conservation Service classifies the site as Urban land (UR).

Currently, runoff that pools on the site infiltrates into the pervious ground cover of the site. Additional runoff that doesn't infiltrate into the ground immediately sheet flows toward both Liberty Street, the tree line at the back of the site, and the adjacent properties.

PROPOSED DRAINAGE CONDITIONS

Runoff will be captured by the roof of the proposed building and managed through the installation of downspouts that direct water to underdrain trench drainage systems. These systems will convey the runoff from the roof of the building down and toward the lot frontages along Liberty Street and Mechanic Street/Haddon Avenue. The underdrain

trench drainage systems will be integrated into the existing City of Camden underground stormwater infrastructure, ensuring efficient and compliant stormwater management.

3. STORMWATER MANAGEMENT ANALYSIS PARAMETERS

The New Jersey Department of Environmental Protection's *Stormwater Best Management Practices Manual, Ch 5, April 2021*, was used to estimate peak runoff rates from the project area using the Rational Method. Rainfall intensity, runoff coefficients, and the drainage area are the main factors applied to determine the runoff results.

Topographic survey mapping and existing topographical features provided by Tristate Civil Engineering (TSE, dated 7/9/2024) were utilized to account for the respective amounts of impervious and pervious land on the project site. The data indicated that the percentage of impervious surface was less than 3%.

This low percentage allowed for the assumption that the predevelopment condition of the site was fully pervious. This assumption is critical in the calculations, as it forms the baseline for comparing pre- and post-development runoff conditions. The pre-development and post-development land cover maps are referenced in Appendix C: Land Cover Maps.

In the analysis, appropriate runoff coefficients for each type of surface on the site were utilized. For the post-development condition, the lot would be 100% impervious. This ensures that the calculations account for the maximum potential runoff from the developed site.

Assessing the difference between the peak runoff rates from the pre and post development conditions indicates an increase in runoff rates. The post-development peak runoff does exceed the pre-development peak runoff for the 25-year storm for the site as referenced in Appendix B Runoff Calculations, with an increase of 1.6625 CFS (cubic feet per second). Adequate connections to the City of Camden's existing stormwater & sewer lines would address this increase in runoff coming from the site.

4. CONCLUSION

Conifer Realty's proposed developments to 1301 Haddon Avenue, Camden, NJ 08104 will increase the runoff rates. Based on NJDEP's Best Management Practices Manual and the Rational Method, the predevelopment condition was assumed fully pervious, with less than 3% impervious surface, while post-development was determined as 100% impervious, resulting in a runoff increase of 1.66 CFS for the 25-year storm. This increase will be appropriately mitigated by connecting to the City's existing stormwater and sewer lines.

5. REFERENCES

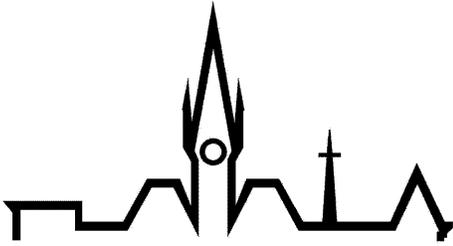
- A. *City of Camden Storm Water Management Ordinance*
- B. *New Jersey Department of Agriculture – State Soil Conservation Committee: The*

Standards for Soil Erosion and Sediment Control in New Jersey, 7th Edition, January 2014, Revised July 2017

C. National Wetlands Inventory – Surface Waters and Wetlands Mapping Tool

D. New Jersey Department of Environmental Protection – Division of Watershed Management: Stormwater Best Management Practices Manual, Ch. 5, April 2021

APPENDIX A: LOCATION MAP



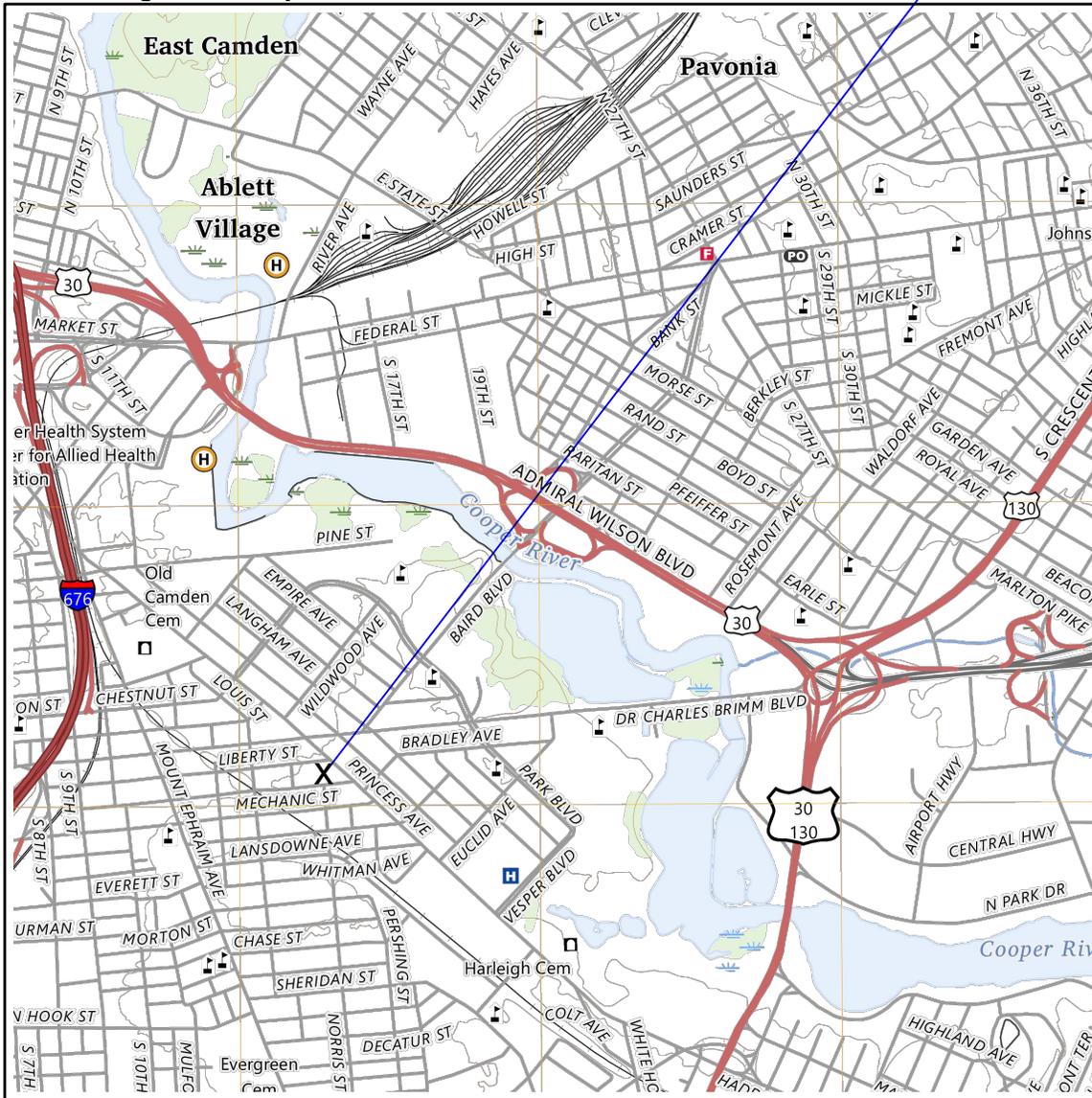
USGS

KELLER ENGINEERS

OF NEW JERSEY, LLC

www.kellerengineersofnj.com

PROJECT LOCATION



PROJECT: CONIFER REALTY, LLC—HADDON AVENUE

LOCATION: CITY OF CAMDEN, CAMDEN COUNTY

U.S.G.S. QUADRANGLE: CAMDEN, NJ, PA

PROJECT NO.: 4774-1

FILE NAME: 4774-1 LOCATION MAP

SCALE: 1"=2000'
2000' 0' 2000'

APPENDIX B: RUNOFF CALCULATIONS

Table 5-1: County-Specific, New Jersey 24-Hour Rainfall Frequency Data

<u>NEW JERSEY 24 HOUR RAINFALL FREQUENCY DATA</u>							
County	Rainfall amounts in Inches						
	1 year	2 year	5 year	10 year	25 year	50 year	100 year
Atlantic	2.72	3.31	4.30	5.16	6.46	7.61	8.90
Bergen	2.75	3.34	4.27	5.07	6.28	7.32	8.47
Burlington	2.77	3.36	4.34	5.18	6.45	7.56	8.81
Camden	2.73	3.31	4.25	5.06	6.28	7.34	8.52
Cape May	2.67	3.25	4.22	5.07	6.34	7.47	8.73
Cumberland	2.69	3.27	4.25	5.09	6.37	7.49	8.76
Essex	2.85	3.44	4.40	5.22	6.44	7.49	8.66
Gloucester	2.71	3.29	4.24	5.05	6.29	7.36	8.55
Hudson	2.73	3.31	4.23	5.02	6.19	7.20	8.31
Hunterdon	2.80	3.38	4.26	5.00	6.09	7.02	8.03
Mercer	2.74	3.31	4.23	5.01	6.19	7.20	8.33
Middlesex	2.76	3.35	4.30	5.12	6.36	7.43	8.63
Monmouth	2.79	3.38	4.38	5.23	6.53	7.66	8.94
Morris	2.94	3.54	4.47	5.24	6.37	7.32	8.35
Ocean	2.81	3.42	4.45	5.33	6.68	7.87	9.20
Passaic	2.87	3.47	4.42	5.23	6.43	7.47	8.62
Salem	2.69	3.26	4.20	5.00	6.22	7.28	8.45
Somerset	2.76	3.34	4.25	5.01	6.15	7.13	8.21
Sussex	2.68	3.22	4.02	4.70	5.72	6.60	7.58
Union	2.80	3.39	4.35	5.17	6.42	7.49	8.69
Warren	2.78	3.34	4.18	4.89	5.93	6.83	7.82

Notes: The average point rainfall amounts listed above were developed from data contained in NOAA Atlas 14 Volume 2.

Point rainfall estimates for specific locations may be obtained from the Precipitation Frequency Data Server located at <http://www.nws.noaa.gov/ohd/hdsc/>

For most hydrologic design procedures, the rainfall amounts listed above may be rounded to the nearest tenth of an inch.

Table 5-3: Runoff Coefficients for the Rational Method

Land Use	Description	Hydrologic Soils Group			
		A	B	C	D
Cultivated Land	without conservation treatment	0.49	0.67	0.81	0.88
	with conservation treatment	0.27	0.43	0.67	0.67
Pasture or Range Land Meadow	poor condition	0.38	0.63	0.78	0.84
	good condition	---	0.25	0.51	0.65
	good condition	---	---	0.41	0.61
Wood or Forest Land	thin stand, poor cover, no mulch	---	0.34	0.59	0.70
	good cover	---	---	0.45	0.59
Open Spaces, Lawns, Parks, Golf Courses, Cemeteries Good Condition Fair Condition	grass cover on 75% or more	---	0.25	0.51	0.65
	grass cover on 50% to 75%	---	0.45	0.63	0.74
Commercial and Business Area Industrial Districts Residential Average Lot Size (acres)	85% impervious	0.84	0.90	0.93	0.96
	72% impervious	0.67	0.81	0.88	0.92
	65	0.59	0.76	0.86	0.90
	38	0.29	0.55	0.70	0.80
	30	---	0.49	0.67	0.78
	25	---	0.45	0.65	0.76
	20	---	0.41	0.63	0.74
	20	---	0.41	0.63	0.74
Paved Areas Streets and Roads	parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.99
	paved with curbs & storm sewers	0.99	0.99	0.99	0.99
	gravel	0.57	0.76	0.84	0.88
	dirt	0.49	0.69	0.80	0.84

Source: New Jersey Department of Environmental Protection, Land Use Management Program. 1988. Technical Manual for Land Use Regulation Program, Bureau of Inland and Coastal Regulations, NJDEP Flood Hazard Area Permits.

Drainage Area Size and Land Cover Limitations

As previously mentioned on Page 9, there are some basic assumptions when applying the Rational Method. The maximum size limit for a drainage area is 20 ac. The drainage area must also have homogeneous land cover and topography, meaning the same runoff coefficient and slope apply to the entire drainage area. Furthermore, the rainfall distribution on a drainage area is assumed to be uniform over the entire drainage area.

Custom Soil Resource Report Soil Map



Map Scale: 1:582 if printed on A landscape (11" x 8.5") sheet.

0 5 10 20 30 Meters

0 25 50 100 150 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Camden County, New Jersey
 Survey Area Data: Version 17, Aug 28, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 5, 2022—Jul 4, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
UR	Urban land	0.8	100.0%
Totals for Area of Interest		0.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Camden County, New Jersey

UR—Urban land

Map Unit Setting

National map unit symbol: rvrf
Elevation: 0 to 170 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Udorthents

Percent of map unit: 5 percent
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Keller Engineers of New Jersey, LLC			
Pre & Post Development Runoff Calculations			
Project Title	Major Site Plan For Mixed Use Four-Story Building For Conifer Realty, LLC	Date	July 15, 2024
Project Location	1301 Haddon Avenue, Camden, NJ 08104	Revised	AA
Project Number	4774-1	Prepared By	AA
		Checked By	SAA

Rational Method $Q = Ki * c * I * A$

Input
Calculations
Fixed
Output

Predevelopment

Design Components

K	1.1	Adjustment Multiplier for 25 yr Storm Recurrence
c	0.65	Runoff Coefficient via Table 5-3 - Lawn Good Condition, 75% or more grasscover
I (in/hr)	6.28	Average Rainfall Intensity (in/hr) based on 25 yr, 24 hr period via Table 5-1
A (acres)	0.707839302	Area of Acreage contributing to runoff (ft ²)
Q = Ki * c * I * A	3.178340	Flow Rate of Peak Runoff in cfs

Areas (sq ft)

A-Pervious	30833.48	Area of Pervious Cover (sq ft)
A-Impervious	0	Area of Impervious Cover (sq ft)
Area Total (sq ft)	30833.48	Total Area of Land Cover (sq ft)
Area Total (acres)	0.707839302	Total Area of Land Cover (acres)

HSG Group: C/D Assumption for Urban Areas

Post Development

Design Components

K	1.1	Adjustment Multiplier for 25 yr Storm Recurrence
c	0.99	Runoff Coefficient via Table 5-3 for Paved Areas
I (in/hr)	6.28	Average Rainfall Intensity (in/hr) based on 25 yr, 24 hr period via Table 5-1
A (acres)	0.707839302	Area of Acreage contributing to runoff (ft ²)
Q = Ki * c * I * A	4.840856	Flow Rate of Peak Runoff in cfs

Areas (sq ft)

A-Pervious	0	Area of Pervious Cover (sq ft)
A-Impervious	30833.48	Area of Impervious Cover (sq ft)
Area Total (sq ft)	30833.48	Total Area of Land Cover (sq ft)
Area Total (acres)	0.707839302	Total Area of Land Cover (acres)

Area of Building Cover	4,272	sq ft
Area of Paved Cover	26,562	sq ft
Total Impervious	30833.48	sq ft

HSG Group: C/D Assumption for Urban Areas

Summary

Predevelopment

Pervious Area	30833.48	sq ft
Impervious Area	0	sq ft
Area Total	30833.48	sq ft
Peak Runoff, Q	3.178340	cfs

Post Development

Pervious Area	0	sq ft
Impervious Area	30833.48	sq ft
Area Total	30833.48	sq ft
Peak Runoff, Q	4.840856	cfs

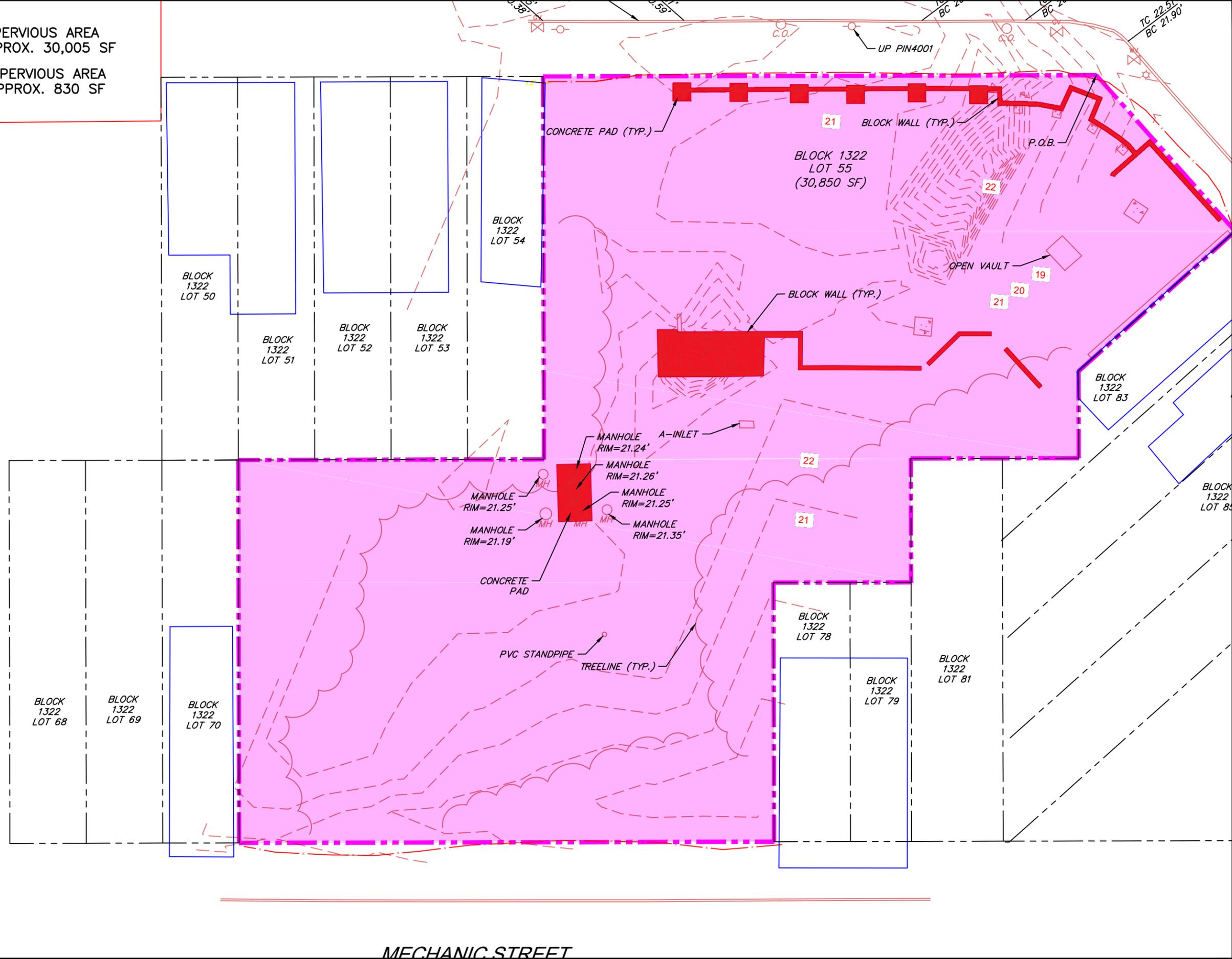
Peak Runoff Increase, ΔQ	1.6625	cfs
--------------------------	--------	-----

APPENDIX C: LAND COVER MAPS

LEGEND:

 PERVIOUS AREA
APPROX. 30,005 SF

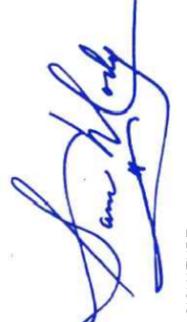
 IMPERVIOUS AREA
APPROX. 830 SF



35 Kings Highway East, Suite 120
Haddonfield, NJ 08033
P: (856) 536-3169
www.kellerengineersofnj.com



SAMIR D. MODY, P.E.
NJ PROFESSIONAL ENGINEER
LICENSE NO. 246E03945600



SIGNATURE: _____

**PRE-DEVELOPMENT
COVERAGE MAP**

NEW CONSTRUCTION OF FOUR-STORY
RESIDENTIAL/COMMERCIAL
BUILDING FOR CONIFER REALTY, LLC
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

KELLER ENGINEERS EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER RIGHTS CONTAINED IN THESE PLANS AND DESIGNS. THEY ARE NOT TO BE REPRODUCED, CHANGED, ALTERED OR COPIED IN ANY FORM OR MANNER WITHOUT WRITTEN PERMISSION AND CONSENT OF KELLER ENGINEERS.

PROJECT NO.:	4774-1
FILE NAME:	PRECOVERAGEMAP.DWG
DATE:	07/15/2024
DESIGNED BY:	SAA/AA
DRAWN BY:	AA
CHECKED BY:	SAA/SDM
PAGE NO.:	1

SCALE: 1" = 50'

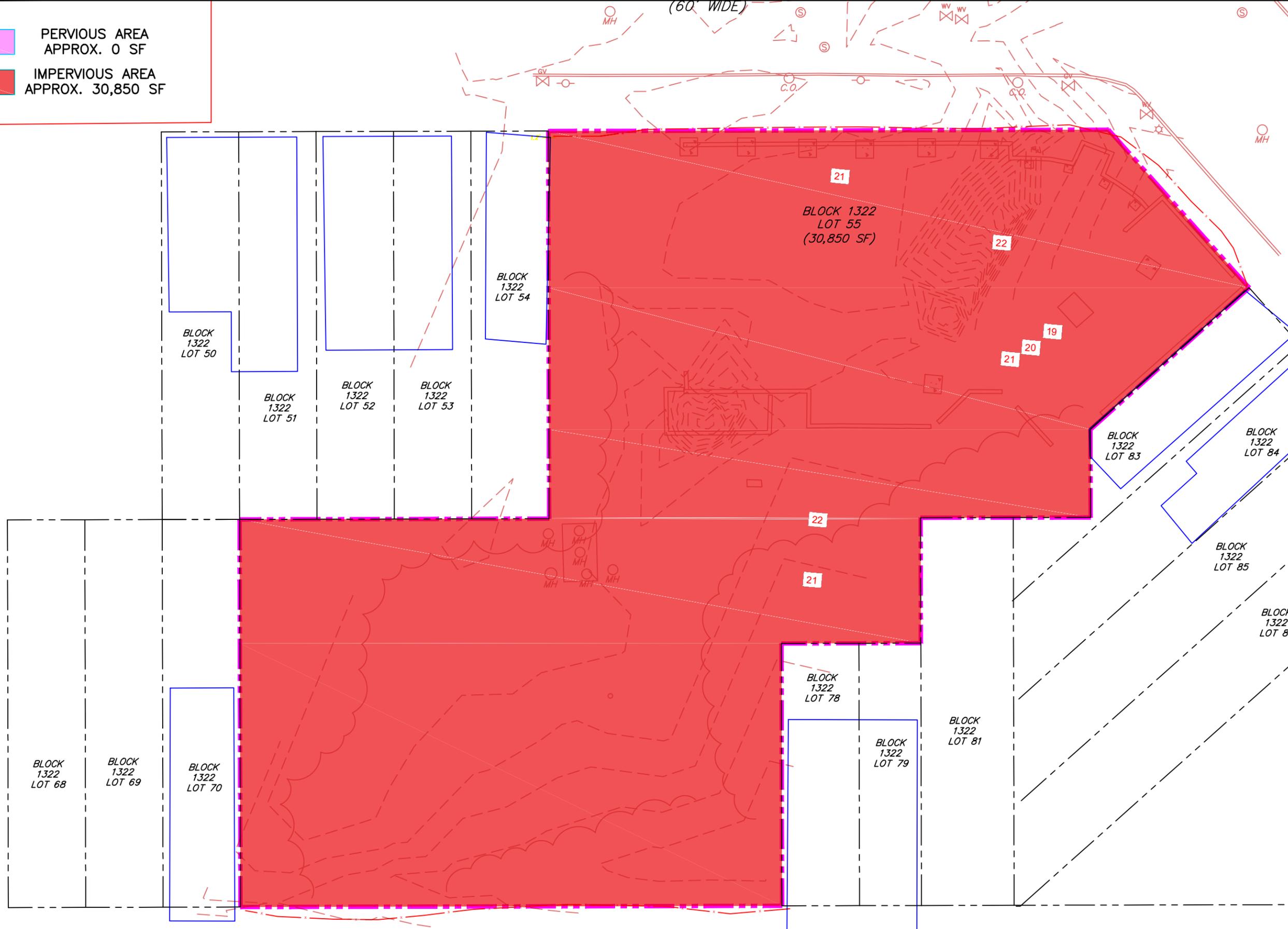


MECHANIC STREET

LEGEND:

 PERVIOUS AREA
APPROX. 0 SF

 IMPERVIOUS AREA
APPROX. 30,850 SF



35 Kings Highway East, Suite 120
Haddonfield, NJ 08033
P: (856) 536-3169
www.kellerengineersofnj.com



SAMIR D. MODY, P.E.
NJ PROFESSIONAL ENGINEER
LICENSE NO. 246E03945600

Samir D. Mody
SIGNATURE: _____

**POST-DEVELOPMENT
COVERAGEMAP**

NEW CONSTRUCTION OF FOUR-STORY
RESIDENTIAL/COMMERCIAL
BUILDING FOR CONIFER REALTY, LLC
CITY OF CAMDEN, CAMDEN COUNTY, NEW JERSEY

KELLER ENGINEERS EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER RIGHTS CONTAINED IN THESE PLANS AND DESIGNS. THEY ARE NOT TO BE REPRODUCED, CHANGED, ALTERED OR COPIED IN ANY FORM OR MANNER, NOR ARE THEY TO BE ASSIGNED WITHOUT WRITTEN PERMISSION AND CONSENT OF KELLER ENGINEERS.

PROJECT NO.:	4774-1
FILE NAME:	COVERAGEMAP.DWG
DATE:	07/15/2024
DESIGNED BY:	SAA/AA
DRAWN BY:	AA
CHECKED BY:	SAA/SDM
PAGE NO.:	

