

# ***DRAINAGE STATEMENT***

*for*

***Sharbell Building Company, LLC  
Planned Residential Development – KT Tract***

***Village Drive  
Block 28009, Lot 2  
Montgomery Township, Somerset County, NJ***

Prepared by:



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A handwritten signature in black ink, appearing to read 'Jeffrey S. Haberman', with a long horizontal flourish extending to the right.

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**Jeffrey S. Haberman, PE, PP**  
NJ Professional Engineer License #53560

June 2023  
DEC# 0043-14-015

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- Pervious Pavement Schematic Detail
- Stormwater Collection System Calculations (Pipe Sizing)
- Inlet Area Map

## **I. NARRATIVE**

The project area consists of Block 28009, Lot 2, in the Township of Montgomery, Somerset County, New Jersey. The subject parcel previously received Preliminary and Final Site Plan approval (#PB-01-18) for the construction of a 40-unit condominium building with associated roadways, parking areas, recreational open space areas and other associated improvements and amenities. The Applicant is now seeking to amend the prior approval to replace the condominium building with two (2) stacked multi-family buildings consisting of a total of 20 units. The purpose of this drainage statement is to outline the changes to the drainage conditions as a result of the site plan revisions to Lot 2.

## **II. DESIGN OVERVIEW**

This report has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the modifications to the proposed layout of Block 28009, Lot 2 as described above. It is important to note that the stormwater runoff quantity, quality, and groundwater recharge requirements set forth by the Montgomery Township Land Use Ordinance and NJAC 7:8 have been satisfied under the previously approved application by way of the two (2) proposed (now constructed) wet pond stormwater basins. Please refer to the Stormwater Management, Water Quality and Groundwater Recharge Analysis prepared by our office, dated January 2018, last revised August 2018 for more information regarding the stormwater drainage conditions for the overall Montgomery Crossing site and compliance with the applicable aspects of the Montgomery Township Land Use Ordinance and NJAC 7:8 – Stormwater Management.

The proposed project modifications result in a decrease in impervious surfaces of 7,053 SF and therefore the peak rate and volume of runoff directed to the wet pond basins will be reduced from the prior approved design. Furthermore, due to the reduction in impervious coverage, additional water quality measures are not required. However, pursuant to discussions with the Municipality, we understand the desire to provide additional green infrastructure into the amended design. Therefore, the amended project proposes two (2) pervious pavement sections with underdrain pipe systems in order to provide additional water quality benefits. A revised stormwater conveyance system is proposed to direct the associated stormwater runoff into the previously approved wet pond basins.

### **III. PERVIOUS PAVEMENT SYSTEM DESIGN**

As noted above, the site design incorporates two (2) pervious pavement with underdrain systems to provide additional water quality benefits. The pervious pavement systems are designed to accept stormwater runoff from the multi-family driveways and portions of the access driveway. The systems treat the stormwater runoff and convey runoff by way of the underdrain system into the previously approved wet-pond basins. In accordance with the New Jersey Stormwater Best Management Practices Manual, the following design considerations have been satisfied:

- Bottom of system must be a minimum of 1 foot about the Seasonal High-Water Table if designed with underdrains or 2 feet above the Seasonal High-Water Table if designed to infiltrate.
- Surface course slope not to exceed 5%.
- System must fully drain basin volume within 72 hours.
- System must be designed to safely convey overflow volume.

### **IV. WATER QUALITY**

As noted previously in this report, the TSS removal rate requirement set forth by the Township of Montgomery Land Use Ordinance and NJAC 7:8 has been met by way of the previously approved and constructed wet pond basin system. However, it is important to note that the proposed pervious pavement systems will provide an additional TSS removal rate of 80% for the associated tributary area. The project also results in a net decrease in vehicle traveled surface on Lot 2 from what was previously approved, which results in further water quality benefits.

### **V. CONCLUSION**

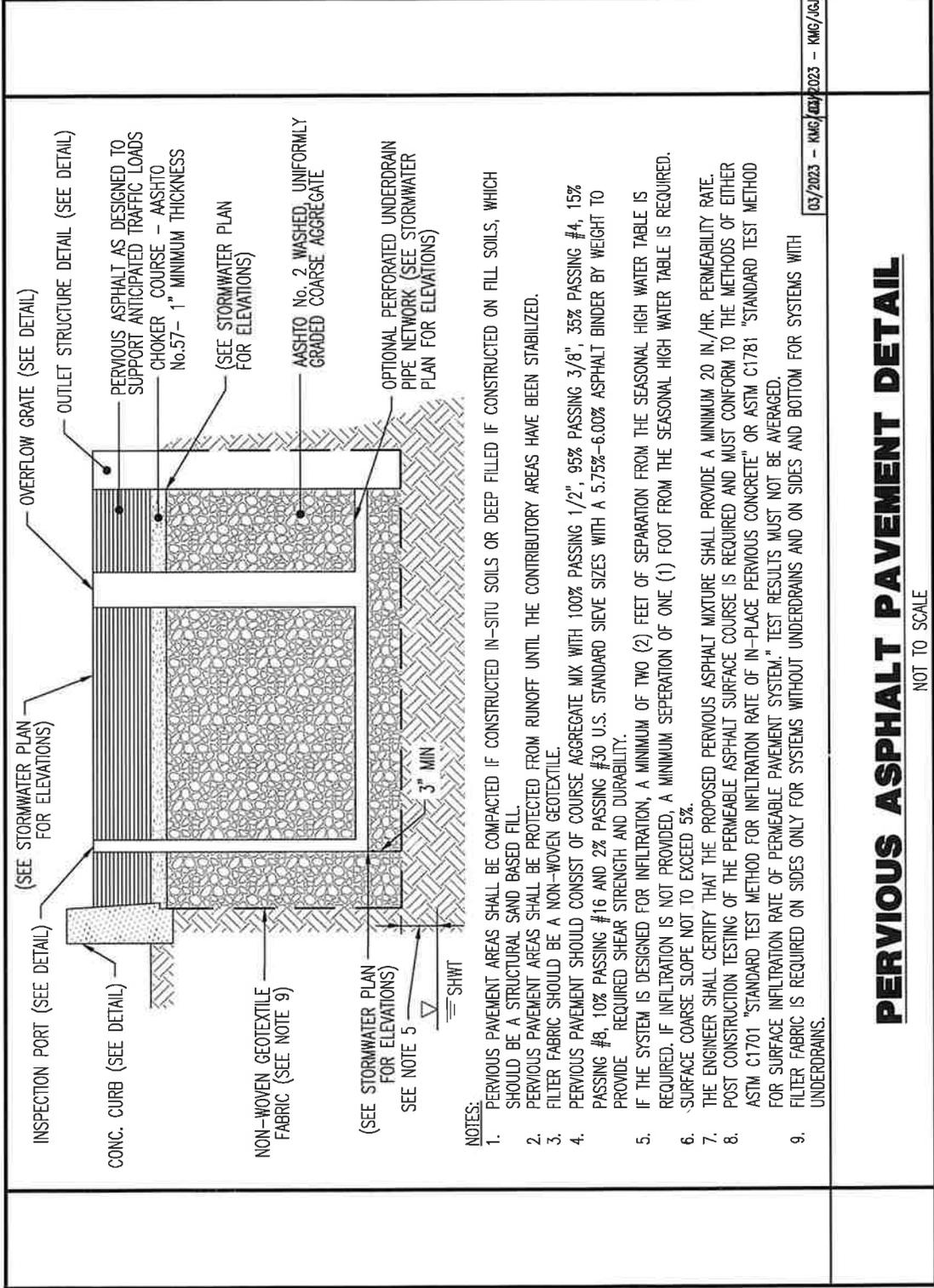
The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing/previously approved drainage patterns, adjacent roadways, or adjacent parcels. The stormwater runoff quantity, quality, and groundwater recharge requirements set forth by the Montgomery Township Land Use Ordinance and NJAC 7:8 have been satisfied under the previously approved wet pond system design. It is important to note that the proposed revisions will result in the same hydrologic conditions and a decrease of impervious coverage from what was previously approved. With this

stated, it is evident that the proposed development will not have a negative impact on the existing/previously approved stormwater management system, water quality, or groundwater recharge on site or within the vicinity of the subject parcel.

Please refer to the Stormwater Management, Water Quality and Groundwater Recharge Analysis prepared by our office, dated January 2018, last revised August 2018 for more information regarding the stormwater drainage conditions for the overall site and compliance with the applicable aspects of the Montgomery Township Land Use Ordinance and NJAC 7:8 – Stormwater Management.

# **APPENDIX**

**PERVIOUS PAVEMENT  
SCHEMATIC DETAILS**



05/2023 - KMG/AB/2023 - KMG/06

**NOTES:**

1. PERVIOUS PAVEMENT AREAS SHALL BE COMPACTED IF CONSTRUCTED IN-SITU SOILS OR DEEP FILLED IF CONSTRUCTED ON FILL SOILS, WHICH SHOULD BE A STRUCTURAL SAND BASED FILL.
2. PERVIOUS PAVEMENT AREAS SHALL BE PROTECTED FROM RUNOFF UNTIL THE CONTRIBUTORY AREAS HAVE BEEN STABILIZED.
3. FILTER FABRIC SHOULD BE A NON-WOVEN GEOTEXTILE.
4. PERVIOUS PAVEMENT SHOULD CONSIST OF COURSE AGGREGATE MIX WITH 100% PASSING 1/2", 95% PASSING 3/8", 35% PASSING #4, 15% PASSING #8, 10% PASSING #16 AND 2% PASSING #30 U.S. STANDARD SIEVE SIZES WITH A 5.75%-6.00% ASPHALT BINDER BY WEIGHT TO PROVIDE REQUIRED SHEAR STRENGTH AND DURABILITY.
5. IF THE SYSTEM IS DESIGNED FOR INFILTRATION, A MINIMUM OF TWO (2) FEET OF SEPARATION FROM THE SEASONAL HIGH WATER TABLE IS REQUIRED. IF INFILTRATION IS NOT PROVIDED, A MINIMUM SEPERATION OF ONE (1) FOOT FROM THE SEASONAL HIGH WATER TABLE IS REQUIRED.
6. SURFACE COARSE SLOPE NOT TO EXCEED 5%.
7. THE ENGINEER SHALL CERTIFY THAT THE PROPOSED PERVIOUS ASPHALT MIXTURE SHALL PROVIDE A MINIMUM 20 IN./HR. PERMEABILITY RATE.
8. POST CONSTRUCTION TESTING OF THE PERMEABLE ASPHALT SURFACE COURSE IS REQUIRED AND MUST CONFORM TO THE METHODS OF EITHER ASTM C1701 "STANDARD TEST METHOD FOR INFILTRATION RATE OF IN-PLACE PERVIOUS CONCRETE" OR ASTM C1781 "STANDARD TEST METHOD FOR SURFACE INFILTRATION RATE OF PERMEABLE PAVEMENT SYSTEM." TEST RESULTS MUST NOT BE AVERAGED.
9. FILTER FABRIC IS REQUIRED ON SIDES ONLY FOR SYSTEMS WITHOUT UNDERDRAINS AND ON SIDES AND BOTTOM FOR SYSTEMS WITH UNDERDRAINS.

**PERVIOUS ASPHALT PAVEMENT DETAIL**

NOT TO SCALE

**STORMWATER COLLECTION SYSTEM  
CALCULATIONS  
(PIPE SIZING)**



# DYNAMIC ENGINEERING

## Inlet Area Summary and Average Coefficient (C) Calculations

Project: Proposed Townhome Ammdement

Computed By: NM

Job #: 0043-14-015

Checked By: JH

Location: Montgomery

Date: 5/23/2023

Drainage Area	Impervious Area (sf)	Coefficient (C) Used	Open Space/Woods Area for Soil Group B (SF)	Coefficient (C) Used	Average Coefficient (C) Used	Total Area (SF)	Total Area (acres)
217B	53	0.95	1020	0.35	0.38	1073	0.02
219D	1126	0.95	2253	0.35	0.55	3379	0.08
219F	3336	0.95	2361	0.35	0.70	5697	0.13
219G	3042	0.95	1827	0.35	0.72	4869	0.11
219H	3068	0.95	1728	0.35	0.73	4796	0.11
219I	3161	0.95	1982	0.35	0.72	5143	0.12
Roof A	4321	0.95	0	0.35	0.95	4321	0.10
Roof B	4269	0.95	0	0.35	0.95	4269	0.10



# DYNAMIC ENGINEERING

## Stormwater Collection System Calculations

Project: Prop. Townhome Ammendment    Computed By: NM  
 Job #: 0043-14-015                              Checked By: JH  
 Location: Montgomery                              Date: 5/23/2023  
 Design Storm: 25 year                              Revised:

NOTES:  
 1) Design method used is Rational Method  
 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)	Full Pipe Velocity (fps)	Actual Pipe Velocity (fps)
219I	219H	0.12	0.72	0.09	0.09	10.00	0.21	10.00	6.80	0.61	0.61	15	52.0	0.012	0.0050	4.95	4.04	1.82
219H	219E	0.11	0.73	0.08	0.17	10.00	0.27	10.21	6.80	0.54	1.16	15	66.0	0.012	0.0050	4.95	4.04	2.70
219G	219F	0.11	0.72	0.08	0.08	10.00	0.21	10.00	6.80	0.54	0.54	15	52.0	0.012	0.0050	4.95	4.04	1.72
219F	219E	0.13	0.70	0.09	0.17	10.00	0.21	10.21	6.80	0.61	1.16	15	51.0	0.012	0.0050	4.95	4.04	2.70
219E	219D	0.00	0.98	0.00	0.34	10.00	0.16	10.48	6.80	0.00	2.31	15	38.0	0.012	0.0050	4.95	4.04	3.93
219D	219C	0.08	0.55	0.04	0.38	10.00	0.15	10.64	6.68	0.27	2.54	15	36.0	0.012	0.0050	4.95	4.04	4.08
Roof A	219C	0.10	0.95	0.10	0.10	10.00	0.53	10.00	6.80	0.68	0.68	8	142.0	0.010	0.0100	1.57	4.50	4.22
Roof B	219C	0.10	0.95	0.10	0.10	10.00	0.57	10.00	6.80	0.68	0.68	8	155.0	0.010	0.0100	1.57	4.50	4.22
217B	217A	0.02	0.38	0.01	0.01	10.00	0.09	10.00	6.80	0.07	0.07	15	30.0	0.012	0.0100	7.00	5.71	0.51

# **INLET AREA MAP**

