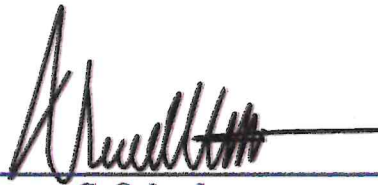


**STORMWATER MANAGEMENT
REPORT
FOR
BLOCK 46.02, LOTS 1.01 & 2.01
CITY OF SEA ISLE
CAPE MAY COUNTY, NJ**

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

$$Q = ciA$$

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

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

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

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

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

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

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

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

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

Post-Development Runoff Calculation

$$Q = ciA$$

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

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

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

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

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

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

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

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

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

Volume Calculation

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

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

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

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

$$[(6' \times 1.33' \times 53') - 68.39] (0.35)$$

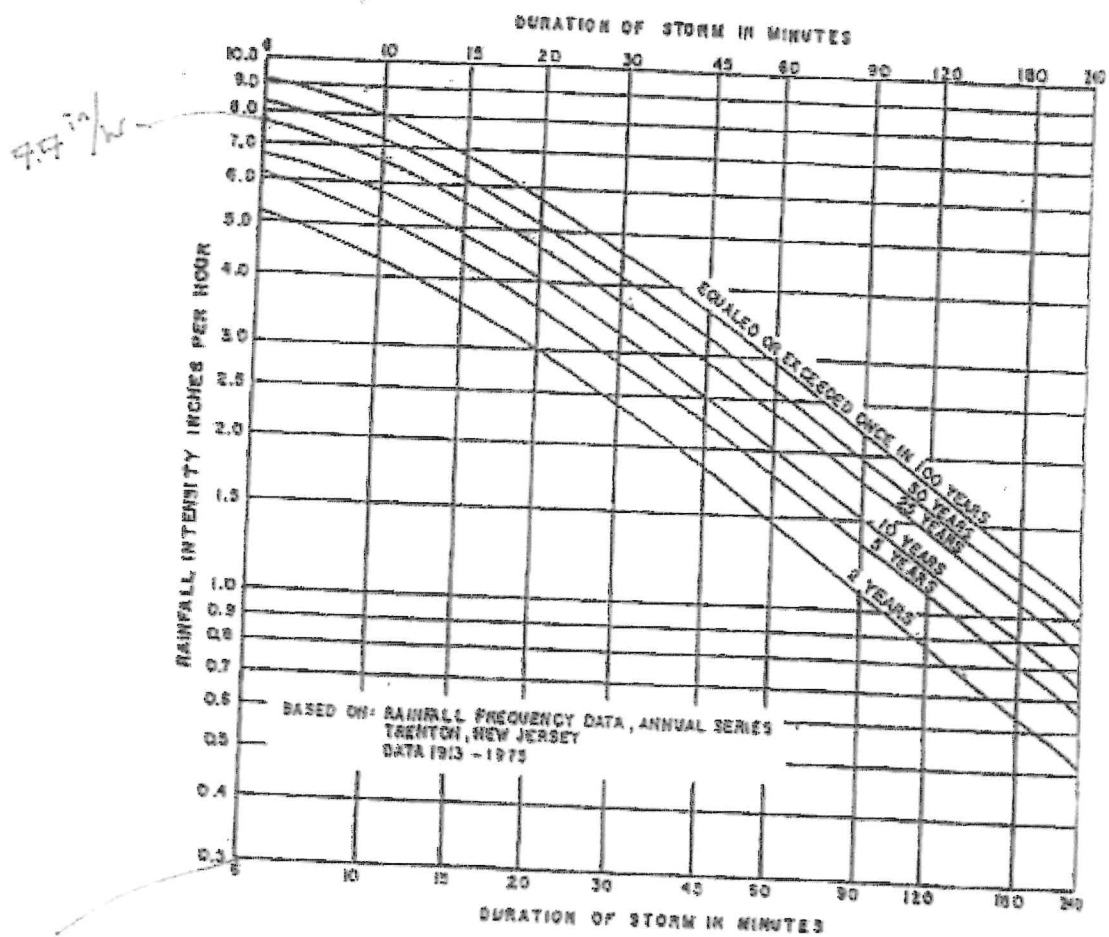
$$= 124.09 \text{ CF}$$

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

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.

FIGURE 7.2 RAINFALL INTENSITY CURVES



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

or other approved methods may be employed.

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

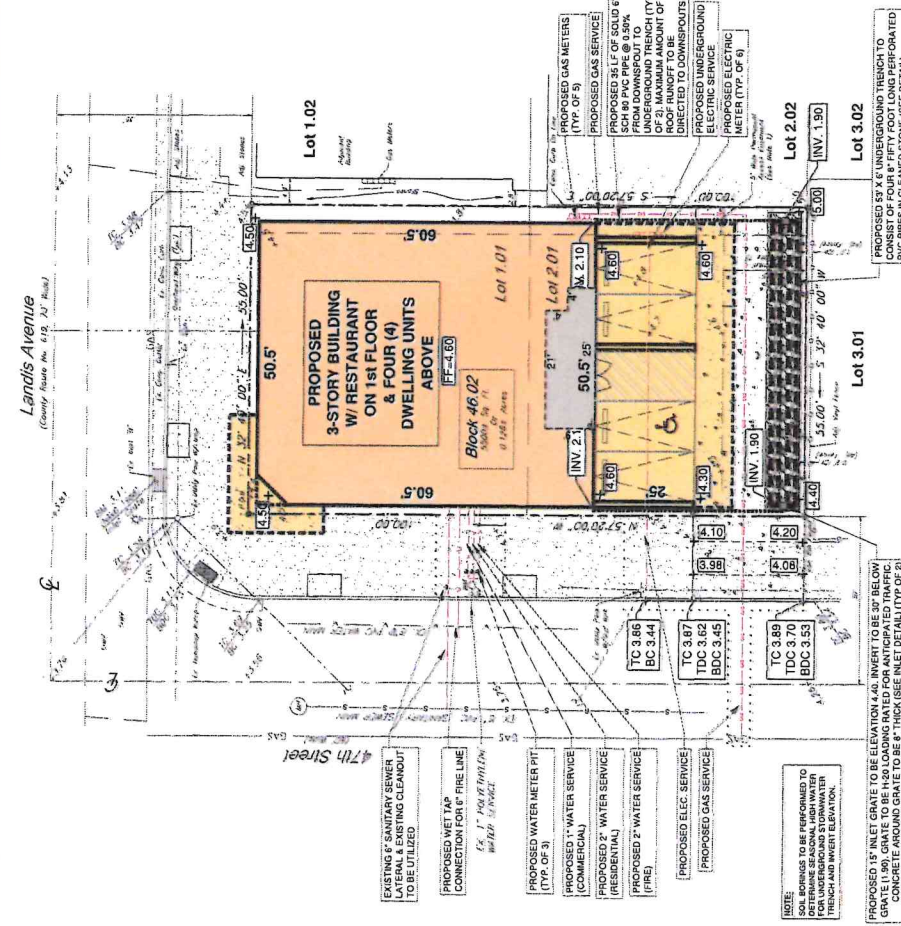
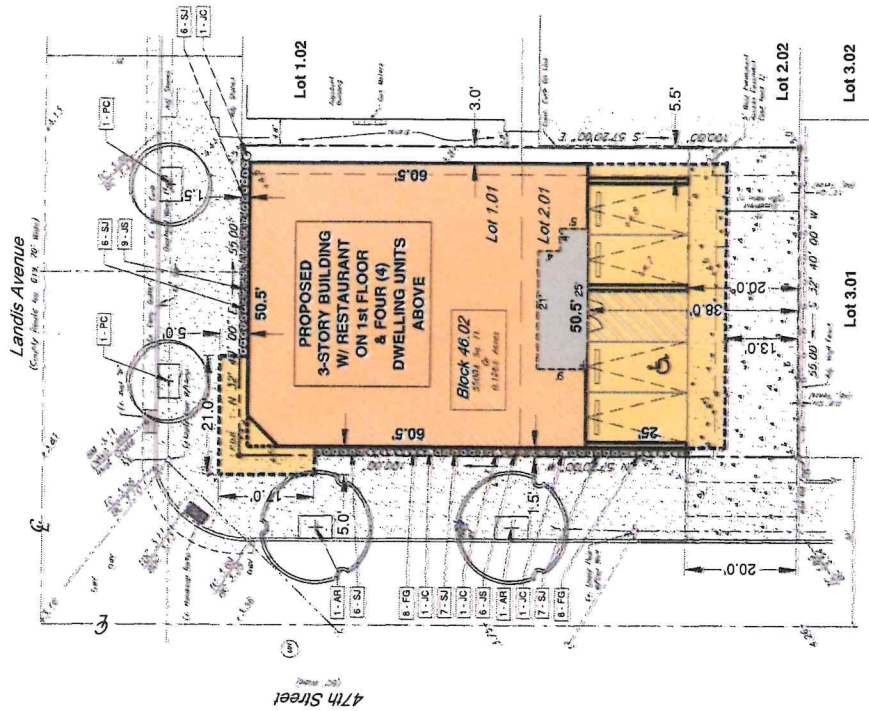
LAND-USE DESCRIPTION	HYDROLOGIC SOIL GROUP			
	A	B	C	D
Cultivated land: without conservation treatment with conservation treatment	0.49 0.27	0.67 0.43	0.81 0.61	0.88 0.67
Pasture or range land: poor condition good condition	0.38 NA	0.63 0.25	0.78 0.51	0.84 0.65
Meadow: good condition	NA	NA	0.44	0.61
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% 1/4 acre 38% 1/3 acre 30% 1/2 acre 25% 1 acre 20%	0.59 0.25 NA NA NA	0.76 0.55 0.49 0.45 0.41	0.86 0.70 0.67 0.65 0.63	0.90 0.80 0.78 0.76 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 0.86 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, Bureau 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'



PLANTING SCHEDULE		COMMON NAME		SIZE	NOTES	QTY
ABBV BOTANICAL NAME	COMMON NAME	SIZE	NOTES	QTY		
AF	ACER GLABRUM 'TILIANUM GLORY'	7'x4'	B&B	0		
FR	FRAXELA GUMMOSA 'TILIANUM GLORY'	7'x4'	B&B	0		
AR	ARJUNIA CANADENSIS 'COMPREHENS'	5 GAL	CONF	4		
AS	ANEMONE 'SANDWICH ISLAND TILIA'	3 GAL	CONF	4		
PC	PAUNIA GRANATIFLORA 'THUNDERCLOUP'	6-7'	B&B	2		
SJ	SPERDIA JAPONICA 'WALBRUNA'	3 GAL	CONF	4		

NOTE: ALL LANDSCAPED AREAS SHALL BE IRRIGATED. IRRIGATION SYSTEM TO HAVE RAIN SENSOR. IRRIGATION DESIGN TO BE PROVIDED BY LANDSCAPE CONTRACTOR & SUBMITTED TO CONSTRUCTION OFFICE.