

DRAINAGE STATEMENT

For

Mavis Tire Supply, LLC

Proposed Automotive Service and Retail Center

Block 105, Lot 64.01
460 Prospect Avenue
Township of West Orange, Essex County, NJ

Prepared by:



5 Greentree Centre, Suite 406
Marlton, NJ 08053
(856) 334-2000

A handwritten signature in black ink, appearing to read 'RR Ritchie', is positioned above a horizontal line.

Rodman R. Ritchie, PE, PP
NJ Professional Engineer License #43547

July 2025
DEC# 1956-24-04187

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I. Introduction

This Drainage Statement has been prepared to analyze the stormwater drainage conditions that would occur as a result of the redevelopment of Block 105, Lot 64.01, located in the Township of West Orange, Essex County, New Jersey. The analysis contained within this Drainage Statement is limited to the proposed area of disturbance. According to the Township of West Orange Zoning Map, the site is located in the (B-2) General Business District. The proposed property consists of 0.74 acres (+/-32,118 SF) and is located on Prospect Avenue (New Jersey State Highway #280), West Orange Township.

The site is currently developed with an existing realtor's office consisting of a two (2) story building, parking, sidewalks, lighting and other site amenities. The proposed project will replace the existing 3,338 SF (GFA) building east of Prospect Avenue to be redeveloped with an Automotive Service and Retail Center. The proposed building will include a total footprint of approximately 6,952 SF (0.16 acres). The overall development will result in 0.04 acres (1,329 SF) of new impervious surfaces (inclusive of MVS)(less than 0.25 acres of impervious coverage increase), and 0.66 acres of land disturbance (less than 1 acre of disturbance). Moreover, the proposed development will reduce existing motor vehicle surfaces by approximately 670 SF. Additional site improvements include modifications to the associated parking areas, landscaping, lighting, signage, and utilities as reflected on the accompanying Site Plan drawings.

II. Existing Pipe Capacity

The subject site has been evaluated using the Manning's Equation to understand the maximum flow capacity for each of the pipes proposed in the stormwater system.

$$Q = \frac{(1.49)}{n} AR^{2/3} \sqrt{S}$$

Equation 1: Manning's Equation

This was determined by first approximating the maximum flow conveyed into the existing system from the 6" CIP line. The slope of the 6" CIP pipe, connecting from the adjacent property, cannot be verified from the property survey, however it can be assumed that capacity of the pipe cannot exceed the downstream pipe at 2.5% slope. The flow from this pipe (1.0 CFS utilized in calculations) has been modeled in the attached Pipe Sizing calculations to demonstrate the proposed system has adequate capacity to convey the flow from the adjacent property, even when flowing at full capacity.

III. Drainage Summary

As a result of the proposed redevelopment, the overall impervious coverage onsite will increase from existing to proposed conditions by 4.7% (approximately 1,329 SF) and the limit of disturbance for proposed site improvements is approximately 0.66 acres.

In the existing condition, stormwater runoff is conveyed overland to five (5) separate inlets. The two yard inlets and two inlets within and surrounding the existing parking lot captures majority of the on-site runoff, ultimately discharging offsite through the existing 15" RCP stormwater line. The round inlet within the existing entrance on Blueberry Bend captures runoff from the adjacent properties, also ultimately discharging to the northeast offsite. The proposed development has been designed to generally maintain similar drainage patterns as the existing condition. As shown on the Inlet Area Map in the Appendix of this report, the majority of the stormwater runoff for the proposed development will be captured by the proposed inlets and yard drains and conveyed to the same offsite region as in the existing condition. Pipe Sizing calculations have been provided in the Appendix of this report to demonstrate that the proposed pipes have adequate capacity to handle the anticipated flows generated by the 25-year storm event.

The project does not result in greater than 1 acre of disturbance or create ¼ acre or more of new regulated impervious or motor vehicle surface; and therefore, the project is not subject to the stormwater management quantity, quality and recharge requirements set forth at NJAC 7:8. Further, due to the minimal increase in impervious coverage from existing to proposed conditions (with a reduction in motor vehicle surface), the proposed development will not significantly impact the existing drainage infrastructure located within the adjacent roadway or the surrounding properties.

APPENDIX

AERIAL PHOTO MAP

Aerial Photo Map

(Not to scale)



5 Greentree Center, Suite 406, Marlton, NJ T. 856-334-2000

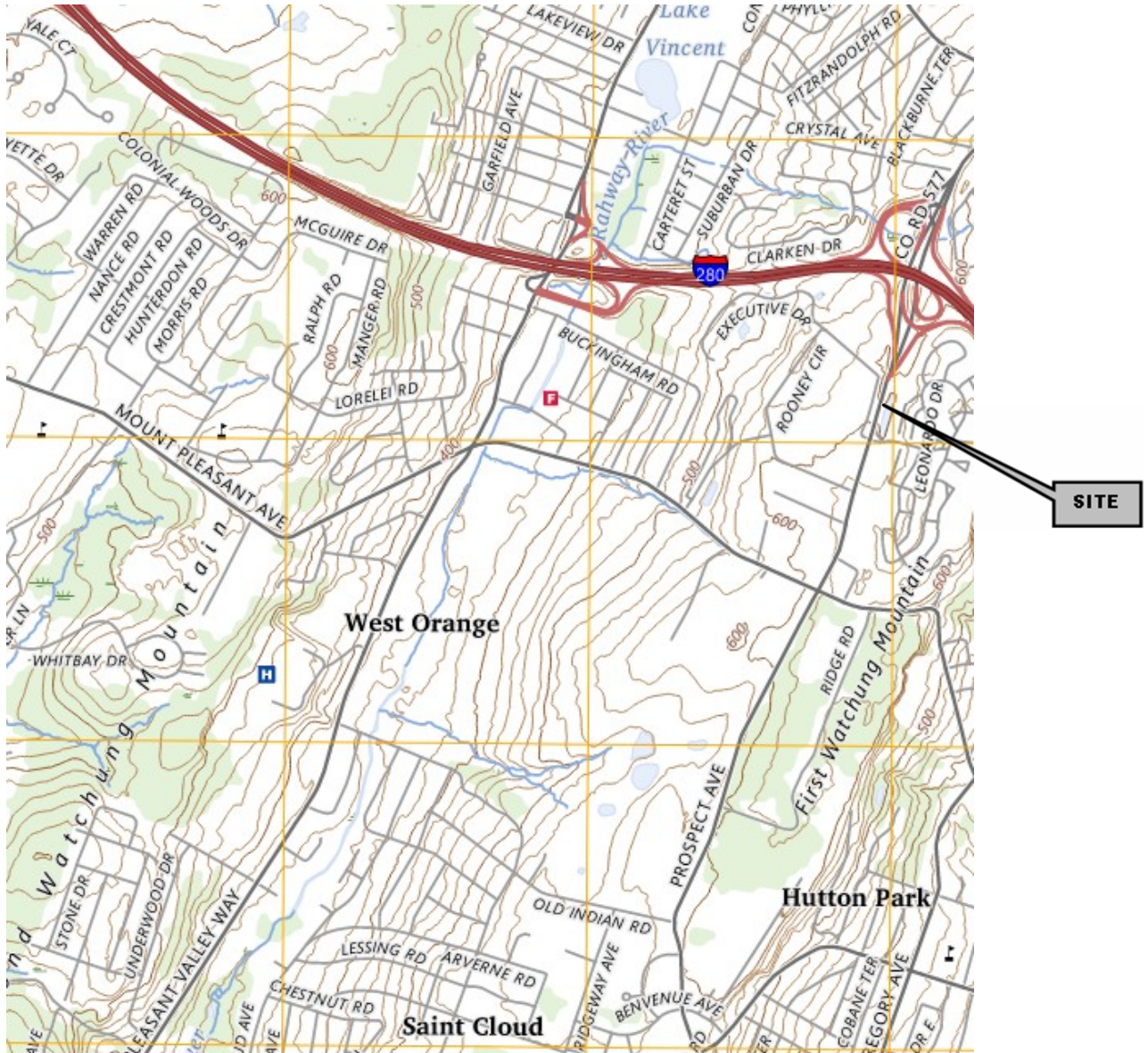
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14521 Old Katy Road, Suite 270, Houston, TX 77079 T. 281-789-6400
714 S. Greenville Avenue, Suite 100, Allen, TX 75002 T. 972-534-2100

USGS MAP

USGS Map

(Not to scale)



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PIPE SIZING



NOTES:

Computed By: KED

Checked By: CAM

Date: 7/3/2025

- 1) Design method used is Rational Method, unless otherwise noted.
- 2) Refer to Weighted Runoff Coefficient table for calculation of incremental areas and C values

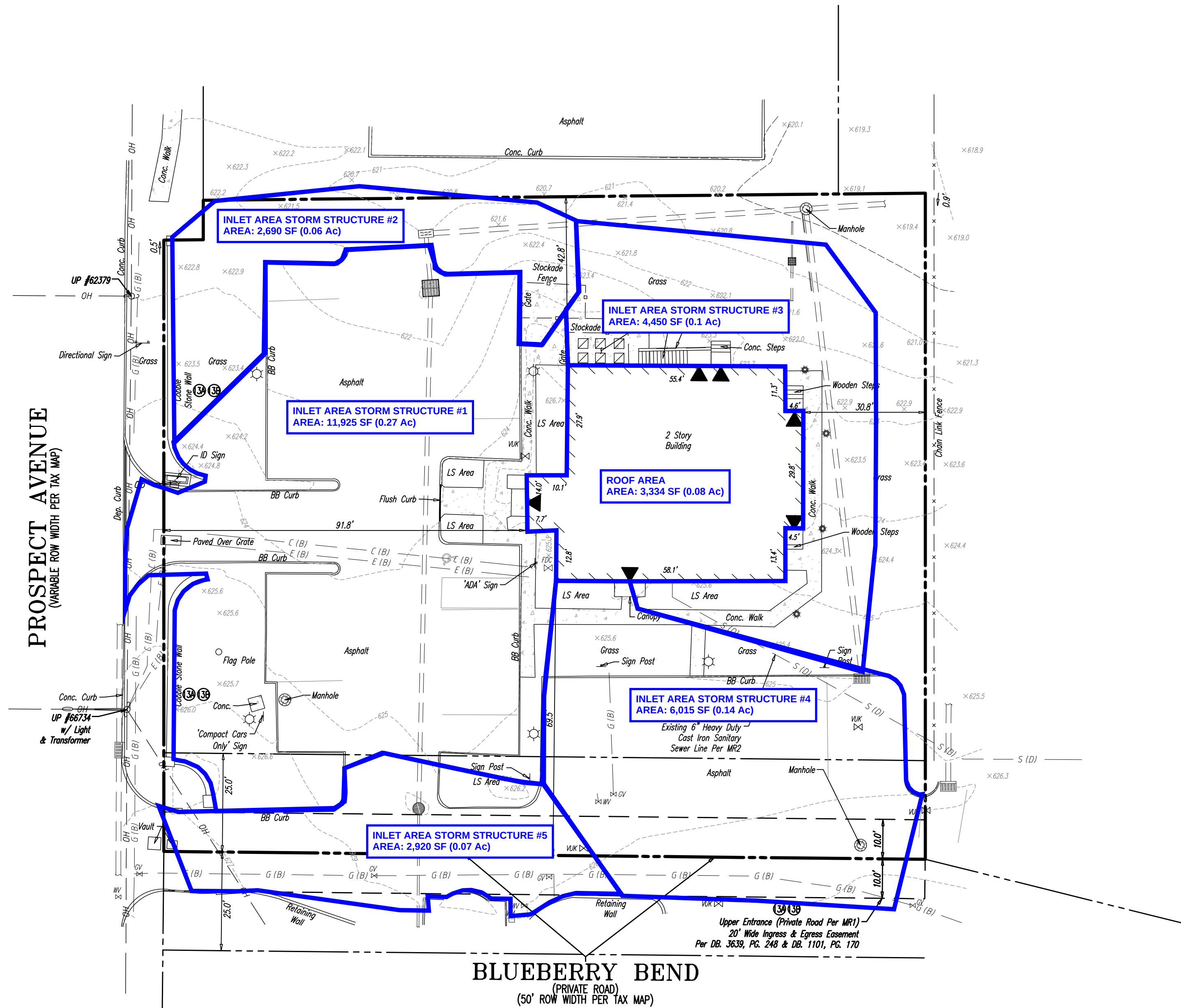
PIPE SECTION		SUBCATCHMENT AREA	INCREMENTAL		CUMULATIVE	TIME OF CONCENTRATION			I	PEAK RUNOFF		PIPING INPUT			PIPING DATA		
FROM	TO	Area (Acres)	"C"	A x C Ac	A x C (acres)	Tc to Inlet (min)	Tc in Pipe (min.)	Final Tc (min)	(In/Hr)	Q to Inlet (CFS)	Q cum. for Pipe (CFS)	Dia. (In)	Length (Ft)	Man. "n"	Slope (ft/ft)	Pipe Capacity (cfs)	Pipe Velocity (fps)
Storm Str. 6	Prop. MH 1	0.12	0.81	0.10	0.23	6.00	0.09	6.12	7.70	0.77	1.77	12	38.0	0.013	0.0250	5.63	7.17
Storm Str. 5	Prop. MH 1	0.11	0.92	0.10	0.10	6.00	0.25	6.00	7.70	0.77	0.77	15	60.0	0.012	0.0050	4.95	4.04
Storm Str. 7	Prop. MH 1	0.06	0.68	0.04	0.04	6.00	0.14	6.00	7.70	0.31	0.31	15	35.0	0.012	0.0050	4.95	4.04
Prop. MH 1	Storm Str. 2	0.00	0.00	0.00	0.37	6.00	0.52	6.25	7.70	0.00	2.85	12	108.0	0.012	0.0050	2.73	3.48
Storm Str. 2	Storm Str. 3	0.01	0.95	0.01	0.38	6.00	0.10	6.77	7.59	0.08	2.88	15	15.0	0.012	0.0020	3.13	2.55
Stm Str. 1 & DA1	Storm Str. 3	0.18	0.69	0.12	0.12	6.00	0.26	6.00	7.70	0.92	0.92	15	63.0	0.012	0.0050	4.95	4.04
Storm Str. 3	Existing MH	0.00	0.35	0.00	0.51	6.00	0.26	6.87	7.59	0.00	3.87	15	97.0	0.013	0.0140	7.64	6.23
Roof Area	Existing MH	0.16	0.95	0.15	0.15	6.00	0.45	6.00	7.70	1.16	1.16	12	93.0	0.012	0.0050	2.73	3.48
Prop. MH 2	End*	0.00	0.00	0.00	0.00	6.00	0.05	6.00	7.70	0.00	0.00	15	20.0	0.013	0.0140	7.64	6.23
Offsite Q**	Storm Str. 6	0.16	0.80	0.13	0.13	6.00	0.12	6.00	7.70	1.00	1.00	6	30.0	0.014	0.0250	0.82	4.18

*This pipe sizing calculation assumes downstream pipe capacity is limited to the capacity of the prior segment under existing conditions.

**This flow has been calculated to provide the conservate flow generated from off-site conditons. (1.0 CFS)

EXISTING INLET DRAINAGE AREA MAP

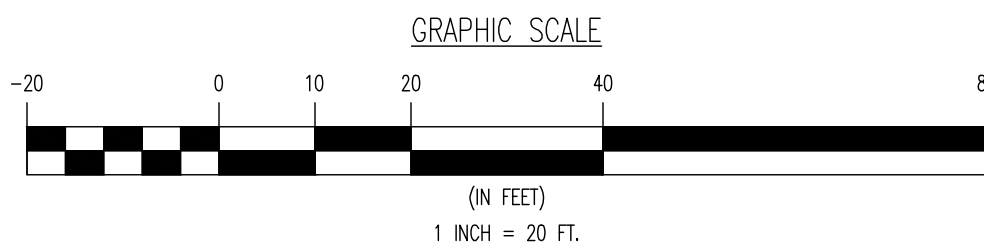
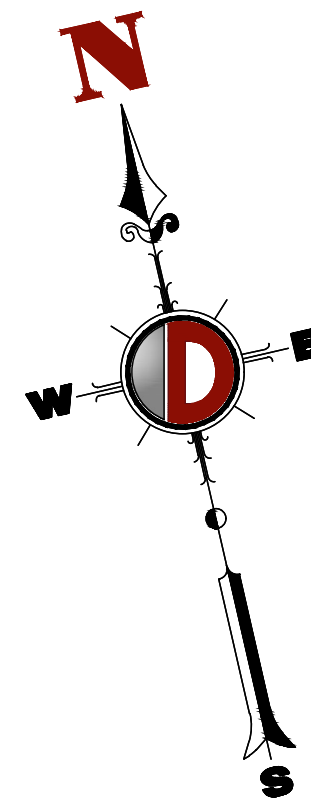
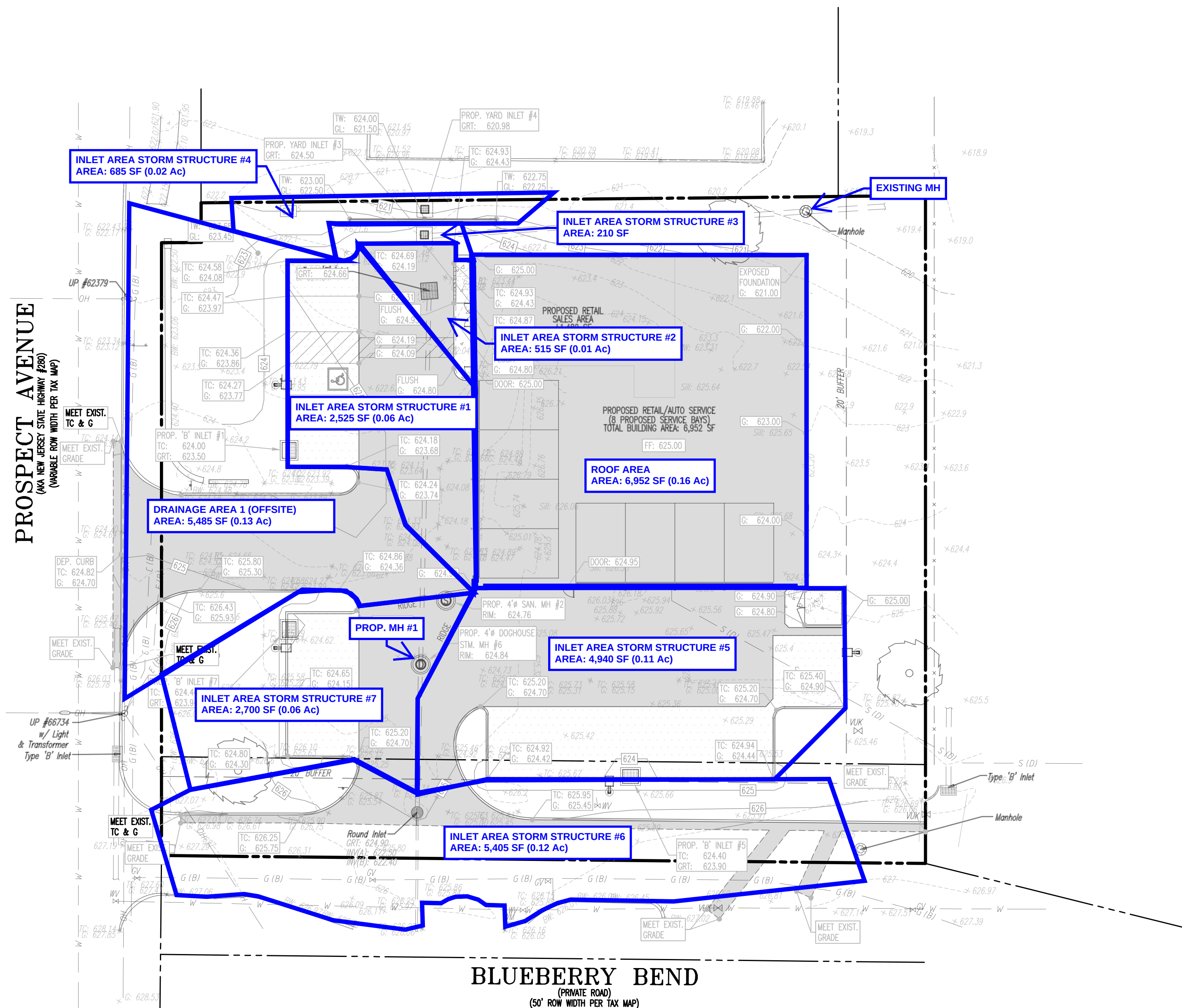
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PROPOSED INLET DRAINAGE AREA MAP

Plotted: 07/18/25 - 9:06 AM, By: krazimir, Product Ver: 25.0
File: P:\BECPC PROJECTS\1956 Mavis Tire Supply LLC\24-04187 West Orange Dwg\DA Maps\019562404187PDA0.dwg, ----> 02 PROPOSED DRAINAGE AREA MAP



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