STORMWATER MANAGEMENT REPORT

for:

HIGHLAND AVENUE SUBDIVISION

Block(s): 117
Lot(s): 93
Borough of Metuchen
Middlesex County, New Jersey

Prepared By:

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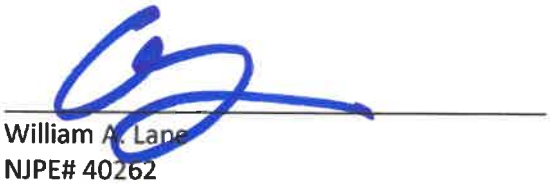
Under the Immediate Supervision of:



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BL/MAD/hc
MEA # 2019.042
Dated: June 24, 2019
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Revised: December 21, 2020

menlo engineering associates

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INTRODUCTION

The following Stormwater Management Report details the design of the stormwater management plan for a proposed subdivision located in the Borough of Metuchen, Middlesex County, New Jersey and has been prepared by Menlo Engineering Associates, Inc. in accordance with the standards of the Borough of Metuchen, the County of Middlesex, the New Jersey Soil Conservation Service, and the New Jersey Department of Environmental Protection. This report supplements, and should be reviewed in conjunction with, the project development plans prepared by Menlo Engineering Associates, Inc.

It is the intent of this report to aid and assist Engineers at the Municipal, County, and State levels in evaluating the drainage calculations and considerations incorporated in the design as shown on the plans submitted. This office will readily respond to questions and requests for additional calculations or verification of the proposed design by Municipal, County, or State Engineers, and will be responsive to their suggestions and modifications to the design in conformance to the applicable codes in the interest of land use control consistent with environmental protection.

STORMWATER MANAGEMENT PLAN & DESIGN

The guidelines for hydraulic design, as prepared by the Soil Conservation District, the Borough of Metuchen, Middlesex County and the New Jersey Department of Environmental Protection have been utilized for the drainage design of this project. The purpose of the drainage design is to safely conveyance the stormwater runoff and attenuate the discharges in accordance with the regulations promulgated by the above cited agencies.

The stormwater management plan for the site is to provide for conveyance of stormwater runoff from the proposed single-family dwellings and driveways to a stormwater collection system. The stormwater collection system will consist of inlets and reinforced concrete pipe. The stormwater conveyance system has been designed for the 25-year storm and the inlet grates have been designed to comply with most current regulations.

The site is depicted by the Middlesex County Soil Manual Boonton-Urban Land (BouB). Per the Soil Conservation Urban Hydrology for Small Watersheds, Boonton-Urban Land has a high runoff potential. "C" Classifications have conservatively been used in runoff computations.

The proposed subdivision does not result in a net increase in impervious coverage of more than 0.25 acres nor propose more than 1.0 acres of disturbance. Therefore, the stormwater management regulations are not triggered, and stormwater management is not required.

CONCLUSION

The proposed stormwater management system for the proposed subdivision has been designed with provisions for safe and efficient control of stormwater runoff in a manner which will not adversely affect the existing drainage patterns found in the surrounding areas. It is the opinion of this office that the proposed development will not have any negative impacts on the drainage characteristics of the site, or the immediately surrounding areas. Further, it is the opinion of this office, that the proposed development will be in compliance with all applicable stormwater management regulations as established by the NJDEP and Borough of Metuchen Standards.

APPENDIX A: EXISTING CONDITIONS

PRE-DEVELOPMENT DRAINAGE CONDITION

I. Total Drainage Area: 1.11 Acres

II. Soil Groups/Types:		Type
	BouB -Boonton-Urban Land	C

III. Time of Concentration: 10 Minutes

IV Rainfall Intensity:

Storm	Rainfall(in.)
100-YR	8.00
25-YR	6.70
10-YR	5.80
2-YR	4.20
1-YR	3.20

V. Weighted 'c' Calulation:

Land Use	Area	% of Cover	C Value	Total
Impervious	0.08 Acres	0.07	0.99	0.07
Gravel	0.15 Acres	0.14	0.84	0.11
Grass	0.88 Acres	0.79	0.51	0.40
Woods	0.00 Acres	0.00	0.45	0.00
			Weighted 'c':	0.58

VI. $Q=ciA$

Q=	c	I	A	=	Q
Q_{100}=	0.58	8.00	1.11	=	5.2
Q_{25}=	0.58	6.70	1.11	=	4.3
Q_{10}=	0.58	5.80	1.11	=	3.7
Q_{2}=	0.58	4.20	1.11	=	2.7

APPENDIX B: PROPOSED CONDITIONS

POST DEVELOPMENT RUNOFF CONDITION

I. Total Drainage Area: 1.11 Acres

II. Soil Groups/Types:		Type
	BouB -Boonton-Urban Land	C

III. Time of Concentration: 10 Minutes

IV Rainfall Intensity:

Storm	Rainfall(in.)
100-YR	8.00
25-YR	6.70
10-YR	5.80
2-YR	4.20
1-YR	3.20

V. Weighted 'c' Calulation:

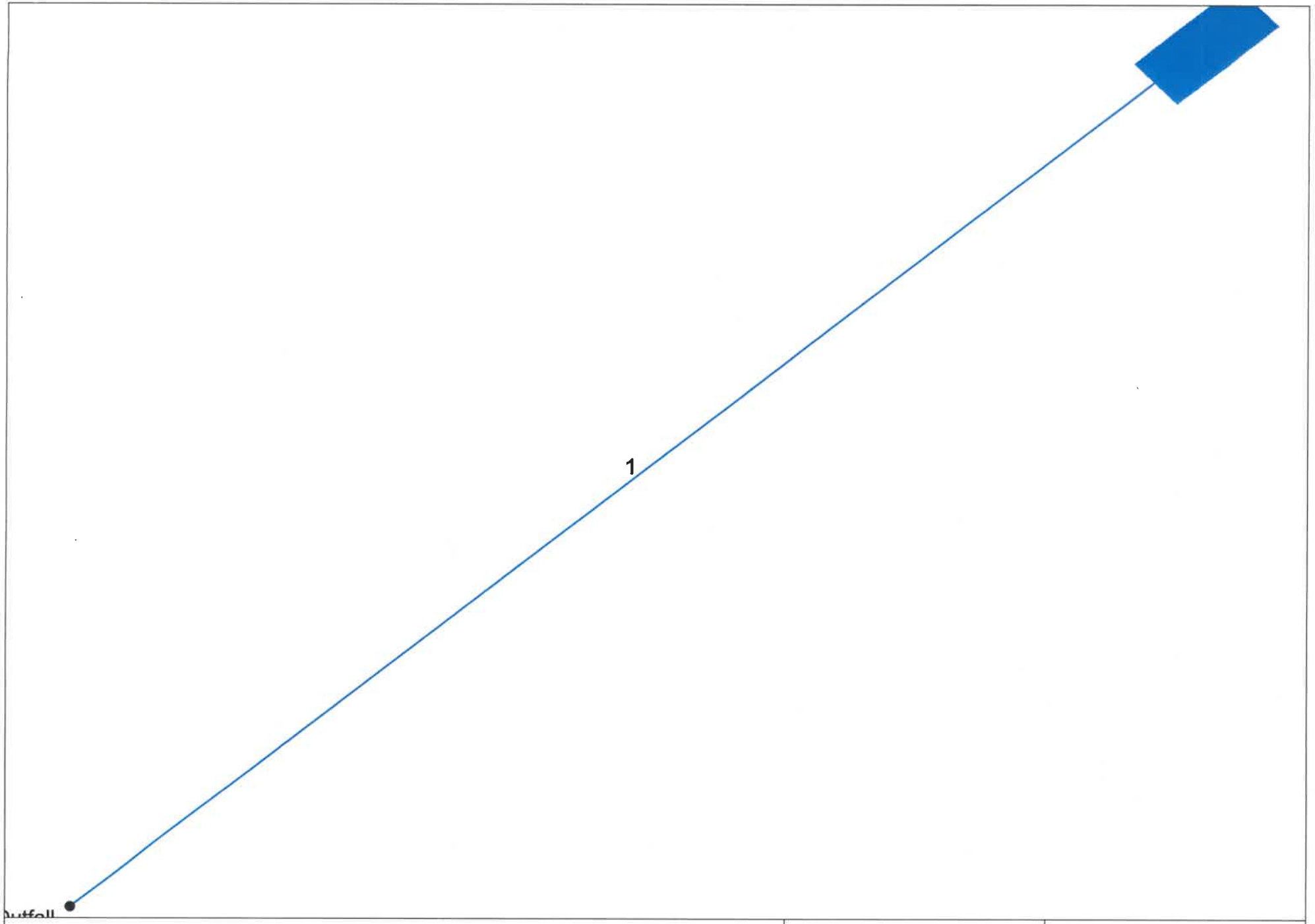
Land Use	Area	% of Cover	C Value	Total
Impervious	0.21 Acres	0.19	0.99	0.19
Gravel	0.14 Acres	0.13	0.84	0.11
Grass	0.76 Acres	0.68	0.51	0.35
Woods	0.00 Acres	0.00	0.45	0.00
			Weighted 'c':	0.65

VI. $Q=ciA$

Q=	c	I	A	=	Q
Q_{100}=	0.65	8.00	1.11	=	5.8
Q_{25}=	0.65	6.70	1.11	=	4.8
Q_{10}=	0.65	5.80	1.11	=	4.2
Q_{2}=	0.65	4.20	1.11	=	3.0

APPENDIX C: PIPE CALCULATIONS

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 2019.042-LINE A.stm	Number of lines: 1	Date: 6/5/2019

Pipe Calc

Line No.	Inlet ID	Line ID	Gnd/Rim El Up (ft)	Line Length (ft)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	i Inlet (in/hr)	Incr Q (cfs)	Total Area (ac)	Tc (min)	i Sys (in/hr)	Total Runoff (cfs)	Known Q (cfs)	Flow Rate (cfs)	Capac Full (cfs)	Line Size (in)	Line Slope (%)	Vel Ave (ft/s)	Invert Up (ft)	Invert Dn (ft)	n-val Pipe
1	A2	P1	104.00	45.106	0.37	0.63	10.0	6.73	1.57	0.37	10.0	6.73	1.57	0.00	1.57	2.54	12	0.51	3.46	101.50	101.27	0.013

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NOTES: Intensity = 42.39 / (Inlet time + 5.10) ^ 0.68 -- Return period = 25 Yrs. ; ** Critical depth