

**STORMWATER MANAGEMENT
REPORT
FOR
BLOCK 46.02, LOTS 1.01 & 2.01
CITY OF SEA ISLE
CAPE MAY COUNTY, NJ**

EDA #10232



Vincent C. Orlando

6/13/24

**Date
N.J.P.E. #32498**

Revised 8/20/24

Stormwater Management Calculations
Doc3, LLC - Block 46.02, Lots 1.01 & 2.01
City of Sea Isle, Cape May County, NJ

The 5,500 SF property, located on Landis Ave is currently an existing restaurant. The Applicant proposes a 4,350 SF mixed-use building with a restaurant on the first floor and a total of four (4) dwelling units on the 2nd and 3rd floors above. A stormwater trench with four 8" perforated PVC pipe surrounded by stone has been proposed to mitigate runoff. The design is to encompass the entire lot area minus any waterway area.

Pre-Development Runoff Calculation

$$Q = ciA$$

$$c = 0.30 \text{ (existing coverage)}$$

$$i = 7.70 \text{ in/hr } (T_c = 6 \text{ Min.})$$

$$A = 5,500 \text{ SF} = 0.126 \text{ Ac.}$$

$$Q = (0.30)(7.70 \text{ in/hr})(0.126 \text{ Ac.})$$

$$Q = 0.291 \text{ CFS}$$

$$V = (Q) T/t$$

$$T/t = 2.5(T/c) \text{ where } (T/c) \text{ is 6 minutes}$$

$$V = (0.291 \text{ CFS})(15 \text{ min.})(60 \text{ sec./min})$$

$$\mathbf{V = 261.9 CF}$$

Post-Development Runoff Calculation

$$Q = ciA$$

$$c = 0.99 \text{ (proposed coverage)}$$

$$i = 7.70 \text{ in/hr } (T_c = 6 \text{ Min.})$$

$$A = 5,500 \text{ SF} = 0.126 \text{ Ac.}$$

$$Q = (0.99)(7.70 \text{ in/hr})(0.126 \text{ Ac.})$$

$$Q = 0.961 \text{ CFS}$$

$$V = (Q) T/t$$

$$T/t = 2.5(T/c) \text{ where } (T/c) \text{ is 6 minutes}$$

$$V = (0.961 \text{ CFS})(15 \text{ min.})(60 \text{ sec./min})$$

$$\mathbf{V = 864.9 CF}$$

Volume Calculation

$$(\text{Post-Development Runoff}) - (\text{Pre-Development Runoff})$$

$$864.9 \text{ CF} - 261.9 \text{ CF} = 603 \text{ CF}$$

$$30\% \text{ Volume} = 181 \text{ CF}$$

Storage Calculation

Four 8" Pipes @ 50 LF

$$3.14 \times (.33)^2 \times 4 \times 50 = 68.39 \text{ CF}$$

6' x 53' Stone Trench

$$[(6' \times 1.33' \times 53') - 68.39] (0.35) = 124.09 \text{ CF}$$

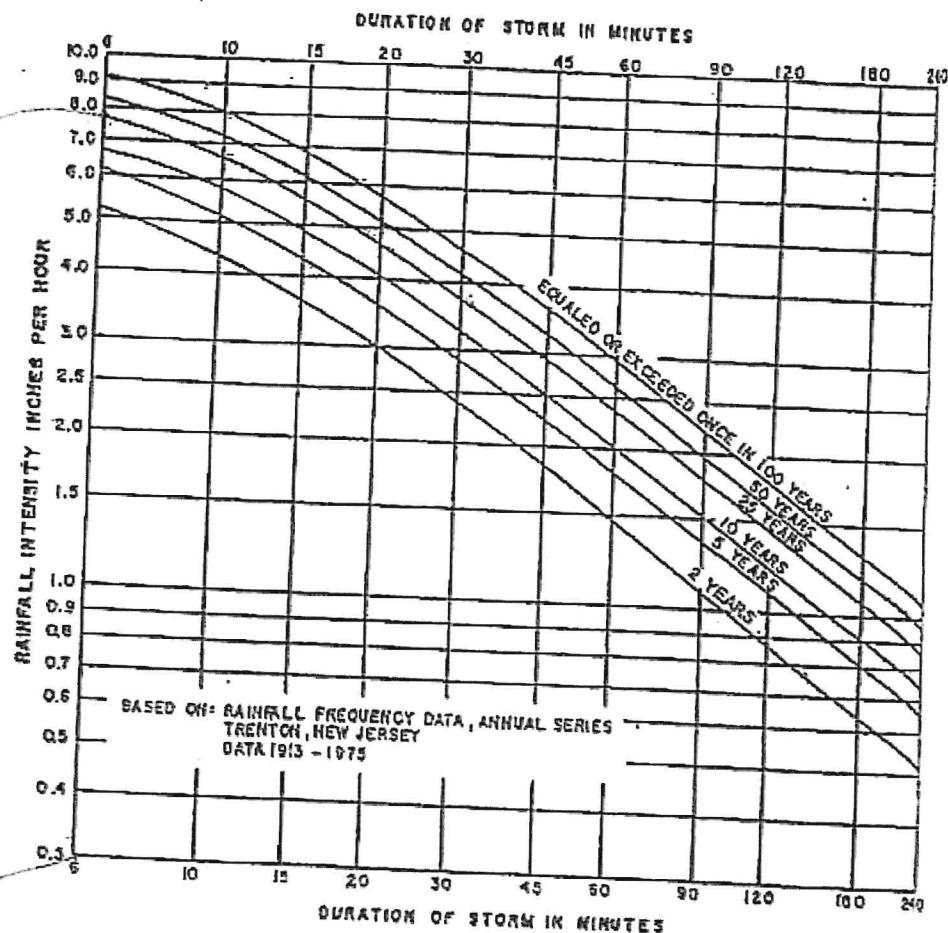
$$\mathbf{Total = 192.48 CF > 181 CF Required}$$

Summary:

The difference in the 25 year design storm generates approximately 603 CF of stormwater runoff from all improvements, of which 181 CF (30%) is required to be stored. The infiltration system has been designed to store approximately 192.48 CF of runoff. If the quantity of runoff exceeds the capacity of the trench, runoff will flow out of the proposed inlet and towards existing drainage patterns on 47th Street.

N.J.A.C. 5:21-7.2 APPENDIX C

FIGURE 7.2 RAINFALL INTENSITY CURVES



Note: Adapted from Figure 2.1-2 in the NJDEP Technical Manual for Stream Encroachment Permits.

N.J.A.C. 5:21-7.2 APPENDIX A

or other approved methods may be employed.

TABLE 7.1 TYPICAL RUNOFF COEFFICIENTS (C VALUES) FOR 100-YEAR FREQUENCY STORM

LAND-USE DESCRIPTION	HYDROLOGIC SOIL GROUP			
	A	B	C	D
Cultivated land: without conservation treatment with conservation treatment	0.49 0.27	0.67 0.43	0.81 0.61	0.88 0.67
Pasture or range land: poor condition good condition	0.38 NA	0.63 0.25	0.78 0.51	0.84 0.65
Meadow: good condition	NA	NA	0.44	0.61
Wood or forest land: thin stand, poor cover, no mulch good cover	NA NA	NA NA	0.59 0.45	0.79 0.59
Open spaces, lawns, parks, golf courses, cemeteries: good condition, grass cover on 75% or more of area fair condition, grass cover on 50-75% of area	NA NA	0.25 0.45	0.51 0.63	0.65 0.74
Commercial and business areas (85% impervious)	0.84	0.90	0.93	0.96
Industrial districts (72% impervious)	0.67	0.81	0.88	0.92
Residential: <u>Average lot size</u> <u>Average impervious</u>				
1/8 acre 65%	0.59	0.76	0.86	0.90
1/4 acre 38%	0.25	0.55	0.70	0.80
1/3 acre 30%	NA	0.48	0.67	0.78
1/2 acre 25%	NA	0.45	0.65	0.76
1 acre 20%	NA	0.41	0.63	0.74
Paved parking lots, roofs, driveways, etc.	0.99	0.99	0.99	0.99
Streets and roads: paved with curbs and storm sewers gravel dirt	0.99 0.57 0.49	0.99 0.76 0.69	0.99 0.84 0.80	0.99 0.88 0.84
NOTE:	NA denotes information is not available; design engineers should rely on another authoritative source.			
SOURCE:	<i>Technical Manual for Land Use Regulation Program</i> , Department of Environmental Protection, Bureaus of Inland and Coastal Regulations, Stream Encroachment Permits (Trenton, New Jersey, revised September 1995), p. 12.			

PROJECT SITE



GENERAL LOCATION
(NJDEP GEOWEB MAP)

1" = 200'

GRADING, DRAINAGE & UTILITY PLAN

LANDSCAPE PLAN

PLANTING SCHEDULE		COMMON NAME	SIZE	NOTES	QTY	
AVR BOTANICAL NAME	ACER BULBIFERUM	OCTOBER GOLD RED MAPLE	7'-6"	B&B	2	
AVR	FAGUS GLAUCA	EUHAKI BLUE	6'-7"	B&B	0	
AVR	JUGLANS COMMUNIS	COMPRESSA	5 GAL.	CONT.	4	
AVR	PRUNUS JAPONICA	PENNIFOL JUNIPER	3'-4'	CONT.	4	
AVR	SYCAMORE	HIMALAYAN BELL STAR	BLUETOOTH JUNIPER	3'-4'	CONT.	4
AVR	SYCAMORE	THUNDERBIRD CLOUD	THUNDERBIRD YEW/LEAF PALM	3'-7'	B&B	0
AVR	SYCAMORE	SPIRAEA	MAGIC CARPET SPIREA	3 GAL.	CONT.	4
NOTE: ALL LANDSCAPE PLANTS ARE FOR RE-BURIED CONDITIONS. SEE NOTES TO THE RIGHT.						

PRUNUS CERASIFERA 'THUNDERLOUD'	THUNDERCLOUD PURPLE LEAF PLUM	6'-7'	B&B
SPIREA 'APONIA 'WALBUNA'	MAGIC CARPET SPIREA	3 GALLONS	CONT.
ALL LANDSCAPED AREAS SHALL BE IRRIGATED. IRRIGATION SYSTEM TO HAVE RAIN SENSOR. IRRIGATION DESIGN TO BE PROVIDED BY LANDSCAPE CONTRACTOR & SUBMITTED TO CONSTRUCTION OFFICE.			

REFERENCES

14

ITEM	NOTES	QTY
B&B		2
B&B		0
CONT.		4
AL	CONT.	4
AL	CONT.	4
B&B		2
T		4
AL	CONT.	4

STRUCTURE OFFICE.

SIZE	7.	6'.	5 G.	3 G.	6'.	3 G.
PIE						

RON NAME
ER GLORY RED MAP
BLUE FESCUE
POINT JUNIPER
STAR JUNIPER
CLOUD PURPLE
CARPET SPREA
RATION SYSTEM TO
CONTRACTOR & SU

COMM	OCTOB	EUAH	PENCIL	BLUE S	THUND	MAGIC	IRRIGATED, IRRIGATED BY LANDSCAPE
RY		'RESSA'		'TIAN'	'RECLLOUD'		

SCHEDULE
ALL NAMES
JUN '10 OCTOBER GLO
LUCAS' ELIJAH BLUE
COMMUNIS' COMP
QUAMATA' BLUE
CLASSIFERA' THUNDE
VANIA' WALBUMA'
FEED AREAS SHALL E
SIGN TO BE PROVIDED

PLANTING SCI	BOTANICA	ACER RUBRUM
LBVR		FG FESC GLA
AR	JC JUNIPERUS	JS JUNIPERUS
	PC PRUNUS CER	SJ SPIREA JAPON
		NOTE: ALL LANDSCAPE IRRIGATION DE

ERA

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