

LAND USE AND DEVELOPMENT

245 Attachment 7

Township of Manchester

Appendix 7

Application for Development Before Zoning Board of Adjustment and Planning Board
(§ 245-12B)

1. Check Appropriate Request:
☒ Variance Approval
☐ Conditional Use Permit
☐ Informal Review – Major Subdivision
☐ Minor Subdivision Approval
☐ Preliminary Major Subdivision Approval
☐ Informal Review – Site Plan
☒ Preliminary Site Plan Approval
☒ Final Site Plan Approval
☐ Permit Pursuant to N.J.S.A. 40:55D-34 and/or N.J.S.A. 40:55D-36
☐ Other: Describe _____
2. Applicant's Name: (If a corporation – State of incorporation and registered agent)
Manchester (Ridgeway) DG, LLC
3. Address: 361 Summit Boulevard, Suite 110, Birmingham, Alabama 35243
4. Phone: 205-281-5053 Fax: _____
5. Represented By: Jason R. Tuvel, Esquire for Prime Law
6. Address: 14000 Horizon Way, Suite 325, Mount Laurel, New Jersey 08054

7. Phone: 856-273-8300 Fax: 856-273-8383
8. Purpose of this Application: Site Plan Approval Commercial Development
9. Use of any Existing Building or Premises: N/A - vacant lot
☐ Single Family
☐ Multifamily
☐ Commercial
☐ Conditional Use Project
☐ Other _____
10. Use of Proposed Construction or Premises:
☐ Single Family
☐ Multifamily
☒ Commercial
☐ Conditional Use Project
☐ Other _____
11. Number of Existing Lots: 1
12. Number of Proposed Lots: 1

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13. Location of Premises: 2920 Highway 511, l, Manchester Township, Ocean County, NJ
Tax Map Block 5 and Lot 2059
Tax Map Sheet _____
Size of Tract: (Acres) 2.34 (Square Feet) 101,892.0 SF
Zoning District B-1 Business Zoning District

14. If there has been a previous appeal or application involving these premises, give details.

N/A

15. Give a brief statement of facts in support of this application.

Testimony to be provided at time of hearing.

16. If Application involves a variance, what section of the chapter is applicant seeking relief from:

See attached zoning relief list.

17. If a variance is involved, state under what subsection of N.J.S.A. 40:55D-70:

(a) _____ (b) _____ (c) X (d) _____

18. Names and Addresses of Persons Preparing Submission:

Architect: Garson Design Group Phone: 570-323-4048 Fax: 570-323-9902
Engineer: Jeffrey A. Martell, PE Phone: 609-362-6900 Fax: 201-340-4472
Stonefield Engineering & Design, LLC
Other - Designate: Jason R. Tuvel, Esq. Phone: 856-273-8300 Fax: 856-273-8383
Prime Law

19. Names and addresses of all witnesses Applicant intends to call. This is not intended to limit the number of witnesses the Applicant intends to call.

See attached witness list.

20. In the event the Applicant is a corporation, set forth names and addresses of officers of the corporation and individuals owning 10% or more of the capital stock.

See the attached Corporate Disclosure Statement.

21. Environmental Impact Statement: For all major subdivisions and major site plans and in special cases as determined by the Approving Agency.

I (We) hereby depose and say that the foregoing statements contained in the papers submitted herewith are true and correct to the best of my (our) knowledge.

Stu E. [Signature] (Applicant)

Sworn and subscribed to before me on this 27th day of December 2018

Rubeeja D. Chaur

I (We) the Owners(s) hereby depose and say that the foregoing statements contained in the papers submitted herewith are true and correct to the best of my (our) knowledge. (Used if the Applicant is not the Owner).

Sworn and subscribed to before me on this _____ day of _____ 20____

Failure to complete this application in its entirety and submit the required documents will result in the determination that this application is incomplete, in which event the application will not be considered by the Board. The applicant is hereby informed that in addition to the documents set forth herein, he must present evidence that he has met the notification requirements as set forth in the municipal notice of application of development forms and Chapter 245 of the Manchester Township Code.

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245 Attachment 3

Township of Manchester

Appendix 3 Application Checklist and Documents Required to be Submitted [Amended 11-27-2000 by Ord. No. 00-040; 11-28-2005 by Ord. No. 05-053; 2-22-2010 by Ord. No. 10-006; 6-24-2013 by Ord. No. 13-005]

No.	Description	Variance	Informal Sketch Plat	Minor Application		Major Application				Submitted	
				Subdivision	Site Plan	Subdivision		Site Plan		<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/> N/A <input type="checkbox"/>
A.	Application Form (20 copies for review)	X	X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/> N/A <input type="checkbox"/>
B.	Project Plat Information (20 copies for review)										
	1. Name, telephone number and address of owner and applicant	X	X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/>
	2. Notarized signature/affidavit of ownership. If applicant is not the owner, state applicant's interest in plan. (Final Plat prior to filing)	X	X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/>
	3. Name, signature, license number, seal, address, telephone number, e-mail and Fax number of professional engineer, land surveyor, architect, planner and certified landscape architect, as applicable, involved in preparation of plat.	X	X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/>
	4. Title block denoting type of application, Tax Map sheet, county, name of municipality, block and lot, and street location.	X	X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/>

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No.	Description	Variance	Informal Sketch Plat	Major Application						Submitted	
				Minor Application		Subdivision		Site Plan			
				Subdivision	Site Plan	Preliminary	Final	Preliminary	Final	<input type="checkbox"/> X	<input type="checkbox"/> N/A
5.	Key map at specified scale showing location to surrounding properties, streets, easements, municipal boundaries, etc., within 500 feet of property.	X	X	X	X	X	X	X	X	<input type="checkbox"/> X	<input type="checkbox"/> N/A
6.	North arrow and scale for key map and plat. Scale to include bar graph depicting feet.	X	X	X	X	X	X	X	X	<input type="checkbox"/> X	<input type="checkbox"/>
7.	Schedule of required zoning district requirements including lot area, density, FAR, width, depth, yard setbacks, building coverage, open space, parking, etc.	X	X	X	X	X	X	X	X	<input type="checkbox"/> X	<input type="checkbox"/>
8.	Signature and date blocks for Board Chairman, Secretary and Engineer.			X	X	X	X	X	X	<input type="checkbox"/> X	<input type="checkbox"/>
9.	Proof that taxes are current.	X	X	X	X	X	X	X	X	<input type="checkbox"/> X	<input type="checkbox"/>
10.	Certification blocks required by Map Filing Law.			X			X			<input type="checkbox"/>	<input type="checkbox"/> N/A
11.	Monumentation as specified by Map Filing Law and required by Township Engineer.			X			X			<input type="checkbox"/>	<input type="checkbox"/> N/A
12.	Date of current property survey, name of reference plat and name and license number of New Jersey Professional Land Surveyor.			X	X	X	X	X	X	<input type="checkbox"/>	<input type="checkbox"/> X

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No.	Description	Variance	Informal Sketch Plat	Major Application						Submitted	
				Minor Application		Subdivision		Site Plan			
				Subdivision	Site Plan	Preliminary	Final	Preliminary	Final		
13.	Plans to a scale of not less than 1 inch = 50 feet (except that 40 acres or larger may be 1 inch = 10 feet) and not larger than 1 inch = 10 feet on one of four of the following standard sheet sizes: 8 1/2" x 13" 15" x 21" 24" x 36" 30" x 42"			X	X	X	X	X	X	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
14.	Metes and bounds description showing dimensions, bearings of original and proposed lots.			X	X	X	X	X	X	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
15.	Metes and bounds description showing dimensions, bearings, curve data, length of tangents, radii, arcs, chords, and central angles for all centerlines and rights-of-way and centerline curves on streets.			X	X	X	X	X	X	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N/A	
16.	Acreage of tract to the nearest tenth of an acre (for GDP to nearest acre).	X	X	X	X	X	X	X	X	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
17.	Date and number of original preparation and of each subsequent revision. Include brief narrative of each revision.	X		X	X	X	X	X	X	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
18.	Size and location of any existing and proposed structures with all setbacks and length measurement of perimeter building walls dimensioned.	X	X	X	X	X	X	X	X	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

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No.	Description	Variance	Informal Sketch Plat	Major Application						Submitted	
				Minor Application		Site Plan					
				Subdivision	Site Plan	Subdivision		Site Plan			
19.	Size and location of all existing structures within 200 feet of the site boundaries. (General use for sketch plat.)		X	X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/> N/A
20.	Tax lot and block numbers of existing lots. The final plat shall show block and lot numbers, street names and addresses (numbers) approved by the Tax Assessor.			X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>
21.	Proposed lot lines and area of proposed lots in square feet.		X	X		X	X				N/A
22.	Any existing or proposed easement or land reserved for or dedicated to public use.	X	X	X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>
23.	Property owners within 200 feet of subject property. (Most recent municipal tax records.)	X	X	X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>
24.	Location of natural slopes of 15% or greater, streams, floodplains, wetlands and other environmentally sensitive area on or within 200 feet of the project site. "Natural slopes," for checklist purposes, shall not include areas previously cleared and/or graded in gravel and mineral mining areas. (Note: Applications for bulk variances need only show these features on-site.)	X		X	X	X	X	X	X	X	<input type="checkbox"/> <input type="checkbox"/> N/A
25.	List of variances required or requested.	X		X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>
26.	List of requested design exceptions.	X	X	X	X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>

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No.	Description	Variance	Informal Sketch Plat	Minor Application		Major Application						Submitted	
				Subdivision	Site Plan	Subdivision		Site Plan		Final	Final	Final	
						Preliminary	Final	Preliminary	Final				
27.	Phasing plan as applicable to include: a. Circulation plan, including signage, separating construction traffic from traffic generated by intended use of site. b. Phasing sequence.						X	X		X	X		<input checked="" type="checkbox"/> X <input type="checkbox"/> N/A
28.	Preliminary architectural plans and elevations.	X	X		X				X	X			<input checked="" type="checkbox"/> X <input type="checkbox"/> N/A
29.	Site identification signs, traffic control signs, and identification signs.				X	X		X	X	X			<input checked="" type="checkbox"/> X <input type="checkbox"/> N/A
30.	Sight triangles.			X	X		X	X	X	X			<input checked="" type="checkbox"/> X <input type="checkbox"/> N/A
31.	Proposed street names when new street is proposed.					X	X	X	X	X			<input type="checkbox"/> <input type="checkbox"/> N/A
32.	Parking plan showing spaces, size and type, side width, curb cuts, drives, driveways, and all ingress and egress areas and dimensions, the number of spaces required by ordinance, and the number of spaces provided.				X				X	X			<input checked="" type="checkbox"/> X <input type="checkbox"/> N/A
32.1.	Number of employees, total and maximum per shift.				X				X	X			<input checked="" type="checkbox"/> X <input type="checkbox"/> N/A
33.	Solid waste management and recycling plan showing dumpster and holding location and provisions for waste and recyclables.				X	X		X	X	X			<input checked="" type="checkbox"/> X <input type="checkbox"/> N/A
34.	Size and location of any existing or proposed streets (general location for sketch plat).	X	X	X	X	X		X	X	X			<input checked="" type="checkbox"/> X <input type="checkbox"/> N/A

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No.	Description	Variance	Informal Sketch Plat	Major Application						Submitted	
				Minor Application			Subdivision			Site Plan	
				Subdivision	Site Plan		Preliminary	Final	Preliminary	Final	
35.	Topographical features of subject property from USC and GS map.		X	X	X						<input checked="" type="checkbox"/> X <input type="checkbox"/> N/A
36.	Boundary, limit, nature and extent of wooded areas, specimen trees, and other significant physical features (details may vary).	X	X	X	X		X	X	X	X	<input checked="" type="checkbox"/> X <input type="checkbox"/>
37.	Existing system of drainage of subject site and of any larger tract or basin of which it is a part.						X	X	X	X	<input checked="" type="checkbox"/> X <input type="checkbox"/>
38.	Drainage area map.						X	X	X	X	<input checked="" type="checkbox"/> X <input type="checkbox"/>
39.	Drainage calculations.						X	X	X	X	<input checked="" type="checkbox"/> X <input type="checkbox"/>
40.	Percolation and soil lots (where septic system, retention basin, or groundwater recharge is proposed).			X	X		X	X	X	X	<input checked="" type="checkbox"/> X <input type="checkbox"/>
41.	Existing rights-of-way and easements within 200 feet of the tract.		X	X	X		X	X	X	X	<input checked="" type="checkbox"/> X <input type="checkbox"/>
42.	Number of lots following subdivision and acreage if over one acre, square feet if one acre or less.	X	X	X	X		X	X	X	X	<input type="checkbox"/> <input type="checkbox"/> N/A
43.	Identification and calculation of critical areas.		X	X	X		X	X	X	X	<input type="checkbox"/> <input type="checkbox"/> N/A
44.	Overall concept plan for all phased development parks and planned office industrial parks.		X				X	X	X	X	<input type="checkbox"/> <input type="checkbox"/> N/A

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				Subdivision	Site Plan	Subdivision		Site Plan		<input type="checkbox"/> X <input type="checkbox"/> N/A <input type="checkbox"/>	<input type="checkbox"/> N/A <input type="checkbox"/>
						Preliminary	Final	Preliminary	Final		
45.	Lot yield map showing the number of lots possible under conventional zoning and the number of lots proposed, notation of any variances or design exceptions or waivers necessary to achieve the yield under conventional zoning and all environmental constraints affecting the tract proposed for development.					X				<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/> N/A <input type="checkbox"/>
46.	Indication of existing utilities.		X							<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/>
47.	Copy of plat and plans on a CD in a .dxf file format if the plat or plans are drawn with the aid of a computer in AutoCAD or GIS format.						X			<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/>
48.	Two copies of the final map as filed with the Ocean County Clerk shall be filed with the Township Tax Assessor and Engineer.						X			<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/>
C. Construction Plans											
1.	Site layout showing all roadways, circulation patterns, curbs, sidewalks, buffers, structures, open space, recreation, etc., as applicable.				X		X		X	<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/>

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No.	Description	Variance	Informal Sketch Plat	Minor Application		Major Application				Submitted	
				Subdivision	Site Plan	Subdivision Preliminary	Subdivision Final	Site Plan Preliminary	Site Plan Final	<input type="checkbox"/> X <input type="checkbox"/> N/A	<input type="checkbox"/> X <input type="checkbox"/> N/A
2.	Grading and utility plan to include, as applicable:				X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
	a. Existing and proposed contours at one-foot intervals for grades 3% or less and at two-foot intervals for grades more than 3% (at a distance of 50 feet beyond limits of major subdivision).									X	
	b. Elevations of existing and proposed structures.									X	
	c. Location and invert elevation of existing and proposed drainage structures.									X	
	d. Location of all streams, ponds, lakes, wetland areas.									N/A	
	e. Locations of existing and proposed utilities, including depth of structures, locations of manholes, valves, services, etc.									X	
3.	a. Typical cross-sections and center-line profiles of all proposed streets, including utilities and stormwater facilities.					X		X		<input type="checkbox"/> <input type="checkbox"/> N/A	

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No.	Description	Variance	Informal Sketch Plat	Major Application						Submitted	
				Minor Application		Subdivision		Site Plan			
				Subdivision	Site Plan	Preliminary	Final	Preliminary	Final	<input type="checkbox"/> X <input type="checkbox"/> N/A <input type="checkbox"/>	<input type="checkbox"/> X <input type="checkbox"/> N/A <input type="checkbox"/>
3.	b. Final center-line profiles for all new streets. Show existing grade, proposed grade, stationing and proposed elevations of all proposed vertical curves, stationing and proposed elevations and intersection of all utility and stormwater lines.					X				X	<input type="checkbox"/> X <input type="checkbox"/> N/A <input type="checkbox"/>
4.	Landscaping plan to include:				X	X	X	X	X		<input type="checkbox"/> X <input type="checkbox"/>
	a. Location of existing vegetation, including all shade trees 10 inches in caliper or greater at 5 feet above ground level and all ornamental trees 4 inches in caliper or greater at one foot above ground limits and clearing limits.										X
	b. Proposed buffer areas and method of protection during construction.										X
	c. Proposed landscaped areas.										X
	d. Number, size, species and location of proposed plantings including street trees.										X
	e. Details for method of planting, including optimum planting season.										X
5.	Soil Erosion and Sediment Control Plan prepared in accordance with the standards for soil erosion and sediment control in New Jersey and the requirements of Chapter 188, Soil and Land Conservation.				X	X	X	X	X	X	<input type="checkbox"/> X <input type="checkbox"/>



Engineers
Planners
Surveyors
Landscape Architects
Environmental Scientists

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January 22, 2019

VIA EMAIL & U.S. MAIL

Marianne Borthwick, Secretary
Manchester Township Planning Board
1 Colonial Drive
Manchester, NJ 08759

Re: Application No.: 10-00224
Applicant: Manchester (Ridgeway) DG, LLC
Block 5, Lot 2059
Manchester Township, Ocean County, New Jersey
MC Project No. MCP-043

Dear Ms. Borthwick:

We have received a copy of the above-referenced application for preliminary and final site plan approval. The subject of the application is the construction of a Dollar General retail store and associated infrastructure improvements. The 2.34-acre site has frontage on Ridgeway Road (County Route 571), Washington Avenue and Richmond Avenue, and is within the B-1 Business Zone.

We received the following on January 7, 2019:

1. Preliminary and Final Major Site Plans, consisting of 15 sheets, prepared by Stonefield Engineering and Design, dated September 25, 2018 and last revised December 27, 2018;
2. ALTA/NSPS Survey, prepared by Valley Land Services, dated October 31, 2018 and last revised November 28, 2018;
3. Environmental Impact Report, prepared by Stonefield Engineering and Design and dated December 27, 2018;
4. Stormwater Management Report, prepared by Stonefield Engineering and Design and dated December 28, 2018;
5. Architectural Plans and Elevations (reduced), consisting of 1 sheet, prepared by Larson Design Group and dated January 3, 2019;
6. Statement of Operations and Justification for Design Waiver/Exception Relief, prepared by Prime Law and dated January 3, 2019;



7. Copy of Site Plan application to the Ocean County Planning Board dated December 27, 2018;
8. Copy of a deed between J&C Enterprises, LLC and Maxali, LLC dated October 31, 2018;
9. Proof of payment of property taxes through the fourth quarter of 2018;
10. Certified list of property owners within 200 feet dated December 27, 2018;
11. Copies of checks for application fees (\$2,650.00) and escrow fees (\$5,665.00);
12. A completed W-9 Form;
13. Standard Planning Board application, including a submission checklist.

The application was deemed complete as of January 14, 2019 and is tentatively scheduled for the Board's February 4, 2019 meeting.

We've reviewed the submittals and offer the following comments for the Board's consideration:

1. Planning and Zoning

- 1.1. The subject of the application is the construction of a Dollar General retail store and associated site improvements on a vacant and wooded 2.34-acre lot. The property has street frontage on three sides (Washington Avenue, Ridgeway Road/County Route 571 and Richmond Avenue), and is within the B-1 Business Zone.

The site is bounded to the north (across Washington Avenue) by Hudson City Plaza, to the east and south (across Richmond Avenue) by single family homes, and to the west (across Route 571) by commercial development, including the Oliverie Funeral Home and professional office space.

- 1.2. Pursuant to Section 245, Attachment 6, the proposed use is permitted in the Zone. The applicant should provide testimony regarding number of employees, hours of operations, type/frequency of deliveries, etc.
- 1.3. The Applicant is requesting a bulk variance from Section 245, Attachment 6, which requires a minimum front yard setback of 50 feet. The Applicant is proposing a setback of 27.8 feet from the Washington Avenue property line. The plans also depict a trash enclosure in the front yard along Washington Avenue approximately 40 feet from property line. The Applicant should provide testimony supporting the requested relief.



- 1.4. We note the Applicant is proposing a setback of 102.8 feet from Richmond Avenue, some of which is proposed to be buffered with the existing vegetation. Portions of the Richmond Avenue frontage will have this buffer reduced by the clearing and grading required for two of the proposed bioretention basins. The Applicant should provide additional information regarding the quality of this buffer as this area is directly across from several homes. It may be appropriate to supplement the remaining vegetation with some additional landscaping. This should be discussed.
- 1.5. The following sign variances are also being requested:
 - 1.5.1. Section 245-27B(2)(a) limits the size of a wall-mounted sign to 60 square feet; the Applicant is proposing a wall sign measuring 97.5 square feet.
 - 1.5.2. Section 245-27E(5) requires ground-mounted signs to be set back at least ½ of the required principal building setback, or in this case 25 feet. The Applicant is proposing a monument sign along the Ridgeway Road frontage with a setback of 16.5 feet.
- 1.6. The Applicant is also requesting relief from the parking area setback requirements of Section 245-28, as follows:
 - 1.6.1. Section 245-28D(2) requires parking facilities to be located a minimum of 20 feet from any street right-of-way line. The Applicant is proposing the parking lot to be within 11.6 feet of the Route 571 right-of-way (after the 7-foot wide right-of-way dedication noted below), and within 5 feet of the Washington Avenue right-of-way.
- 1.7. The Applicant is also requesting additional relief from the parking space requirements listed in Section 245-28. These requests will be addressed later in this report.
- 1.8. According to the plans, the Applicant is proposing a 7-foot wide right-of-way dedication to Ocean County along the site's Ridgeway Road frontage. We defer to the County for any additional review and comment.

2. Grading and Drainage

- 2.1. The Applicant is proposing to manage stormwater generated by the development using a system of inlets and piping conveying runoff to a combination of bioretention swales, subsurface infiltration systems and an above-ground infiltration basin. The Applicant should present a brief overview of how the system is designed to function.



- 2.2. According to the Geotechnical Engineering Services Report included with the Stormwater Management Report, there were a total of 9 soil borings performed on the site; however, only 2 of the 9 (P2 and P3) are located within the footprint of an infiltration feature. The Applicant should therefore have additional borings performed, with at least one within the footprint of each of the proposed infiltration basins/swales. Permeability tests should also be performed in each location to confirm the design parameters utilized.
- 2.3. A maintenance access path for the above-ground infiltration basin maintenance should be provided.
- 2.4. It is recommended the Applicant install fencing with non-climbable mesh around the above-ground stormwater and bioretention basins for safety purposes.
- 2.5. Pursuant to Section 245-83J(a), an operations and maintenance plan for the stormwater management facilities is required and should be submitted.
- 2.6. The Applicant is proposing to tie into the County's existing stormwater system on Route 571 and should confirm there is enough capacity to do so.
- 2.7. The Applicant is proposing 3 bioretention basins as part of the overall stormwater management system. According to the Chapter 9.1 of the New Jersey Stormwater Best Management Practices, a bioretention system consists of "a soil bed planted with native vegetation located above an underdrained sand layer". The plans include details for each of the 3 basins, and the details refer to the landscaping plans for basin area plantings. The landscaping plan, however, does not appear to depict any plantings within the 3 basins. Additional information is required.
- 2.8. The Applicant should address the items listed in the Technical Attachment provided along with this review letter.

3. Access, Circulation and Parking

- 3.1. Access to the site is provided via a right-in/right out driveway (with a mountable curb island) on Route 571, and a full access driveway on Washington Avenue. Two-way traffic flow is provided throughout the access aisles and parking area.
- 3.2. Section 245-28B requires 1 parking space be provided for each 200 square feet of floor area for retail stores, or a total of 46 spaces for the 9,100 square foot store proposed. The Applicant is proposing only 35 spaces, including 5 spaces at the rear of the store labeled "employee parking", and is requesting the associated relief. The Applicant has provided a "Parking Count Memorandum", prepared by Stonefield



Engineering & Design, which provides an analysis of the parking requirement for several other Dollar General stores in New Jersey. The findings and conclusions of this report should be presented for the record, and justification for the requested relief should be provided.

- 3.3. Section 245-28F(1) requires 3 ADA parking spaces for parking lots with 26 to 50 total spaces. As noted above, the Applicant is proposing 35 total spaces, only two of which would be designated as ADA-accessible and is requesting the associated relief.
- 3.4. According to the site plan, the proposed signs for the ADA parking spaces are “mounted to the bollard shown”. This should be clarified, and an applicable detail should be provided.
- 3.5. We have reviewed the Traffic Impact Study provided by the Applicant, and offer the following comments:
 - 3.5.1. The Study was conducted in accordance with general engineering principles. The results of the traffic impact study show the site-generated traffic will not have an impact on the adjacent intersections and the site driveways will operate at acceptable levels of service with minimum queuing. We take no exception to the findings and conclusions of the traffic impact study.
 - 3.5.2. Turning templates for any vehicles contemplated to be accessing the site, as well as emergency vehicles, should be provided.
 - 3.5.3. The Applicant should provide testimony on any feedback received from the Ocean County Engineer’s office. We recommend the Applicant investigate the possibility of installing a left turn lane on the eastbound approach of Ridgeway Road (CR 571) within the existing striped gore area, so that vehicles making a left turn onto Washington Avenue can perform the maneuver more safely than turning from the existing through lane.
- 3.6. The plans show a “concrete pad loading area” within the access drive from Washington Avenue. According to the operations statement provided with the application, deliveries will only be made while the store is open. The Applicant should indicate what steps will be taken to ensure customer access is not impacted during the delivery process.
- 3.7. “No Parking – Fire Lane” markings should be added to the plans. We defer to the Township Fire Marshal and Office of Emergency Management for additional review and comment.



4. Lighting and Landscaping

- 4.1. The Applicant is proposing to illuminate the site using a combination of pole-mounted and wall-mounted LED light fixtures. The wall-mounted units face downward. Based on the photometrics provided, the lighting scheme meets the intent of Section 245-28D(6). The Applicant should confirm house-side shields are provided to eliminate off-site spillage. Hours of operations for the lighting should be provided.
- 4.2. As noted previously, the Applicant is preserving much of the existing vegetation along the site's Washington Avenue frontage as a buffer for the homes across the street. It may be necessary to supplement the remaining vegetation with additional plantings in order to provide an adequate screening.

5. Utilities

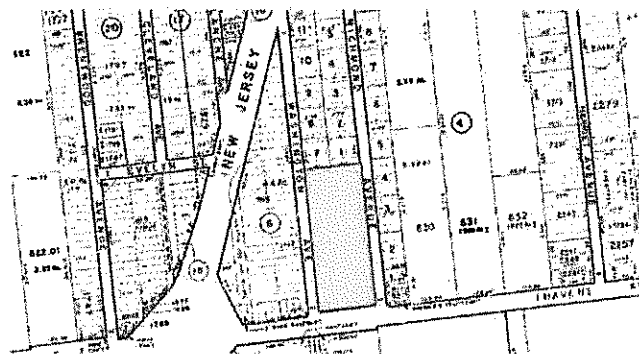
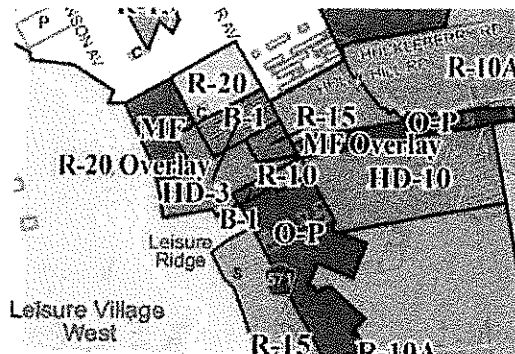
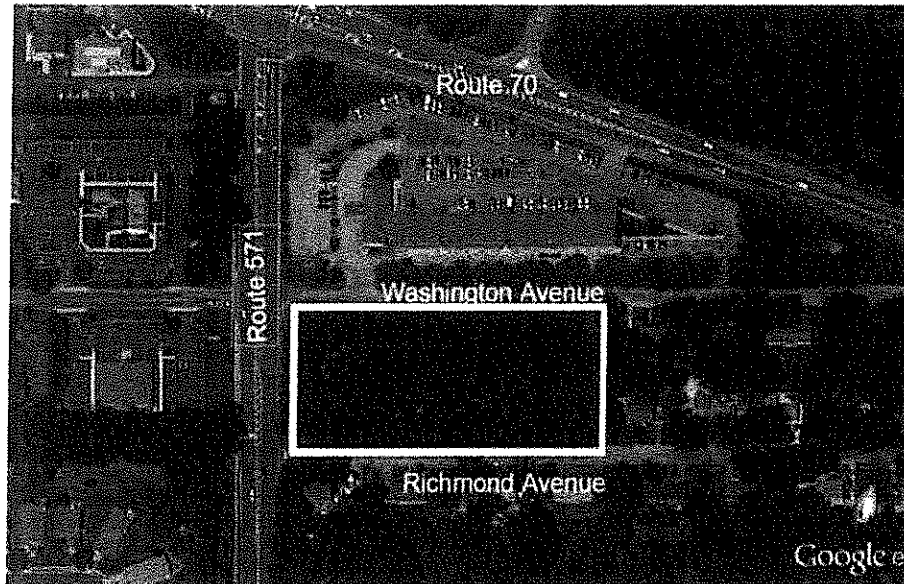
- 5.1. The proposed development will be served by Township water and sewer. We defer to the Township Department of Utilities for further review and comment.

6. Miscellaneous

- 6.1. The Applicant should present preliminary architectural plans and elevations for the Board's consideration.
- 6.2. We have reviewed the Environmental Impact Report and find it to be acceptable. By copy of this letter, we defer to the Township Environmental Commission for additional review and comment.
- 6.3. We defer to the Township's Office of Emergency Management for additional review and comment.
- 6.4. The Applicant will be required to submit any applicable COAH fees.
- 6.5. The requirement for a developer's agreement in accordance with Section 245-89F should be discussed. Applicable performance bonds and associated escrow fees will be required.
- 6.6. Proof of the following approvals must be submitted:
 - 6.6.1. Ocean County Planning Board;
 - 6.6.2. Ocean County Soil Conservation District;
 - 6.6.3. Manchester Department of Utilities;
 - 6.6.4. NJDEP/CAFRA, as applicable.



Marianne Borthwick, Board Secretary
MC Project No. MCP-043
January 22, 2019
Page 7 of 8



Should you have any questions or require additional information, please feel free to contact me directly.

Very truly yours,

MASER CONSULTING P.A.

A handwritten signature in black ink, appearing to read 'Robert A. Mullin'.

Robert A. Mullin, P.E., P.P., C.M.E., C.P.W.M.
Planning Board Engineer



Marianne Borthwick, Board Secretary
MC Project No. MCP-043
January 22, 2019
Page 8 of 8

RAM/nb
Attachment

cc: Art Abline, Manchester Office of Emergency Management (*via email at aabline@manchestertwp.com*)
Mike Martin, Township Fire Marshal (*via email at mmartin@manchestertwp.com*)
Al Yodakis, PE, PP, Director, Manchester Public Works (*via email*)
Gregory Hock, Esq, Planning Board Attorney (*via email*)
Manchester (Ridgeway) DG, LLC
361 Summit Blvd., Suite 110, Birmingham, AL 35243
Jason Tuvel, Esq. (*via email at jason@primelaw.com*)
Jeffrey A. Martell, P.E. (*via email at jmartell@stonefieldeng.com*)

R:\General\Projects\MCP\MCP-043\Correspondence\OUT\190122_MBorthwick_ram_Manchester (Ridgeway) DG_Technical Review.docx



Technical Attachment
Manchester (Ridgeway) DG, LLC
Block 5, Lot 2059
Manchester Township, Ocean County, New Jersey
MC Project No. MCP-043

Stormwater Management Review Comments:

1. Boring logs are included on the boring location plan in the geotechnical report, and they should be added to the Grading and Drainage plan.
2. To ensure downstream safety and channel stability, infiltration should not be considered when complying with the stormwater quantity requirements (i.e., control of the 2, 10, and 100-year storms). The routings should be revised to remove the infiltration.
3. The water quality storm calculations should be provided in the Stormwater Management Report.
4. Basin cross-section details for the bioretention basins should include the depth for each of the following design storms, water quality, 2-year, 10-year and 100- year.
5. The above-ground infiltration basin and bioretention basins should have filter fabric on the sides of the basin and should be depicted on the basin details.
6. Stormwater conveyance pipe calculations should be provided to convey the 25-year design storm.
7. Roof drain pipe size calculations should be provided.
8. Inlet area calculations should be provided.
9. The Annual Groundwater Recharge Analysis Spreadsheet to demonstrate compliance with the recharge requirements of the Stormwater Management Rules should be submitted.
10. The time of concentration flow paths shall be indicated on the existing drainage area map.
11. The underground outlet structure (OS-1) detail shows a 36" HDPE. The plans depict a 48" HDPE. Correct the discrepancy.
12. The Existing Drainage Area Map has 2 areas labeled "Area E-1A". This should be corrected.



MANCHESTER TOWNSHIP
1 COLONIAL DRIVE • MANCHESTER, NJ 08759 • (732)657-8121
DEPARTMENT OF INSPECTIONS, LAND USE & PLANNING

GARY T. SYLVESTER
DIRECTOR

KENNETH T. PALMER
MAYOR

January 10, 2019

TO:

GARY LOFTUS, BUILDING SUB CODE

LAURIE CLUNE ZONING OFFICER

AL YODAKIS, UTILITIES

MICHAEL MARTIN, FIRE PREVENTION

ARTHUR ABLINE, EMS

ANTONIO ELLIS, TRAFFIC SAFETY

MARTIN LYNCH, TAX ASSESSOR

FROM: MARIANNE BORTHWICK, PLANNING BOARD

RE: MANCHESTER (RIDGEWAY) DG LLC

Proposed DOLLAR GENERAL

BLOCK 5 LOT 2059 2920 HWY 571

Please review the attached application & submit your comments if any, within (7) business days from January 10, 2019. Please sign and return this form with or without comments. Thank you.

LOFTUS-----

CLUNE-----

YODAKIS-----

MARTIN-----

ABLINE-----

ELLIS-----

LYNCH-----

[Signature] 1/14/19



MANCHESTER TOWNSHIP

1 COLONIAL DRIVE • MANCHESTER, NJ 08759 • (732)657-8121
DEPARTMENT OF INSPECTIONS, LAND USE & PLANNING

GARY T. SYLVESTER
DIRECTOR

KENNETH T. PALMER
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LOFTUS— NO comment M4 1-14-19

CLUNE-----

YODAKIS-----

MARTIN-----

ABLINE-----

ELLIS-----

LYNCH-----



MANCHESTER TOWNSHIP
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DEPARTMENT OF INSPECTIONS, LAND USE & PLANNING

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LOFTUS-----

CLUNE-----

YODAKIS----- *no comments @ this time. Alt*

MARTIN-----

ABLINE-----

ELLIS-----

LYNCH-----



STONEFIELD
engineering & design

ENVIRONMENTAL IMPACT STATEMENT

**PROPOSED DOLLAR GENERAL RETAIL STORE
TAX MAP #1.01, BLOCK 5, LOT 2059
2920 RIDGEWAY ROAD
MANCHESTER TOWNSHIP
OCEAN COUNTY, NEW JERSEY**

PREPARED FOR:

MANCHESTER (RIDGEWAY) DG, LLC

PREPARED BY:

STONEFIELD ENGINEERING & DESIGN, LLC

DECEMBER 27, 2018

Z-18116

JEFFREY A. MARTELL PE, PP, LEED AP
NEW JERSEY PROFESSIONAL ENGINEER LICENSE # 47290

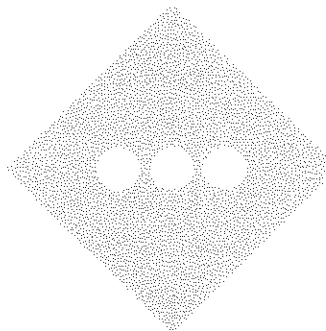
stonefieldeng.com

92 Park Avenue, Rutherford, NJ 07070 201.340.4468 t. 201.340.4472 f.



APPENDICIES

PROJECT FIGURES.....	A
AERIAL MAP.....	FIGURE 1
TAX & ZONING MAP	FIGURE 2
USGS LOCATION MAP.....	FIGURE 3
NRCS COUNTY SOILS SURVEY.....	B



1.0 SITE DESCRIPTION

Manchester (Ridgeway) DG, LLC is proposing the construction of a Dollar General retail store. The subject property is designated Block 5, Lot 2059 commonly known as 2920 Ridgeway Road. The subject property is located within the Manchester Business (B-1) Zoning District and is bounded by Richmond Avenue to the east, Ridgeway Road to the south, Washington Avenue to the west, and residential properties to the north. The total project area is 101,892 SF (2.34 acres). Project Figures can be found in Appendix A of this Report.

Under existing conditions, the site is undeveloped and is heavily wooded. The proposed development includes clearing a portion of the site to construct a 9,100 SF Dollar General retail store and supporting improvements inclusive of parking facilities, landscape, utilities, site lighting, and stormwater management facilities.

This Environmental Impact Statement has been prepared per the Manchester Township requirements to investigate the existing conditions of the property, evaluate the potential impacts of the proposed redevelopment, and discuss the measures to mitigate environmental impacts, if any.

2.0 INVENTORY OF EXISTING ENVIRONMENTAL CONDITIONS

2.1 AIR & WATER QUALITY

Air quality and water quality on-site is likely enhanced by vegetation and the absence of a commercial development under existing conditions.

2.2 WATER SUPPLY

The site is currently undeveloped and does not have water supply. Per the Survey prepared by Stonefield Engineering, a water main is located within Richmond Avenue along the site frontage.

2.3 HYDROLOGY & STORMWATER

Under existing conditions, the site is comprised of a single drainage area that has been broken up into three (3) sections associated with the areas draining to each of the fronting roadways. The project site slopes predominantly from north to south with high points at the rear and center of the property. Gradual slopes exist ranging from 1% to 7%. The stormwater runoff flows overland from the rear of the site to the three (3) fronting roadways and is collected by the existing conveyance system located within Ridgeway Road.

2.4 GEOLOGY

A Geotechnical Engineering Services Report was prepared by Professional Service Industries Inc. (PSI). Regarding the geology on-site, PSI utilized NJDEP GeoWeb mapping and found that the surficial geology at the site is mapped as upper stream terrace deposits (Qtu) and/or weathered coastal plains formations (Qwcp). The upper stream terrace deposit is described as "sand and pebble gravel, minor silt and coble gravel; yellow, reddish yellow, yellow brown and as much as 20 feet thick". The weathered coastal plain formation is described as "exposed sand and clay of Coastal Plain bedrock formations" which includes "thin, patchy alluvium and colluvium, and pebbles left from erosion of surficial deposits".

PSI also reported that below the surficial deposits, the "Bedrock Geologic Map of the Lakehurst Quadrangle – Ocean County, New Jersey" (by Sugarman, Castelli, et al., 2016) indicates that the project site is underlain by the Cohansey Formation (Tch), which is a Coastal Plain sediment formation. The Coastal Plain sediments of this formation consists of sand (light brown to dark-yellowish-orange and yellowish-gray to light gray; medium to coarse grained) with pebbles and commonly crossbedded. The overall thickness of this formation can be up to 100 feet and typically underlain by other Coastal Plain formations."

PSI also performed a subsurface exploration including nine SPT borings which were drilled to termination depths ranging from 10 to 22 feet below the existing ground surface. PSI found that the generalized subsurface stratigraphy below the surficial materials typically consisted of Coastal Plain sediments to the respective boring terminated depths. The soils consisted of Sands with varying amounts of silts and clay. Based on the SPT N-values, the coastal plain soils exhibited very loose to loose relative densities to depths ranging from approximately 4 to 8 feet below existing ground surface.

2.5 SOILS

The site is underlain by the following soil classifications, based upon the County Soil Survey (Appendix B):

TABLE 1: NRCS PROJECT SOILS

Soil Unit Code	Soil Description	Approximate Project Coverage	Hydrologic Soil Group
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	99.2%	A
EveB	Evesboro sand, 0 to 5 percent slopes	0.8%	A

The hydrologic soil group classifications above have been utilized in the landcover data for the stormwater analysis performed on the project.

2.6 SEWERAGE SYSTEM

The site is currently undeveloped and does not have sewer supply. Per the Survey prepared by Stonefield Engineering, a sewer main is located within Ridgeway Road along the site frontage. Per NJDEP GeoWeb, the site is located within a sewer service area within the jurisdiction of the Ocean County Utility Authority.

2.7 TOPOGRAPHY & SLOPE

The site slopes predominantly from north to south with high points at the rear and center of the property. Gradual slopes exist ranging from 1 to 7%.

2.8 VEGETATION , WILDLIFE HABITAT, AND AQUATIC ORGANISMS

The site is currently undeveloped and is heavily wooded. Per the NJDEP GeoWeb mapping, the site is located within the Pinelands Landscape Region and there are no endangered or threatened fauna, flora, and / or habitats on-site.

2.9 NOISE CHARACTERISTICS AND LEVELS

The site is currently undeveloped and does not contribute to the noise levels of the surrounding area. The prevailing noise levels are generated by the roadways that are adjacent to the site.

2.10 DEMOGRAPHY & LAND USE

The existing site is undeveloped and does not affect to the population of the municipality. Per NJDEP GeoWeb, the land use is currently classified as forest.

2.11 AESTHETICS & HISTORY

Per historic imagery, the site has been undeveloped since as early as 1995. There are no portions of the site which would be considered to have unique, scenic and/or historic qualities.

2.12 TRAFFIC

Under existing conditions, the property receives no traffic due to the lack of development.

The site has approximately 193 feet of frontage along Ridgeway Road approximately 502 feet of frontage along Washington Avenue, and approximately 500 feet of frontage along Richmond Avenue.

A Level of Service and Volume/Capacity analysis was conducted for the 2018 Existing Condition during weekday evening and Saturday midday peak hours at the study intersection. Under the existing condition, the unsignalized intersection of Ridgeway Road and Washington Avenue is calculated to operate at overall Level of Service D during the weekday evening time period and at Level of Service C during the Saturday midday peak hour.

Please refer to the Traffic Impact Study prepared by Stonefield Engineering and Design for additional information.

3.0 ENVIRONMENTAL IMPACT ASSESSMENT

3.1 AIR & WATER QUALITY

Air quality on the developed site will likely be similar to that of surrounding commercial uses on Washington Avenue and Ridgeway Road. As the site is currently undeveloped, there is potential negative air quality impacts due to the proposed development of the site with a commercial use and the increase in traffic. Landscaping is proposed along the perimeter of the site where feasible and a large portion of the existing wooded area in the rear of the site and along Ridgeway Road is proposed to remain to offset the potential negative impacts.

As the project will add 0.9 acres of new impervious area, there is potential negative water quality impacts due to the proposed development of the site. To offset this degradation, stormwater management measures are proposed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality storm by 80% of the anticipate load from the developed site. The stormwater best management practices (BMP) proposed on site include three (3) bioretention basins and one aboveground basin that collect all of the runoff associated with the site and meet the total suspended solids removal (TSS) removal requirements as certified by the NJDEP BMP Manual.

3.2 WATER SUPPLY

The proposed development will require the installation of a 1" domestic water service line which will connect to the existing water main along Richmond Avenue. The proposed water demand is summarized in the following table:

TABLE 2: SUMMARY OF PROPOSED WATER DEMAND

<i>Type of Establishment</i>	<i>Number of Measurement Units</i>	<i>Gallons per Day per Unit</i>	<i>Projected Flow (GPD)</i>
Retail	9,100 SF	0.125 Gal / SF	1,137.5
TOTAL FLOW			1,138 GPD

All values are based on N.J.A.C. Title 7, Chapter 10, Subchapter 12.6 "Water volume requirements", Table 1: Average Daily Water Demand

3.3 HYDROLOGY & STORMWATER

Under proposed conditions the site is comprised of eight (8) drainage areas which all discharge to the existing conveyance system within Ridgeway Road. A series of bio-retention basins and an above-ground basin pre-treat and infiltrate the runoff associated with the smaller design storms before conveying the remaining runoff to the proposed underground basins and discharging into the conveyance system within Ridgeway Road. The undisturbed rear portion of the site along with small areas along each street frontage will continue to flow undetained onto the fronting roadways.

The proposed project complies with all applicable stormwater management regulations and standards. Runoff quantity, recharge, and quality requirements are addressed by the implementation of three (3) bioretention basins, and above-ground detention/infiltration basin, and two (2) underground detention/infiltration basins. As such, the project is not anticipated to have any adverse impacts on neighboring properties, downstream watercourses, or conveyance systems within the watershed.

Please refer to the Stormwater Management Report prepared by Stonefield Engineering & Design for additional information.

3.4 GEOLOGY

The geology on-site is to remain unchanged by the proposed development.

3.5 SOILS

Soils on-site will be unaffected by the proposed development, and existing soil conditions have been considered when designing the stormwater management practices to be utilized.

As the project proposes to disturb over 5,000 SF of land, an application to the Ocean County Soil Conservation District has been submitted for soil erosion and sediment control plan certification. A soil erosion plan has been included within the plan set and all temporary and permanent soil erosion measures have been designed in accordance with the Standards for Soil Erosion and Sediment Control Manual for New Jersey.

3.6 SEWERAGE SYSTEM

The proposed development will require the installation of a 4" sanitary sewer line which will connect to the sewer main along Ridgeway Road. The piping will be installed at a minimum slope of 2.08%. The sanitary sewer projected flow is summarized in the following table:

TABLE 3: SANITARY SEWER PROJECTED FLOW

<i>Type of Establishment</i>	<i>Number of Measurement Units</i>	<i>Gallons per Day per Unit</i>	<i>Projected Flow (GPD)</i>
Retail	9,100 SF	0.1	910
TOTAL FLOW			910

All flow values are based on N.J.A.C. Title 7, Chapter 14A, Subchapter 23.3 "Projected Flow Criteria"

3.7 TOPOGRAPHY & SLOPE

Proposed grades throughout the site will be slightly higher than existing grades. A series of 3-4 FT deep bio-retention basins and above-ground basins are implemented to convey the runoff to the same point-of interest as under existing conditions. The proposed finish floor elevation is 62 FT. Slopes on the developed portion of the site range from 3%-6%.

3.8 VEGETATION ,WILDLIFE HABITAT, AND AQUATIC ORGANISMS

As no threatened or endangered species are located on-site per NJDEP GeoWeb, the proposed development will have no negative influence on threatened or endangered species. Development impacts do not extend off-site and will therefore not affect nearby threatened or endangered species.

The existing wooded area within the proposed limit of disturbance is 59,479 SF (1.37 AC) is to be removed. A landscaping plan has been designed for the proposed development inclusive of trees, shrubs, ground cover, and perennials within the limit of disturbance. Shrubs are proposed along the perimeter of the parking area to provide a visual screen. Additionally, screening is proposed around the trash enclosure. A portion of the wooded area in the rear of the site and along the Richmond Avenue frontage is proposed to remain which will provide a natural buffer along those lot lines.

The proposed development exceeds the township requirement for proposed landscaped areas; the Township requires a minimum of 30% whereas 64.1% is proposed.

3.9 NOISE CHARACTERISTICS AND LEVELS

Noise levels will increase as a result of the proposed developed. The prevailing noise levels on site are generated from vehicular circulation onsite. The level of noise on the developed site will likely be similar to that of the surrounding commercial uses. Noise generated from the proposed development would not be considered significant as to greatly increase noise levels in the community, especially compared to the levels generated by the roadways. Proposed landscaping along the property lines will buffer noise levels. The levels of noise that will be generated by the improvements on site are in compliance with NJAC 7:29.

3.10 DEMOGRAPHY & LAND USE

The proposed land use is commercial and will not impact demographics. The municipality has zoned the site for business uses and thus the property is currently being underutilized. A retail use is a compatible use for the property and the surrounding area.

3.11 AESTHETICS & HISTORY

There are no portions of the site which would be considered to have unique, scenic and/or historic qualities; as such, no impacts are anticipated.

3.12 TRAFFIC

Traffic to the property will increase due to the proposed development. Approximately 62 new trips will be added to the roadway network during the weekday evening peak hour and 63 new trips will be added to the roadway network during the Saturday midday peak hour. Based on Transportation Impact Analysis for Site Development published by ITE, a trip increase of less than 100 vehicle trips would likely not change the level of service of the roadway system or appreciably increase the volume-to-capacity ratio of an intersection approach. As such, the proposed development is not anticipated to significantly impact the operations of the adjacent roadway network.

Access is proposed via one (1) right-ingress/right-egress driveway along Ridgeway Road and one (1) full movement driveway along Washington Avenue. Circulation throughout the site would be provided via a two (2)-way drive aisle with a minimum width of 24 feet. The Township of Manchester requires one (1) parking space per every 200 square feet of floor area for retail uses. For the proposed 9,100-square-foot Dollar General, this equates to 46 required spaces. The site would provide 35 total parking stalls, inclusive of two (2) ADA accessible parking stalls. The stalls would be 10 feet wide by 20 feet deep in accordance with industry standards. The adequacy of the parking supply was evaluated using industry-standard data published within ITE's Parking Generation, 4th Edition. Land Use 815 "Free-Standing Discount Store" was cited for the 9,100-squarefoot Dollar General development. The 85th percentile peak parking demand rate for discount store uses is 1.87 vehicles per 1,000-square-feet. As a result, the proposed Dollar General would be expected to generate a peak parking demand of 17 vehicles during the peak period. Therefore, the proposed parking supply of 35 parking spaces would be sufficient to support the projected parking demand.

Please refer to the Traffic Impact Statement prepared by Stonefield Engineering & Design for additional information.

4.0 STEPS TO MINIMIZE ENVIRONMENTAL IMPACTS

The development of the project and site plan design enhances the property and minimizes environmental damage by completing the following:

- Minimizing clearing of the existing woods to the maximum extent possible by proposing 36.9% lot coverage where 65% is permitted within the Business (B-1) zone.
- Planting low-maintenance landscape vegetation while minimizing the use of lawn areas and enhancing site aesthetics. Providing 64.1% landscaping whereas 30% is required.

- Implementing non-structural stormwater management strategies in conjunction with underground basins to comply with runoff quantity, groundwater recharge, and water quality requirements.
- Installing temporary soil erosion and sediment control measures inclusive of silt fencing, stabilized construction entrances, and inlet filters. Permanent post-construction measures include conduit outlet protection, native vegetation, rip-rap lining.

APPENDIX A

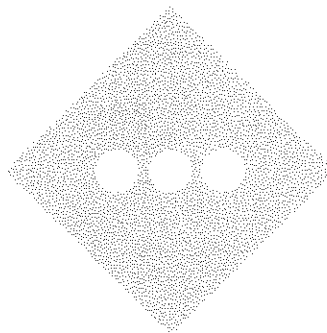
PROJECT FIGURES

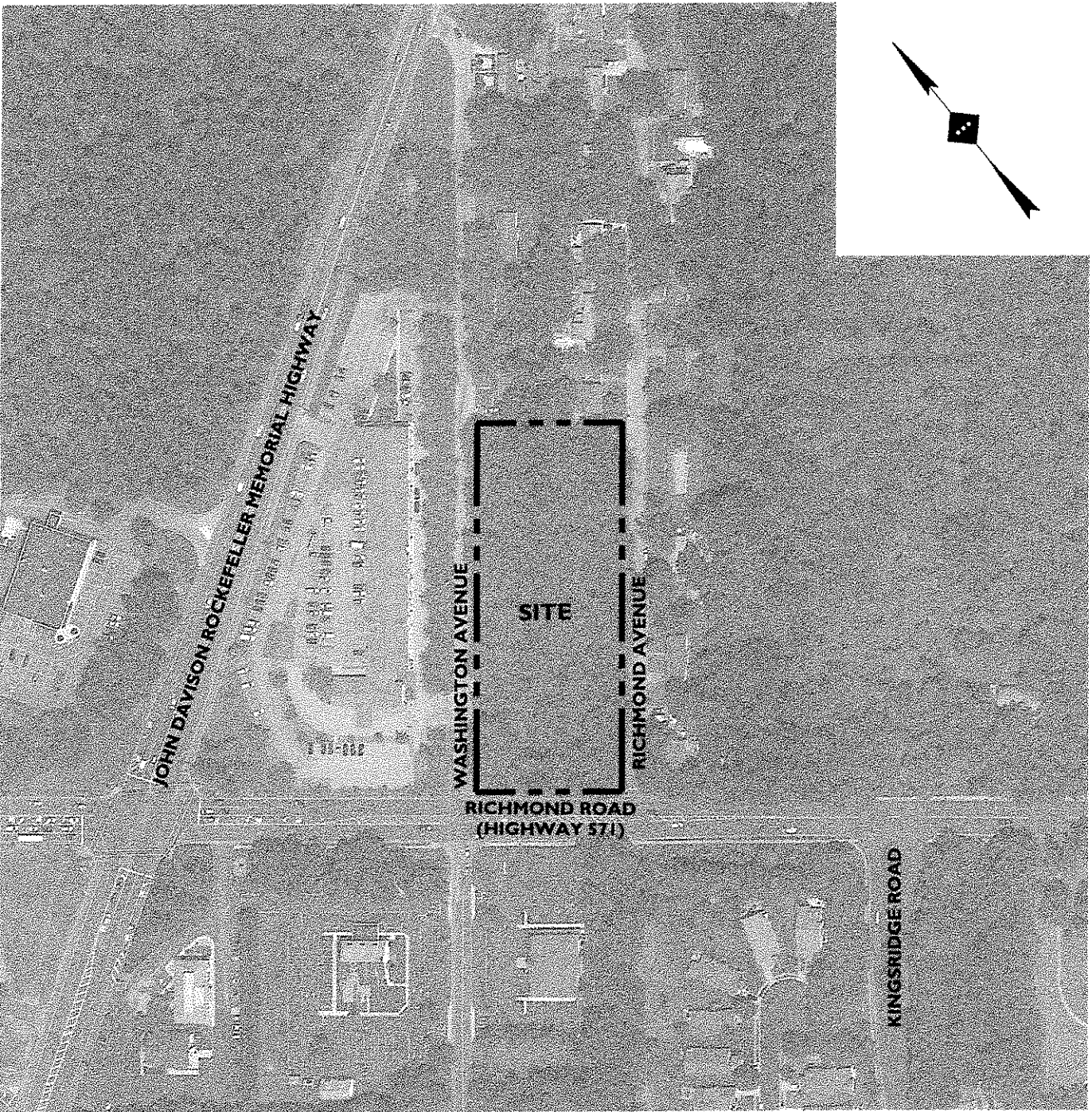
INVENTORY

AERIAL MAP

TAX & ZONING MAP

USGS LOCATION MAP





AERIAL MAP

200' 0' 200' 400'



GRAPHIC SCALE IN FEET

1"=200'

SOURCE: GOOGLE EARTH PRO RETRIEVED 12/28/2018

PROPOSED RETAIL STORE

TAX MAP # 1.01 BLOCK 5, LOT 2059
2920 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

DRAWN BY:

AMB

CHECKED BY:

PDM

DATE:

12/28/2018

SCALE:

1" = 200'

PROJECT ID:

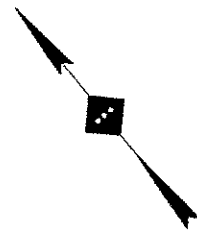
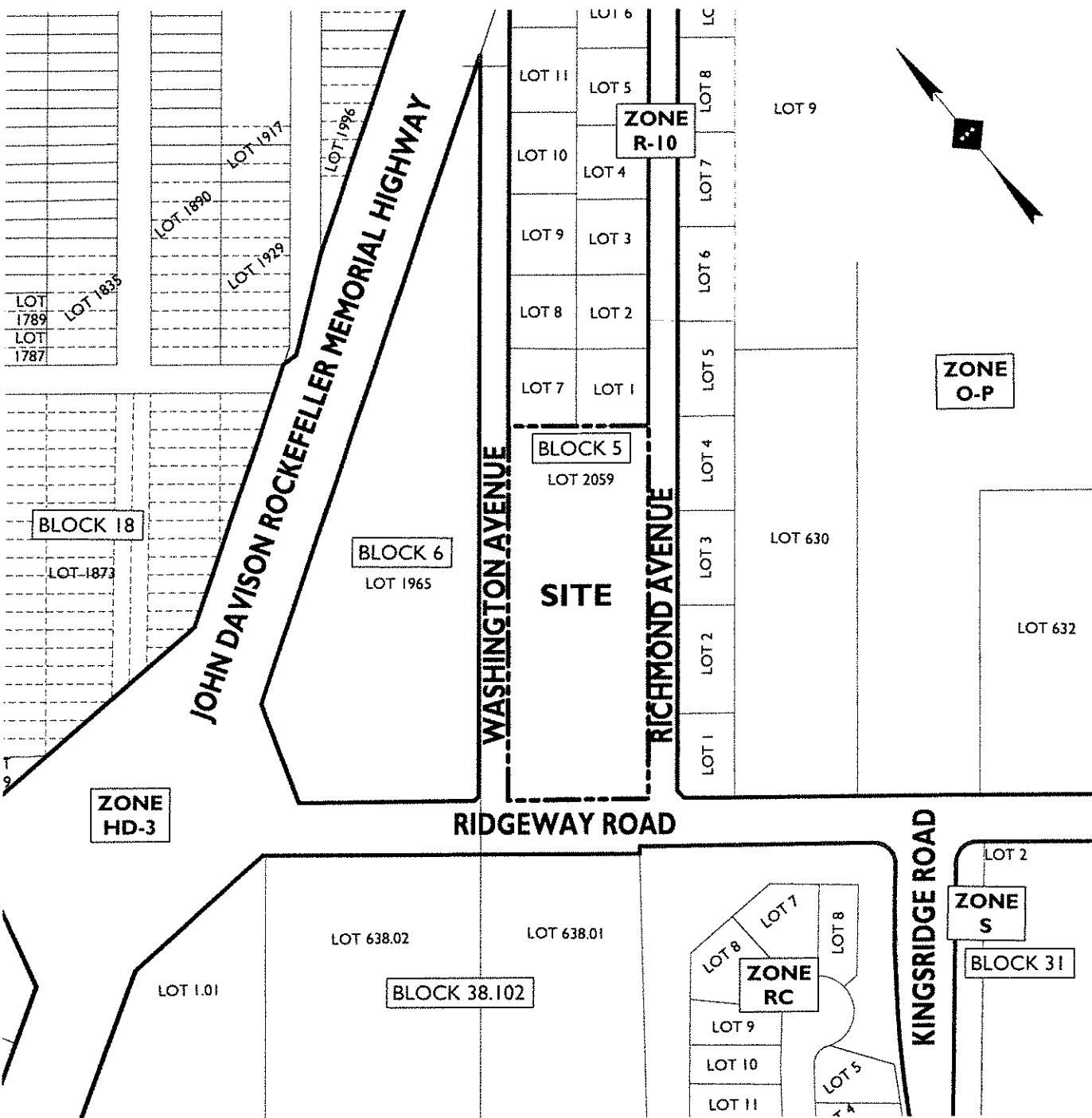
Z-18116



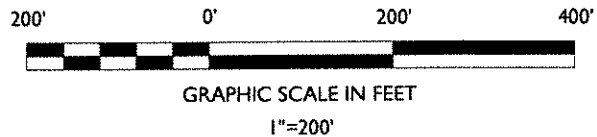
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www.stonefieldeng.com

15 Spring Street, Princeton, NJ 08542
Phone 609.362.6900



TAX AND ZONING MAP



SOURCE: TOWNSHIP OF MANCHESTER, OCEAN COUNTY, NJ TAX MAP SHEET 1.01, TOWNSHIP OF MANCHESTER TAX MAP

PROPOSED RETAIL STORE

TAX MAP # 1.01 BLOCK 5, LOT 2059
2920 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

DRAWN BY:	AMB
CHECKED BY:	PDM
DATE:	12/28/2018
SCALE:	1" = 200'
PROJECT ID:	Z-18116



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Z:\Princeton\2018\18116 Dollar General - 2920 Ridgeway Road, Manchester, NJ\CADD\Exhibit\2018.03.28 Project Map.dwg



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Ocean County, New Jersey**



November 28, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map
























The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Age Group	Percentage (%)
0-14	10
15-24	15
25-34	20
35-44	25
45-54	30
55-64	35
65-74	40
75-84	45
85+	50



Map projection: Web Mercator Corner coordinates: WGS84 Edge bcs: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)		Spoil Area
Area of Interest (AOI)		Stony Spot
Soils		Very Stony Spot
Soil Map Unit Polygons		Wet Spot
		Other
Soil Map Unit Lines		Special Line Features
		
Soil Map Unit Points		
Special Point Features		
		Water Features
Blowout		Streams and Canals
		
Borrow Pit		Transportation
		Rails
Clay Spot		Interstate Highways
		US Routes
Closed Depression		Major Roads
		Local Roads
Gravel Pit		
		
Gravelly Spot		
		
Landfill		
		Background
Lava Flow		Aerial Photography
		
Marsh or swamp		
		
Mine or Quarry		
		
Miscellaneous Water		
		
Perennial Water		
		
Rock Outcrop		
		
Saline Spot		
		
Sandy Spot		
		
Severely Eroded Spot		
		
Sinkhole		
		
Slide or Slip		
		
Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 16, Sep 13, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 8, 2014—Sep 2, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DocBO	Dowmer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	2.3	99.2%
EveB	Evesboro sand, 0 to 5 percent slopes	0.0	0.8%
Totals for Area of Interest		2.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An undifferentiated group is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Ocean County, New Jersey

DocBO—Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

Map Unit Setting

National map unit symbol: 2thw1
Elevation: 60 to 90 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 66 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Downer and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Downer

Setting

Landform: Knolls, low hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: loamy sand
BE - 10 to 16 inches: loamy sand
Bt - 16 to 28 inches: sandy loam
C1 - 28 to 48 inches: loamy sand
C2 - 48 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 0.2 mmhos/cm)
Available water storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hammonton

Percent of map unit: 10 percent
Landform: Broad interstream divides, flats
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Atsion

Percent of map unit: 5 percent
Landform: Depressions, drainageways, deflation flats, flats
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Dip, tail
Down-slope shape: Concave, linear
Across-slope shape: Linear
Hydric soil rating: Yes

Evesboro

Percent of map unit: 5 percent
Landform: Flats, knolls, fluvio-marine terraces, dunes
Landform position (three-dimensional): Riser, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

EveB—Evesboro sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: rdtn
Elevation: 0 to 150 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of local importance

Map Unit Composition

Evesboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Evesboro

Setting

Landform: Low hills
Landform position (three-dimensional): Interfluvial, side slope
Down-slope shape: Convex
Across-slope shape: Linear

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Parent material: Sandy eolian deposits and/or sandy fluviomarine deposits

Typical profile

A - 0 to 4 inches: sand
AB - 4 to 17 inches: sand
Bw - 17 to 31 inches: sand
C - 31 to 80 inches: stratified loamy sand to sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Atsion

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Drainageways, flood plains, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Downer

Percent of map unit: 5 percent
Landform: Knolls, low hills
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Lakehurst

Percent of map unit: 5 percent
Landform: Flats, depressions
Landform position (two-dimensional): Toeslope

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Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

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STONEFIELD
engineering & design

PARKING COUNT MEMORANDUM

PROPOSED DOLLAR GENERAL
BLOCK 5, LOT 2059
2920 RIDGEWAY ROAD
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

PREPARED FOR:

CAPITAL GROWTH BUCHALTER

PREPARED BY:

STONEFIELD ENGINEERING & DESIGN, LLC
JANUARY 7, 2019
S-18155

CHARLES D. OLIVO, PE, PTOE
PRINCIPAL
NJ P.E. LICENSE #46719

MATTHEW J. SECKLER, PE, PTOE
SENIOR PROJECT MANAGER
NJ P.E. LICENSE #48731

Parking Count Memorandum

Stonefield Engineering and Design, LLC ("Stonefield") has prepared this memorandum to examine the parking demand of various Dollar General locations throughout New Jersey. Parking counts were conducted at six (6) separate locations. The parking counts were collected at the following Dollar General locations:

- ◆ 720 Atlantic City Boulevard, Bayville, New Jersey
- ◆ 1416 East Buckshuntem Road, Millville, New Jersey
- ◆ 380 NJSH 23, Wantage, New Jersey
- ◆ 3400 Haddonfield Road, Pennsauken, New Jersey
- ◆ 1000 West Main Street, Millville, New Jersey
- ◆ 1170 US Route 130, Burlington New Jersey

The first three (3) locations listed (Bayville, Millville, Wantage) were counted during the summer months, when the parking demand is expected to greatest based on their proximity to vacation areas. These locations were counted on Friday, August 31, 2018 between 1:00 p.m. and 6:00 p.m. and Saturday, September 1, 2018 between 10:00 a.m. and 3:00 p.m. in five-minute intervals. The following three locations (Pennsauken, Millville, Burlington) were counted on Thursday, October 25, 2018 between 1:00 p.m. and 6:00 p.m. and Saturday, October 27, 2018 between 10:00 a.m. and 3:00 p.m. in five-minute intervals. The site maps and data from these counts are shown in appended **Figures 1** through **17**. It should be noted that the site map for the 1000 West Main Street, Millville was not included, as aerial images of this site are not available at this time.

For five (5) of the locations, the parking supply ranged from 30 spaces to 34 spaces. The Burlington Dollar General was an outlier and had a parking supply of 97 spaces. The data shows that the average peak parking demand for weekdays at the summer locations was approximately 18 spaces. The highest peak parking demand occurred at Millville at 5:55 p.m. and was 25 spaces. The average peak parking demand for Saturdays at the summer locations was 15 spaces. The highest peak parking demand occurred at Millville at 12:20 p.m. and 2:10 p.m. and was 17 spaces. The average peak parking demand for weekdays at non-summer locations was approximately 15 spaces. The highest peak parking demand occurred Pennsauken at 12:45 p.m. and was 20 spaces. The average peak parking demand for Saturdays in non-summer locations was approximately 14 spaces. The highest peak parking demand occurred at Pennsauken at 3:10 p.m. and was 22 spaces. **Table 1** shows the average and peak parking demand of each site.

Parking Count Memorandum

TABLE I – PARKING DEMAND

	WEEKDAY		WEEKEND	
	Average Peak Demand	Maximum Demand	Average Peak Demand	Maximum Demand
720 Atlantic City Boulevard Bayville	7.4	12	7.4	13
380 NJSH 23 Wantage	10.5	18	11.1	15
1416 Buckshuntem Road Millville	13.2	25	10.7	17
1170 US Route 13 Burlington	5.4	10	7.2	11
3400 Haddonfield Road Pennsauken	11.7	22	11.6	20
1000 West Main Street Millville	5.5	9	8.6	15
Overall	9.0	25	9.4	20

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720 Atlantic City Boulevard
Township of Bayville, Ocean County, New Jersey

STONEFIELD

FIGURE I
Parking Section Map

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Figure 2: Existing Parking Utilization Data

720 Atlantic City Boulevard, Bayville, New Jersey

Friday, August 31, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	13	13	5	31	
1:00 PM	4	0	1	5	16%
1:05 PM	3	0	1	4	13%
1:10 PM	4	0	1	5	16%
1:15 PM	4	0	1	5	16%
1:20 PM	6	0	1	7	23%
1:25 PM	6	0	1	7	23%
1:30 PM	5	0	1	6	19%
1:35 PM	5	1	1	7	23%
1:40 PM	7	2	1	10	32%
1:45 PM	7	1	1	9	29%
1:50 PM	8	2	1	11	35%
1:55 PM	8	0	2	10	32%
2:00 PM	9	0	2	11	35%
2:05 PM	7	0	2	9	29%
2:10 PM	6	1	2	9	29%
2:15 PM	3	1	2	6	19%
2:20 PM	3	0	2	5	16%
2:25 PM	7	1	2	10	32%
2:30 PM	8	1	2	11	35%
2:35 PM	7	1	2	10	32%
2:40 PM	5	1	2	8	26%
2:45 PM	2	1	2	5	16%
2:50 PM	1	1	2	4	13%
2:55 PM	3	1	2	6	19%
3:00 PM	6	0	1	7	23%
3:05 PM	6	0	1	7	23%
3:10 PM	4	0	1	5	16%
3:15 PM	4	1	1	6	19%
3:20 PM	4	1	1	6	19%
3:25 PM	4	0	1	5	16%
3:30 PM	5	0	1	6	19%
3:35 PM	5	0	1	6	19%
3:40 PM	3	0	1	4	13%
3:45 PM	8	0	1	9	29%
3:50 PM	6	1	1	8	26%
3:55 PM	8	1	1	10	32%
4:00 PM	9	1	1	11	35%
4:05 PM	9	1	1	11	35%
4:10 PM	9	1	1	11	35%
4:15 PM	5	1	1	7	23%
4:20 PM	6	0	1	7	23%
4:25 PM	8	1	1	10	32%
4:30 PM	7	2	1	10	32%
4:35 PM	5	1	1	7	23%
4:40 PM	3	1	1	5	16%
4:45 PM	9	2	1	12	39%
4:50 PM	7	1	1	9	29%
4:55 PM	5	0	1	6	19%
5:00 PM	4	0	1	5	16%
5:05 PM	1	1	1	3	10%
5:10 PM	3	0	1	4	13%
5:15 PM	4	0	1	5	16%
5:20 PM	5	0	1	6	19%
5:25 PM	6	0	1	7	23%
5:30 PM	4	0	1	5	16%
5:35 PM	6	0	1	7	23%
5:40 PM	6	0	1	7	23%
5:45 PM	7	3	1	11	35%
5:50 PM	6	2	1	9	29%
5:55 PM	6	3	1	10	32%
6:00 PM	7	2	1	10	32%

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Figure 3: Existing Parking Utilization Data
720 Atlantic City Boulevard, Bayville, New Jersey
Saturday, September 1, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	13	13	5	31	
10:00 AM	4	0	1	5	16%
10:05 AM	4	0	1	5	16%
10:10 AM	5	1	1	7	23%
10:15 AM	3	1	1	5	16%
10:20 AM	1	1	1	3	10%
10:25 AM	3	1	1	5	16%
10:30 AM	3	2	1	6	19%
10:35 AM	6	2	1	9	29%
10:40 AM	7	3	1	11	35%
10:45 AM	9	3	1	13	42%
10:50 AM	6	3	1	10	32%
10:55 AM	5	3	1	9	29%
11:00 AM	5	2	1	8	26%
11:05 AM	5	3	1	9	29%
11:10 AM	3	4	1	8	26%
11:15 AM	5	1	1	7	23%
11:20 AM	4	1	1	6	19%
11:25 AM	6	1	1	8	26%
11:30 AM	6	1	1	8	26%
11:35 AM	8	2	1	11	35%
11:40 AM	8	1	1	10	32%
11:45 AM	7	0	1	8	26%
11:50 AM	7	0	1	8	26%
11:55 AM	6	1	2	9	29%
12:00 PM	7	1	2	10	32%
12:05 PM	5	1	2	8	26%
12:10 PM	6	1	2	9	29%
12:15 PM	6	2	2	10	32%
12:20 PM	7	0	2	9	29%
12:25 PM	4	1	1	6	19%
12:30 PM	4	1	1	6	19%
12:35 PM	5	1	1	7	23%
12:40 PM	7	1	1	9	29%
12:45 PM	6	1	1	8	26%
12:50 PM	6	1	1	8	26%
12:55 PM	6	1	1	8	26%
1:00 PM	6	1	1	8	26%
1:05 PM	5	1	1	7	23%
1:10 PM	5	1	1	7	23%
1:15 PM	5	2	1	8	26%
1:20 PM	3	2	1	6	19%
1:25 PM	3	4	1	8	26%
1:30 PM	2	3	1	6	19%
1:35 PM	1	2	1	4	13%
1:40 PM	4	1	1	6	19%
1:45 PM	5	0	1	6	19%
1:50 PM	4	0	1	5	16%
1:55 PM	3	1	2	6	19%
2:00 PM	2	1	2	5	16%
2:05 PM	1	1	2	4	13%
2:10 PM	1	1	2	4	13%
2:15 PM	4	0	2	6	19%
2:20 PM	7	0	2	9	29%
2:25 PM	6	1	2	9	29%
2:30 PM	7	1	2	10	32%
2:35 PM	7	0	2	9	29%
2:40 PM	8	0	2	10	32%
2:45 PM	5	0	2	7	23%
2:50 PM	3	0	2	5	16%
2:55 PM	3	0	2	5	16%
3:00 PM	2	0	2	4	13%



FIGURE 4
Parking Section Map

380 NJSH 23
Wantage Township, Sussex County, New Jersey

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Figure 5: Existing Parking Utilization Data

380 NJ-23, Wantage, New Jersey

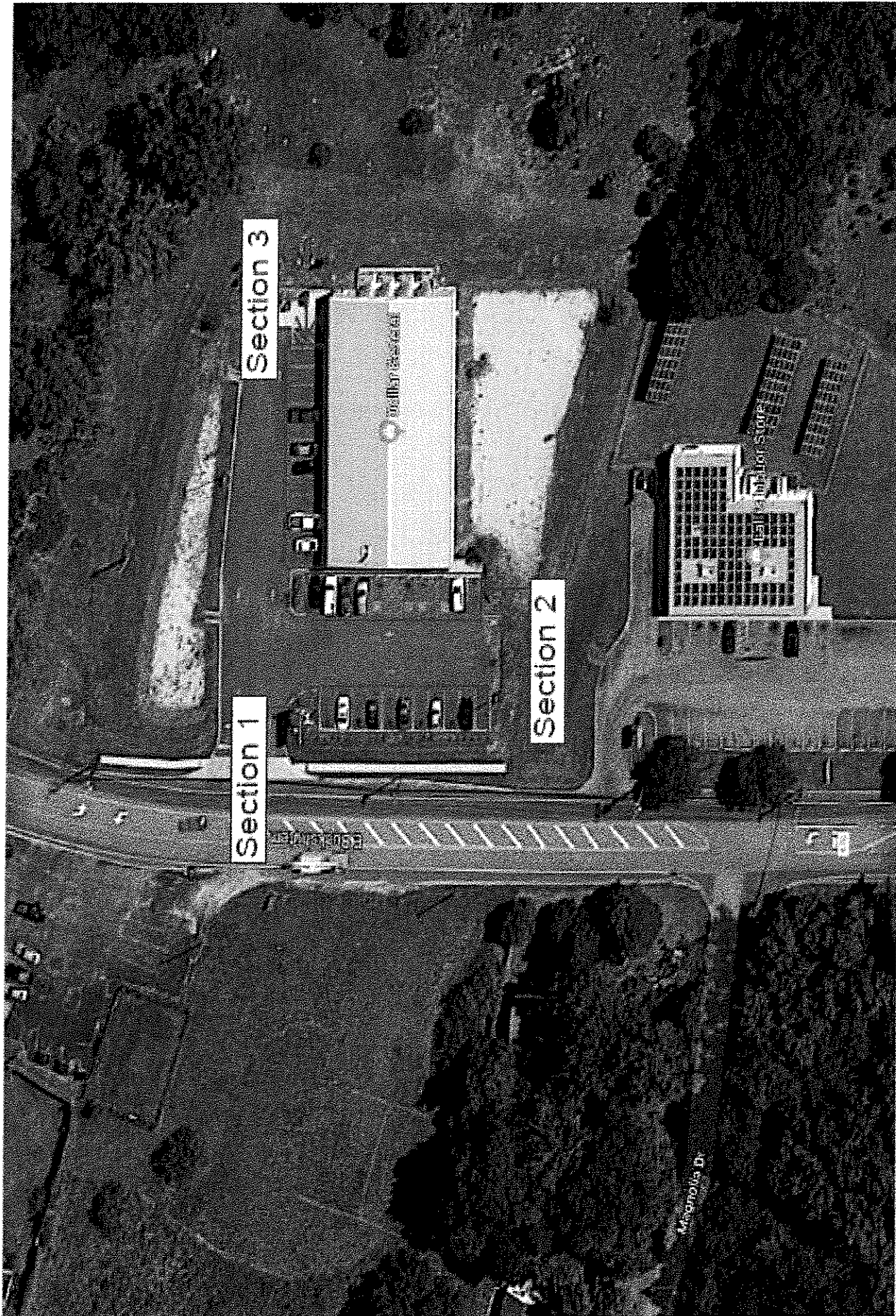
Friday, August 31, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	13	13	5	31	
1:00 PM	5	3	4	12	39%
1:05 PM	5	4	5	14	45%
1:10 PM	4	4	6	14	45%
1:15 PM	4	3	6	13	42%
1:20 PM	5	3	5	13	42%
1:25 PM	9	3	5	17	55%
1:30 PM	9	3	4	16	52%
1:35 PM	7	2	4	13	42%
1:40 PM	6	2	3	11	35%
1:45 PM	6	2	4	12	39%
1:50 PM	2	1	4	7	23%
1:55 PM	6	1	4	11	35%
2:00 PM	5	0	4	9	29%
2:05 PM	4	0	4	8	26%
2:10 PM	3	0	3	6	19%
2:15 PM	3	1	2	6	19%
2:20 PM	4	1	2	7	23%
2:25 PM	6	0	2	8	26%
2:30 PM	7	1	2	10	32%
2:35 PM	7	3	5	15	48%
2:40 PM	7	4	6	17	55%
2:45 PM	6	6	6	18	58%
2:50 PM	6	6	4	16	52%
2:55 PM	5	5	4	14	45%
3:00 PM	5	6	4	15	48%
3:05 PM	4	4	3	11	35%
3:10 PM	6	3	4	13	42%
3:15 PM	6	3	3	12	39%
3:20 PM	3	3	2	8	26%
3:25 PM	6	4	3	13	42%
3:30 PM	4	3	2	9	29%
3:35 PM	5	3	3	11	35%
3:40 PM	6	4	3	13	42%
3:45 PM	4	4	3	11	35%
3:50 PM	4	4	4	12	39%
3:55 PM	5	4	3	12	39%
4:00 PM	4	4	2	10	32%
4:05 PM	4	5	2	11	35%
4:10 PM	4	4	4	12	39%
4:15 PM	5	3	5	13	42%
4:20 PM	4	1	4	9	29%
4:25 PM	3	3	4	10	32%
4:30 PM	5	3	2	10	32%
4:35 PM	4	4	2	10	32%
4:40 PM	6	3	3	12	39%
4:45 PM	4	2	1	7	23%
4:50 PM	3	1	2	6	19%
4:55 PM	1	1	1	3	10%
5:00 PM	3	0	1	4	13%
5:05 PM	2	0	1	3	10%
5:10 PM	3	1	2	6	19%
5:15 PM	3	2	1	6	19%
5:20 PM	5	2	2	9	29%
5:25 PM	5	1	2	8	26%
5:30 PM	4	2	1	7	23%
5:35 PM	4	1	1	6	19%
5:40 PM	4	2	2	8	26%
5:45 PM	6	1	3	10	32%
5:50 PM	7	3	3	13	42%
5:55 PM	7	1	2	10	32%
6:00 PM	7	3	3	13	42%

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Figure 6: Existing Parking Utilization Data
380 NJ-23, Wantage, New Jersey
Saturday, September 1, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	9	9	12	30	
10:00 AM	7	5	2	14	47%
10:05 AM	3	4	5	12	40%
10:10 AM	4	4	5	13	43%
10:15 AM	5	3	5	13	43%
10:20 AM	4	1	2	7	23%
10:25 AM	5	2	3	10	33%
10:30 AM	5	3	3	11	37%
10:35 AM	6	3	2	11	37%
10:40 AM	7	5	2	14	47%
10:45 AM	6	5	2	13	43%
10:50 AM	7	5	2	14	47%
10:55 AM	7	4	3	14	47%
11:00 AM	6	4	2	12	40%
11:05 AM	6	5	2	13	43%
11:10 AM	4	3	4	11	37%
11:15 AM	3	4	4	11	37%
11:20 AM	7	3	2	12	40%
11:25 AM	6	4	1	11	37%
11:30 AM	5	3	2	10	33%
11:35 AM	6	3	2	11	37%
11:40 AM	6	4	2	12	40%
11:45 AM	5	3	2	10	33%
11:50 AM	5	4	2	11	37%
11:55 AM	3	3	2	8	27%
12:00 PM	6	4	2	12	40%
12:05 PM	7	3	2	12	40%
12:10 PM	7	2	1	10	33%
12:15 PM	6	3	2	11	37%
12:20 PM	3	2	3	8	27%
12:25 PM	4	2	2	8	27%
12:30 PM	5	4	3	12	40%
12:35 PM	5	3	2	10	33%
12:40 PM	2	3	3	8	27%
12:45 PM	6	2	2	10	33%
12:50 PM	3	6	4	13	43%
12:55 PM	3	5	2	10	33%
1:00 PM	4	4	3	11	37%
1:05 PM	4	3	3	10	33%
1:10 PM	5	2	4	11	37%
1:15 PM	5	3	4	12	40%
1:20 PM	4	3	4	11	37%
1:25 PM	6	4	5	15	50%
1:30 PM	5	3	3	11	37%
1:35 PM	6	3	3	12	40%
1:40 PM	5	4	3	12	40%
1:45 PM	7	4	3	14	47%
1:50 PM	3	5	5	13	43%
1:55 PM	4	5	4	13	43%
2:00 PM	3	4	4	11	37%
2:05 PM	4	4	4	12	40%
2:10 PM	2	3	3	8	27%
2:15 PM	2	3	3	8	27%
2:20 PM	4	5	3	12	40%
2:25 PM	4	5	4	13	43%
2:30 PM	3	5	3	11	37%
2:35 PM	3	3	3	9	30%
2:40 PM	4	4	2	10	33%
2:45 PM	4	2	2	8	27%
2:50 PM	3	2	3	8	27%
2:55 PM	5	1	4	10	33%
3:00 PM	2	1	5	8	27%



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1416 East Buckshuntem Road
City of Millville, Cumberland County, New Jersey

FIGURE 7
Parking Section Map

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Figure 8: Existing Parking Utilization Data

1416 East Buckshuntem Road, Milville, New Jersey

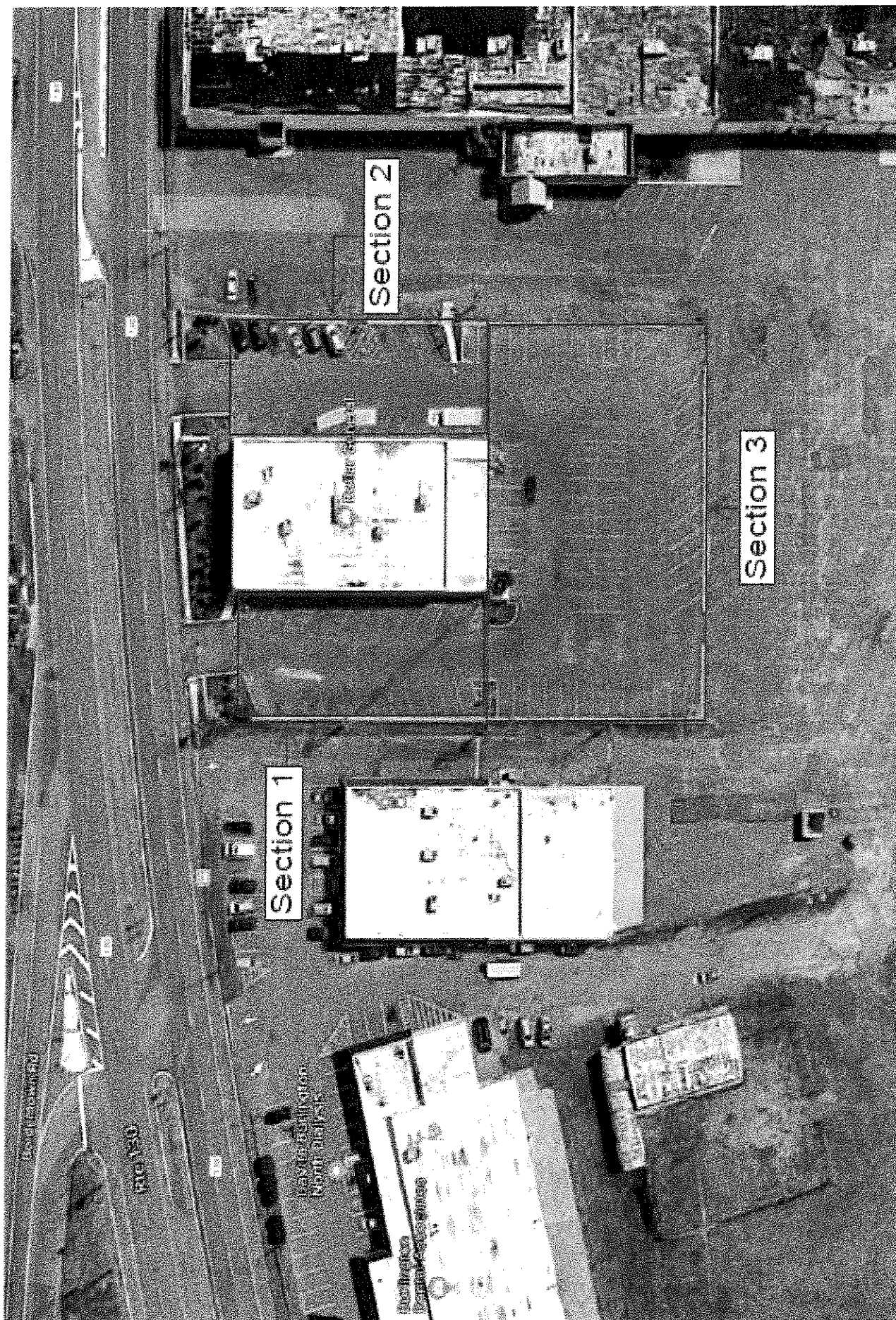
Friday, August 31, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	11	10	11	32	
1:00 PM	3	4	2	9	28%
1:05 PM	3	5	2	10	31%
1:10 PM	3	6	3	12	38%
1:15 PM	4	3	3	10	31%
1:20 PM	2	2	3	7	22%
1:25 PM	2	5	3	10	31%
1:30 PM	6	4	3	13	41%
1:35 PM	5	5	1	11	34%
1:40 PM	3	7	3	13	41%
1:45 PM	4	2	2	8	25%
1:50 PM	3	4	4	11	34%
1:55 PM	4	4	4	12	38%
2:00 PM	3	4	2	9	28%
2:05 PM	4	5	3	12	38%
2:10 PM	4	4	2	10	31%
2:15 PM	3	3	3	9	28%
2:20 PM	5	2	5	12	38%
2:25 PM	5	4	2	11	34%
2:30 PM	7	5	5	17	53%
2:35 PM	5	8	4	17	53%
2:40 PM	4	6	7	17	53%
2:45 PM	4	5	6	15	47%
2:50 PM	5	5	3	13	41%
2:55 PM	5	6	2	13	41%
3:00 PM	4	6	2	12	38%
3:05 PM	5	5	3	13	41%
3:10 PM	6	5	3	14	44%
3:15 PM	4	5	4	13	41%
3:20 PM	4	2	5	11	34%
3:25 PM	3	2	5	10	31%
3:30 PM	4	4	5	13	41%
3:35 PM	4	4	3	11	34%
3:40 PM	3	5	1	9	28%
3:45 PM	2	4	1	7	22%
3:50 PM	3	5	1	9	28%
3:55 PM	3	6	2	11	34%
4:00 PM	2	4	2	8	25%
4:05 PM	5	3	4	12	38%
4:10 PM	2	4	4	10	31%
4:15 PM	4	3	4	11	34%
4:20 PM	5	4	6	15	47%
4:25 PM	6	4	3	13	41%
4:30 PM	4	3	3	10	31%
4:35 PM	3	5	2	10	31%
4:40 PM	6	5	5	16	50%
4:45 PM	6	5	6	17	53%
4:50 PM	7	5	3	15	47%
4:55 PM	9	4	4	17	53%
5:00 PM	9	5	7	21	66%
5:05 PM	7	7	7	21	66%
5:10 PM	8	6	8	22	69%
5:15 PM	4	5	5	14	44%
5:20 PM	4	4	5	13	41%
5:25 PM	4	7	5	16	50%
5:30 PM	6	6	7	19	59%
5:35 PM	6	5	3	14	44%
5:40 PM	3	4	2	9	28%
5:45 PM	6	7	5	18	56%
5:50 PM	6	8	7	21	66%
5:55 PM	8	9	8	25	78%
6:00 PM	9	9	7	25	78%

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Figure 9: Existing Parking Utilization Data
1416 East Buckshuntem Road, Millville, New Jersey
Saturday, September 1, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	11	10	11	32	
10:00 AM	1	5	4	10	31%
10:05 AM	2	6	4	12	38%
10:10 AM	1	5	4	10	31%
10:15 AM	1	3	4	8	25%
10:20 AM	1	6	5	12	38%
10:25 AM	1	3	4	8	25%
10:30 AM	2	2	4	8	25%
10:35 AM	1	4	3	8	25%
10:40 AM	1	2	4	7	22%
10:45 AM	0	0	3	3	9%
10:50 AM	0	4	3	7	22%
10:55 AM	1	4	2	7	22%
11:00 AM	3	5	2	10	31%
11:05 AM	1	4	1	6	19%
11:10 AM	2	4	1	7	22%
11:15 AM	3	2	2	7	22%
11:20 AM	0	3	2	5	16%
11:25 AM	1	4	1	6	19%
11:30 AM	2	5	3	10	31%
11:35 AM	2	5	2	9	28%
11:40 AM	4	6	3	13	41%
11:45 AM	3	5	6	14	44%
11:50 AM	4	6	3	13	41%
11:55 AM	4	4	2	10	31%
12:00 PM	3	7	3	13	41%
12:05 PM	3	7	3	13	41%
12:10 PM	3	5	4	12	38%
12:15 PM	2	8	5	15	47%
12:20 PM	4	7	6	17	53%
12:25 PM	3	6	4	13	41%
12:30 PM	2	5	6	13	41%
12:35 PM	3	3	4	10	31%
12:40 PM	3	5	2	10	31%
12:45 PM	4	2	5	11	34%
12:50 PM	1	5	2	8	25%
12:55 PM	4	7	3	14	44%
1:00 PM	3	3	1	7	22%
1:05 PM	3	7	4	14	44%
1:10 PM	4	4	6	14	44%
1:15 PM	4	4	5	13	41%
1:20 PM	4	3	3	10	31%
1:25 PM	1	5	2	8	25%
1:30 PM	0	5	2	7	22%
1:35 PM	0	2	2	4	13%
1:40 PM	2	6	3	11	34%
1:45 PM	2	7	5	14	44%
1:50 PM	4	4	4	12	38%
1:55 PM	6	4	3	13	41%
2:00 PM	5	5	3	13	41%
2:05 PM	3	6	5	14	44%
2:10 PM	4	6	7	17	53%
2:15 PM	5	4	4	13	41%
2:20 PM	3	3	6	12	38%
2:25 PM	4	5	4	13	41%
2:30 PM	3	6	4	13	41%
2:35 PM	2	3	6	11	34%
2:40 PM	2	4	5	11	34%
2:45 PM	2	4	3	9	28%
2:50 PM	4	5	4	13	41%
2:55 PM	5	6	3	14	44%
3:00 PM	5	5	6	16	50%



1170 US Route 130
City of Burlington, Burlington County, New Jersey

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FIGURE 10
Parking Section Map

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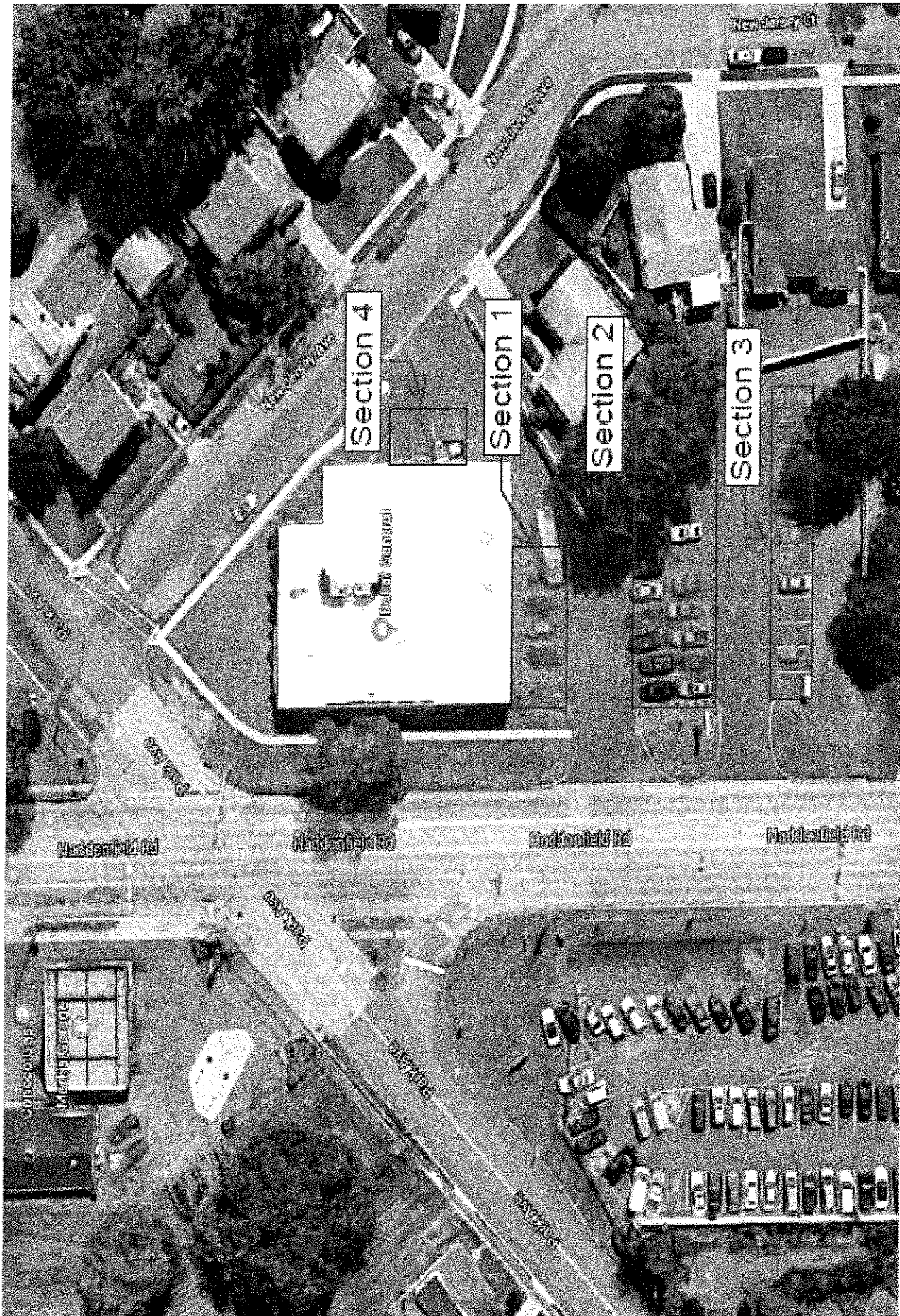
Figure 11: Existing Parking Utilization Data
1170 US Route 130, Burlington, New Jersey
Wednesday, October 24, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	23	16	58	97	
1:00 PM	2	1	3	6	6%
1:05 PM	1	1	4	6	6%
1:10 PM	1	1	4	6	6%
1:15 PM	2	1	3	6	6%
1:20 PM	2	1	5	8	8%
1:25 PM	1	1	2	4	4%
1:30 PM	1	0	2	3	3%
1:35 PM	2	0	2	4	4%
1:40 PM	4	0	1	5	5%
1:45 PM	3	0	3	6	6%
1:50 PM	3	0	2	5	5%
1:55 PM	2	0	1	3	3%
2:00 PM	2	1	1	4	4%
2:05 PM	2	1	1	4	4%
2:10 PM	2	1	1	4	4%
2:15 PM	1	1	3	5	5%
2:20 PM	1	1	3	5	5%
2:25 PM	4	1	3	8	8%
2:30 PM	2	1	2	5	5%
2:35 PM	1	1	3	5	5%
2:40 PM	1	1	2	4	4%
2:45 PM	3	0	3	6	6%
2:50 PM	4	0	1	5	5%
2:55 PM	2	0	1	3	3%
3:00 PM	2	0	2	4	4%
3:05 PM	1	0	3	4	4%
3:10 PM	2	0	2	4	4%
3:15 PM	4	0	2	6	6%
3:20 PM	3	0	2	5	5%
3:25 PM	4	0	3	7	7%
3:30 PM	3	0	3	6	6%
3:35 PM	3	0	2	5	5%
3:40 PM	8	0	2	10	10%
3:45 PM	6	0	3	9	9%
3:50 PM	4	0	2	6	6%
3:55 PM	3	0	1	4	4%
4:00 PM	1	0	1	2	2%
4:05 PM	1	0	3	4	4%
4:10 PM	2	0	4	6	6%
4:15 PM	2	0	4	6	6%
4:20 PM	0	0	1	1	1%
4:25 PM	2	0	4	6	6%
4:30 PM	0	0	4	4	4%
4:35 PM	2	0	5	7	7%
4:40 PM	3	0	3	6	6%
4:45 PM	2	0	4	6	6%
4:50 PM	0	0	5	5	5%
4:55 PM	0	0	6	6	6%
5:00 PM	2	0	4	6	6%
5:05 PM	2	0	3	5	5%
5:10 PM	1	0	6	7	7%
5:15 PM	0	0	5	5	5%
5:20 PM	0	0	6	6	6%
5:25 PM	0	0	8	8	8%
5:30 PM	0	0	9	9	9%
5:35 PM	2	0	7	9	9%
5:40 PM	2	0	5	7	7%
5:45 PM	2	0	2	4	4%
5:50 PM	2	0	4	6	6%
5:55 PM	1	0	3	4	4%
6:00 PM	1	0	4	5	5%

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Figure 12: Existing Parking Utilization Data
 1170 US Route 130, Burlington, New Jersey
 Saturday, October 27, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	23	16	58	97	
10:00 AM	5	0	3	8	8%
10:05 AM	4	0	2	6	6%
10:10 AM	4	0	2	6	6%
10:15 AM	3	0	2	5	5%
10:20 AM	3	0	3	6	6%
10:25 AM	3	0	4	7	7%
10:30 AM	2	0	4	6	6%
10:35 AM	2	0	3	5	5%
10:40 AM	3	0	6	9	9%
10:45 AM	3	0	6	9	9%
10:50 AM	5	0	5	10	10%
10:55 AM	6	0	5	11	11%
11:00 AM	3	0	6	9	9%
11:05 AM	3	0	5	8	8%
11:10 AM	4	0	4	8	8%
11:15 AM	5	0	3	8	8%
11:20 AM	9	0	2	11	11%
11:25 AM	7	0	4	11	11%
11:30 AM	4	0	5	9	9%
11:35 AM	1	0	4	5	5%
11:40 AM	2	0	4	6	6%
11:45 AM	1	0	2	3	3%
11:50 AM	2	0	4	6	6%
11:55 AM	0	0	3	3	3%
12:00 PM	4	0	3	7	7%
12:05 PM	6	0	4	10	10%
12:10 PM	5	0	4	9	9%
12:15 PM	2	0	1	3	3%
12:20 PM	1	0	2	3	3%
12:25 PM	2	0	7	9	9%
12:30 PM	2	0	5	7	7%
12:35 PM	2	0	4	6	6%
12:40 PM	0	0	5	5	5%
12:45 PM	0	0	7	7	7%
12:50 PM	0	0	7	7	7%
12:55 PM	1	0	8	9	9%
1:00 PM	2	0	6	8	8%
1:05 PM	0	0	5	5	5%
1:10 PM	0	0	5	5	5%
1:15 PM	0	0	3	3	3%
1:20 PM	1	0	3	4	4%
1:25 PM	1	0	2	3	3%
1:30 PM	2	0	2	4	4%
1:35 PM	2	0	7	9	9%
1:40 PM	4	0	6	10	10%
1:45 PM	1	0	5	6	6%
1:50 PM	3	0	4	7	7%
1:55 PM	3	0	3	6	6%
2:00 PM	3	0	2	5	5%
2:05 PM	3	0	3	6	6%
2:10 PM	2	0	6	8	8%
2:15 PM	3	0	6	9	9%
2:20 PM	4	0	6	10	10%
2:25 PM	6	0	4	10	10%
2:30 PM	7	0	4	11	11%
2:35 PM	7	0	4	11	11%
2:40 PM	5	0	6	11	11%
2:45 PM	6	0	5	11	11%
2:50 PM	5	0	4	9	9%
2:55 PM	2	0	3	5	5%
3:00 PM	2	0	4	6	6%



3400 Haddonfield Road
Pennsauken Township, Camden County, New Jersey

STONEFIELD

FIGURE 13
Parking Section Map

STONEFIELD

Figure 14: Existing Parking Utilization Data
 3400 Haddonfield Road, Pennsauken, New Jersey
 Thursday, October 25, 2018

Time	Section 1	Section 2	Section 3	Section 4	Total	Utilization
Supply	5	14	12	3	34	
1:00 PM	4	2	1	1	7	21%
1:05 PM	3	3	1	1	7	21%
1:10 PM	4	4	1	1	9	26%
1:15 PM	2	3	1	1	6	18%
1:20 PM	2	4	1	1	7	21%
1:25 PM	3	6	1	1	10	29%
1:30 PM	2	5	1	1	8	24%
1:35 PM	3	8	1	1	12	35%
1:40 PM	3	5	1	1	9	26%
1:45 PM	3	4	1	1	8	24%
1:50 PM	4	6	1	1	11	32%
1:55 PM	3	5	1	1	9	26%
2:00 PM	4	5	3	1	12	35%
2:05 PM	5	4	3	2	12	35%
2:10 PM	3	5	2	2	10	29%
2:15 PM	4	5	2	1	11	32%
2:20 PM	3	6	2	1	11	32%
2:25 PM	4	4	4	1	12	35%
2:30 PM	3	9	4	1	16	47%
2:35 PM	2	8	3	1	13	38%
2:40 PM	3	6	2	1	11	32%
2:45 PM	4	8	2	1	14	41%
2:50 PM	3	5	2	1	10	29%
2:55 PM	4	5	4	1	13	38%
3:00 PM	4	6	4	1	14	41%
3:05 PM	2	8	4	1	14	41%
3:10 PM	5	11	6	1	22	65%
3:15 PM	5	9	6	1	20	59%
3:20 PM	4	6	5	1	15	44%
3:25 PM	4	6	5	1	15	44%
3:30 PM	2	7	4	1	13	38%
3:35 PM	1	3	4	1	8	24%
3:40 PM	3	4	5	1	12	35%
3:45 PM	4	4	4	1	12	35%
3:50 PM	5	6	4	1	15	44%
3:55 PM	3	6	3	1	12	35%
4:00 PM	3	7	3	1	13	38%
4:05 PM	4	6	5	1	15	44%
4:10 PM	4	9	5	1	18	53%
4:15 PM	3	8	4	1	15	44%
4:20 PM	2	7	4	1	13	38%
4:25 PM	2	8	3	1	13	38%
4:30 PM	3	8	3	1	14	41%
4:35 PM	2	6	2	2	10	29%
4:40 PM		5	2	1	7	21%
4:45 PM	3	6	2	1	11	32%
4:50 PM	3	4	2	1	9	26%
4:55 PM	2	5	2	1	9	26%
5:00 PM	2	7	2	1	11	32%
5:05 PM	1	6	2	1	9	26%
5:10 PM	1	5	2	1	8	24%
5:15 PM		7	2	1	9	26%
5:20 PM	2	9	2	1	13	38%
5:25 PM	2	7	2	1	11	32%
5:30 PM	3	9	2	1	14	41%
5:35 PM	4	8	3	1	15	44%
5:40 PM	4	8	2	1	14	41%
5:45 PM	2	8	1	1	11	32%
5:50 PM	2	9	2	1	13	38%
5:55 PM	4	6	3	1	13	38%
6:00 PM	2	4	2	1	8	24%

STONEFIELD

Figure 15: Existing Parking Utilization Data
 3400 Haddonfield Road, Pennsauken, New Jersey
 Saturday, October 27, 2018

Time	Section 1	Section 2	Section 3	Section 4	Total	Utilization
Supply	5	14	12	3	34	
10:00 AM	3	3	1	1	7	21%
10:05 AM	4	2	1	1	7	21%
10:10 AM	3	2	1	1	6	18%
10:15 AM	3	3	1	1	7	21%
10:20 AM	2	3	1	1	6	18%
10:25 AM	3	5	1	1	9	26%
10:30 AM	2	3	1	1	6	18%
10:35 AM	4	5	1	1	10	29%
10:40 AM	4	7	1	1	12	35%
10:45 AM	3	4	1	1	8	24%
10:50 AM	4	3	1	1	8	24%
10:55 AM	4	4	1	1	9	26%
11:00 AM	4	5	1	1	10	29%
11:05 AM	4	3	1	1	8	24%
11:10 AM	2	3	1	1	6	18%
11:15 AM	4	6	2	1	12	35%
11:20 AM	3	6	2	1	11	32%
11:25 AM	4	5	0	1	9	26%
11:30 AM	5	3	0	1	8	24%
11:35 AM	6	4	0	1	10	29%
11:40 AM	4	6	0	1	10	29%
11:45 AM	3	5	0	1	8	24%
11:50 AM	5	5	1	1	11	32%
11:55 AM	5	6	2	1	13	38%
12:00 PM	6	3	2	1	11	32%
12:05 PM	3	4	1	1	8	24%
12:10 PM	4	7	1	1	12	35%
12:15 PM	6	6	0	1	12	35%
12:20 PM	5	7	0	1	12	35%
12:25 PM	5	7	0	1	12	35%
12:30 PM	3	9	0	1	12	35%
12:35 PM	4	11	0	1	15	44%
12:40 PM	3	12	1	1	16	47%
12:45 PM	5	12	3	1	20	59%
12:50 PM	5	9	3	1	17	50%
12:55 PM	5	9	2	1	16	47%
1:00 PM	4	11	3	1	18	53%
1:05 PM	3	11	4	1	18	53%
1:10 PM	4	8	3	1	15	44%
1:15 PM	2	10	2	1	14	41%
1:20 PM	2	6	1	1	9	26%
1:25 PM	3	9	0	1	12	35%
1:30 PM	3	10	0	1	13	38%
1:35 PM	4	11	2	1	17	50%
1:40 PM	3	12	2	1	17	50%
1:45 PM	3	10	2	1	15	44%
1:50 PM	4	6	2	1	12	35%
1:55 PM	3	5	0	1	8	24%
2:00 PM	4	7	0	1	11	32%
2:05 PM	5	9	0	1	14	41%
2:10 PM	5	12	0	1	17	50%
2:15 PM	5	7	1	2	13	38%
2:20 PM	3	5	1	2	9	26%
2:25 PM	3	6	1	4	10	29%
2:30 PM	3	5	1	2	9	26%
2:35 PM	4	9	0	2	13	38%
2:40 PM	3	11	0	3	14	41%
2:45 PM	3	9	0	2	12	35%
2:50 PM	3	9	0	2	12	35%
2:55 PM	4	11	1	2	16	47%
3:00 PM	6	8	1	2	15	44%

STONEFIELD

Figure 16: Existing Parking Utilization Data
1000 West Main Street, Millville, New Jersey
Thursday, October 25, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	15	12	3	30	
1:00 PM	0	2	0	2	7%
1:05 PM	0	1	0	1	3%
1:10 PM	0	2	0	2	7%
1:15 PM	0	4	0	4	13%
1:20 PM	0	7	0	7	23%
1:25 PM	0	8	0	8	27%
1:30 PM	0	5	0	5	17%
1:35 PM	0	7	0	7	23%
1:40 PM	0	8	0	8	27%
1:45 PM	0	7	0	7	23%
1:50 PM	0	5	0	5	17%
1:55 PM	0	3	0	3	10%
2:00 PM	0	4	0	4	13%
2:05 PM	0	6	0	6	20%
2:10 PM	0	4	0	4	13%
2:15 PM	0	5	0	5	17%
2:20 PM	0	2	0	2	7%
2:25 PM	0	4	0	4	13%
2:30 PM	0	6	0	6	20%
2:35 PM	0	6	0	6	20%
2:40 PM	0	9	0	9	30%
2:45 PM	0	6	0	6	20%
2:50 PM	1	5	0	6	20%
2:55 PM	1	3	0	4	13%
3:00 PM	1	5	0	6	20%
3:05 PM	1	3	0	4	13%
3:10 PM	1	3	0	4	13%
3:15 PM	1	3	0	4	13%
3:20 PM	1	5	0	6	20%
3:25 PM	1	6	0	7	23%
3:30 PM	1	5	0	6	20%
3:35 PM	1	6	0	7	23%
3:40 PM	1	6	0	7	23%
3:45 PM	2	5	0	7	23%
3:50 PM	2	6	0	8	27%
3:55 PM	1	6	0	7	23%
4:00 PM	0	6	0	6	20%
4:05 PM	0	6	0	6	20%
4:10 PM	0	4	0	4	13%
4:15 PM	0	4	0	4	13%
4:20 PM	0	3	0	3	10%
4:25 PM	0	4	0	4	13%
4:30 PM	0	7	0	7	23%
4:35 PM	0	6	0	6	20%
4:40 PM	0	6	0	6	20%
4:45 PM	0	8	0	8	27%
4:50 PM	0	7	0	7	23%
4:55 PM	0	7	1	8	27%
5:00 PM	0	3	1	4	13%
5:05 PM	0	4	1	5	17%
5:10 PM	0	5	1	6	20%
5:15 PM	0	7	1	8	27%
5:20 PM	0	6	1	7	23%
5:25 PM	0	5	1	6	20%
5:30 PM	0	3	1	4	13%
5:35 PM	0	4	1	5	17%
5:40 PM	0	4	1	5	17%
5:45 PM	0	3	1	4	13%
5:50 PM	0	6	1	7	23%
5:55 PM	0	6	1	7	23%
6:00 PM	0	6	1	7	23%

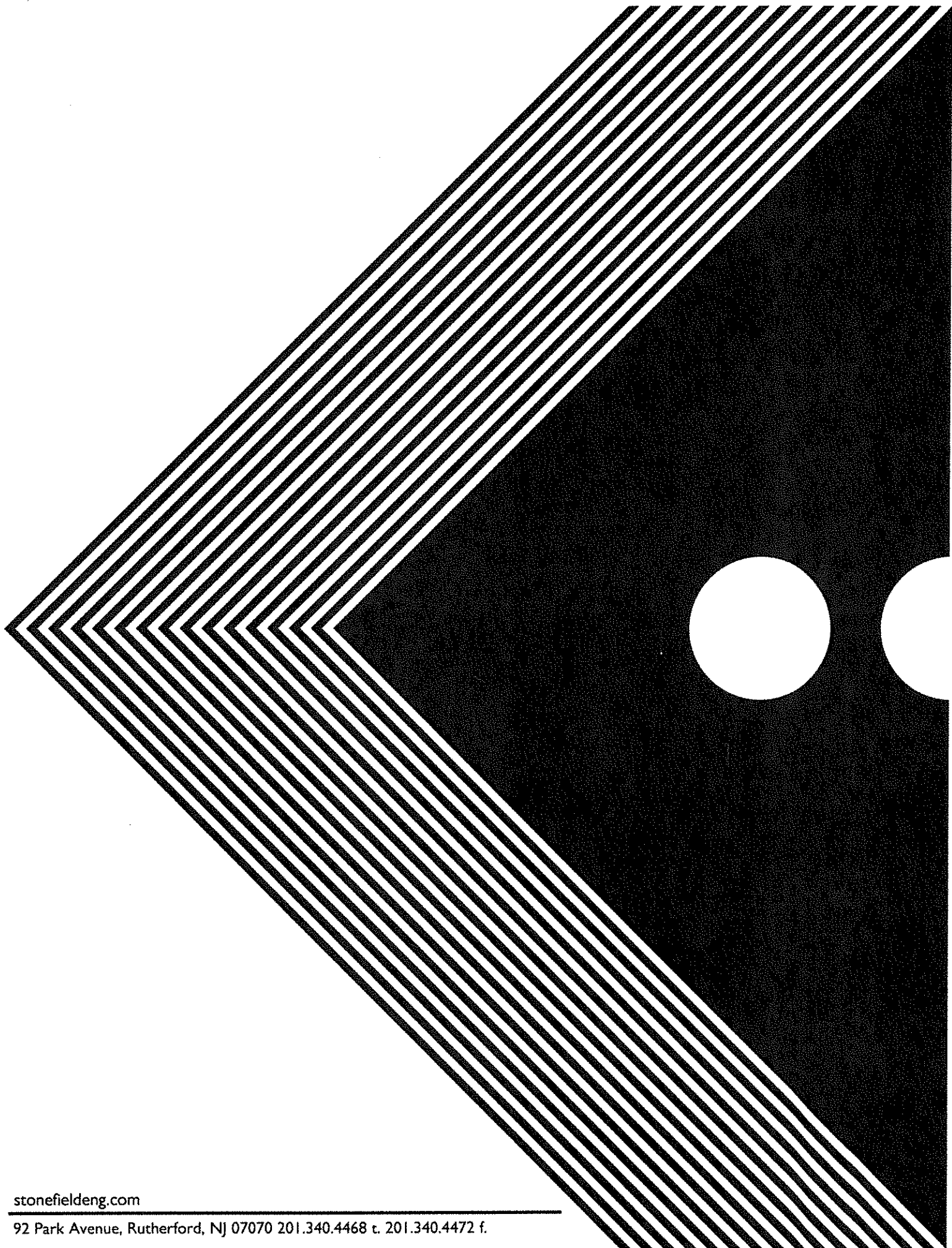
STONEFIELD

Figure 17: Existing Parking Utilization Data

1000 West Main Street, Millville, New Jersey

Saturday, October 27, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	15	12	3	30	
10:00 AM	0	3	0	3	10%
10:05 AM	0	1	0	1	3%
10:10 AM	0	1	0	1	3%
10:15 AM	0	5	0	5	17%
10:20 AM	0	7	0	7	23%
10:25 AM	1	6	1	8	27%
10:30 AM	1	8	1	10	33%
10:35 AM	2	8	1	11	37%
10:40 AM	2	7	1	10	33%
10:45 AM	1	6	1	8	27%
10:50 AM	1	5	1	7	23%
10:55 AM	1	3	1	5	17%
11:00 AM	1	5	1	7	23%
11:05 AM	0	4	1	5	17%
11:10 AM	0	9	1	10	33%
11:15 AM	2	7	1	10	33%
11:20 AM	1	10	1	12	40%
11:25 AM	2	9	1	12	40%
11:30 AM	5	8	1	14	47%
11:35 AM	1	8	1	10	33%
11:40 AM	1	8	1	10	33%
11:45 AM	1	6	1	8	27%
11:50 AM	1	7	1	9	30%
11:55 AM	1	5	1	7	23%
12:00 PM	1	5	1	7	23%
12:05 PM	1	6	1	8	27%
12:10 PM	1	7	1	9	30%
12:15 PM	0	5	1	6	20%
12:20 PM	0	7	1	8	27%
12:25 PM	0	5	1	6	20%
12:30 PM	2	10	1	13	43%
12:35 PM	3	7	1	11	37%
12:40 PM	1	6	1	8	27%
12:45 PM	0	4	1	5	17%
12:50 PM	0	7	1	8	27%
12:55 PM	0	7	1	8	27%
1:00 PM	0	8	1	9	30%
1:05 PM	0	5	1	6	20%
1:10 PM	1	5	1	7	23%
1:15 PM	0	10	1	11	37%
1:20 PM	2	12	1	15	50%
1:25 PM	1	7	1	9	30%
1:30 PM	0	5	1	6	20%
1:35 PM	0	8	1	9	30%
1:40 PM	0	11	1	12	40%
1:45 PM	3	10	1	14	47%
1:50 PM	4	9	2	15	50%
1:55 PM	1	9	2	12	40%
2:00 PM	0	8	2	10	33%
2:05 PM	0	7	2	9	30%
2:10 PM	1	6	2	9	30%
2:15 PM	2	4	2	8	27%
2:20 PM	0	2	2	4	13%
2:25 PM	1	5	2	8	27%
2:30 PM	1	7	2	10	33%
2:35 PM	1	4	2	7	23%
2:40 PM	1	6	2	9	30%
2:45 PM	0	5	2	7	23%
2:50 PM	0	5	2	7	23%
2:55 PM	3	4	2	9	30%
3:00 PM	4	8	2	14	47%





STONEFIELD
engineering & design

STORMWATER MANAGEMENT REPORT

**PROPOSED DOLLAR GENERAL RETAIL STORE
BLOCK 5, LOT 2059
2920 HIGHWAY 571
MANCHESTER TOWNSHIP
OCEAN COUNTY, NEW JERSEY**

PREPARED FOR:

DOLLAR GENERAL

PREPARED BY:

**STONEFIELD ENGINEERING & DESIGN, LLC
DECEMBER 28, 2018
Z-18116**

**JEFFREY A. MARTELL, PE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE # 47290**

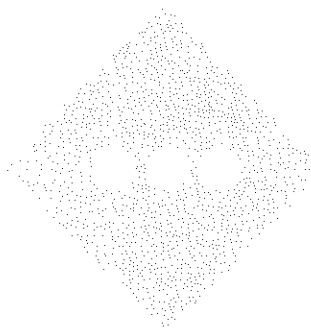
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15 Spring Street, Princeton, NJ 08542 609.362.6900 t. 201.340.4472 f.



REPORT CONTENTS

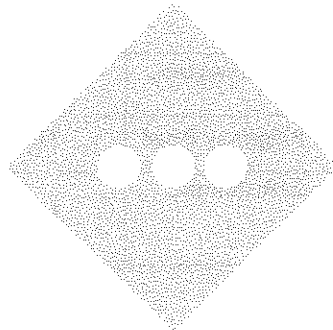
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1.0 PROJECT DESCRIPTION

Dollar General is proposing the construction of a 9,100 SF retail store and associated access, loading, and parking facilities. The subject property is designated Block 5, Lots 2059 commonly known as 2920 Highway 571.

The subject property totals 101,892.0 SF and the proposed development will disturb 59,500 SF (1.4 acres) and the total area of new impervious surfaces is 37,624.2 SF (0.9 acres). Project Figures can be found in Appendix A of this Report.

This Stormwater Management Report has been prepared to analyze the potential stormwater runoff impacts of the proposed project and discuss the measures proposed to conform to the stormwater management requirements set forth by the Township of Manchester, Ocean County Soil Conservation District, and the New Jersey Department of Environmental Protection (NJDEP).

2.0 EXISTING CONDITIONS

The project site is currently undeveloped and wooded and no access or significant improvements are presently visible on-site.

2.1 EXISTING DRAINAGE AREAS

Under existing conditions, the site is comprised of a single drainage area that has been broken up into three (3) sections associated with the areas draining to each of the fronting roadways. The project site slopes predominantly from north to south with high points at the rear and center of the property. Gradual slopes exist ranging from 1 to 7%. The stormwater runoff flows overland from the rear of the site to the three (3) fronting roadways and is collected by the existing conveyance system located within Ridgeway Road.

TABLE 1: EXISTING DRAINAGE AREAS

Drainage Area	Description	Area Extents (SF)	Impervious Area (SF)	Time of Concentration (Min)
EX-1A	Existing Drainage to Washington Road	17,104	10	20.2
EX-1B	Existing Drainage to Ridgeway Road	31,102	15	25.6
EX-1C	Existing Drainage to Richmond Avenue	15,910	246	12.4

Detailed information regarding each drainage area can be found on the Existing Drainage Area Map in Appendix E of this Report.

2.2 PROJECT SOILS

Per the National Resource Conservation Service (NRCS) data, the soil underlying the project site consists of:

TABLE 2: NRCS PROJECT SOILS

Soil Unit Code	Soil Description	Approximate Project Coverage	Hydrologic Soil Group
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	99.2%	A
EveB	Evesboro sand, 0 to 5 percent slopes	0.8%	A

The hydrologic soil group classifications above have been utilized in the landcover data for the stormwater analysis performed on the project.

3.0 PROPOSED CONDITIONS

A portion, roughly one-third, of the wooded area on-site will be cleared to accommodate the proposed 9,100 SF retail building and associated walkways, driveways, parking, and loading facilities. Improvements will also include lighting, utilities, landscaping. All existing site features within the limit of disturbance are proposed to be demolished.

3.1 PROPOSED DRAINAGE AREAS

Under proposed conditions the site is comprised of eight (8) drainage areas which all discharge to the existing conveyance system within Ridgeway Road. A series of bio-retention basins and an above-ground basin pre-treat and infiltrate the runoff associated with the smaller design storms before conveying the remaining runoff to the proposed underground basins and discharging into the conveyance system within Ridgeway Road. The undisturbed rear portion of the site along with small areas along each street frontage will continue to flow undetained onto the fronting roadways.

TABLE 3: PROPOSED DRAINAGE AREAS

Drainage Area	Description	Area Extents (SF)	Impervious Area (SF)	Time of Concentration (Min)
P-1	Bioretention Basin 1 Drainage Area	8,620	6,155	10
P-2	Bioretention Basin 2 Drainage Area	13,843	8,084	10
P-3	Bioretention Basin 3 Drainage Area	14,846	10,576	10
P-4	Aboveground Basin Drainage Area	5,133	2556	10
P-5	Building Roof Drainage Area	9,100	9,100	10
P-6	Richmond Avenue Drainage Area	6,500	0	10
P-7	Ridgeway Road Drainage Area	1,825	0	10
P-8	Washington Avenue Drainage Area	4249	0	10

* The minimum time of concentration was utilized. Refer to Section 4.0 for more information regarding design parameters.

Detailed information regarding each drainage area can be found on the Proposed Drainage Area Map in Appendix E of this Report.

4.0 ANALYSIS METHODOLOGY & DESIGN PARAMETERS

4.1 HYDROLOGIC & HYDRAULIC ANALYSES

The existing and proposed drainage areas have been analyzed utilizing a modified version of the NRCS SCS TR-20 method. The analysis program "HydroCAD" Version 9.10 by HydroCAD Software Solutions LLC was used to calculate and plot the runoff hydrographs. The program incorporates the time of concentration, CN values, 24-hour rainfall events, and project drainage areas to calculate the runoff characteristics. Key variables utilized include the SCS Unit Hydrograph, a minimum time of concentration of 10 minutes, separate runoff calculations for impervious and pervious areas, and dynamic storage and conveyance routing to account for any variable tailwater conditions.

4.2 NEW JERSEY STORMWATER DESIGN PARAMETERS

The project is proposing to disturb 1.4 acres of land. Per the applicable stormwater standards, the project is classified as a Major Development and is subject to stormwater quantity and groundwater recharge regulations. Additionally, the project will add 0.9 acres of new impervious areas and will thus be subject to stormwater quality regulations.

TABLE 4: PROJECT STORMWATER DESIGN INTENT SUMMARY TABLE

Design Parameters	Design Intent for Compliance
Stormwater Quantity	<p>Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2, 10, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events.</p> <p>Design stormwater management measures so that the post-construction peak runoff rates for the 2, 10, and 100-year storm events are 50%, 75%, and 80%, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed.</p>
Groundwater Recharge	<p>Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measure maintain 100% of the average annual pre-construction groundwater recharge volume for the site</p> <p>Demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the two-year storm is infiltrated.</p>
Stormwater Quality	<p>Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality storm by 80% of the anticipated load from the developed site, expressed as an annual average</p>

4.3 SUBSURFACE STORMWATER INVESTIGATION

A subsurface stormwater investigation was conducted by Profession Service Industries, Inc. on November 18th, 2018. A total of nine (9) borings were performed in compliance with the soil testing standards outlined within Appendix E of the NJDEP Best Management Practices (BMP) Manual. All proposed stormwater facilities meet or exceed the minimum separation depth from seasonal high groundwater. The full investigation report and testing results can be found in Appendix D of this Report.

Based on the testing results and soil profile observed a conservative design infiltration rate of 1.0 inches per hour has been utilized in the design of each of the bioretention basins, aboveground basin, and the underground infiltration basin.

5.0 PROJECT ANALYSIS RESULTS

5.1 STORMWATER QUANTITY CONTROL

Runoff is controlled through the implementation of bioretention basins (BIO1-BIO3), an aboveground detention/infiltration basin (B-3), connected underground detention/infiltration basins (B-1 & B-2), and an outlet structure (OS-1). To analyze runoff quantities between the existing and proposed drainage areas, one (1) point of interest was selected:

TABLE 5: QUANTITY COMPARISON POINTS OF INTEREST

Point of Interest	Area Description	Existing Tributary Drainage Areas	Proposed Tributary Drainage Areas
POI - 1	Drainage to Catch Basin Within Ridgeway Road	EX-1	P-1, P-2, P-3, P-4, P-5, P-6, P-7, P-8

The following tables summarize the results for the 2-year, 10-year, and 100-year storm events for each project point of interest:

TABLE 6: PEAK DISCHARGE TO EXISTING CONVEYANCE SYSTEM (POI-1)

Storm Event	Pre-Development Peak Discharge	Reduction Required	Post-Development Peak Discharge	Reduction Achieved
2-Year	0.00 CFS	50.0%	0.00 CFS	N/A
10-Year	0.30 CFS	25.0%	0.10 CFS	66.7%
100-Year	1.01 CFS	20.0%	0.70 CFS	30.7%

As shown in the tables above, peak stormwater discharge rates are reduced by at least the required amount for each storm event other than the 2-year storm which maintains zero runoff leaving the site. Project hydrographs and more detailed data can be found in Appendix C of this Report.

5.2 GROUNDWATER RECHARGE

The wooded nature of the existing site retains and infiltrates the entirety of the runoff associated with the 2-year design storm. Under proposed conditions, the incorporation of the bioretention basins (3), aboveground basin, and the underground maintains that condition and the entirety of the runoff associated with the 2-year design storm is infiltrated. No runoff associated with the 2-year design storm leaves the site in the existing or proposed condition and groundwater recharge is maintained or increased in the post-development condition.

5.3 STORMWATER QUALITY CONTROL

The stormwater BMPs proposed on site include three (3) bioretention basins and one aboveground basin that collect all the runoff associated with the site and meet the total suspended solids removal (TSS) removal requirements as certified by the NJDEP BMP Manual.

TABLE 7: STORMWATER BMP TSS REMOVAL EFFICIENCIES

Stormwater BMP Facility	NJDEP Certified Removal Efficiency
Aboveground Infiltration Basin (B-3)	80%
Bioretention Facility (BIO-1)	90%
Bioretention Facility (BIO-2)	90%
Bioretention Facility (BIO-3)	90%

5.4 STORMWATER CONVEYANCE SYSTEMS

The stormwater conveyance system has been sized for the 25-year storm and is able to safely convey runoff to stormwater management facilities without overflowing.

5.5 SOIL EROSION & SEDIMENT CONTROL

A Soil Erosion & Sediment Control Plan has been prepared in accordance with the latest edition of the Standards for Soil Erosion and Sediment Control in New Jersey. Proposed temporary measures during construction include silt fencing, stabilized construction entrances, inlet filters, and cover for soil stabilization. Permanent post-construction measures include conduit outlet projection, native vegetation, and rip-rap lining. No land disturbance will occur until a permit has been obtained from the Ocean County Soil Conservation District.

5.6 STORMWATER OPERATIONS & MAINTENANCE

A Stormwater Operations & Maintenance Manual will be submitted for approval to the Township of Manchester prior to the start construction. Any required easements or covenants associated with the stormwater improvements will be recorded prior to the start of construction.

6.0 CONCLUSIONS

The proposed project complies with all applicable stormwater management regulations and standards. Runoff quantity, recharge, and quality requirements are addressed by the implementation of three (3) bioretention basins, and above-ground detention/infiltration basin, and two (2) underground detention/infiltration basins. As such, the project is not anticipated to have any adverse impacts or neighboring properties, downstream watercourses, or conveyance systems within the watershed.

APPENDIX A

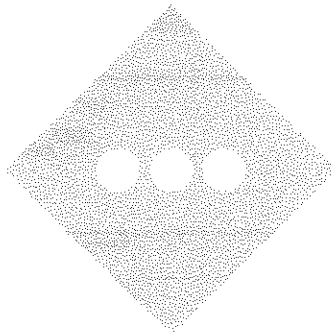
PROJECT FIGURES

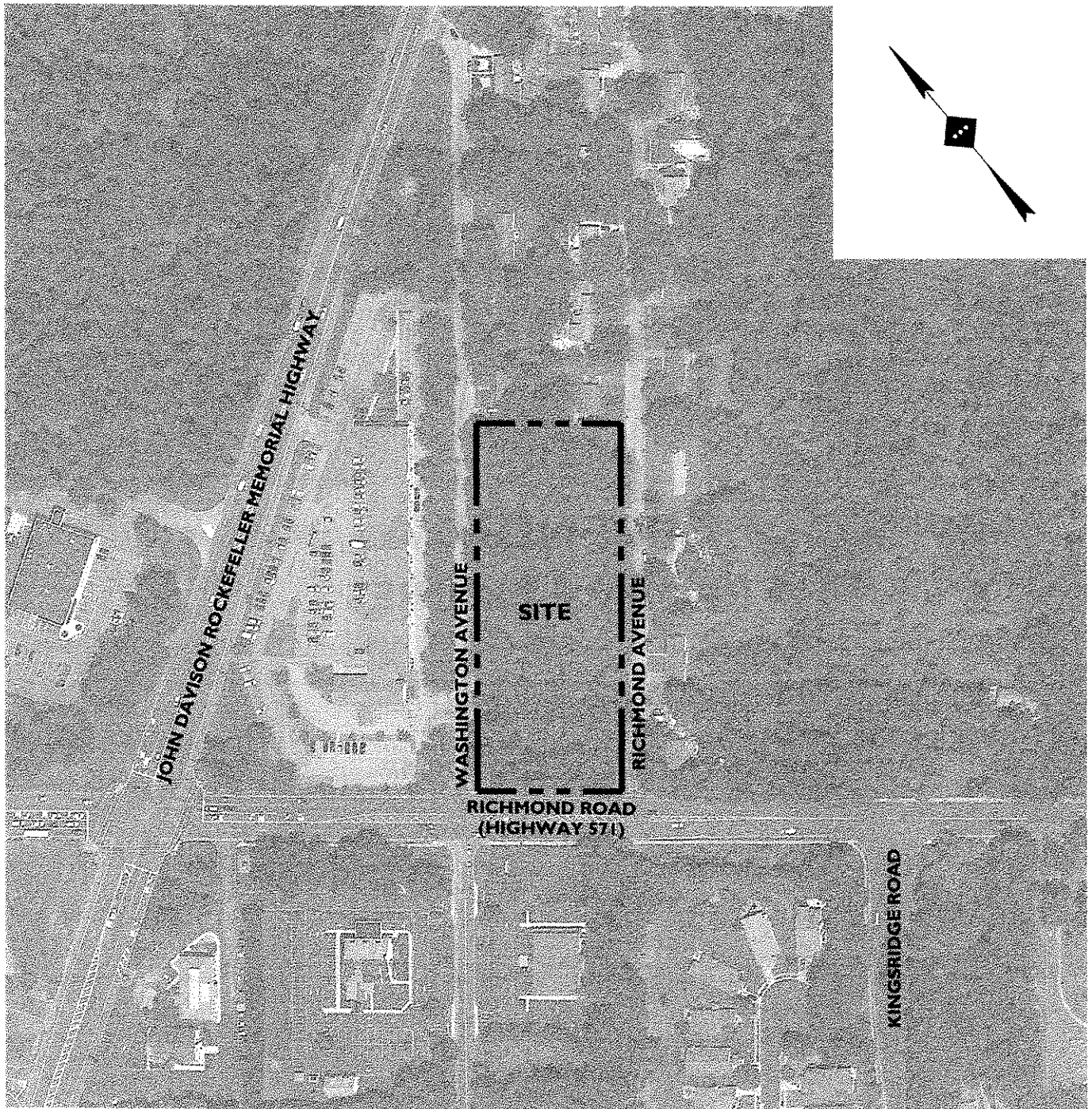
INVENTORY

USGS LOCATION MAP

TAX MAP

AERIAL MAP





AERIAL MAP

200' 0' 200' 400'



GRAPHIC SCALE IN FEET

1"=200'

SOURCE: GOOGLE EARTH PRO RETRIEVED 12/28/2018

PROPOSED RETAIL STORE

TAX MAP # 1.01 BLOCK 5, LOT 2059
2920 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

DRAWN BY:

AMB

CHECKED BY:

PDM

DATE:

12/28/2018

SCALE:

1" = 200'

PROJECT ID:

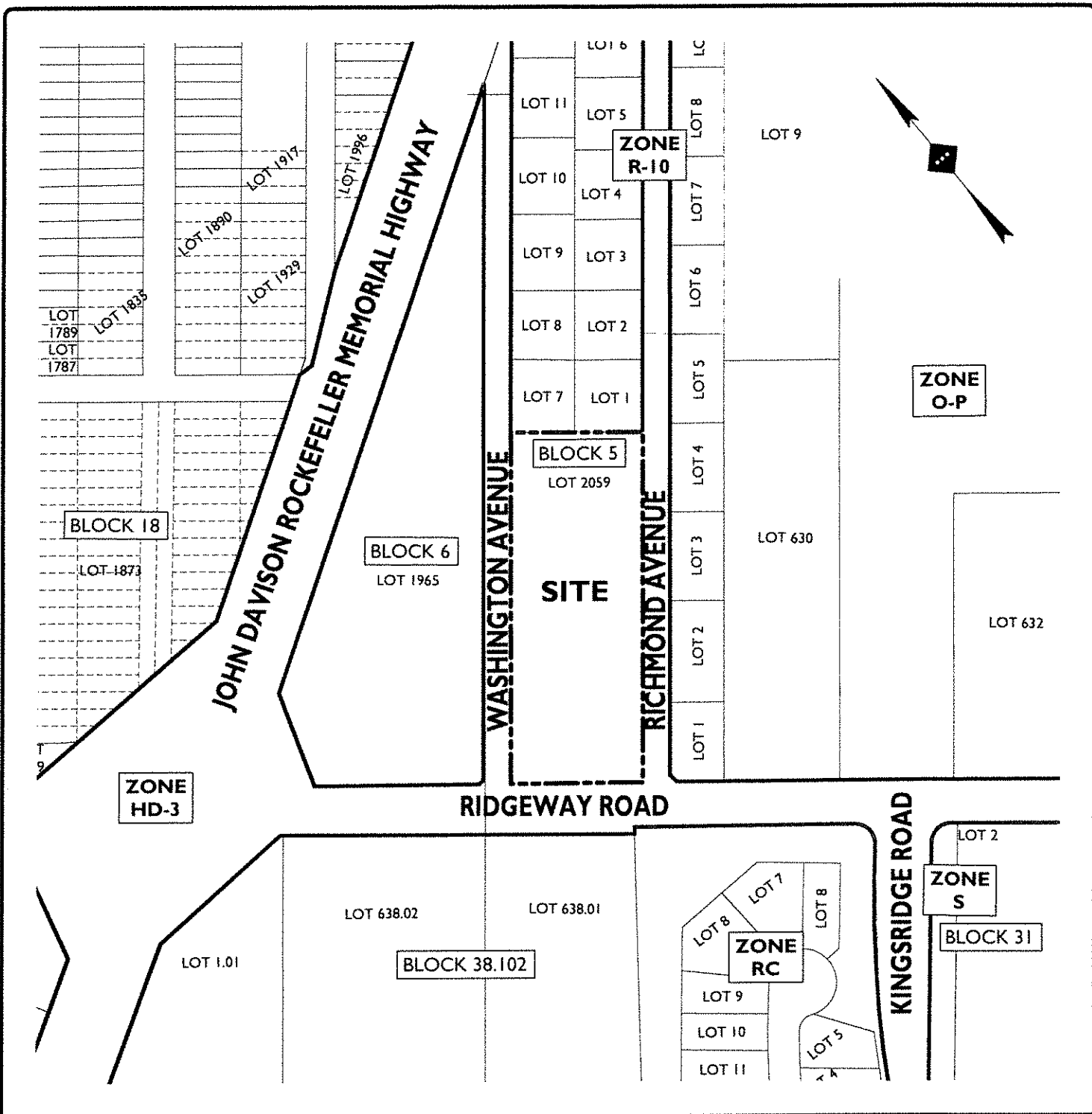
Z-18116



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engineering & design

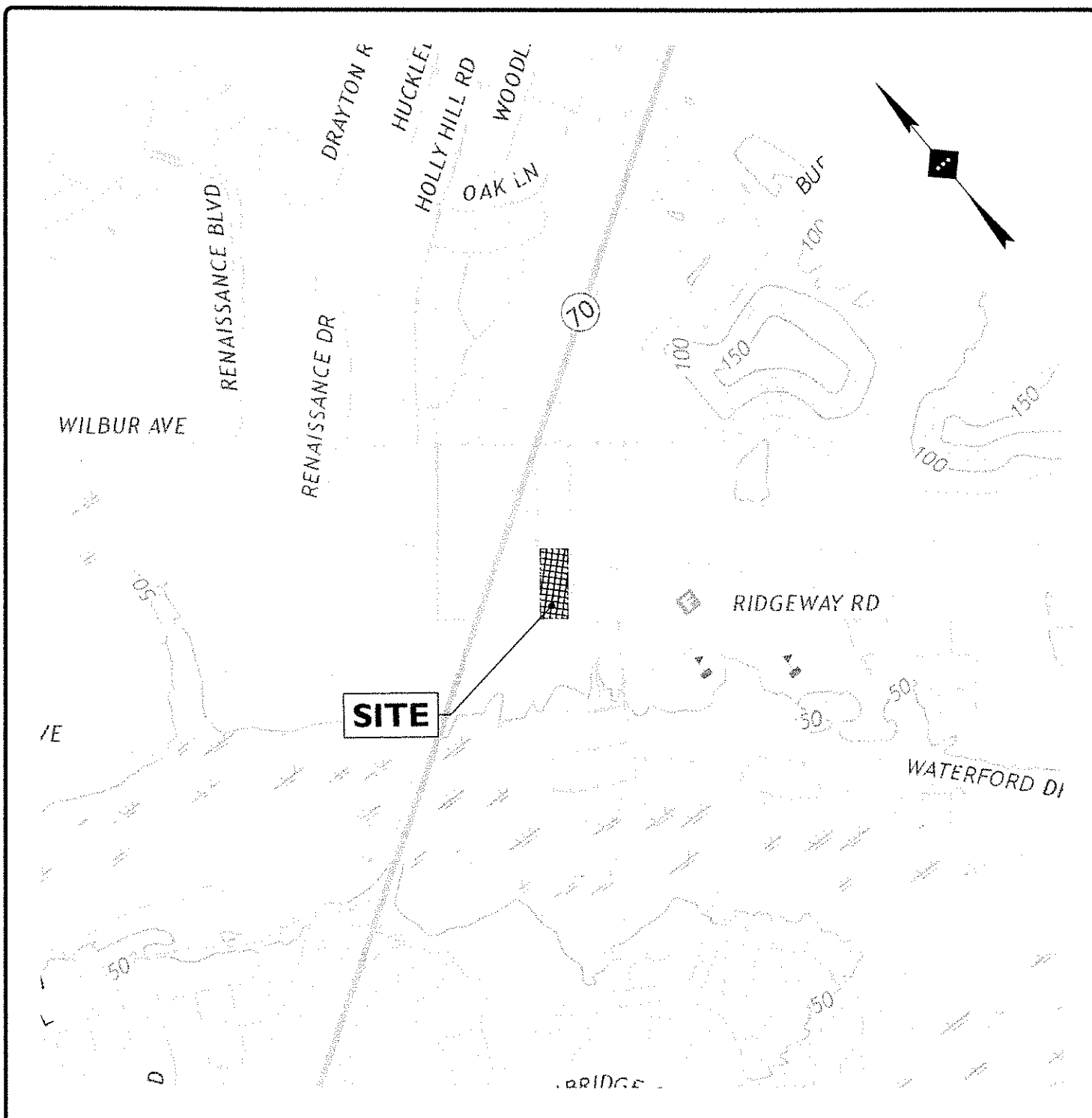
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Phone 609.362.6900

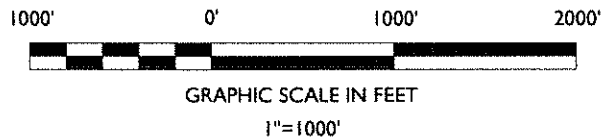


15 Spring Street, Princeton, Nj 08542
Phone 609.362.6900

Z:\Princeton\231816\Z-1816 Dollar General - 7919 Ridgeway Road, Manchester, NJ\CADD\Exhibit\231816-12-28 Project Map.dwg



USGS QUADRANGLE MAP



SOURCE: UNITED STATES GEOLOGICAL SURVEY MAP, MILFORD QUADRANGLE, NJ-PA 2016, 7.5 MINUTE SERIES

PROPOSED RETAIL STORE

TAX MAP # 1.01 BLOCK 5, LOT 2059
2920 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

DRAWN BY:

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SCALE:

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Z-18116



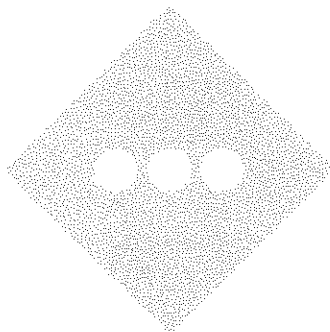
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APPENDIX B

NRCS COUNTY SOIL SURVEY



Custom Soil Resource Report for **Ocean County, New Jersey**

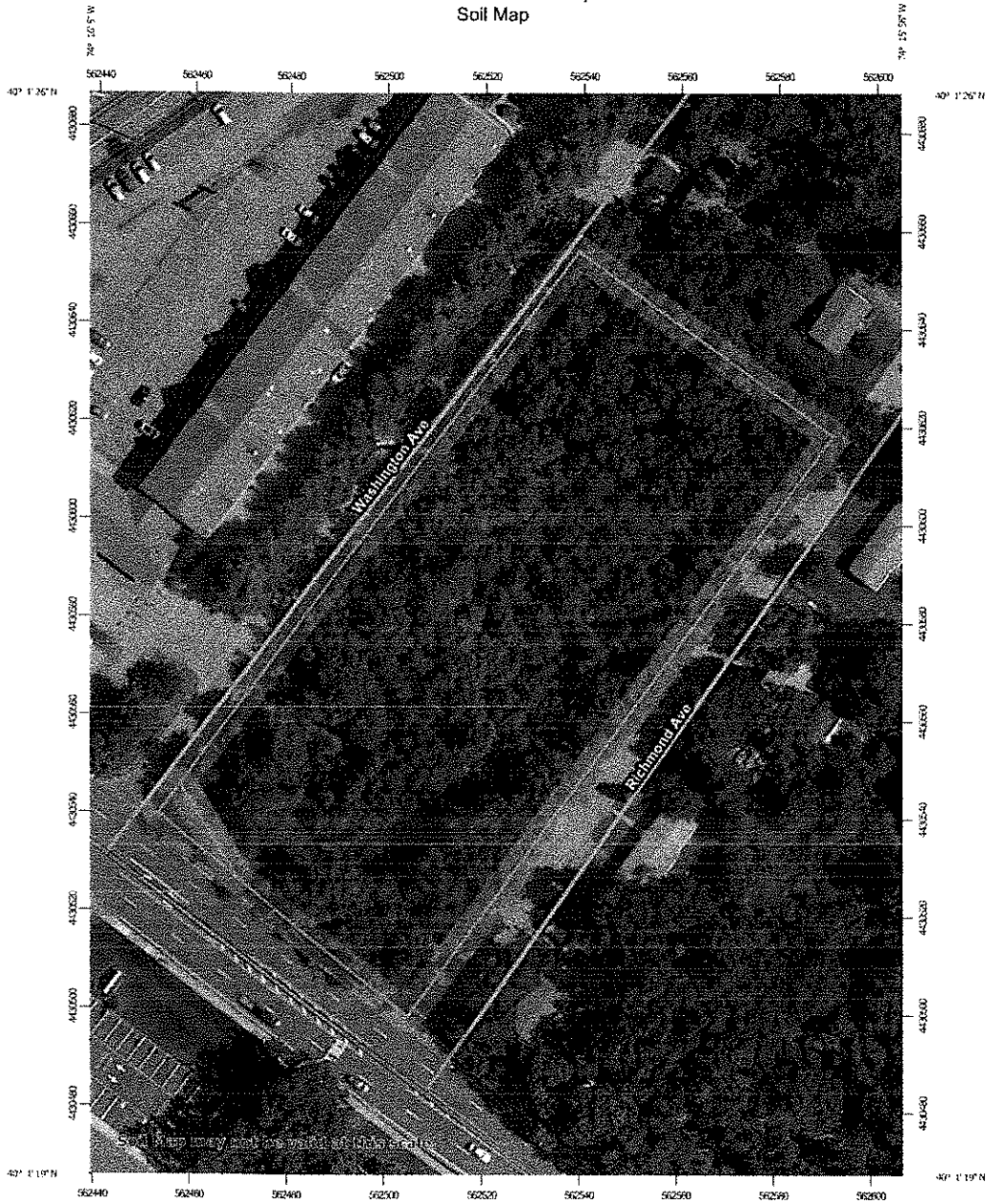


November 28, 2018

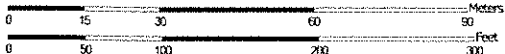
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Custom Soil Resource Report Soil Map







































Map Scale: 1:1,080 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge ties: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)				Spoil Area	
	Area of Interest (AOI)			Stony Spot	
Soils				Very Stony Spot	
	Soil Map Unit Polygons			Wet Spot	
	Soil Map Unit Lines			Other	
	Soil Map Unit Points			Special Line Features	
Special Point Features					
	Blowout	Water Features			
	Borrow Pit				Streams and Canals
	Clay Spot	Transportation			
	Closed Depression				Rails
	Gravel Pit				Interstate Highways
	Gravelly Spot				US Routes
	Landfill				Major Roads
	Lava Flow				Local Roads
	Marsh or swamp	Background			
	Mine or Quarry				Aerial Photography
	Miscellaneous Water				
	Perennial Water				
	Rock Outcrop				
	Saline Spot				
	Sandy Spot				
	Severely Eroded Spot				
	Sinkhole				
	Slide or Slip				
	Sodic Spot				

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 16, Sep 13, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 8, 2014—Sep 2, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	2.3	99.2%
EveB	Evesboro sand, 0 to 5 percent slopes	0.0	0.8%
Totals for Area of Interest		2.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

Custom Soil Resource Report

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An undifferentiated group is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Ocean County, New Jersey

DocBO—Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

Map Unit Setting

National map unit symbol: 2thw1
Elevation: 60 to 90 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 66 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Downer and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Downer

Setting

Landform: Knolls, low hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluvium, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: loamy sand
BE - 10 to 16 inches: loamy sand
Bt - 16 to 28 inches: sandy loam
C1 - 28 to 48 inches: loamy sand
C2 - 48 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 0.2 mmhos/cm)
Available water storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hammonton

Percent of map unit: 10 percent
Landform: Broad interstream divides, flats
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Atsion

Percent of map unit: 5 percent
Landform: Depressions, drainageways, deflation flats, flats
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Linear
Hydric soil rating: Yes

Evesboro

Percent of map unit: 5 percent
Landform: Flats, knolls, fluviomarine terraces, dunes
Landform position (three-dimensional): Riser, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

EveB—Evesboro sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: rdtm
Elevation: 0 to 150 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of local importance

Map Unit Composition

Evesboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Evesboro

Setting

Landform: Low hills
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear

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Parent material: Sandy eolian deposits and/or sandy fluviomarine deposits

Typical profile

A - 0 to 4 inches: sand
AB - 4 to 17 inches: sand
Bw - 17 to 31 inches: sand
C - 31 to 80 inches: stratified loamy sand to sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Atsion

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Drainageways, flood plains, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Downer

Percent of map unit: 5 percent
Landform: Knolls, low hills
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Lakehurst

Percent of map unit: 5 percent
Landform: Flats, depressions
Landform position (two-dimensional): Toeslope

Custom Soil Resource Report

Landform position (three-dimensional): Base slope

Down-slope shape: Linear, concave

Across-slope shape: Linear, concave

Hydric soil rating: No

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2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

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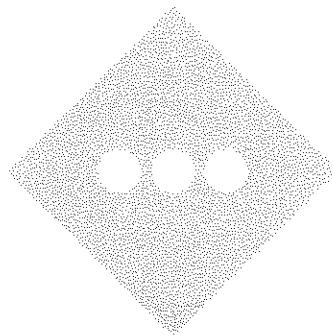
APPENDIX C

DESIGN CALCULATIONS & DIAGRAMS



APPENDIX C-I

HYDROCAD ROUTING DIAGRAM



Summary for Subcatchment E-1A: Existing Washington Ave Drainage to DOT Inlet

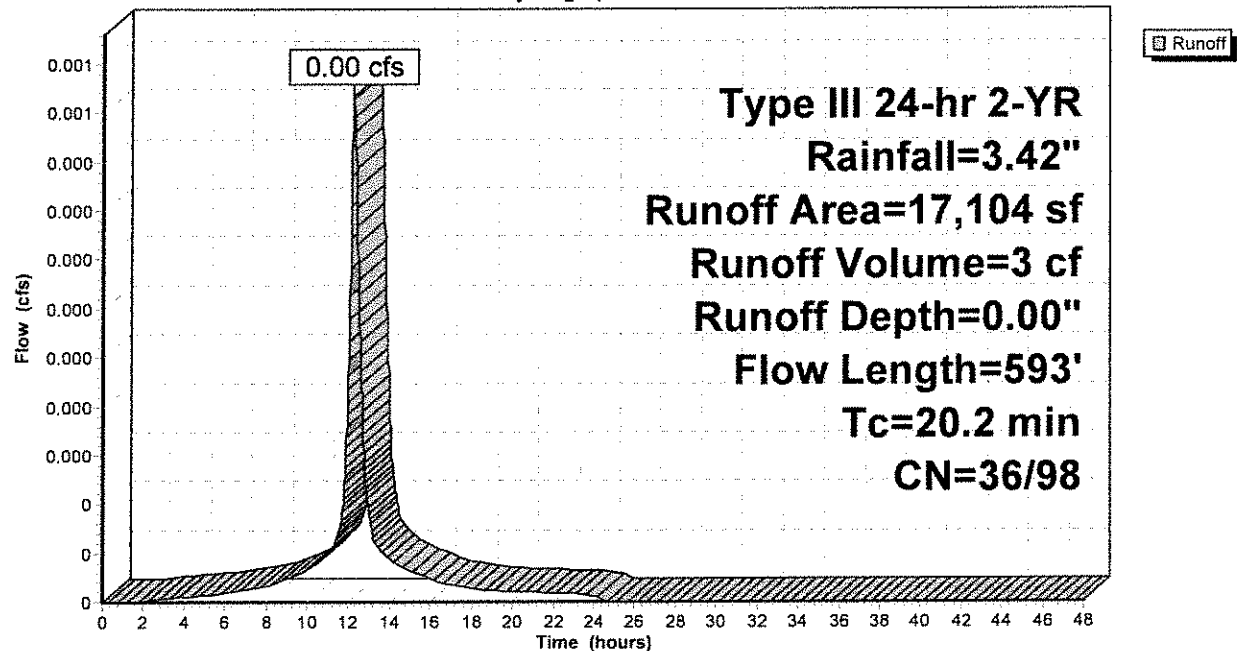
Runoff = 0.00 cfs @ 12.26 hrs, Volume= 3 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

Area (sf)	CN	Description
* 10	98	Imp.
* 55	39	Grass, Good (A)
17,039	36	Woods, Fair, HSG A
17,104	36	Weighted Average
17,094	36	99.94% Pervious Area
10	98	0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	41	0.0120	0.05		Sheet Flow, 41 LF Sheet Flow Woods: Light underbrush n= 0.400 P2= 3.42"
0.7	39	0.0360	0.95		Shallow Concentrated Flow, 39 LF Shallow Concentrated Woodland Kv= 5.0 fps
6.9	480	0.0033	1.17		Shallow Concentrated Flow, 480 LF Paved Flow Paved Kv= 20.3 fps
0.1	33	0.0100	8.51	26.74	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
20.2	593	Total			

Hydrograph



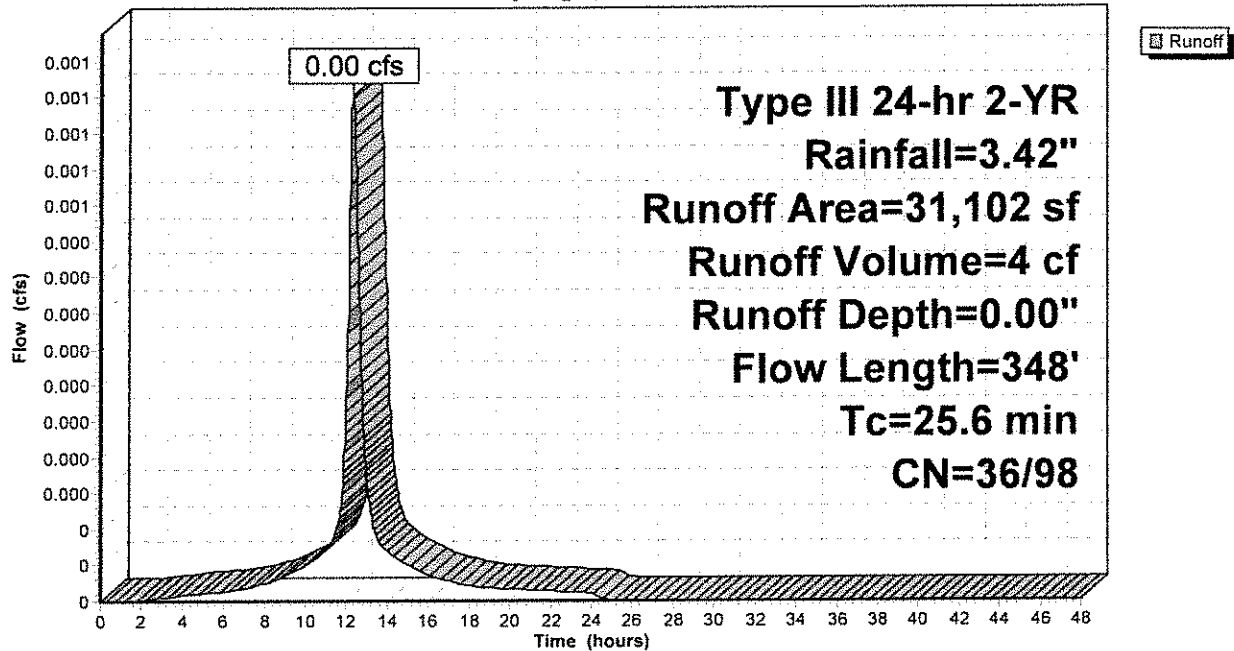
Summary for Subcatchment E-1B: Existing Ridgeway Rd Drainage to DOT Inlet

Runoff = 0.00 cfs @ 12.33 hrs, Volume= 4 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

Area (sf)	CN	Description
* 15	98	Imp
* 477	39	Grass, Good (A)
* 30,610	36	Woods, Fair (A)
31,102	36	Weighted Average
31,087	36	99.95% Pervious Area
15	98	0.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.1	51	0.0040	0.04		Sheet Flow, 51 LF Sheet Flow Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	37	0.0410	1.01		Shallow Concentrated Flow, 37 LF Shallow Conc. Woodland Kv= 5.0 fps
1.5	149	0.0110	1.69		Shallow Concentrated Flow, 149 LF Shallow Conc. Unpaved Kv= 16.1 fps
0.3	78	0.0610	5.01		Shallow Concentrated Flow, 78 LF Shallow Conc Paved Kv= 20.3 fps
0.1	33	0.0100	9.36	29.41	Pipe Channel, 33 LF Pipe Flow 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010 Concrete pipe, straight & clean
25.6	348	Total			



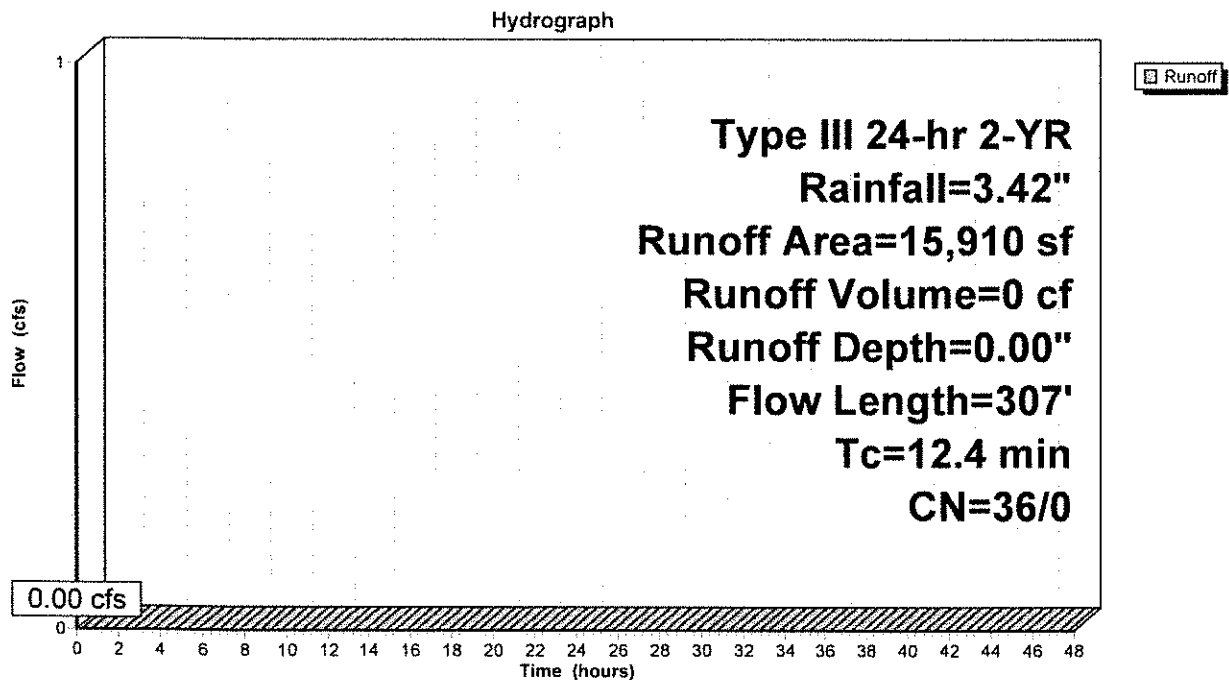
Summary for Subcatchment E-1C: Existing Richmond Ave Drainage to DOT Inlet

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

Area (sf)	CN	Description
246	39	>75% Grass cover, Good, HSG A
15,664	36	Woods, Fair, HSG A
15,910	36	Weighted Average
15,910	36	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	30	0.0230	0.07		Sheet Flow, 30 LF Sheet
					Woods: Light underbrush n= 0.400 P2= 3.42"
3.3	112	0.0130	0.57		Shallow Concentrated Flow, 112 LF Shallow Conc
					Woodland Kv= 5.0 fps
1.6	165	0.0070	1.70		Shallow Concentrated Flow, 165 LF Shallow Conc
					Paved Kv= 20.3 fps
12.4	307	Total			

Subcatchment E-1C: Existing Richmond Ave Drainage to DOT Inlet

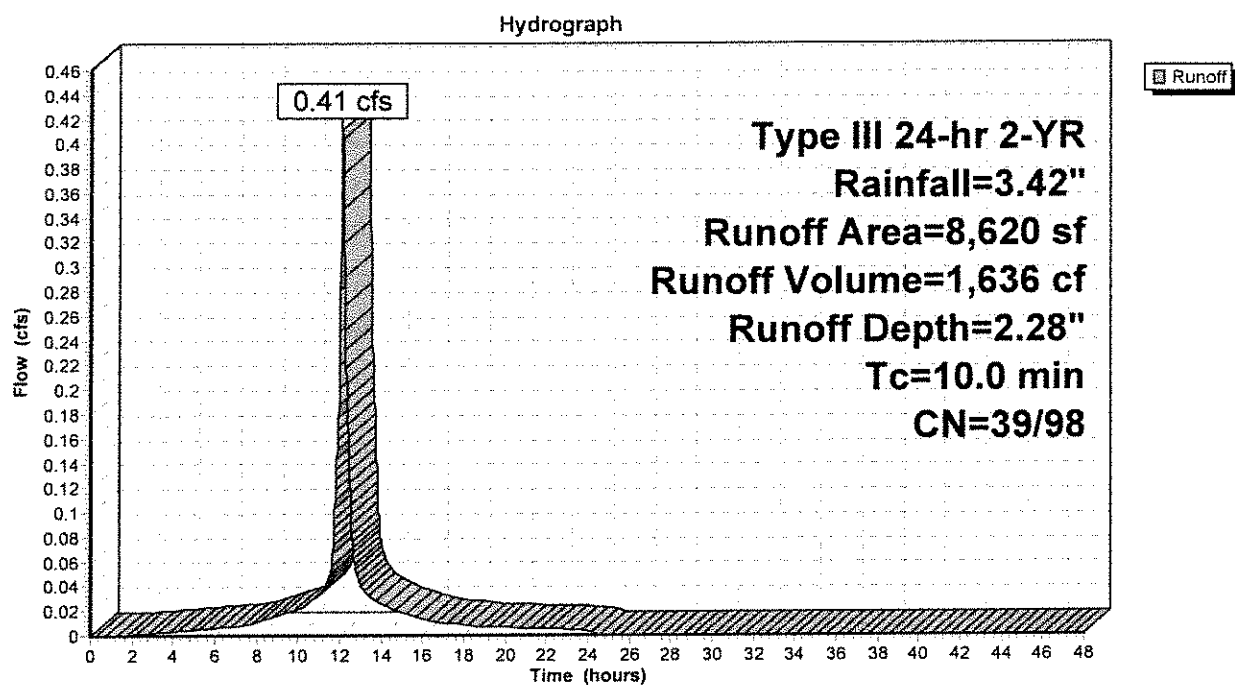
Summary for Subcatchment P-1: Proposed BIO1 Drainage Area

Runoff = 0.41 cfs @ 12.13 hrs, Volume= 1,636 cf, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

	Area (sf)	CN	Description
*	6,155	98	Imp
	2,465	39	>75% Grass cover, Good, HSG A
	8,620	81	Weighted Average
	2,465	39	28.60% Pervious Area
	6,155	98	71.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-1: Proposed BIO1 Drainage Area

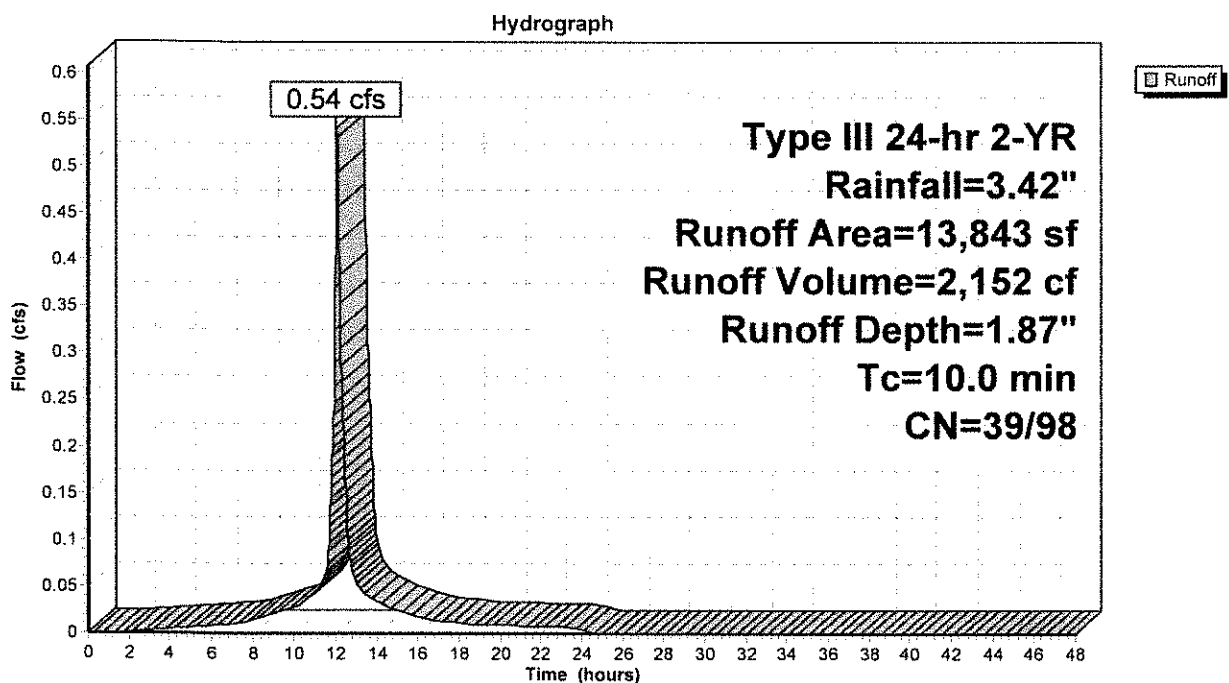
Summary for Subcatchment P-2: Proposed BIO2 Drainage Area

Runoff = 0.54 cfs @ 12.13 hrs, Volume= 2,152 cf, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

Area (sf)	CN	Description
* 8,094	98	Imp
5,749	39	>75% Grass cover, Good, HSG A
13,843	73	Weighted Average
5,749	39	41.53% Pervious Area
8,094	98	58.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-2: Proposed BIO2 Drainage Area

Summary for Subcatchment P-3: Proposed BIO3 Drainage Area

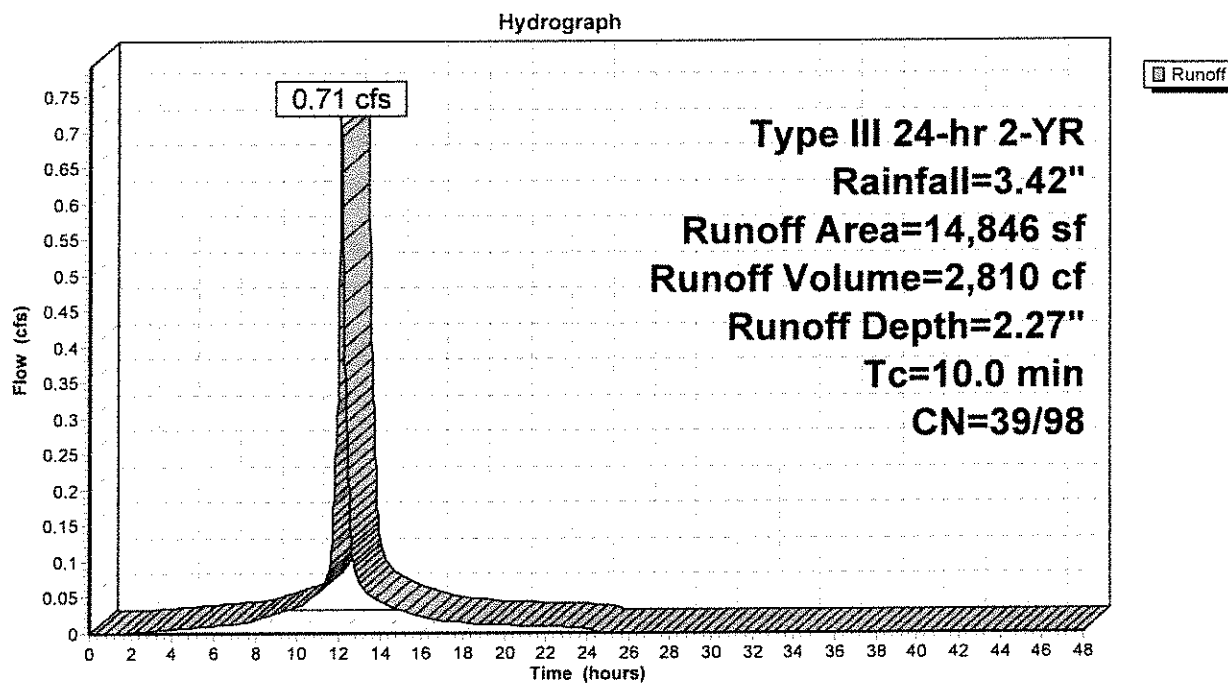
Runoff = 0.71 cfs @ 12.13 hrs, Volume= 2,810 cf, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

	Area (sf)	CN	Description
*	10,576	98	Imp.
	4,270	39	>75% Grass cover, Good, HSG A
	14,846	81	Weighted Average
	4,270	39	28.76% Pervious Area
	10,576	98	71.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-3: Proposed BIO3 Drainage Area



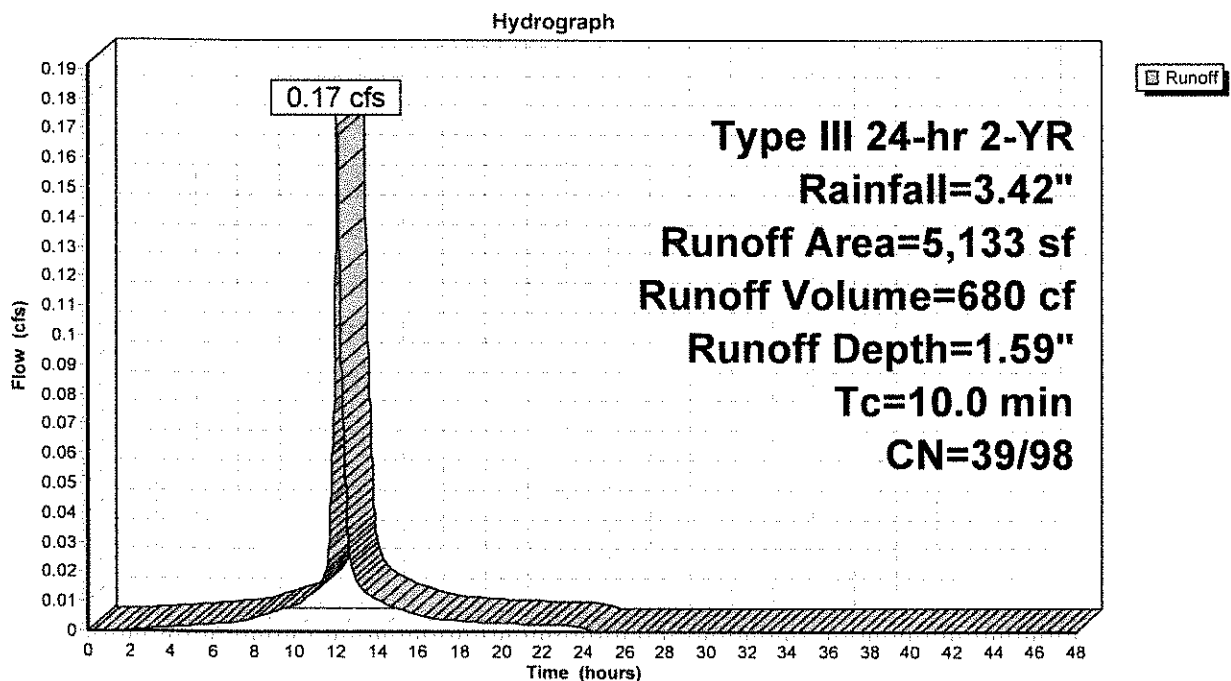
Summary for Subcatchment P-4: Proposed Aboveground Basin Drainage Area

Runoff = 0.17 cfs @ 12.13 hrs, Volume= 680 cf, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

	Area (sf)	CN	Description
*	2,556	98	Imp
	2,577	39	>75% Grass cover, Good, HSG A
	5,133	68	Weighted Average
	2,577	39	50.20% Pervious Area
	2,556	98	49.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-4: Proposed Aboveground Basin Drainage Area

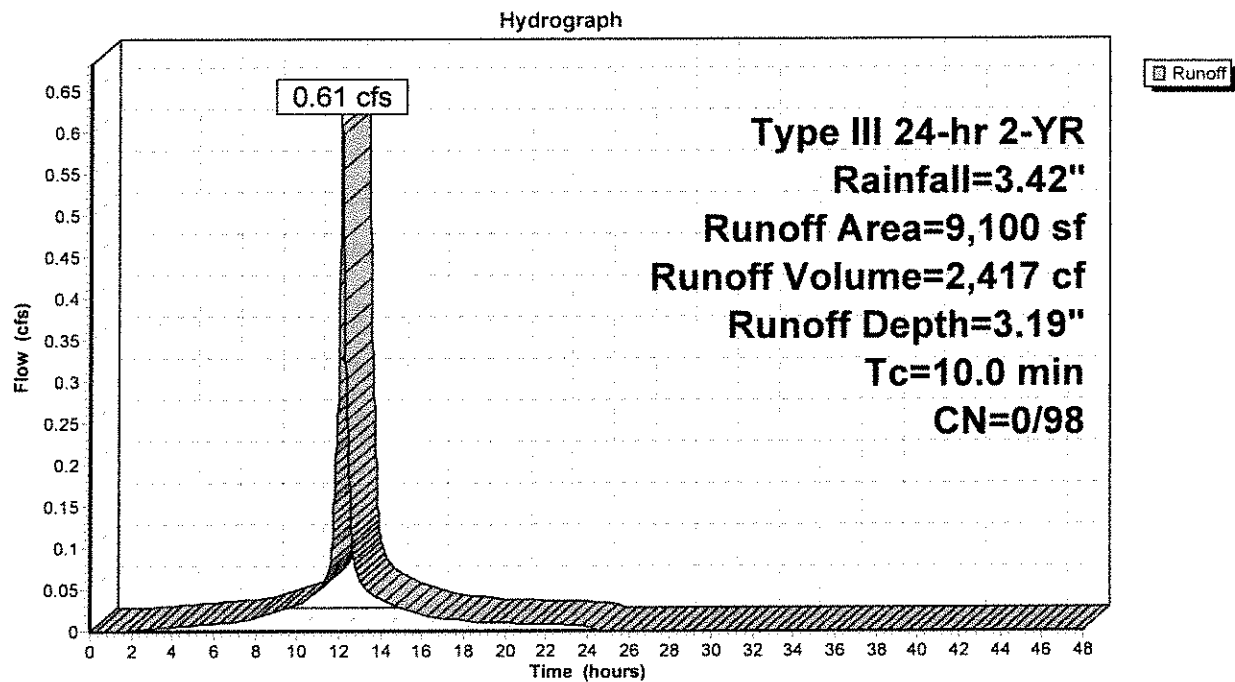
Summary for Subcatchment P-5: Proposed Roof Runoff to Detention Basin

Runoff = 0.61 cfs @ 12.13 hrs, Volume= 2,417 cf, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

Area (sf)	CN	Description
* 9,100	98	Roof
9,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct Entry

Subcatchment P-5: Proposed Roof Runoff to Detention Basin

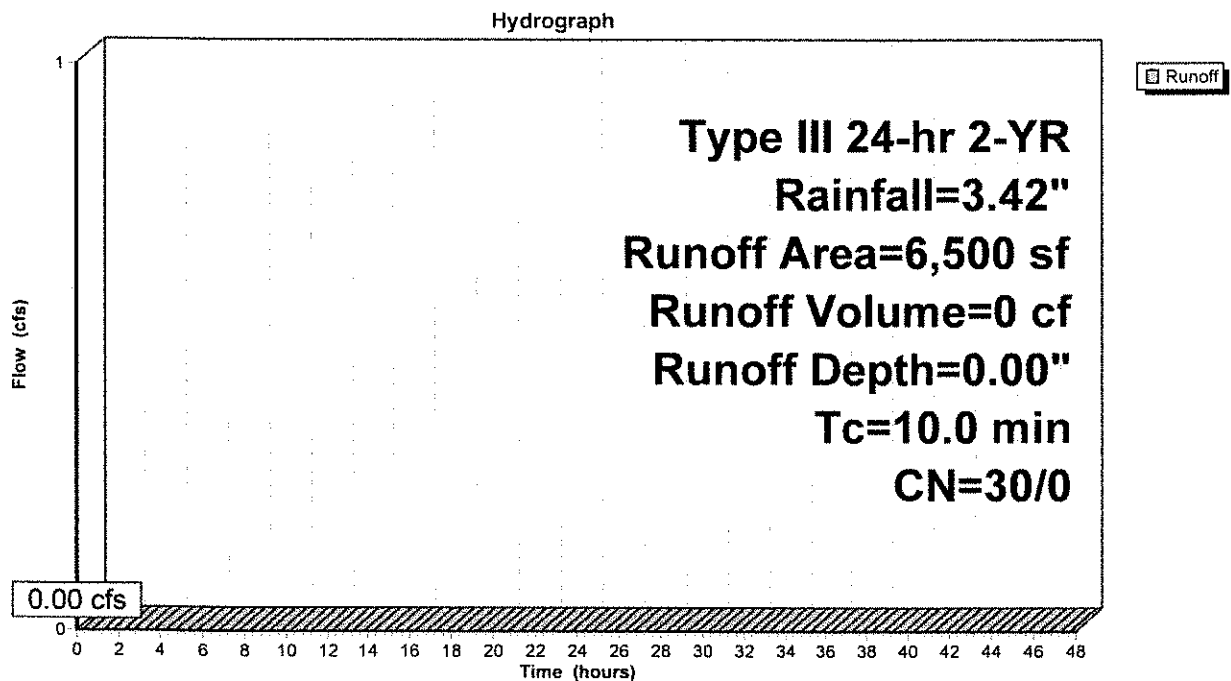
Summary for Subcatchment P-6: Proposed Undertained Drainahe to Richmond Ave

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

Area (sf)	CN	Description
6,500	30	Woods, Good, HSG A
6,500	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-6: Proposed Undertained Drainahe to Richmond Ave

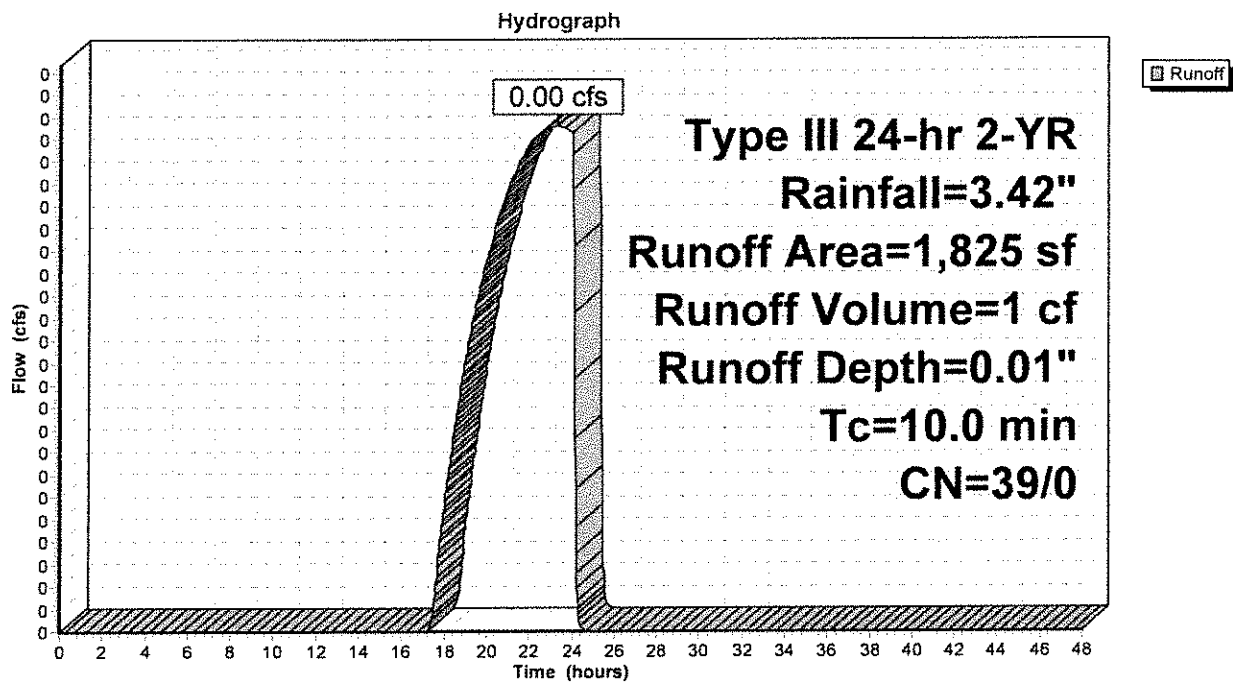
Summary for Subcatchment P-7: Proposed Undetained Drainage to Ridgeway Rd

Runoff = 0.00 cfs @ 23.30 hrs, Volume= 1 cf, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

Area (sf)	CN	Description
*	0	98 Imp
1,825	39	>75% Grass cover, Good, HSG A
1,825	39	Weighted Average
1,825	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-7: Proposed Undetained Drainage to Ridgeway Rd

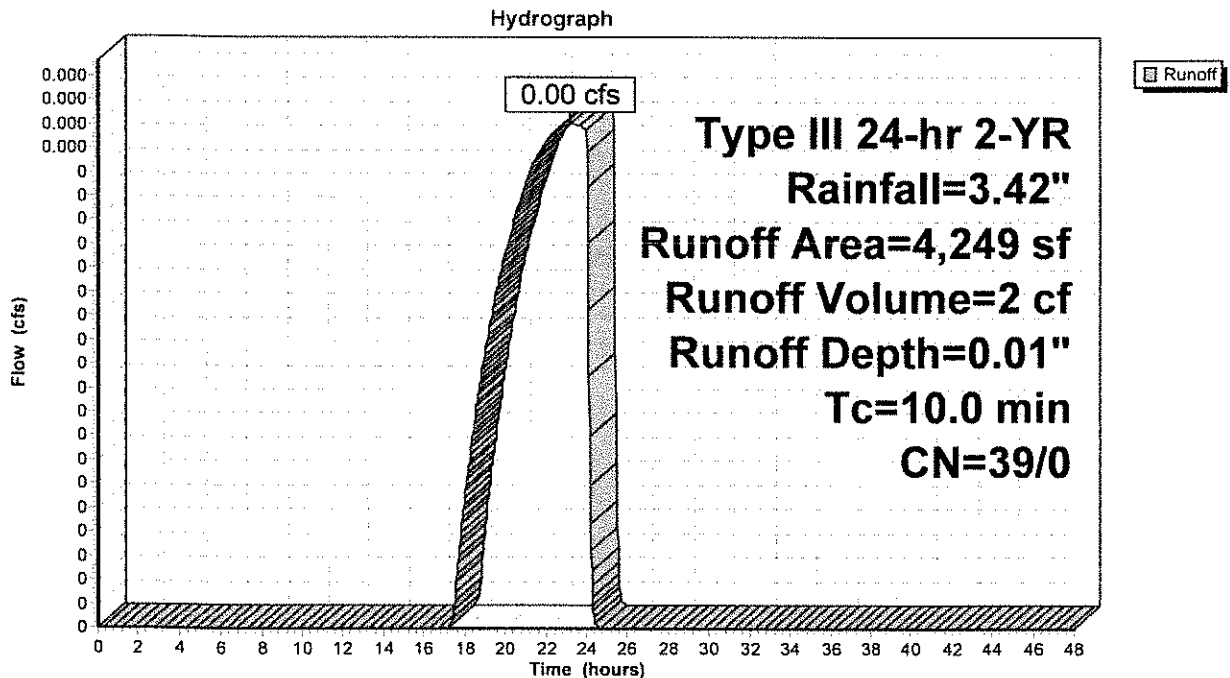
Summary for Subcatchment P-8: Proposed Undetained Drainage to Washington Ave

Runoff = 0.00 cfs @ 23.30 hrs, Volume= 2 cf, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.42"

	Area (sf)	CN	Description
*	0	98	Imp.
*	4,249	39	Grass, Good
	4,249	39	Weighted Average
	4,249	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

Subcatchment P-8: Proposed Undetained Drainage to Washington Ave

Summary for Pond B1: Underground Basin (Ridgeway)

Inflow Area = 46,409 sf, 73.10% Impervious, Inflow Depth = 1.11" for 2-YR event
 Inflow = 1.25 cfs @ 12.15 hrs, Volume= 4,294 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 55.16' @ 36.76 hrs Surf.Area= 3,336 sf Storage= 4,294 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	53.41'	6,409 cf	48.0" D x 85.0'L 48" PIPE x 6 Inside #2 8,111 cf Overall - 3.0" Wall Thickness = 6,409 cf
#2	52.91'	3,428 cf	78.5"W x 60.0"H x 85.0'L STONE x 6 16,681 cf Overall - 8,111 cf Embedded = 8,570 cf x 40.0% Voids
		9,837 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	53.41'	15.0" Round Culvert L= 68.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 53.41' / 52.83' S= 0.0085 ' S= 0.0085 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean
#2	Device 1	56.61'	5.0" W x 2.0" H Vert. Slot C= 0.600
#3	Device 1	57.41'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Discarded	52.91'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=52.91' (Free Discharge)

↑ **4=Exfiltration** (Controls 0.00 cfs)

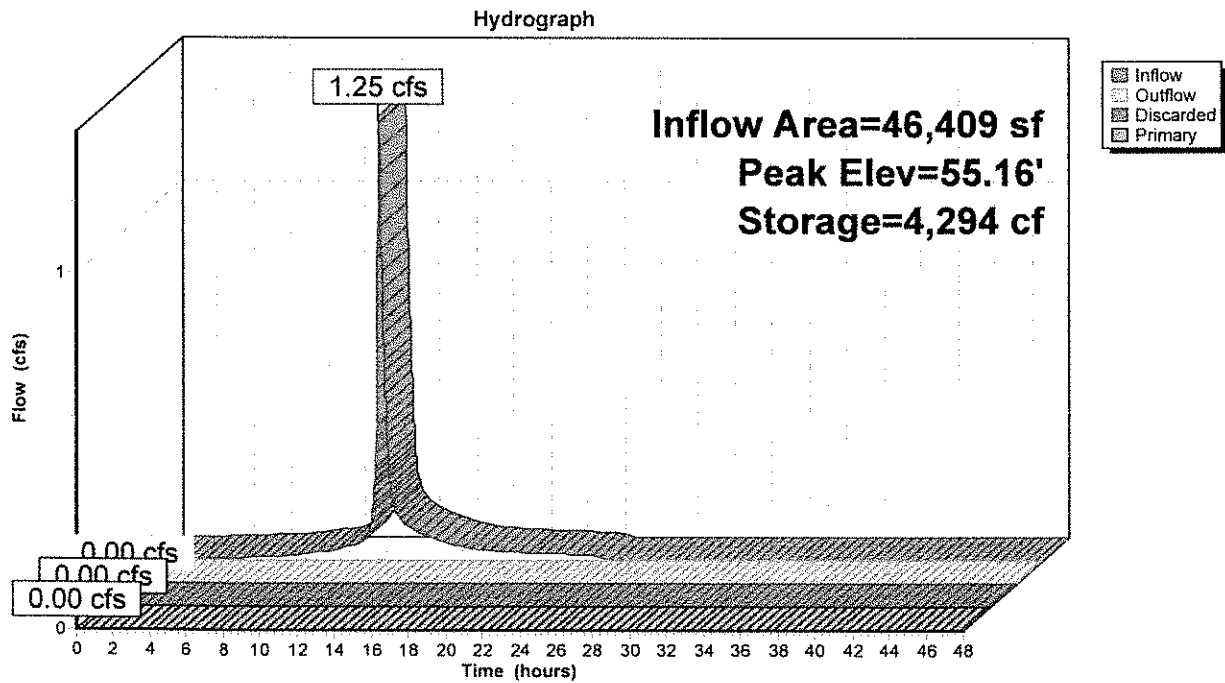
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=52.91' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** (Controls 0.00 cfs)

↑ **2=Slot** (Controls 0.00 cfs)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B1: Underground Basin (Ridgeway)



Summary for Pond B2: Underground Basin (Richmond)

Inflow Area = 22,463 sf, 63.43% Impervious, Inflow Depth = 1.31" for 2-YR event
 Inflow = 0.94 cfs @ 12.15 hrs, Volume= 2,457 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 54.74' @ 29.10 hrs Surf.Area= 2,486 sf Storage= 2,457 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	53.41'	4,775 cf	48.0" D x 95.0'L 48" PIPE x 4 Inside #2 6,044 cf Overall - 3.0" Wall Thickness = 4,775 cf
#2	52.91'	2,554 cf	78.5"W x 60.0"H x 95.0'L STONE x 4 12,429 cf Overall - 6,044 cf Embedded = 6,386 cf x 40.0% Voids
		7,329 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	53.41'	18.0" Round Culvert L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 53.41' / 53.17' S= 0.0120 ' / ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean
#2	Discarded	52.91'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

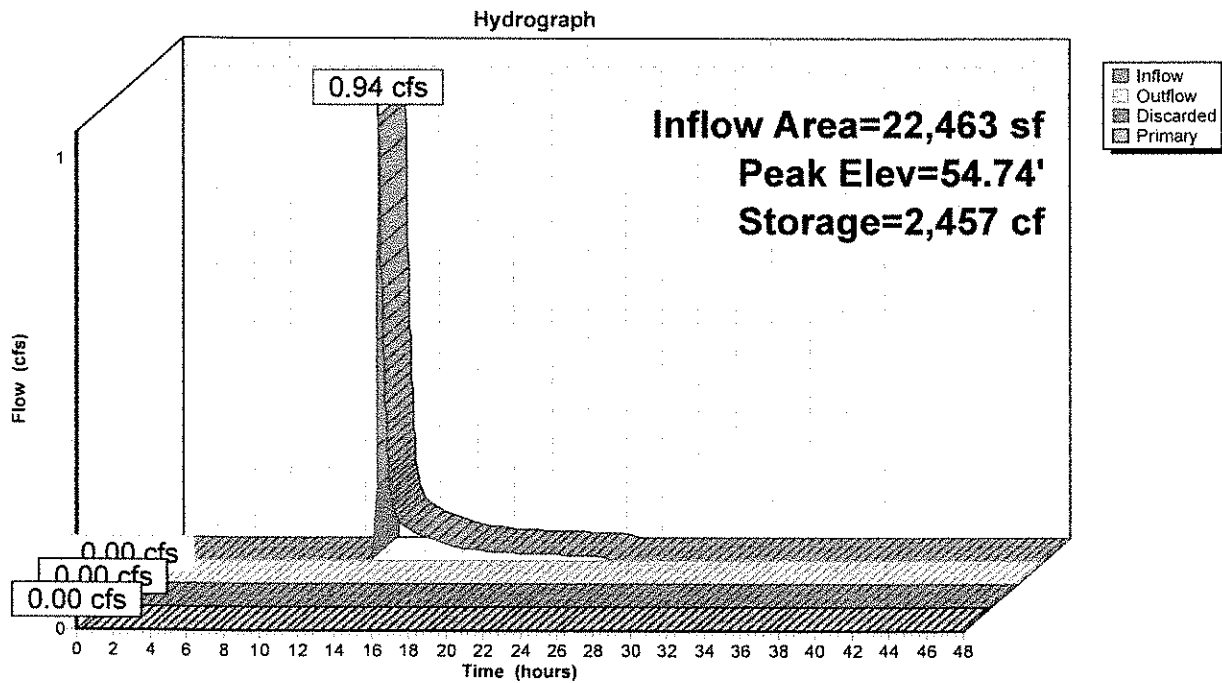
Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=52.91' (Free Discharge)

↳ **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=52.91' TW=52.91' (Dynamic Tailwater)

↳ **1=Culvert** (Controls 0.00 cfs)

Pond B2: Underground Basin (Richmond)



Summary for Pond B3: Aboveground Basin

Inflow Area = 5,133 sf, 49.80% Impervious, Inflow Depth = 1.59" for 2-YR event
 Inflow = 0.17 cfs @ 12.13 hrs, Volume= 680 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 55.80' @ 24.58 hrs Surf.Area= 591 sf Storage= 680 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

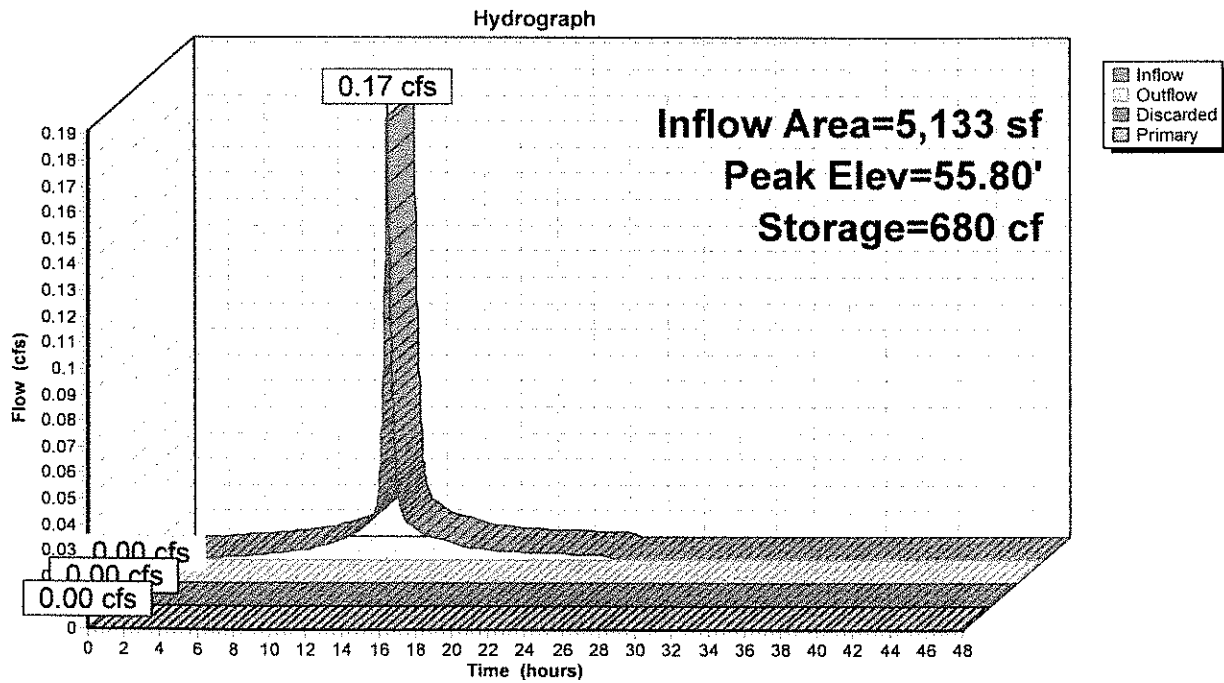
Volume	Invert	Avail.Storage	Storage Description		
#1	54.00'	1,601 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	197	56.0	0	0	197
55.00	393	75.0	289	289	406
56.00	647	93.0	515	804	660
57.00	956	112.0	796	1,601	987

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	15.0" Round Culvert L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 52.83' S= 0.0585 ' /' Cc= 0.900 n= 0.011
#2	Device 1	56.50'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	54.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' (Free Discharge)
 ↳3=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' TW=0.00' (Dynamic Tailwater)
 ↳1=Culvert (Controls 0.00 cfs)
 ↳2=Grate (Controls 0.00 cfs)

Pond B3: Aboveground Basin



Summary for Pond BIO1: Bio-Retention Basin 1

Inflow Area = 8,620 sf, 71.40% Impervious, Inflow Depth = 2.28" for 2-YR event
 Inflow = 0.41 cfs @ 12.13 hrs, Volume= 1,636 cf
 Outflow = 0.41 cfs @ 12.15 hrs, Volume= 1,038 cf, Atten= 1%, Lag= 0.7 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.41 cfs @ 12.15 hrs, Volume= 1,038 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 57.79' @ 12.15 hrs Surf.Area= 655 sf Storage= 623 cf

Plug-Flow detention time= 198.5 min calculated for 1,038 cf (63% of inflow)
 Center-of-Mass det. time= 94.7 min (853.8 - 759.1)

Volume	Invert	Avail.Storage	Storage Description		
#1	56.00'	770 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
56.00	86	89.0	0	0	86
57.00	385	108.0	218	218	400
58.00	739	127.0	552	770	774

Device	Routing	Invert	Outlet Devices
#1	Primary	55.00'	15.0" Round Culvert L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.00' / 54.90' S= 0.0050 ' ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Device 1	57.75'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	56.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)

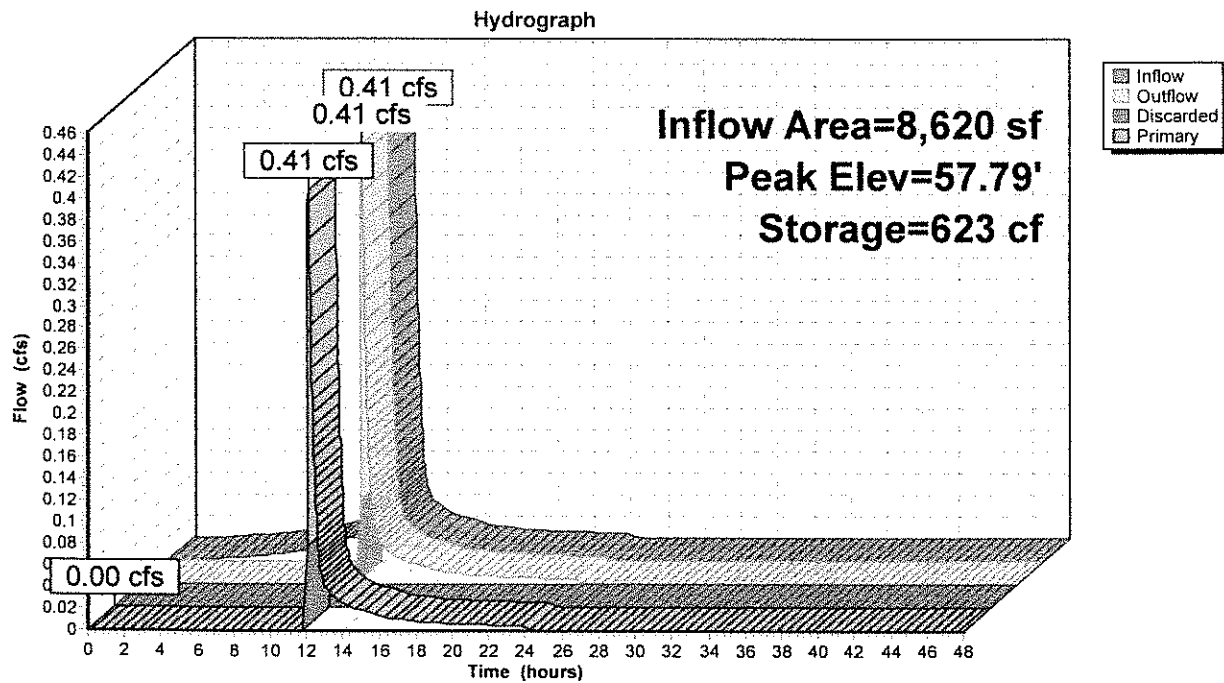
↑ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.41 cfs @ 12.15 hrs HW=57.79' TW=53.27' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.41 cfs of 8.69 cfs potential flow)

↑ **2=Grate** (Weir Controls 0.41 cfs @ 0.65 fps)

Pond BIO1: Bio-Retention Basin 1



Summary for Pond BIO2: Bio-Retention Basin 2

Inflow Area = 13,843 sf, 58.47% Impervious, Inflow Depth = 1.87" for 2-YR event
 Inflow = 0.54 cfs @ 12.13 hrs, Volume= 2,152 cf
 Outflow = 0.53 cfs @ 12.15 hrs, Volume= 1,419 cf, Atten= 2%, Lag= 1.1 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.53 cfs @ 12.15 hrs, Volume= 1,419 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 59.40' @ 12.15 hrs Surf.Area= 1,128 sf Storage= 784 cf

Plug-Flow detention time= 191.0 min calculated for 1,419 cf (66% of inflow)
 Center-of-Mass det. time= 90.9 min (850.3 - 759.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	58.00'	907 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
58.00	200	157.0	0	0	200
59.00	700	176.0	425	425	730
59.50	1,256	194.0	482	907	1,268

Device	Routing	Invert	Outlet Devices
#1	Primary	55.00'	15.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.00' / 54.90' S= 0.0050 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	59.35'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	58.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge)

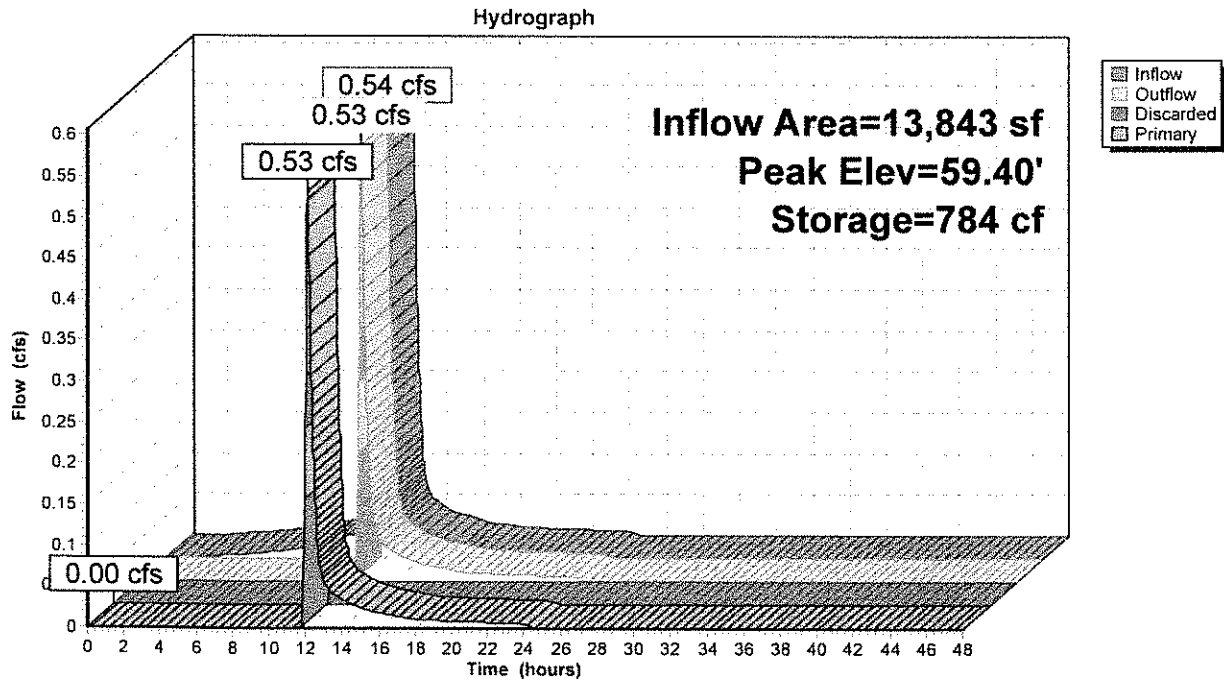
↑ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.53 cfs @ 12.15 hrs HW=59.40' TW=53.30' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.53 cfs of 11.48 cfs potential flow)

↑ **2=Grate** (Weir Controls 0.53 cfs @ 0.71 fps)

Pond BIO2: Bio-Retention Basin 2



Summary for Pond BIO3: Bio-Retention Basin 3

Inflow Area = 14,846 sf, 71.24% Impervious, Inflow Depth = 2.27" for 2-YR event
 Inflow = 0.71 cfs @ 12.13 hrs, Volume= 2,810 cf
 Outflow = 0.66 cfs @ 12.17 hrs, Volume= 1,877 cf, Atten= 6%, Lag= 2.4 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.66 cfs @ 12.17 hrs, Volume= 1,877 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 58.74' @ 12.17 hrs Surf.Area= 1,032 sf Storage= 1,071 cf

Plug-Flow detention time= 191.9 min calculated for 1,877 cf (67% of inflow)
 Center-of-Mass det. time= 92.9 min (852.0 - 759.1)

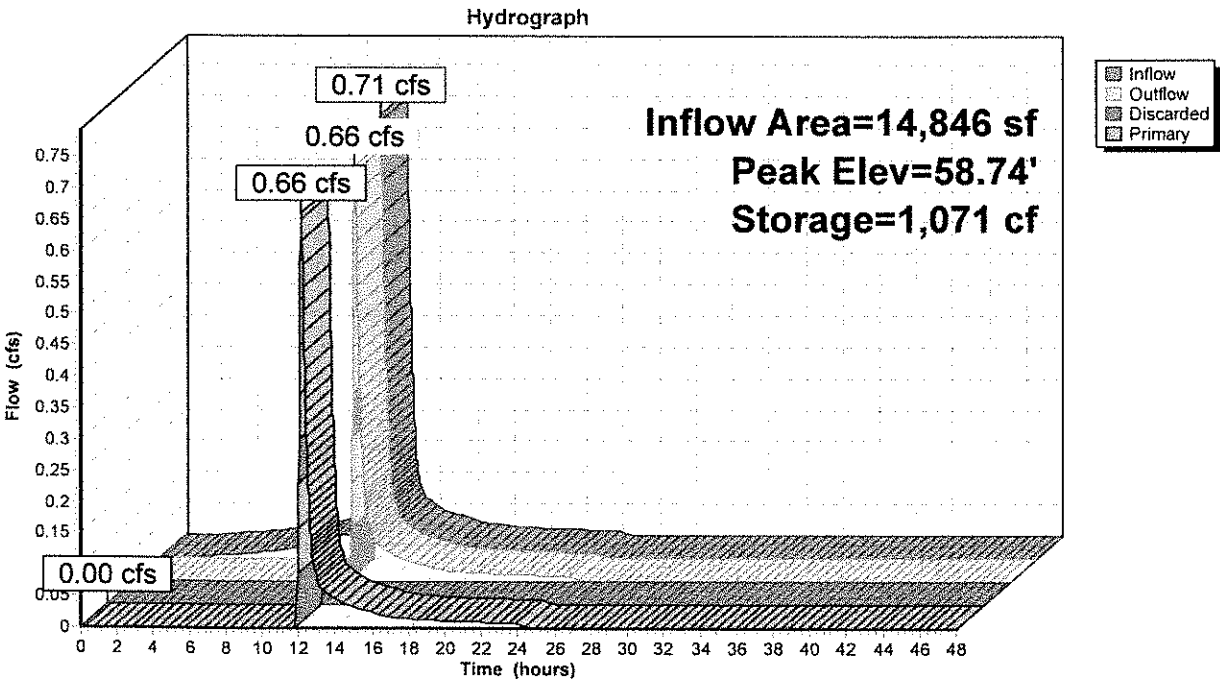
Volume	Invert	Avail.Storage	Storage Description		
#1	57.00'	1,359 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.00	241	165.0	0	0	241
58.00	682	183.0	443	443	769
59.00	1,173	200.0	916	1,359	1,321

Device	Routing	Invert	Outlet Devices
#1	Primary	54.50'	15.0" Round Culvert L= 53.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 54.50' / 54.25' S= 0.0047 ' S= 0.0047 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	58.60'	48.0" W x 48.0" H Vert. Grate C= 0.600
#3	Discarded	57.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=57.00' (Free Discharge)
 ↳ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.66 cfs @ 12.17 hrs HW=58.74' TW=53.93' (Dynamic Tailwater)
 ↳ **1=Culvert** (Passes 0.66 cfs of 10.71 cfs potential flow)
 ↳ **2=Grate** (Orifice Controls 0.66 cfs @ 1.19 fps)

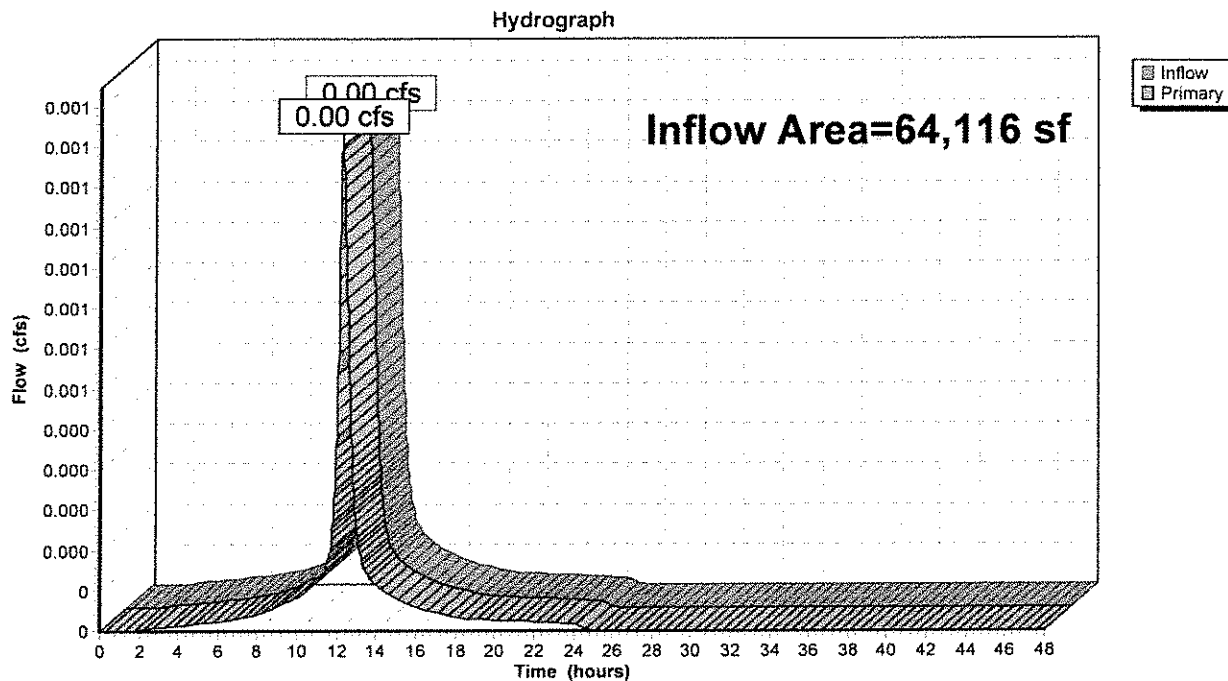
Pond BIO3: Bio-Retention Basin 3



Summary for Link E-POI: Existing Point of Interest #1

Inflow Area = 64,116 sf, 0.04% Impervious, Inflow Depth = 0.00" for 2-YR event
Inflow = 0.00 cfs @ 12.30 hrs, Volume= 7 cf
Primary = 0.00 cfs @ 12.30 hrs, Volume= 7 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

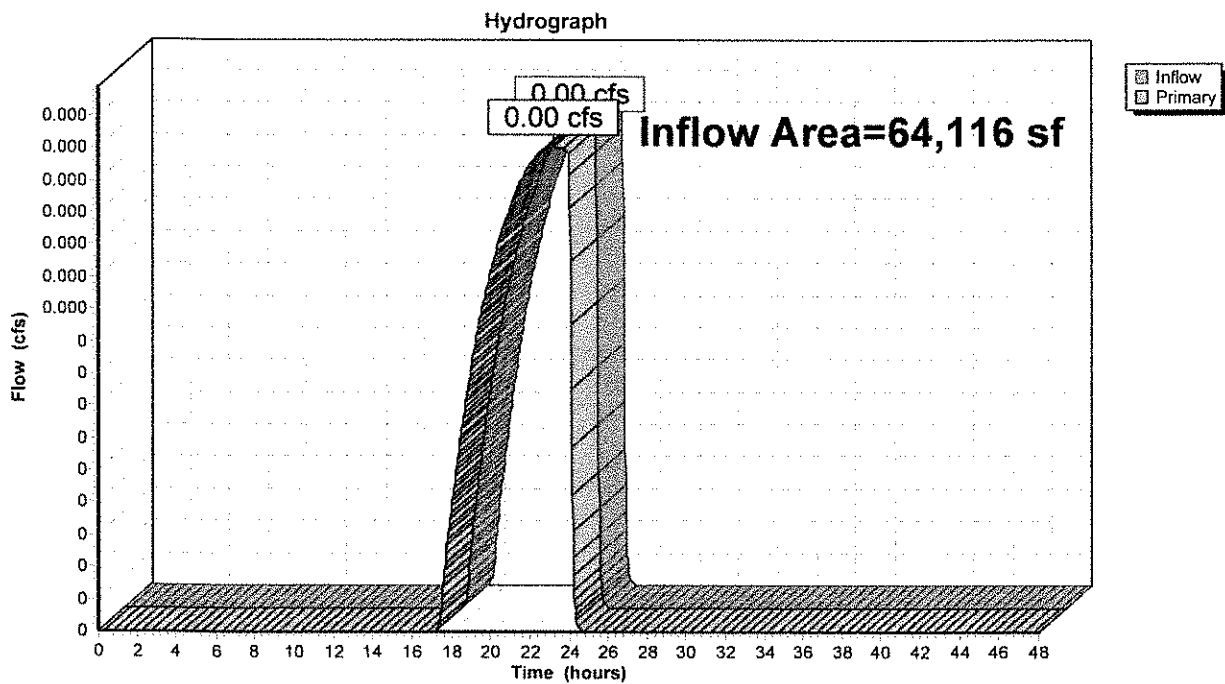
Link E-POI: Existing Point of Interest #1

Summary for Link POI: POINT OF INTEREST

Inflow Area = 64,116 sf, 56.90% Impervious, Inflow Depth = 0.00" for 2-YR event
 Inflow = 0.00 cfs @ 23.30 hrs, Volume= 3 cf
 Primary = 0.00 cfs @ 23.30 hrs, Volume= 3 cf, Atten= 0%, Lag= 0.0 min

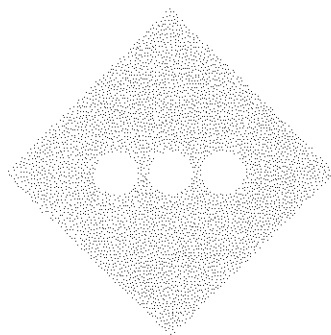
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POI: POINT OF INTEREST



APPENDIX C-3

10-YEAR STORM EVENT HYDROGRAPHS



Summary for Subcatchment E-1A: Existing Washington Ave Drainage to DOT Inlet

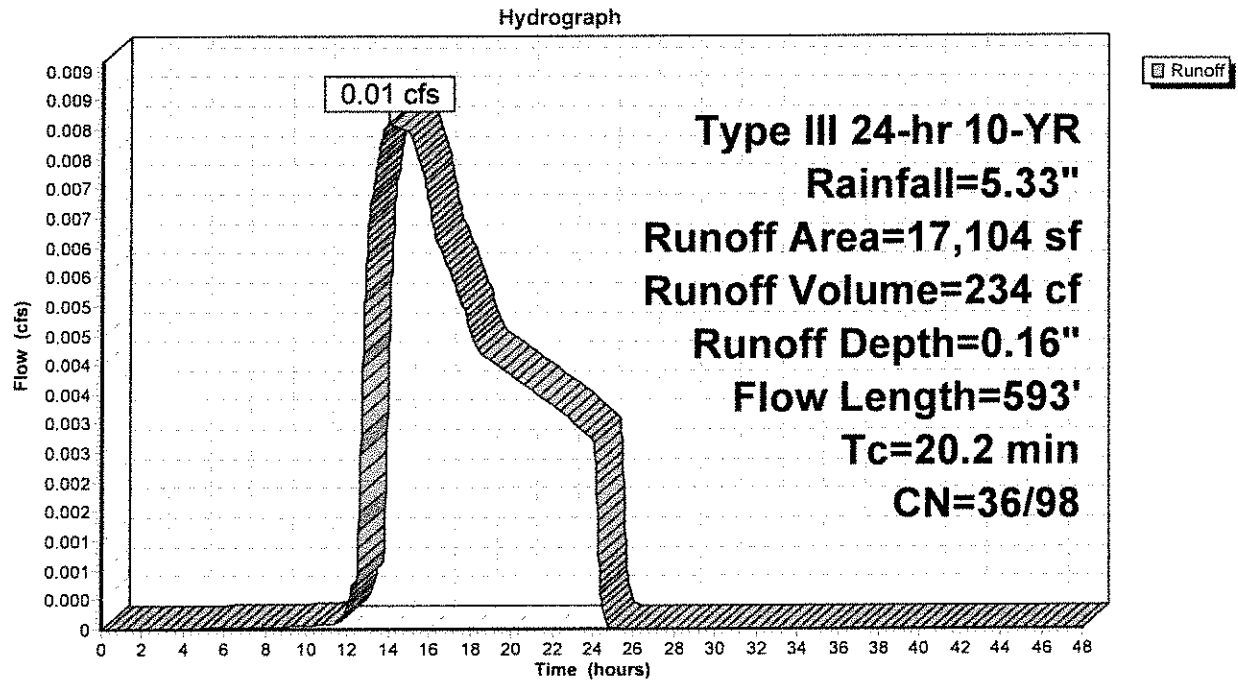
Runoff = 0.01 cfs @ 13.98 hrs, Volume= 234 cf, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

Area (sf)	CN	Description
* 10	98	Imp.
* 55	39	Grass, Good (A)
17,039	36	Woods, Fair, HSG A
17,104	36	Weighted Average
17,094	36	99.94% Pervious Area
10	98	0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	41	0.0120	0.05		Sheet Flow, 41 LF Sheet Flow Woods: Light underbrush n= 0.400 P2= 3.42"
0.7	39	0.0360	0.95		Shallow Concentrated Flow, 39 LF Shallow Concentrated Woodland Kv= 5.0 fps
6.9	480	0.0033	1.17		Shallow Concentrated Flow, 480 LF Paved Flow Paved Kv= 20.3 fps
0.1	33	0.0100	8.51	26.74	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
20.2	593	Total			

Subcatchment E-1A: Existing Washington Ave Drainage to DOT Inlet



Summary for Subcatchment E-1B: Existing Ridgeway Rd Drainage to DOT Inlet

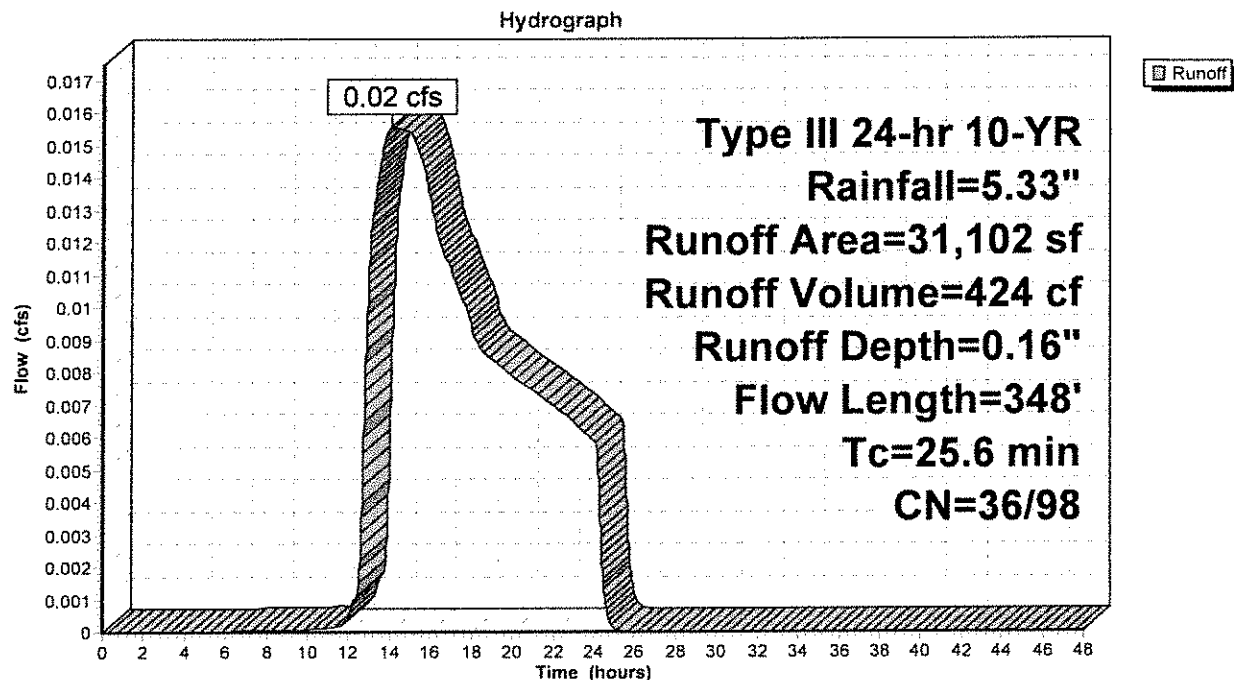
Runoff = 0.02 cfs @ 14.08 hrs, Volume= 424 cf, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

	Area (sf)	CN	Description
*	15	98	Imp
*	477	39	Grass, Good (A)
*	30,610	36	Woods, Fair (A)
	31,102	36	Weighted Average
	31,087	36	99.95% Pervious Area
	15	98	0.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.1	51	0.0040	0.04		Sheet Flow, 51 LF Sheet Flow Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	37	0.0410	1.01		Shallow Concentrated Flow, 37 LF Shallow Conc. Woodland Kv= 5.0 fps
1.5	149	0.0110	1.69		Shallow Concentrated Flow, 149 LF Shallow Conc. Unpaved Kv= 16.1 fps
0.3	78	0.0610	5.01		Shallow Concentrated Flow, 78 LF Shallow Conc Paved Kv= 20.3 fps
0.1	33	0.0100	9.36	29.41	Pipe Channel, 33 LF Pipe Flow 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010 Concrete pipe, straight & clean
25.6	348	Total			

Subcatchment E-1B: Existing Ridgeway Rd Drainage to DOT Inlet



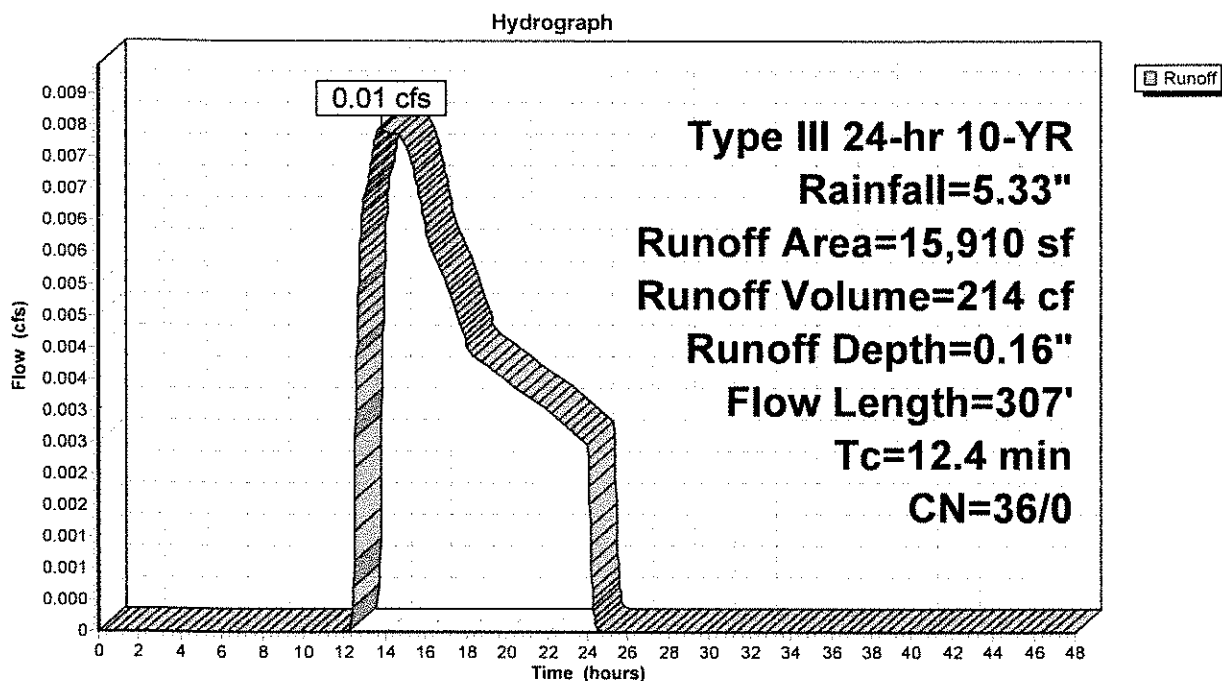
Summary for Subcatchment E-1C: Existing Richmond Ave Drainage to DOT Inlet

Runoff = 0.01 cfs @ 13.89 hrs, Volume= 214 cf, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

Area (sf)	CN	Description
246	39	>75% Grass cover, Good, HSG A
15,664	36	Woods, Fair, HSG A
15,910	36	Weighted Average
15,910	36	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	30	0.0230	0.07		Sheet Flow, 30 LF Sheet
3.3	112	0.0130	0.57		Woods: Light underbrush n= 0.400 P2= 3.42" Shallow Concentrated Flow, 112 LF Shallow Conc
1.6	165	0.0070	1.70		Woodland Kv= 5.0 fps Shallow Concentrated Flow, 165 LF Shallow Conc
12.4	307				Paved Kv= 20.3 fps

Subcatchment E-1C: Existing Richmond Ave Drainage to DOT Inlet

Summary for Subcatchment P-1: Proposed BIO1 Drainage Area

Runoff = 0.65 cfs @ 12.13 hrs, Volume= 2,668 cf, Depth= 3.71"

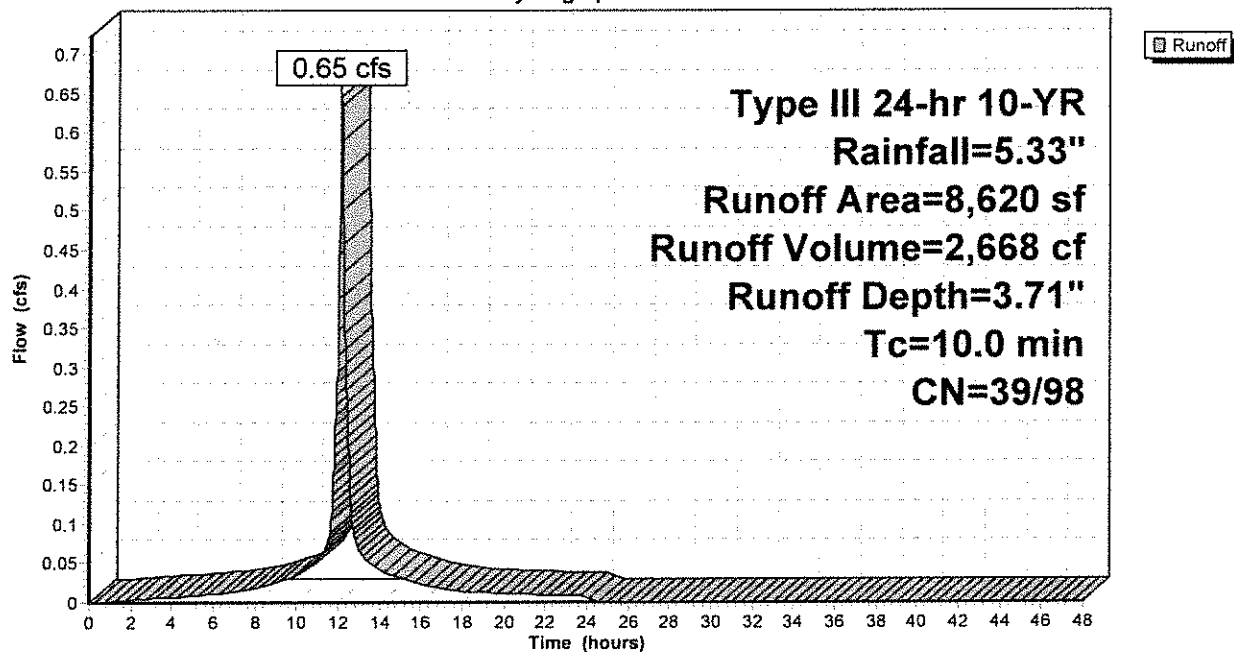
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

	Area (sf)	CN	Description
*	6,155	98	Imp
	2,465	39	>75% Grass cover, Good, HSG A
	8,620	81	Weighted Average
	2,465	39	28.60% Pervious Area
	6,155	98	71.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-1: Proposed BIO1 Drainage Area

Hydrograph



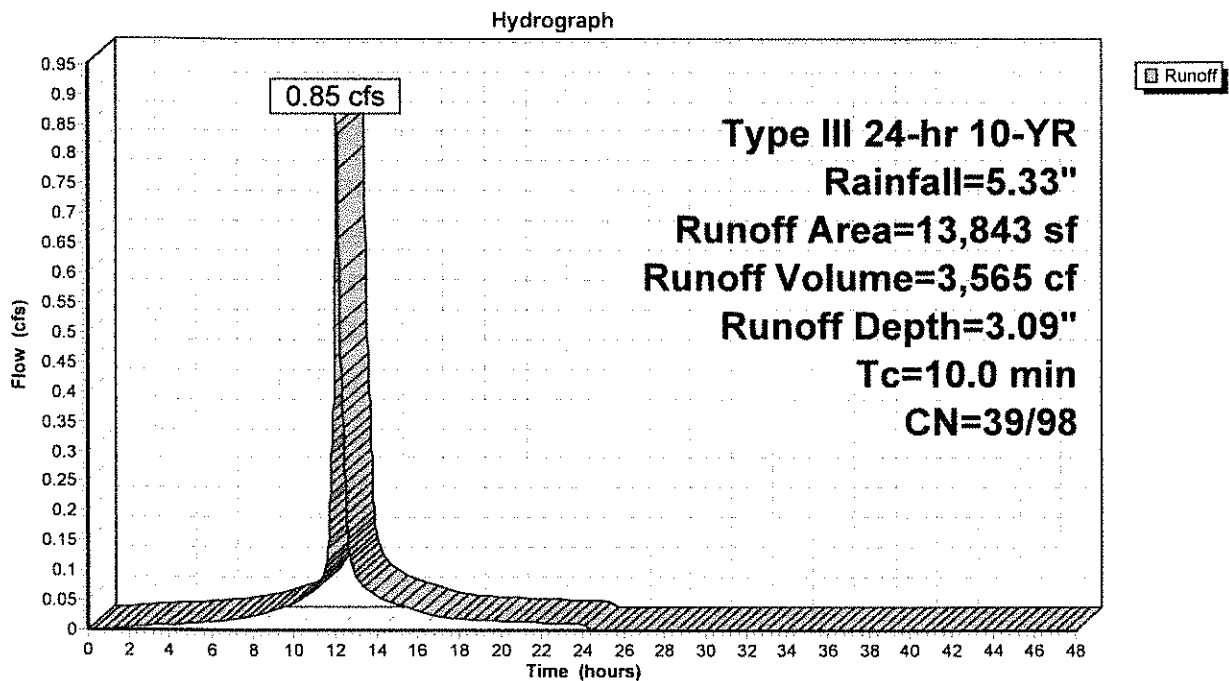
Summary for Subcatchment P-2: Proposed BIO2 Drainage Area

Runoff = 0.85 cfs @ 12.13 hrs, Volume= 3,565 cf, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

	Area (sf)	CN	Description
*	8,094	98	Imp
	5,749	39	>75% Grass cover, Good, HSG A
	13,843	73	Weighted Average
	5,749	39	41.53% Pervious Area
	8,094	98	58.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-2: Proposed BIO2 Drainage Area

Summary for Subcatchment P-3: Proposed BIO3 Drainage Area

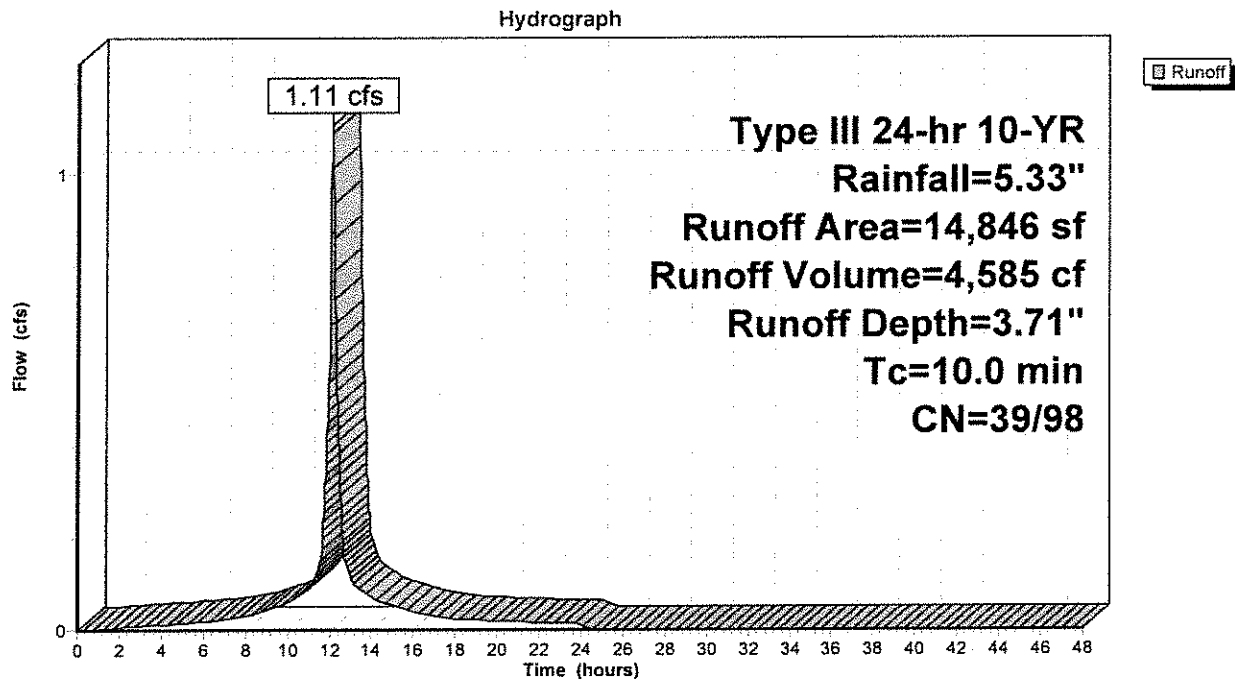
Runoff = 1.11 cfs @ 12.13 hrs, Volume= 4,585 cf, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

	Area (sf)	CN	Description
*	10,576	98	Imp.
	4,270	39	>75% Grass cover, Good, HSG A
	14,846	81	Weighted Average
	4,270	39	28.76% Pervious Area
	10,576	98	71.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-3: Proposed BIO3 Drainage Area



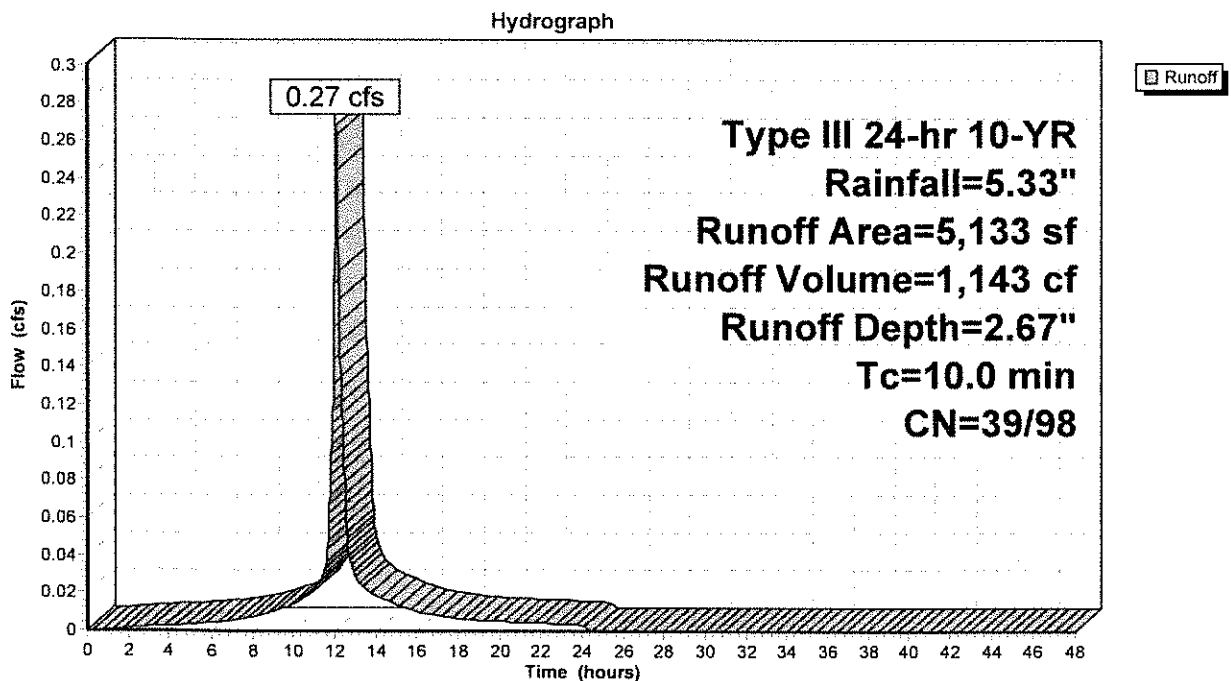
Summary for Subcatchment P-4: Proposed Aboveground Basin Drainage Area

Runoff = 0.27 cfs @ 12.13 hrs, Volume= 1,143 cf, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

	Area (sf)	CN	Description
*	2,556	98	Imp
	2,577	39	>75% Grass cover, Good, HSG A
	5,133	68	Weighted Average
	2,577	39	50.20% Pervious Area
	2,556	98	49.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-4: Proposed Aboveground Basin Drainage Area

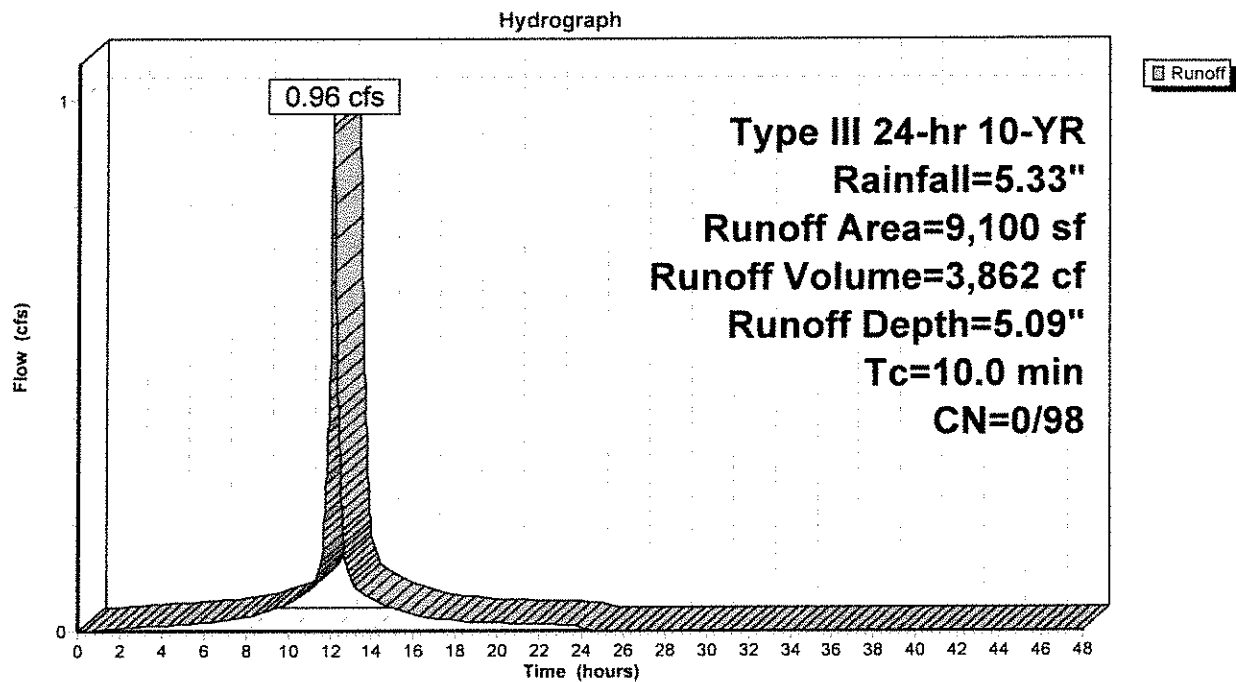
Summary for Subcatchment P-5: Proposed Roof Runoff to Detention Basin

Runoff = 0.96 cfs @ 12.13 hrs, Volume= 3,862 cf, Depth= 5.09"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

	Area (sf)	CN	Description
*	9,100	98	Roof
	9,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct Entry

Subcatchment P-5: Proposed Roof Runoff to Detention Basin

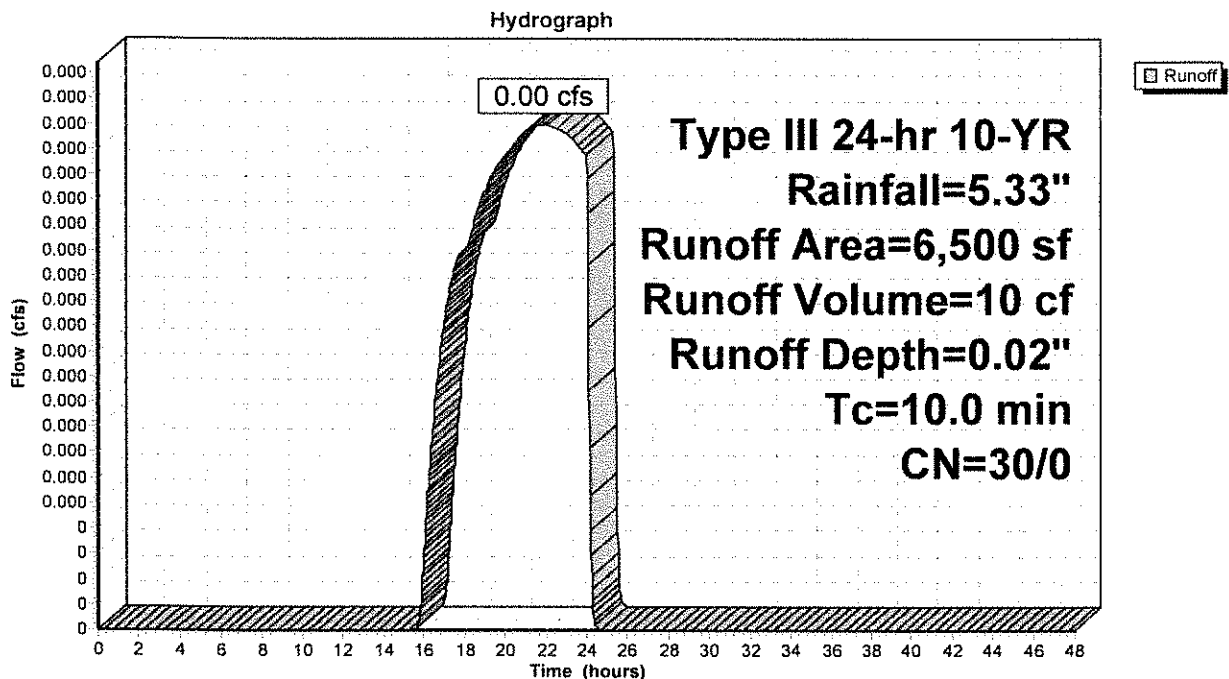
Summary for Subcatchment P-6: Proposed Undertained Drainahe to Richmond Ave

Runoff = 0.00 cfs @ 21.92 hrs, Volume= 10 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

Area (sf)	CN	Description
6,500	30	Woods, Good, HSG A
6,500	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-6: Proposed Undertained Drainahe to Richmond Ave

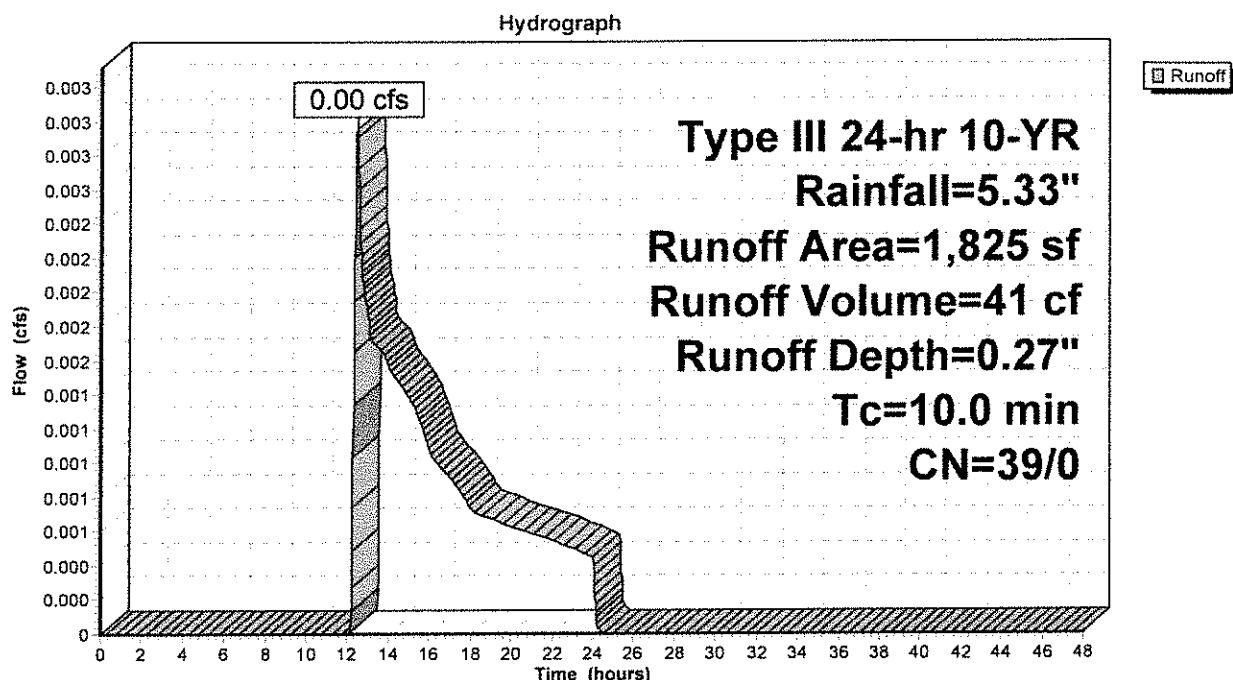
Summary for Subcatchment P-7: Proposed Undetained Drainage to Ridgeway Rd

Runoff = 0.00 cfs @ 12.48 hrs, Volume= 41 cf, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

Area (sf)	CN	Description
*	0	98 Imp
1,825	39	>75% Grass cover, Good, HSG A
1,825	39	Weighted Average
1,825	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-7: Proposed Undetained Drainage to Ridgeway Rd

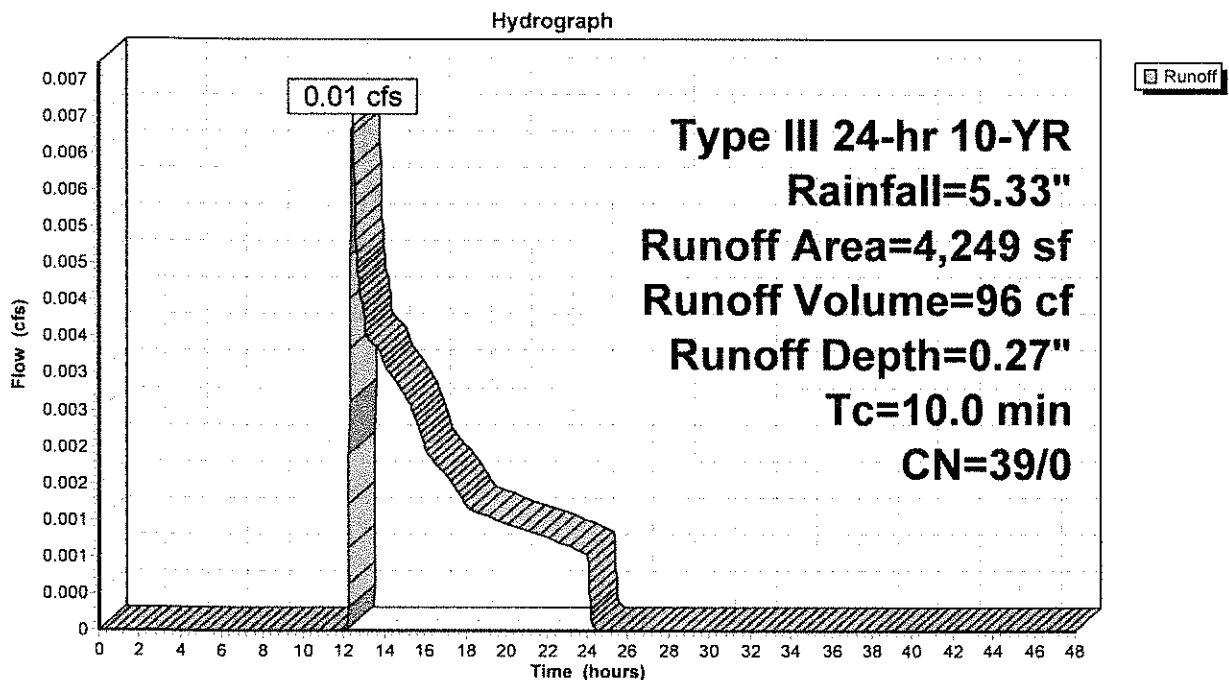
Summary for Subcatchment P-8: Proposed Undetained Drainage to Washington Ave

Runoff = 0.01 cfs @ 12.48 hrs, Volume= 96 cf, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=5.33"

	Area (sf)	CN	Description
*	0	98	Imp.
*	4,249	39	Grass, Good
	4,249	39	Weighted Average
	4,249	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct

Subcatchment P-8: Proposed Undetained Drainage to Washington Ave

Summary for Pond B1: Underground Basin (Ridgeway)

Inflow Area = 46,409 sf, 73.10% Impervious, Inflow Depth = 1.94" for 10-YR event
 Inflow = 1.99 cfs @ 12.15 hrs, Volume= 7,514 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 56.50' @ 36.90 hrs Surf.Area= 3,336 sf Storage= 7,514 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	53.41'	6,409 cf	48.0" D x 85.0'L 48" PIPE x 6 Inside #2 8,111 cf Overall - 3.0" Wall Thickness = 6,409 cf
#2	52.91'	3,428 cf	78.5"W x 60.0"H x 85.0'L STONE x 6 16,681 cf Overall - 8,111 cf Embedded = 8,570 cf x 40.0% Voids
		9,837 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	53.41'	15.0" Round Culvert L= 68.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 53.41' / 52.83' S= 0.0085 ' S= 0.0085 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean
#2	Device 1	56.61'	5.0" W x 2.0" H Vert. Slot C= 0.600
#3	Device 1	57.41'	4.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#4	Discarded	52.91'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=52.91' (Free Discharge)

4=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=52.91' TW=0.00' (Dynamic Tailwater)

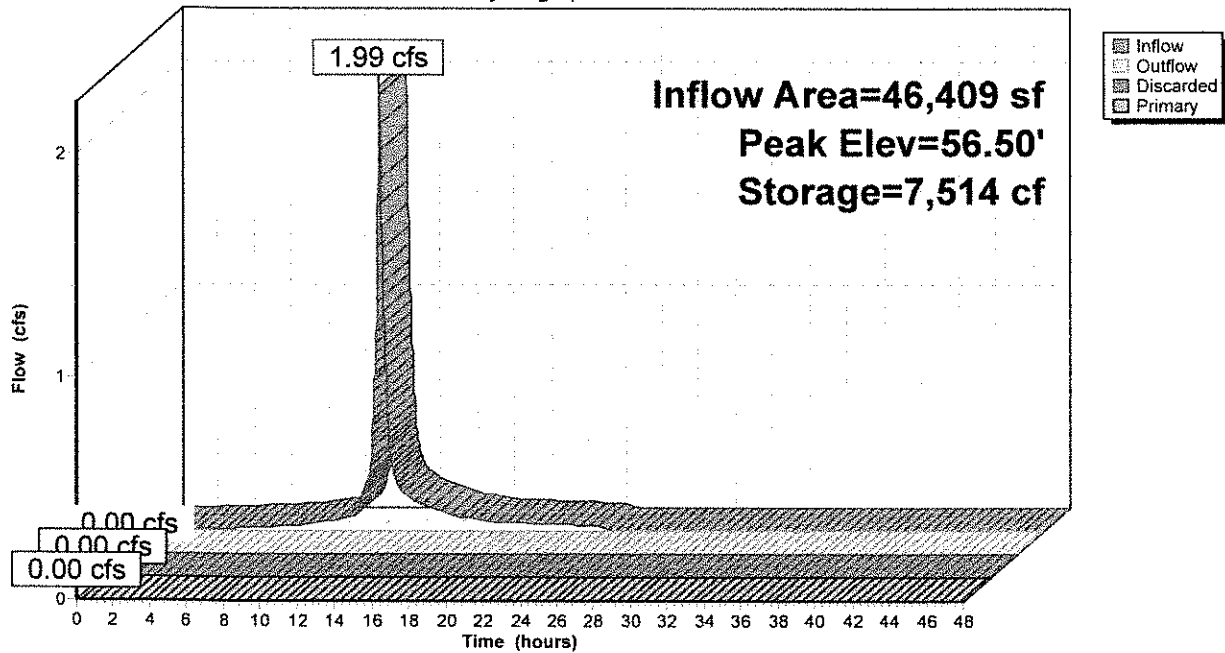
1=Culvert (Controls 0.00 cfs)

2=Slot (Controls 0.00 cfs)

3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B1: Underground Basin (Ridgeway)

Hydrograph



Summary for Pond B2: Underground Basin (Richmond)

Inflow Area = 22,463 sf, 63.43% Impervious, Inflow Depth = 2.62" for 10-YR event
 Inflow = 1.48 cfs @ 12.15 hrs, Volume= 4,903 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Peak Elev= 56.09' @ 29.14 hrs Surf.Area= 2,486 sf Storage= 4,903 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	53.41'	4,775 cf	48.0" D x 95.0'L 48" PIPE x 4 Inside #2 6,044 cf Overall - 3.0" Wall Thickness = 4,775 cf
#2	52.91'	2,554 cf	78.5"W x 60.0"H x 95.0'L STONE x 4 12,429 cf Overall - 6,044 cf Embedded = 6,386 cf x 40.0% Voids
		7,329 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	53.41'	18.0" Round Culvert L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 53.41' / 53.17' S= 0.0120 ' / ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean
#2	Discarded	52.91'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=52.91' (Free Discharge)

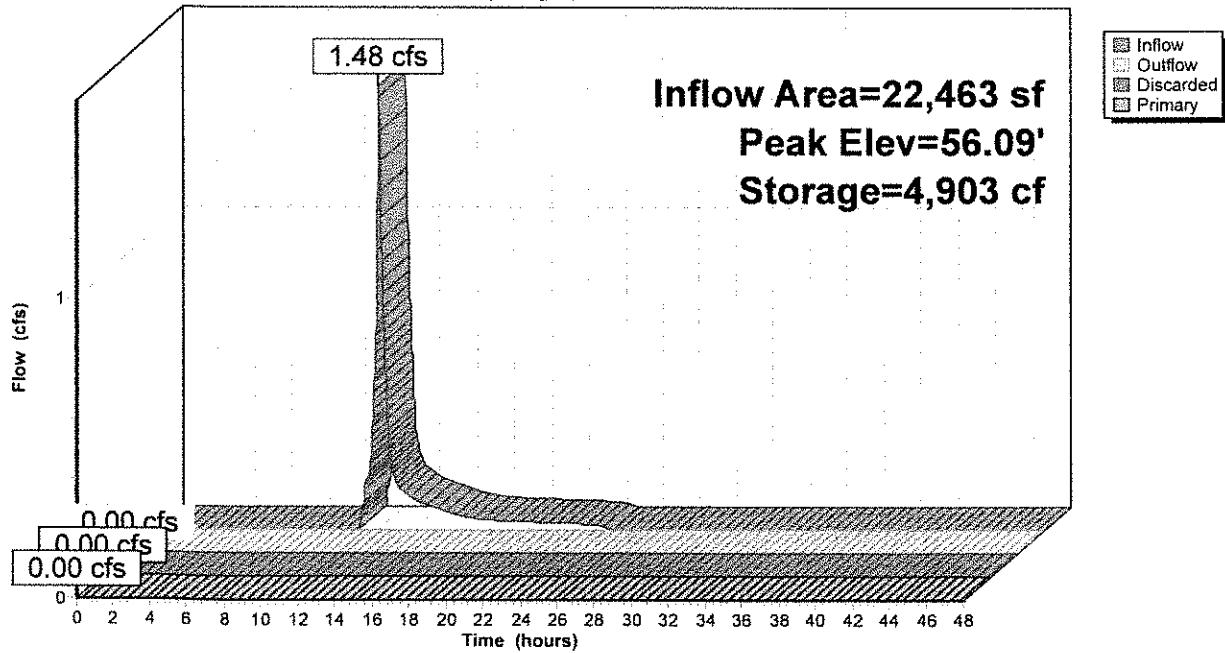
←2=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=52.91' TW=52.91' (Dynamic Tailwater)

←1=Culvert (Controls 0.00 cfs)

Pond B2: Underground Basin (Richmond)

Hydrograph



Summary for Pond B3: Aboveground Basin

Inflow Area = 5,133 sf, 49.80% Impervious, Inflow Depth = 2.67" for 10-YR event
 Inflow = 0.27 cfs @ 12.13 hrs, Volume= 1,143 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 56.47' @ 24.58 hrs Surf.Area= 786 sf Storage= 1,143 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

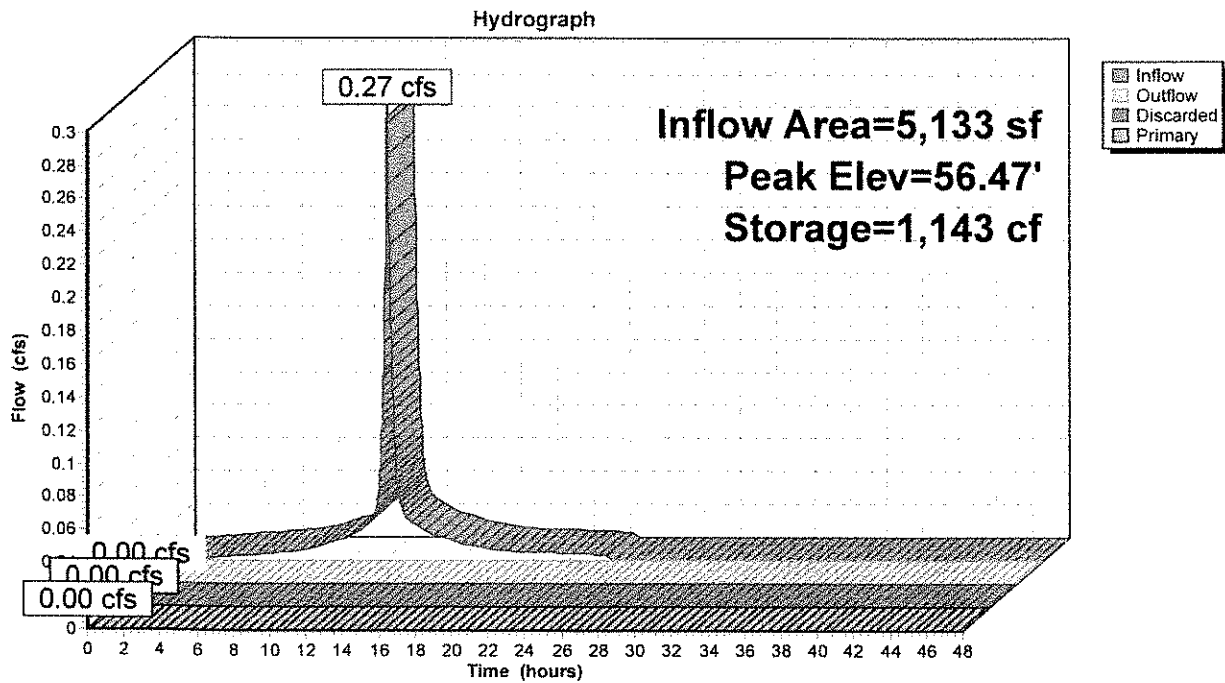
Volume	Invert	Avail.Storage	Storage Description		
#1	54.00'	1,601 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	197	56.0	0	0	197
55.00	393	75.0	289	289	406
56.00	647	93.0	515	804	660
57.00	956	112.0	796	1,601	987

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	15.0" Round Culvert L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 52.83' S= 0.0585 ' / Cc= 0.900 n= 0.011
#2	Device 1	56.50'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	54.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' (Free Discharge)
 ↳ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' TW=0.00' (Dynamic Tailwater)
 ↳ **1=Culvert** (Controls 0.00 cfs)
 ↳ **2=Grate** (Controls 0.00 cfs)

Pond B3: Aboveground Basin



Summary for Pond BIO1: Bio-Retention Basin 1

Inflow Area = 8,620 sf, 71.40% Impervious, Inflow Depth = 3.71" for 10-YR event
 Inflow = 0.65 cfs @ 12.13 hrs, Volume= 2,668 cf
 Outflow = 0.64 cfs @ 12.14 hrs, Volume= 2,070 cf, Atten= 0%, Lag= 0.6 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.64 cfs @ 12.14 hrs, Volume= 2,070 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 57.80' @ 12.14 hrs Surf.Area= 660 sf Storage= 633 cf

Plug-Flow detention time= 157.7 min calculated for 2,070 cf (78% of inflow)
 Center-of-Mass det. time= 73.3 min (829.1 - 755.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	56.00'	770 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
56.00	86	89.0	0	0	86
57.00	385	108.0	218	218	400
58.00	739	127.0	552	770	774

Device	Routing	Invert	Outlet Devices
#1	Primary	55.00'	15.0" Round Culvert L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.00' / 54.90' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Device 1	57.75'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	56.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)

↑ **3=Exfiltration** (Controls 0.00 cfs)

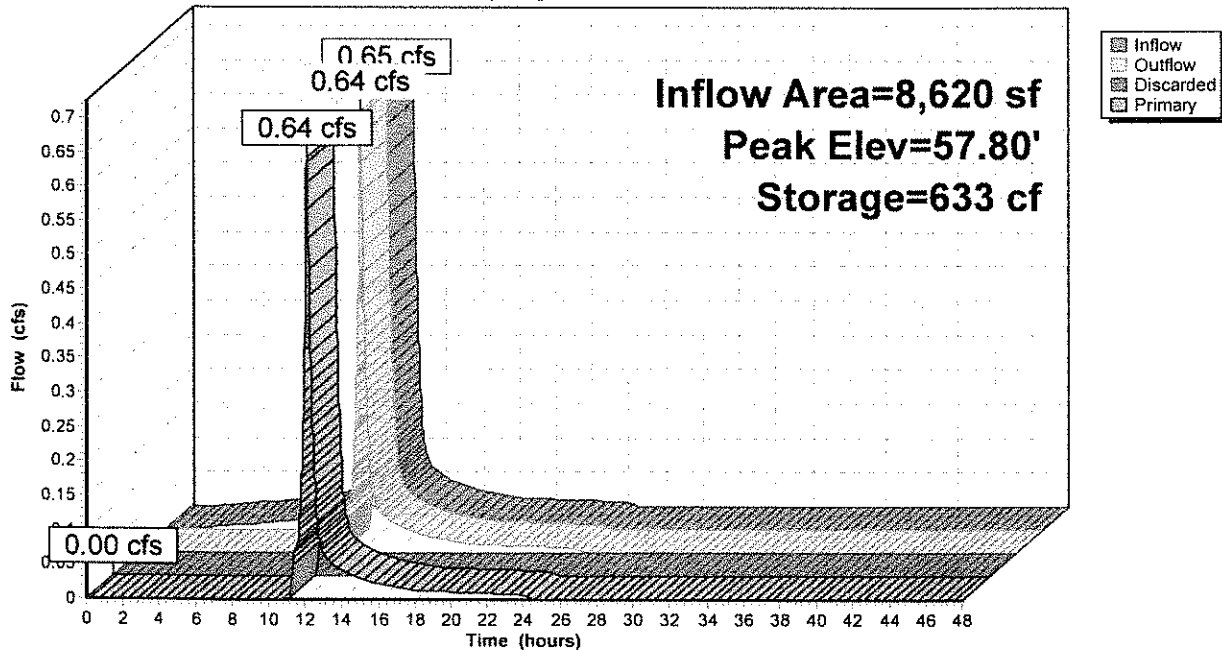
Primary OutFlow Max=0.64 cfs @ 12.14 hrs HW=57.80' TW=54.14' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.64 cfs of 8.72 cfs potential flow)

↑ **2=Grate** (Weir Controls 0.64 cfs @ 0.75 fps)

Pond BIO1: Bio-Retention Basin 1

Hydrograph



Summary for Pond BIO2: Bio-Retention Basin 2

Inflow Area = 13,843 sf, 58.47% Impervious, Inflow Depth = 3.09" for 10-YR event
 Inflow = 0.85 cfs @ 12.13 hrs, Volume= 3,565 cf
 Outflow = 0.84 cfs @ 12.15 hrs, Volume= 2,833 cf, Atten= 1%, Lag= 1.0 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.84 cfs @ 12.15 hrs, Volume= 2,833 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Peak Elev= 59.41' @ 12.15 hrs Surf.Area= 1,148 sf Storage= 803 cf

Plug-Flow detention time= 152.3 min calculated for 2,831 cf (79% of inflow)

Center-of-Mass det. time= 70.9 min (830.4 - 759.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	58.00'	907 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
58.00	200	157.0	0	0	200
59.00	700	176.0	425	425	730
59.50	1,256	194.0	482	907	1,268

Device	Routing	Invert	Outlet Devices
#1	Primary	55.00'	15.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.00' / 54.90' S= 0.0050 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	59.35'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	58.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' (Free Discharge)

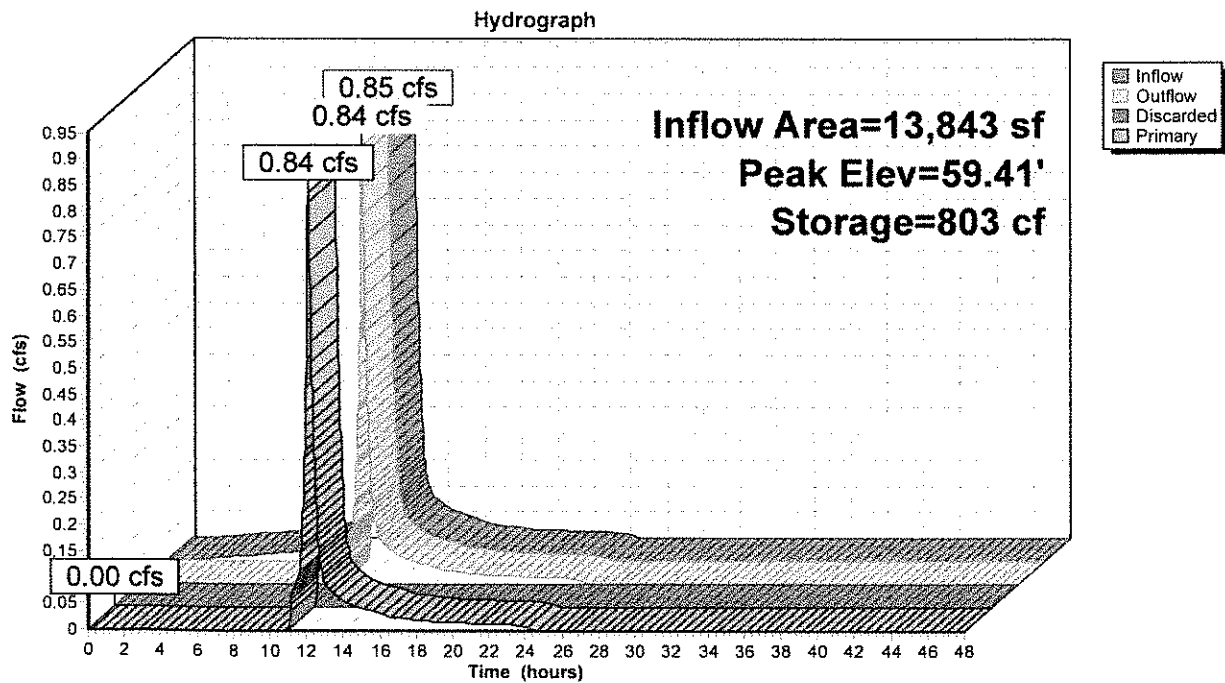
↑ **3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.84 cfs @ 12.15 hrs HW=59.41' TW=54.16' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 0.84 cfs of 11.50 cfs potential flow)

↑ **2=Grate** (Weir Controls 0.84 cfs @ 0.82 fps)

Pond BIO2: Bio-Retention Basin 2



Summary for Pond BIO3: Bio-Retention Basin 3

Inflow Area = 14,846 sf, 71.24% Impervious, Inflow Depth = 3.71" for 10-YR event
 Inflow = 1.11 cfs @ 12.13 hrs, Volume= 4,585 cf
 Outflow = 1.06 cfs @ 12.17 hrs, Volume= 3,652 cf, Atten= 5%, Lag= 2.0 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 1.06 cfs @ 12.17 hrs, Volume= 3,652 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Peak Elev= 58.79' @ 12.17 hrs Surf.Area= 1,059 sf Storage= 1,124 cf

Plug-Flow detention time= 153.3 min calculated for 3,652 cf (80% of inflow)
 Center-of-Mass det. time= 73.3 min (829.1 - 755.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	57.00'	1,359 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
57.00	241	165.0	0	0	241
58.00	682	183.0	443	443	769
59.00	1,173	200.0	916	1,359	1,321

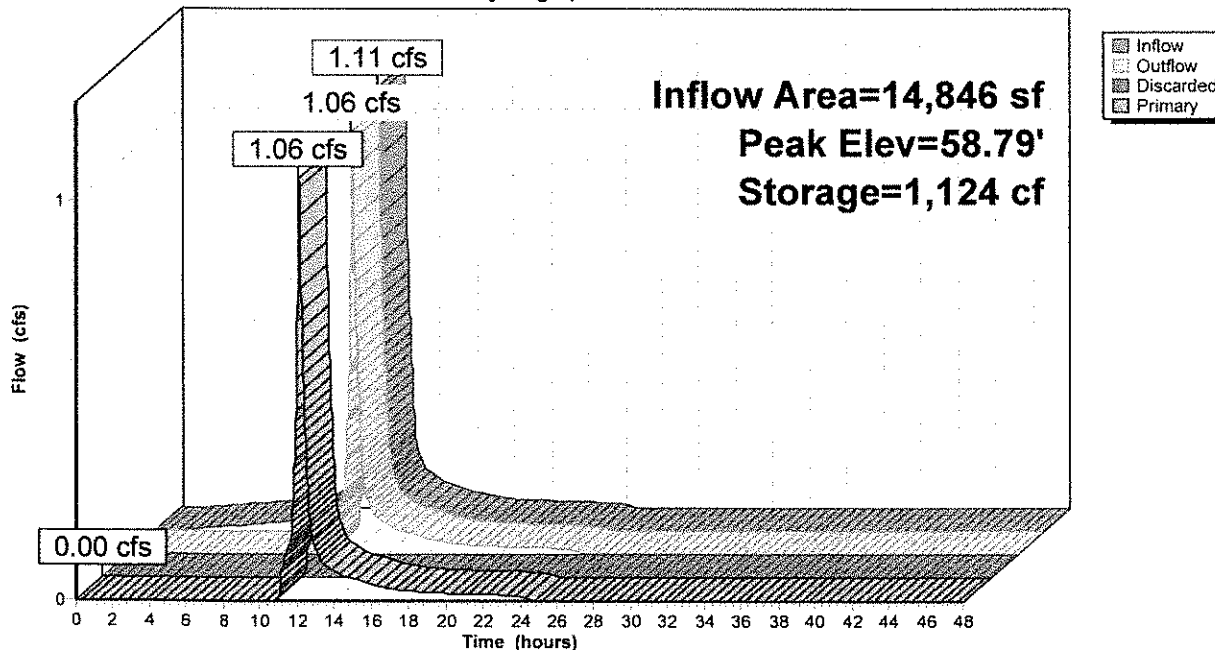
Device	Routing	Invert	Outlet Devices
#1	Primary	54.50'	15.0" Round Culvert L= 53.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 54.50' / 54.25' S= 0.0047 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior
#2	Device 1	58.60'	48.0" W x 48.0" H Vert. Grate C= 0.600
#3	Discarded	57.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=57.00' (Free Discharge)
 ↳3=Exfiltration (Controls 0.00 cfs)

Primary OutFlow Max=1.05 cfs @ 12.17 hrs HW=58.79' TW=54.61' (Dynamic Tailwater)
 ↳1=Culvert (Passes 1.05 cfs of 10.80 cfs potential flow)
 ↳2=Grate (Orifice Controls 1.05 cfs @ 1.40 fps)

Pond BIO3: Bio-Retention Basin 3

Hydrograph

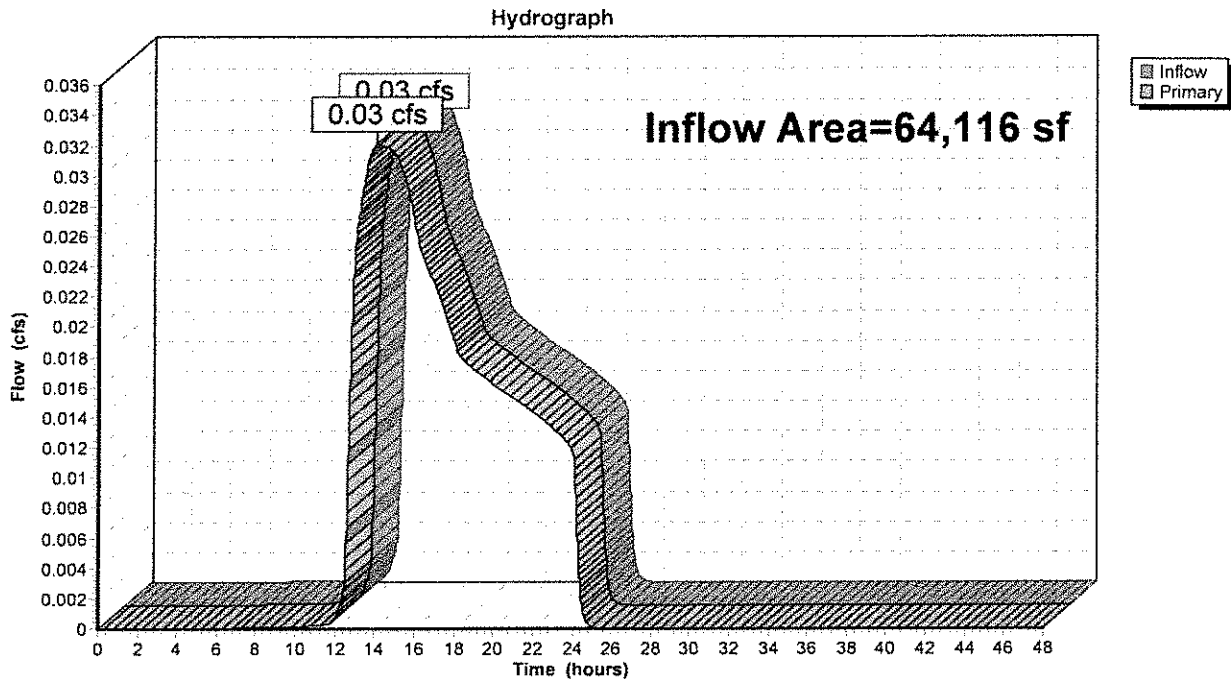


Summary for Link E-POI: Existing Point of Interest #1

Inflow Area = 64,116 sf, 0.04% Impervious, Inflow Depth = 0.16" for 10-YR event
 Inflow = 0.03 cfs @ 14.02 hrs, Volume= 871 cf
 Primary = 0.03 cfs @ 14.02 hrs, Volume= 871 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

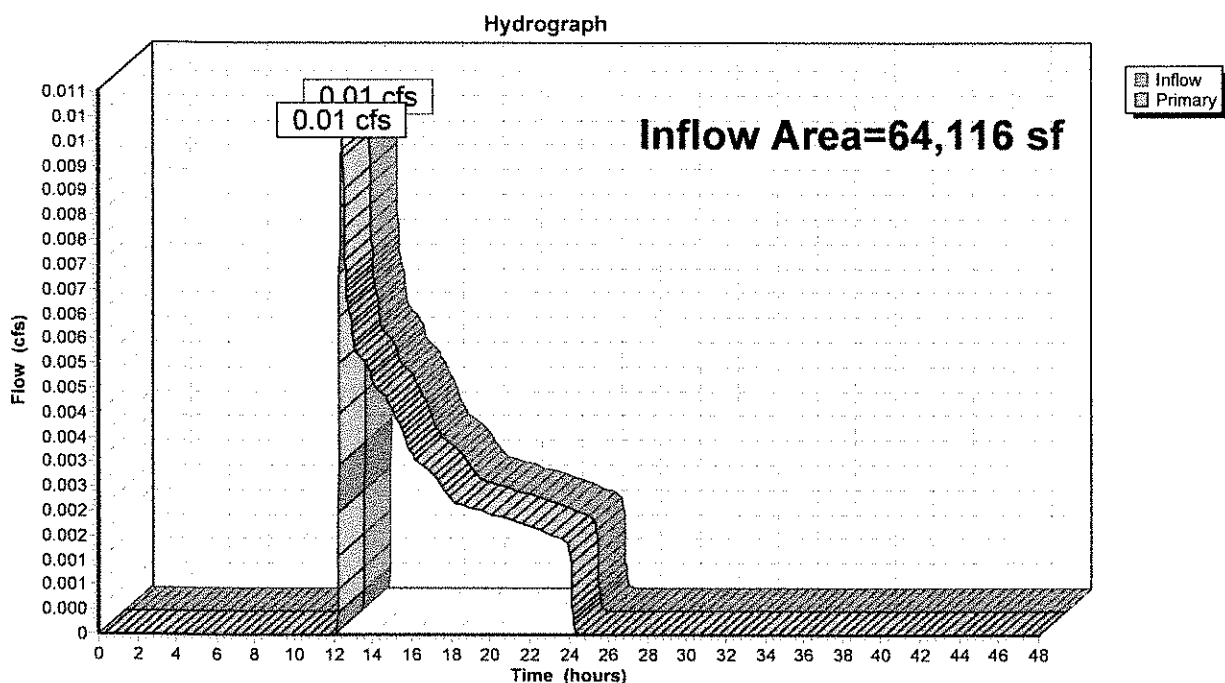
Link E-POI: Existing Point of Interest #1



Summary for Link POI: POINT OF INTEREST

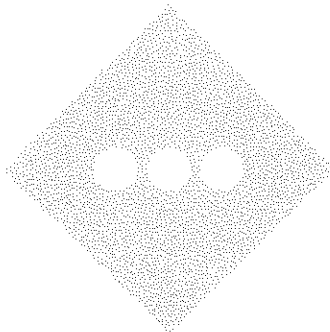
Inflow Area = 64,116 sf, 56.90% Impervious, Inflow Depth = 0.03" for 10-YR event
Inflow = 0.01 cfs @ 12.48 hrs, Volume= 147 cf
Primary = 0.01 cfs @ 12.48 hrs, Volume= 147 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POI: POINT OF INTEREST

APPENDIX C-4

100-YEAR STORM EVENT HYDROGRAPHS



Summary for Subcatchment E-1A: Existing Washington Ave Drainage to DOT Inlet

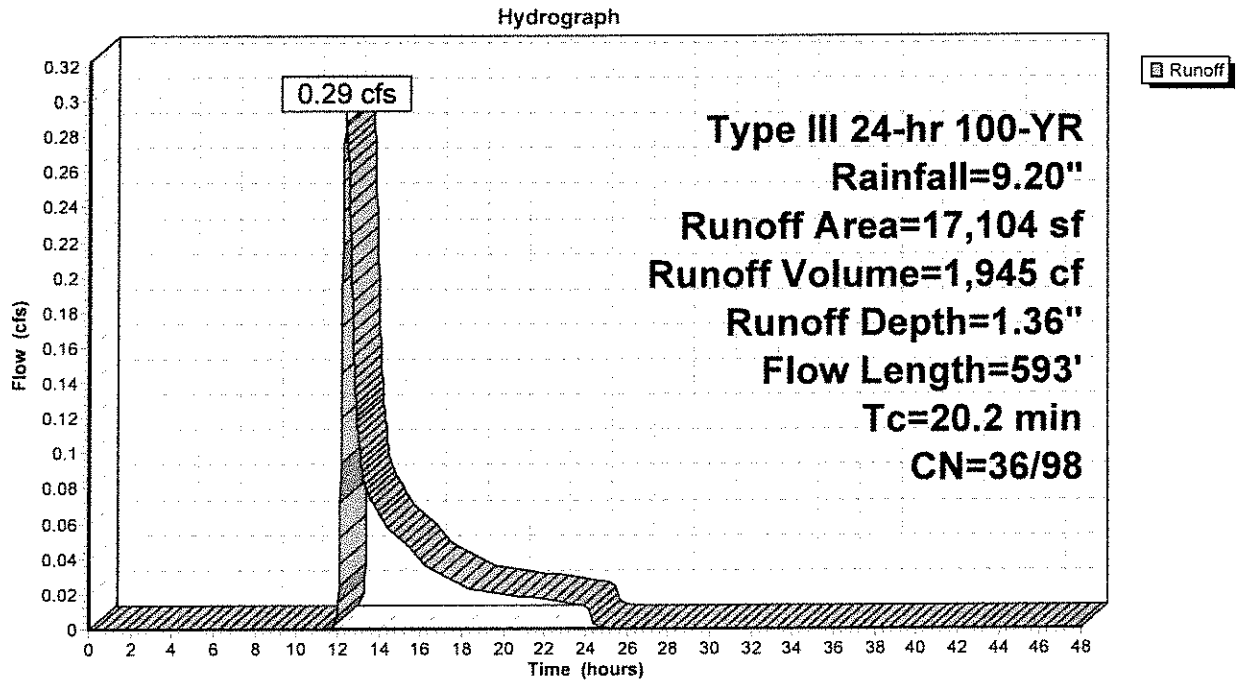
Runoff = 0.29 cfs @ 12.39 hrs, Volume= 1,945 cf, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

	Area (sf)	CN	Description
*	10	98	Imp.
*	55	39	Grass, Good (A)
	17,039	36	Woods, Fair, HSG A
	17,104	36	Weighted Average
	17,094	36	99.94% Pervious Area
	10	98	0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	41	0.0120	0.05		Sheet Flow, 41 LF Sheet Flow Woods: Light underbrush n= 0.400 P2= 3.42"
0.7	39	0.0360	0.95		Shallow Concentrated Flow, 39 LF Shallow Concentrated Woodland Kv= 5.0 fps
6.9	480	0.0033	1.17		Shallow Concentrated Flow, 480 LF Paved Flow Paved Kv= 20.3 fps
0.1	33	0.0100	8.51	26.74	Pipe Channel, RCP_Round 24" 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011
20.2	593	Total			

Subcatchment E-1A: Existing Washington Ave Drainage to DOT Inlet



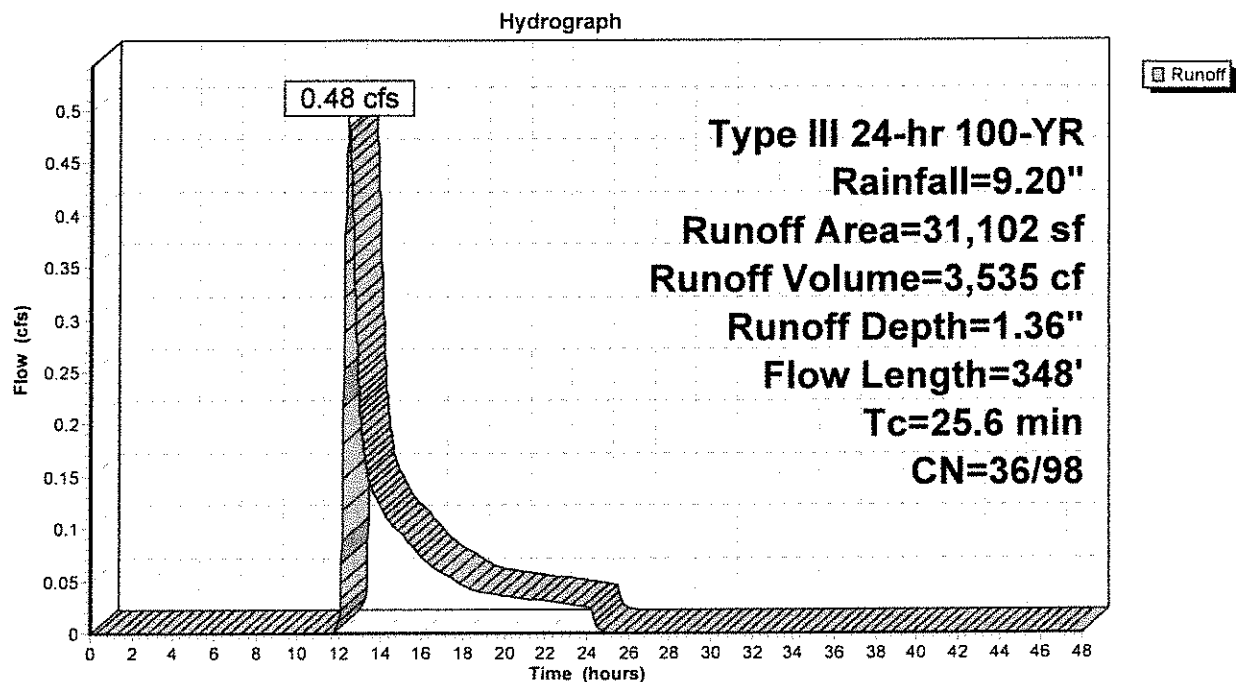
Summary for Subcatchment E-1B: Existing Ridgeway Rd Drainage to DOT Inlet

Runoff = 0.48 cfs @ 12.48 hrs, Volume= 3,535 cf, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

Area (sf)	CN	Description
* 15	98	Imp
* 477	39	Grass, Good (A)
* 30,610	36	Woods, Fair (A)
31,102	36	Weighted Average
31,087	36	99.95% Pervious Area
15	98	0.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.1	51	0.0040	0.04		Sheet Flow, 51 LF Sheet Flow Woods: Light underbrush n= 0.400 P2= 3.42"
0.6	37	0.0410	1.01		Shallow Concentrated Flow, 37 LF Shallow Conc. Woodland Kv= 5.0 fps
1.5	149	0.0110	1.69		Shallow Concentrated Flow, 149 LF Shallow Conc. Unpaved Kv= 16.1 fps
0.3	78	0.0610	5.01		Shallow Concentrated Flow, 78 LF Shallow Conc Paved Kv= 20.3 fps
0.1	33	0.0100	9.36	29.41	Pipe Channel, 33 LF Pipe Flow 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.010 Concrete pipe, straight & clean
25.6	348	Total			

Subcatchment E-1B: Existing Ridgeway Rd Drainage to DOT Inlet

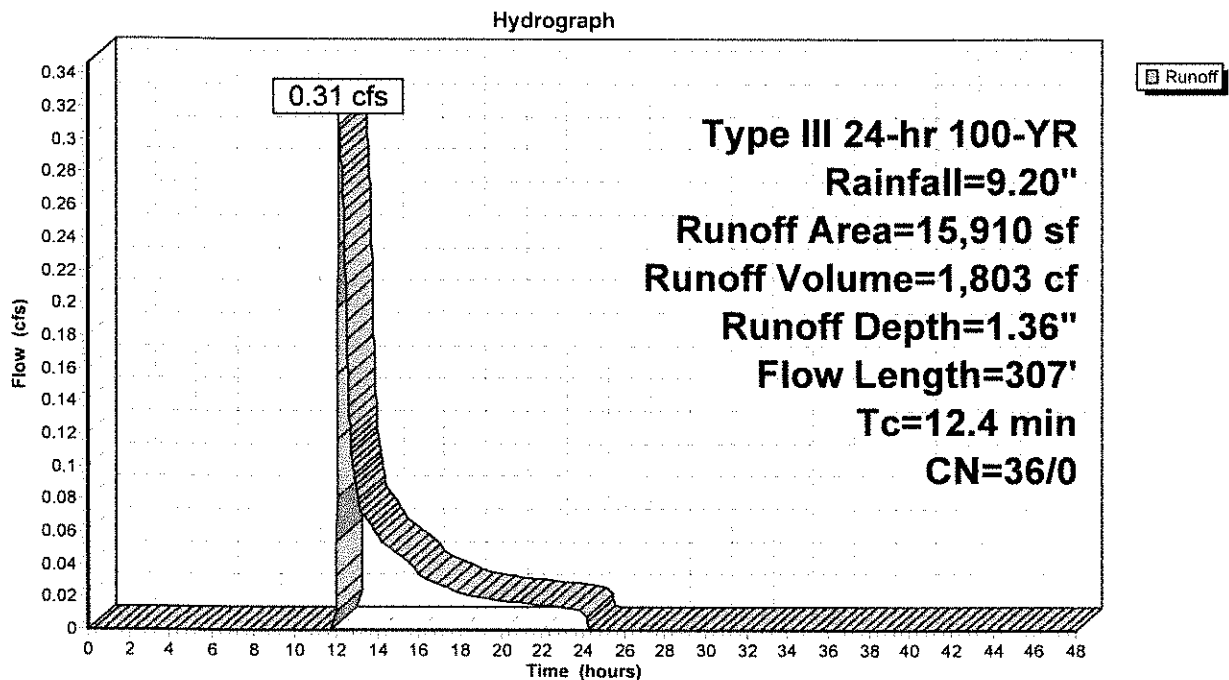
Summary for Subcatchment E-1C: Existing Richmond Ave Drainage to DOT Inlet

Runoff = 0.31 cfs @ 12.23 hrs, Volume= 1,803 cf, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

Area (sf)	CN	Description
246	39	>75% Grass cover, Good, HSG A
15,664	36	Woods, Fair, HSG A
15,910	36	Weighted Average
15,910	36	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	30	0.0230	0.07		Sheet Flow, 30 LF Sheet
3.3	112	0.0130	0.57		Woods: Light underbrush n= 0.400 P2= 3.42"
					Shallow Concentrated Flow, 112 LF Shallow Conc
1.6	165	0.0070	1.70		Woodland Kv= 5.0 fps
					Shallow Concentrated Flow, 165 LF Shallow Conc
					Paved Kv= 20.3 fps
12.4	307	Total			

Subcatchment E-1C: Existing Richmond Ave Drainage to DOT Inlet

Summary for Subcatchment P-1: Proposed BIO1 Drainage Area

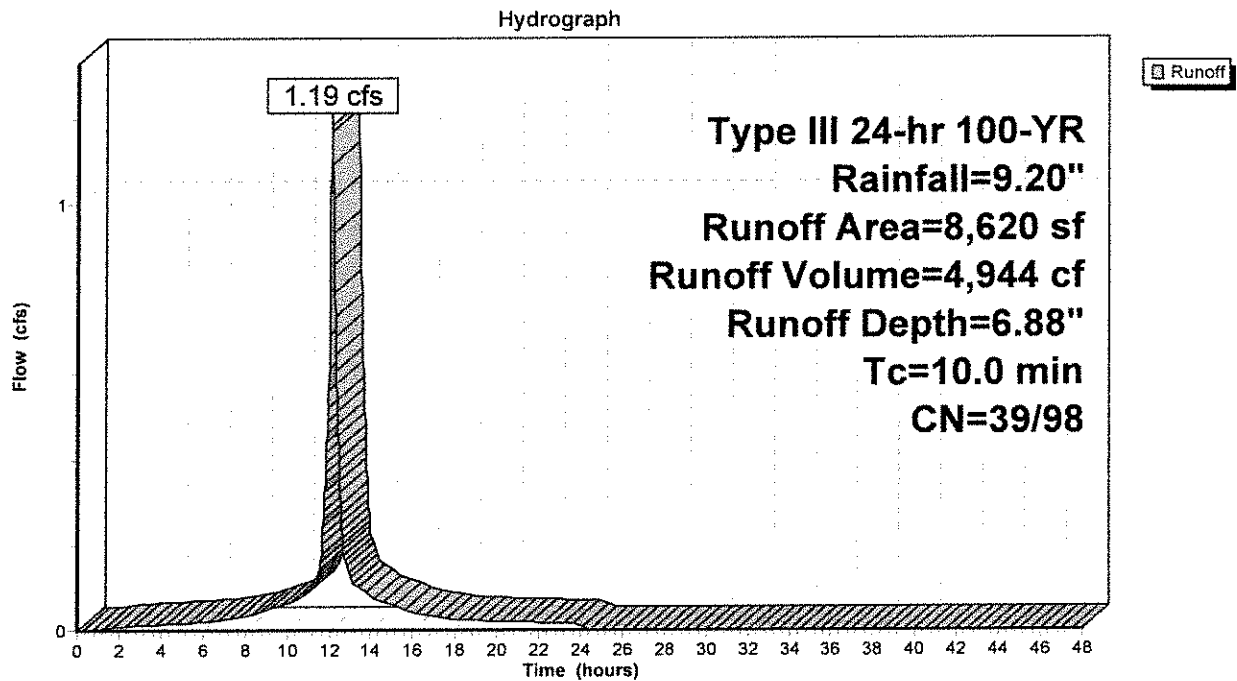
Runoff = 1.19 cfs @ 12.14 hrs, Volume= 4,944 cf, Depth= 6.88"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

	Area (sf)	CN	Description
*	6,155	98	Imp
	2,465	39	>75% Grass cover, Good, HSG A
	8,620	81	Weighted Average
	2,465	39	28.60% Pervious Area
	6,155	98	71.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-1: Proposed BIO1 Drainage Area



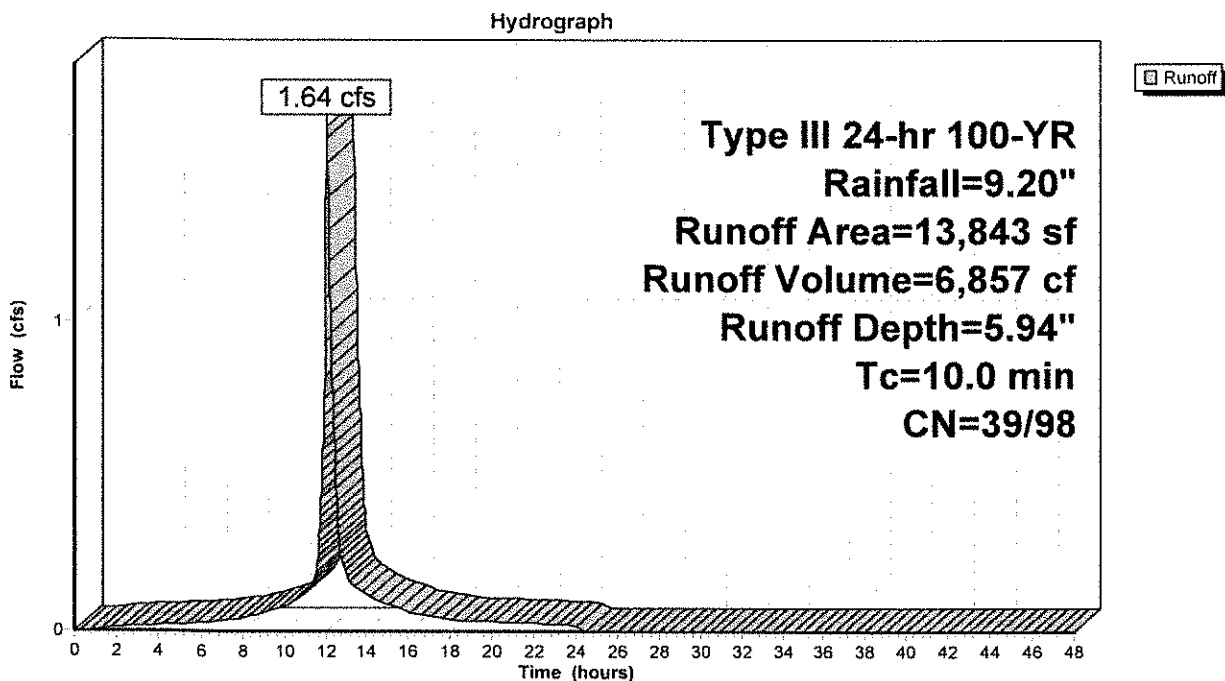
Summary for Subcatchment P-2: Proposed BIO2 Drainage Area

Runoff = 1.64 cfs @ 12.14 hrs, Volume= 6,857 cf, Depth= 5.94"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

Area (sf)	CN	Description
8,094	98	Imp
5,749	39	>75% Grass cover, Good, HSG A
13,843	73	Weighted Average
5,749	39	41.53% Pervious Area
8,094	98	58.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-2: Proposed BIO2 Drainage Area

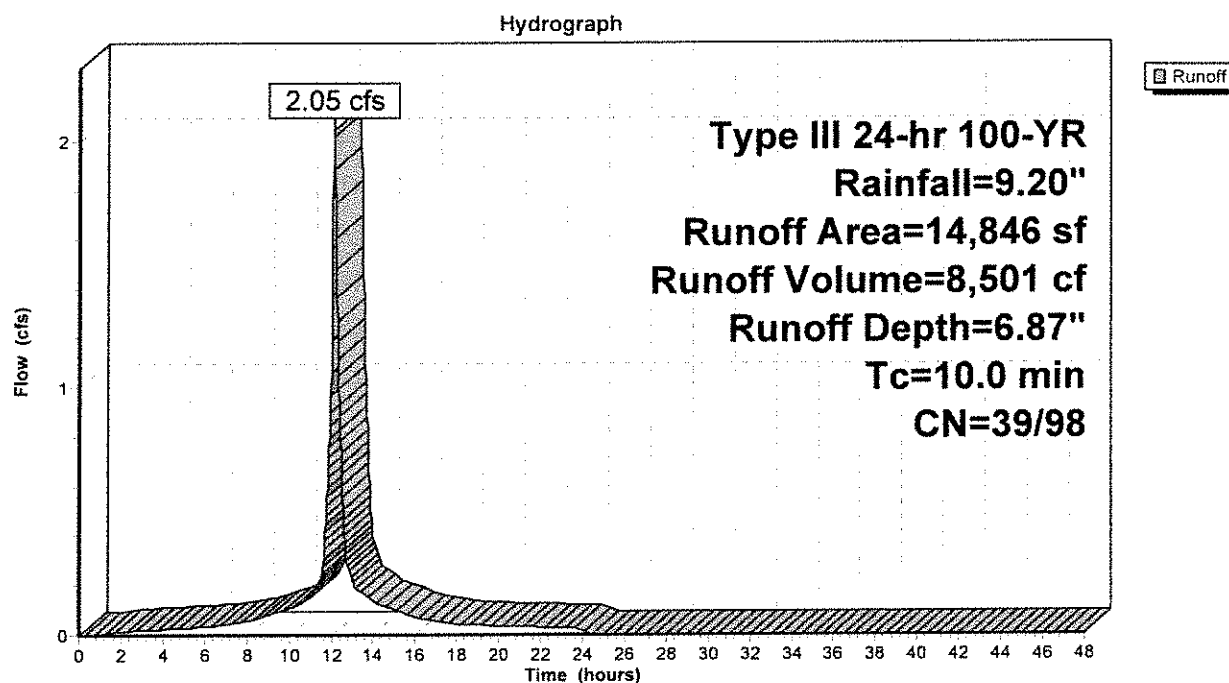
Summary for Subcatchment P-3: Proposed BIO3 Drainage Area

Runoff = 2.05 cfs @ 12.14 hrs, Volume= 8,501 cf, Depth= 6.87"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

Area (sf)	CN	Description
* 10,576	98	Imp.
4,270	39	>75% Grass cover, Good, HSG A
14,846	81	Weighted Average
4,270	39	28.76% Pervious Area
10,576	98	71.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-3: Proposed BIO3 Drainage Area

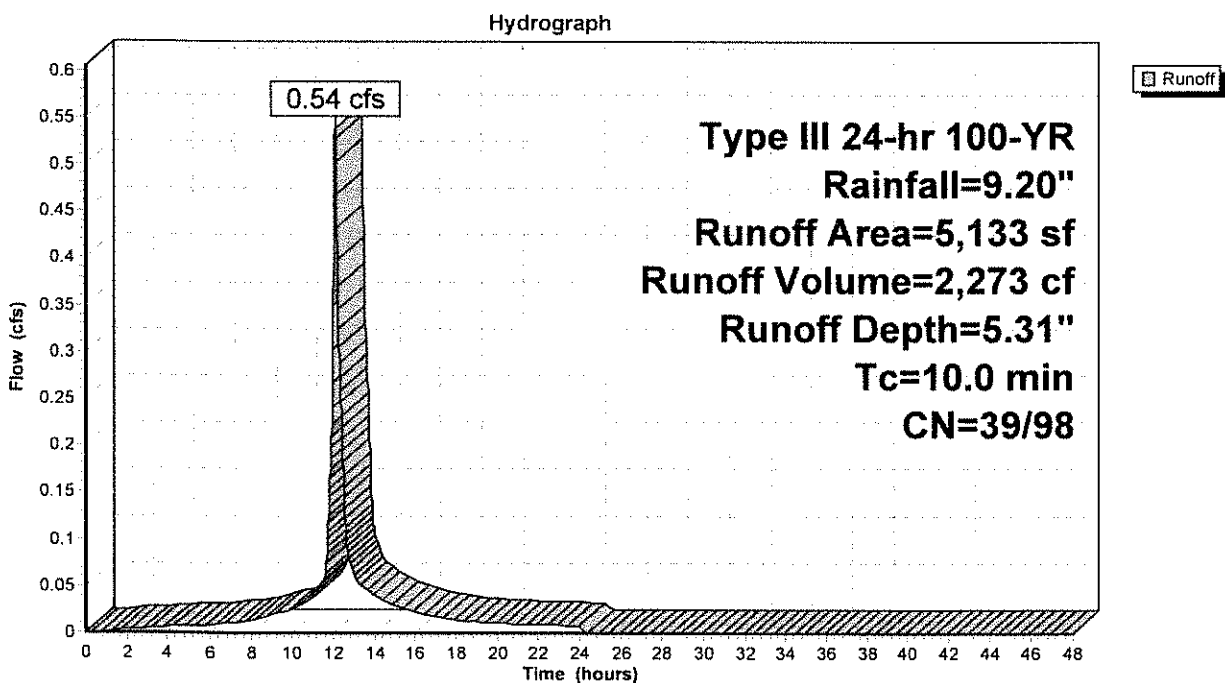
Summary for Subcatchment P-4: Proposed Aboveground Basin Drainage Area

Runoff = 0.54 cfs @ 12.14 hrs, Volume= 2,273 cf, Depth= 5.31"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

	Area (sf)	CN	Description
*	2,556	98	Imp
	2,577	39	>75% Grass cover, Good, HSG A
	5,133	68	Weighted Average
	2,577	39	50.20% Pervious Area
	2,556	98	49.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-4: Proposed Aboveground Basin Drainage Area

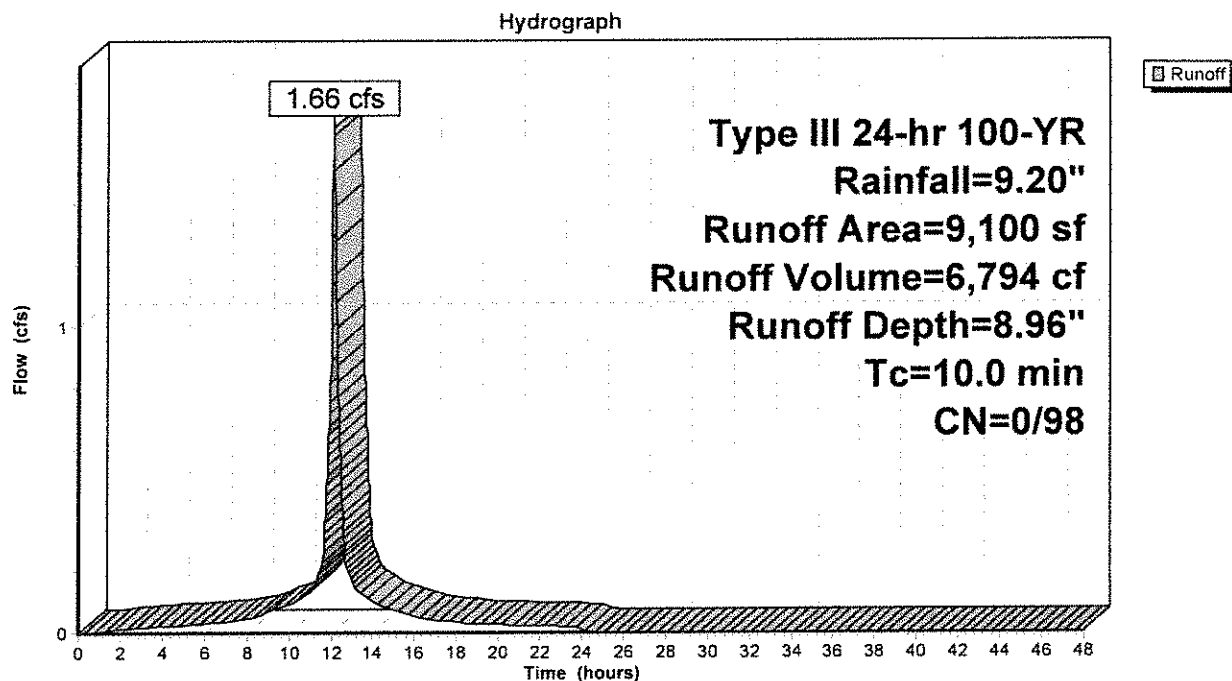
Summary for Subcatchment P-5: Proposed Roof Runoff to Detention Basin

Runoff = 1.66 cfs @ 12.13 hrs, Volume= 6,794 cf, Depth= 8.96"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

	Area (sf)	CN	Description
*	9,100	98	Roof
	9,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Direct Entry

Subcatchment P-5: Proposed Roof Runoff to Detention Basin

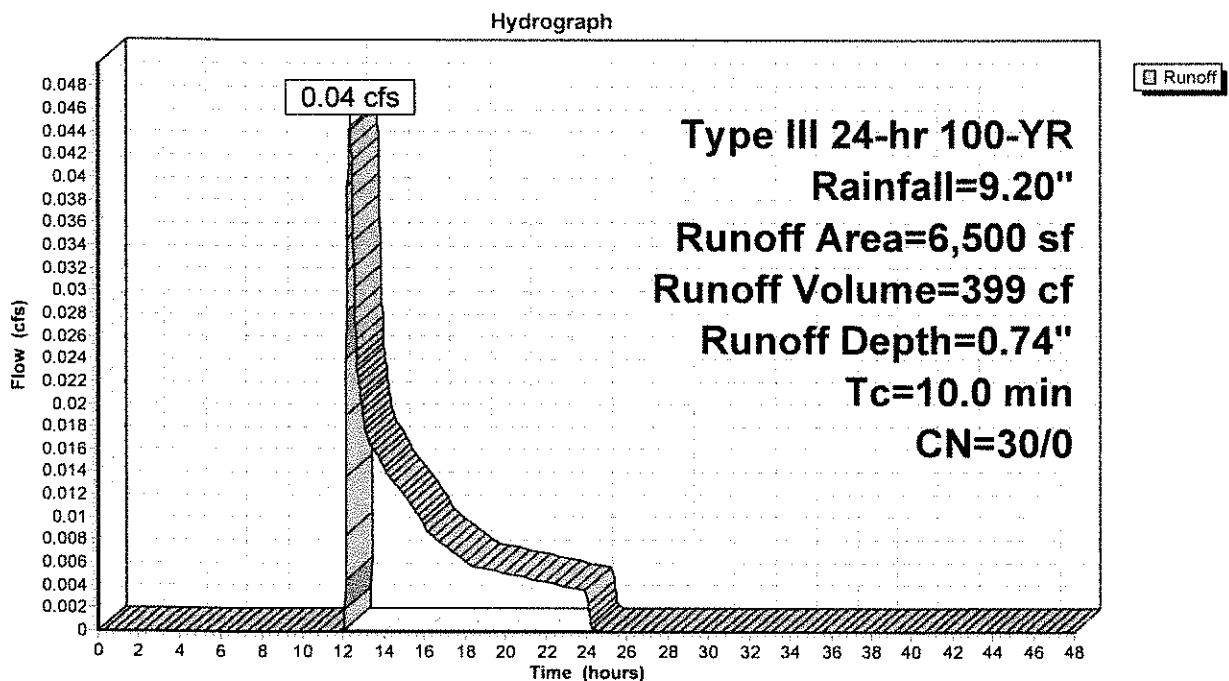
Summary for Subcatchment P-6: Proposed Undertained Drainahe to Richmond Ave

Runoff = 0.04 cfs @ 12.39 hrs, Volume= 399 cf, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

Area (sf)	CN	Description
6,500	30	Woods, Good, HSG A
6,500	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-6: Proposed Undertained Drainahe to Richmond Ave

Summary for Subcatchment P-7: Proposed Undetained Drainage to Ridgeway Rd

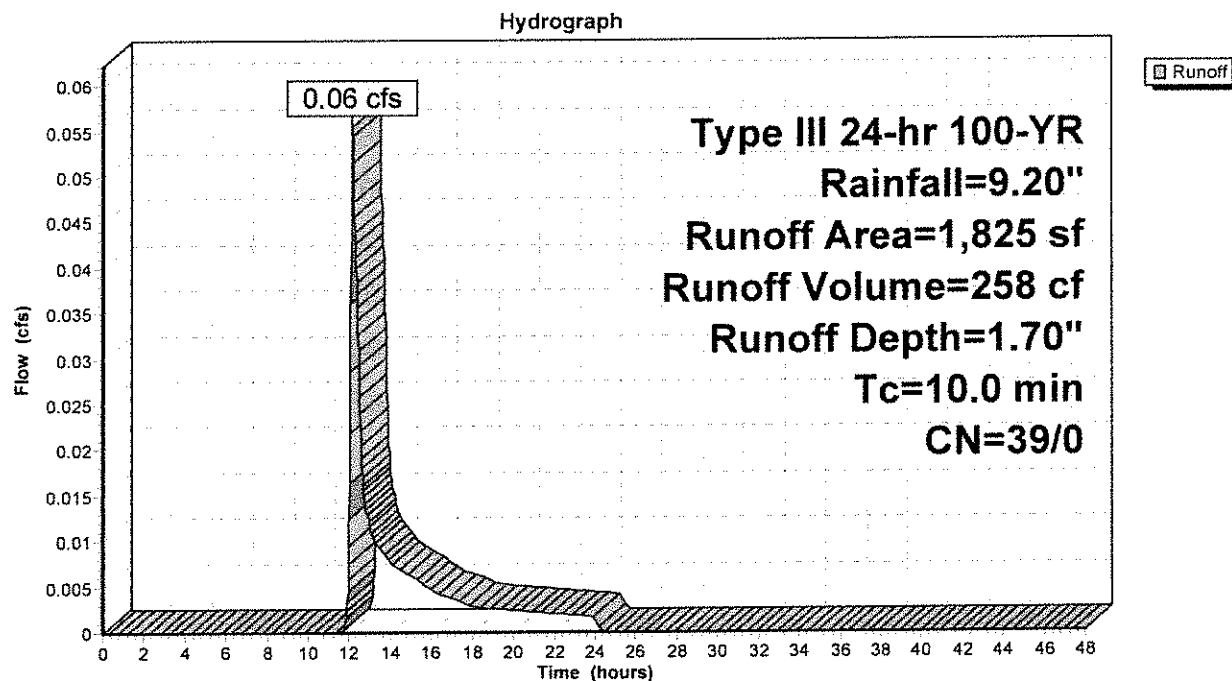
Runoff = 0.06 cfs @ 12.17 hrs, Volume= 258 cf, Depth= 1.70"

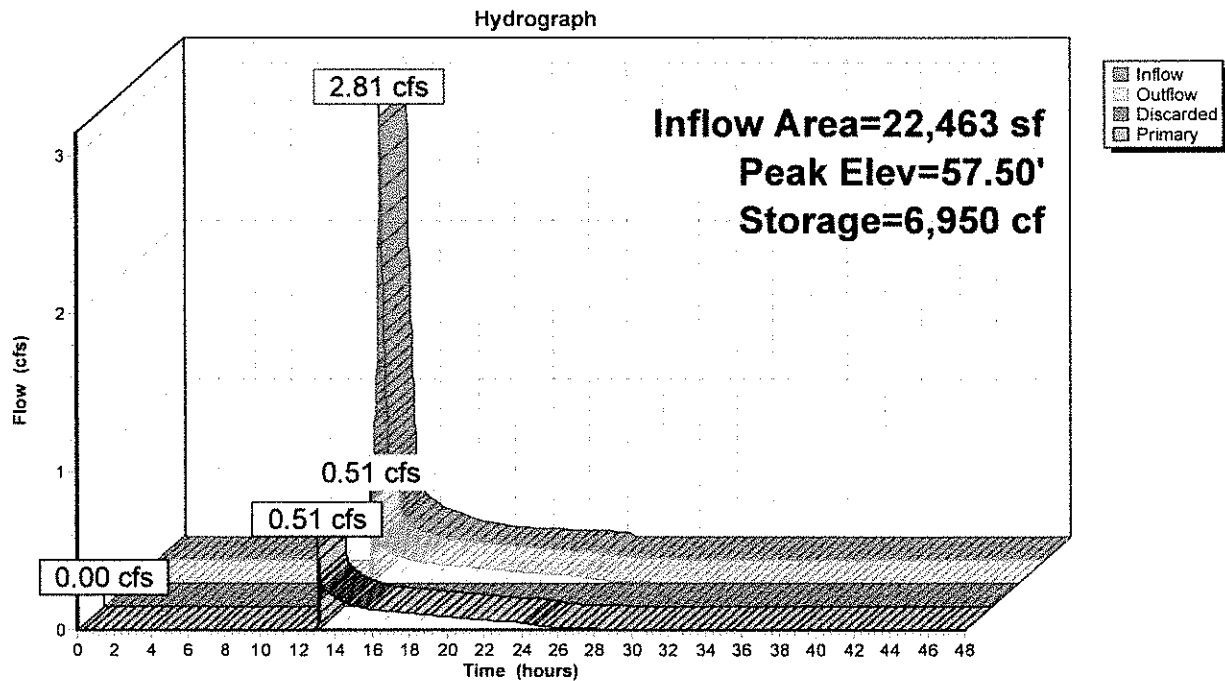
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-YR Rainfall=9.20"

Area (sf)	CN	Description
*	0	98 Imp
1,825	39	>75% Grass cover, Good, HSG A
1,825	39	Weighted Average
1,825	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P-7: Proposed Undetained Drainage to Ridgeway Rd



Pond B2: Underground Basin (Richmond)

Summary for Pond B3: Aboveground Basin

Inflow Area = 5,133 sf, 49.80% Impervious, Inflow Depth = 5.31" for 100-YR event
 Inflow = 0.54 cfs @ 12.14 hrs, Volume= 2,273 cf
 Outflow = 0.29 cfs @ 12.34 hrs, Volume= 1,109 cf, Atten= 45%, Lag= 12.1 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.29 cfs @ 12.34 hrs, Volume= 1,109 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Peak Elev= 56.53' @ 12.34 hrs Surf.Area= 804 sf Storage= 1,189 cf

Plug-Flow detention time= 290.7 min calculated for 1,109 cf (49% of inflow)

Center-of-Mass det. time= 147.8 min (916.2 - 768.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	54.00'	1,601 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
54.00	197	56.0	0	0	197
55.00	393	75.0	289	289	406
56.00	647	93.0	515	804	660
57.00	956	112.0	796	1,601	987

Device	Routing	Invert	Outlet Devices
#1	Primary	54.00'	15.0" Round Culvert L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 54.00' / 52.83' S= 0.0585 ' / Cc= 0.900 n= 0.011
#2	Device 1	56.50'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	54.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.00' (Free Discharge)

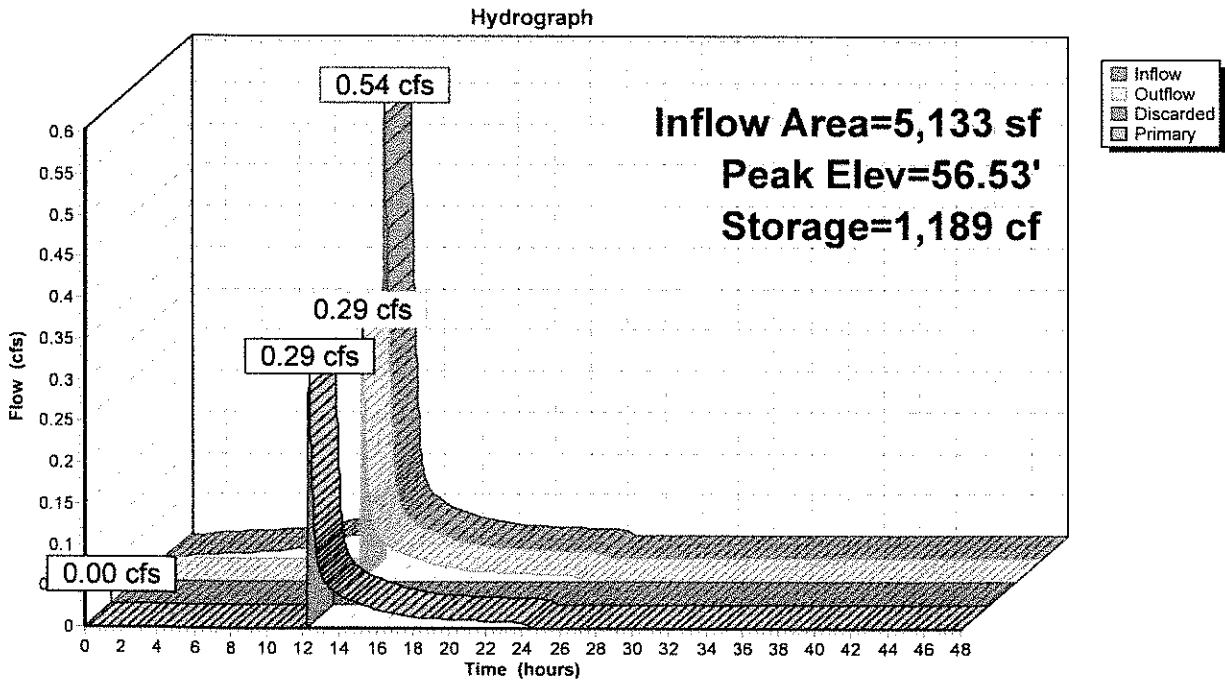
↑**3=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.29 cfs @ 12.34 hrs HW=56.53' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Passes 0.29 cfs of 8.16 cfs potential flow)

↑**2=Grate** (Weir Controls 0.29 cfs @ 0.58 fps)

Pond B3: Aboveground Basin



Summary for Pond BIO1: Bio-Retention Basin 1

Inflow Area = 8,620 sf, 71.40% Impervious, Inflow Depth = 6.88" for 100-YR event
 Inflow = 1.19 cfs @ 12.14 hrs, Volume= 4,944 cf
 Outflow = 1.19 cfs @ 12.14 hrs, Volume= 4,346 cf, Atten= 0%, Lag= 0.5 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 1.19 cfs @ 12.14 hrs, Volume= 4,346 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Peak Elev= 57.83' @ 12.14 hrs Surf.Area= 671 sf Storage= 650 cf

Plug-Flow detention time= 110.9 min calculated for 4,345 cf (88% of inflow)

Center-of-Mass det. time= 52.6 min (806.9 - 754.3)

Volume	Invert	Avail.Storage	Storage Description		
#1	56.00'	770 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
56.00	86	89.0	0	0	86
57.00	385	108.0	218	218	400
58.00	739	127.0	552	770	774

Device	Routing	Invert	Outlet Devices
#1	Primary	55.00'	15.0" Round Culvert L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 55.00' / 54.90' S= 0.0050 ' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections
#2	Device 1	57.75'	48.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	56.00'	1.000 in/hr Exfiltration X 0.00 over Surface area Conductivity to Groundwater Elevation = 40.00'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=56.00' (Free Discharge)

↑ **3=Exfiltration** (Controls 0.00 cfs)

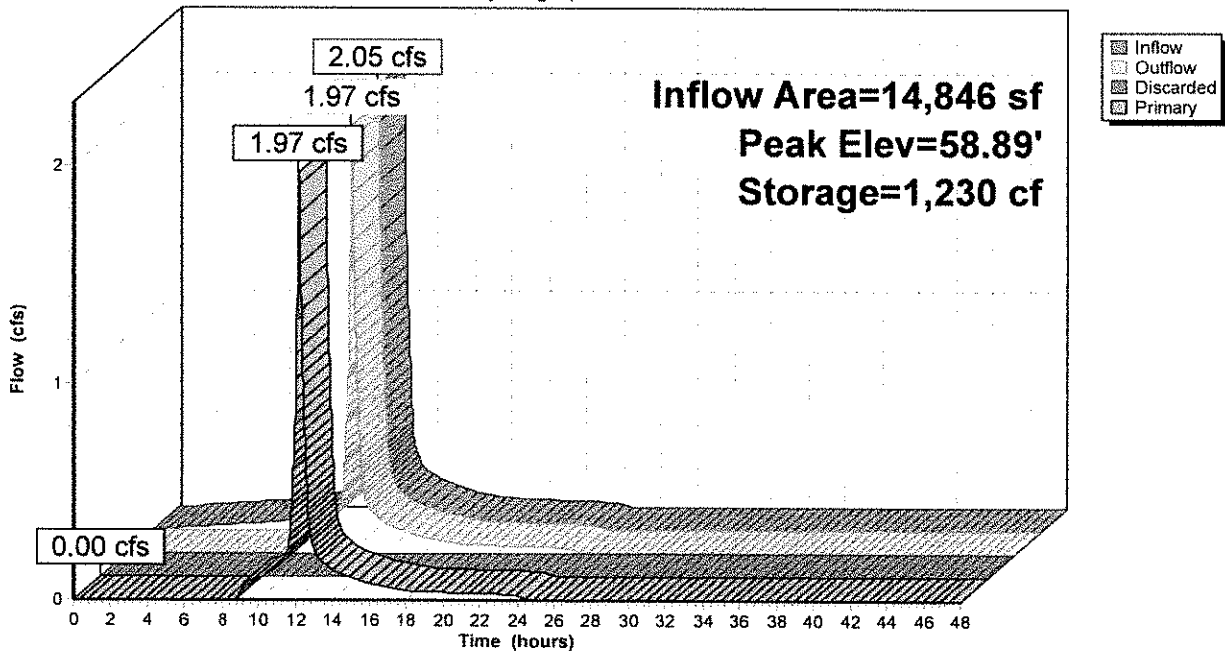
Primary OutFlow Max=1.18 cfs @ 12.14 hrs HW=57.83' TW=55.44' (Dynamic Tailwater)

↑ **1=Culvert** (Passes 1.18 cfs of 8.77 cfs potential flow)

↑ **2=Grate** (Weir Controls 1.18 cfs @ 0.92 fps)

Pond BIO3: Bio-Retention Basin 3

Hydrograph

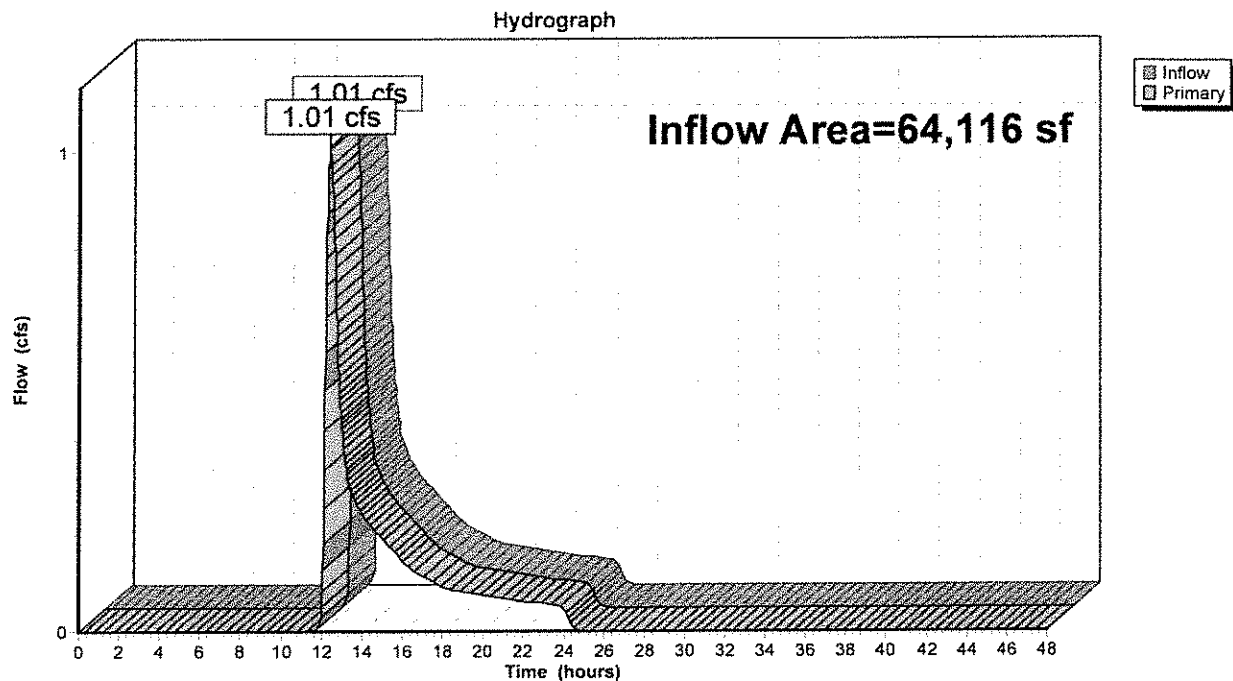


Summary for Link E-POI: Existing Point of Interest #1

Inflow Area = 64,116 sf, 0.04% Impervious, Inflow Depth = 1.36" for 100-YR event
 Inflow = 1.01 cfs @ 12.42 hrs, Volume= 7,284 cf
 Primary = 1.01 cfs @ 12.42 hrs, Volume= 7,284 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link E-POI: Existing Point of Interest #1

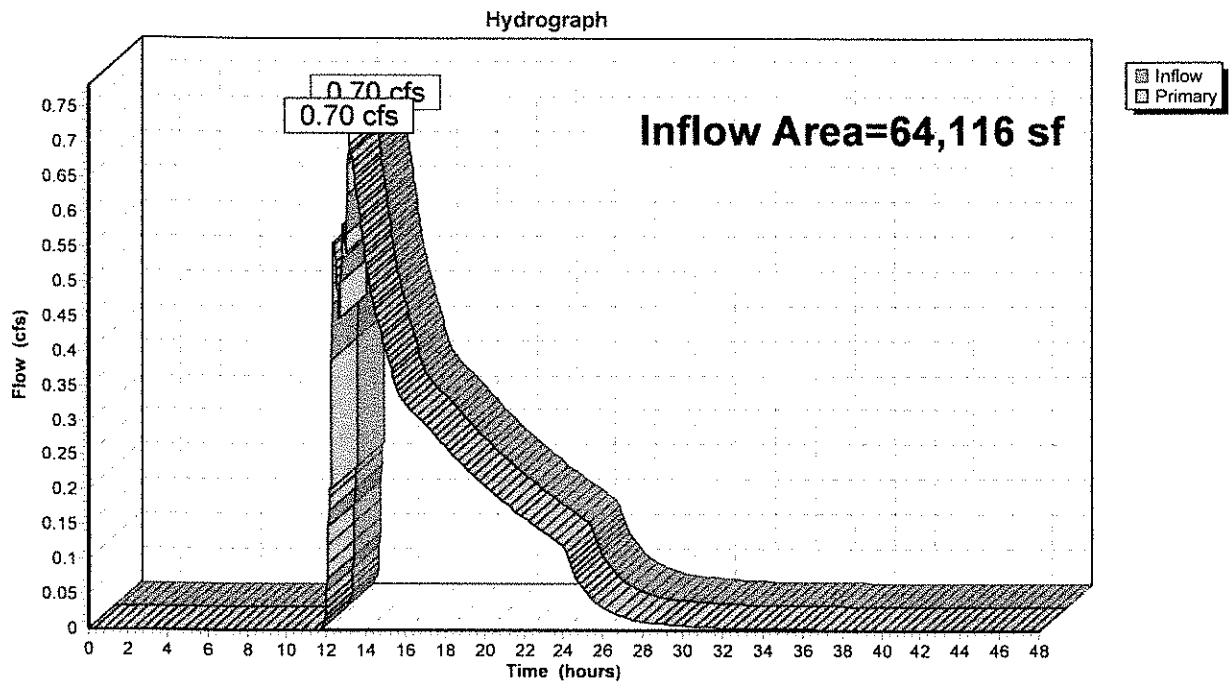


Summary for Link POI: POINT OF INTEREST

Inflow Area = 64,116 sf, 56.90% Impervious, Inflow Depth > 2.55" for 100-YR event
 Inflow = 0.70 cfs @ 13.22 hrs, Volume= 13,637 cf
 Primary = 0.70 cfs @ 13.22 hrs, Volume= 13,637 cf, Atten= 0%, Lag= 0.0 min

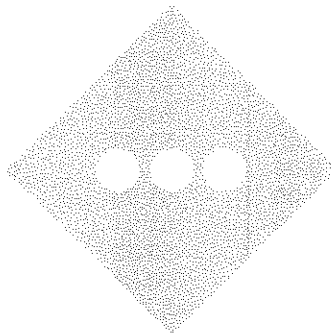
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Link POI: POINT OF INTEREST



APPENDIX C-5

BMP DISCHARGE & STORAGE TABLES



Stage-Discharge for Pond B1: Underground Basin (Ridgeway)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
52.91	0.00	0.00	0.00	53.44	0.08	0.08	0.00
52.92	0.08	0.08	0.00	53.45	0.08	0.08	0.00
52.93	0.08	0.08	0.00	53.46	0.08	0.08	0.00
52.94	0.08	0.08	0.00	53.47	0.08	0.08	0.00
52.95	0.08	0.08	0.00	53.48	0.08	0.08	0.00
52.96	0.08	0.08	0.00	53.49	0.08	0.08	0.00
52.97	0.08	0.08	0.00	53.50	0.08	0.08	0.00
52.98	0.08	0.08	0.00	53.51	0.08	0.08	0.00
52.99	0.08	0.08	0.00	53.52	0.08	0.08	0.00
53.00	0.08	0.08	0.00	53.53	0.08	0.08	0.00
53.01	0.08	0.08	0.00	53.54	0.08	0.08	0.00
53.02	0.08	0.08	0.00	53.55	0.08	0.08	0.00
53.03	0.08	0.08	0.00	53.56	0.08	0.08	0.00
53.04	0.08	0.08	0.00	53.57	0.08	0.08	0.00
53.05	0.08	0.08	0.00	53.58	0.08	0.08	0.00
53.06	0.08	0.08	0.00	53.59	0.08	0.08	0.00
53.07	0.08	0.08	0.00	53.60	0.08	0.08	0.00
53.08	0.08	0.08	0.00	53.61	0.08	0.08	0.00
53.09	0.08	0.08	0.00	53.62	0.08	0.08	0.00
53.10	0.08	0.08	0.00	53.63	0.08	0.08	0.00
53.11	0.08	0.08	0.00	53.64	0.08	0.08	0.00
53.12	0.08	0.08	0.00	53.65	0.08	0.08	0.00
53.13	0.08	0.08	0.00	53.66	0.08	0.08	0.00
53.14	0.08	0.08	0.00	53.67	0.08	0.08	0.00
53.15	0.08	0.08	0.00	53.68	0.08	0.08	0.00
53.16	0.08	0.08	0.00	53.69	0.08	0.08	0.00
53.17	0.08	0.08	0.00	53.70	0.08	0.08	0.00
53.18	0.08	0.08	0.00	53.71	0.08	0.08	0.00
53.19	0.08	0.08	0.00	53.72	0.08	0.08	0.00
53.20	0.08	0.08	0.00	53.73	0.08	0.08	0.00
53.21	0.08	0.08	0.00	53.74	0.08	0.08	0.00
53.22	0.08	0.08	0.00	53.75	0.08	0.08	0.00
53.23	0.08	0.08	0.00	53.76	0.08	0.08	0.00
53.24	0.08	0.08	0.00	53.77	0.08	0.08	0.00
53.25	0.08	0.08	0.00	53.78	0.08	0.08	0.00
53.26	0.08	0.08	0.00	53.79	0.08	0.08	0.00
53.27	0.08	0.08	0.00	53.80	0.08	0.08	0.00
53.28	0.08	0.08	0.00	53.81	0.08	0.08	0.00
53.29	0.08	0.08	0.00	53.82	0.08	0.08	0.00
53.30	0.08	0.08	0.00	53.83	0.08	0.08	0.00
53.31	0.08	0.08	0.00	53.84	0.08	0.08	0.00
53.32	0.08	0.08	0.00	53.85	0.08	0.08	0.00
53.33	0.08	0.08	0.00	53.86	0.08	0.08	0.00
53.34	0.08	0.08	0.00	53.87	0.08	0.08	0.00
53.35	0.08	0.08	0.00	53.88	0.08	0.08	0.00
53.36	0.08	0.08	0.00	53.89	0.08	0.08	0.00
53.37	0.08	0.08	0.00	53.90	0.08	0.08	0.00
53.38	0.08	0.08	0.00	53.91	0.08	0.08	0.00
53.39	0.08	0.08	0.00	53.92	0.08	0.08	0.00
53.40	0.08	0.08	0.00	53.93	0.08	0.08	0.00
53.41	0.08	0.08	0.00	53.94	0.08	0.08	0.00
53.42	0.08	0.08	0.00	53.95	0.08	0.08	0.00
53.43	0.08	0.08	0.00	53.96	0.08	0.08	0.00

Stage-Discharge for Pond B1: Underground Basin (Ridgeway) (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
53.97	0.08	0.08	0.00	54.50	0.09	0.09	0.00
53.98	0.08	0.08	0.00	54.51	0.09	0.09	0.00
53.99	0.08	0.08	0.00	54.52	0.09	0.09	0.00
54.00	0.08	0.08	0.00	54.53	0.09	0.09	0.00
54.01	0.08	0.08	0.00	54.54	0.09	0.09	0.00
54.02	0.08	0.08	0.00	54.55	0.09	0.09	0.00
54.03	0.08	0.08	0.00	54.56	0.09	0.09	0.00
54.04	0.08	0.08	0.00	54.57	0.09	0.09	0.00
54.05	0.08	0.08	0.00	54.58	0.09	0.09	0.00
54.06	0.08	0.08	0.00	54.59	0.09	0.09	0.00
54.07	0.08	0.08	0.00	54.60	0.09	0.09	0.00
54.08	0.08	0.08	0.00	54.61	0.09	0.09	0.00
54.09	0.08	0.08	0.00	54.62	0.09	0.09	0.00
54.10	0.08	0.08	0.00	54.63	0.09	0.09	0.00
54.11	0.08	0.08	0.00	54.64	0.09	0.09	0.00
54.12	0.08	0.08	0.00	54.65	0.09	0.09	0.00
54.13	0.08	0.08	0.00	54.66	0.09	0.09	0.00
54.14	0.08	0.08	0.00	54.67	0.09	0.09	0.00
54.15	0.08	0.08	0.00	54.68	0.09	0.09	0.00
54.16	0.08	0.08	0.00	54.69	0.09	0.09	0.00
54.17	0.08	0.08	0.00	54.70	0.09	0.09	0.00
54.18	0.08	0.08	0.00	54.71	0.09	0.09	0.00
54.19	0.08	0.08	0.00	54.72	0.09	0.09	0.00
54.20	0.08	0.08	0.00	54.73	0.09	0.09	0.00
54.21	0.08	0.08	0.00	54.74	0.09	0.09	0.00
54.22	0.08	0.08	0.00	54.75	0.09	0.09	0.00
54.23	0.08	0.08	0.00	54.76	0.09	0.09	0.00
54.24	0.08	0.08	0.00	54.77	0.09	0.09	0.00
54.25	0.08	0.08	0.00	54.78	0.09	0.09	0.00
54.26	0.08	0.08	0.00	54.79	0.09	0.09	0.00
54.27	0.09	0.09	0.00	54.80	0.09	0.09	0.00
54.28	0.09	0.09	0.00	54.81	0.09	0.09	0.00
54.29	0.09	0.09	0.00	54.82	0.09	0.09	0.00
54.30	0.09	0.09	0.00	54.83	0.09	0.09	0.00
54.31	0.09	0.09	0.00	54.84	0.09	0.09	0.00
54.32	0.09	0.09	0.00	54.85	0.09	0.09	0.00
54.33	0.09	0.09	0.00	54.86	0.09	0.09	0.00
54.34	0.09	0.09	0.00	54.87	0.09	0.09	0.00
54.35	0.09	0.09	0.00	54.88	0.09	0.09	0.00
54.36	0.09	0.09	0.00	54.89	0.09	0.09	0.00
54.37	0.09	0.09	0.00	54.90	0.09	0.09	0.00
54.38	0.09	0.09	0.00	54.91	0.09	0.09	0.00
54.39	0.09	0.09	0.00	54.92	0.09	0.09	0.00
54.40	0.09	0.09	0.00	54.93	0.09	0.09	0.00
54.41	0.09	0.09	0.00	54.94	0.09	0.09	0.00
54.42	0.09	0.09	0.00	54.95	0.09	0.09	0.00
54.43	0.09	0.09	0.00	54.96	0.09	0.09	0.00
54.44	0.09	0.09	0.00	54.97	0.09	0.09	0.00
54.45	0.09	0.09	0.00	54.98	0.09	0.09	0.00
54.46	0.09	0.09	0.00	54.99	0.09	0.09	0.00
54.47	0.09	0.09	0.00	55.00	0.09	0.09	0.00
54.48	0.09	0.09	0.00	55.01	0.09	0.09	0.00
54.49	0.09	0.09	0.00	55.02	0.09	0.09	0.00

Stage-Discharge for Pond B1: Underground Basin (Ridgeway) (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
55.03	0.09	0.09	0.00	55.56	0.09	0.09	0.00
55.04	0.09	0.09	0.00	55.57	0.09	0.09	0.00
55.05	0.09	0.09	0.00	55.58	0.09	0.09	0.00
55.06	0.09	0.09	0.00	55.59	0.09	0.09	0.00
55.07	0.09	0.09	0.00	55.60	0.09	0.09	0.00
55.08	0.09	0.09	0.00	55.61	0.09	0.09	0.00
55.09	0.09	0.09	0.00	55.62	0.09	0.09	0.00
55.10	0.09	0.09	0.00	55.63	0.09	0.09	0.00
55.11	0.09	0.09	0.00	55.64	0.09	0.09	0.00
55.12	0.09	0.09	0.00	55.65	0.09	0.09	0.00
55.13	0.09	0.09	0.00	55.66	0.09	0.09	0.00
55.14	0.09	0.09	0.00	55.67	0.09	0.09	0.00
55.15	0.09	0.09	0.00	55.68	0.09	0.09	0.00
55.16	0.09	0.09	0.00	55.69	0.09	0.09	0.00
55.17	0.09	0.09	0.00	55.70	0.09	0.09	0.00
55.18	0.09	0.09	0.00	55.71	0.09	0.09	0.00
55.19	0.09	0.09	0.00	55.72	0.09	0.09	0.00
55.20	0.09	0.09	0.00	55.73	0.09	0.09	0.00
55.21	0.09	0.09	0.00	55.74	0.09	0.09	0.00
55.22	0.09	0.09	0.00	55.75	0.09	0.09	0.00
55.23	0.09	0.09	0.00	55.76	0.09	0.09	0.00
55.24	0.09	0.09	0.00	55.77	0.09	0.09	0.00
55.25	0.09	0.09	0.00	55.78	0.09	0.09	0.00
55.26	0.09	0.09	0.00	55.79	0.09	0.09	0.00
55.27	0.09	0.09	0.00	55.80	0.09	0.09	0.00
55.28	0.09	0.09	0.00	55.81	0.09	0.09	0.00
55.29	0.09	0.09	0.00	55.82	0.09	0.09	0.00
55.30	0.09	0.09	0.00	55.83	0.09	0.09	0.00
55.31	0.09	0.09	0.00	55.84	0.09	0.09	0.00
55.32	0.09	0.09	0.00	55.85	0.09	0.09	0.00
55.33	0.09	0.09	0.00	55.86	0.09	0.09	0.00
55.34	0.09	0.09	0.00	55.87	0.09	0.09	0.00
55.35	0.09	0.09	0.00	55.88	0.09	0.09	0.00
55.36	0.09	0.09	0.00	55.89	0.09	0.09	0.00
55.37	0.09	0.09	0.00	55.90	0.09	0.09	0.00
55.38	0.09	0.09	0.00	55.91	0.09	0.09	0.00
55.39	0.09	0.09	0.00	55.92	0.09	0.09	0.00
55.40	0.09	0.09	0.00	55.93	0.09	0.09	0.00
55.41	0.09	0.09	0.00	55.94	0.09	0.09	0.00
55.42	0.09	0.09	0.00	55.95	0.10	0.10	0.00
55.43	0.09	0.09	0.00	55.96	0.10	0.10	0.00
55.44	0.09	0.09	0.00	55.97	0.10	0.10	0.00
55.45	0.09	0.09	0.00	55.98	0.10	0.10	0.00
55.46	0.09	0.09	0.00	55.99	0.10	0.10	0.00
55.47	0.09	0.09	0.00	56.00	0.10	0.10	0.00
55.48	0.09	0.09	0.00	56.01	0.10	0.10	0.00
55.49	0.09	0.09	0.00	56.02	0.10	0.10	0.00
55.50	0.09	0.09	0.00	56.03	0.10	0.10	0.00
55.51	0.09	0.09	0.00	56.04	0.10	0.10	0.00
55.52	0.09	0.09	0.00	56.05	0.10	0.10	0.00
55.53	0.09	0.09	0.00	56.06	0.10	0.10	0.00
55.54	0.09	0.09	0.00	56.07	0.10	0.10	0.00
55.55	0.09	0.09	0.00	56.08	0.10	0.10	0.00

Stage-Discharge for Pond B1: Underground Basin (Ridgeway) (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
56.09	0.10	0.10	0.00	56.62	0.10	0.10	0.00
56.10	0.10	0.10	0.00	56.63	0.10	0.10	0.00
56.11	0.10	0.10	0.00	56.64	0.11	0.10	0.01
56.12	0.10	0.10	0.00	56.65	0.11	0.10	0.01
56.13	0.10	0.10	0.00	56.66	0.11	0.10	0.01
56.14	0.10	0.10	0.00	56.67	0.12	0.10	0.02
56.15	0.10	0.10	0.00	56.68	0.12	0.10	0.02
56.16	0.10	0.10	0.00	56.69	0.13	0.10	0.03
56.17	0.10	0.10	0.00	56.70	0.14	0.10	0.04
56.18	0.10	0.10	0.00	56.71	0.14	0.10	0.04
56.19	0.10	0.10	0.00	56.72	0.15	0.10	0.05
56.20	0.10	0.10	0.00	56.73	0.16	0.10	0.06
56.21	0.10	0.10	0.00	56.74	0.16	0.10	0.06
56.22	0.10	0.10	0.00	56.75	0.17	0.10	0.07
56.23	0.10	0.10	0.00	56.76	0.18	0.10	0.08
56.24	0.10	0.10	0.00	56.77	0.19	0.10	0.09
56.25	0.10	0.10	0.00	56.78	0.19	0.10	0.09
56.26	0.10	0.10	0.00	56.79	0.20	0.10	0.10
56.27	0.10	0.10	0.00	56.80	0.21	0.10	0.11
56.28	0.10	0.10	0.00	56.81	0.21	0.10	0.11
56.29	0.10	0.10	0.00	56.82	0.22	0.10	0.12
56.30	0.10	0.10	0.00	56.83	0.22	0.10	0.12
56.31	0.10	0.10	0.00	56.84	0.23	0.10	0.13
56.32	0.10	0.10	0.00	56.85	0.23	0.10	0.13
56.33	0.10	0.10	0.00	56.86	0.24	0.10	0.14
56.34	0.10	0.10	0.00	56.87	0.24	0.10	0.14
56.35	0.10	0.10	0.00	56.88	0.24	0.10	0.14
56.36	0.10	0.10	0.00	56.89	0.25	0.10	0.15
56.37	0.10	0.10	0.00	56.90	0.25	0.10	0.15
56.38	0.10	0.10	0.00	56.91	0.26	0.10	0.15
56.39	0.10	0.10	0.00	56.92	0.26	0.10	0.16
56.40	0.10	0.10	0.00	56.93	0.26	0.10	0.16
56.41	0.10	0.10	0.00	56.94	0.27	0.10	0.17
56.42	0.10	0.10	0.00	56.95	0.27	0.10	0.17
56.43	0.10	0.10	0.00	56.96	0.27	0.10	0.17
56.44	0.10	0.10	0.00	56.97	0.28	0.10	0.18
56.45	0.10	0.10	0.00	56.98	0.28	0.10	0.18
56.46	0.10	0.10	0.00	56.99	0.28	0.10	0.18
56.47	0.10	0.10	0.00	57.00	0.29	0.10	0.18
56.48	0.10	0.10	0.00	57.01	0.29	0.10	0.19
56.49	0.10	0.10	0.00	57.02	0.29	0.10	0.19
56.50	0.10	0.10	0.00	57.03	0.29	0.10	0.19
56.51	0.10	0.10	0.00	57.04	0.30	0.10	0.20
56.52	0.10	0.10	0.00	57.05	0.30	0.10	0.20
56.53	0.10	0.10	0.00	57.06	0.30	0.10	0.20
56.54	0.10	0.10	0.00	57.07	0.31	0.10	0.20
56.55	0.10	0.10	0.00	57.08	0.31	0.10	0.21
56.56	0.10	0.10	0.00	57.09	0.31	0.10	0.21
56.57	0.10	0.10	0.00	57.10	0.31	0.10	0.21
56.58	0.10	0.10	0.00	57.11	0.32	0.10	0.22
56.59	0.10	0.10	0.00	57.12	0.32	0.10	0.22
56.60	0.10	0.10	0.00	57.13	0.32	0.10	0.22
56.61	0.10	0.10	0.00	57.14	0.33	0.10	0.22

Stage-Discharge for Pond B1: Underground Basin (Ridgeway) (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
57.15	0.33	0.10	0.23	57.68	1.95	0.11	1.85
57.16	0.33	0.10	0.23	57.69	2.04	0.11	1.94
57.17	0.33	0.10	0.23	57.70	2.13	0.11	2.02
57.18	0.34	0.10	0.23	57.71	2.22	0.11	2.11
57.19	0.34	0.10	0.24	57.72	2.31	0.11	2.21
57.20	0.34	0.10	0.24	57.73	2.41	0.11	2.30
57.21	0.34	0.10	0.24	57.74	2.50	0.11	2.40
57.22	0.35	0.10	0.24	57.75	2.60	0.11	2.49
57.23	0.35	0.10	0.24	57.76	2.70	0.11	2.59
57.24	0.35	0.10	0.25	57.77	2.80	0.11	2.69
57.25	0.35	0.10	0.25	57.78	2.90	0.11	2.79
57.26	0.35	0.10	0.25	57.79	3.00	0.11	2.90
57.27	0.36	0.10	0.25	57.80	3.11	0.11	3.00
57.28	0.36	0.10	0.26	57.81	3.21	0.11	3.11
57.29	0.36	0.10	0.26	57.82	3.32	0.11	3.21
57.30	0.36	0.10	0.26	57.83	3.43	0.11	3.32
57.31	0.37	0.10	0.26	57.84	3.54	0.11	3.43
57.32	0.37	0.10	0.26	57.85	3.65	0.11	3.54
57.33	0.37	0.10	0.27	57.86	3.76	0.11	3.65
57.34	0.37	0.10	0.27	57.87	3.87	0.11	3.77
57.35	0.37	0.10	0.27	57.88	3.99	0.11	3.88
57.36	0.38	0.10	0.27	57.89	4.11	0.11	4.00
57.37	0.38	0.10	0.27	57.90	4.22	0.11	4.12
57.38	0.38	0.10	0.28	57.91	4.34	0.11	4.24
57.39	0.38	0.10	0.28				
57.40	0.38	0.10	0.28				
57.41	0.39	0.10	0.28				
57.42	0.40	0.10	0.30				
57.43	0.42	0.10	0.32				
57.44	0.45	0.10	0.34				
57.45	0.48	0.10	0.38				
57.46	0.52	0.10	0.41				
57.47	0.56	0.10	0.45				
57.48	0.60	0.10	0.50				
57.49	0.65	0.10	0.54				
57.50	0.69	0.10	0.59				
57.51	0.75	0.10	0.64				
57.52	0.80	0.10	0.70				
57.53	0.86	0.10	0.75				
57.54	0.92	0.10	0.81				
57.55	0.98	0.10	0.87				
57.56	1.04	0.10	0.94				
57.57	1.11	0.10	1.00				
57.58	1.17	0.10	1.07				
57.59	1.24	0.10	1.14				
57.60	1.31	0.10	1.21				
57.61	1.39	0.10	1.28				
57.62	1.46	0.10	1.36				
57.63	1.54	0.11	1.44				
57.64	1.62	0.11	1.51				
57.65	1.70	0.11	1.59				
57.66	1.78	0.11	1.68				
57.67	1.87	0.11	1.76				

Stage-Area-Storage for Pond B1: Underground Basin (Ridgeway)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
52.91	0	0	53.44	3,336	630
52.92	3,336	13	53.45	3,336	643
52.93	3,336	27	53.46	3,336	656
52.94	3,336	40	53.47	3,336	670
52.95	3,336	53	53.48	3,336	684
52.96	3,336	67	53.49	3,336	698
52.97	3,336	80	53.50	3,336	712
52.98	3,336	93	53.51	3,336	727
52.99	3,336	107	53.52	3,336	742
53.00	3,336	120	53.53	3,336	757
53.01	3,336	133	53.54	3,336	772
53.02	3,336	147	53.55	3,336	788
53.03	3,336	160	53.56	3,336	804
53.04	3,336	173	53.57	3,336	819
53.05	3,336	187	53.58	3,336	836
53.06	3,336	200	53.59	3,336	852
53.07	3,336	214	53.60	3,336	868
53.08	3,336	227	53.61	3,336	885
53.09	3,336	240	53.62	3,336	902
53.10	3,336	254	53.63	3,336	919
53.11	3,336	267	53.64	3,336	936
53.12	3,336	280	53.65	3,336	953
53.13	3,336	294	53.66	3,336	971
53.14	3,336	307	53.67	3,336	988
53.15	3,336	320	53.68	3,336	1,006
53.16	3,336	334	53.69	3,336	1,024
53.17	3,336	346	53.70	3,336	1,041
53.18	3,336	359	53.71	3,336	1,059
53.19	3,336	371	53.72	3,336	1,078
53.20	3,336	382	53.73	3,336	1,096
53.21	3,336	394	53.74	3,336	1,114
53.22	3,336	405	53.75	3,336	1,133
53.23	3,336	416	53.76	3,336	1,151
53.24	3,336	427	53.77	3,336	1,170
53.25	3,336	438	53.78	3,336	1,189
53.26	3,336	449	53.79	3,336	1,208
53.27	3,336	460	53.80	3,336	1,227
53.28	3,336	470	53.81	3,336	1,246
53.29	3,336	480	53.82	3,336	1,265
53.30	3,336	491	53.83	3,336	1,284
53.31	3,336	501	53.84	3,336	1,303
53.32	3,336	511	53.85	3,336	1,323
53.33	3,336	521	53.86	3,336	1,342
53.34	3,336	530	53.87	3,336	1,362
53.35	3,336	540	53.88	3,336	1,382
53.36	3,336	550	53.89	3,336	1,402
53.37	3,336	559	53.90	3,336	1,421
53.38	3,336	569	53.91	3,336	1,441
53.39	3,336	578	53.92	3,336	1,461
53.40	3,336	587	53.93	3,336	1,482
53.41	3,336	596	53.94	3,336	1,502
53.42	3,336	607	53.95	3,336	1,522
53.43	3,336	618	53.96	3,336	1,542

Stage-Area-Storage for Pond B1: Underground Basin (Ridgeway) (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
53.97	3,336	1,563	54.50	3,336	2,726
53.98	3,336	1,583	54.51	3,336	2,749
53.99	3,336	1,604	54.52	3,336	2,772
54.00	3,336	1,624	54.53	3,336	2,795
54.01	3,336	1,645	54.54	3,336	2,819
54.02	3,336	1,666	54.55	3,336	2,842
54.03	3,336	1,687	54.56	3,336	2,865
54.04	3,336	1,708	54.57	3,336	2,888
54.05	3,336	1,729	54.58	3,336	2,912
54.06	3,336	1,750	54.59	3,336	2,935
54.07	3,336	1,771	54.60	3,336	2,959
54.08	3,336	1,792	54.61	3,336	2,982
54.09	3,336	1,813	54.62	3,336	3,006
54.10	3,336	1,834	54.63	3,336	3,029
54.11	3,336	1,856	54.64	3,336	3,053
54.12	3,336	1,877	54.65	3,336	3,076
54.13	3,336	1,898	54.66	3,336	3,100
54.14	3,336	1,920	54.67	3,336	3,123
54.15	3,336	1,942	54.68	3,336	3,147
54.16	3,336	1,963	54.69	3,336	3,171
54.17	3,336	1,985	54.70	3,336	3,194
54.18	3,336	2,007	54.71	3,336	3,218
54.19	3,336	2,028	54.72	3,336	3,242
54.20	3,336	2,050	54.73	3,336	3,266
54.21	3,336	2,072	54.74	3,336	3,289
54.22	3,336	2,094	54.75	3,336	3,313
54.23	3,336	2,116	54.76	3,336	3,337
54.24	3,336	2,138	54.77	3,336	3,361
54.25	3,336	2,160	54.78	3,336	3,385
54.26	3,336	2,182	54.79	3,336	3,409
54.27	3,336	2,204	54.80	3,336	3,433
54.28	3,336	2,226	54.81	3,336	3,457
54.29	3,336	2,249	54.82	3,336	3,481
54.30	3,336	2,271	54.83	3,336	3,505
54.31	3,336	2,293	54.84	3,336	3,529
54.32	3,336	2,316	54.85	3,336	3,553
54.33	3,336	2,338	54.86	3,336	3,577
54.34	3,336	2,361	54.87	3,336	3,601
54.35	3,336	2,383	54.88	3,336	3,625
54.36	3,336	2,406	54.89	3,336	3,649
54.37	3,336	2,428	54.90	3,336	3,673
54.38	3,336	2,451	54.91	3,336	3,697
54.39	3,336	2,474	54.92	3,336	3,721
54.40	3,336	2,496	54.93	3,336	3,745
54.41	3,336	2,519	54.94	3,336	3,770
54.42	3,336	2,542	54.95	3,336	3,794
54.43	3,336	2,565	54.96	3,336	3,818
54.44	3,336	2,588	54.97	3,336	3,842
54.45	3,336	2,611	54.98	3,336	3,867
54.46	3,336	2,634	54.99	3,336	3,891
54.47	3,336	2,657	55.00	3,336	3,915
54.48	3,336	2,680	55.01	3,336	3,939
54.49	3,336	2,703	55.02	3,336	3,964

Stage-Area-Storage for Pond B1: Underground Basin (Ridgeway) (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
55.03	3,336	3,988	55.56	3,336	5,287
55.04	3,336	4,012	55.57	3,336	5,311
55.05	3,336	4,037	55.58	3,336	5,336
55.06	3,336	4,061	55.59	3,336	5,360
55.07	3,336	4,085	55.60	3,336	5,385
55.08	3,336	4,110	55.61	3,336	5,409
55.09	3,336	4,134	55.62	3,336	5,434
55.10	3,336	4,159	55.63	3,336	5,458
55.11	3,336	4,183	55.64	3,336	5,483
55.12	3,336	4,207	55.65	3,336	5,507
55.13	3,336	4,232	55.66	3,336	5,532
55.14	3,336	4,256	55.67	3,336	5,556
55.15	3,336	4,281	55.68	3,336	5,581
55.16	3,336	4,305	55.69	3,336	5,605
55.17	3,336	4,330	55.70	3,336	5,629
55.18	3,336	4,354	55.71	3,336	5,654
55.19	3,336	4,379	55.72	3,336	5,678
55.20	3,336	4,403	55.73	3,336	5,703
55.21	3,336	4,428	55.74	3,336	5,727
55.22	3,336	4,452	55.75	3,336	5,751
55.23	3,336	4,477	55.76	3,336	5,776
55.24	3,336	4,501	55.77	3,336	5,800
55.25	3,336	4,526	55.78	3,336	5,825
55.26	3,336	4,550	55.79	3,336	5,849
55.27	3,336	4,575	55.80	3,336	5,873
55.28	3,336	4,599	55.81	3,336	5,898
55.29	3,336	4,624	55.82	3,336	5,922
55.30	3,336	4,648	55.83	3,336	5,946
55.31	3,336	4,673	55.84	3,336	5,970
55.32	3,336	4,697	55.85	3,336	5,995
55.33	3,336	4,722	55.86	3,336	6,019
55.34	3,336	4,746	55.87	3,336	6,043
55.35	3,336	4,771	55.88	3,336	6,067
55.36	3,336	4,796	55.89	3,336	6,091
55.37	3,336	4,820	55.90	3,336	6,116
55.38	3,336	4,845	55.91	3,336	6,140
55.39	3,336	4,869	55.92	3,336	6,164
55.40	3,336	4,894	55.93	3,336	6,188
55.41	3,336	4,918	55.94	3,336	6,212
55.42	3,336	4,943	55.95	3,336	6,236
55.43	3,336	4,968	55.96	3,336	6,260
55.44	3,336	4,992	55.97	3,336	6,284
55.45	3,336	5,017	55.98	3,336	6,308
55.46	3,336	5,041	55.99	3,336	6,332
55.47	3,336	5,066	56.00	3,336	6,356
55.48	3,336	5,090	56.01	3,336	6,380
55.49	3,336	5,115	56.02	3,336	6,404
55.50	3,336	5,139	56.03	3,336	6,428
55.51	3,336	5,164	56.04	3,336	6,452
55.52	3,336	5,189	56.05	3,336	6,476
55.53	3,336	5,213	56.06	3,336	6,500
55.54	3,336	5,238	56.07	3,336	6,524
55.55	3,336	5,262	56.08	3,336	6,547

Stage-Area-Storage for Pond B1: Underground Basin (Ridgeway) (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
56.09	3,336	6,571	56.62	3,336	7,787
56.10	3,336	6,595	56.63	3,336	7,809
56.11	3,336	6,619	56.64	3,336	7,830
56.12	3,336	6,643	56.65	3,336	7,852
56.13	3,336	6,666	56.66	3,336	7,874
56.14	3,336	6,690	56.67	3,336	7,895
56.15	3,336	6,714	56.68	3,336	7,917
56.16	3,336	6,737	56.69	3,336	7,938
56.17	3,336	6,761	56.70	3,336	7,960
56.18	3,336	6,784	56.71	3,336	7,981
56.19	3,336	6,808	56.72	3,336	8,003
56.20	3,336	6,831	56.73	3,336	8,024
56.21	3,336	6,855	56.74	3,336	8,045
56.22	3,336	6,878	56.75	3,336	8,066
56.23	3,336	6,902	56.76	3,336	8,087
56.24	3,336	6,925	56.77	3,336	8,108
56.25	3,336	6,948	56.78	3,336	8,129
56.26	3,336	6,972	56.79	3,336	8,150
56.27	3,336	6,995	56.80	3,336	8,171
56.28	3,336	7,018	56.81	3,336	8,192
56.29	3,336	7,042	56.82	3,336	8,212
56.30	3,336	7,065	56.83	3,336	8,233
56.31	3,336	7,088	56.84	3,336	8,254
56.32	3,336	7,111	56.85	3,336	8,274
56.33	3,336	7,134	56.86	3,336	8,294
56.34	3,336	7,157	56.87	3,336	8,315
56.35	3,336	7,180	56.88	3,336	8,335
56.36	3,336	7,203	56.89	3,336	8,355
56.37	3,336	7,226	56.90	3,336	8,375
56.38	3,336	7,249	56.91	3,336	8,395
56.39	3,336	7,272	56.92	3,336	8,415
56.40	3,336	7,295	56.93	3,336	8,435
56.41	3,336	7,318	56.94	3,336	8,455
56.42	3,336	7,340	56.95	3,336	8,475
56.43	3,336	7,363	56.96	3,336	8,494
56.44	3,336	7,386	56.97	3,336	8,514
56.45	3,336	7,408	56.98	3,336	8,533
56.46	3,336	7,431	56.99	3,336	8,553
56.47	3,336	7,454	57.00	3,336	8,572
56.48	3,336	7,476	57.01	3,336	8,591
56.49	3,336	7,499	57.02	3,336	8,610
56.50	3,336	7,521	57.03	3,336	8,629
56.51	3,336	7,543	57.04	3,336	8,648
56.52	3,336	7,566	57.05	3,336	8,667
56.53	3,336	7,588	57.06	3,336	8,686
56.54	3,336	7,610	57.07	3,336	8,704
56.55	3,336	7,633	57.08	3,336	8,723
56.56	3,336	7,655	57.09	3,336	8,741
56.57	3,336	7,677	57.10	3,336	8,759
56.58	3,336	7,699	57.11	3,336	8,777
56.59	3,336	7,721	57.12	3,336	8,795
56.60	3,336	7,743	57.13	3,336	8,813
56.61	3,336	7,765	57.14	3,336	8,831

Stage-Area-Storage for Pond B1: Underground Basin (Ridgeway) (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
57.15	3,336	8,849	57.68	3,336	9,530
57.16	3,336	8,866	57.69	3,336	9,543
57.17	3,336	8,884	57.70	3,336	9,557
57.18	3,336	8,901	57.71	3,336	9,570
57.19	3,336	8,918	57.72	3,336	9,583
57.20	3,336	8,935	57.73	3,336	9,597
57.21	3,336	8,952	57.74	3,336	9,610
57.22	3,336	8,968	57.75	3,336	9,623
57.23	3,336	8,985	57.76	3,336	9,637
57.24	3,336	9,001	57.77	3,336	9,650
57.25	3,336	9,017	57.78	3,336	9,663
57.26	3,336	9,033	57.79	3,336	9,677
57.27	3,336	9,049	57.80	3,336	9,690
57.28	3,336	9,065	57.81	3,336	9,703
57.29	3,336	9,080	57.82	3,336	9,717
57.30	3,336	9,095	57.83	3,336	9,730
57.31	3,336	9,110	57.84	3,336	9,743
57.32	3,336	9,125	57.85	3,336	9,757
57.33	3,336	9,139	57.86	3,336	9,770
57.34	3,336	9,153	57.87	3,336	9,783
57.35	3,336	9,167	57.88	3,336	9,797
57.36	3,336	9,181	57.89	3,336	9,810
57.37	3,336	9,194	57.90	3,336	9,824
57.38	3,336	9,206	57.91	3,336	9,837
57.39	3,336	9,219			
57.40	3,336	9,230			
57.41	3,336	9,241			
57.42	3,336	9,250			
57.43	3,336	9,259			
57.44	3,336	9,268			
57.45	3,336	9,278			
57.46	3,336	9,287			
57.47	3,336	9,297			
57.48	3,336	9,307			
57.49	3,336	9,316			
57.50	3,336	9,326			
57.51	3,336	9,336			
57.52	3,336	9,346			
57.53	3,336	9,357			
57.54	3,336	9,367			
57.55	3,336	9,377			
57.56	3,336	9,388			
57.57	3,336	9,399			
57.58	3,336	9,409			
57.59	3,336	9,420			
57.60	3,336	9,432			
57.61	3,336	9,443			
57.62	3,336	9,454			
57.63	3,336	9,466			
57.64	3,336	9,478			
57.65	3,336	9,490			
57.66	3,336	9,503			
57.67	3,336	9,517			

Stage-Discharge for Pond B2: Underground Basin (Richmond)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
52.91	0.00	0.00	0.00	53.44	0.06	0.06	0.00
52.92	0.06	0.06	0.00	53.45	0.07	0.06	0.01
52.93	0.06	0.06	0.00	53.46	0.07	0.06	0.01
52.94	0.06	0.06	0.00	53.47	0.08	0.06	0.02
52.95	0.06	0.06	0.00	53.48	0.09	0.06	0.03
52.96	0.06	0.06	0.00	53.49	0.09	0.06	0.04
52.97	0.06	0.06	0.00	53.50	0.10	0.06	0.04
52.98	0.06	0.06	0.00	53.51	0.11	0.06	0.05
52.99	0.06	0.06	0.00	53.52	0.13	0.06	0.07
53.00	0.06	0.06	0.00	53.53	0.14	0.06	0.08
53.01	0.06	0.06	0.00	53.54	0.15	0.06	0.09
53.02	0.06	0.06	0.00	53.55	0.17	0.06	0.11
53.03	0.06	0.06	0.00	53.56	0.18	0.06	0.12
53.04	0.06	0.06	0.00	53.57	0.20	0.06	0.14
53.05	0.06	0.06	0.00	53.58	0.22	0.06	0.16
53.06	0.06	0.06	0.00	53.59	0.23	0.06	0.17
53.07	0.06	0.06	0.00	53.60	0.25	0.06	0.19
53.08	0.06	0.06	0.00	53.61	0.27	0.06	0.21
53.09	0.06	0.06	0.00	53.62	0.30	0.06	0.23
53.10	0.06	0.06	0.00	53.63	0.32	0.06	0.26
53.11	0.06	0.06	0.00	53.64	0.34	0.06	0.28
53.12	0.06	0.06	0.00	53.65	0.37	0.06	0.30
53.13	0.06	0.06	0.00	53.66	0.39	0.06	0.33
53.14	0.06	0.06	0.00	53.67	0.42	0.06	0.36
53.15	0.06	0.06	0.00	53.68	0.44	0.06	0.38
53.16	0.06	0.06	0.00	53.69	0.47	0.06	0.41
53.17	0.06	0.06	0.00	53.70	0.50	0.06	0.44
53.18	0.06	0.06	0.00	53.71	0.53	0.06	0.47
53.19	0.06	0.06	0.00	53.72	0.56	0.06	0.50
53.20	0.06	0.06	0.00	53.73	0.59	0.06	0.53
53.21	0.06	0.06	0.00	53.74	0.62	0.06	0.56
53.22	0.06	0.06	0.00	53.75	0.66	0.06	0.60
53.23	0.06	0.06	0.00	53.76	0.69	0.06	0.63
53.24	0.06	0.06	0.00	53.77	0.72	0.06	0.66
53.25	0.06	0.06	0.00	53.78	0.75	0.06	0.69
53.26	0.06	0.06	0.00	53.79	0.79	0.06	0.73
53.27	0.06	0.06	0.00	53.80	0.82	0.06	0.76
53.28	0.06	0.06	0.00	53.81	0.86	0.06	0.80
53.29	0.06	0.06	0.00	53.82	0.89	0.06	0.83
53.30	0.06	0.06	0.00	53.83	0.93	0.06	0.87
53.31	0.06	0.06	0.00	53.84	0.96	0.06	0.90
53.32	0.06	0.06	0.00	53.85	1.00	0.06	0.94
53.33	0.06	0.06	0.00	53.86	1.04	0.06	0.98
53.34	0.06	0.06	0.00	53.87	1.08	0.06	1.02
53.35	0.06	0.06	0.00	53.88	1.12	0.06	1.06
53.36	0.06	0.06	0.00	53.89	1.16	0.06	1.09
53.37	0.06	0.06	0.00	53.90	1.20	0.06	1.13
53.38	0.06	0.06	0.00	53.91	1.24	0.06	1.17
53.39	0.06	0.06	0.00	53.92	1.28	0.06	1.22
53.40	0.06	0.06	0.00	53.93	1.32	0.06	1.26
53.41	0.06	0.06	0.00	53.94	1.36	0.06	1.30
53.42	0.06	0.06	0.00	53.95	1.40	0.06	1.34
53.43	0.06	0.06	0.00	53.96	1.45	0.06	1.38

Stage-Discharge for Pond B2: Underground Basin (Richmond) (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
53.97	1.49	0.06	1.43	54.50	4.35	0.06	4.28
53.98	1.53	0.06	1.47	54.51	4.41	0.06	4.34
53.99	1.58	0.06	1.52	54.52	4.47	0.06	4.41
54.00	1.62	0.06	1.56	54.53	4.53	0.06	4.47
54.01	1.67	0.06	1.61	54.54	4.59	0.06	4.53
54.02	1.71	0.06	1.65	54.55	4.66	0.06	4.59
54.03	1.76	0.06	1.70	54.56	4.72	0.06	4.65
54.04	1.81	0.06	1.75	54.57	4.78	0.06	4.72
54.05	1.85	0.06	1.79	54.58	4.84	0.06	4.78
54.06	1.90	0.06	1.84	54.59	4.91	0.06	4.84
54.07	1.95	0.06	1.89	54.60	4.97	0.06	4.90
54.08	2.00	0.06	1.94	54.61	5.03	0.06	4.97
54.09	2.05	0.06	1.99	54.62	5.09	0.06	5.03
54.10	2.10	0.06	2.03	54.63	5.16	0.06	5.09
54.11	2.15	0.06	2.08	54.64	5.22	0.07	5.16
54.12	2.20	0.06	2.13	54.65	5.28	0.07	5.22
54.13	2.25	0.06	2.19	54.66	5.35	0.07	5.28
54.14	2.30	0.06	2.24	54.67	5.41	0.07	5.34
54.15	2.35	0.06	2.29	54.68	5.47	0.07	5.41
54.16	2.40	0.06	2.34	54.69	5.54	0.07	5.47
54.17	2.45	0.06	2.39	54.70	5.60	0.07	5.53
54.18	2.51	0.06	2.44	54.71	5.66	0.07	5.60
54.19	2.56	0.06	2.50	54.72	5.73	0.07	5.66
54.20	2.61	0.06	2.55	54.73	5.79	0.07	5.72
54.21	2.67	0.06	2.60	54.74	5.85	0.07	5.79
54.22	2.72	0.06	2.66	54.75	5.92	0.07	5.85
54.23	2.77	0.06	2.71	54.76	5.98	0.07	5.91
54.24	2.83	0.06	2.77	54.77	6.04	0.07	5.98
54.25	2.88	0.06	2.82	54.78	6.11	0.07	6.04
54.26	2.94	0.06	2.88	54.79	6.17	0.07	6.10
54.27	2.99	0.06	2.93	54.80	6.23	0.07	6.17
54.28	3.05	0.06	2.99	54.81	6.30	0.07	6.23
54.29	3.11	0.06	3.04	54.82	6.36	0.07	6.29
54.30	3.16	0.06	3.10	54.83	6.42	0.07	6.36
54.31	3.22	0.06	3.16	54.84	6.48	0.07	6.42
54.32	3.28	0.06	3.21	54.85	6.55	0.07	6.48
54.33	3.33	0.06	3.27	54.86	6.61	0.07	6.54
54.34	3.39	0.06	3.33	54.87	6.67	0.07	6.61
54.35	3.45	0.06	3.39	54.88	6.73	0.07	6.67
54.36	3.51	0.06	3.44	54.89	6.80	0.07	6.73
54.37	3.57	0.06	3.50	54.90	6.86	0.07	6.79
54.38	3.63	0.06	3.56	54.91	6.92	0.07	6.85
54.39	3.68	0.06	3.62	54.92	6.98	0.07	6.92
54.40	3.74	0.06	3.68	54.93	7.04	0.07	6.98
54.41	3.80	0.06	3.74	54.94	7.10	0.07	7.04
54.42	3.86	0.06	3.80	54.95	7.17	0.07	7.10
54.43	3.92	0.06	3.86	54.96	7.23	0.07	7.16
54.44	3.98	0.06	3.92	54.97	7.29	0.07	7.22
54.45	4.04	0.06	3.98	54.98	7.35	0.07	7.28
54.46	4.10	0.06	4.04	54.99	7.41	0.07	7.34
54.47	4.16	0.06	4.10	55.00	7.47	0.07	7.40
54.48	4.23	0.06	4.16	55.01	7.53	0.07	7.46
54.49	4.29	0.06	4.22	55.02	7.58	0.07	7.52

Stage-Discharge for Pond B2: Underground Basin (Richmond) (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
55.03	7.64	0.07	7.58	55.56	10.14	0.07	10.07
55.04	7.70	0.07	7.63	55.57	10.17	0.07	10.10
55.05	7.76	0.07	7.69	55.58	10.21	0.07	10.14
55.06	7.82	0.07	7.75	55.59	10.24	0.07	10.18
55.07	7.87	0.07	7.81	55.60	10.28	0.07	10.21
55.08	7.93	0.07	7.86	55.61	10.32	0.07	10.25
55.09	7.99	0.07	7.92	55.62	10.35	0.07	10.28
55.10	8.04	0.07	7.97	55.63	10.39	0.07	10.32
55.11	8.10	0.07	8.03	55.64	10.42	0.07	10.35
55.12	8.15	0.07	8.08	55.65	10.46	0.07	10.39
55.13	8.21	0.07	8.14	55.66	10.49	0.07	10.42
55.14	8.26	0.07	8.19	55.67	10.53	0.07	10.46
55.15	8.31	0.07	8.24	55.68	10.56	0.07	10.49
55.16	8.36	0.07	8.30	55.69	10.59	0.07	10.52
55.17	8.42	0.07	8.35	55.70	10.63	0.07	10.56
55.18	8.47	0.07	8.40	55.71	10.66	0.07	10.59
55.19	8.52	0.07	8.45	55.72	10.70	0.07	10.63
55.20	8.57	0.07	8.50	55.73	10.73	0.07	10.66
55.21	8.61	0.07	8.55	55.74	10.77	0.07	10.70
55.22	8.66	0.07	8.59	55.75	10.80	0.07	10.73
55.23	8.71	0.07	8.64	55.76	10.83	0.07	10.76
55.24	8.75	0.07	8.69	55.77	10.87	0.07	10.80
55.25	8.80	0.07	8.73	55.78	10.90	0.07	10.83
55.26	8.84	0.07	8.78	55.79	10.93	0.07	10.86
55.27	8.89	0.07	8.82	55.80	10.97	0.07	10.90
55.28	8.93	0.07	8.86	55.81	11.00	0.07	10.93
55.29	8.97	0.07	8.90	55.82	11.03	0.07	10.96
55.30	9.01	0.07	8.94	55.83	11.07	0.07	11.00
55.31	9.04	0.07	8.98	55.84	11.10	0.07	11.03
55.32	9.08	0.07	9.01	55.85	11.13	0.07	11.06
55.33	9.11	0.07	9.05	55.86	11.16	0.07	11.09
55.34	9.15	0.07	9.08	55.87	11.20	0.07	11.13
55.35	9.18	0.07	9.11	55.88	11.23	0.07	11.16
55.36	9.21	0.07	9.14	55.89	11.26	0.07	11.19
55.37	9.23	0.07	9.16	55.90	11.29	0.07	11.22
55.38	9.25	0.07	9.18	55.91	11.33	0.07	11.26
55.39	9.27	0.07	9.20	55.92	11.36	0.07	11.29
55.40	9.28	0.07	9.21	55.93	11.39	0.07	11.32
55.41	9.26	0.07	9.19	55.94	11.42	0.07	11.35
55.42	9.32	0.07	9.25	55.95	11.45	0.07	11.38
55.43	9.38	0.07	9.31	55.96	11.49	0.07	11.42
55.44	9.44	0.07	9.38	55.97	11.52	0.07	11.45
55.45	9.50	0.07	9.44	55.98	11.55	0.07	11.48
55.46	9.56	0.07	9.50	55.99	11.58	0.07	11.51
55.47	9.62	0.07	9.56	56.00	11.61	0.07	11.54
55.48	9.68	0.07	9.62	56.01	11.64	0.07	11.57
55.49	9.74	0.07	9.67	56.02	11.68	0.07	11.60
55.50	9.80	0.07	9.73	56.03	11.71	0.07	11.64
55.51	9.86	0.07	9.79	56.04	11.74	0.07	11.67
55.52	9.92	0.07	9.85	56.05	11.77	0.07	11.70
55.53	9.98	0.07	9.91	56.06	11.80	0.07	11.73
55.54	10.03	0.07	9.97	56.07	11.83	0.07	11.76
55.55	10.09	0.07	10.02	56.08	11.86	0.07	11.79

Stage-Discharge for Pond B2: Underground Basin (Richmond) (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
56.09	11.89	0.07	11.82	56.62	13.42	0.07	13.35
56.10	11.92	0.07	11.85	56.63	13.45	0.07	13.37
56.11	11.95	0.07	11.88	56.64	13.47	0.07	13.40
56.12	11.98	0.07	11.91	56.65	13.50	0.07	13.43
56.13	12.01	0.07	11.94	56.66	13.53	0.07	13.45
56.14	12.04	0.07	11.97	56.67	13.55	0.07	13.48
56.15	12.07	0.07	12.00	56.68	13.58	0.07	13.51
56.16	12.10	0.07	12.03	56.69	13.61	0.07	13.53
56.17	12.14	0.07	12.06	56.70	13.63	0.07	13.56
56.18	12.17	0.07	12.09	56.71	13.66	0.07	13.59
56.19	12.20	0.07	12.12	56.72	13.69	0.07	13.61
56.20	12.22	0.07	12.15	56.73	13.71	0.07	13.64
56.21	12.25	0.07	12.18	56.74	13.74	0.07	13.67
56.22	12.28	0.07	12.21	56.75	13.77	0.07	13.69
56.23	12.31	0.07	12.24	56.76	13.79	0.07	13.72
56.24	12.34	0.07	12.27	56.77	13.82	0.07	13.75
56.25	12.37	0.07	12.30	56.78	13.85	0.07	13.77
56.26	12.40	0.07	12.33	56.79	13.87	0.07	13.80
56.27	12.43	0.07	12.36	56.80	13.90	0.07	13.83
56.28	12.46	0.07	12.39	56.81	13.93	0.07	13.85
56.29	12.49	0.07	12.42	56.82	13.95	0.07	13.88
56.30	12.52	0.07	12.45	56.83	13.98	0.07	13.90
56.31	12.55	0.07	12.48	56.84	14.00	0.07	13.93
56.32	12.58	0.07	12.51	56.85	14.03	0.07	13.96
56.33	12.61	0.07	12.53	56.86	14.06	0.07	13.98
56.34	12.64	0.07	12.56	56.87	14.08	0.07	14.01
56.35	12.66	0.07	12.59	56.88	14.11	0.07	14.03
56.36	12.69	0.07	12.62	56.89	14.13	0.07	14.06
56.37	12.72	0.07	12.65	56.90	14.16	0.08	14.08
56.38	12.75	0.07	12.68	56.91	14.19	0.08	14.11
56.39	12.78	0.07	12.71	56.92	14.21	0.08	14.14
56.40	12.81	0.07	12.73	56.93	14.24	0.08	14.16
56.41	12.84	0.07	12.76	56.94	14.26	0.08	14.19
56.42	12.86	0.07	12.79	56.95	14.29	0.08	14.21
56.43	12.89	0.07	12.82	56.96	14.31	0.08	14.24
56.44	12.92	0.07	12.85	56.97	14.34	0.08	14.26
56.45	12.95	0.07	12.88	56.98	14.36	0.08	14.29
56.46	12.98	0.07	12.90	56.99	14.39	0.08	14.31
56.47	13.01	0.07	12.93	57.00	14.41	0.08	14.34
56.48	13.03	0.07	12.96	57.01	14.44	0.08	14.36
56.49	13.06	0.07	12.99	57.02	14.47	0.08	14.39
56.50	13.09	0.07	13.02	57.03	14.49	0.08	14.41
56.51	13.12	0.07	13.04	57.04	14.52	0.08	14.44
56.52	13.14	0.07	13.07	57.05	14.54	0.08	14.46
56.53	13.17	0.07	13.10	57.06	14.57	0.08	14.49
56.54	13.20	0.07	13.13	57.07	14.59	0.08	14.51
56.55	13.23	0.07	13.15	57.08	14.62	0.08	14.54
56.56	13.26	0.07	13.18	57.09	14.64	0.08	14.56
56.57	13.28	0.07	13.21	57.10	14.67	0.08	14.59
56.58	13.31	0.07	13.24	57.11	14.69	0.08	14.61
56.59	13.34	0.07	13.26	57.12	14.72	0.08	14.64
56.60	13.36	0.07	13.29	57.13	14.74	0.08	14.66
56.61	13.39	0.07	13.32	57.14	14.76	0.08	14.69

Stage-Discharge for Pond B2: Underground Basin (Richmond) (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
57.15	14.79	0.08	14.71	57.68	16.04	0.08	15.96
57.16	14.81	0.08	14.74	57.69	16.07	0.08	15.99
57.17	14.84	0.08	14.76	57.70	16.09	0.08	16.01
57.18	14.86	0.08	14.79	57.71	16.11	0.08	16.03
57.19	14.89	0.08	14.81	57.72	16.13	0.08	16.05
57.20	14.91	0.08	14.84	57.73	16.16	0.08	16.08
57.21	14.94	0.08	14.86	57.74	16.18	0.08	16.10
57.22	14.96	0.08	14.88	57.75	16.20	0.08	16.12
57.23	14.99	0.08	14.91	57.76	16.22	0.08	16.14
57.24	15.01	0.08	14.93	57.77	16.25	0.08	16.17
57.25	15.03	0.08	14.96	57.78	16.27	0.08	16.19
57.26	15.06	0.08	14.98	57.79	16.29	0.08	16.21
57.27	15.08	0.08	15.01	57.80	16.31	0.08	16.23
57.28	15.11	0.08	15.03	57.81	16.34	0.08	16.26
57.29	15.13	0.08	15.05	57.82	16.36	0.08	16.28
57.30	15.15	0.08	15.08	57.83	16.38	0.08	16.30
57.31	15.18	0.08	15.10	57.84	16.40	0.08	16.32
57.32	15.20	0.08	15.13	57.85	16.42	0.08	16.34
57.33	15.23	0.08	15.15	57.86	16.45	0.08	16.37
57.34	15.25	0.08	15.17	57.87	16.47	0.08	16.39
57.35	15.27	0.08	15.20	57.88	16.49	0.08	16.41
57.36	15.30	0.08	15.22	57.89	16.51	0.08	16.43
57.37	15.32	0.08	15.24	57.90	16.53	0.08	16.46
57.38	15.35	0.08	15.27	57.91	16.56	0.08	16.48
57.39	15.37	0.08	15.29				
57.40	15.39	0.08	15.32				
57.41	15.42	0.08	15.34				
57.42	15.44	0.08	15.36				
57.43	15.46	0.08	15.39				
57.44	15.49	0.08	15.41				
57.45	15.51	0.08	15.43				
57.46	15.53	0.08	15.46				
57.47	15.56	0.08	15.48				
57.48	15.58	0.08	15.50				
57.49	15.60	0.08	15.53				
57.50	15.63	0.08	15.55				
57.51	15.65	0.08	15.57				
57.52	15.67	0.08	15.60				
57.53	15.70	0.08	15.62				
57.54	15.72	0.08	15.64				
57.55	15.74	0.08	15.67				
57.56	15.77	0.08	15.69				
57.57	15.79	0.08	15.71				
57.58	15.81	0.08	15.74				
57.59	15.84	0.08	15.76				
57.60	15.86	0.08	15.78				
57.61	15.88	0.08	15.80				
57.62	15.91	0.08	15.83				
57.63	15.93	0.08	15.85				
57.64	15.95	0.08	15.87				
57.65	15.97	0.08	15.90				
57.66	16.00	0.08	15.92				
57.67	16.02	0.08	15.94				

Stage-Area-Storage for Pond B2: Underground Basin (Richmond)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
52.91	0	0	53.44	2,486	470
52.92	2,486	10	53.45	2,486	479
52.93	2,486	20	53.46	2,486	489
52.94	2,486	30	53.47	2,486	499
52.95	2,486	40	53.48	2,486	509
52.96	2,486	50	53.49	2,486	520
52.97	2,486	60	53.50	2,486	531
52.98	2,486	70	53.51	2,486	541
52.99	2,486	80	53.52	2,486	553
53.00	2,486	89	53.53	2,486	564
53.01	2,486	99	53.54	2,486	575
53.02	2,486	109	53.55	2,486	587
53.03	2,486	119	53.56	2,486	599
53.04	2,486	129	53.57	2,486	611
53.05	2,486	139	53.58	2,486	623
53.06	2,486	149	53.59	2,486	635
53.07	2,486	159	53.60	2,486	647
53.08	2,486	169	53.61	2,486	659
53.09	2,486	179	53.62	2,486	672
53.10	2,486	189	53.63	2,486	685
53.11	2,486	199	53.64	2,486	697
53.12	2,486	209	53.65	2,486	710
53.13	2,486	219	53.66	2,486	723
53.14	2,486	229	53.67	2,486	736
53.15	2,486	239	53.68	2,486	749
53.16	2,486	249	53.69	2,486	763
53.17	2,486	258	53.70	2,486	776
53.18	2,486	267	53.71	2,486	789
53.19	2,486	276	53.72	2,486	803
53.20	2,486	285	53.73	2,486	817
53.21	2,486	294	53.74	2,486	830
53.22	2,486	302	53.75	2,486	844
53.23	2,486	310	53.76	2,486	858
53.24	2,486	318	53.77	2,486	872
53.25	2,486	327	53.78	2,486	886
53.26	2,486	335	53.79	2,486	900
53.27	2,486	342	53.80	2,486	914
53.28	2,486	350	53.81	2,486	928
53.29	2,486	358	53.82	2,486	942
53.30	2,486	365	53.83	2,486	957
53.31	2,486	373	53.84	2,486	971
53.32	2,486	380	53.85	2,486	986
53.33	2,486	388	53.86	2,486	1,000
53.34	2,486	395	53.87	2,486	1,015
53.35	2,486	402	53.88	2,486	1,030
53.36	2,486	410	53.89	2,486	1,044
53.37	2,486	417	53.90	2,486	1,059
53.38	2,486	424	53.91	2,486	1,074
53.39	2,486	431	53.92	2,486	1,089
53.40	2,486	437	53.93	2,486	1,104
53.41	2,486	444	53.94	2,486	1,119
53.42	2,486	452	53.95	2,486	1,134
53.43	2,486	461	53.96	2,486	1,149

Stage-Area-Storage for Pond B2: Underground Basin (Richmond) (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
53.97	2,486	1,164	54.50	2,486	2,031
53.98	2,486	1,180	54.51	2,486	2,048
53.99	2,486	1,195	54.52	2,486	2,066
54.00	2,486	1,210	54.53	2,486	2,083
54.01	2,486	1,226	54.54	2,486	2,100
54.02	2,486	1,241	54.55	2,486	2,117
54.03	2,486	1,257	54.56	2,486	2,135
54.04	2,486	1,272	54.57	2,486	2,152
54.05	2,486	1,288	54.58	2,486	2,170
54.06	2,486	1,304	54.59	2,486	2,187
54.07	2,486	1,319	54.60	2,486	2,204
54.08	2,486	1,335	54.61	2,486	2,222
54.09	2,486	1,351	54.62	2,486	2,239
54.10	2,486	1,367	54.63	2,486	2,257
54.11	2,486	1,383	54.64	2,486	2,274
54.12	2,486	1,399	54.65	2,486	2,292
54.13	2,486	1,415	54.66	2,486	2,310
54.14	2,486	1,431	54.67	2,486	2,327
54.15	2,486	1,447	54.68	2,486	2,345
54.16	2,486	1,463	54.69	2,486	2,362
54.17	2,486	1,479	54.70	2,486	2,380
54.18	2,486	1,495	54.71	2,486	2,398
54.19	2,486	1,511	54.72	2,486	2,415
54.20	2,486	1,528	54.73	2,486	2,433
54.21	2,486	1,544	54.74	2,486	2,451
54.22	2,486	1,560	54.75	2,486	2,469
54.23	2,486	1,577	54.76	2,486	2,486
54.24	2,486	1,593	54.77	2,486	2,504
54.25	2,486	1,609	54.78	2,486	2,522
54.26	2,486	1,626	54.79	2,486	2,540
54.27	2,486	1,642	54.80	2,486	2,558
54.28	2,486	1,659	54.81	2,486	2,575
54.29	2,486	1,676	54.82	2,486	2,593
54.30	2,486	1,692	54.83	2,486	2,611
54.31	2,486	1,709	54.84	2,486	2,629
54.32	2,486	1,725	54.85	2,486	2,647
54.33	2,486	1,742	54.86	2,486	2,665
54.34	2,486	1,759	54.87	2,486	2,683
54.35	2,486	1,776	54.88	2,486	2,701
54.36	2,486	1,793	54.89	2,486	2,719
54.37	2,486	1,809	54.90	2,486	2,737
54.38	2,486	1,826	54.91	2,486	2,755
54.39	2,486	1,843	54.92	2,486	2,773
54.40	2,486	1,860	54.93	2,486	2,791
54.41	2,486	1,877	54.94	2,486	2,809
54.42	2,486	1,894	54.95	2,486	2,827
54.43	2,486	1,911	54.96	2,486	2,845
54.44	2,486	1,928	54.97	2,486	2,863
54.45	2,486	1,945	54.98	2,486	2,881
54.46	2,486	1,962	54.99	2,486	2,899
54.47	2,486	1,979	55.00	2,486	2,917
54.48	2,486	1,997	55.01	2,486	2,935
54.49	2,486	2,014	55.02	2,486	2,953

Stage-Area-Storage for Pond B2: Underground Basin (Richmond) (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
55.03	2,486	2,971	55.56	2,486	3,939
55.04	2,486	2,990	55.57	2,486	3,957
55.05	2,486	3,008	55.58	2,486	3,976
55.06	2,486	3,026	55.59	2,486	3,994
55.07	2,486	3,044	55.60	2,486	4,012
55.08	2,486	3,062	55.61	2,486	4,030
55.09	2,486	3,080	55.62	2,486	4,049
55.10	2,486	3,099	55.63	2,486	4,067
55.11	2,486	3,117	55.64	2,486	4,085
55.12	2,486	3,135	55.65	2,486	4,103
55.13	2,486	3,153	55.66	2,486	4,122
55.14	2,486	3,171	55.67	2,486	4,140
55.15	2,486	3,190	55.68	2,486	4,158
55.16	2,486	3,208	55.69	2,486	4,176
55.17	2,486	3,226	55.70	2,486	4,195
55.18	2,486	3,244	55.71	2,486	4,213
55.19	2,486	3,262	55.72	2,486	4,231
55.20	2,486	3,281	55.73	2,486	4,249
55.21	2,486	3,299	55.74	2,486	4,267
55.22	2,486	3,317	55.75	2,486	4,285
55.23	2,486	3,335	55.76	2,486	4,304
55.24	2,486	3,354	55.77	2,486	4,322
55.25	2,486	3,372	55.78	2,486	4,340
55.26	2,486	3,390	55.79	2,486	4,358
55.27	2,486	3,409	55.80	2,486	4,376
55.28	2,486	3,427	55.81	2,486	4,394
55.29	2,486	3,445	55.82	2,486	4,412
55.30	2,486	3,463	55.83	2,486	4,430
55.31	2,486	3,482	55.84	2,486	4,448
55.32	2,486	3,500	55.85	2,486	4,467
55.33	2,486	3,518	55.86	2,486	4,485
55.34	2,486	3,537	55.87	2,486	4,503
55.35	2,486	3,555	55.88	2,486	4,521
55.36	2,486	3,573	55.89	2,486	4,539
55.37	2,486	3,592	55.90	2,486	4,557
55.38	2,486	3,610	55.91	2,486	4,575
55.39	2,486	3,628	55.92	2,486	4,593
55.40	2,486	3,646	55.93	2,486	4,611
55.41	2,486	3,665	55.94	2,486	4,629
55.42	2,486	3,683	55.95	2,486	4,647
55.43	2,486	3,701	55.96	2,486	4,665
55.44	2,486	3,720	55.97	2,486	4,682
55.45	2,486	3,738	55.98	2,486	4,700
55.46	2,486	3,756	55.99	2,486	4,718
55.47	2,486	3,775	56.00	2,486	4,736
55.48	2,486	3,793	56.01	2,486	4,754
55.49	2,486	3,811	56.02	2,486	4,772
55.50	2,486	3,829	56.03	2,486	4,790
55.51	2,486	3,848	56.04	2,486	4,807
55.52	2,486	3,866	56.05	2,486	4,825
55.53	2,486	3,884	56.06	2,486	4,843
55.54	2,486	3,903	56.07	2,486	4,861
55.55	2,486	3,921	56.08	2,486	4,879

Stage-Area-Storage for Pond B2: Underground Basin (Richmond) (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
56.09	2,486	4,896	56.62	2,486	5,802
56.10	2,486	4,914	56.63	2,486	5,818
56.11	2,486	4,932	56.64	2,486	5,834
56.12	2,486	4,949	56.65	2,486	5,851
56.13	2,486	4,967	56.66	2,486	5,867
56.14	2,486	4,985	56.67	2,486	5,883
56.15	2,486	5,002	56.68	2,486	5,899
56.16	2,486	5,020	56.69	2,486	5,915
56.17	2,486	5,037	56.70	2,486	5,931
56.18	2,486	5,055	56.71	2,486	5,947
56.19	2,486	5,072	56.72	2,486	5,963
56.20	2,486	5,090	56.73	2,486	5,979
56.21	2,486	5,107	56.74	2,486	5,994
56.22	2,486	5,125	56.75	2,486	6,010
56.23	2,486	5,142	56.76	2,486	6,026
56.24	2,486	5,160	56.77	2,486	6,041
56.25	2,486	5,177	56.78	2,486	6,057
56.26	2,486	5,195	56.79	2,486	6,073
56.27	2,486	5,212	56.80	2,486	6,088
56.28	2,486	5,229	56.81	2,486	6,104
56.29	2,486	5,247	56.82	2,486	6,119
56.30	2,486	5,264	56.83	2,486	6,134
56.31	2,486	5,281	56.84	2,486	6,150
56.32	2,486	5,298	56.85	2,486	6,165
56.33	2,486	5,316	56.86	2,486	6,180
56.34	2,486	5,333	56.87	2,486	6,195
56.35	2,486	5,350	56.88	2,486	6,210
56.36	2,486	5,367	56.89	2,486	6,226
56.37	2,486	5,384	56.90	2,486	6,240
56.38	2,486	5,401	56.91	2,486	6,255
56.39	2,486	5,418	56.92	2,486	6,270
56.40	2,486	5,435	56.93	2,486	6,285
56.41	2,486	5,452	56.94	2,486	6,300
56.42	2,486	5,469	56.95	2,486	6,315
56.43	2,486	5,486	56.96	2,486	6,329
56.44	2,486	5,503	56.97	2,486	6,344
56.45	2,486	5,520	56.98	2,486	6,358
56.46	2,486	5,537	56.99	2,486	6,373
56.47	2,486	5,554	57.00	2,486	6,387
56.48	2,486	5,570	57.01	2,486	6,401
56.49	2,486	5,587	57.02	2,486	6,415
56.50	2,486	5,604	57.03	2,486	6,430
56.51	2,486	5,621	57.04	2,486	6,444
56.52	2,486	5,637	57.05	2,486	6,458
56.53	2,486	5,654	57.06	2,486	6,472
56.54	2,486	5,670	57.07	2,486	6,485
56.55	2,486	5,687	57.08	2,486	6,499
56.56	2,486	5,704	57.09	2,486	6,513
56.57	2,486	5,720	57.10	2,486	6,527
56.58	2,486	5,736	57.11	2,486	6,540
56.59	2,486	5,753	57.12	2,486	6,553
56.60	2,486	5,769	57.13	2,486	6,567
56.61	2,486	5,786	57.14	2,486	6,580

Stage-Area-Storage for Pond B2: Underground Basin (Richmond) (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
57.15	2,486	6,593	57.68	2,486	7,101
57.16	2,486	6,606	57.69	2,486	7,111
57.17	2,486	6,619	57.70	2,486	7,121
57.18	2,486	6,632	57.71	2,486	7,131
57.19	2,486	6,645	57.72	2,486	7,141
57.20	2,486	6,657	57.73	2,486	7,150
57.21	2,486	6,670	57.74	2,486	7,160
57.22	2,486	6,682	57.75	2,486	7,170
57.23	2,486	6,695	57.76	2,486	7,180
57.24	2,486	6,707	57.77	2,486	7,190
57.25	2,486	6,719	57.78	2,486	7,200
57.26	2,486	6,731	57.79	2,486	7,210
57.27	2,486	6,742	57.80	2,486	7,220
57.28	2,486	6,754	57.81	2,486	7,230
57.29	2,486	6,766	57.82	2,486	7,240
57.30	2,486	6,777	57.83	2,486	7,250
57.31	2,486	6,788	57.84	2,486	7,260
57.32	2,486	6,799	57.85	2,486	7,270
57.33	2,486	6,810	57.86	2,486	7,280
57.34	2,486	6,820	57.87	2,486	7,290
57.35	2,486	6,830	57.88	2,486	7,300
57.36	2,486	6,840	57.89	2,486	7,310
57.37	2,486	6,850	57.90	2,486	7,319
57.38	2,486	6,860	57.91	2,486	7,329
57.39	2,486	6,869			
57.40	2,486	6,877			
57.41	2,486	6,885			
57.42	2,486	6,892			
57.43	2,486	6,899			
57.44	2,486	6,906			
57.45	2,486	6,913			
57.46	2,486	6,920			
57.47	2,486	6,927			
57.48	2,486	6,934			
57.49	2,486	6,942			
57.50	2,486	6,949			
57.51	2,486	6,956			
57.52	2,486	6,964			
57.53	2,486	6,972			
57.54	2,486	6,979			
57.55	2,486	6,987			
57.56	2,486	6,995			
57.57	2,486	7,003			
57.58	2,486	7,011			
57.59	2,486	7,019			
57.60	2,486	7,027			
57.61	2,486	7,036			
57.62	2,486	7,045			
57.63	2,486	7,053			
57.64	2,486	7,062			
57.65	2,486	7,071			
57.66	2,486	7,081			
57.67	2,486	7,091			

Stage-Discharge for Pond B3: Aboveground Basin

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
54.00	0.00	0.00	0.00	54.53	0.01	0.01	0.00
54.01	0.00	0.00	0.00	54.54	0.01	0.01	0.00
54.02	0.00	0.00	0.00	54.55	0.01	0.01	0.00
54.03	0.00	0.00	0.00	54.56	0.01	0.01	0.00
54.04	0.00	0.00	0.00	54.57	0.01	0.01	0.00
54.05	0.00	0.00	0.00	54.58	0.01	0.01	0.00
54.06	0.00	0.00	0.00	54.59	0.01	0.01	0.00
54.07	0.00	0.00	0.00	54.60	0.01	0.01	0.00
54.08	0.00	0.00	0.00	54.61	0.01	0.01	0.00
54.09	0.00	0.00	0.00	54.62	0.01	0.01	0.00
54.10	0.00	0.00	0.00	54.63	0.01	0.01	0.00
54.11	0.01	0.01	0.00	54.64	0.01	0.01	0.00
54.12	0.01	0.01	0.00	54.65	0.01	0.01	0.00
54.13	0.01	0.01	0.00	54.66	0.01	0.01	0.00
54.14	0.01	0.01	0.00	54.67	0.01	0.01	0.00
54.15	0.01	0.01	0.00	54.68	0.01	0.01	0.00
54.16	0.01	0.01	0.00	54.69	0.01	0.01	0.00
54.17	0.01	0.01	0.00	54.70	0.01	0.01	0.00
54.18	0.01	0.01	0.00	54.71	0.01	0.01	0.00
54.19	0.01	0.01	0.00	54.72	0.01	0.01	0.00
54.20	0.01	0.01	0.00	54.73	0.01	0.01	0.00
54.21	0.01	0.01	0.00	54.74	0.01	0.01	0.00
54.22	0.01	0.01	0.00	54.75	0.01	0.01	0.00
54.23	0.01	0.01	0.00	54.76	0.01	0.01	0.00
54.24	0.01	0.01	0.00	54.77	0.01	0.01	0.00
54.25	0.01	0.01	0.00	54.78	0.01	0.01	0.00
54.26	0.01	0.01	0.00	54.79	0.01	0.01	0.00
54.27	0.01	0.01	0.00	54.80	0.01	0.01	0.00
54.28	0.01	0.01	0.00	54.81	0.01	0.01	0.00
54.29	0.01	0.01	0.00	54.82	0.01	0.01	0.00
54.30	0.01	0.01	0.00	54.83	0.01	0.01	0.00
54.31	0.01	0.01	0.00	54.84	0.01	0.01	0.00
54.32	0.01	0.01	0.00	54.85	0.01	0.01	0.00
54.33	0.01	0.01	0.00	54.86	0.01	0.01	0.00
54.34	0.01	0.01	0.00	54.87	0.01	0.01	0.00
54.35	0.01	0.01	0.00	54.88	0.01	0.01	0.00
54.36	0.01	0.01	0.00	54.89	0.01	0.01	0.00
54.37	0.01	0.01	0.00	54.90	0.01	0.01	0.00
54.38	0.01	0.01	0.00	54.91	0.01	0.01	0.00
54.39	0.01	0.01	0.00	54.92	0.01	0.01	0.00
54.40	0.01	0.01	0.00	54.93	0.01	0.01	0.00
54.41	0.01	0.01	0.00	54.94	0.01	0.01	0.00
54.42	0.01	0.01	0.00	54.95	0.01	0.01	0.00
54.43	0.01	0.01	0.00	54.96	0.01	0.01	0.00
54.44	0.01	0.01	0.00	54.97	0.01	0.01	0.00
54.45	0.01	0.01	0.00	54.98	0.01	0.01	0.00
54.46	0.01	0.01	0.00	54.99	0.01	0.01	0.00
54.47	0.01	0.01	0.00	55.00	0.01	0.01	0.00
54.48	0.01	0.01	0.00	55.01	0.01	0.01	0.00
54.49	0.01	0.01	0.00	55.02	0.01	0.01	0.00
54.50	0.01	0.01	0.00	55.03	0.01	0.01	0.00
54.51	0.01	0.01	0.00	55.04	0.01	0.01	0.00
54.52	0.01	0.01	0.00	55.05	0.01	0.01	0.00

Stage-Discharge for Pond B3: Aboveground Basin (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
55.06	0.01	0.01	0.00	55.59	0.01	0.01	0.00
55.07	0.01	0.01	0.00	55.60	0.01	0.01	0.00
55.08	0.01	0.01	0.00	55.61	0.01	0.01	0.00
55.09	0.01	0.01	0.00	55.62	0.01	0.01	0.00
55.10	0.01	0.01	0.00	55.63	0.01	0.01	0.00
55.11	0.01	0.01	0.00	55.64	0.01	0.01	0.00
55.12	0.01	0.01	0.00	55.65	0.01	0.01	0.00
55.13	0.01	0.01	0.00	55.66	0.01	0.01	0.00
55.14	0.01	0.01	0.00	55.67	0.01	0.01	0.00
55.15	0.01	0.01	0.00	55.68	0.01	0.01	0.00
55.16	0.01	0.01	0.00	55.69	0.01	0.01	0.00
55.17	0.01	0.01	0.00	55.70	0.01	0.01	0.00
55.18	0.01	0.01	0.00	55.71	0.01	0.01	0.00
55.19	0.01	0.01	0.00	55.72	0.01	0.01	0.00
55.20	0.01	0.01	0.00	55.73	0.01	0.01	0.00
55.21	0.01	0.01	0.00	55.74	0.01	0.01	0.00
55.22	0.01	0.01	0.00	55.75	0.01	0.01	0.00
55.23	0.01	0.01	0.00	55.76	0.01	0.01	0.00
55.24	0.01	0.01	0.00	55.77	0.01	0.01	0.00
55.25	0.01	0.01	0.00	55.78	0.01	0.01	0.00
55.26	0.01	0.01	0.00	55.79	0.01	0.01	0.00
55.27	0.01	0.01	0.00	55.80	0.01	0.01	0.00
55.28	0.01	0.01	0.00	55.81	0.01	0.01	0.00
55.29	0.01	0.01	0.00	55.82	0.01	0.01	0.00
55.30	0.01	0.01	0.00	55.83	0.01	0.01	0.00
55.31	0.01	0.01	0.00	55.84	0.02	0.02	0.00
55.32	0.01	0.01	0.00	55.85	0.02	0.02	0.00
55.33	0.01	0.01	0.00	55.86	0.02	0.02	0.00
55.34	0.01	0.01	0.00	55.87	0.02	0.02	0.00
55.35	0.01	0.01	0.00	55.88	0.02	0.02	0.00
55.36	0.01	0.01	0.00	55.89	0.02	0.02	0.00
55.37	0.01	0.01	0.00	55.90	0.02	0.02	0.00
55.38	0.01	0.01	0.00	55.91	0.02	0.02	0.00
55.39	0.01	0.01	0.00	55.92	0.02	0.02	0.00
55.40	0.01	0.01	0.00	55.93	0.02	0.02	0.00
55.41	0.01	0.01	0.00	55.94	0.02	0.02	0.00
55.42	0.01	0.01	0.00	55.95	0.02	0.02	0.00
55.43	0.01	0.01	0.00	55.96	0.02	0.02	0.00
55.44	0.01	0.01	0.00	55.97	0.02	0.02	0.00
55.45	0.01	0.01	0.00	55.98	0.02	0.02	0.00
55.46	0.01	0.01	0.00	55.99	0.02	0.02	0.00
55.47	0.01	0.01	0.00	56.00	0.02	0.02	0.00
55.48	0.01	0.01	0.00	56.01	0.02	0.02	0.00
55.49	0.01	0.01	0.00	56.02	0.02	0.02	0.00
55.50	0.01	0.01	0.00	56.03	0.02	0.02	0.00
55.51	0.01	0.01	0.00	56.04	0.02	0.02	0.00
55.52	0.01	0.01	0.00	56.05	0.02	0.02	0.00
55.53	0.01	0.01	0.00	56.06	0.02	0.02	0.00
55.54	0.01	0.01	0.00	56.07	0.02	0.02	0.00
55.55	0.01	0.01	0.00	56.08	0.02	0.02	0.00
55.56	0.01	0.01	0.00	56.09	0.02	0.02	0.00
55.57	0.01	0.01	0.00	56.10	0.02	0.02	0.00
55.58	0.01	0.01	0.00	56.11	0.02	0.02	0.00

Stage-Discharge for Pond B3: Aboveground Basin (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
56.12	0.02	0.02	0.00	56.65	3.06	0.02	3.04
56.13	0.02	0.02	0.00	56.66	3.37	0.02	3.35
56.14	0.02	0.02	0.00	56.67	3.69	0.02	3.67
56.15	0.02	0.02	0.00	56.68	4.02	0.02	4.00
56.16	0.02	0.02	0.00	56.69	4.35	0.02	4.33
56.17	0.02	0.02	0.00	56.70	4.70	0.02	4.68
56.18	0.02	0.02	0.00	56.71	5.06	0.02	5.03
56.19	0.02	0.02	0.00	56.72	5.42	0.02	5.40
56.20	0.02	0.02	0.00	56.73	5.79	0.02	5.77
56.21	0.02	0.02	0.00	56.74	6.17	0.02	6.15
56.22	0.02	0.02	0.00	56.75	6.56	0.02	6.54
56.23	0.02	0.02	0.00	56.76	6.96	0.02	6.94
56.24	0.02	0.02	0.00	56.77	7.36	0.02	7.34
56.25	0.02	0.02	0.00	56.78	7.77	0.02	7.75
56.26	0.02	0.02	0.00	56.79	8.19	0.02	8.17
56.27	0.02	0.02	0.00	56.80	8.62	0.02	8.60
56.28	0.02	0.02	0.00	56.81	8.76	0.02	8.73
56.29	0.02	0.02	0.00	56.82	8.78	0.02	8.75
56.30	0.02	0.02	0.00	56.83	8.80	0.02	8.77
56.31	0.02	0.02	0.00	56.84	8.82	0.02	8.79
56.32	0.02	0.02	0.00	56.85	8.84	0.02	8.81
56.33	0.02	0.02	0.00	56.86	8.86	0.02	8.83
56.34	0.02	0.02	0.00	56.87	8.88	0.02	8.85
56.35	0.02	0.02	0.00	56.88	8.90	0.02	8.87
56.36	0.02	0.02	0.00	56.89	8.92	0.02	8.89
56.37	0.02	0.02	0.00	56.90	8.94	0.02	8.91
56.38	0.02	0.02	0.00	56.91	8.96	0.02	8.93
56.39	0.02	0.02	0.00	56.92	8.98	0.02	8.95
56.40	0.02	0.02	0.00	56.93	8.99	0.02	8.97
56.41	0.02	0.02	0.00	56.94	9.01	0.02	8.99
56.42	0.02	0.02	0.00	56.95	9.03	0.02	9.01
56.43	0.02	0.02	0.00	56.96	9.05	0.02	9.03
56.44	0.02	0.02	0.00	56.97	9.07	0.02	9.05
56.45	0.02	0.02	0.00	56.98	9.09	0.02	9.07
56.46	0.02	0.02	0.00	56.99	9.11	0.02	9.09
56.47	0.02	0.02	0.00	57.00	9.13	0.02	9.11
56.48	0.02	0.02	0.00				
56.49	0.02	0.02	0.00				
56.50	0.02	0.02	0.00				
56.51	0.07	0.02	0.05				
56.52	0.17	0.02	0.15				
56.53	0.29	0.02	0.27				
56.54	0.44	0.02	0.42				
56.55	0.61	0.02	0.58				
56.56	0.79	0.02	0.77				
56.57	0.99	0.02	0.97				
56.58	1.20	0.02	1.18				
56.59	1.43	0.02	1.41				
56.60	1.68	0.02	1.65				
56.61	1.93	0.02	1.91				
56.62	2.20	0.02	2.17				
56.63	2.47	0.02	2.45				
56.64	2.76	0.02	2.74				

Stage-Area-Storage for Pond B3: Aboveground Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
54.00	197	0	54.53	293	129
54.01	199	2	54.54	295	132
54.02	200	4	54.55	297	135
54.03	202	6	54.56	299	138
54.04	204	8	54.57	301	141
54.05	205	10	54.58	303	144
54.06	207	12	54.59	305	147
54.07	209	14	54.60	307	150
54.08	210	16	54.61	309	153
54.09	212	18	54.62	311	156
54.10	214	21	54.63	313	159
54.11	215	23	54.64	315	162
54.12	217	25	54.65	317	165
54.13	219	27	54.66	319	169
54.14	220	29	54.67	321	172
54.15	222	31	54.68	323	175
54.16	224	34	54.69	325	178
54.17	226	36	54.70	327	182
54.18	227	38	54.71	329	185
54.19	229	40	54.72	331	188
54.20	231	43	54.73	333	191
54.21	233	45	54.74	336	195
54.22	234	47	54.75	338	198
54.23	236	50	54.76	340	202
54.24	238	52	54.77	342	205
54.25	240	55	54.78	344	208
54.26	242	57	54.79	346	212
54.27	243	59	54.80	348	215
54.28	245	62	54.81	351	219
54.29	247	64	54.82	353	222
54.30	249	67	54.83	355	226
54.31	251	69	54.84	357	229
54.32	252	72	54.85	359	233
54.33	254	74	54.86	362	237
54.34	256	77	54.87	364	240
54.35	258	79	54.88	366	244
54.36	260	82	54.89	368	248
54.37	262	85	54.90	370	251
54.38	264	87	54.91	373	255
54.39	265	90	54.92	375	259
54.40	267	93	54.93	377	262
54.41	269	95	54.94	379	266
54.42	271	98	54.95	382	270
54.43	273	101	54.96	384	274
54.44	275	103	54.97	386	278
54.45	277	106	54.98	388	282
54.46	279	109	54.99	391	285
54.47	281	112	55.00	393	289
54.48	283	115	55.01	395	293
54.49	285	117	55.02	397	297
54.50	287	120	55.03	400	301
54.51	289	123	55.04	402	305
54.52	291	126	55.05	404	309

Stage-Area-Storage for Pond B3: Aboveground Basin (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
55.06	406	313	55.59	535	562
55.07	409	317	55.60	538	568
55.08	411	322	55.61	540	573
55.09	413	326	55.62	543	578
55.10	416	330	55.63	546	584
55.11	418	334	55.64	548	589
55.12	420	338	55.65	551	595
55.13	422	342	55.66	554	600
55.14	425	347	55.67	556	606
55.15	427	351	55.68	559	611
55.16	429	355	55.69	562	617
55.17	432	359	55.70	564	623
55.18	434	364	55.71	567	628
55.19	436	368	55.72	570	634
55.20	439	373	55.73	572	640
55.21	441	377	55.74	575	645
55.22	443	381	55.75	578	651
55.23	446	386	55.76	580	657
55.24	448	390	55.77	583	663
55.25	451	395	55.78	586	669
55.26	453	399	55.79	588	674
55.27	455	404	55.80	591	680
55.28	458	408	55.81	594	686
55.29	460	413	55.82	597	692
55.30	463	418	55.83	599	698
55.31	465	422	55.84	602	704
55.32	467	427	55.85	605	710
55.33	470	432	55.86	608	716
55.34	472	436	55.87	610	722
55.35	475	441	55.88	613	729
55.36	477	446	55.89	616	735
55.37	480	451	55.90	619	741
55.38	482	455	55.91	622	747
55.39	485	460	55.92	624	753
55.40	487	465	55.93	627	760
55.41	490	470	55.94	630	766
55.42	492	475	55.95	633	772
55.43	495	480	55.96	636	779
55.44	497	485	55.97	638	785
55.45	500	490	55.98	641	791
55.46	502	495	55.99	644	798
55.47	505	500	56.00	647	804
55.48	507	505	56.01	650	811
55.49	510	510	56.02	653	817
55.50	512	515	56.03	655	824
55.51	515	520	56.04	658	830
55.52	517	525	56.05	661	837
55.53	520	531	56.06	664	843
55.54	522	536	56.07	667	850
55.55	525	541	56.08	670	857
55.56	527	546	56.09	672	864
55.57	530	552	56.10	675	870
55.58	533	557	56.11	678	877

Stage-Area-Storage for Pond B3: Aboveground Basin (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
56.12	681	884	56.65	841	1,286
56.13	684	891	56.66	844	1,295
56.14	687	898	56.67	847	1,303
56.15	690	904	56.68	851	1,312
56.16	692	911	56.69	854	1,320
56.17	695	918	56.70	857	1,329
56.18	698	925	56.71	860	1,337
56.19	701	932	56.72	863	1,346
56.20	704	939	56.73	867	1,355
56.21	707	946	56.74	870	1,363
56.22	710	953	56.75	873	1,372
56.23	713	960	56.76	876	1,381
56.24	716	968	56.77	880	1,390
56.25	719	975	56.78	883	1,398
56.26	722	982	56.79	886	1,407
56.27	725	989	56.80	889	1,416
56.28	727	996	56.81	893	1,425
56.29	730	1,004	56.82	896	1,434
56.30	733	1,011	56.83	899	1,443
56.31	736	1,018	56.84	903	1,452
56.32	739	1,026	56.85	906	1,461
56.33	742	1,033	56.86	909	1,470
56.34	745	1,041	56.87	912	1,479
56.35	748	1,048	56.88	916	1,488
56.36	751	1,056	56.89	919	1,498
56.37	754	1,063	56.90	922	1,507
56.38	757	1,071	56.91	926	1,516
56.39	760	1,078	56.92	929	1,525
56.40	763	1,086	56.93	932	1,535
56.41	766	1,094	56.94	936	1,544
56.42	769	1,101	56.95	939	1,553
56.43	773	1,109	56.96	942	1,563
56.44	776	1,117	56.97	946	1,572
56.45	779	1,124	56.98	949	1,582
56.46	782	1,132	56.99	953	1,591
56.47	785	1,140	57.00	956	1,601
56.48	788	1,148			
56.49	791	1,156			
56.50	794	1,164			
56.51	797	1,172			
56.52	800	1,180			
56.53	803	1,188			
56.54	806	1,196			
56.55	810	1,204			
56.56	813	1,212			
56.57	816	1,220			
56.58	819	1,228			
56.59	822	1,237			
56.60	825	1,245			
56.61	828	1,253			
56.62	831	1,261			
56.63	835	1,270			
56.64	838	1,278			

Stage-Discharge for Pond BIO1: Bio-Retention Basin 1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
56.00	0.00	0.00	0.00	56.53	0.01	0.01	0.00
56.01	0.00	0.00	0.00	56.54	0.01	0.01	0.00
56.02	0.00	0.00	0.00	56.55	0.01	0.01	0.00
56.03	0.00	0.00	0.00	56.56	0.01	0.01	0.00
56.04	0.00	0.00	0.00	56.57	0.01	0.01	0.00
56.05	0.00	0.00	0.00	56.58	0.01	0.01	0.00
56.06	0.00	0.00	0.00	56.59	0.01	0.01	0.00
56.07	0.00	0.00	0.00	56.60	0.01	0.01	0.00
56.08	0.00	0.00	0.00	56.61	0.01	0.01	0.00
56.09	0.00	0.00	0.00	56.62	0.01	0.01	0.00
56.10	0.00	0.00	0.00	56.63	0.01	0.01	0.00
56.11	0.00	0.00	0.00	56.64	0.01	0.01	0.00
56.12	0.00	0.00	0.00	56.65	0.01	0.01	0.00
56.13	0.00	0.00	0.00	56.66	0.01	0.01	0.00
56.14	0.00	0.00	0.00	56.67	0.01	0.01	0.00
56.15	0.00	0.00	0.00	56.68	0.01	0.01	0.00
56.16	0.00	0.00	0.00	56.69	0.01	0.01	0.00
56.17	0.00	0.00	0.00	56.70	0.01	0.01	0.00
56.18	0.00	0.00	0.00	56.71	0.01	0.01	0.00
56.19	0.00	0.00	0.00	56.72	0.01	0.01	0.00
56.20	0.00	0.00	0.00	56.73	0.01	0.01	0.00
56.21	0.00	0.00	0.00	56.74	0.01	0.01	0.00
56.22	0.00	0.00	0.00	56.75	0.01	0.01	0.00
56.23	0.00	0.00	0.00	56.76	0.01	0.01	0.00
56.24	0.00	0.00	0.00	56.77	0.01	0.01	0.00
56.25	0.00	0.00	0.00	56.78	0.01	0.01	0.00
56.26	0.00	0.00	0.00	56.79	0.01	0.01	0.00
56.27	0.00	0.00	0.00	56.80	0.01	0.01	0.00
56.28	0.00	0.00	0.00	56.81	0.01	0.01	0.00
56.29	0.00	0.00	0.00	56.82	0.01	0.01	0.00
56.30	0.00	0.00	0.00	56.83	0.01	0.01	0.00
56.31	0.00	0.00	0.00	56.84	0.01	0.01	0.00
56.32	0.00	0.00	0.00	56.85	0.01	0.01	0.00
56.33	0.00	0.00	0.00	56.86	0.01	0.01	0.00
56.34	0.00	0.00	0.00	56.87	0.01	0.01	0.00
56.35	0.00	0.00	0.00	56.88	0.01	0.01	0.00
56.36	0.00	0.00	0.00	56.89	0.01	0.01	0.00
56.37	0.00	0.00	0.00	56.90	0.01	0.01	0.00
56.38	0.00	0.00	0.00	56.91	0.01	0.01	0.00
56.39	0.00	0.00	0.00	56.92	0.01	0.01	0.00
56.40	0.00	0.00	0.00	56.93	0.01	0.01	0.00
56.41	0.00	0.00	0.00	56.94	0.01	0.01	0.00
56.42	0.00	0.00	0.00	56.95	0.01	0.01	0.00
56.43	0.00	0.00	0.00	56.96	0.01	0.01	0.00
56.44	0.00	0.00	0.00	56.97	0.01	0.01	0.00
56.45	0.00	0.00	0.00	56.98	0.01	0.01	0.00
56.46	0.00	0.00	0.00	56.99	0.01	0.01	0.00
56.47	0.00	0.00	0.00	57.00	0.01	0.01	0.00
56.48	0.00	0.00	0.00	57.01	0.01	0.01	0.00
56.49	0.00	0.00	0.00	57.02	0.01	0.01	0.00
56.50	0.00	0.00	0.00	57.03	0.01	0.01	0.00
56.51	0.01	0.01	0.00	57.04	0.01	0.01	0.00
56.52	0.01	0.01	0.00	57.05	0.01	0.01	0.00

Stage-Discharge for Pond BIO1: Bio-Retention Basin 1 (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
57.06	0.01	0.01	0.00	57.59	0.01	0.01	0.00
57.07	0.01	0.01	0.00	57.60	0.01	0.01	0.00
57.08	0.01	0.01	0.00	57.61	0.01	0.01	0.00
57.09	0.01	0.01	0.00	57.62	0.01	0.01	0.00
57.10	0.01	0.01	0.00	57.63	0.01	0.01	0.00
57.11	0.01	0.01	0.00	57.64	0.01	0.01	0.00
57.12	0.01	0.01	0.00	57.65	0.01	0.01	0.00
57.13	0.01	0.01	0.00	57.66	0.01	0.01	0.00
57.14	0.01	0.01	0.00	57.67	0.01	0.01	0.00
57.15	0.01	0.01	0.00	57.68	0.01	0.01	0.00
57.16	0.01	0.01	0.00	57.69	0.02	0.02	0.00
57.17	0.01	0.01	0.00	57.70	0.02	0.02	0.00
57.18	0.01	0.01	0.00	57.71	0.02	0.02	0.00
57.19	0.01	0.01	0.00	57.72	0.02	0.02	0.00
57.20	0.01	0.01	0.00	57.73	0.02	0.02	0.00
57.21	0.01	0.01	0.00	57.74	0.02	0.02	0.00
57.22	0.01	0.01	0.00	57.75	0.02	0.02	0.00
57.23	0.01	0.01	0.00	57.76	0.07	0.02	0.05
57.24	0.01	0.01	0.00	57.77	0.16	0.02	0.15
57.25	0.01	0.01	0.00	57.78	0.29	0.02	0.27
57.26	0.01	0.01	0.00	57.79	0.43	0.02	0.42
57.27	0.01	0.01	0.00	57.80	0.60	0.02	0.58
57.28	0.01	0.01	0.00	57.81	0.79	0.02	0.77
57.29	0.01	0.01	0.00	57.82	0.99	0.02	0.97
57.30	0.01	0.01	0.00	57.83	1.20	0.02	1.18
57.31	0.01	0.01	0.00	57.84	1.43	0.02	1.41
57.32	0.01	0.01	0.00	57.85	1.67	0.02	1.65
57.33	0.01	0.01	0.00	57.86	1.93	0.02	1.91
57.34	0.01	0.01	0.00	57.87	2.19	0.02	2.17
57.35	0.01	0.01	0.00	57.88	2.47	0.02	2.45
57.36	0.01	0.01	0.00	57.89	2.76	0.02	2.74
57.37	0.01	0.01	0.00	57.90	3.06	0.02	3.04
57.38	0.01	0.01	0.00	57.91	3.37	0.02	3.35
57.39	0.01	0.01	0.00	57.92	3.68	0.02	3.67
57.40	0.01	0.01	0.00	57.93	4.01	0.02	4.00
57.41	0.01	0.01	0.00	57.94	4.35	0.02	4.33
57.42	0.01	0.01	0.00	57.95	4.70	0.02	4.68
57.43	0.01	0.01	0.00	57.96	5.05	0.02	5.03
57.44	0.01	0.01	0.00	57.97	5.42	0.02	5.40
57.45	0.01	0.01	0.00	57.98	5.79	0.02	5.77
57.46	0.01	0.01	0.00	57.99	6.17	0.02	6.15
57.47	0.01	0.01	0.00	58.00	6.56	0.02	6.54
57.48	0.01	0.01	0.00				
57.49	0.01	0.01	0.00				
57.50	0.01	0.01	0.00				
57.51	0.01	0.01	0.00				
57.52	0.01	0.01	0.00				
57.53	0.01	0.01	0.00				
57.54	0.01	0.01	0.00				
57.55	0.01	0.01	0.00				
57.56	0.01	0.01	0.00				
57.57	0.01	0.01	0.00				
57.58	0.01	0.01	0.00				

Stage-Area-Storage for Pond BIO1: Bio-Retention Basin 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
56.00	86	0	56.53	218	78
56.01	88	1	56.54	221	80
56.02	90	2	56.55	224	82
56.03	92	3	56.56	227	85
56.04	94	4	56.57	230	87
56.05	96	5	56.58	233	89
56.06	98	6	56.59	237	91
56.07	100	7	56.60	240	94
56.08	102	8	56.61	243	96
56.09	104	9	56.62	246	99
56.10	106	10	56.63	249	101
56.11	108	11	56.64	253	104
56.12	111	12	56.65	256	106
56.13	113	13	56.66	259	109
56.14	115	14	56.67	263	111
56.15	117	15	56.68	266	114
56.16	119	16	56.69	269	117
56.17	122	18	56.70	273	119
56.18	124	19	56.71	276	122
56.19	126	20	56.72	280	125
56.20	129	21	56.73	283	128
56.21	131	23	56.74	287	131
56.22	133	24	56.75	290	134
56.23	136	25	56.76	294	136
56.24	138	27	56.77	297	139
56.25	141	28	56.78	301	142
56.26	143	29	56.79	304	145
56.27	146	31	56.80	308	148
56.28	148	32	56.81	312	152
56.29	151	34	56.82	315	155
56.30	153	35	56.83	319	158
56.31	156	37	56.84	323	161
56.32	158	39	56.85	326	164
56.33	161	40	56.86	330	168
56.34	164	42	56.87	334	171
56.35	166	43	56.88	338	174
56.36	169	45	56.89	342	178
56.37	172	47	56.90	345	181
56.38	174	48	56.91	349	185
56.39	177	50	56.92	353	188
56.40	180	52	56.93	357	192
56.41	183	54	56.94	361	195
56.42	185	56	56.95	365	199
56.43	188	58	56.96	369	203
56.44	191	59	56.97	373	206
56.45	194	61	56.98	377	210
56.46	197	63	56.99	381	214
56.47	200	65	57.00	385	218
56.48	203	67	57.01	388	222
56.49	206	69	57.02	391	225
56.50	209	71	57.03	394	229
56.51	212	74	57.04	397	233
56.52	215	76	57.05	400	237

Stage-Area-Storage for Pond BIO1: Bio-Retention Basin 1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
57.06	403	241	57.59	580	500
57.07	406	245	57.60	584	506
57.08	409	249	57.61	587	512
57.09	412	254	57.62	591	518
57.10	415	258	57.63	595	524
57.11	418	262	57.64	598	530
57.12	421	266	57.65	602	536
57.13	425	270	57.66	606	542
57.14	428	275	57.67	610	548
57.15	431	279	57.68	613	554
57.16	434	283	57.69	617	560
57.17	437	287	57.70	621	566
57.18	440	292	57.71	625	573
57.19	443	296	57.72	628	579
57.20	447	301	57.73	632	585
57.21	450	305	57.74	636	592
57.22	453	310	57.75	640	598
57.23	456	314	57.76	644	604
57.24	460	319	57.77	647	611
57.25	463	323	57.78	651	617
57.26	466	328	57.79	655	624
57.27	469	333	57.80	659	630
57.28	473	338	57.81	663	637
57.29	476	342	57.82	667	644
57.30	479	347	57.83	671	650
57.31	483	352	57.84	675	657
57.32	486	357	57.85	679	664
57.33	489	362	57.86	683	671
57.34	493	366	57.87	687	677
57.35	496	371	57.88	690	684
57.36	499	376	57.89	694	691
57.37	503	381	57.90	698	698
57.38	506	386	57.91	702	705
57.39	509	392	57.92	706	712
57.40	513	397	57.93	710	719
57.41	516	402	57.94	715	727
57.42	520	407	57.95	719	734
57.43	523	412	57.96	723	741
57.44	527	417	57.97	727	748
57.45	530	423	57.98	731	755
57.46	534	428	57.99	735	763
57.47	537	433	58.00	739	770
57.48	541	439			
57.49	544	444			
57.50	548	450			
57.51	551	455			
57.52	555	461			
57.53	558	466			
57.54	562	472			
57.55	566	477			
57.56	569	483			
57.57	573	489			
57.58	576	495			

Stage-Discharge for Pond BIO2: Bio-Retention Basin 2

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
58.00	0.00	0.00	0.00	58.53	0.01	0.01	0.00
58.01	0.00	0.00	0.00	58.54	0.01	0.01	0.00
58.02	0.00	0.00	0.00	58.55	0.01	0.01	0.00
58.03	0.00	0.00	0.00	58.56	0.01	0.01	0.00
58.04	0.00	0.00	0.00	58.57	0.01	0.01	0.00
58.05	0.01	0.01	0.00	58.58	0.01	0.01	0.00
58.06	0.01	0.01	0.00	58.59	0.01	0.01	0.00
58.07	0.01	0.01	0.00	58.60	0.01	0.01	0.00
58.08	0.01	0.01	0.00	58.61	0.01	0.01	0.00
58.09	0.01	0.01	0.00	58.62	0.01	0.01	0.00
58.10	0.01	0.01	0.00	58.63	0.01	0.01	0.00
58.11	0.01	0.01	0.00	58.64	0.01	0.01	0.00
58.12	0.01	0.01	0.00	58.65	0.01	0.01	0.00
58.13	0.01	0.01	0.00	58.66	0.01	0.01	0.00
58.14	0.01	0.01	0.00	58.67	0.01	0.01	0.00
58.15	0.01	0.01	0.00	58.68	0.01	0.01	0.00
58.16	0.01	0.01	0.00	58.69	0.01	0.01	0.00
58.17	0.01	0.01	0.00	58.70	0.01	0.01	0.00
58.18	0.01	0.01	0.00	58.71	0.01	0.01	0.00
58.19	0.01	0.01	0.00	58.72	0.01	0.01	0.00
58.20	0.01	0.01	0.00	58.73	0.01	0.01	0.00
58.21	0.01	0.01	0.00	58.74	0.01	0.01	0.00
58.22	0.01	0.01	0.00	58.75	0.01	0.01	0.00
58.23	0.01	0.01	0.00	58.76	0.01	0.01	0.00
58.24	0.01	0.01	0.00	58.77	0.01	0.01	0.00
58.25	0.01	0.01	0.00	58.78	0.01	0.01	0.00
58.26	0.01	0.01	0.00	58.79	0.01	0.01	0.00
58.27	0.01	0.01	0.00	58.80	0.01	0.01	0.00
58.28	0.01	0.01	0.00	58.81	0.01	0.01	0.00
58.29	0.01	0.01	0.00	58.82	0.01	0.01	0.00
58.30	0.01	0.01	0.00	58.83	0.01	0.01	0.00
58.31	0.01	0.01	0.00	58.84	0.01	0.01	0.00
58.32	0.01	0.01	0.00	58.85	0.01	0.01	0.00
58.33	0.01	0.01	0.00	58.86	0.01	0.01	0.00
58.34	0.01	0.01	0.00	58.87	0.01	0.01	0.00
58.35	0.01	0.01	0.00	58.88	0.01	0.01	0.00
58.36	0.01	0.01	0.00	58.89	0.02	0.02	0.00
58.37	0.01	0.01	0.00	58.90	0.02	0.02	0.00
58.38	0.01	0.01	0.00	58.91	0.02	0.02	0.00
58.39	0.01	0.01	0.00	58.92	0.02	0.02	0.00
58.40	0.01	0.01	0.00	58.93	0.02	0.02	0.00
58.41	0.01	0.01	0.00	58.94	0.02	0.02	0.00
58.42	0.01	0.01	0.00	58.95	0.02	0.02	0.00
58.43	0.01	0.01	0.00	58.96	0.02	0.02	0.00
58.44	0.01	0.01	0.00	58.97	0.02	0.02	0.00
58.45	0.01	0.01	0.00	58.98	0.02	0.02	0.00
58.46	0.01	0.01	0.00	58.99	0.02	0.02	0.00
58.47	0.01	0.01	0.00	59.00	0.02	0.02	0.00
58.48	0.01	0.01	0.00	59.01	0.02	0.02	0.00
58.49	0.01	0.01	0.00	59.02	0.02	0.02	0.00
58.50	0.01	0.01	0.00	59.03	0.02	0.02	0.00
58.51	0.01	0.01	0.00	59.04	0.02	0.02	0.00
58.52	0.01	0.01	0.00	59.05	0.02	0.02	0.00

Stage-Discharge for Pond BIO2: Bio-Retention Basin 2 (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
59.06	0.02	0.02	0.00
59.07	0.02	0.02	0.00
59.08	0.02	0.02	0.00
59.09	0.02	0.02	0.00
59.10	0.02	0.02	0.00
59.11	0.02	0.02	0.00
59.12	0.02	0.02	0.00
59.13	0.02	0.02	0.00
59.14	0.02	0.02	0.00
59.15	0.02	0.02	0.00
59.16	0.02	0.02	0.00
59.17	0.02	0.02	0.00
59.18	0.02	0.02	0.00
59.19	0.02	0.02	0.00
59.20	0.02	0.02	0.00
59.21	0.02	0.02	0.00
59.22	0.02	0.02	0.00
59.23	0.02	0.02	0.00
59.24	0.02	0.02	0.00
59.25	0.02	0.02	0.00
59.26	0.02	0.02	0.00
59.27	0.02	0.02	0.00
59.28	0.02	0.02	0.00
59.29	0.02	0.02	0.00
59.30	0.02	0.02	0.00
59.31	0.02	0.02	0.00
59.32	0.02	0.02	0.00
59.33	0.03	0.03	0.00
59.34	0.03	0.03	0.00
59.35	0.03	0.03	0.00
59.36	0.08	0.03	0.05
59.37	0.17	0.03	0.15
59.38	0.30	0.03	0.27
59.39	0.45	0.03	0.42
59.40	0.61	0.03	0.58
59.41	0.80	0.03	0.77
59.42	1.00	0.03	0.97
59.43	1.21	0.03	1.18
59.44	1.44	0.03	1.41
59.45	1.68	0.03	1.65
59.46	1.94	0.03	1.91
59.47	2.20	0.03	2.17
59.48	2.48	0.03	2.45
59.49	2.77	0.03	2.74
59.50	3.07	0.03	3.04

Stage-Area-Storage for Pond BIO2: Bio-Retention Basin 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
58.00	200	0	58.53	427	162
58.01	203	2	58.54	432	167
58.02	207	4	58.55	437	171
58.03	211	6	58.56	443	175
58.04	214	8	58.57	448	180
58.05	218	10	58.58	453	184
58.06	221	13	58.59	458	189
58.07	225	15	58.60	464	194
58.08	229	17	58.61	469	198
58.09	233	19	58.62	474	203
58.10	236	22	58.63	480	208
58.11	240	24	58.64	485	213
58.12	244	27	58.65	490	217
58.13	248	29	58.66	496	222
58.14	252	32	58.67	501	227
58.15	256	34	58.68	507	232
58.16	260	37	58.69	513	238
58.17	264	39	58.70	518	243
58.18	268	42	58.71	524	248
58.19	272	45	58.72	529	253
58.20	276	47	58.73	535	258
58.21	280	50	58.74	541	264
58.22	284	53	58.75	547	269
58.23	288	56	58.76	552	275
58.24	292	59	58.77	558	280
58.25	297	62	58.78	564	286
58.26	301	65	58.79	570	292
58.27	305	68	58.80	576	297
58.28	309	71	58.81	582	303
58.29	314	74	58.82	588	309
58.30	318	77	58.83	594	315
58.31	323	80	58.84	600	321
58.32	327	83	58.85	606	327
58.33	331	87	58.86	612	333
58.34	336	90	58.87	618	339
58.35	340	94	58.88	624	345
58.36	345	97	58.89	630	352
58.37	350	100	58.90	636	358
58.38	354	104	58.91	643	364
58.39	359	107	58.92	649	371
58.40	364	111	58.93	655	377
58.41	368	115	58.94	661	384
58.42	373	118	58.95	668	391
58.43	378	122	58.96	674	397
58.44	383	126	58.97	681	404
58.45	387	130	58.98	687	411
58.46	392	134	58.99	693	418
58.47	397	138	59.00	700	425
58.48	402	142	59.01	710	432
58.49	407	146	59.02	719	439
58.50	412	150	59.03	729	446
58.51	417	154	59.04	739	453
58.52	422	158	59.05	748	461

Stage-Area-Storage for Pond BIO2: Bio-Retention Basin 2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
59.06	758	468
59.07	768	476
59.08	778	484
59.09	788	492
59.10	798	500
59.11	808	508
59.12	819	516
59.13	829	524
59.14	839	532
59.15	850	541
59.16	860	549
59.17	871	558
59.18	882	567
59.19	892	576
59.20	903	585
59.21	914	594
59.22	925	603
59.23	936	612
59.24	947	622
59.25	958	631
59.26	969	641
59.27	980	650
59.28	991	660
59.29	1,003	670
59.30	1,014	680
59.31	1,026	691
59.32	1,037	701
59.33	1,049	711
59.34	1,061	722
59.35	1,072	733
59.36	1,084	743
59.37	1,096	754
59.38	1,108	765
59.39	1,120	776
59.40	1,132	788
59.41	1,144	799
59.42	1,156	811
59.43	1,168	822
59.44	1,181	834
59.45	1,193	846
59.46	1,206	858
59.47	1,218	870
59.48	1,231	882
59.49	1,243	895
59.50	1,256	907

Stage-Discharge for Pond BIO3: Bio-Retention Basin 3

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
57.00	0.00	0.00	0.00	58.06	0.02	0.02	0.00
57.02	0.01	0.01	0.00	58.08	0.02	0.02	0.00
57.04	0.01	0.01	0.00	58.10	0.02	0.02	0.00
57.06	0.01	0.01	0.00	58.12	0.02	0.02	0.00
57.08	0.01	0.01	0.00	58.14	0.02	0.02	0.00
57.10	0.01	0.01	0.00	58.16	0.02	0.02	0.00
57.12	0.01	0.01	0.00	58.18	0.02	0.02	0.00
57.14	0.01	0.01	0.00	58.20	0.02	0.02	0.00
57.16	0.01	0.01	0.00	58.22	0.02	0.02	0.00
57.18	0.01	0.01	0.00	58.24	0.02	0.02	0.00
57.20	0.01	0.01	0.00	58.26	0.02	0.02	0.00
57.22	0.01	0.01	0.00	58.28	0.02	0.02	0.00
57.24	0.01	0.01	0.00	58.30	0.02	0.02	0.00
57.26	0.01	0.01	0.00	58.32	0.02	0.02	0.00
57.28	0.01	0.01	0.00	58.34	0.02	0.02	0.00
57.30	0.01	0.01	0.00	58.36	0.02	0.02	0.00
57.32	0.01	0.01	0.00	58.38	0.02	0.02	0.00
57.34	0.01	0.01	0.00	58.40	0.02	0.02	0.00
57.36	0.01	0.01	0.00	58.42	0.02	0.02	0.00
57.38	0.01	0.01	0.00	58.44	0.02	0.02	0.00
57.40	0.01	0.01	0.00	58.46	0.02	0.02	0.00
57.42	0.01	0.01	0.00	58.48	0.02	0.02	0.00
57.44	0.01	0.01	0.00	58.50	0.02	0.02	0.00
57.46	0.01	0.01	0.00	58.52	0.02	0.02	0.00
57.48	0.01	0.01	0.00	58.54	0.02	0.02	0.00
57.50	0.01	0.01	0.00	58.56	0.02	0.02	0.00
57.52	0.01	0.01	0.00	58.58	0.02	0.02	0.00
57.54	0.01	0.01	0.00	58.60	0.02	0.02	0.00
57.56	0.01	0.01	0.00	58.62	0.06	0.02	0.04
57.58	0.01	0.01	0.00	58.64	0.13	0.02	0.10
57.60	0.01	0.01	0.00	58.66	0.21	0.02	0.19
57.62	0.01	0.01	0.00	58.68	0.32	0.02	0.29
57.64	0.01	0.01	0.00	58.70	0.43	0.02	0.41
57.66	0.01	0.01	0.00	58.72	0.56	0.03	0.53
57.68	0.01	0.01	0.00	58.74	0.70	0.03	0.67
57.70	0.01	0.01	0.00	58.76	0.85	0.03	0.82
57.72	0.01	0.01	0.00	58.78	1.01	0.03	0.98
57.74	0.01	0.01	0.00	58.80	1.17	0.03	1.15
57.76	0.01	0.01	0.00	58.82	1.35	0.03	1.32
57.78	0.01	0.01	0.00	58.84	1.54	0.03	1.51
57.80	0.01	0.01	0.00	58.86	1.73	0.03	1.70
57.82	0.01	0.01	0.00	58.88	1.93	0.03	1.90
57.84	0.01	0.01	0.00	58.90	2.14	0.03	2.11
57.86	0.01	0.01	0.00	58.92	2.35	0.03	2.32
57.88	0.01	0.01	0.00	58.94	2.57	0.03	2.55
57.90	0.02	0.02	0.00	58.96	2.80	0.03	2.77
57.92	0.02	0.02	0.00	58.98	3.04	0.03	3.01
57.94	0.02	0.02	0.00	59.00	3.28	0.03	3.25
57.96	0.02	0.02	0.00	59.02	3.52	0.03	3.49
57.98	0.02	0.02	0.00	59.04	3.78	0.03	3.75
58.00	0.02	0.02	0.00	59.06	4.03	0.03	4.01
58.02	0.02	0.02	0.00	59.08	4.30	0.03	4.27
58.04	0.02	0.02	0.00	59.10	4.57	0.03	4.54

Stage-Discharge for Pond BIO3: Bio-Retention Basin 3 (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
59.12	4.84	0.03	4.81	60.18	12.91	0.03	12.88
59.14	5.12	0.03	5.10	60.20	12.94	0.03	12.91
59.16	5.41	0.03	5.38	60.22	12.97	0.03	12.94
59.18	5.70	0.03	5.67	60.24	12.99	0.03	12.96
59.20	6.00	0.03	5.97	60.26	13.02	0.03	12.99
59.22	6.30	0.03	6.27	60.28	13.05	0.03	13.02
59.24	6.60	0.03	6.57	60.30	13.08	0.03	13.04
59.26	6.91	0.03	6.88	60.32	13.10	0.03	13.07
59.28	7.23	0.03	7.20	60.34	13.13	0.03	13.10
59.30	7.55	0.03	7.52	60.36	13.16	0.03	13.13
59.32	7.87	0.03	7.84	60.38	13.18	0.03	13.15
59.34	8.20	0.03	8.17	60.40	13.21	0.03	13.18
59.36	8.54	0.03	8.51	60.42	13.24	0.03	13.21
59.38	8.87	0.03	8.85	60.44	13.26	0.03	13.23
59.40	9.22	0.03	9.19	60.46	13.29	0.03	13.26
59.42	9.56	0.03	9.53	60.48	13.32	0.03	13.29
59.44	9.91	0.03	9.89	60.50	13.34	0.03	13.31
59.46	10.27	0.03	10.24	60.52	13.37	0.03	13.34
59.48	10.63	0.03	10.60	60.54	13.40	0.03	13.37
59.50	10.99	0.03	10.96	60.56	13.42	0.03	13.39
59.52	11.36	0.03	11.33	60.58	13.45	0.03	13.42
59.54	11.73	0.03	11.70	60.60	13.48	0.03	13.45
59.56	12.03	0.03	12.00	60.62	13.50	0.03	13.47
59.58	12.06	0.03	12.03	60.64	13.53	0.03	13.50
59.60	12.09	0.03	12.06	60.66	13.56	0.03	13.52
59.62	12.11	0.03	12.09	60.68	13.58	0.03	13.55
59.64	12.14	0.03	12.11	60.70	13.61	0.03	13.58
59.66	12.17	0.03	12.14	60.72	13.63	0.03	13.60
59.68	12.20	0.03	12.17	60.74	13.66	0.03	13.63
59.70	12.23	0.03	12.20	60.76	13.69	0.03	13.66
59.72	12.26	0.03	12.23	60.78	13.71	0.03	13.68
59.74	12.29	0.03	12.26	60.80	13.74	0.03	13.71
59.76	12.32	0.03	12.29	60.82	13.76	0.03	13.73
59.78	12.35	0.03	12.32	60.84	13.79	0.03	13.76
59.80	12.38	0.03	12.35	60.86	13.82	0.03	13.78
59.82	12.41	0.03	12.37	60.88	13.84	0.03	13.81
59.84	12.43	0.03	12.40	60.90	13.87	0.03	13.84
59.86	12.46	0.03	12.43	60.92	13.89	0.03	13.86
59.88	12.49	0.03	12.46	60.94	13.92	0.03	13.89
59.90	12.52	0.03	12.49	60.96	13.94	0.03	13.91
59.92	12.55	0.03	12.52	60.98	13.97	0.03	13.94
59.94	12.58	0.03	12.55	61.00	14.00	0.03	13.96
59.96	12.60	0.03	12.57	61.02	14.02	0.03	13.99
59.98	12.63	0.03	12.60	61.04	14.05	0.03	14.01
60.00	12.66	0.03	12.63	61.06	14.07	0.03	14.04
60.02	12.69	0.03	12.66	61.08	14.10	0.03	14.06
60.04	12.72	0.03	12.69	61.10	14.12	0.03	14.09
60.06	12.74	0.03	12.71	61.12	14.15	0.03	14.11
60.08	12.77	0.03	12.74	61.14	14.17	0.03	14.14
60.10	12.80	0.03	12.77	61.16	14.20	0.03	14.16
60.12	12.83	0.03	12.80	61.18	14.22	0.03	14.19
60.14	12.86	0.03	12.83	61.20	14.25	0.03	14.21
60.16	12.88	0.03	12.85	61.22	14.27	0.03	14.24

Stage-Discharge for Pond BIO3: Bio-Retention Basin 3 (continued)

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
61.24	14.30	0.03	14.26	62.30	15.56	0.03	15.53
61.26	14.32	0.03	14.29	62.32	15.58	0.03	15.55
61.28	14.35	0.03	14.31	62.34	15.61	0.03	15.57
61.30	14.37	0.03	14.34	62.36	15.63	0.03	15.59
61.32	14.40	0.03	14.36	62.38	15.65	0.03	15.62
61.34	14.42	0.03	14.39	62.40	15.67	0.03	15.64
61.36	14.45	0.03	14.41	62.42	15.70	0.03	15.66
61.38	14.47	0.03	14.44	62.44	15.72	0.03	15.68
61.40	14.49	0.03	14.46	62.46	15.74	0.03	15.71
61.42	14.52	0.03	14.49	62.48	15.76	0.03	15.73
61.44	14.54	0.03	14.51	62.50	15.79	0.03	15.75
61.46	14.57	0.03	14.54	62.52	15.81	0.03	15.78
61.48	14.59	0.03	14.56	62.54	15.83	0.03	15.80
61.50	14.62	0.03	14.58	62.56	15.85	0.03	15.82
61.52	14.64	0.03	14.61	62.58	15.88	0.03	15.84
61.54	14.67	0.03	14.63	62.60	15.90	0.03	15.86
61.56	14.69	0.03	14.66				
61.58	14.71	0.03	14.68				
61.60	14.74	0.03	14.71				
61.62	14.76	0.03	14.73				
61.64	14.79	0.03	14.75				
61.66	14.81	0.03	14.78				
61.68	14.83	0.03	14.80				
61.70	14.86	0.03	14.83				
61.72	14.88	0.03	14.85				
61.74	14.91	0.03	14.87				
61.76	14.93	0.03	14.90				
61.78	14.95	0.03	14.92				
61.80	14.98	0.03	14.94				
61.82	15.00	0.03	14.97				
61.84	15.02	0.03	14.99				
61.86	15.05	0.03	15.02				
61.88	15.07	0.03	15.04				
61.90	15.10	0.03	15.06				
61.92	15.12	0.03	15.09				
61.94	15.14	0.03	15.11				
61.96	15.17	0.03	15.13				
61.98	15.19	0.03	15.16				
62.00	15.21	0.03	15.18				
62.02	15.24	0.03	15.20				
62.04	15.26	0.03	15.23				
62.06	15.28	0.03	15.25				
62.08	15.31	0.03	15.27				
62.10	15.33	0.03	15.30				
62.12	15.35	0.03	15.32				
62.14	15.38	0.03	15.34				
62.16	15.40	0.03	15.37				
62.18	15.42	0.03	15.39				
62.20	15.45	0.03	15.41				
62.22	15.47	0.03	15.43				
62.24	15.49	0.03	15.46				
62.26	15.51	0.03	15.48				
62.28	15.54	0.03	15.50				

Stage-Area-Storage for Pond BIO3: Bio-Retention Basin 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
57.00	241	0	58.06	708	484
57.02	248	5	58.08	716	499
57.04	254	10	58.10	725	513
57.06	261	15	58.12	734	528
57.08	268	20	58.14	743	543
57.10	275	26	58.16	752	557
57.12	282	31	58.18	761	573
57.14	289	37	58.20	770	588
57.16	296	43	58.22	779	603
57.18	304	49	58.24	788	619
57.20	311	55	58.26	797	635
57.22	319	61	58.28	806	651
57.24	326	68	58.30	815	667
57.26	334	74	58.32	825	684
57.28	342	81	58.34	834	700
57.30	350	88	58.36	844	717
57.32	358	95	58.38	853	734
57.34	366	102	58.40	863	751
57.36	374	110	58.42	872	768
57.38	382	117	58.44	882	786
57.40	390	125	58.46	891	804
57.42	399	133	58.48	901	822
57.44	407	141	58.50	911	840
57.46	416	149	58.52	921	858
57.48	425	158	58.54	931	876
57.50	433	166	58.56	941	895
57.52	442	175	58.58	951	914
57.54	451	184	58.60	961	933
57.56	460	193	58.62	971	953
57.58	469	202	58.64	981	972
57.60	479	212	58.66	991	992
57.62	488	222	58.68	1,001	1,012
57.64	497	231	58.70	1,012	1,032
57.66	507	241	58.72	1,022	1,052
57.68	516	252	58.74	1,033	1,073
57.70	526	262	58.76	1,043	1,093
57.72	536	273	58.78	1,054	1,114
57.74	546	284	58.80	1,064	1,136
57.76	556	295	58.82	1,075	1,157
57.78	566	306	58.84	1,086	1,179
57.80	576	317	58.86	1,096	1,200
57.82	586	329	58.88	1,107	1,222
57.84	596	341	58.90	1,118	1,245
57.86	607	353	58.92	1,129	1,267
57.88	617	365	58.94	1,140	1,290
57.90	628	377	58.96	1,151	1,313
57.92	638	390	58.98	1,162	1,336
57.94	649	403	59.00	1,173	1,359
57.96	660	416	59.02	1,173	1,359
57.98	671	429	59.04	1,173	1,359
58.00	682	443	59.06	1,173	1,359
58.02	691	457	59.08	1,173	1,359
58.04	699	470	59.10	1,173	1,359

APPENDIX D

GEOTECHNICAL REPORT



**UNSEALED FINAL VERSION OF REPORT
SIGNED AND SEALED ORIGINAL REPORTS
HAVE BEEN ISSUED**

**GEOTECHNICAL ENGINEERING
SERVICES REPORT**

For the proposed

**DOLLAR GENERAL
2920 RIDGEWAY ROAD
MANCHESTER TOWNSHIP, NEW JERSEY**

Prepared for

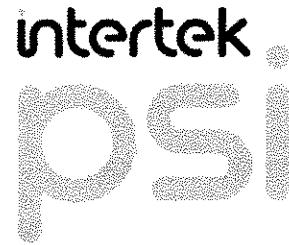
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PSI PROJECT NO. 04911692

December 5, 2018



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EXECUTIVE SUMMARY

This executive summary should be used in conjunction with the entire report for design and construction purposes.

Project Information / Site Conditions / Grading / Compaction / Foundations	
ITEM	Summary & Recommendations
Project Location	Northeast corner of the intersection of Ridgeway Road and Washington Avenue in Manchester Township, New Jersey.
Prop. Construction	Dollar General Store (9,100 SF) and pavements.
Structural Loading	Max column loads of 40 kips.
Existing Topography	Based on our site observations, grades across the proposed improvement areas slopes upwards from south to north.
Prop. Finished Grading/Cut-Fill	Proposed grading information was not provided. Therefore, PSI has based this report on finished grades being similar to existing grades with cuts and fills on the order of 2 feet or less, exclusive of additional cuts and fills associated with the removal of unsuitable soil sections.
Existing Conditions	At the time of our exploration, the property was a heavily wooded land.
Surface Materials	At the boring locations, topsoil was encountered and ranged in thickness from 3 to 5 inches. The thickness of surficial materials should be expected to vary across this site and between boring locations.
Subsurface Conditions	Based on nine SPT borings drilled to boring termination depths ranging from approximately 10 to 22 feet below the existing ground surface (bgs), the generalized subsurface stratigraphy below the surficial materials typically consisted of Coastal Plain sediments to the respective boring terminated depths. The soils consisted of Sands with varying amounts of silts and clay. <u>Based on the SPT N-values, the coastal plain soils exhibited very loose to loose relative densities to depths ranging from approximately 4 to 8 feet below existing ground surface.</u>
Groundwater	At the time of our drilling activities (November 2018), groundwater was not encountered within the test borings to the depths explored (22 feet bgs or less).
Site Preparation / Earthwork / Building Support Recommendations	
Site Preparation/ Earthwork	PSI anticipates that much of the site will not pass a proof-roll and will require remedial measures such as compaction-in-place or removal and re-compaction or replacement.
Structural Fill	Satisfactory structural material should include clean soil with USCS classifications of GW, GM, GC, SW, SP, SM, and SC placed in 8-inch loose lifts or thinner and compacted to 95% of its maximum dry density and within 2 percent of its optimum moisture content per ASTM D 1557. PSI expects that the natural soils should be suitable for re-use as structural fill if properly moisture conditioned and free of deleterious materials.
Foundation Type, Net Allowable Bearing Pressure, Depths	Based on our subsurface exploration, PSI recommends sizing the foundations for relatively low bearing pressure (1,500 psf) and that foundation bottoms compacted. Perimeter exterior foundations should be located at 36 inches below final grades.
Seismic Design	Soil Seismic Site Class "D" - IBC/2015, NJ Edition.
Modulus of Subgrade Reaction	100 pci on properly prepared subgrade as outlined in this report.



1.0 PROJECT INFORMATION

1.1 PROJECT AUTHORIZATION

Professional Service Industries, Inc. (PSI), an Intertek Company, was provided written authorization to proceed with this project by Mr. Mark Bush with Capital Growth Buchalter, Inc. by signing the Dollar General Work Order Form on November 1, 2018. The geotechnical services were provided in general accordance with the scope of work set forth in Dollar General's "NNN" Triple Net Build to Suit Lease Scope of Work Exhibit C, dated February 24, 2014.

1.2 PROJECT DESCRIPTION

Project information was provided by Capital Growth Buchalter, Inc. (CGB) which included drawings titled "Concept B (Concept)" (Sheet B-1 – dated 07/03/18) and "Concept B (Overlay)" (Sheet B-2 – dated 07/03/18) both prepared by Stonefield Engineering & Design.

PSI understands that a Dollar General retail store development is planned within an approximately 2.26-acre tract of land situated on the northeastern quadrant of the intersection of Ridgeway Road and Washington Avenue in Manchester, New Jersey. The development will consist of a one-story, rectangle-shaped (approximately 130 by 70 feet) pre-engineered structure with a slab-on-grade floor. Pavement areas are planned on the north, south and east sides of the building. Site access entrances are planned off of Ridgeway Road and Washington Avenue.

Structural loads were not provided to PSI; however, based on previous Dollar General projects, PSI understands that maximum loading of individual columns will be on the order of approximately 40 kips with little to no loads on wall footings.

Existing topographic information was not provided to PSI. Based on our site observations, grades across the proposed development area generally slopes upwards from south to north and the grade difference was estimated on the order of 10 feet. Proposed grading information was also not provided. Therefore, PSI has based this report on final grades being similar to existing grades with cuts and fills up to 2 feet, exclusive of cuts and fills associated with the removal of unsuitable soil sections.

Estimated loads, foundation sizes and cut/fill amounts have a direct effect on the recommendations in this report, including the recommended type of foundation, the allowable bearing pressure and the estimated settlement. Should any of the above information or assumptions made by PSI be inconsistent with the planned construction, we request that you contact us immediately to allow us to make any necessary modifications to this report.



1.3 PURPOSE AND SCOPE OF WORK

The purpose of our geotechnical services was to assess the subsurface conditions at the site and develop geotechnical related site preparation, fill placement, foundation, slab-on-grade and pavement recommendations. PSI's scope of services included a subsurface exploration (nine test borings) and laboratory work which formed the basis for the geotechnical recommendations contained in this report.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 SITE LOCATION AND DESCRIPTION

The project site is located on the northeastern quadrant of the intersection of Ridgeway Road and Washington Avenue in Manchester, New Jersey. The subject site is generally bordered by Richmond Avenue to the east; Ridgeway Road to the south; Washington Avenue to the west; and residential properties to the north. The project site is situated approximately 1.5 miles west of Toms River. The approximate site location is shown on a USGS topographic map in the Appendix (Figure 1).

At the time of our exploration, the property was a heavily wooded with overhead utilities lines along Ridgeway Road and Washington Avenue. Based on our site observations, the site generally slopes upward from south to north with an estimated grade difference of 10 feet.

2.2 SUBSURFACE CONDITIONS

2.2.1 GEOLOGIC MAP REVIEW

Based on the NJ-GeoWeb website (<https://www.nj.gov/dep/gis/geoweb splash.htm>), the surficial geology at the site is mapped as upper stream terrace deposits (Qtu) and/or weathered coastal plains formations (Qwcp). The upper stream terrace deposit is described as "sand and pebble gravel, minor silt and cobble gravel; yellow, reddish yellow, yellow brown and as much as 20 feet thick". The weathered coastal plain formation is described as "exposed sand and clay of Coastal Plain bedrock formations" which includes "thin, patchy alluvium and colluvium, and pebbles left from erosion of surficial deposits".

Below the surficial deposits, the "Bedrock Geologic Map of the Lakehurst Quadrangle – Ocean County, New Jersey" (by Sugarman, Castelli, et al., 2016) indicates that the project site is underlain by the Cohansey Formation (Tch), which is a Coastal Plain sediment formation. The Coastal Plain sediments of this formation consists of sand (light brown to dark-yellowish-orange and yellowish-gray to light gray; medium to coarse grained) with pebbles and commonly cross-bedded. The overall thickness of this formation can be up to 100 feet and typically underlain by other Coastal Plain formations.

2.2.2 SUBSURFACE EXPLORATION

On November 13 and November 14, 2018, PSI's drilling subcontractor, Boring Brothers, Inc., drilled nine test borings at the site including B-1 through B-5 for the proposed building footprint



3.0 OBSERVATIONS AND RECOMMENDATIONS

3.1 GENERAL

Based on the subsurface conditions encountered and PSI's understanding of the proposed development, loose upper soils are expected to impact design and construction. Based on the results of PSI's test borings, the site is generally underlain by 4 to 8 feet of loose/very loose granular soils. As such, a relatively lower bearing pressure (1,500 psf) is recommended to support the proposed building with shallow foundations. For a higher bearing pressure, the subsurface conditions can be improved with mass removal of loose soils and replaced with compacted structural fill.

3.2 SITE PREPARATION AND EARTHWORK RECOMMENDATIONS

Site preparation procedures should include removal of vegetation, topsoil, tree rootballs, debris and any other unsuitable or unstable material within the building and pavement areas. Topsoil may be stockpiled for later use in landscape areas. Under no circumstances should topsoil or organic- or debris-laden soil be placed as fill beneath or within 5 horizontal feet of building areas or beneath pavement areas.

Following clearing/grubbing operations and cuts to design grades, the entire site including the proposed building and pavement areas should be proof-compacted with a 15-ton smooth drum vibratory roller under the observation of an Intertek-PSI or Intertek-MT Group representative. Those areas observed to rut and deflect excessively should be removed and replaced or otherwise stabilized. The subgrade repair or stabilization approaches should be determined at the time of construction, but may include scarifying subgrades, the placement of a geotextile/geogrid or removal/recompaction or removal/replacement. Additionally, depending on weather conditions and precipitation at the time of construction, the use of additional stabilization techniques such as choking the subgrade with coarse aggregate may be required in the upper twenty-four (24) inches of the exposed subgrade. Field conditions will dictate the extent of any undercuts.

Prior to placement of stone subbase for concrete slabs or asphalt pavements, the site should be proof-rolled at each construction sequence with a 15 to 20 ton loaded tandem axle dump truck or other heavy pneumatic-tired construction equipment and soft subgrades repaired as determined by the PSI.

Any required backfill or new structural fill required to achieve the design site grades should comply with Section 3.3 Structural Fill Material Placement below. It is also recommended that Intertek-MT Group be retained to perform field density testing during fill/backfill placement. The placement of a geotextile and/or coarse stone may be required to stabilize the undercut subgrade and to facilitate backfilling.

In general, subgrade areas should be kept properly drained and free of ponded water surfaces. This may be achieved by either sloping the site topography adjacent to the construction to direct the water away from the excavation or trenching and berming to collect the excess runoff. Final excavations to desired subgrades should be accomplished immediately prior to the



placement of concrete. The contractor should not place concrete on disturbed subgrades. If the subgrade soils are wet, machine or foot traffic should be reduced or eliminated to lessen disturbance of the subgrade. If the site clearing is performed separate from the proposed building construction, restoration of the site to provide for positive drainage is recommended.

3.3 STRUCTURAL FILL MATERIAL AND PLACEMENT

Materials to be used as fill/backfill should be tested for compliance with the specifications below for structural fill. If the materials do not meet the specifications, then they may be placed in non-bearing, landscaped areas or removed off-site.

The in-place soils will be sensitive to moisture content variations. This general sensitivity to water will influence construction, since subgrade support capacities will deteriorate when this soil type becomes wet and/or disturbed. It is not unusual for wet or cool season grading operations to be hindered by the continual need to dry back the on-site natural soils during placement. If fill placement must proceed during other than the summer months, the use of imported granular fill with less than 10 percent passing the No. 200 sieve may be necessary.

For any necessary fill, it is recommended that all imported or on-site soils be tested and evaluated by PSI. In general, fill materials planned for use as structural fill should be free of organic matter and construction debris, and should not be excessively wet or excessively plastic, and should have rock fragments no larger than 3 inches in maximum dimension.

Satisfactory fill material should include clean soil with USCS classifications of (GW, GM, GC, SW, SP, SM or SC). The fill material should have a maximum Liquid Limit of 40 and a Plasticity Index of 20 or less. Unsatisfactory fill material includes fine-grained or highly elastic, plastic or organic soils (CL, ML, MH, CH, OH, OL, PT) and these materials should not be used as structural fill.

Structural fill should be placed in accordance with the following recommendations:

1. Structural fill materials should be placed in layers of not more than 8 inches in loose thickness with soils that have rock fragments that are no larger than 3 inches in their maximum dimension.
2. Structural fill materials should have maximum liquid limit of 40 and a maximum plasticity index of 20, tested per ASTM D-4318. Preference should be given to using granular with low plasticity soil fines for structural fill.
3. Moisture contents should be within ± 2 percentage points of optimum moisture content per ASTM D-1557. Adjustments to the natural moisture contents of the soils may be required in order to obtain specified compaction levels. Additionally, soils to be used as fill should have a Maximum Dry Density (MDD) of at least 110 pcf as determined by a Modified Proctor.
4. Each layer of the fill materials in the building areas and in pavement subgrade areas should be compacted to at least 95 percent of the Modified Proctor maximum dry



density (ASTM D-1557).

5. A representative of the Geotechnical Engineer should monitor the fill placement and compaction operations on a full-time basis and should perform a sufficient number of density tests to verify that proper degrees of compaction are achieved.

If on-site material is considered for reuse as structural fill, then PSI recommends that at the start of construction and during construction (as needed) bulk samples be collected for laboratory testing by Intertek-PSI or Intertek-MT Group. Based on visual classifications and laboratory testing associated with our test boring exploration, the natural soils generally have suitable plasticity and gradation characteristics for use as structural fill material.

3.4 FOUNDATION RECOMMENDATIONS

3.4.1 SHALLOW FOUNDATIONS

After the site has been prepared as described in Section 3.2 above, the proposed structure may be supported on shallow spread footings bearing on firm natural soils, or compacted, approved structural fill. These foundations can be sized for a maximum allowable bearing pressure of 1,500 pounds per square foot (psf). Foundation bottoms should be compacted to 95 percent of its maximum dry density based on ASTM D-1557 prior to placement of reinforcing steel and concrete.

Exterior foundations should be designed for a minimum embedment of 36 inches below final exterior grades to provide adequate cover for frost protection. However, in areas where interior foundations are constructed in heated areas, the footings may be constructed at a minimum depth of 18 inches below final exterior grades.

We recommend that wall footings have a minimum width of 18 inches and that column footings have a minimum width of 36 inches, regardless of the actual bearing pressure. Wall footings should be provided with nominal, continuous, longitudinal steel reinforcement for greater bending strength so they can span across small areas of loose or soft soils that may go undetected during construction.

Foundation bearing surface evaluations should be performed in each foundation excavation prior to placement of reinforcing steel. These evaluations should be performed by a representative of PSI to confirm that the design allowable soil bearing pressure is available and that our design assumptions about the subgrade are applicable to the conditions encountered during construction.

In addition, if the bottom of footing excavation is found to be soft/loose and/or wet, it will most probably be required to be choked with coarse aggregate such as AASHTO #1 stone or its equivalent. Should the footing excavation need to be undercut, a line drawn outward and downward at 1H:2V, where H=Horizontal and V=Vertical, from the perimeter of the foundation bearing area should define the lateral limits of over-excavation.

Prior to the placement of foundation concrete, where reinforcing steel is placed in the foundations, an inspection must be conducted to observe that specified chairs or supports are provided that the reinforcing steel is properly positioned, as specified.



Exposure to the environment can weaken the soils at the foundation-bearing surface. PSI recommends that foundation concrete be placed on the same day it is excavated, if possible. If the foundation-bearing surface becomes unstable due to exposure to the environment, remedial work, removal of soft, frozen or otherwise unsuitable soils, may need to be performed prior to concrete placement.

Once the footing concrete is placed, the foundations should be backfilled with structural fill as soon as it is safe to do so without causing damage to them. The backfill serves to protect the footing, is a component of overturning resistance and prevents accumulation of water around the foundations which can soften and weaken the bearing soils. The ground surface near the completed foundations should be sloped to drain away from the foundations throughout construction to avoid accumulation of moisture in the subgrade soils.

The settlement of shallow foundations supported on engineered fill or suitable natural soils are anticipated to be measurable, but tolerable for the type of construction proposed. PSI estimates that foundations designed and constructed in accordance with the above recommendations will experience estimated total settlements on the order of one (1)-inch or less with differential settlement on the order of a half (1/2)-inch or less. Total and differential settlements of these magnitudes are usually considered tolerable for the anticipated construction. However, the structural engineer should confirm the tolerance of the proposed structure to the predicted total and differential settlements. While settlement of this magnitude is generally considered tolerable for the proposed construction, the design of building walls must include provisions for additional reinforcing steel and liberally spaced vertical control joints to limit the effects of cosmetic cracking.

3.4.2 UPLIFT AND SHEAR RESISTANCE OF SHALLOW FOUNDATIONS

Shallow foundations may be used to resist both uplift and lateral forces. For the case of uplift forces, the resistance should be calculated including the weight of the foundation and the weight of the overburden soil above the foundation. The overburden soil above the foundation must be well-compacted structural fill. The unit weight of the foundation and soil overburden must account for the location of the design water table.

Materials below the water table should be assigned buoyant unit weights and materials above the water table, total unit weights. For materials above the water level, PSI recommends using total unit weights of 115 and 150 pcf for soil and concrete materials in this calculation; below the water table unit weights of 53 and 88 pcf.

For sustained uplift loading conditions, the resisting force should be calculated using the weight of the foundation and the weight of the material within a vertical projection of the foundation perimeter. The safety factor for uplift resistance for the sustained loading condition should be at least 2.

For transient uplift loads, such as wind loads, the uplift resistance should be computed similarly to the case of the sustained loading, except that the prism of soil above the foundation used to compute the resistance is formed by the projection of lines from the top perimeter of the foundation upwards at an angle of 20 to 30 degrees from the vertical depending on the type of



soil.

For clay backfill above the footing, the upward projection of the sides of the soil prism should be at a 30-degree angle, outward from the vertical. For sand backfill above the footing, the upward projection of the sides of the soil prism should be at a 20-degree angle, outward from the vertical. The safety factor for uplift resistance for the transient loading condition is the ratio of the sum of the foundation and overburden weights divided by the uplift force and should be at least 1.5.

Passive earth pressures of foundation materials adjacent to the footing, as well as soil friction along the footing base, may be used to resist sliding. The passive earth pressure can be calculated using an estimated passive earth pressure coefficient of 2 for limited deflection. Due to the variability of foundation materials that will be exposed at the bearing level, we have assumed relatively firm undisturbed soils or compacted structural fill as the foundation material to be used for computing passive earth pressures and soil friction. An allowable friction coefficient between the concrete footing and soil can be assumed to be 0.3.

3.5 SEISMIC DESIGN

3.5.1 SEISMIC PARAMETERS

It is PSI's understanding that the project site is located within a municipality that employs the IBC/2015, NJ Edition. As part of this code, the design of structures must consider dynamic forces resulting from seismic events. These forces are dependent upon the magnitude of the earthquake event as well as the properties of the soils that underlie the site. As part of the procedure to evaluate seismic forces, the code requires the evaluation of the Seismic Site Class, which categorizes the site based upon the characteristics of the subsurface profile within the upper 100 feet of the ground surface. To define the Site Class for this project, we have interpreted the results of soil test borings drilled within the project site and estimated appropriate soil properties below the base of the borings to a depth of 100 feet as permitted by the code.

Based upon our evaluation, the subsurface conditions within the site are consistent with the characteristics of a **Site Class "D"** as defined in 1613.3.2 of the IBC/2015, NJ Edition. If a specific evaluation of the shear wave velocity profile is performed, then a more favorable Site Class may be determined for this site. PSI should be engaged to perform these additional services, if needed.

The associated USGS-NEHRP (2008) probabilistic ground acceleration values and site coefficients for the general site area were obtained from the USGS geohazards web page: <http://earthquake.usgs.gov/designmaps/us/application.php>. The seismic values and coefficient are presented in Table 1 below:



Table 1: Ground Motion Values*

Period (sec)	Mapped MCE Spectral Response Acceleration** (g)		Site Coefficients		Adjusted MCE Spectral Response Acceleration (g)		Design Spectral Response Acceleration (g)	
0.2	S_s	0.195	F_a	1.6	S_{Ms}	0.312	S_{Ds}	0.208
1.0	S_1	0.059	F_v	2.4	S_{M1}	0.142	S_{D1}	0.094

*2% Probability of Exceedance in 50 years for Latitude 40.02299°N and Longitude 74.26739°W

**At B-C interface (i.e. top of bedrock).

MCE = Maximum Considered Earthquake; g = acceleration due to gravity

3.5.2 GEOLOGIC/SEISMIC HAZARDS

According to the IBC/2015, NJ Edition, if the Seismic Design Category, as determined from the intended building use is interpreted to be D, E or F, the code requires an assessment of slope stability, liquefaction potential and surface rupture due to faulting or lateral spreading. Detailed evaluations of these factors were beyond the scope of this study. However, the following table presents a qualitative assessment of these issues considering the site class, the subsurface soil properties, the groundwater elevation, and probabilistic ground motions.

Table 2: Qualitative Seismic Risk Assessments

Hazard	Relative Risk	Comments
Liquefaction	Low	Groundwater was not encountered within the depths explored (22 feet bgs or less) and soils appear to contain sufficient fines and relative densities to limit liquefaction.
Slope Stability	Low	Existing site grades are relatively level and new slopes are not anticipated. Probabilistic ground accelerations are also low at the site.
Surface Rupture	Low	The site is not underlain by a mapped active fault.

3.6 FLOOR SLAB RECOMMENDATIONS

The concrete slab for the structure may be ground-supported (slab-on-grade) after the aforementioned ground improvement has been performed. Should soft or loose soils be identified at slab subgrade during proofrolling, undercutting or stabilization may be required. A visual inspection of the exposed soil slab subgrade must be made by PSI.

For the subgrade prepared as recommended in this report, a Modulus of Subgrade Reaction, k value, of 100 pounds per cubic inch (pci) may be used on in-situ soil subgrades or approved engineered fill in the grade slab design, based on a presumed value for a 1 foot by 1 foot plate load test.

In order to provide a more consistent subgrade reaction immediately beneath any concrete slab-on-grade, we recommend that floor slabs be underlain by a minimum of 4 inches of free-



draining (a maximum particle size of $\frac{3}{4}$ inch with less than 5 percent material passing the No. 200 sieve), well-graded gravel or crushed rock base course. Base course material should be moisture conditioned to within ± 2 percent of optimum moisture content and compacted by mechanical means to a minimum of 95 percent of the material's maximum dry density as determined in accordance with ASTM D-1557.

The crushed stone should provide a capillary break to limit migration of moisture through the slab. If additional protection against moisture vapor is desired, a vapor retarding membrane may also be incorporated into the design. Factors such as cost, special considerations for construction and the floor coverings suggest that the architect and owner make decisions on the use of and placement location for vapor retarding membranes.

The precautions listed below should be followed for construction of slab-on-grade pads. These details will not reduce the amount of movement but are intended to reduce potential damage should some settlement of the supporting subgrade take place. Some increase in moisture content is inevitable as a result of development and associated landscaping. However, extreme moisture content increases can be largely controlled by proper and responsible site drainage, building maintenance and irrigation practices.

Cracking of slabs-on-grade is normal and should be expected. Cracking can occur not only as a result of heaving or compression of the supporting soil and/or bedrock material, but also as a result of concrete curing stresses. The occurrence of concrete shrinkage cracks and problems associated with concrete curing may be reduced and/or controlled by limiting the water/cement ratio of the concrete, proper concrete placement, finishing, curing and by the placement of crack control joints at frequent intervals, particularly, where re-entrant slab corners occur. The American Concrete Institute (ACI) recommends a maximum panel size (in feet) equal to approximately three times the thickness of the slab (in inches) in both directions. For example, joints are recommended at a maximum spacing of 12 feet assuming a four-inch thick slab. PSI also recommends that the slab be independent of the foundation walls. Using fiber reinforcement in the concrete can also help control shrinkage cracking.

Areas supporting slabs should be properly moisture conditioned and compacted. Backfill soils in all interior and exterior water and sewer line trenches should be carefully compacted.

Exterior slabs should be isolated from the building. These slabs should be reinforced to function as independent units. Movement of these slabs should not be transmitted to the building foundation or superstructure.

3.7 PAVEMENT DESIGN

Prior to placing the aggregate base, the subgrade should be proof-compacted with a smooth steel drum vibratory roller weighing at least fifteen (15) tons and operating in the vibratory mode, in order to detect areas or pockets of unusually soft/loose material. These areas, if encountered, should be over-excavated and replaced with structural fill. Prior to placement of asphaltic concrete, the aggregate base should be proofrolled with a fully loaded triaxle dump truck and areas that pump and rut be repaired.



PSI has determined a theoretical pavement design based on the anticipated traffic use, assumed traffic loads and estimated subgrade properties. The following assumptions and design parameters were used in the flexible pavement section designs:

- 1) The traffic loading was assumed to have an equivalent traffic loading condition of 30,000 equivalent 18-kip single axle loads (ESAL's) for light-duty pavements (car traffic), and 60,000 ESAL's for heavy-duty pavements (truck traffic).
- 2) The Initial and Terminal Serviceability Indexes are 4.2 and 2.5, respectively. A reliability of 95% and a standard deviation of 0.45 were utilized.
- 3) The asphaltic concrete to be used for the proposed flexible pavement will be a NJDOT plant mix with a Structural Coefficient of 0.44 for both the Binder Course and for the Wearing Course.
- 4) The aggregate subbase material to be used is assumed to be a high quality, densely graded crushed stone with a minimum Structural Coefficient of 0.10. The drainage coefficient used for aggregate base course material was 1.0.
- 5) Based on the soils encountered in our test borings and a properly prepared subgrade, an assumed CBR value of 5 percent was used which yields an estimated Resilient Modulus of 5,800 psi.
- 6) Utilizing the above criteria, a minimum structural number of 2.28 is required for light-duty pavements and 2.56 for heavy-duty pavements.

The civil engineer for the project may have more traffic and project design data available than is currently available to PSI or thicker sections may be required in DOT right-of-way's or local ordinance and may need to modify and refine these pavement sections. We will, upon request, be pleased to provide a more detailed pavement section design when definite traffic loading and site layout plans are available. Based upon our field results, analysis and assumptions, the following pavement sections were obtained:

Light Duty

- 1.5 in. Surface Course (9.5M64 NJDOT Superpave HMA)
- 2.5 in. Intermediate Course (19M64 NJDOT Superpave HMA)
- 6.0 in. Aggregate Base Course (NJDOT 901.10.01, DGA Virgin, or equivalent)
Compacted to minimum 95 percent of maximum dry density.

Heavy Duty

- 1.5 in. Surface Course (9.5M64 NJDOT Superpave HMA)
- 3.0 in. Intermediate Course (19M64 NJDOT Superpave HMA)
- 6.0 in. Aggregate Base Course (NJDOT 901.10.01, DGA Virgin, or equivalent)
Compacted to minimum 95 percent of maximum dry density.



The asphaltic concrete is to be designed, delivered and placed in accordance with the current NJDOT Standards for the appropriate traffic volume considering the maximum legal axle loadings. The pavement should be crowned or sloped in order to promote effective surface drainage and reduce the risk of water ponding. It is also recommended a minimum slope of one and one-half (1-1/2) percent. In addition, the subgrade should be similarly sloped to promote effective subgrade drainage and incorporation of perimeter drains should be considered to facilitate drainage of aggregate base.

Rigid pavement sections merit consideration for areas that receive concentrated sustained loads such as dumpsters, loading areas, and storage bins. Rigid pavements of 6-inch minimum thickness will distribute concentrated loads and reduce the possibility of high stress concentrations to the subgrade. The concrete should be air-entrained (AE) with a minimum compressive strength of 4,000 PSI. The rigid pavement should be underlain by minimum of 6-inch aggregate base course consistent with NJDOT 901.10.01, DGA Virgin.

Actual pavement component thicknesses should be selected by the civil design engineer based on traffic loads, volume, and the owner's design life requirements. The above section represents minimum thicknesses representative of typical local construction practices, and as such, the owner and designer should anticipate the need for periodic maintenance.

4.0 CONSTRUCTION CONSIDERATIONS

4.1 GROUNDWATER CONTROL

As previously indicated at the time of our drilling activities (November 2018), groundwater was not encountered within test boring locations to the depths explored (22 feet bgs or less). However, it is possible that seasonal variations and subsurface conditions will cause the water levels across the site to vary at different times.

Overall site drainage is to be arranged in a manner to restrict the possibility of water impounding below foundation areas at all times during construction. It is anticipated that foundation excavations and construction control of water may be accomplished with multiple pumps pumping from multiple properly filtered open sumps.

PSI recommends that the Contractor determine the actual groundwater levels at the site at the time of the construction activities to assess the impact groundwater may have on construction. Water should not be allowed to collect in the foundation excavation, on floor slab areas or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of collected rainwater, groundwater or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. The grades should be sloped away from the building and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

The Geotechnical engineer should be consulted if excessive and uncontrolled amounts of seepage occur. Consultation with the project Storm Civil Engineer may also be necessary.



4.2 EXCAVATION CONSIDERATIONS

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P". This document was established to better enhance the safety of workers entering trenches or excavations.

Federal regulation mandates that all excavations, whether they be utility trenches, basement or footing excavations or others (i.e. underground storage tanks), be constructed in accordance with the OSHA requirements. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could risk injury to workers and be liable for substantial financial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's responsible person, as defined in "29 CFR Part 1926", should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination or excavation depth, including utility trench excavation depth, exceed those specified in local, state and federal safety regulations.

We are providing this information solely as a service to our client. PSI is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

5.0 REPORT LIMITATIONS

The recommendations and discussions in this submittal are based on the available information obtained by PSI and design details furnished by Capital Growth Buchalter, Inc. If there are any revisions of the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the recommendations are required. If PSI is not retained to perform these functions, PSI cannot be responsible for the impact of those conditions on the performance of the project.

PSI warrants that the findings, recommendations, specifications or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area at the time of this report. No other warranties are implied or expressed.

The scope of our services does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater or surface water within or beyond the site studied. Any statements in this report regarding odors, staining of soils or other unusual conditions observed are strictly for the information of our client.

Upon completion of plans and specifications, PSI should be provided the opportunity to review



the final design documents. This review process will allow PSI to verify whether or not our engineering recommendations have been properly incorporated into the design documents and that the earthwork and foundation recommendations have been properly interpreted and implemented. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Capital Growth Buchalter, Inc for the specific application to the proposed Dollar General at 2920 Ridgeway Road, Manchester Township, New Jersey.



APPENDIX

Figure 1: Site Location Plan

Figure 2: Boring Location Plan

Boring Logs

General Notes

Laboratory Test Results

FIGURE 1: USGS SITE LOCATION PLAN
 USGS Quadrangle: Lakehurst, New Jersey (1957)
 Proposed Dollar General
 (Ridgeway) Manchestertown Branch
 PSI Project No.: 04911692

Light Duty
Unimproved dirt
State Route

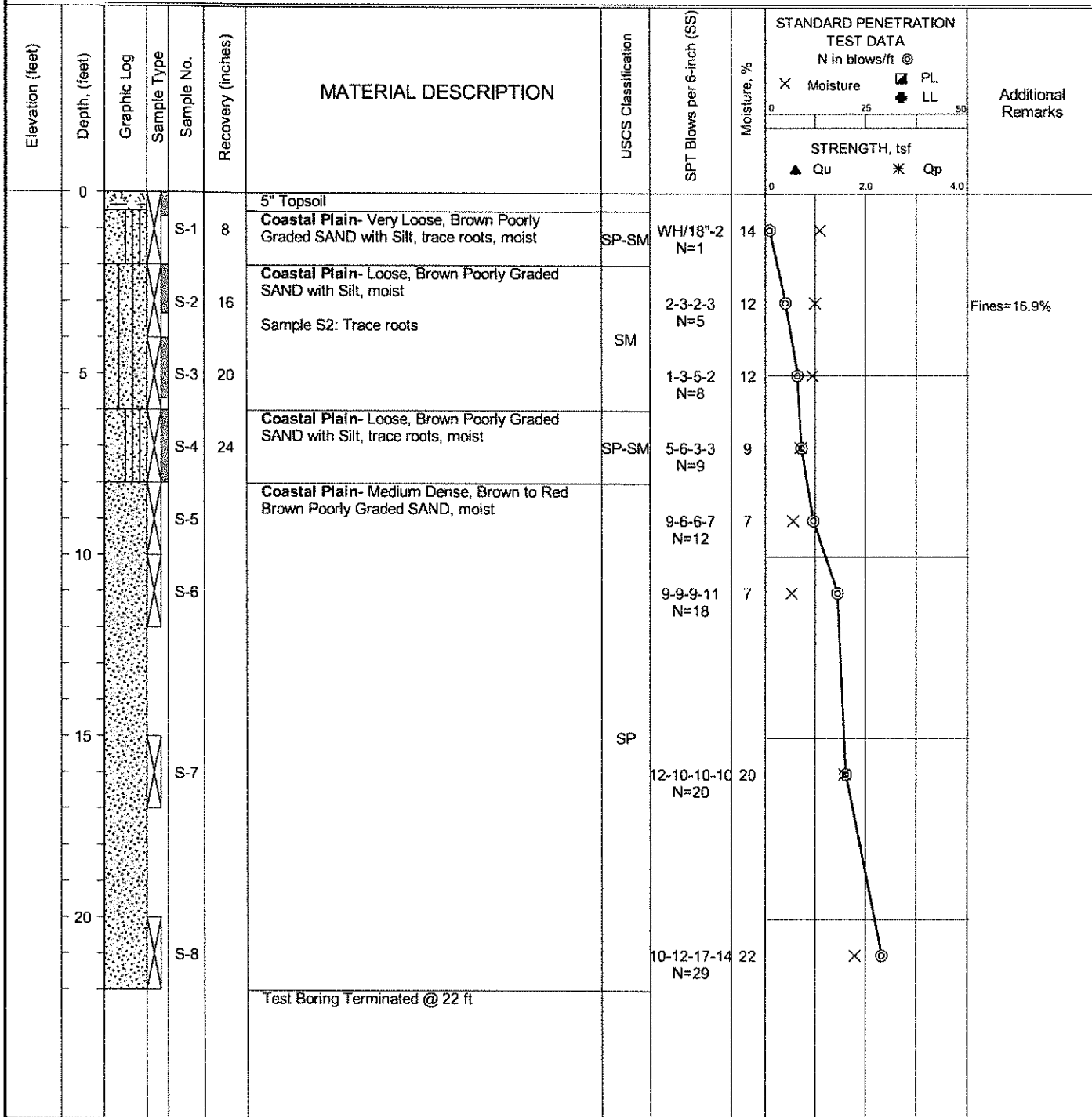
LAKEHURST, N.J.
SEE LAKEHURST 15' QUADRANGLE
N4000-W7415/75

1957

FOR SALE BY U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

DATE STARTED: 11/14/18		DRILL COMPANY: Boring Brothers, Inc.		BORING B-1
DATE COMPLETED: 11/14/18		DRILLER: LOGGED BY: R. Peddishree		
COMPLETION DEPTH: 22.0 ft		DRILL RIG: CME 55		<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> Water While Drilling Upon Completion </div> <div style="text-align: center;"> Not Enc. Not Enc. feet </div> </div>
BENCHMARK: N/A		DRILLING METHOD: Casing/Mud-Rotary		
ELEVATION: N/A		SAMPLING METHOD: 2-in SS		BORING LOCATION: See Boring Location Plan
LATITUDE: n/a°		HAMMER TYPE: Automatic		
LONGITUDE: n/a°		EFFICIENCY: N/A		
STATION: N/A		OFFSET: N/A		
REMARKS:		REVIEWED BY: P. McMichael		



Professional Service Industries, Inc.
 1707 S. Cameron Street, Suite B
 Harrisburg, PA 17104
 Telephone: (717) 230-8622

PROJECT NO.: 04911692
PROJECT: Dollar General (CGB)
LOCATION: 2920 Ridgeway Road
 Manchester Twp, NJ

DATE STARTED: 11/14/18		DRILL COMPANY: Boring Brothers, Inc.		BORING B-2	
DATE COMPLETED: 11/14/18		DRILLER: LOGGED BY: R. Peddishree			
COMPLETION DEPTH: 22.0 ft		DRILL RIG: CME 55		<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> Water ∇ While Drilling ∇ Upon Completion ∇ </div> <div style="width: 40%;"> Not Enc. Not Enc. feet </div> </div>	
BENCHMARK: N/A		DRILLING METHOD: Casing/Mud-Rotary			
ELEVATION: N/A		SAMPLING METHOD: 2-in SS		BORING LOCATION: See Boring Location Plan	
LATITUDE: n/a°		HAMMER TYPE: Automatic			
LONGITUDE: n/a°		EFFICIENCY: N/A			
STATION: N/A		OFFSET: N/A		REVIEWED BY: P. McMichael	
REMARKS:					

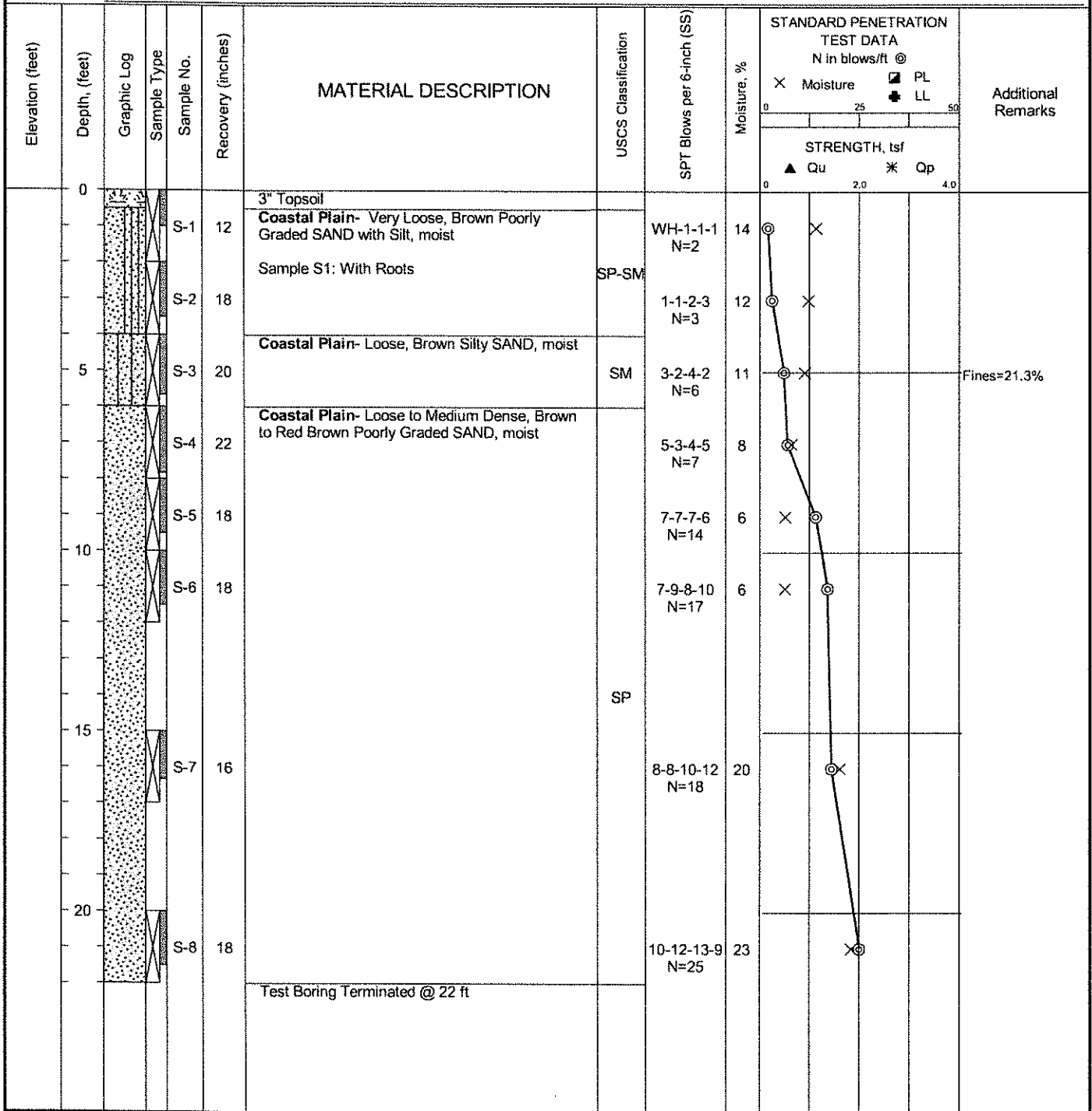
Elevation (feet)	Depth (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
						<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> X Moisture PL LL </div> <div style="width: 40%;"> STRENGTH, tsf ▲ Qu * Qp </div> </div>					
0						5" Topsoil					
				S-1	24	Coastal Plain- Loose, Brown Silty SAND, moist		1-3-3-2 N=6			
				S-2	18		SM	2-2-3-2 N=5			
5				S-3	20			2-3-3-5 N=6			
				S-4	16	Coastal Plain- Medium Dense, Brown Poorly Graded SAND with Silt, moist		3-5-6-6 N=11			
				S-5	18		SP-SM	7-6-6-6 N=12			
10				S-6	20			7-9-7-10 N=16			
						Coastal Plain- Medium Dense, Yellow Brown Poorly Graded SAND, moist					
15				S-7	12		SP	6-12-12-14 N=24			
20				S-8	16			7-9-17-12 N=26			
						Test Boring Terminated @ 22 ft					



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 Telephone: (717) 230-8622

PROJECT NO.: 04911692
PROJECT: Dollar General (CGB)
LOCATION: 2920 Ridgeway Road
 Manchester Twp, NJ

DATE STARTED: 11/14/18	DRILL COMPANY: Boring Brothers, Inc.	BORING B-3
DATE COMPLETED: 11/14/18	DRILLER: LOGGED BY: R. Peddishree	
COMPLETION DEPTH: 22.0 ft	DRILL RIG: CME 55	<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> <p>Water</p> <p>▽ While Drilling Not Enc.</p> <p>▼ Upon Completion Not Enc. feet</p> </div> </div>
BENCHMARK: N/A	DRILLING METHOD: Casing/Mud-Rotary	
ELEVATION: N/A	SAMPLING METHOD: 2-in SS	BORING LOCATION: See Boring Location Plan
LATITUDE: n/a°	HAMMER TYPE: Automatic	
LONGITUDE: n/a°	EFFICIENCY: N/A	
STATION: N/A OFFSET: N/A	REVIEWED BY: P. McMichael	
REMARKS:		



Professional Service Industries, Inc.
1707 S. Cameron Street, Suite B
Harrisburg, PA 17104
Telephone: (717) 230-8622

PROJECT NO.: 04911692
PROJECT: Dollar General (CGB)
LOCATION: 2920 Ridgeway Road
Manchester Twp, NJ

DATE STARTED: 11/14/18		DRILL COMPANY: Boring Brothers, Inc.		BORING B-4	
DATE COMPLETED: 11/14/18		DRILLER: LOGGED BY: R. Peddishree			
COMPLETION DEPTH: 22.0 ft		DRILL RIG: CME 55		<div style="display: flex; justify-content: space-between;"> <div> Water ∇ While Drilling ∇ Upon Completion ∇ </div> <div> Not Enc. Not Enc. feet Not Enc. </div> </div>	
BENCHMARK: N/A		DRILLING METHOD: Casing/Mud-Rotary		BORING LOCATION: See Boring Location Plan	
ELEVATION: N/A		SAMPLING METHOD: 2-in SS			
LATITUDE: n/a°		HAMMER TYPE: Automatic			
LONGITUDE: n/a°		EFFICIENCY: N/A			
STATION: N/A		OFFSET: N/A			
REMARKS:		REVIEWED BY: P. McMichael			

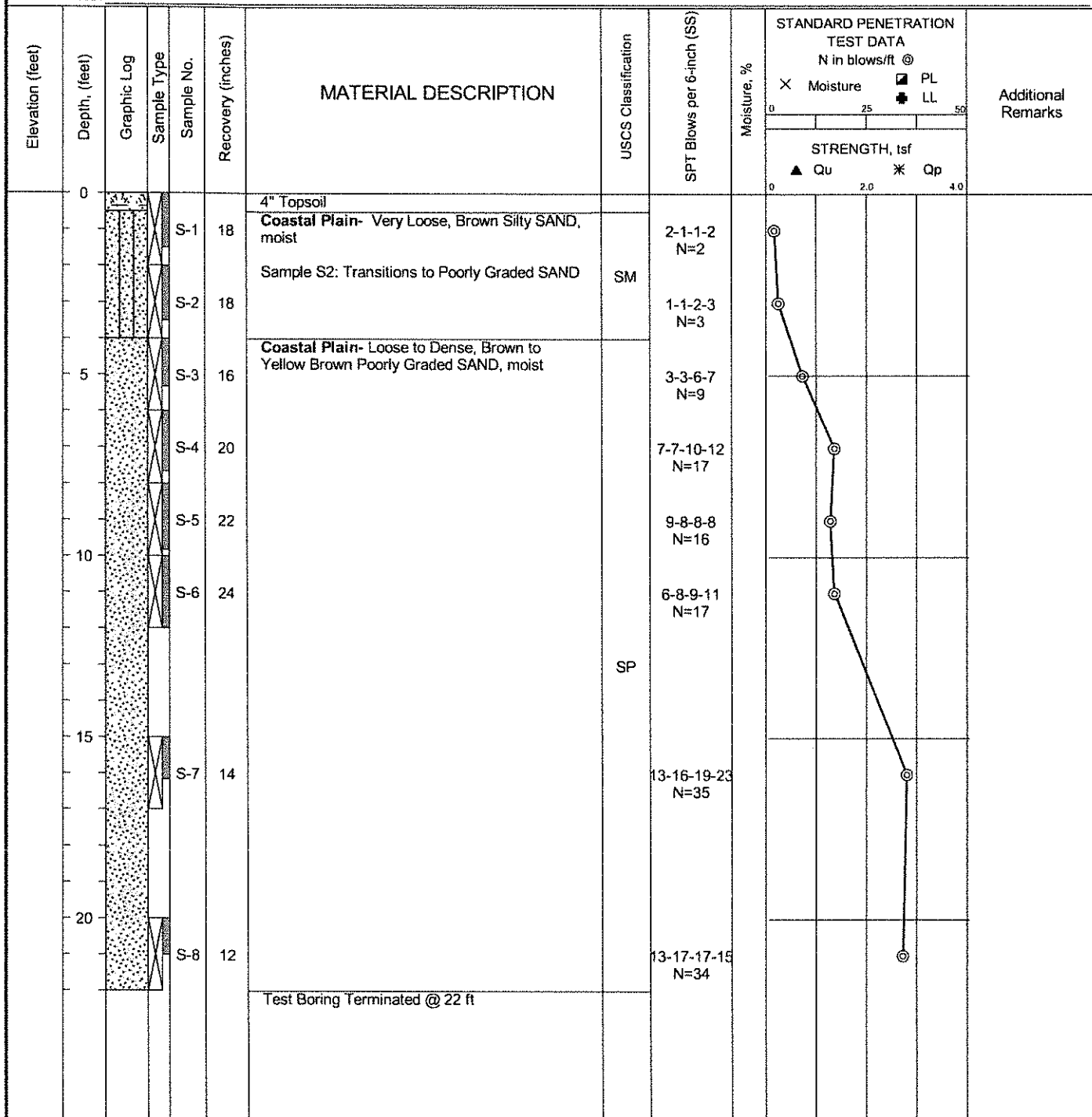
Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @ X Moisture PL LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0	0					5" Topsoil					
	6		S-1		6	Coastal Plain- Very Loose, Dark Brown to Brown Poorly Graded SAND with Silt, trace roots, moist	SP-SM	WH/12"-2-3 N=2			
	18		S-2		18	Sample S2: Transitions to Silty SAND		WH-1-1-2 N=2			
	20		S-3		20	Coastal Plain- Loose, Brown Silty SAND, moist	SM	2-2-4-4 N=6			
			S-4			Coastal Plain- Medium Dense, Brown to Red Brown Poorly Graded SAND, moist		4-5-5-3 N=10			
			S-5					8-7-5-7 N=12			
			S-6				SP	10-8-7-7 N=15			
			S-7					6-8-10-11 N=18			
			S-8					11-9-11-12 N=20			
	22					Test Boring Terminated @ 22 ft					



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Harrisburg, PA 17104
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PROJECT NO.: 04911692
PROJECT: Dollar General (CGB)
LOCATION: 2920 Ridgeway Road
Manchester Twp, NJ

DATE STARTED: 11/14/18	DRILL COMPANY: Boring Brothers, Inc.	BORING B-5
DATE COMPLETED: 11/14/18	DRILLER: LOGGED BY: R. Peddishree	
COMPLETION DEPTH: 22.0 ft	DRILL RIG: CME 55	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Water</p> <p>▽ While Drilling Not Enc.</p> <p>▽ Upon Completion Not Enc. feet</p> </div> </div>
BENCHMARK: N/A	DRILLING METHOD: Casing/Mud-Rotary	
ELEVATION: N/A	SAMPLING METHOD: 2-in SS	BORING LOCATION: See Boring Location Plan
LATITUDE: n/a°	HAMMER TYPE: Automatic	
LONGITUDE: n/a°	EFFICIENCY: N/A	
STATION: N/A OFFSET: N/A	REVIEWED BY: P. McMichael	
REMARKS:		



	Professional Service Industries, Inc. 1707 S. Cameron Street, Suite B Harrisburg, PA 17104 Telephone: (717) 230-8622	PROJECT NO.: 04911692
		PROJECT: Dollar General (CGB)
		LOCATION: 2920 Ridgeway Road
		Manchester Twp, NJ

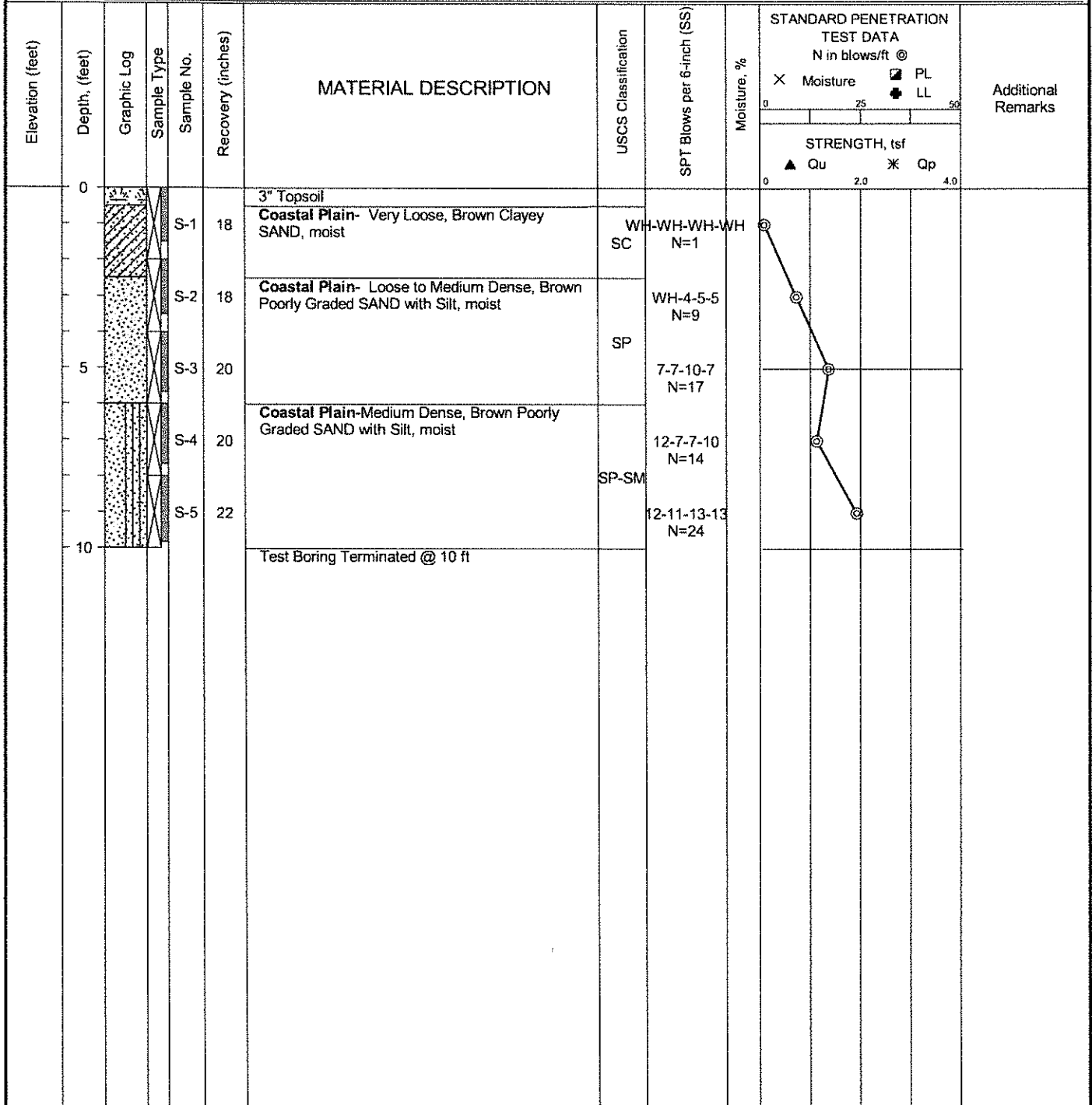
The stratification lines represent approximate boundaries. The transition may be gradual.

DATE STARTED: 11/13/18		DRILL COMPANY: Boring Brothers, Inc.		BORING P-1
DATE COMPLETED: 11/13/18		DRILLER: LOGGED BY: R. Peddishree		
COMPLETION DEPTH: 10.0 ft		DRILL RIG: CME 55		<div style="display: flex; justify-content: space-between;"> <div style="width: 20px;"> <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 10px; height: 10px;"></div> </div> <div style="width: 60%;"> <div style="display: flex; justify-content: space-between;"> <div>While Drilling</div> <div>Not Enc.</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Upon Completion</div> <div>Not Enc. feet</div> </div> </div> </div>
BENCHMARK: N/A		DRILLING METHOD: Casing/Mud-Rotary		
ELEVATION: N/A		SAMPLING METHOD: 2-in SS		
LATITUDE: n/a°		HAMMER TYPE: Automatic		BORING LOCATION: See Boring Location Plan
LONGITUDE: n/a°		EFFICIENCY: N/A		
STATION: N/A OFFSET: N/A		REVIEWED BY: P. McMichael		
REMARKS:				

Elevation (feet)	Depth (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft © X Moisture PL LL	STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0						3" Topsoil						
			S-1	14		Coastal Plain- Very Loose, Brown Poorly Graded SAND with Silt, moist		WH/12"-1-1 N=1	14	⊗	X	
			S-2	12			SP-SM	WH/12"-1-1 N=1	6	⊗	X	Fines=6.3%
5			S-3	16				2-2-2-2 N=4	6	⊗	X	
			S-4	18		Coastal Plain-Medium Dense, Brown Poorly Graded SAND with Silt, moist		6-6-5-5 N=11	4	X	⊗	
			S-5	18			SP-SM	6-7-7-5 N=14	3	X	⊗	
10						Test Boring Terminated @ 10 ft						

	Professional Service Industries, Inc.	PROJECT NO.: 04911692
	1707 S. Cameron Street, Suite B	PROJECT: Dollar General (CGB)
	Harrisburg, PA 17104	LOCATION: 2920 Ridgeway Road
	Telephone: (717) 230-8622	Manchester Twp, NJ

DATE STARTED: 11/13/18		DRILL COMPANY: Boring Brothers, Inc.		BORING P-2	
DATE COMPLETED: 11/13/18		DRILLER: LOGGED BY: R. Peddishree			
COMPLETION DEPTH: 10.0 ft		DRILL RIG: CME 55		<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> Water <input type="checkbox"/> While Drilling <input checked="" type="checkbox"/> Upon Completion </div> <div style="width: 40%;"> Not Enc. Not Enc. feet </div> </div>	
BENCHMARK: N/A		DRILLING METHOD: Casing/Mud-Rotary			
ELEVATION: N/A		SAMPLING METHOD: 2-in SS		BORING LOCATION: See Boring Location Plan	
LATITUDE: n/a°		HAMMER TYPE: Automatic			
LONGITUDE: n/a°		EFFICIENCY: N/A			
STATION: N/A		OFFSET: N/A		REVIEWED BY: P. McMichael	
REMARKS:					



	Professional Service Industries, Inc.	PROJECT NO.: 04911692
	1707 S. Cameron Street, Suite B	PROJECT: Dollar General (CGB)
	Harrisburg, PA 17104	LOCATION: 2920 Ridgeway Road
	Telephone: (717) 230-8622	Manchester Twp, NJ

The stratification lines represent approximate boundaries. The transition may be gradual.

DATE STARTED: 11/13/18		DRILL COMPANY: Boring Brothers, Inc.		BORING P-3	
DATE COMPLETED: 11/13/18		DRILLER: LOGGED BY: R. Peddishree			
COMPLETION DEPTH: 10.0 ft		DRILL RIG: CME 55		<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> Water ▽ While Drilling ▽ Upon Completion </div> <div style="width: 30%;"> Not Enc. Not Enc. feet </div> </div>	
BENCHMARK: N/A		DRILLING METHOD: Casing/Mud-Rotary			
ELEVATION: N/A		SAMPLING METHOD: 2-in SS		BORING LOCATION: See Boring Location Plan	
LATITUDE: n/a°		HAMMER TYPE: Automatic			
LONGITUDE: n/a°		EFFICIENCY: N/A			
STATION: N/A		OFFSET: N/A		REVIEWED BY: P. McMichael	
REMARKS:					

Elevation (feet)	Depth (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STRENGTH, tsf	Additional Remarks
0						3" Topsoil					
				S-1	14	Coastal Plain- Very Loose, Brown Silty SAND, moist	SM	WH/12"-1-1 N=1	13		
				S-2	18	Coastal Plain- Loose, Brown Poorly Graded SAND, moist	SP	1-2-3-3 N=5	5		
5				S-3	20			5-3-4-3 N=7	6		
				S-4	20	Coastal Plain-Medium Dense, Brown Poorly Graded SAND, moist	SP	8-7-7-9 N=14	6		
				S-5	22			9-9-10-12 N=19	5		
10						Test Boring Terminated @ 10 ft					

	Professional Service Industries, Inc.	PROJECT NO.: 04911692
	1707 S. Cameron Street, Suite B	PROJECT: Dollar General (CGB)
	Harrisburg, PA 17104	LOCATION: 2920 Ridgeway Road
	Telephone: (717) 230-8622	Manchester Twp, NJ

DATE STARTED: 11/13/18		DRILL COMPANY: Boring Brothers, Inc.		BORING P-4	
DATE COMPLETED: 11/13/18		DRILLER: LOGGED BY: R. Peddishree			
COMPLETION DEPTH: 10.0 ft		DRILL RIG: CME 55		<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">Water</div> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></div> While Drilling </div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></div> Upon Completion </div> </div> <div style="margin-left: 20px;"> Not Enc. Not Enc. feet </div> </div>	
BENCHMARK: N/A		DRILLING METHOD: Casing/Mud-Rotary			
ELEVATION: N/A		SAMPLING METHOD: 2-in SS		BORING LOCATION: See Boring Location Plan	
LATITUDE: n/a°		HAMMER TYPE: Automatic			
LONGITUDE: n/a°		EFFICIENCY: N/A			
STATION: N/A		OFFSET: N/A		REVIEWED BY: P. McMichael	
REMARKS:					

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
										<div> X Moisture <div> <div>PL</div> <div>LL</div> </div> </div>	
										<div> <div>STRENGTH, tsf</div> <div> <div>▲ Qu</div> <div>✱ Qp</div> </div> </div>	
	0					4" Topsoil					
				S-1	14	Coastal Plain- Very Loose, Brown Silty SAND, moist	SM	WH/18"-1 N=1			
				S-2	12	Sample S2: Transitions to Poorly Graded Sand		1-2-1-2 N=3			
	5			S-3	18	Coastal Plain- Loose, Brown Poorly Graded SAND, moist	SP	2-2-3-3 N=5			
				S-4	20	Coastal Plain-Medium Dense, Brown Poorly Graded SAND, moist	SP	3-6-7-9 N=13			
				S-5	20			5-6-7-6 N=13			
	10					Test Boring Terminated @ 10 ft					

	Professional Service Industries, Inc. 1707 S. Cameron Street, Suite B Harrisburg, PA 17104 Telephone: (717) 230-8622	PROJECT NO.: 04911692 PROJECT: Dollar General (CGB) LOCATION: 2920 Ridgeway Road Manchester Twp, NJ

The stratification lines represent approximate boundaries. The transition may be gradual.

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.	☒ SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
HSA: Hollow Stem Auger - typically 3 1/4" or 4 1/4" I.D. openings, except where noted.	■ ST: Shelby Tube - 3" O.D., except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry	□ RC: Rock Core
R.C.: Diamond Bit Core Sampler	↓ TC: Texas Cone
H.A.: Hand Auger	⊗ BS: Bulk Sample
P.A.: Power Auger - Handheld motorized auger	⊞ PM: Pressuremeter
	CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
N ₆₀ : A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q _u : Unconfined compressive strength, TSF
Q _p : Pocket penetrometer value, unconfined compressive strength, TSF
w%: Moisture/water content, %
LL: Liquid Limit, %
PL: Plastic Limit, %
PI: Plasticity Index = (LL-PL), %
DD: Dry unit weight, pcf
▽, ▽, ▼ Apparent groundwater level at time noted

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	N - Blows/foot
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	50 - 80
Extremely Dense	80+

ANGULARITY OF COARSE-GRAINED PARTICLES

Description	Criteria
Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular:	Particles are similar to angular description, but have rounded edges
Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Rounded:	Particles have smoothly curved sides and no edges

GRAIN-SIZE TERMINOLOGY

Component	Size Range
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (3/4 in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to 3/4 in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

PARTICLE SHAPE

Description	Criteria
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% Dry Weight
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%

GENERAL NOTES

(Continued)

CONSISTENCY OF FINE-GRAINED SOILS

<u>Q_u - TSF</u>	<u>N - Blows/foot</u>	<u>Consistency</u>
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

MOISTURE CONDITION DESCRIPTION

<u>Description</u>	<u>Criteria</u>
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term</u>	<u>% Dry Weight</u>
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

STRUCTURE DESCRIPTION

<u>Description</u>	<u>Criteria</u>	<u>Description</u>	<u>Criteria</u>
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick	Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick	Lensed:	Inclusion of small pockets of different soils
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing	Layer:	Inclusion greater than 3 inches thick (75 mm)
Slickensided:	Fracture planes appear polished or glossy, sometimes striated	Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
		Parting:	Inclusion less than 1/8-inch (3 mm) thick

SCALE OF RELATIVE ROCK HARDNESS

<u>Q_u - TSF</u>	<u>Consistency</u>
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

ROCK BEDDING THICKNESSES

<u>Description</u>	<u>Criteria</u>
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

ROCK VOIDS

<u>Voids</u>	<u>Void Diameter</u>
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

GRAIN-SIZED TERMINOLOGY

<u>(Typically Sedimentary Rock)</u>	
<u>Component</u>	<u>Size Range</u>
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

ROCK QUALITY DESCRIPTION

<u>Rock Mass Description</u>	<u>RQD Value</u>
Excellent	90 - 100
Good	75 - 90
Fair	50 - 75
Poor	25 - 50
Very Poor	Less than 25

DEGREE OF WEATHERING

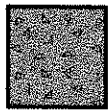
Slightly Weathered:	Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.
Weathered:	Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.
Highly Weathered:	Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.

SOIL CLASSIFICATION CHART

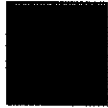
NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

Graphic Symbols for Materials and Rock Deposits



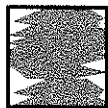
CONCRETE
Portland Cement Concrete



BITUMINOUS CONCRETE



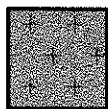
CLAYSTONE



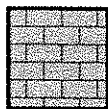
COAL
Coal, Anthracite Coal



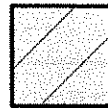
CONGLOMERATE/BRECCIA
Conglomerate, Breccia



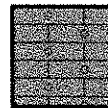
IGNEOUS ROCK
Anorthosite, Basalt, Metabasalt, Diabase (Gabbro), Gabbro, Granite/Granodiorite, Hornfels, Pegmatite, Rhyolite/Metarhyolite



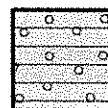
LIMESTONE
Limestone, Dolomite



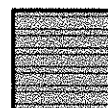
METAMORPHIC ROCK
Amphibolite, Gneiss, Marble, Phyllite, Quartzite, Schist, Serpentine, Slate



CHERT



SANDSTONE
Sandstone, Orthoquartzite (Sandstone)



SHALE



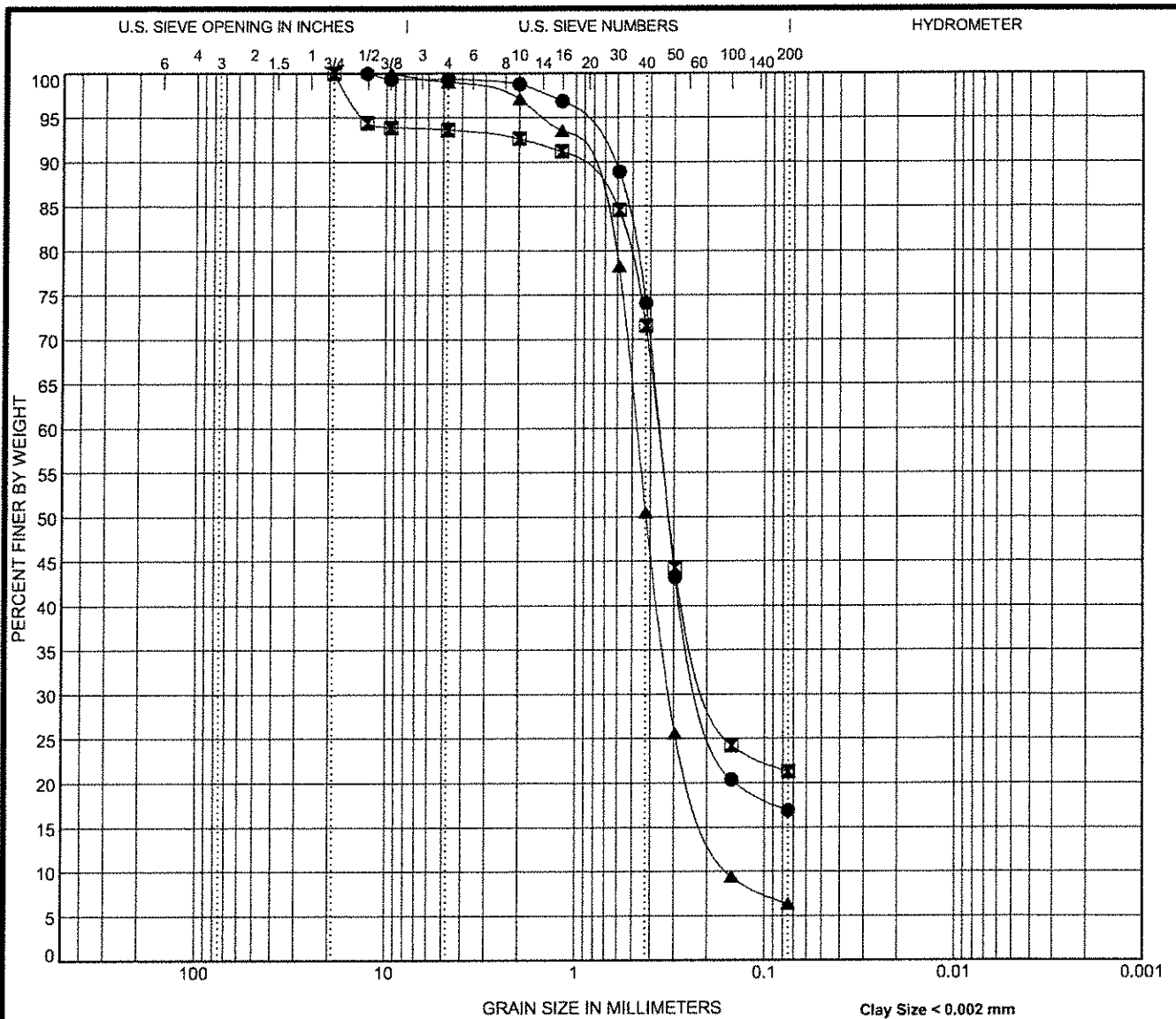
SILTSTONE



NO RECOVERY



VOID



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● B-1 3.0	Silty SAND (SM)					
⊠ B-3 5.0	Silty SAND (SM)					
▲ P-1 3.0	Poorly Graded SAND with silt (SP-SM)				1.38	3.11

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-1 3.0	12.7	0.361	0.199		0.7	82.4	16.9	
⊠ B-3 5.0	19.05	0.365	0.181		6.3	72.4	21.3	
▲ P-1 3.0	9.525	0.476	0.316	0.153	1.0	92.6	6.3	



Professional Service Industries, Inc.
1707 S. Cameron Street, Suite B
Harrisburg, PA 17104
Telephone: (717) 230-8622
Fax: (717) 230-8626

GRAIN SIZE DISTRIBUTION

Project: Dollar General (CGB)
PSI Job No.: 04911692
Location: 2920 Ridgeway Road
Manchester Twp, NJ

Laboratory Summary Sheet

Sheet 1 of 1

Borehole	Approx. Depth	Liquid Limit	Plastic Limit	Plasticity Index	Qu (tsf)	%<#200 Sieve	Est. Specific Gravity	Water Content (%)	Dry Density (pcf)	Saturation (%)	Void Ratio
B-1	1							14			
B-1	3					16.9%		12			
B-1	5							12			
B-1	7							9			
B-1	9							7			
B-1	11							7			
B-1	16							20			
B-1	21							22			
B-3	1							14			
B-3	3							12			
B-3	5					21.3%		11			
B-3	7							8			
B-3	9							6			
B-3	11							6			
B-3	16							20			
B-3	21							23			
P-1	1							14			
P-1	3					6.3%		6			
P-1	5							6			
P-1	7							4			
P-1	9							3			
P-3	1							13			
P-3	3							5			
P-3	5							6			
P-3	7							6			
P-3	9							5			



Professional Service Industries
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Summary of Laboratory Results

PSI Job No.: 04911692
Project: Dollar General (CGB)
Location: 2920 Ridgeway Road
Manchester Twp, NJ

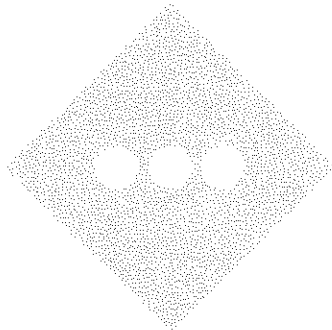
APPENDIX E

DRAINAGE AREA MAPS

INVENTORY

EXISTING DRAINAGE AREA MAP

PROPOSED DRAINAGE AREA MAP





TRAFFIC IMPACT STUDY

PROPOSED DOLLAR GENERAL
Manchester Township
Ocean County, New Jersey
Block 5, Lot 2059

Prepared For:
Manchester (Ridgeway) DG, LLC

Stonefield Engineering & Design, LLC
January 7, 2018
S-18155

Charles D. Olivo, PE, PTOE
Principal
NJ P.E. License #46719

Matthew J. Seckler, PE, PTOE
Senior Project Manager
NJ P.E. License #48731

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TECHNICAL APPENDIX

LEVEL OF SERVICE/AVERAGE CONTROL DELAY CRITERIA

TURNING MOVEMENT COUNT DATA

Intersection of Ridgeway Road and Washington Avenue

FIGURES

Figure 1 – Site Location Map

Figure 2 – 2018 Existing Traffic Volumes

Figure 3 – 2020 No-Build Traffic Volumes

Figure 4 – “New” Site-Generated Traffic Volumes

Figure 5 – “Pass-By” Site-Generated Traffic Volumes

Figure 6 – 2020 Build Traffic Volumes

HIGHWAY CAPACITY ANALYSIS DETAIL SHEETS

2018 Existing Traffic Conditions

2020 No-Build Traffic Conditions

2020 Build Traffic Conditions

PARKING STUDY MEMORANDUM

INTRODUCTION

This Traffic Impact Study was prepared to investigate the potential impacts of the proposed Dollar General on the adjacent roadway network. The subject property is located along the northbound side of Ridgeway Road between Washington Avenue and Richmond Avenue in the Township of Manchester, Ocean County, New Jersey. The site location is shown on appended **Figure 1**.

The subject property is designated as Block 5, Lot 2059 as depicted on the Township of Manchester Tax Map. The site has approximately 193 feet of frontage along Ridgeway Road, approximately 502 feet of frontage on Washington Avenue, and approximately 500 feet of frontage along Richmond Avenue. The existing site is currently vacant. Under the proposed development program, the existing wooded area would be razed and the proposed Dollar General would be constructed. Access is proposed via one (1) right-ingress/right-egress driveway along Ridgeway Road and one (1) full movement driveway along Washington Avenue.

METHODOLOGY

Stonefield Engineering & Design, LLC has prepared this Traffic Impact Study in accordance with the recommended guidelines and practices outlined by the Institute of Transportation Engineers (ITE) within Transportation Impact Analyses for Site Development. A detailed field investigation was performed to assess the existing conditions of the adjacent roadway network. A data collection effort was completed to identify the existing traffic volumes at the study intersections to serve as a base for the traffic analyses. Capacity analysis, a procedure used to estimate the traffic-carrying ability of roadway facilities over a range of defined operating conditions, was performed using the Highway Capacity Manual (HCM), and the Highway Capacity Software (HCS7) for all study conditions to assess the roadway operations.

For an unsignalized intersection, Level of Service (LOS) A indicates operations with delay of less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle. For a signalized intersection, LOS A indicates operations with delay of less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 80 seconds per vehicle. The Technical Appendix contains the Highway Capacity Analysis Detail Sheets for the study intersections analyzed in this assessment.

2018 EXISTING CONDITION

2018 EXISTING ROADWAY CONDITIONS

The proposed Dollar General is located along the northbound side of Ridgeway Road between Washington Avenue and Richmond Avenue in the Township of Manchester, Ocean County, New Jersey. The subject property is designated as Block 5, Lot 2059 as depicted on the Township of Manchester Tax Map. The site has

approximately 193 feet of frontage along Ridgeway Road, approximately 500 feet of frontage along Washington Avenue, and approximately 500 feet of frontage along Richmond Avenue. Land use in the area is a mix of commercial and office-professional uses.

Ridgeway Road (CR 571) is classified as an Urban Principal Arterial roadway with a general north-south orientation and is under the jurisdiction of Ocean County. Along the site frontage, the roadway provides two (2) lanes of travel in each direction and with additional lanes provided at nearby intersections to facilitate turning movements and provide additional capacity. The roadway has a posted speed limit of 50 mph. Curb and sidewalk are provided along the southerly side of the roadway, striped shoulders are provided on both sides of the roadway, and on-street parking is not permitted along either side of the roadway. Ridgeway Road provides north-south mobility within the Township of Manchester as well as access to surrounding municipalities for a mix of residential, office, commercial, and institutional uses along its length. The roadway provides connections to N.J.S.H. Route 70 to the north as well as N.J.S.H. Route 9 and the Garden State Parkway to the south.

Washington Avenue is a local roadway with a general east-west orientation and is under the jurisdiction of the Township of Manchester. Along the site frontage, the roadway provides one (1) lane of travel in each direction and has a posted speed limit of 25 mph. Curb is provided along the westerly side of the roadway, sidewalk and striped shoulders are not provided on either side of the roadway, and on-street parking is not permitted. Washington Avenue provides east-west mobility within the Township of Manchester for predominately residential and commercial uses along its length.

Ridgeway Road and Washington Avenue intersect to form an unsignalized four (4)-leg intersection with the eastbound and westbound approaches of Washington Avenue operating under stop control. The eastbound and westbound approaches of Washington Avenue each provide one (1) full-movement turn lane. The northbound approach of Ridgeway Road provides one (1) exclusive left-turn lane, one (1) exclusive through lane, and one (1) shared through/right-turn lane. The southbound approach of Ridgeway Road provides one (1) shared left-turn/through lane and one (1) shared through/right-turn lane. Crosswalks and pedestrian signals are not provided across any legs of the intersections.

2018 EXISTING TRAFFIC VOLUMES

Manual turning movement counts were collected during the typical weekday evening and Saturday midday time periods to evaluate existing traffic conditions and identify the specific hours when traffic activity on the adjacent roadways is at a maximum and could be potentially impacted by the development of the site. Turning movement counts were collected at the intersection of Ridgeway Road and Washington Avenue.

Specifically, manual turning movement counts were conducted on the following dates and during the following times:

- ◆ Thursday, September 27, 2018, from 4:00 p.m. to 7:00 p.m.
- ◆ Saturday, September 29, 2018, from 11:00 a.m. to 2:00 p.m.

The study time periods were chosen as they are representative of the peak periods of both the adjacent roadway network and the proposed development. The traffic volume data was collected and analyzed to identify the design peak hour in accordance with HCM and ITE guidelines. Based on the review of the count data the weekday evening peak hour occurred from 4:15 p.m. to 5:15 p.m. and the Saturday midday peak hour occurred from 11:30 a.m. to 12:30 p.m. The Technical Appendix contains a summary of the turning movement count data. The 2018 Existing weekday evening and Saturday midday peak-hour volumes are summarized on appended **Figure 2**.

2018 EXISTING LOS/CAPACITY ANALYSIS

A Level of Service and Volume/Capacity analysis was conducted for the 2018 Existing Condition during weekday evening and Saturday midday peak hours at the study intersection. Under the existing condition, the unsignalized intersection of Ridgeway Road and Washington Avenue is calculated to operate at Level of Service C or better during the weekday evening and Saturday midday peak hours.

2020 NO-BUILD CONDITION

BACKGROUND GROWTH

The 2018 Existing Condition traffic volume data was grown to a future horizon year of 2020, which is a conservative estimate for when the proposed Dollar General is expected to be fully constructed. In accordance with industry guidelines, the existing traffic volumes at the study intersections were increased by 2.25% annually for two (2) years. The 2.25% background growth rate was obtained from the New Jersey Department of Transportation (NJDOT) Annual Background Growth Rate Table.

2020 NO-BUILD TRAFFIC VOLUMES

The background growth rate was applied to the 2018 Existing Traffic Volumes to calculate the 2020 No-Build Traffic Volumes for the weekday evening and Saturday midday peak hours. These volumes are summarized on appended **Figure 3**.

2020 NO-BUILD LOS/CAPACITY ANALYSIS

A Level of Service and Volume/Capacity analysis was also conducted for the 2020 No-Build Condition during the weekday evening and Saturday midday peak hours at the study intersection. The turning movements at the intersection of Ridgeway Road and Washington Avenue are calculated to operate consistent with the findings of the Existing Condition during the weekday evening and Saturday midday peak hours.

2020 BUILD CONDITION

The site-generated traffic volume of the proposed Dollar General development was estimated to identify the potential impacts of the project. For the purpose of this analysis, the Dollar General is assumed to be fully operational within two (2) years of the preparation of this study.

TRIP GENERATION

Trip generation projections for the proposed Dollar General were prepared utilizing the ITE's Trip Generation Manual, 10th Edition. Trip generation rates associated with Land Use 814 "Variety Store", were cited for the proposed 9,100 square foot Dollar General. It should be noted that ITE does not publish Saturday midday trip generation rates for Land Use 814 "Variety Store," as such the trip generation rates from the NJDOT Highway Access Permitting System (HAPS) were utilized for the Saturday midday peak hour. **Table I** provides the weekday evening and Saturday midday trip generation volumes associated with the proposed development.

TABLE I – PROPOSED TRIP GENERATION

Land Use	Weekday Evening Peak Hour			Saturday Midday Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
9,100 SF Dollar General ITE Land Use 814	32	30	62	34	34	68

As stated within Chapter 10 of ITE's Trip Generation Handbook, 3rd Edition, there are instances when the total number of trips generated by a site is different from the amount of new traffic added to the street system by the generator. Variety Stores are specifically located on or adjacent to busy streets to attract motorists already on the roadway. Therefore, the proposed site would be expected to attract a portion of its trips from the traffic passing the site on the way from an origin to an ultimate destination. These trips do not add new traffic to the adjacent roadway system and are referred to as pass-by trips.

Based upon the published ITE data for Land Use 814 "Variety Store," 34% of the site-generated traffic during the weekday evening peak hour is comprised of pass-by traffic. It should be noted that ITE does not publish Saturday midday pass-by rates for Land Use 814 "Variety Store," so in order to maintain a conservative

analysis, no pass-by credit shall be taken for the Saturday midday peak hour. **Table 2** shows the additional site generated traffic for the proposed development in terms of newly generated traffic and pass-by traffic.

TABLE 2– PROPOSED TRIP GENERATION – NEW & PASS-BY TRIPS

Land Use	Weekday Evening Peak Hour			Saturday Midday Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
"New" Trips	22	20	42	34	34	68
"Pass-By" Trips	10	10	20	--	--	--
Total	32	30	62	34	34	68

At the site driveways, the calculated number of pass-by trips is shown as a negative number at the through movement as the vehicles are temporarily diverted from the through travel stream into and out of the site access point.

TRIP ASSIGNMENT/DISTRIBUTION

The trips generated by the proposed development were distributed according to the location of the population centers in the Township of Manchester, the geometry of the surrounding roadway network, and the access management plan of the site. The "New" Site-Generated Traffic Volumes assigned to the roadway network are illustrated on appended **Figure 4** and the "Pass-By" Site-Generated Traffic Volumes expected to access the site are depicted on **Figure 5**.

2020 BUILD TRAFFIC VOLUMES

The site-generated trips were added to the 2020 No-Build Traffic Volumes to calculate the 2020 Build Traffic Volumes and are shown on appended **Figure 6**.

2020 BUILD LOS/CAPACITY ANALYSIS

A Level of Service and Volume/Capacity analysis was also conducted for the 2020 Build Condition during the weekday evening and Saturday midday peak hours at the study intersection and proposed site driveways. **Tables 3 through 6** compare the Existing, No-Build, and Build Conditions Level of Service and delay values. Under the 2020 Build Condition, the unsignalized intersection of Ridgeway Road and Washington Avenue is calculated to operate at Level of Service D or better during the weekday evening and Saturday midday peak hours. The unsignalized intersection of Ridgeway Road and the proposed site driveway was calculated to operate at Level of Service B during the weekday evening and Saturday midday peak hours. The unsignalized intersection of Washington Avenue and the proposed site driveway is calculated to operate at Level of Service A during the weekday evening and Saturday midday peak hours.

COMPARATIVE LEVEL OF SERVICE (DELAY) TABLES**RIDGEWAY ROAD & WASHINGTON AVENUE**

EB (Eastbound) and WB (Westbound) approaches are the Washington Avenue approaches

NB (Northbound) and SB (Southbound) approaches are the Ridgeway Road approaches

X (n) = Level of Service (seconds of delay)

TABLE 3 – WEEKDAY EVENING PEAK HOUR

Lane Group	2018 Existing	2020 No-Build	2020 Build
EB Left/Through/Right	C (22.1)	C (23.9)	D (25.7)
WB Left/Through/Right	C (24.8)	C (20.5)	D (25.0)
NB Left	B (10.4)	B (10.7)	B (10.6)
SB Left/Through	A (8.8)	A (8.9)	A (9.0)

TABLE 4 – SATURDAY MIDDAY PEAK HOUR

Lane Group	2018 Existing	2020 No-Build	2020 Build
EB Left/Through/Right	C (16.4)	C (21.1)	C (18.3)
WB Left/Through/Right	C (15.5)	C (19.6)	C (21.4)
NB Left	A (9.1)	A (9.2)	A (9.3)
SB Left/Through	A (8.8)	A (8.9)	A (9.1)

WASHINGTON AVENUE & SITE DRIVEWAY

EB (Eastbound) and WB (Westbound) approaches are the Washington Avenue approaches

NB (Northbound) approach is the site driveway approach

X (n) = Level of Service (seconds of delay)

TABLE 5 – 2020 BUILD CONDITION

Lane Group	Weekday Evening Peak Hour	Saturday Midday Peak Hour
WB Left/Through	A (7.5)	A (7.4)
NB Left/Right	A (9.3)	A (9.2)

RIDGEWAY ROAD & SITE DRIVEWAY

WB (Westbound) approach is the site driveway approach

NB (Northbound) and SB (southbound) approaches are the Ridgeway Road approaches

X (n) = Level of Service (seconds of delay)

TABLE 6 – 2020 BUILD CONDITION

Lane Group	Weekday Evening Peak Hour	Saturday Midday Peak Hour
WB Right	B (10.4)	B (10.7)

SITE CIRCULATION/PARKING SUPPLY

A review was conducted of the proposed Dollar General using the Site Plan prepared by Stonefield Engineering and Design, dated December 27, 2018. In completing this review, particular attention was focused on the site access, circulation, and parking supply.

Access is proposed via one (1) right-in/right-out driveway along Ridgeway Road and one (1) full-movement driveway along Washington Avenue. Circulation throughout the site would be provided via a two (2)-way drive aisle with a minimum width of 24 feet.

The Township of Manchester requires one (1) parking space per every 200 square feet of floor area for retail uses. For the proposed 9,100-square-foot Dollar General, this equates to 46 required spaces. The site would provide 35 total parking stalls, inclusive of two (2) ADA-accessible parking stalls. The stalls would be 10 feet wide by 20 feet deep in accordance with industry standards.

In order to assess the typical parking demand of a Dollar General location, a parking study was conducted at multiple existing Dollar General locations and across multiple dates, all of similar size compared to the proposed Dollar General development. The full methodology and results from the parking study can be found appended to this report. Findings from the study show that the average parking demand for a typical weekday peak period is nine (9) vehicles and the maximum parking demand across all of the studied locations was 25 parked vehicles. The average parking demand for a typical Saturday peak period is 9.4 parked vehicles and the maximum parking demand across all of the studied locations was 20 parked vehicles. The results of this study indicate that the proposed parking supply of 34 spaces would be sufficient to accommodate the anticipated parking demand of the proposed Dollar General.

CONCLUSIONS

This report was prepared to examine the potential traffic impact of the proposed Dollar General. The analysis findings, which have been based on industry-standard guidelines, indicate that the proposed development would not have a significant impact on the traffic operations of the adjacent roadway network. The site driveways and on-site layout have been designed to provide for effective access to and from the subject property. Based on field observations, the proposed parking would be sufficient to support the peak parking demand at the subject site.

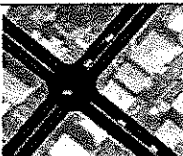
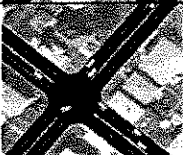

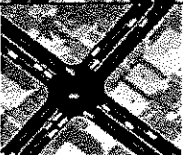


TECHNICAL APPENDIX

LEVEL OF SERVICE/AVERAGE CONTROL DELAY CRITERIA

LEVEL OF SERVICE /AVERAGE CONTROL DELAY CRITERIA

The ability of a roadway to effectively accommodate traffic demand is determined through an assessment of the volume-to-capacity ratio, delay and Level of Service of the lane group and/or intersection. The volume-to-capacity ratio is the ratio of traffic flow rate to capacity for a given transportation facility. As defined within the Highway Capacity Manual, 6th Edition (HCM), intersection delay is the total additional travel time experienced by drivers, passengers, or pedestrians as a result of control measures and interaction with other users of the facility, divided by the volume departing from the corresponding cross section of the facility. Level of service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience.

For an unsignalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle, while LOS F describes operations with delay in excess of 50 seconds per vehicle. For a signalized intersection, LOS A indicates operations with delay less than 10 seconds per vehicle and LOS F denotes operations with delay in excess of 80 seconds per vehicle.

	Level Of Service (LOS)	Signalized Delay Range (average control delay in sec/veh)	Unsignalized Delay Range (average control delay in sec/veh)
	A	≤ 10	≤ 10
	B	> 10 and ≤ 20	> 10 and ≤ 15
	C	> 20 and ≤ 35	> 15 and ≤ 25
	D	> 35 and ≤ 55	> 25 and ≤ 35
	E	> 55 and ≤ 80	> 35 and ≤ 50
	F	> 80	> 50

Source: Highway Capacity Manual, 6th Edition

TURNING MOVEMENT COUNT DATA

1. CR 571/Ridgeway Road & Washington Avenue - TMC

Thu Sep 27, 2018

Full Length (11AM-2PM, 4PM-7PM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 569262, Location: 40.022687, -74.268244, Site Code: 1

Provided by: Imperial Traffic & Data Collection

PO Box 4637, Cherry Hill, NJ, 08003, US

Leg Direction	Business Park Entrance Eastbound						Washington Avenue Westbound						Ridgeway Road Northbound						Ridgeway Road Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2018-09-27 4:00PM	4	1	10	0	15	0	1	0	5	0	6	0	2	124	10	0	136	0	3	257	5	0	265	0	422
4:15PM	8	2	7	0	17	1	6	0	8	0	14	0	2	128	21	0	151	0	5	259	3	0	267	0	449
4:30PM	4	1	6	0	11	0	2	0	5	0	7	0	1	135	13	0	149	0	17	260	3	0	280	0	447
4:45PM	4	1	4	0	9	0	2	0	7	0	9	0	1	132	12	0	145	0	14	247	8	0	269	0	432
Hourly Total	20	5	27	0	52	1	11	0	25	0	36	0	6	519	56	0	581	0	39	1023	19	0	1081	0	1750
5:00PM	7	1	4	0	12	0	7	0	5	0	12	0	3	145	14	0	162	0	1	255	5	0	261	0	447
5:15PM	4	0	2	0	6	0	5	0	5	0	10	0	2	128	15	0	145	0	2	257	3	0	262	0	423
5:30PM	0	0	4	0	4	1	2	0	3	0	5	0	3	141	3	0	147	0	0	248	1	0	249	0	405
5:45PM	2	0	3	0	5	0	1	0	1	0	2	0	2	119	11	0	132	1	3	285	4	0	292	0	431
Hourly Total	13	1	13	0	27	1	15	0	14	0	29	0	10	533	43	0	586	1	6	1045	13	0	1064	0	1706
6:00PM	2	0	1	0	3	0	2	0	5	0	7	0	3	129	9	0	141	0	2	227	2	0	231	0	382
6:15PM	0	0	7	0	7	0	1	0	3	0	4	0	4	91	9	0	104	0	1	198	2	0	201	0	316
6:30PM	5	0	0	0	5	0	2	0	1	0	3	0	1	87	8	0	96	0	0	191	5	0	196	0	300
6:45PM	2	0	3	0	5	0	0	0	0	0	0	0	1	102	6	0	109	0	1	139	0	0	140	0	254
Hourly Total	9	0	11	0	28	0	5	0	9	0	14	0	9	409	32	0	450	0	4	755	9	0	768	0	1252
7:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1
2018-09-29 11:00AM	8	1	1	0	10	1	4	0	1	0	5	0	4	117	14	0	135	0	0	154	0	0	154	0	304
11:15AM	2	0	0	0	2	0	3	0	5	0	8	0	3	156	21	0	180	0	4	142	3	0	149	0	339
11:30AM	6	0	4	0	10	0	5	0	2	0	7	0	0	121	22	0	143	0	2	186	4	0	192	0	352
11:45AM	4	0	2	0	6	0	5	0	6	0	11	0	4	144	17	0	165	0	3	182	1	0	186	0	368
Hourly Total	20	1	7	0	28	1	17	0	14	0	31	0	11	538	74	0	623	0	9	664	8	0	681	0	1363
12:00PM	5	0	6	0	11	0	7	0	5	0	12	0	3	145	13	0	161	0	1	157	4	0	162	0	346
12:15PM	1	0	3	0	4	0	1	0	5	0	6	0	1	157	12	0	170	0	0	181	6	0	187	0	367
12:30PM	7	0	2	0	9	0	4	0	4	0	8	0	1	139	7	0	147	0	0	169	4	1	174	0	338
12:45PM	1	0	1	0	2	0	0	0	4	0	4	0	1	131	12	0	144	0	0	174	6	0	180	0	330
Hourly Total	14	0	12	0	26	0	12	0	18	0	30	0	6	572	44	0	622	0	1	681	20	1	703	0	1381
1:00PM	2	0	2	0	4	0	0	0	2	0	2	0	6	138	7	0	151	0	0	169	3	1	173	0	330
1:15PM	3	0	2	0	5	0	2	0	4	0	6	0	3	104	7	0	114	0	3	154	3	0	160	0	285
1:30PM	3	0	4	0	7	1	1	0	2	0	3	0	3	127	13	0	143	0	0	160	5	0	165	0	318
1:45PM	6	1	1	0	8	0	3	0	4	0	7	0	2	153	13	0	168	0	0	172	2	0	174	0	357
Hourly Total	14	1	9	0	24	1	6	0	12	0	18	0	14	522	40	0	576	0	3	655	13	1	672	0	1290
2:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	90	8	79	0	177	4	66	0	92	0	158	0	56	3093	289	0	3438	1	62	4824	82	2	4970	0	8743
% Approach	50.8%	4.5%	44.6%	0%	-	-	41.8%	0%	58.2%	0%	-	-	1.6%	90.0%	8.4%	0%	-	-	1.2%	97.1%	1.6%	0%	-	-	-
% Total	1.0%	0.1%	0.9%	0%	2.0%	-	0.8%	0%	1.1%	0%	1.8%	-	0.6%	35.4%	3.3%	0%	39.3%	-	0.7%	55.2%	0.9%	0%	56.8%	-	-
Lights	90	8	76	0	174	-	65	0	92	0	157	-	55	3022	289	0	3366	-	61	4747	81	2	4891	-	8588
% Lights	100%	100%	96.2%	0%	98.3%	-	98.5%	0%	100%	0%	99.4%	-	98.2%	97.7%	100%	0%	97.9%	-	98.4%	98.4%	98.8%	100%	98.4%	-	98.2%
Articulated Trucks and Single-Unit Trucks	0	0	3	0	3	-	1	0	0	0	1	-	1	64	0	0	65	-	1	70	1	0	72	-	141
% Articulated Trucks and Single-Unit Trucks	0%	0%	3.8%	0%	1.7%	-	1.5%	0%	0%	0%	0.6%	-	1.8%	2.1%	0%	0%	1.9%	-	1.6%	1.5%	1.2%	0%	1.4%	-	1.6%
Buses	0	0	0	0	0	-	0	0	0	0	0	-	0	7	0	0	7	-	0	7	0	0	7	-	14
% Buses	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0.2%	0%	0%	0.2%	-	0%	0.1%	0%	0%	0.1%	-	0.2%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	25.0%	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	75.0%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

1. CR 571/Ridgeway Road & Washington Avenue - TMC

Thu Sep 27, 2018

PM Peak (Sep 27 2018 4:15PM - 5:15PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 569262, Location: 40.022687, -74.268244, Site Code: 1

Provided by: Imperial Traffic & Data

Collection

PO Box 4637, Cherry Hill, NJ, 08003, US

Leg Direction	Business Park Entrance Eastbound						Washington Avenue Westbound						Ridgeway Road Northbound						Ridgeway Road Southbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2018-09-27 4:15PM	8	2	7	0	17	1	6	0	8	0	14	0	2	128	21	0	151	0	5	259	3	0	267	0	449
4:30PM	4	1	6	0	11	0	2	0	5	0	7	0	1	135	13	0	149	0	17	260	3	0	280	0	447
4:45PM	4	1	4	0	9	0	2	0	7	0	9	0	1	132	12	0	145	0	14	247	8	0	269	0	432
5:00PM	7	1	4	0	12	0	7	0	5	0	12	0	3	145	14	0	162	0	1	255	5	0	261	0	447
Total	23	5	21	0	49	1	17	0	25	0	42	0	7	540	60	0	607	0	37	1021	19	0	1077	0	1775
% Approach	46.9%	10.2%	42.9%	0%	-	-	40.5%	0%	59.5%	0%	-	-	1.2%	89.0%	9.9%	0%	-	-	3.4%	94.8%	1.8%	0%	-	-	-
% Total	1.3%	0.3%	1.2%	0%	2.8%	-	1.0%	0%	1.4%	0%	2.4%	-	0.4%	30.4%	3.4%	0%	34.2%	-	2.1%	57.5%	1.1%	0%	60.7%	-	-
PHF	0.719	0.625	0.750	-	0.721	-	0.607	-	0.781	-	0.750	-	0.583	0.931	0.714	-	0.937	-	0.544	0.982	0.594	-	0.962	-	0.988
Lights	23	5	21	0	49	-	16	0	25	0	41	-	7	521	60	0	588	-	37	1005	19	0	1061	-	1739
% Lights	100%	100%	100%	0%	100%	-	94.1%	0%	100%	0%	97.6%	-	100%	96.5%	100%	0%	96.9%	-	100%	98.4%	100%	0%	98.5%	-	98.0%
Articulated Trucks and Single-Unit Trucks	0	0	0	0	0	-	1	0	0	0	1	-	0	14	0	0	14	-	0	14	0	0	14	-	29
% Articulated Trucks and Single-Unit Trucks	0%	0%	0%	0%	0%	-	5.9%	0%	0%	0%	2.4%	-	0%	2.6%	0%	0%	2.3%	-	0%	1.4%	0%	0%	1.3%	-	1.6%
Buses	0	0	0	0	0	-	0	0	0	0	0	-	0	5	0	0	5	-	0	2	0	0	2	-	7
% Buses	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0.9%	0%	0%	0.8%	-	0%	0.2%	0%	0%	0.2%	-	0.4%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

1. CR 571/Ridgeway Road & Washington Avenue - TMC

Sat Sep 29, 2018

Midday Peak (WKND) (Sep 29 2018 11:30AM - 12:30PM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 569262, Location: 40.022687, -74.268244, Site Code: 1

Provided by: Imperial Traffic & Data

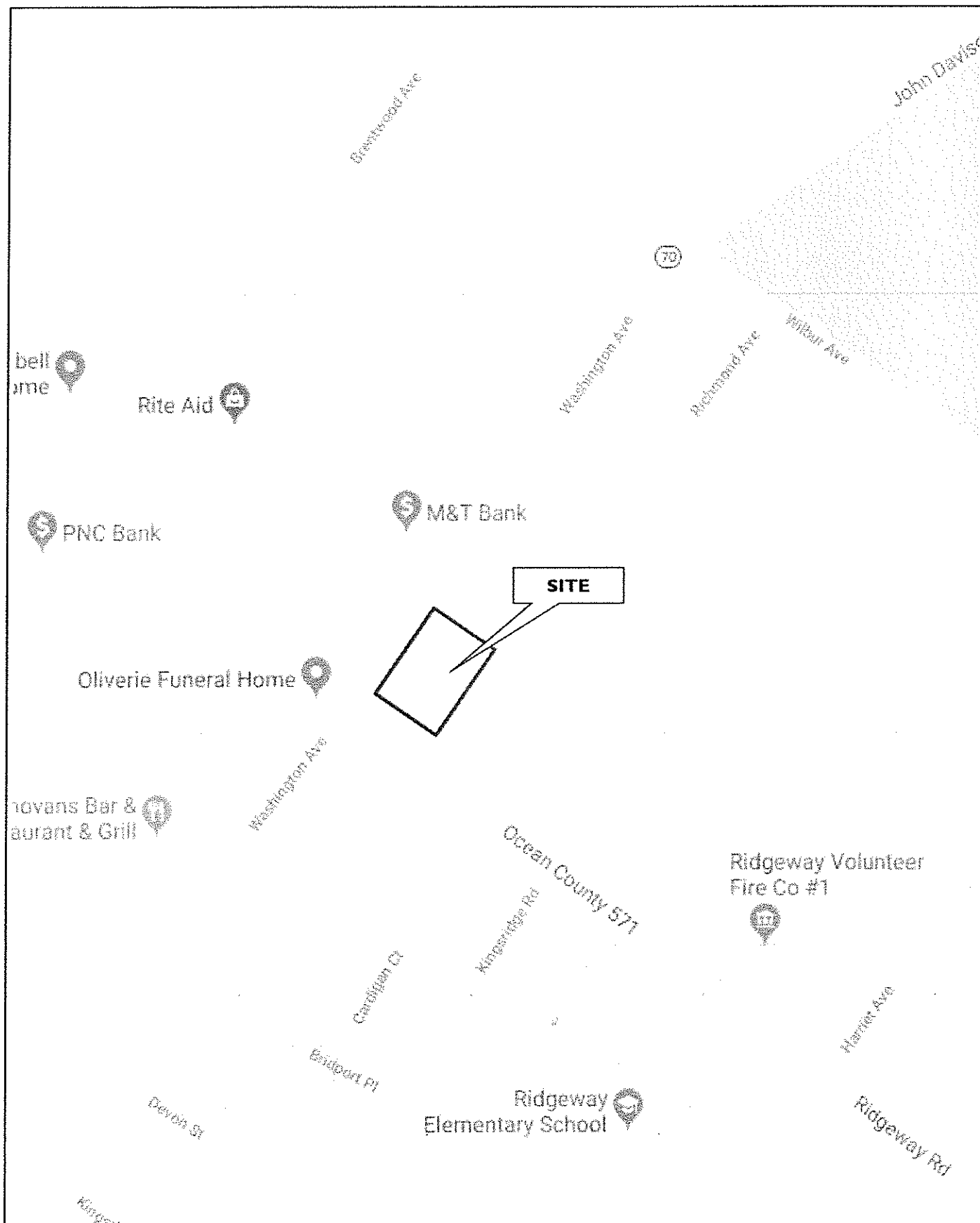
Collection

PO Box 4637, Cherry Hill, NJ, 08003, US

Leg Direction	Business Park Entrance Eastbound					Washington Avenue Westbound					Ridgeway Road Northbound					Ridgeway Road Southbound					In				
Time	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	L	T	R	U	App Ped*	In				
2018-09-29 11:30AM	6	0	4	0	10	0	5	0	2	0	7	0	0	121	22	0	143	0	2	186	4	0	192	0	352
11:45AM	4	0	2	0	6	0	5	0	6	0	11	0	4	144	17	0	165	0	3	182	1	0	186	0	368
12:00PM	5	0	6	0	11	0	7	0	5	0	12	0	3	145	13	0	161	0	1	157	4	0	162	0	346
12:15PM	1	0	3	0	4	0	1	0	5	0	6	0	1	157	12	0	170	0	0	181	6	0	187	0	367
Total	16	0	15	0	31	0	18	0	18	0	36	0	8	567	64	0	639	0	6	706	15	0	727	0	1433
% Approach	51.6%	0%	48.4%	0%	-	-	50.0%	0%	50.0%	0%	-	-	1.3%	88.7%	10.0%	0%	-	-	0.8%	97.1%	2.1%	0%	-	-	-
% Total	1.1%	0%	1.0%	0%	2.2%	-	1.3%	0%	1.3%	0%	2.5%	-	0.6%	39.6%	4.5%	0%	44.6%	-	0.4%	49.3%	1.0%	0%	50.7%	-	-
PHF	0.667	-	0.625	-	0.705	-	0.643	-	0.750	-	0.750	-	0.500	0.903	0.727	-	0.940	-	0.500	0.949	0.625	-	0.947	-	0.974
Lights	16	0	14	0	30	-	18	0	18	0	36	-	8	560	64	0	632	-	6	692	14	0	712	-	1410
% Lights	100%	0%	93.3%	0%	96.8%	-	100%	0%	100%	0%	100%	-	100%	98.8%	100%	0%	98.9%	-	100%	98.0%	93.3%	0%	97.9%	-	98.4%
Articulated Trucks and Single-Unit Trucks	0	0	1	0	1	-	0	0	0	0	0	-	0	7	0	0	7	-	0	14	1	0	15	-	23
% Articulated Trucks and Single-Unit Trucks	0%	0%	6.7%	0%	3.2%	-	0%	0%	0%	0%	0%	-	0%	1.2%	0%	0%	1.1%	-	0%	2.0%	6.7%	0%	2.1%	-	1.6%
Buses	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Buses	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

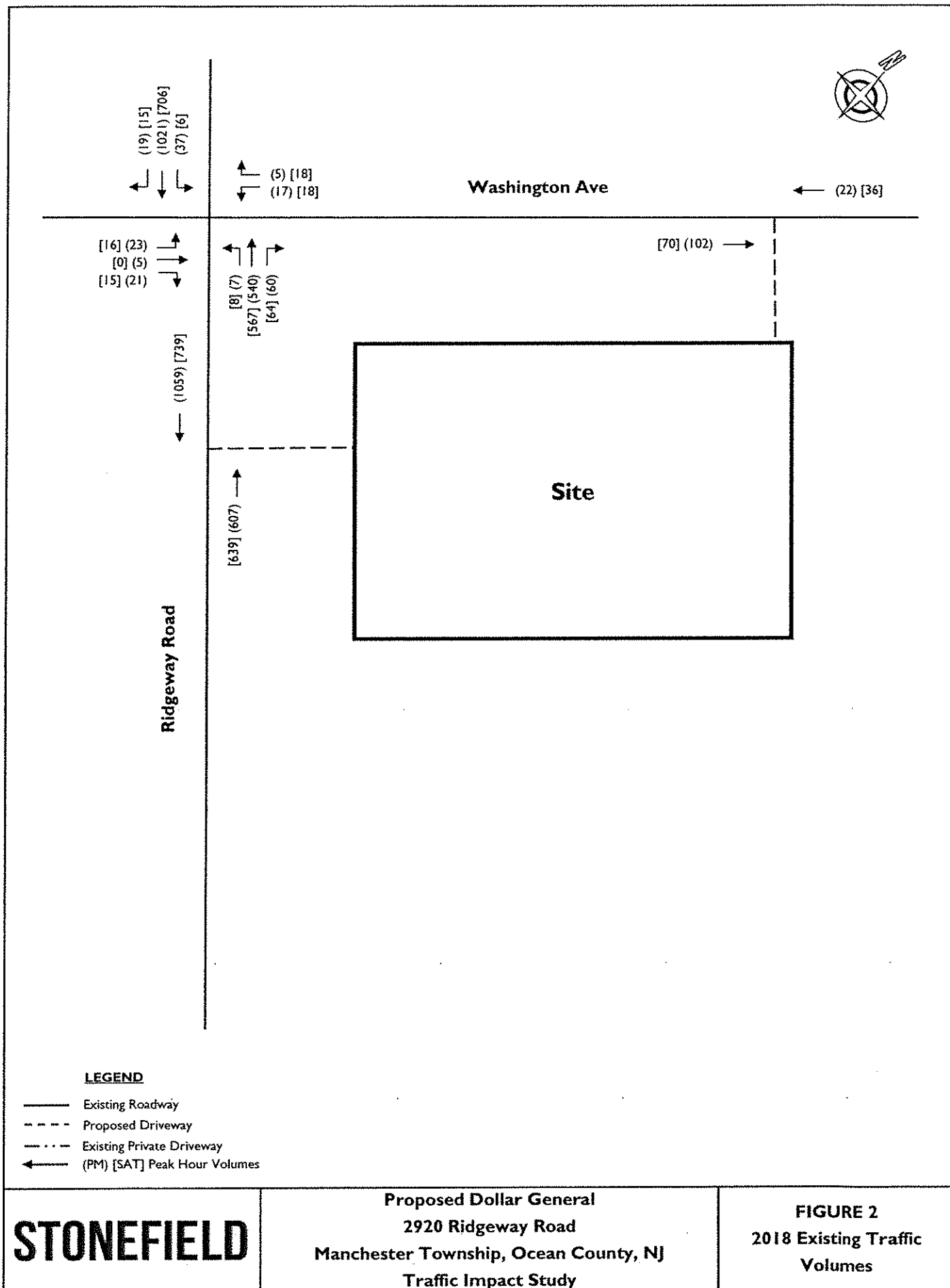
FIGURES

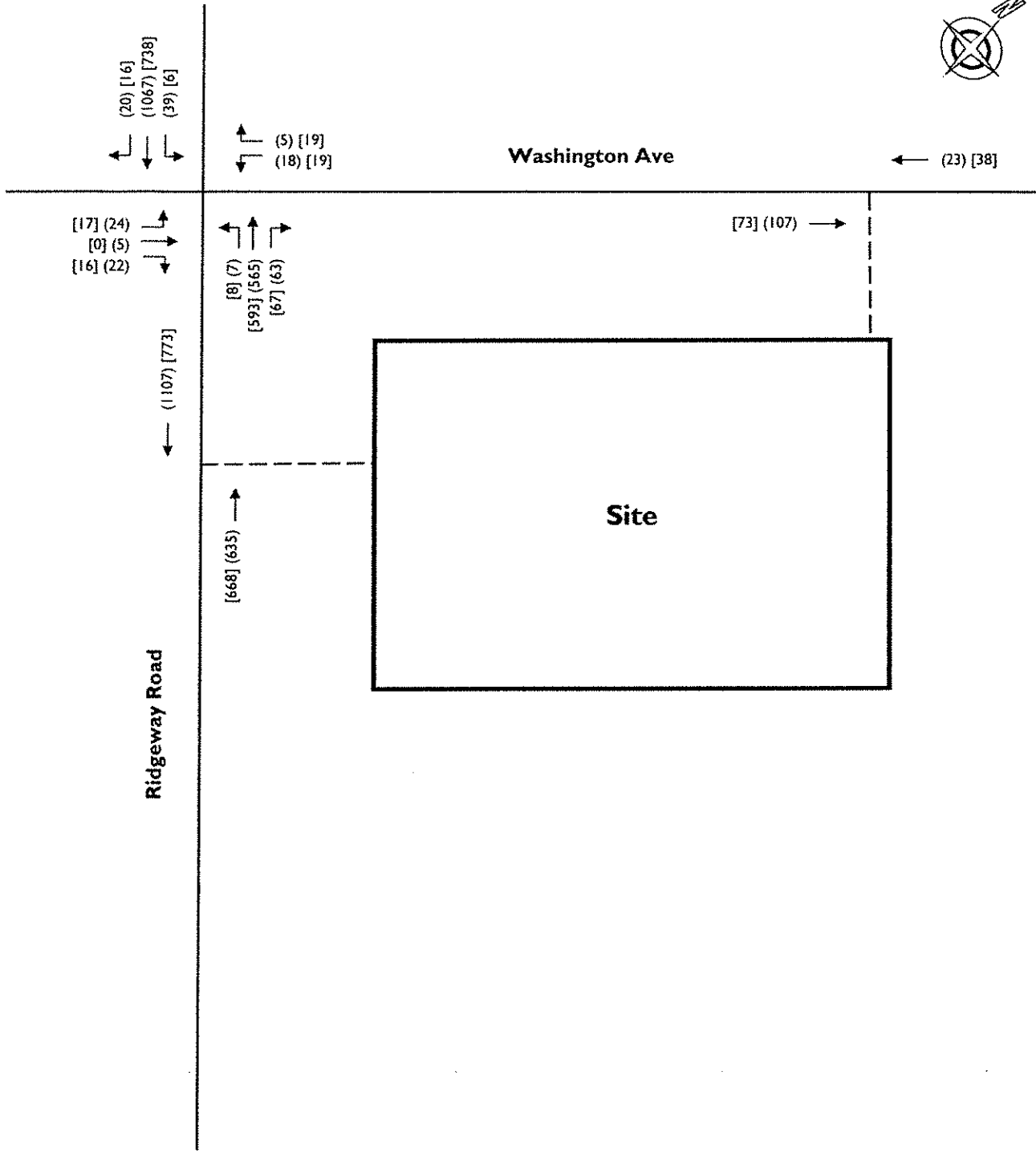


STONEFIELD

Proposed Dollar General
2920 Ridgeway Road
Manchester Township, Ocean County, NJ
Traffic Impact Study

FIGURE I
Site Location Map





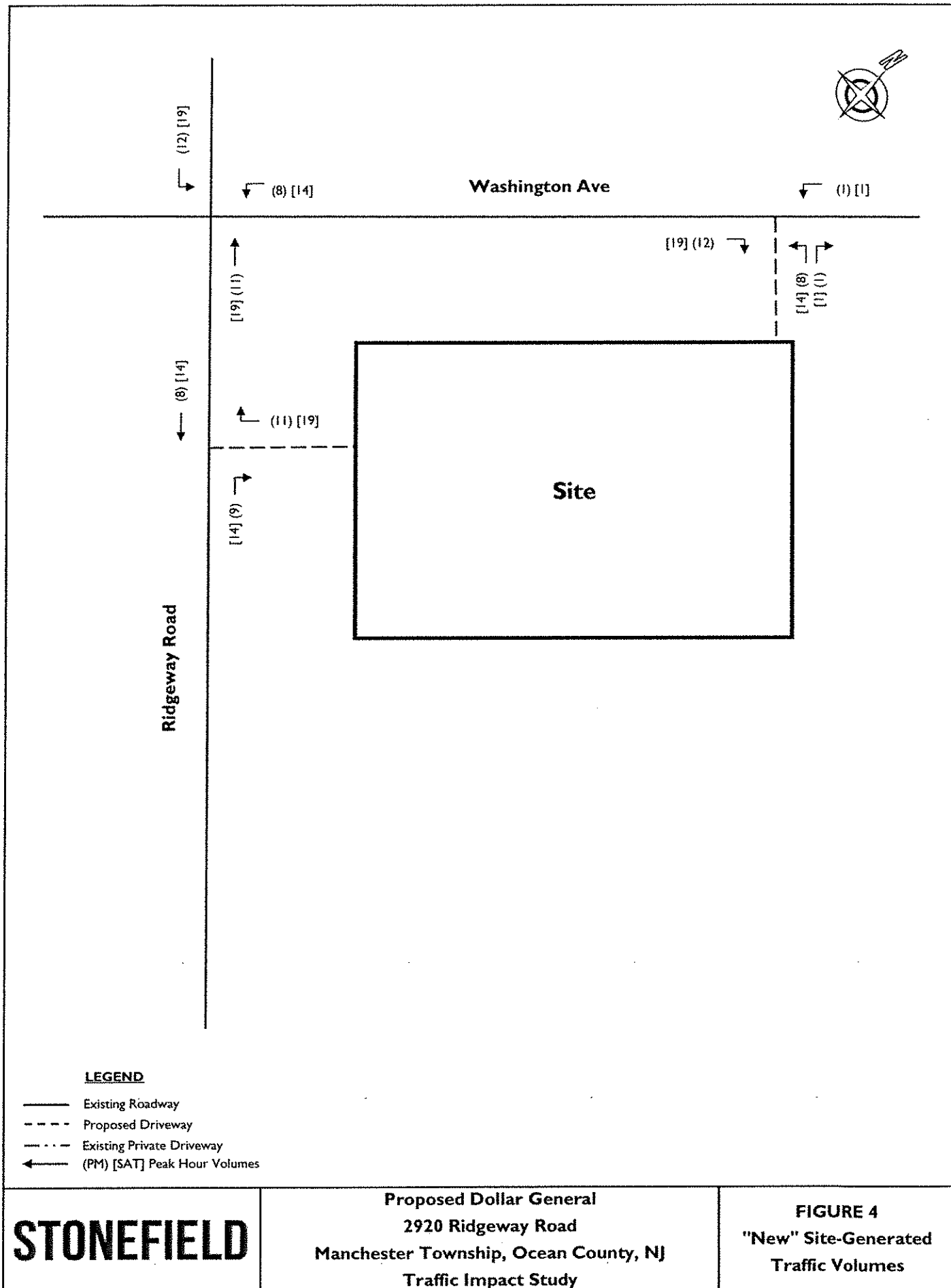
LEGEND

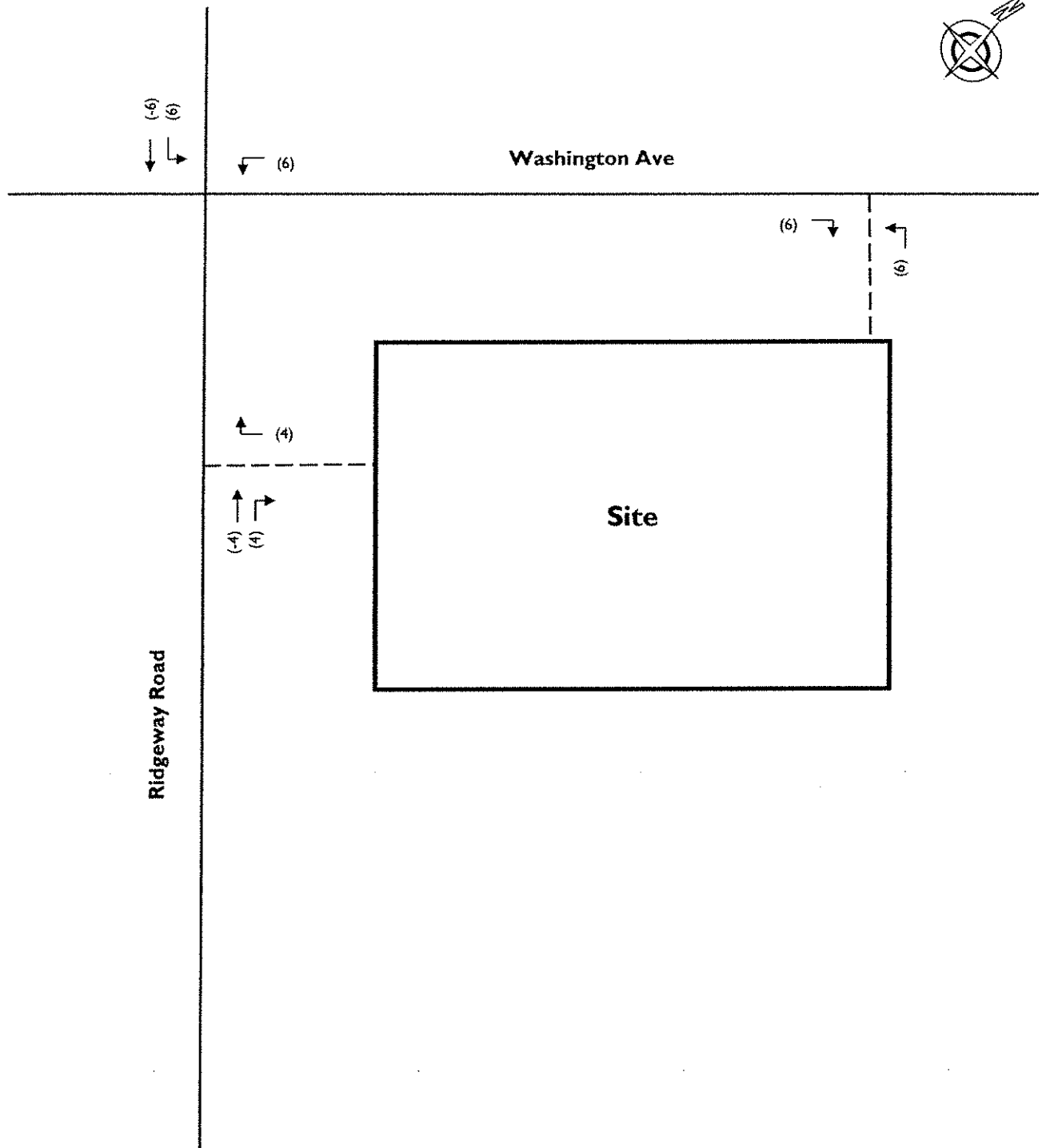
- Existing Roadway
- - - Proposed Driveway
- . - Existing Private Driveway
- ← (PM) [SAT] Peak Hour Volumes

STONEFIELD

Proposed Dollar General
2920 Ridgeway Road
Manchester Township, Ocean County, NJ
Traffic Impact Study

FIGURE 3
2020 No-Build Traffic
Volumes





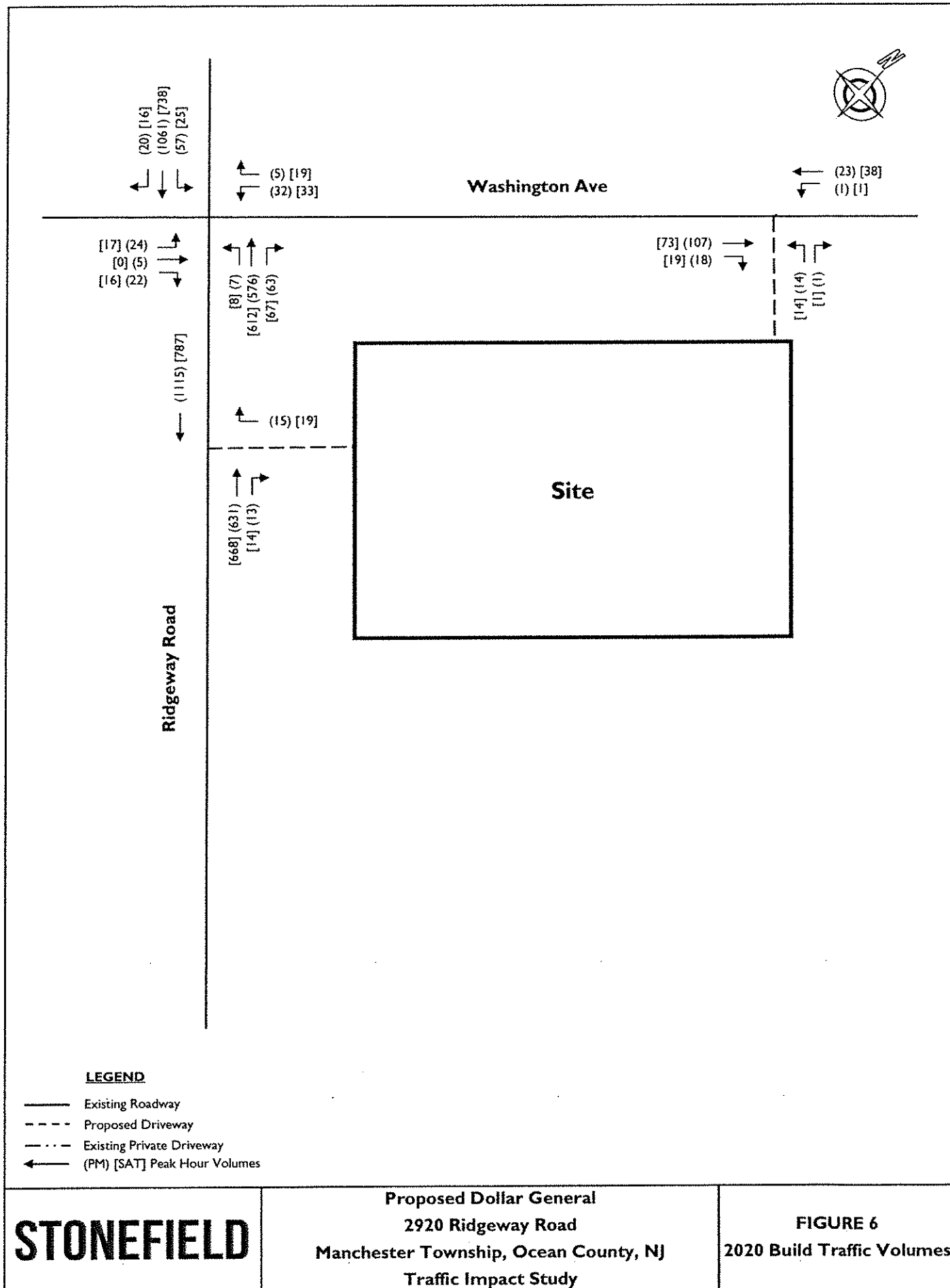
LEGEND

- Existing Roadway
- - - Proposed Driveway
- · - Existing Private Driveway
- ← (PM) [SAT] Peak Hour Volumes

STONEFIELD

Proposed Dollar General
2920 Ridgeway Road
Manchester Township, Ocean County, NJ
Traffic Impact Study

FIGURE 5
"Pass-By" Site-Generated
Traffic Volumes



CAPACITY ANALYSIS DETAIL SHEETS

HCS7 Two-Way Stop-Control Report

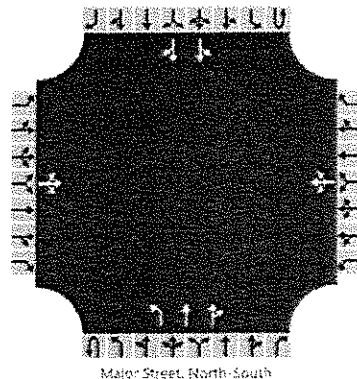
General Information

Analyst	WK
Agency/Co.	SED
Date Performed	12/14/2018
Analysis Year	2018
Time Analyzed	EX-PM
Intersection Orientation	North-South
Project Description	Existing Weekday Evening

Site Information

Intersection	Ridgeway and Washington
Jurisdiction	Ocean County
East/West Street	Washington Avenue
North/South Street	Ridgeway Road
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	0	2	0
Configuration			LTR				LTR			L	T	TR		LT		TR
Volume, V (veh/h)		23	5	21		17	0	5		7	540	60		37	1021	19
Percent Heavy Vehicles (%)		0	0	0		6	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		5.5	5.5	5.9		6.5	5.5	5.9		4.1				4.1		
Critical Headway (sec)		5.50	5.50	5.90		6.62	5.50	5.90		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.56	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			49				22				7				37	
Capacity, c (veh/h)			260				204				670				982	
v/c Ratio			0.19				0.11				0.01				0.04	
95% Queue Length, Q ₉₅ (veh)			0.7				0.4				0.0				0.1	
Control Delay (s/veh)			22.1				24.8				10.4				8.8	
Level of Service, LOS			C				C				B				A	
Approach Delay (s/veh)	22.1				24.8				0.1				0.7			
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

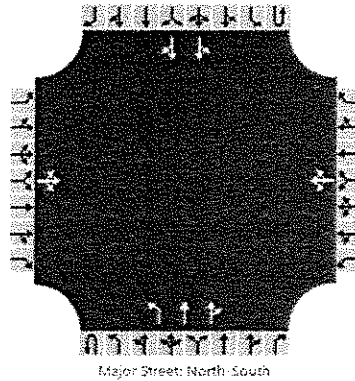
General Information

Analyst	WK
Agency/Co.	SED
Date Performed	12/14/2018
Analysis Year	2018
Time Analyzed	EX-SAT
Intersection Orientation	North-South
Project Description	Existing Saturday Midday

Site Information

Intersection	Ridgeway and Washington
Jurisdiction	Ocean County
East/West Street	Washington Avenue
North/South Street	Ridgeway Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	0	2	0
Configuration			LTR				LTR			L	T	TR		LT		TR
Volume, V (veh/h)		16	0	15		18	0	18		8	567	64		6	706	15
Percent Heavy Vehicles (%)		0	0	7		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		6.5	5.5	5.9		6.5	5.5	5.9		4.1				4.1		
Critical Headway (sec)		6.50	5.50	6.04		6.50	5.50	5.90		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.37		3.50	4.00	3.30		2.20				2.20		

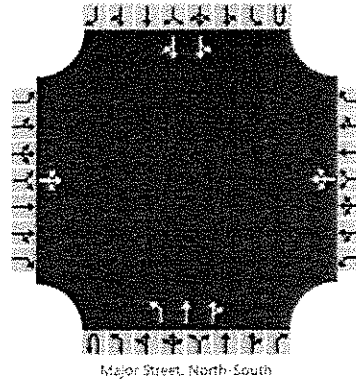
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			32				37			8				6		
Capacity, c (veh/h)			343				375			874				945		
v/c Ratio			0.09				0.10			0.01				0.01		
95% Queue Length, Q ₉₅ (veh)			0.3				0.3			0.0				0.0		
Control Delay (s/veh)			16.6				15.7			9.2				8.8		
Level of Service, LOS			C				C			A				A		
Approach Delay (s/veh)	16.6				15.7				0.1				0.1			
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	WK	Intersection	Ridgeway and Washington
Agency/Co.	SED	Jurisdiction	Ocean County
Date Performed	12/14/2018	East/West Street	Washington Avenue
Analysis Year	2020	North/South Street	Ridgeway Road
Time Analyzed	NB-PM	Peak Hour Factor	0.99
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	No-Build Weekday Evening		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	0	2	0
Configuration			LTR				LTR			L	T	TR		LT		TR
Volume, V (veh/h)		24	5	22		18	0	5		7	565	63		39	1067	20
Percent Heavy Vehicles (%)		0	0	0		6	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		5.5	5.5	5.9		5.5	5.5	5.9		4.1				4.1		
Critical Headway (sec)		5.50	5.50	5.90		5.62	5.50	5.90		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.56	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			52				23			7				39		
Capacity, c (veh/h)			242				255			643				959		
v/c Ratio			0.21				0.09			0.01				0.04		
95% Queue Length, Q ₉₅ (veh)			0.8				0.3			0.0				0.1		
Control Delay (s/veh)			23.9				20.5			10.7				8.9		
Level of Service, LOS			C				C			B				A		
Approach Delay (s/veh)	23.9				20.5				0.1				0.7			
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

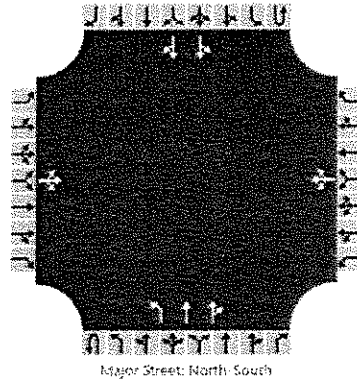
General Information

Analyst	WK
Agency/Co.	SED
Date Performed	12/14/2018
Analysis Year	2020
Time Analyzed	NB-SAT
Intersection Orientation	North-South
Project Description	No-Build Saturday MIDDAY

Site Information

Intersection	Ridgeway and Washington
Jurisdiction	Ocean County
East/West Street	Washington Avenue
North/South Street	Ridgeway Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	0	2	0
Configuration			LTR				LTR			L	T	TR		LT		TR
Volume, V (veh/h)		17	0	16		19	0	19		8	593	67		6	738	16
Percent Heavy Vehicles (%)		0	0	7		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	7.04		7.50	6.50	6.90		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.37		3.50	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			34				39			8				6		
Capacity, c (veh/h)			249				276			849				922		
v/c Ratio			0.14				0.14			0.01				0.01		
95% Queue Length, Q ₉₅ (veh)			0.5				0.5			0.0				0.0		
Control Delay (s/veh)			21.8				20.2			9.3				8.9		
Level of Service, LOS			C				C			A				A		
Approach Delay (s/veh)	21.8				20.2				0.1				0.1			
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

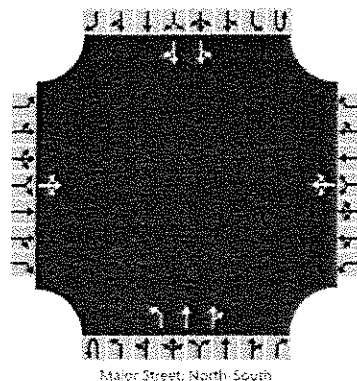
General Information

Analyst	WK
Agency/Co.	SED
Date Performed	12/14/2018
Analysis Year	2020
Time Analyzed	1B-PM
Intersection Orientation	North-South
Project Description	Build Weekday Evening

Site Information

Intersection	Ridgeway and Washington
Jurisdiction	Ocean County
East/West Street	Washington Avenue
North/South Street	Ridgeway Road
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	0	2	0
Configuration			LTR				LTR			L	T	TR		LT		TR
Volume, V (veh/h)		24	5	22		32	0	5		7	576	63		57	1061	20
Percent Heavy Vehicles (%)		0	0	0		6	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		5.5	5.5	5.9		5.5	5.5	5.9		4.1				4.1		
Critical Headway (sec)		5.50	5.50	5.90		5.62	5.50	5.90		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.56	4.00	3.30		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			52				37			7				58		
Capacity, c (veh/h)			225				217			647				950		
v/c Ratio			0.23				0.17			0.01				0.06		
95% Queue Length, Q ₉₅ (veh)			0.9				0.6			0.0				0.2		
Control Delay (s/veh)			25.7				25.0			10.6				9.0		
Level of Service, LOS			D				D			B				A		
Approach Delay (s/veh)	25.7				25.0				0.1				1.0			
Approach LOS	D				D											

HCS7 Two-Way Stop-Control Report

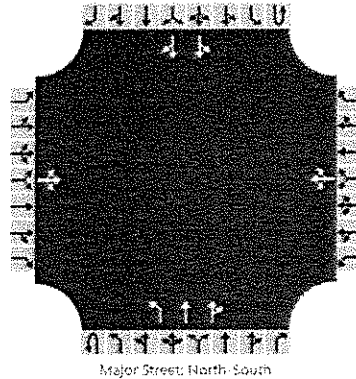
General Information

Analyst	WK
Agency/Co.	SED
Date Performed	12/14/2018
Analysis Year	2020
Time Analyzed	1B-SAT
Intersection Orientation	North-South
Project Description	Build Saturday MIDDAY

Site Information

Intersection	Ridgeway and Washington
Jurisdiction	Ocean County
East/West Street	Washington Avenue
North/South Street	Ridgeway Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	0	2	0
Configuration			LTR				LTR			L	T	TR		LT		TR
Volume, V (veh/h)		17	0	16		33	0	19		8	612	67		25	738	16
Percent Heavy Vehicles (%)		0	0	0		6	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		6.5	5.5	5.9		6.5	5.5	5.9		4.1				4.1		
Critical Headway (sec)		6.50	5.50	5.90		6.62	5.50	5.90		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.56	4.00	3.30		2.20				2.20		

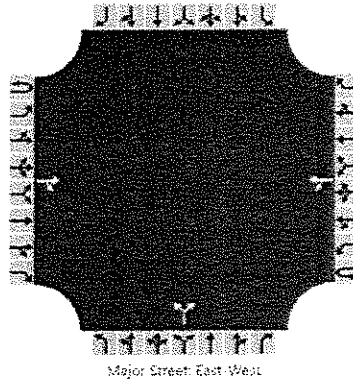
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			34				54			8				26		
Capacity, c (veh/h)			302				272			849				906		
v/c Ratio			0.11				0.20			0.01				0.03		
95% Queue Length, Q ₉₅ (veh)			0.4				0.7			0.0				0.1		
Control Delay (s/veh)			18.4				21.4			9.3				9.1		
Level of Service, LOS			C				C			A				A		
Approach Delay (s/veh)	18.4				21.4				0.1				0.5			
Approach LOS	C				C											

HCS7 Two-Way Stop Control Report

General Information		Site Information	
Analyst	WK	Intersection	Washington/Site Driveway
Agency/Co.	SED	Jurisdiction	Manchester Township
Date Performed	12/14/2018	East/West Street	Washington Avenue
Analysis Year	2020	North/South Street	Site Driveway
Time Analyzed	2B-PM	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Build Weekday Evening		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			107	18		1	23			14		1				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						1				16						
Capacity, c (veh/h)						1461				848						
v/c Ratio						0.00				0.02						
95% Queue Length, Q ₉₅ (veh)						0.0				0.1						
Control Delay (s/veh)						7.5				9.3						
Level of Service, LOS						A				A						
Approach Delay (s/veh)					0.3				9.3							
Approach LOS									A							

HCS7 Two-Way Stop-Control Report

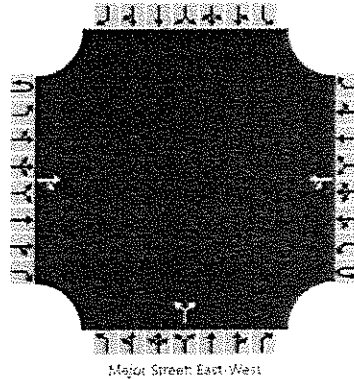
General Information

Analyst	WK
Agency/Co.	SED
Date Performed	12/14/2018
Analysis Year	2020
Time Analyzed	2B-SAT
Intersection Orientation	East-West
Project Description	Build Saturday Middy

Site Information

Intersection	Washington/Site Driveway
Jurisdiction	Manchester Township
East/West Street	Washington Avenue
North/South Street	Site Driveway
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			73	19		1	38			14		1				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No				No				No				No	
Median Type/Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				

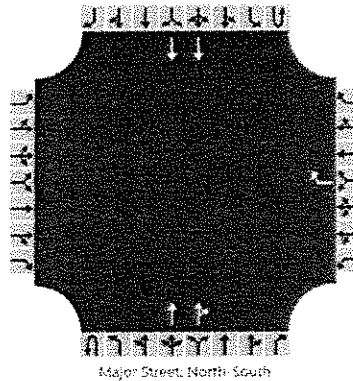
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						1					16					
Capacity, c (veh/h)						1505					872					
v/c Ratio						0.00					0.02					
95% Queue Length, Q ₉₅ (veh)						0.0					0.1					
Control Delay (s/veh)						7.4					9.2					
Level of Service, LOS						A					A					
Approach Delay (s/veh)							0.2				9.2					
Approach LOS											A					

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	WK	Intersection	Ridgeway & Site Driveway
Agency/Co.	SED	Jurisdiction	Ocean County
Date Performed	12/14/2018	East/West Street	Site Driveway
Analysis Year	2020	North/South Street	Ridgeway Road
Time Analyzed	3B-PM	Peak Hour Factor	0.99
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Build Weekday Evening - Ridgeway Road Driveway		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	2	0	0	0	2	0
Configuration								R			T	TR			T	
Volume, V (veh/h)								15			631	13			1115	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.90								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								15								
Capacity, c (veh/h)								677								
v/c Ratio								0.02								
95% Queue Length, Q ₉₅ (veh)								0.1								
Control Delay (s/veh)								10.4								
Level of Service, LOS								B								
Approach Delay (s/veh)	10.4															
Approach LOS	B															

HCS7 Two-Way Stop-Control Report

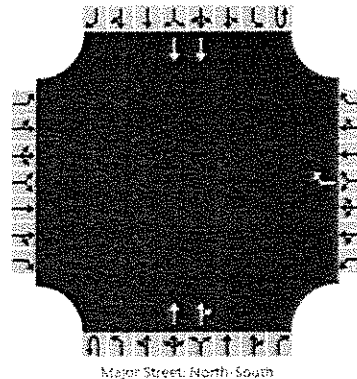
General Information

Analyst	WK
Agency/Co.	SED
Date Performed	12/14/2018
Analysis Year	2020
Time Analyzed	3B-SAT
Intersection Orientation	North-South
Project Description	Build Saturday Midday - Ridgeway Road Driveway

Site Information

Intersection	Ridgeway & Site Driveway
Jurisdiction	Ocean County
East/West Street	Site Driveway
North/South Street	Ridgeway Road
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	2	0	0	0	2	0
Configuration								R			T	TR			T	
Volume, V (veh/h)								19			668	14			787	
Percent Heavy Vehicles (%)								0								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.90								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.30								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								20								
Capacity, c (veh/h)								650								
v/c Ratio								0.03								
95% Queue Length, Q ₉₅ (veh)								0.1								
Control Delay (s/veh)								10.7								
Level of Service, LOS								B								
Approach Delay (s/veh)					10.7											
Approach LOS					B											

PARKING STUDY MEMORANDUM



STONEFIELD
engineering & design

PARKING COUNT MEMORANDUM

PROPOSED DOLLAR GENERAL
BLOCK 5, LOT 2059
2920 RIDGEWAY ROAD
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

PREPARED FOR:

CAPITAL GROWTH BUCHALTER

PREPARED BY:

STONEFIELD ENGINEERING & DESIGN, LLC
JANUARY 7, 2019
S-18155

CHARLES D. OLIVO, PE, PTOE
PRINCIPAL
NJ P.E. LICENSE #46719

MATTHEW J. SECKLER, PE, PTOE
SENIOR PROJECT MANAGER
NJ P.E. LICENSE #48731

Parking Count Memorandum

Stonefield Engineering and Design, LLC ("Stonefield") has prepared this memorandum to examine the parking demand of various Dollar General locations throughout New Jersey. Parking counts were conducted at six (6) separate locations. The parking counts were collected at the following Dollar General locations:

- ♦ 720 Atlantic City Boulevard, Bayville, New Jersey
- ♦ 1416 East Buckshuntem Road, Millville, New Jersey
- ♦ 380 NJSH 23, Wantage, New Jersey
- ♦ 3400 Haddonfield Road, Pennsauken, New Jersey
- ♦ 1000 West Main Street, Millville, New Jersey
- ♦ 1170 US Route 130, Burlington New Jersey

The first three (3) locations listed (Bayville, Millville, Wantage) were counted during the summer months, when the parking demand is expected to greatest based on their proximity to vacation areas. These locations were counted on Friday, August 31, 2018 between 1:00 p.m. and 6:00 p.m. and Saturday, September 1, 2018 between 10:00 a.m. and 3:00 p.m. in five-minute intervals. The following three locations (Pennsauken, Millville, Burlington) were counted on Thursday, October 25, 2018 between 1:00 p.m. and 6:00 p.m. and Saturday, October 27, 2018 between 10:00 a.m. and 3:00 p.m. in five-minute intervals. The site maps and data from these counts are shown in appended **Figures 1** through **17**. It should be noted that the site map for the 1000 West Main Street, Millville was not included, as aerial images of this site are not available at this time.

For five (5) of the locations, the parking supply ranged from 30 spaces to 34 spaces. The Burlington Dollar General was an outlier and had a parking supply of 97 spaces. The data shows that the average peak parking demand for weekdays at the summer locations was approximately 18 spaces. The highest peak parking demand occurred at Millville at 5:55 p.m. and was 25 spaces. The average peak parking demand for Saturdays at the summer locations was 15 spaces. The highest peak parking demand occurred at Millville at 12:20 p.m. and 2:10 p.m. and was 17 spaces. The average peak parking demand for weekdays at non-summer locations was approximately 15 spaces. The highest peak parking demand occurred Pennsauken at 12:45 p.m. and was 20 spaces. The average peak parking demand for Saturdays in non-summer locations was approximately 14 spaces. The highest peak parking demand occurred at Pennsauken at 3:10 p.m. and was 22 spaces. **Table 1** shows the average and peak parking demand of each site.

Parking Count Memorandum

TABLE I – PARKING DEMAND

	WEEKDAY		WEEKEND	
	Average Peak Demand	Maximum Demand	Average Peak Demand	Maximum Demand
720 Atlantic City Boulevard Bayville	7.4	12	7.4	13
380 NJSH 23 Wantage	10.5	18	11.1	15
1416 Buckshuntem Road Millville	13.2	25	10.7	17
1170 US Route 13 Burlington	5.4	10	7.2	11
3400 Haddonfield Road Pennsauken	11.7	22	11.6	20
1000 West Main Street Millville	5.5	9	8.6	15
Overall	9.0	25	9.4	20

S:\2018\S-18200 Dollar General Parking Study\Reports\2019-01 Parking Memorandum.docx

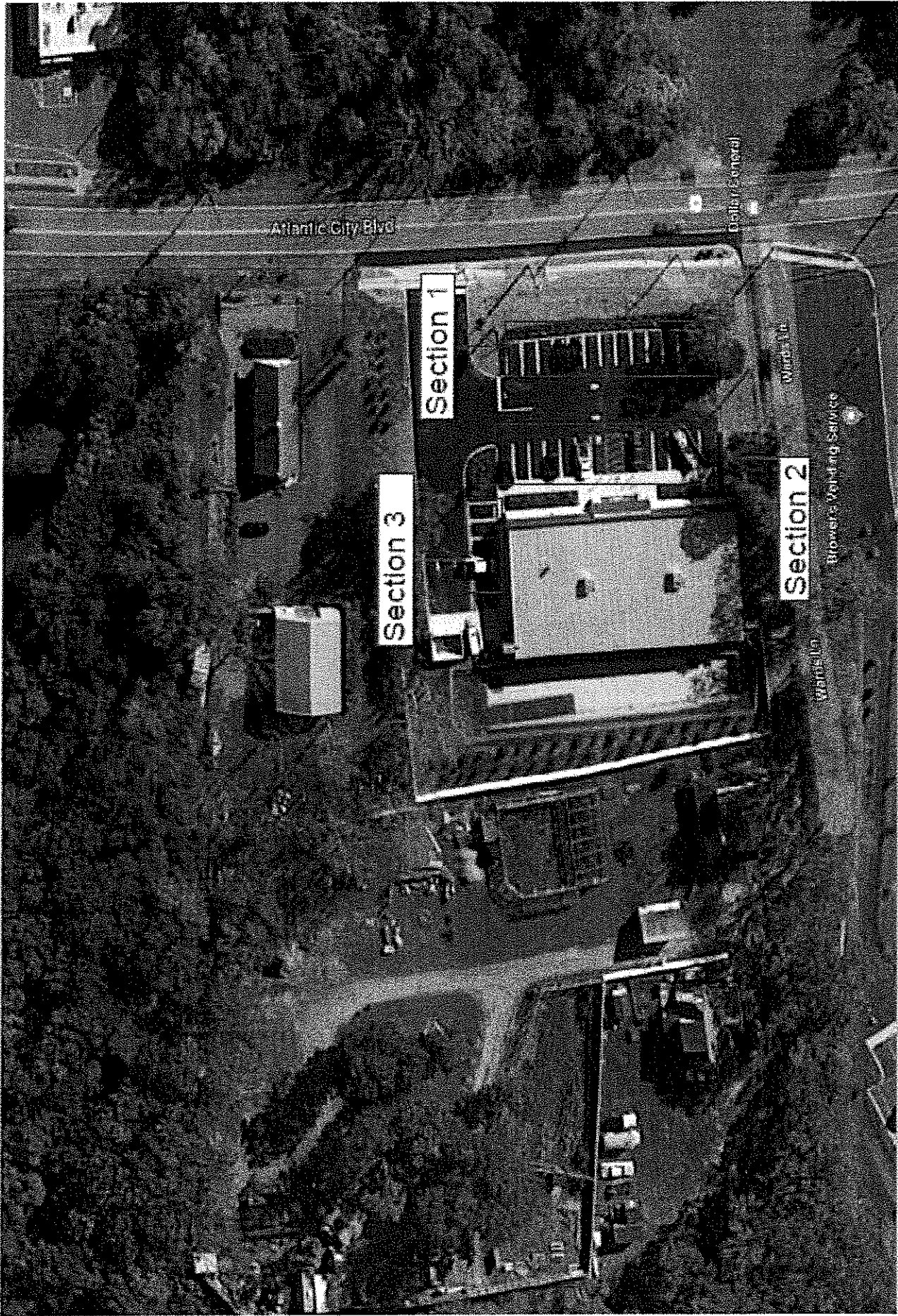


FIGURE 1
Parking Section Map

720 Atlantic City Boulevard
Township of Bayville, Ocean County, New Jersey

STONEFIELD

STONEFIELD

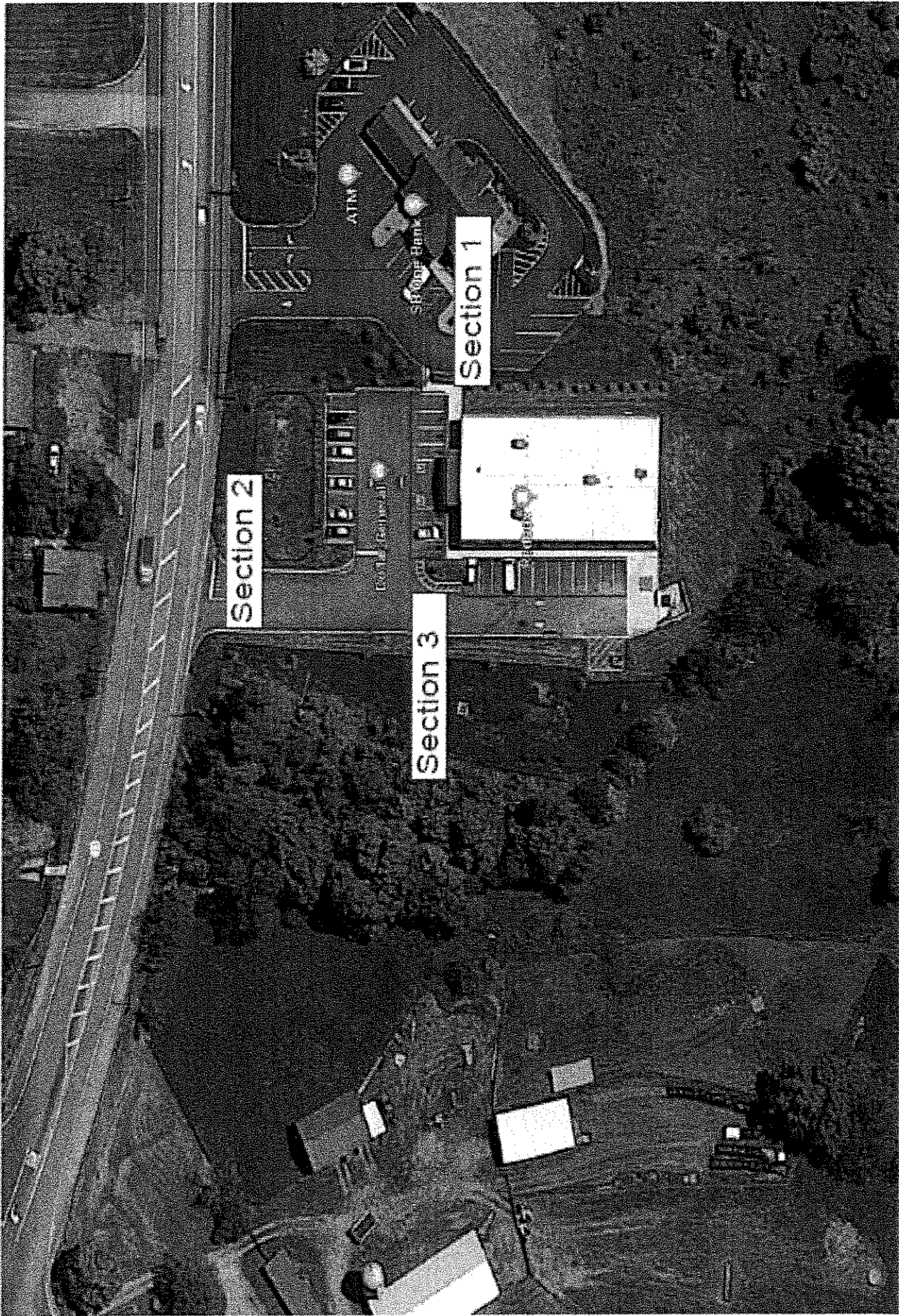
Figure 2: Existing Parking Utilization Data
720 Atlantic City Boulevard, Bayville, New Jersey
Friday, August 31, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	13	13	5	31	
1:00 PM	4	0	1	5	16%
1:05 PM	3	0	1	4	13%
1:10 PM	4	0	1	5	16%
1:15 PM	4	0	1	5	16%
1:20 PM	6	0	1	7	23%
1:25 PM	6	0	1	7	23%
1:30 PM	5	0	1	6	19%
1:35 PM	5	1	1	7	23%
1:40 PM	7	2	1	10	32%
1:45 PM	7	1	1	9	29%
1:50 PM	8	2	1	11	35%
1:55 PM	8	0	2	10	32%
2:00 PM	9	0	2	11	35%
2:05 PM	7	0	2	9	29%
2:10 PM	6	1	2	9	29%
2:15 PM	3	1	2	6	19%
2:20 PM	3	0	2	5	16%
2:25 PM	7	1	2	10	32%
2:30 PM	8	1	2	11	35%
2:35 PM	7	1	2	10	32%
2:40 PM	5	1	2	8	26%
2:45 PM	2	1	2	5	16%
2:50 PM	1	1	2	4	13%
2:55 PM	3	1	2	6	19%
3:00 PM	6	0	1	7	23%
3:05 PM	6	0	1	7	23%
3:10 PM	4	0	1	5	16%
3:15 PM	4	1	1	6	19%
3:20 PM	4	1	1	6	19%
3:25 PM	4	0	1	5	16%
3:30 PM	5	0	1	6	19%
3:35 PM	5	0	1	6	19%
3:40 PM	3	0	1	4	13%
3:45 PM	8	0	1	9	29%
3:50 PM	6	1	1	8	26%
3:55 PM	8	1	1	10	32%
4:00 PM	9	1	1	11	35%
4:05 PM	9	1	1	11	35%
4:10 PM	9	1	1	11	35%
4:15 PM	5	1	1	7	23%
4:20 PM	6	0	1	7	23%
4:25 PM	8	1	1	10	32%
4:30 PM	7	2	1	10	32%
4:35 PM	5	1	1	7	23%
4:40 PM	3	1	1	5	16%
4:45 PM	9	2	1	12	39%
4:50 PM	7	1	1	9	29%
4:55 PM	5	0	1	6	19%
5:00 PM	4	0	1	5	16%
5:05 PM	1	1	1	3	10%
5:10 PM	3	0	1	4	13%
5:15 PM	4	0	1	5	16%
5:20 PM	5	0	1	6	19%
5:25 PM	6	0	1	7	23%
5:30 PM	4	0	1	5	16%
5:35 PM	6	0	1	7	23%
5:40 PM	6	0	1	7	23%
5:45 PM	7	3	1	11	35%
5:50 PM	6	2	1	9	29%
5:55 PM	6	3	1	10	32%
6:00 PM	7	2	1	10	32%

STONEFIELD

Figure 3: Existing Parking Utilization Data
720 Atlantic City Boulevard, Bayville, New Jersey
Saturday, September 1, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	13	13	5	31	
10:00 AM	4	0	1	5	16%
10:05 AM	4	0	1	5	16%
10:10 AM	5	1	1	7	23%
10:15 AM	3	1	1	5	16%
10:20 AM	1	1	1	3	10%
10:25 AM	3	1	1	5	16%
10:30 AM	3	2	1	6	19%
10:35 AM	6	2	1	9	29%
10:40 AM	7	3	1	11	35%
10:45 AM	9	3	1	13	42%
10:50 AM	6	3	1	10	32%
10:55 AM	5	3	1	9	29%
11:00 AM	5	2	1	8	26%
11:05 AM	5	3	1	9	29%
11:10 AM	3	4	1	8	26%
11:15 AM	5	1	1	7	23%
11:20 AM	4	1	1	6	19%
11:25 AM	6	1	1	8	26%
11:30 AM	6	1	1	8	26%
11:35 AM	8	2	1	11	35%
11:40 AM	8	1	1	10	32%
11:45 AM	7	0	1	8	26%
11:50 AM	7	0	1	8	26%
11:55 AM	6	1	2	9	29%
12:00 PM	7	1	2	10	32%
12:05 PM	5	1	2	8	26%
12:10 PM	6	1	2	9	29%
12:15 PM	6	2	2	10	32%
12:20 PM	7	0	2	9	29%
12:25 PM	4	1	1	6	19%
12:30 PM	4	1	1	6	19%
12:35 PM	5	1	1	7	23%
12:40 PM	7	1	1	9	29%
12:45 PM	6	1	1	8	26%
12:50 PM	6	1	1	8	26%
12:55 PM	6	1	1	8	26%
1:00 PM	6	1	1	8	26%
1:05 PM	5	1	1	7	23%
1:10 PM	5	1	1	7	23%
1:15 PM	5	2	1	8	26%
1:20 PM	3	2	1	6	19%
1:25 PM	3	4	1	8	26%
1:30 PM	2	3	1	6	19%
1:35 PM	1	2	1	4	13%
1:40 PM	4	1	1	6	19%
1:45 PM	5	0	1	6	19%
1:50 PM	4	0	1	5	16%
1:55 PM	3	1	2	6	19%
2:00 PM	2	1	2	5	16%
2:05 PM	1	1	2	4	13%
2:10 PM	1	1	2	4	13%
2:15 PM	4	0	2	6	19%
2:20 PM	7	0	2	9	29%
2:25 PM	6	1	2	9	29%
2:30 PM	7	1	2	10	32%
2:35 PM	7	0	2	9	29%
2:40 PM	8	0	2	10	32%
2:45 PM	5	0	2	7	23%
2:50 PM	3	0	2	5	16%
2:55 PM	3	0	2	5	16%
3:00 PM	2	0	2	4	13%



380 NJSH 23

Wantage Township, Sussex County, New Jersey

FIGURE 4
Parking Section Map

STONEFIELD

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Figure 5: Existing Parking Utilization Data
380 NJ-23, Wantage, New Jersey
Friday, August 31, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	13	13	5	31	
1:00 PM	5	3	4	12	39%
1:05 PM	5	4	5	14	45%
1:10 PM	4	4	6	14	45%
1:15 PM	4	3	6	13	42%
1:20 PM	5	3	5	13	42%
1:25 PM	9	3	5	17	55%
1:30 PM	9	3	4	16	52%
1:35 PM	7	2	4	13	42%
1:40 PM	6	2	3	11	35%
1:45 PM	6	2	4	12	39%
1:50 PM	2	1	4	7	23%
1:55 PM	6	1	4	11	35%
2:00 PM	5	0	4	9	29%
2:05 PM	4	0	4	8	26%
2:10 PM	3	0	3	6	19%
2:15 PM	3	1	2	6	19%
2:20 PM	4	1	2	7	23%
2:25 PM	6	0	2	8	26%
2:30 PM	7	1	2	10	32%
2:35 PM	7	3	5	15	48%
2:40 PM	7	4	6	17	55%
2:45 PM	6	6	6	18	58%
2:50 PM	6	6	4	16	52%
2:55 PM	5	5	4	14	45%
3:00 PM	5	6	4	15	48%
3:05 PM	4	4	3	11	35%
3:10 PM	6	3	4	13	42%
3:15 PM	6	3	3	12	39%
3:20 PM	3	3	2	8	26%
3:25 PM	6	4	3	13	42%
3:30 PM	4	3	2	9	29%
3:35 PM	5	3	3	11	35%
3:40 PM	6	4	3	13	42%
3:45 PM	4	4	3	11	35%
3:50 PM	4	4	4	12	39%
3:55 PM	5	4	3	12	39%
4:00 PM	4	4	2	10	32%
4:05 PM	4	5	2	11	35%
4:10 PM	4	4	4	12	39%
4:15 PM	5	3	5	13	42%
4:20 PM	4	1	4	9	29%
4:25 PM	3	3	4	10	32%
4:30 PM	5	3	2	10	32%
4:35 PM	4	4	2	10	32%
4:40 PM	6	3	3	12	39%
4:45 PM	4	2	1	7	23%
4:50 PM	3	1	2	6	19%
4:55 PM	1	1	1	3	10%
5:00 PM	3	0	1	4	13%
5:05 PM	2	0	1	3	10%
5:10 PM	3	1	2	6	19%
5:15 PM	3	2	1	6	19%
5:20 PM	5	2	2	9	29%
5:25 PM	5	1	2	8	26%
5:30 PM	4	2	1	7	23%
5:35 PM	4	1	1	6	19%
5:40 PM	4	2	2	8	26%
5:45 PM	6	1	3	10	32%
5:50 PM	7	3	3	13	42%
5:55 PM	7	1	2	10	32%
6:00 PM	7	3	3	13	42%

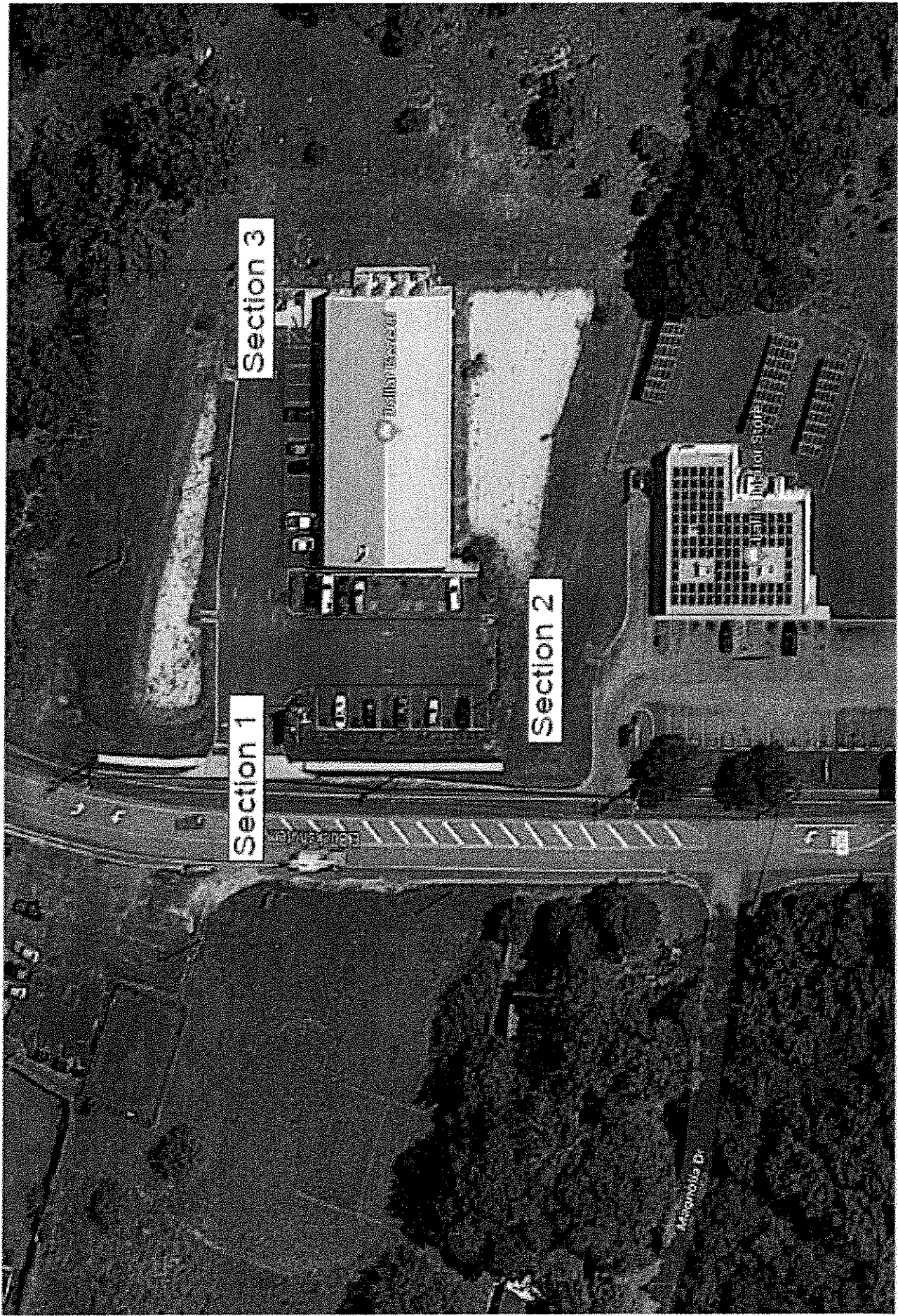
STONEFIELD

Figure 6: Existing Parking Utilization Data

380 NJ-23, Wantage, New Jersey

Saturday, September 1, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	9	9	12	30	
10:00 AM	7	5	2	14	47%
10:05 AM	3	4	5	12	40%
10:10 AM	4	4	5	13	43%
10:15 AM	5	3	5	13	43%
10:20 AM	4	1	2	7	23%
10:25 AM	5	2	3	10	33%
10:30 AM	5	3	3	11	37%
10:35 AM	6	3	2	11	37%
10:40 AM	7	5	2	14	47%
10:45 AM	6	5	2	13	43%
10:50 AM	7	5	2	14	47%
10:55 AM	7	4	3	14	47%
11:00 AM	6	4	2	12	40%
11:05 AM	6	5	2	13	43%
11:10 AM	4	3	4	11	37%
11:15 AM	3	4	4	11	37%
11:20 AM	7	3	2	12	40%
11:25 AM	6	4	1	11	37%
11:30 AM	5	3	2	10	33%
11:35 AM	6	3	2	11	37%
11:40 AM	6	4	2	12	40%
11:45 AM	5	3	2	10	33%
11:50 AM	5	4	2	11	37%
11:55 AM	3	3	2	8	27%
12:00 PM	6	4	2	12	40%
12:05 PM	7	3	2	12	40%
12:10 PM	7	2	1	10	33%
12:15 PM	6	3	2	11	37%
12:20 PM	3	2	3	8	27%
12:25 PM	4	2	2	8	27%
12:30 PM	5	4	3	12	40%
12:35 PM	5	3	2	10	33%
12:40 PM	2	3	3	8	27%
12:45 PM	6	2	2	10	33%
12:50 PM	3	6	4	13	43%
12:55 PM	3	5	2	10	33%
1:00 PM	4	4	3	11	37%
1:05 PM	4	3	3	10	33%
1:10 PM	5	2	4	11	37%
1:15 PM	5	3	4	12	40%
1:20 PM	4	3	4	11	37%
1:25 PM	6	4	5	15	50%
1:30 PM	5	3	3	11	37%
1:35 PM	6	3	3	12	40%
1:40 PM	5	4	3	12	40%
1:45 PM	7	4	3	14	47%
1:50 PM	3	5	5	13	43%
1:55 PM	4	5	4	13	43%
2:00 PM	3	4	4	11	37%
2:05 PM	4	4	4	12	40%
2:10 PM	2	3	3	8	27%
2:15 PM	2	3	3	8	27%
2:20 PM	4	5	3	12	40%
2:25 PM	4	5	4	13	43%
2:30 PM	3	5	3	11	37%
2:35 PM	3	3	3	9	30%
2:40 PM	4	4	2	10	33%
2:45 PM	4	2	2	8	27%
2:50 PM	3	2	3	8	27%
2:55 PM	5	1	4	10	33%
3:00 PM	2	1	5	8	27%



1416 East Buckshunter Road
City of Millville, Cumberland County, New Jersey

FIGURE 7
Parking Section Map

STONEFIELD

STONEFIELD

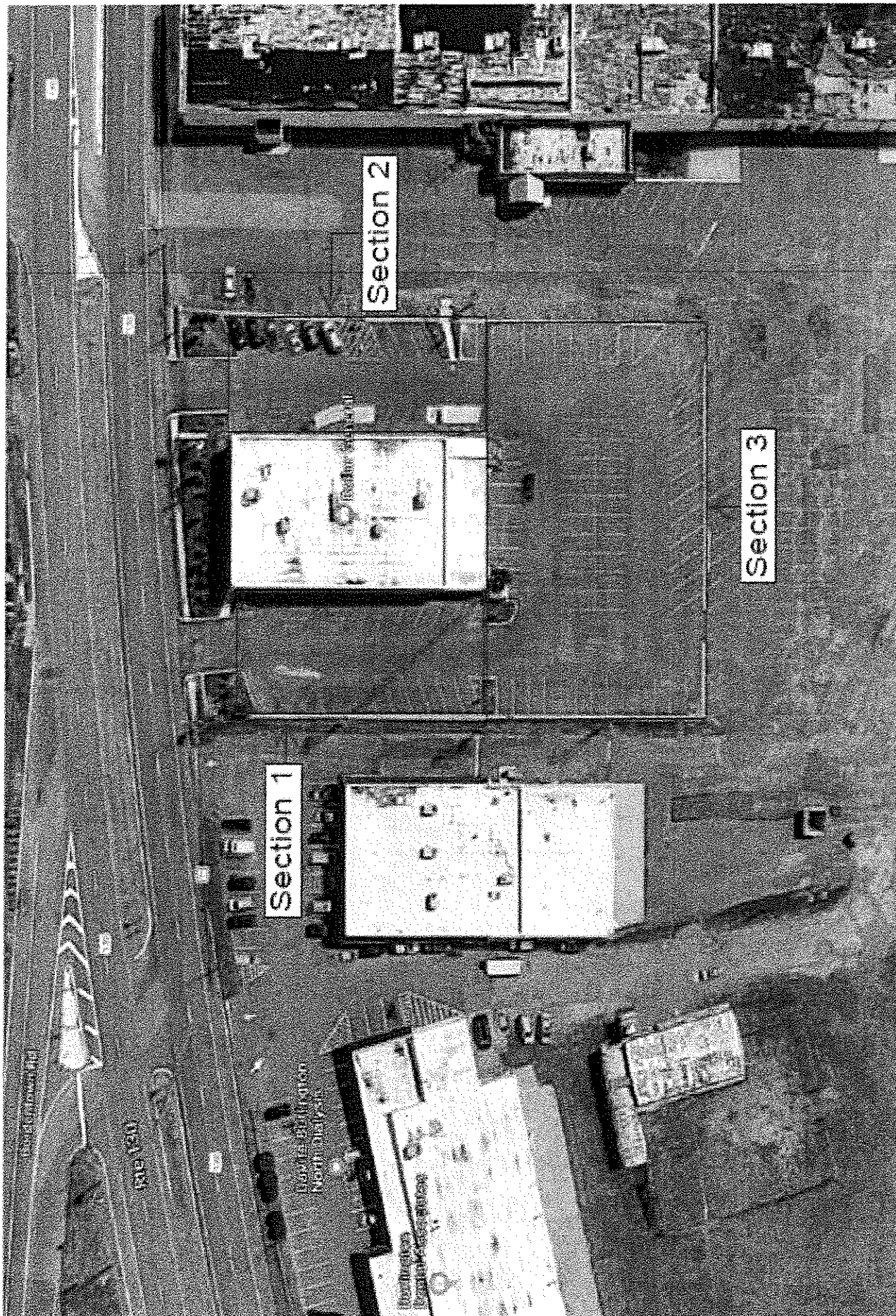
Figure 8: Existing Parking Utilization Data
1416 East Buckshuntem Road, Milville, New Jersey
Friday, August 31, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	11	10	11	32	
1:00 PM	3	4	2	9	28%
1:05 PM	3	5	2	10	31%
1:10 PM	3	6	3	12	38%
1:15 PM	4	3	3	10	31%
1:20 PM	2	2	3	7	22%
1:25 PM	2	5	3	10	31%
1:30 PM	6	4	3	13	41%
1:35 PM	5	5	1	11	34%
1:40 PM	3	7	3	13	41%
1:45 PM	4	2	2	8	25%
1:50 PM	3	4	4	11	34%
1:55 PM	4	4	4	12	38%
2:00 PM	3	4	2	9	28%
2:05 PM	4	5	3	12	38%
2:10 PM	4	4	2	10	31%
2:15 PM	3	3	3	9	28%
2:20 PM	5	2	5	12	38%
2:25 PM	5	4	2	11	34%
2:30 PM	7	5	5	17	53%
2:35 PM	5	8	4	17	53%
2:40 PM	4	6	7	17	53%
2:45 PM	4	5	6	15	47%
2:50 PM	5	5	3	13	41%
2:55 PM	5	6	2	13	41%
3:00 PM	4	6	2	12	38%
3:05 PM	5	5	3	13	41%
3:10 PM	6	5	3	14	44%
3:15 PM	4	5	4	13	41%
3:20 PM	4	2	5	11	34%
3:25 PM	3	2	5	10	31%
3:30 PM	4	4	5	13	41%
3:35 PM	4	4	3	11	34%
3:40 PM	3	5	1	9	28%
3:45 PM	2	4	1	7	22%
3:50 PM	3	5	1	9	28%
3:55 PM	3	6	2	11	34%
4:00 PM	2	4	2	8	25%
4:05 PM	5	3	4	12	38%
4:10 PM	2	4	4	10	31%
4:15 PM	4	3	4	11	34%
4:20 PM	5	4	6	15	47%
4:25 PM	6	4	3	13	41%
4:30 PM	4	3	3	10	31%
4:35 PM	3	5	2	10	31%
4:40 PM	6	5	5	16	50%
4:45 PM	6	5	6	17	53%
4:50 PM	7	5	3	15	47%
4:55 PM	9	4	4	17	53%
5:00 PM	9	5	7	21	66%
5:05 PM	7	7	7	21	66%
5:10 PM	8	6	8	22	69%
5:15 PM	4	5	5	14	44%
5:20 PM	4	4	5	13	41%
5:25 PM	4	7	5	16	50%
5:30 PM	6	6	7	19	59%
5:35 PM	6	5	3	14	44%
5:40 PM	3	4	2	9	28%
5:45 PM	6	7	5	18	56%
5:50 PM	6	8	7	21	66%
5:55 PM	8	9	8	25	78%
6:00 PM	9	9	7	25	78%

STONEFIELD

Figure 9: Existing Parking Utilization Data
1416 East Buckshuntem Road, Millville, New Jersey
Saturday, September 1, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	11	10	11	32	
10:00 AM	1	5	4	10	31%
10:05 AM	2	6	4	12	38%
10:10 AM	1	5	4	10	31%
10:15 AM	1	3	4	8	25%
10:20 AM	1	6	5	12	38%
10:25 AM	1	3	4	8	25%
10:30 AM	2	2	4	8	25%
10:35 AM	1	4	3	8	25%
10:40 AM	1	2	4	7	22%
10:45 AM	0	0	3	3	9%
10:50 AM	0	4	3	7	22%
10:55 AM	1	4	2	7	22%
11:00 AM	3	5	2	10	31%
11:05 AM	1	4	1	6	19%
11:10 AM	2	4	1	7	22%
11:15 AM	3	2	2	7	22%
11:20 AM	0	3	2	5	16%
11:25 AM	1	4	1	6	19%
11:30 AM	2	5	3	10	31%
11:35 AM	2	5	2	9	28%
11:40 AM	4	6	3	13	41%
11:45 AM	3	5	6	14	44%
11:50 AM	4	6	3	13	41%
11:55 AM	4	4	2	10	31%
12:00 PM	3	7	3	13	41%
12:05 PM	3	7	3	13	41%
12:10 PM	3	5	4	12	38%
12:15 PM	2	8	5	15	47%
12:20 PM	4	7	6	17	53%
12:25 PM	3	6	4	13	41%
12:30 PM	2	5	6	13	41%
12:35 PM	3	3	4	10	31%
12:40 PM	3	5	2	10	31%
12:45 PM	4	2	5	11	34%
12:50 PM	1	5	2	8	25%
12:55 PM	4	7	3	14	44%
1:00 PM	3	3	1	7	22%
1:05 PM	3	7	4	14	44%
1:10 PM	4	4	6	14	44%
1:15 PM	4	4	5	13	41%
1:20 PM	4	3	3	10	31%
1:25 PM	1	5	2	8	25%
1:30 PM	0	5	2	7	22%
1:35 PM	0	2	2	4	13%
1:40 PM	2	6	3	11	34%
1:45 PM	2	7	5	14	44%
1:50 PM	4	4	4	12	38%
1:55 PM	6	4	3	13	41%
2:00 PM	5	5	3	13	41%
2:05 PM	3	6	5	14	44%
2:10 PM	4	6	7	17	53%
2:15 PM	5	4	4	13	41%
2:20 PM	3	3	6	12	38%
2:25 PM	4	5	4	13	41%
2:30 PM	3	6	4	13	41%
2:35 PM	2	3	6	11	34%
2:40 PM	2	4	5	11	34%
2:45 PM	2	4	3	9	28%
2:50 PM	4	5	4	13	41%
2:55 PM	5	6	3	14	44%
3:00 PM	5	5	6	16	50%



1170 US Route 130
City of Burlington, Burlington County, New Jersey

FIGURE 10
Parking Section Map

STONEFIELD

STONEFIELD

Figure 11: Existing Parking Utilization Data

1170 US Route 130, Burlington, New Jersey

Wednesday, October 24, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	23	16	58	97	
1:00 PM	2	1	3	6	6%
1:05 PM	1	1	4	6	6%
1:10 PM	1	1	4	6	6%
1:15 PM	2	1	3	6	6%
1:20 PM	2	1	5	8	8%
1:25 PM	1	1	2	4	4%
1:30 PM	1	0	2	3	3%
1:35 PM	2	0	2	4	4%
1:40 PM	4	0	1	5	5%
1:45 PM	3	0	3	6	6%
1:50 PM	3	0	2	5	5%
1:55 PM	2	0	1	3	3%
2:00 PM	2	1	1	4	4%
2:05 PM	2	1	1	4	4%
2:10 PM	2	1	1	4	4%
2:15 PM	1	1	3	5	5%
2:20 PM	1	1	3	5	5%
2:25 PM	4	1	3	8	8%
2:30 PM	2	1	2	5	5%
2:35 PM	1	1	3	5	5%
2:40 PM	1	1	2	4	4%
2:45 PM	3	0	3	6	6%
2:50 PM	4	0	1	5	5%
2:55 PM	2	0	1	3	3%
3:00 PM	2	0	2	4	4%
3:05 PM	1	0	3	4	4%
3:10 PM	2	0	2	4	4%
3:15 PM	4	0	2	6	6%
3:20 PM	3	0	2	5	5%
3:25 PM	4	0	3	7	7%
3:30 PM	3	0	3	6	6%
3:35 PM	3	0	2	5	5%
3:40 PM	8	0	2	10	10%
3:45 PM	6	0	3	9	9%
3:50 PM	4	0	2	6	6%
3:55 PM	3	0	1	4	4%
4:00 PM	1	0	1	2	2%
4:05 PM	1	0	3	4	4%
4:10 PM	2	0	4	6	6%
4:15 PM	2	0	4	6	6%
4:20 PM	0	0	1	1	1%
4:25 PM	2	0	4	6	6%
4:30 PM	0	0	4	4	4%
4:35 PM	2	0	5	7	7%
4:40 PM	3	0	3	6	6%
4:45 PM	2	0	4	6	6%
4:50 PM	0	0	5	5	5%
4:55 PM	0	0	6	6	6%
5:00 PM	2	0	4	6	6%
5:05 PM	2	0	3	5	5%
5:10 PM	1	0	6	7	7%
5:15 PM	0	0	5	5	5%
5:20 PM	0	0	6	6	6%
5:25 PM	0	0	8	8	8%
5:30 PM	0	0	9	9	9%
5:35 PM	2	0	7	9	9%
5:40 PM	2	0	5	7	7%
5:45 PM	2	0	2	4	4%
5:50 PM	2	0	4	6	6%
5:55 PM	1	0	3	4	4%
6:00 PM	1	0	4	5	5%

STONEFIELD

Figure 12: Existing Parking Utilization Data

1170 US Route 130, Burlington, New Jersey

Saturday, October 27, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	23	16	58	97	
10:00 AM	5	0	3	8	8%
10:05 AM	4	0	2	6	6%
10:10 AM	4	0	2	6	6%
10:15 AM	3	0	2	5	5%
10:20 AM	3	0	3	6	6%
10:25 AM	3	0	4	7	7%
10:30 AM	2	0	4	6	6%
10:35 AM	2	0	3	5	5%
10:40 AM	3	0	6	9	9%
10:45 AM	3	0	6	9	9%
10:50 AM	5	0	5	10	10%
10:55 AM	6	0	5	11	11%
11:00 AM	3	0	6	9	9%
11:05 AM	3	0	5	8	8%
11:10 AM	4	0	4	8	8%
11:15 AM	5	0	3	8	8%
11:20 AM	9	0	2	11	11%
11:25 AM	7	0	4	11	11%
11:30 AM	4	0	5	9	9%
11:35 AM	1	0	4	5	5%
11:40 AM	2	0	4	6	6%
11:45 AM	1	0	2	3	3%
11:50 AM	2	0	4	6	6%
11:55 AM	0	0	3	3	3%
12:00 PM	4	0	3	7	7%
12:05 PM	6	0	4	10	10%
12:10 PM	5	0	4	9	9%
12:15 PM	2	0	1	3	3%
12:20 PM	1	0	2	3	3%
12:25 PM	2	0	7	9	9%
12:30 PM	2	0	5	7	7%
12:35 PM	2	0	4	6	6%
12:40 PM	0	0	5	5	5%
12:45 PM	0	0	7	7	7%
12:50 PM	0	0	7	7	7%
12:55 PM	1	0	8	9	9%
1:00 PM	2	0	6	8	8%
1:05 PM	0	0	5	5	5%
1:10 PM	0	0	5	5	5%
1:15 PM	0	0	3	3	3%
1:20 PM	1	0	3	4	4%
1:25 PM	1	0	2	3	3%
1:30 PM	2	0	2	4	4%
1:35 PM	2	0	7	9	9%
1:40 PM	4	0	6	10	10%
1:45 PM	1	0	5	6	6%
1:50 PM	3	0	4	7	7%
1:55 PM	3	0	3	6	6%
2:00 PM	3	0	2	5	5%
2:05 PM	3	0	3	6	6%
2:10 PM	2	0	6	8	8%
2:15 PM	3	0	6	9	9%
2:20 PM	4	0	6	10	10%
2:25 PM	6	0	4	10	10%
2:30 PM	7	0	4	11	11%
2:35 PM	7	0	4	11	11%
2:40 PM	5	0	6	11	11%
2:45 PM	6	0	5	11	11%
2:50 PM	5	0	4	9	9%
2:55 PM	2	0	3	5	5%
3:00 PM	2	0	4	6	6%

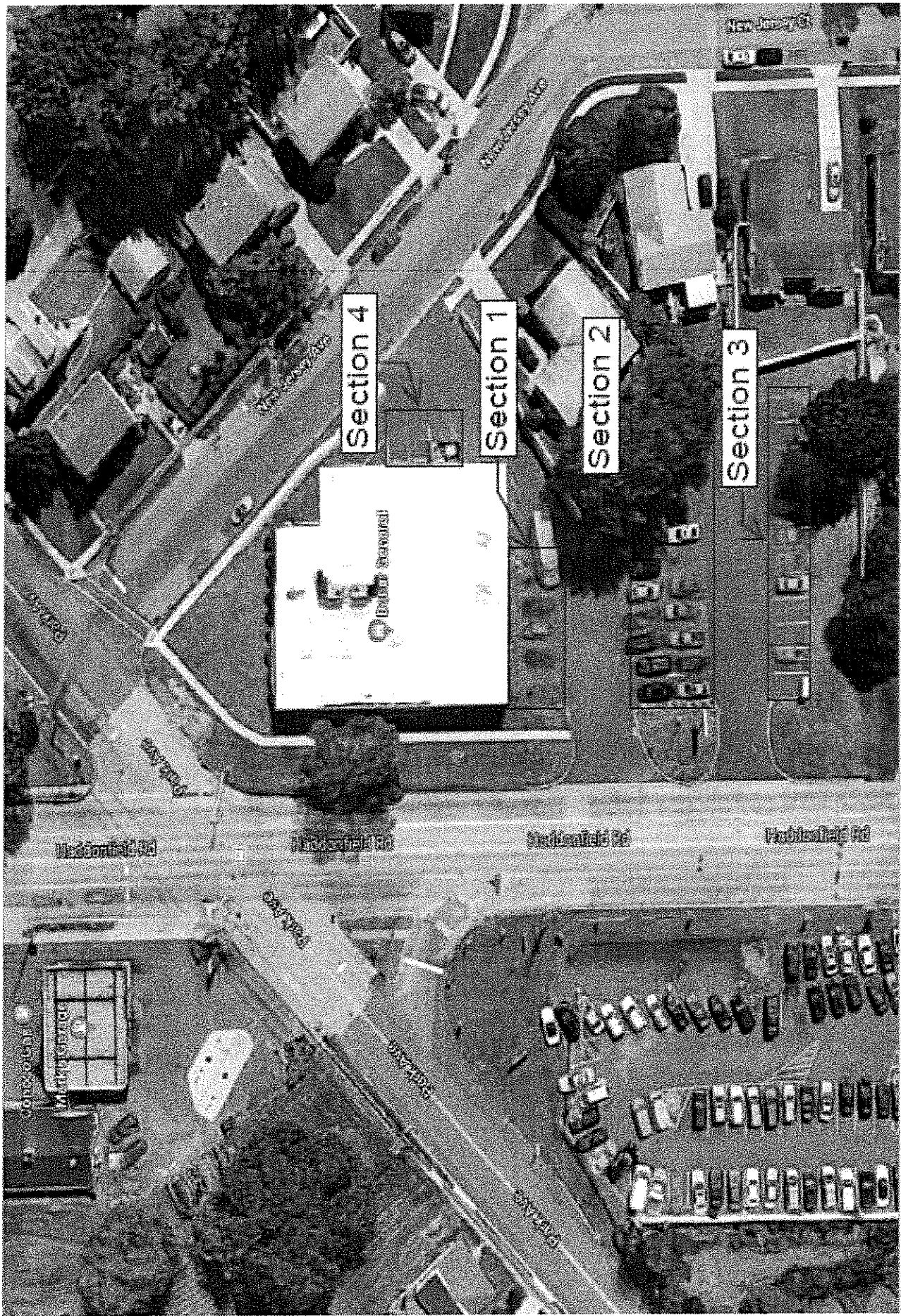


FIGURE 13
Parking Section Map

3400 Haddonfield Road
Pennsauken Township, Camden County, New Jersey

STONEFIELD

STONEFIELD

Figure 14: Existing Parking Utilization Data
3400 Haddonfield Road, Pennsauken, New Jersey
Thursday, October 25, 2018

Time	Section 1	Section 2	Section 3	Section 4	Total	Utilization
Supply	5	14	12	3	34	
1:00 PM	4	2	1	1	7	21%
1:05 PM	3	3	1	1	7	21%
1:10 PM	4	4	1	1	9	26%
1:15 PM	2	3	1	1	6	18%
1:20 PM	2	4	1	1	7	21%
1:25 PM	3	6	1	1	10	29%
1:30 PM	2	5	1	1	8	24%
1:35 PM	3	8	1	1	12	35%
1:40 PM	3	5	1	1	9	26%
1:45 PM	3	4	1	1	8	24%
1:50 PM	4	6	1	1	11	32%
1:55 PM	3	5	1	1	9	26%
2:00 PM	4	5	3	1	12	35%
2:05 PM	5	4	3	2	12	35%
2:10 PM	3	5	2	2	10	29%
2:15 PM	4	5	2	1	11	32%
2:20 PM	3	6	2	1	11	32%
2:25 PM	4	4	4	1	12	35%
2:30 PM	3	9	4	1	16	47%
2:35 PM	2	8	3	1	13	38%
2:40 PM	3	6	2	1	11	32%
2:45 PM	4	8	2	1	14	41%
2:50 PM	3	5	2	1	10	29%
2:55 PM	4	5	4	1	13	38%
3:00 PM	4	6	4	1	14	41%
3:05 PM	2	8	4	1	14	41%
3:10 PM	5	11	6	1	22	65%
3:15 PM	5	9	6	1	20	59%
3:20 PM	4	6	5	1	15	44%
3:25 PM	4	6	5	1	15	44%
3:30 PM	2	7	4	1	13	38%
3:35 PM	1	3	4	1	8	24%
3:40 PM	3	4	5	1	12	35%
3:45 PM	4	4	4	1	12	35%
3:50 PM	5	6	4	1	15	44%
3:55 PM	3	6	3	1	12	35%
4:00 PM	3	7	3	1	13	38%
4:05 PM	4	6	5	1	15	44%
4:10 PM	4	9	5	1	18	53%
4:15 PM	3	8	4	1	15	44%
4:20 PM	2	7	4	1	13	38%
4:25 PM	2	8	3	1	13	38%
4:30 PM	3	8	3	1	14	41%
4:35 PM	2	6	2	2	10	29%
4:40 PM		5	2	1	7	21%
4:45 PM	3	6	2	1	11	32%
4:50 PM	3	4	2	1	9	26%
4:55 PM	2	5	2	1	9	26%
5:00 PM	2	7	2	1	11	32%
5:05 PM	1	6	2	1	9	26%
5:10 PM	1	5	2	1	8	24%
5:15 PM		7	2	1	9	26%
5:20 PM	2	9	2	1	13	38%
5:25 PM	2	7	2	1	11	32%
5:30 PM	3	9	2	1	14	41%
5:35 PM	4	8	3	1	15	44%
5:40 PM	4	8	2	1	14	41%
5:45 PM	2	8	1	1	11	32%
5:50 PM	2	9	2	1	13	38%
5:55 PM	4	6	3	1	13	38%
6:00 PM	2	4	2	1	8	24%

STONEFIELD

Figure 15: Existing Parking Utilization Data
3400 Haddonfield Road, Pennsauken, New Jersey
Saturday, October 27, 2018

Time	Section 1	Section 2	Section 3	Section 4	Total	Utilization
Supply	5	14	12	3	34	
10:00 AM	3	3	1	1	7	21%
10:05 AM	4	2	1	1	7	21%
10:10 AM	3	2	1	1	6	18%
10:15 AM	3	3	1	1	7	21%
10:20 AM	2	3	1	1	6	18%
10:25 AM	3	5	1	1	9	26%
10:30 AM	2	3	1	1	6	18%
10:35 AM	4	5	1	1	10	29%
10:40 AM	4	7	1	1	12	35%
10:45 AM	3	4	1	1	8	24%
10:50 AM	4	3	1	1	8	24%
10:55 AM	4	4	1	1	9	26%
11:00 AM	4	5	1	1	10	29%
11:05 AM	4	3	1	1	8	24%
11:10 AM	2	3	1	1	6	18%
11:15 AM	4	6	2	1	12	35%
11:20 AM	3	6	2	1	11	32%
11:25 AM	4	5	0	1	9	26%
11:30 AM	5	3	0	1	8	24%
11:35 AM	6	4	0	1	10	29%
11:40 AM	4	6	0	1	10	29%
11:45 AM	3	5	0	1	8	24%
11:50 AM	5	5	1	1	11	32%
11:55 AM	5	6	2	1	13	38%
12:00 PM	6	3	2	1	11	32%
12:05 PM	3	4	1	1	8	24%
12:10 PM	4	7	1	1	12	35%
12:15 PM	6	6	0	1	12	35%
12:20 PM	5	7	0	1	12	35%
12:25 PM	5	7	0	1	12	35%
12:30 PM	3	9	0	1	12	35%
12:35 PM	4	11	0	1	15	44%
12:40 PM	3	12	1	1	16	47%
12:45 PM	5	12	3	1	20	59%
12:50 PM	5	9	3	1	17	50%
12:55 PM	5	9	2	1	16	47%
1:00 PM	4	11	3	1	18	53%
1:05 PM	3	11	4	1	18	53%
1:10 PM	4	8	3	1	15	44%
1:15 PM	2	10	2	1	14	41%
1:20 PM	2	6	1	1	9	26%
1:25 PM	3	9	0	1	12	35%
1:30 PM	3	10	0	1	13	38%
1:35 PM	4	11	2	1	17	50%
1:40 PM	3	12	2	1	17	50%
1:45 PM	3	10	2	1	15	44%
1:50 PM	4	6	2	1	12	35%
1:55 PM	3	5	0	1	8	24%
2:00 PM	4	7	0	1	11	32%
2:05 PM	5	9	0	1	14	41%
2:10 PM	5	12	0	1	17	50%
2:15 PM	5	7	1	2	13	38%
2:20 PM	3	5	1	2	9	26%
2:25 PM	3	6	1	4	10	29%
2:30 PM	3	5	1	2	9	26%
2:35 PM	4	9	0	2	13	38%
2:40 PM	3	11	0	3	14	41%
2:45 PM	3	9	0	2	12	35%
2:50 PM	3	9	0	2	12	35%
2:55 PM	4	11	1	2	16	47%
3:00 PM	6	8	1	2	15	44%

STONEFIELD

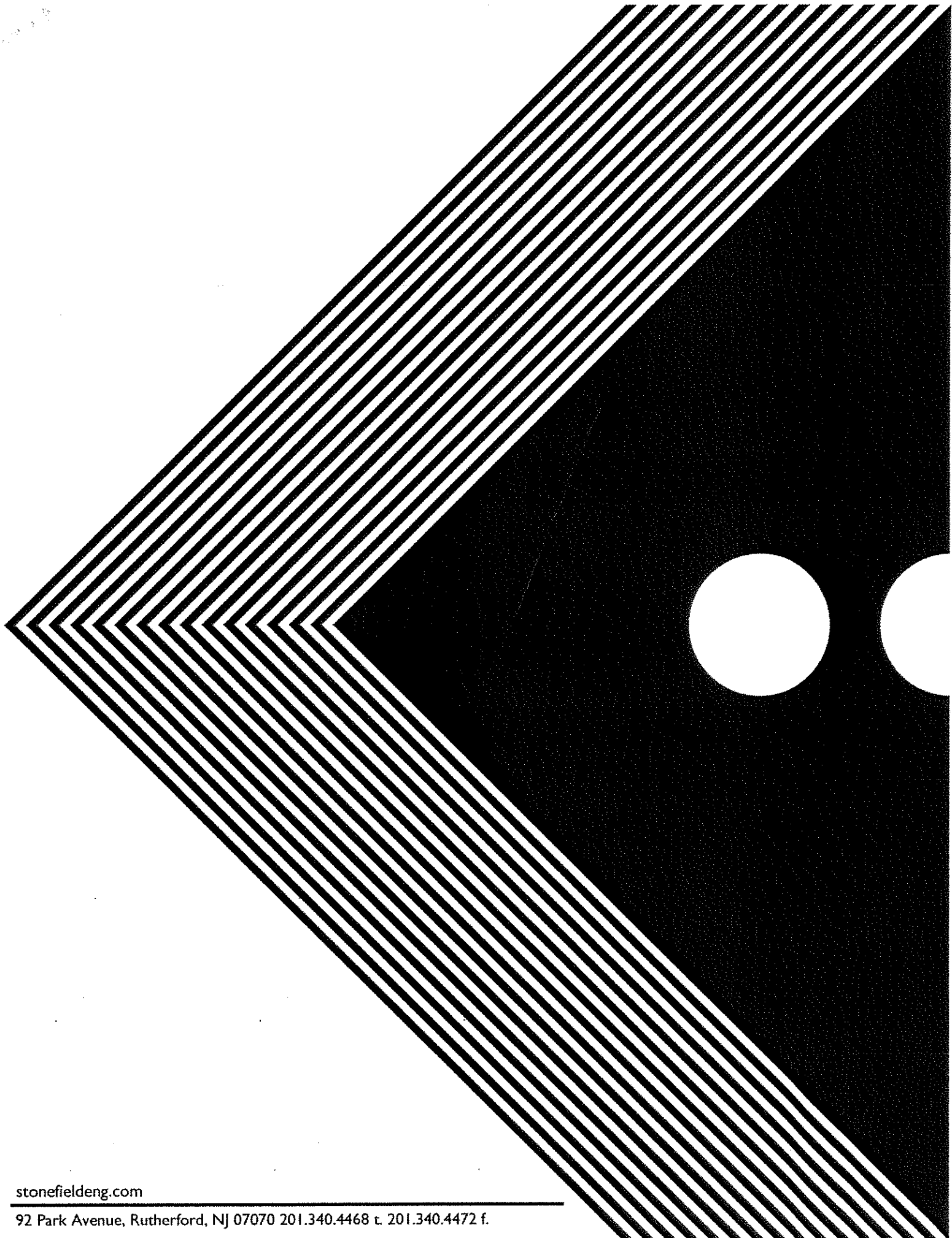
Figure 16: Existing Parking Utilization Data
1000 West Main Street, Millville, New Jersey
Thursday, October 25, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	15	12	3	30	
1:00 PM	0	2	0	2	7%
1:05 PM	0	1	0	1	3%
1:10 PM	0	2	0	2	7%
1:15 PM	0	4	0	4	13%
1:20 PM	0	7	0	7	23%
1:25 PM	0	8	0	8	27%
1:30 PM	0	5	0	5	17%
1:35 PM	0	7	0	7	23%
1:40 PM	0	8	0	8	27%
1:45 PM	0	7	0	7	23%
1:50 PM	0	5	0	5	17%
1:55 PM	0	3	0	3	10%
2:00 PM	0	4	0	4	13%
2:05 PM	0	6	0	6	20%
2:10 PM	0	4	0	4	13%
2:15 PM	0	5	0	5	17%
2:20 PM	0	2	0	2	7%
2:25 PM	0	4	0	4	13%
2:30 PM	0	6	0	6	20%
2:35 PM	0	6	0	6	20%
2:40 PM	0	9	0	9	30%
2:45 PM	0	6	0	6	20%
2:50 PM	1	5	0	6	20%
2:55 PM	1	3	0	4	13%
3:00 PM	1	5	0	6	20%
3:05 PM	1	3	0	4	13%
3:10 PM	1	3	0	4	13%
3:15 PM	1	3	0	4	13%
3:20 PM	1	5	0	6	20%
3:25 PM	1	6	0	7	23%
3:30 PM	1	5	0	6	20%
3:35 PM	1	6	0	7	23%
3:40 PM	1	6	0	7	23%
3:45 PM	2	5	0	7	23%
3:50 PM	2	6	0	8	27%
3:55 PM	1	6	0	7	23%
4:00 PM	0	6	0	6	20%
4:05 PM	0	6	0	6	20%
4:10 PM	0	4	0	4	13%
4:15 PM	0	4	0	4	13%
4:20 PM	0	3	0	3	10%
4:25 PM	0	4	0	4	13%
4:30 PM	0	7	0	7	23%
4:35 PM	0	6	0	6	20%
4:40 PM	0	6	0	6	20%
4:45 PM	0	8	0	8	27%
4:50 PM	0	7	0	7	23%
4:55 PM	0	7	1	8	27%
5:00 PM	0	3	1	4	13%
5:05 PM	0	4	1	5	17%
5:10 PM	0	5	1	6	20%
5:15 PM	0	7	1	8	27%
5:20 PM	0	6	1	7	23%
5:25 PM	0	5	1	6	20%
5:30 PM	0	3	1	4	13%
5:35 PM	0	4	1	5	17%
5:40 PM	0	4	1	5	17%
5:45 PM	0	3	1	4	13%
5:50 PM	0	6	1	7	23%
5:55 PM	0	6	1	7	23%
6:00 PM	0	6	1	7	23%

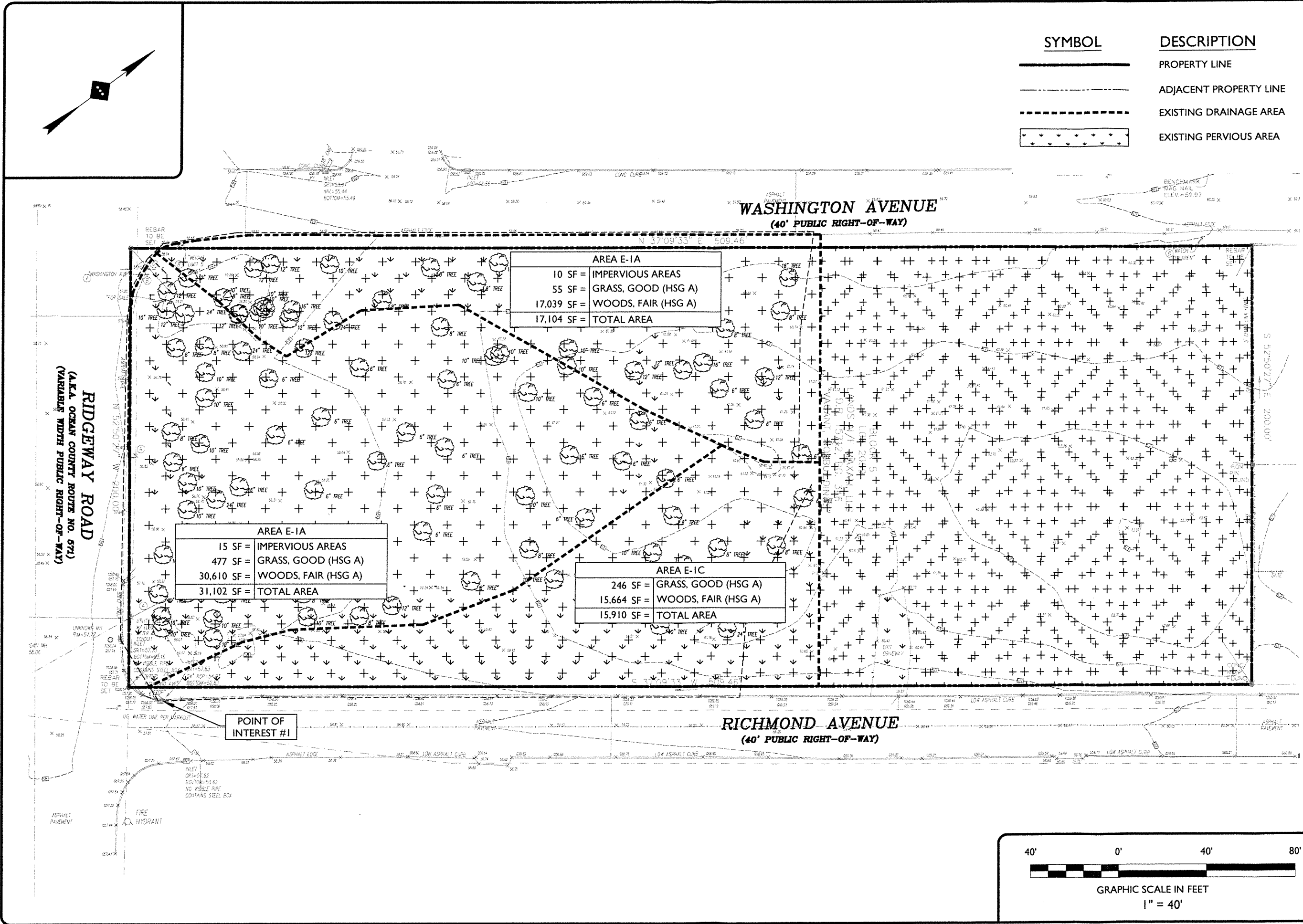
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Figure 17: Existing Parking Utilization Data
1000 West Main Street, Millville, New Jersey
Saturday, October 27, 2018

Time	Section 1	Section 2	Section 3	Total	Utilization
Supply	15	12	3	30	
10:00 AM	0	3	0	3	10%
10:05 AM	0	1	0	1	3%
10:10 AM	0	1	0	1	3%
10:15 AM	0	5	0	5	17%
10:20 AM	0	7	0	7	23%
10:25 AM	1	6	1	8	27%
10:30 AM	1	8	1	10	33%
10:35 AM	2	8	1	11	37%
10:40 AM	2	7	1	10	33%
10:45 AM	1	6	1	8	27%
10:50 AM	1	5	1	7	23%
10:55 AM	1	3	1	5	17%
11:00 AM	1	5	1	7	23%
11:05 AM	0	4	1	5	17%
11:10 AM	0	9	1	10	33%
11:15 AM	2	7	1	10	33%
11:20 AM	1	10	1	12	40%
11:25 AM	2	9	1	12	40%
11:30 AM	5	8	1	14	47%
11:35 AM	1	8	1	10	33%
11:40 AM	1	8	1	10	33%
11:45 AM	1	6	1	8	27%
11:50 AM	1	7	1	9	30%
11:55 AM	1	5	1	7	23%
12:00 PM	1	5	1	7	23%
12:05 PM	1	6	1	8	27%
12:10 PM	1	7	1	9	30%
12:15 PM	0	5	1	6	20%
12:20 PM	0	7	1	8	27%
12:25 PM	0	5	1	6	20%
12:30 PM	2	10	1	13	43%
12:35 PM	3	7	1	11	37%
12:40 PM	1	6	1	8	27%
12:45 PM	0	4	1	5	17%
12:50 PM	0	7	1	8	27%
12:55 PM	0	7	1	8	27%
1:00 PM	0	8	1	9	30%
1:05 PM	0	5	1	6	20%
1:10 PM	1	5	1	7	23%
1:15 PM	0	10	1	11	37%
1:20 PM	2	12	1	15	50%
1:25 PM	1	7	1	9	30%
1:30 PM	0	5	1	6	20%
1:35 PM	0	8	1	9	30%
1:40 PM	0	11	1	12	40%
1:45 PM	3	10	1	14	47%
1:50 PM	4	9	2	15	50%
1:55 PM	1	9	2	12	40%
2:00 PM	0	8	2	10	33%
2:05 PM	0	7	2	9	30%
2:10 PM	1	6	2	9	30%
2:15 PM	2	4	2	8	27%
2:20 PM	0	2	2	4	13%
2:25 PM	1	5	2	8	27%
2:30 PM	1	7	2	10	33%
2:35 PM	1	4	2	7	23%
2:40 PM	1	6	2	9	30%
2:45 PM	0	5	2	7	23%
2:50 PM	0	5	2	7	23%
2:55 PM	3	4	2	9	30%
3:00 PM	4	8	2	14	47%



Z:\PRINCETON\2018\2018-18116 DOLLAR GENERAL - 2920 RIDGEWAY ROAD, MANCHESTER, NJ\CADD\X-HIBITS\2018-12-07_DRAINAGE MAPS.DWG



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BLOCK 5, LOT 2059
2920 RIDGEWAY ROAD
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

JEFFREY MARTELL, P.E.
NEW JERSEY LICENSE No. 47290
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

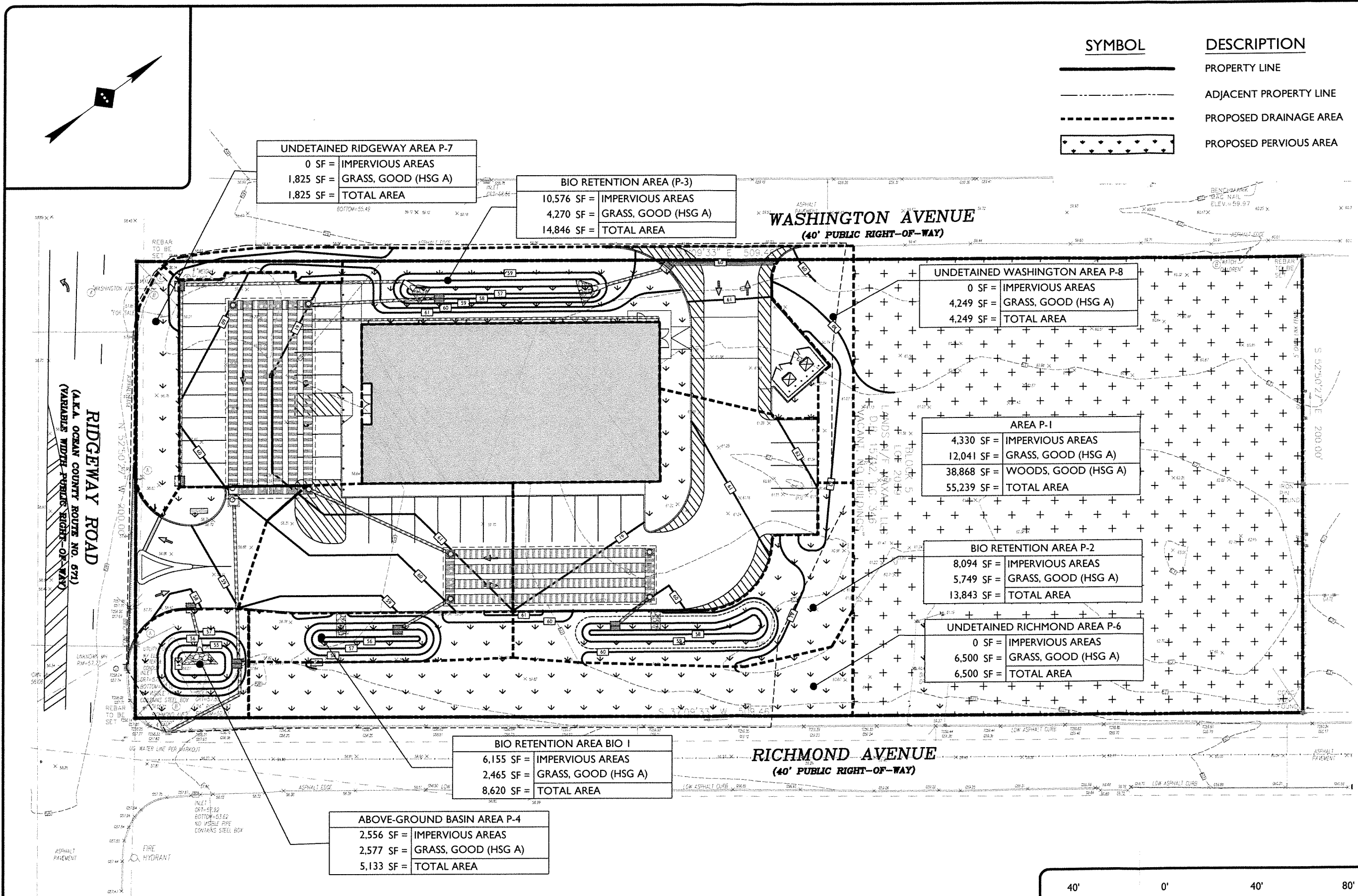
SCALE: 1" = 40'

PROJECT ID: Z-18116

TITLE:
**EXISTING
DRAINAGE
AREA MAP**

SHEET:
STM-01

DESCRIPTION
BY
DATE
ISSUE



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JEFFREY MARTELL, P.E.
NEW JERSEY LICENSE No. 47290
LICENSED PROFESSIONAL ENGINEER

NOT FOR CONSTRUCTION

SCALE: 1" = 40'

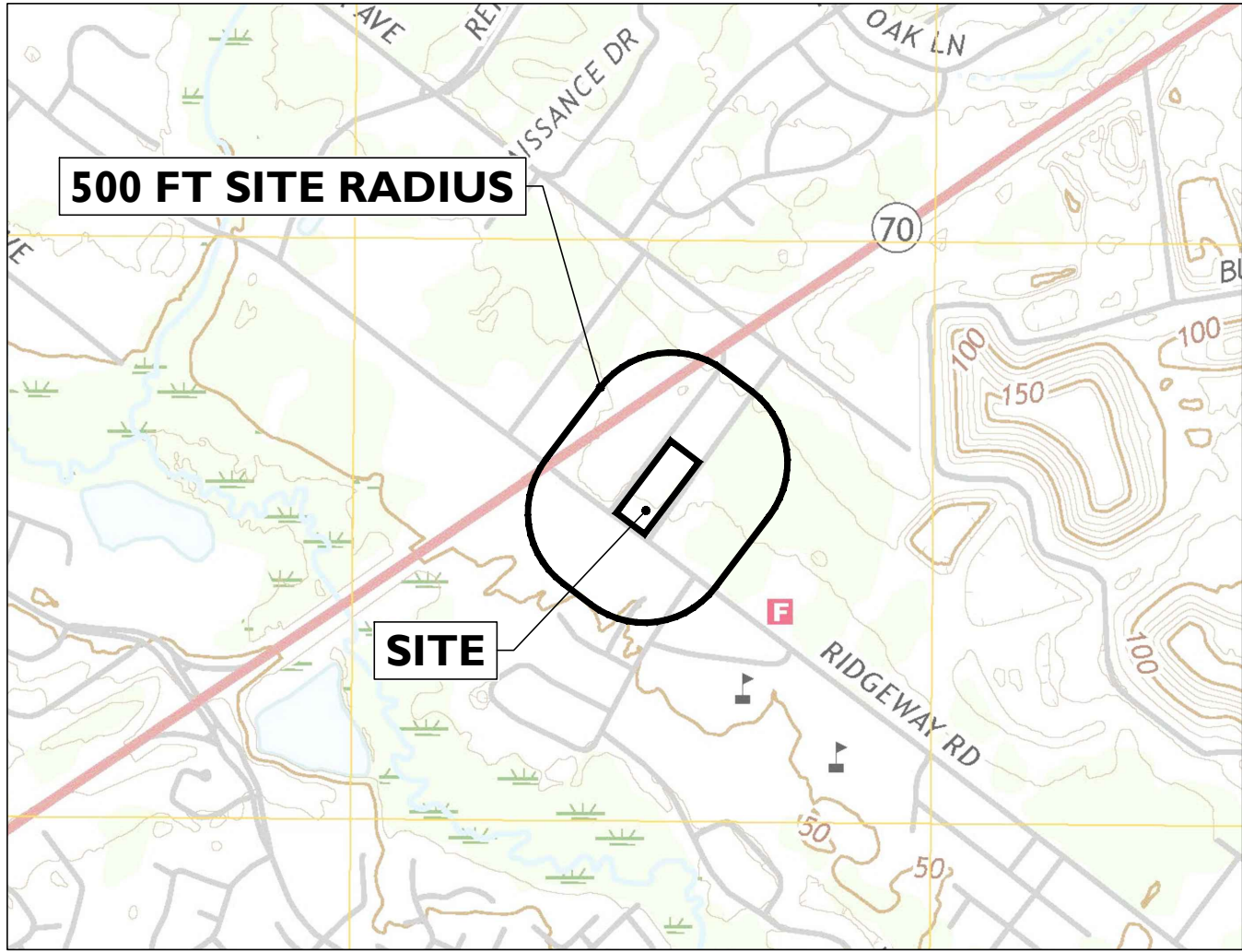
PROJECT ID: Z-18116

TITLE:
PROPOSED DRAINAGE AREA MAP

SHEET:

STM-02

DESCRIPTION
BY
DATE
ISSUE



SOURCE: UNITED STATES GEOLOGIC SURVEY MAP, MILFORD QUADRANGLE, NJ-PA 2016, 7.5 MINUTE SERIES

KEY MAP

SCALE: 1" = 1000'±

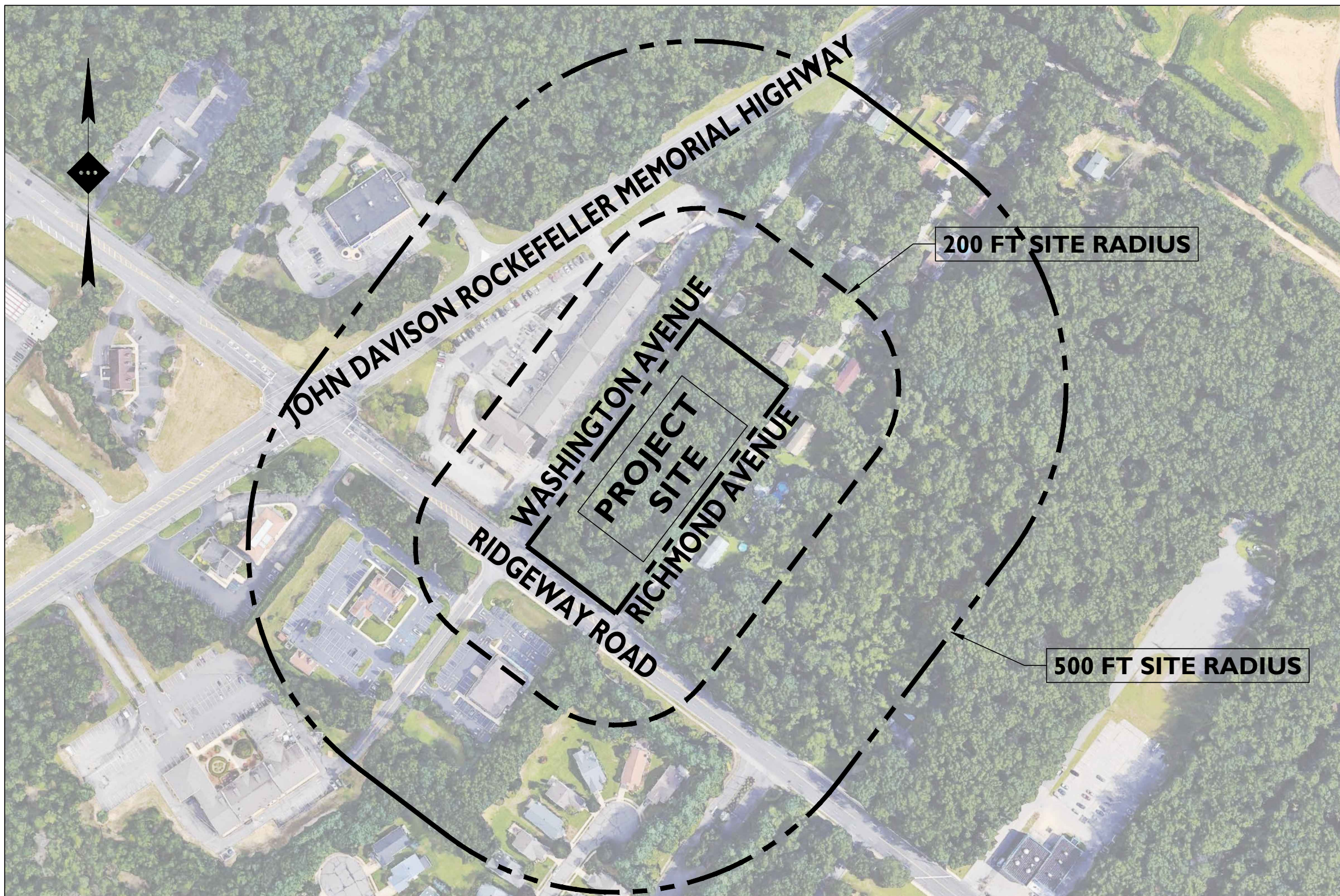
APPROVAL BLOCK	
APPROVED BY THE TOWNSHIP OF MANCHESTER PLANNING BOARD	
BOARD CHAIR	DATE
SECRETARY	DATE
ENGINEER	DATE

TOWNSHIP OF MANCHESTER 200' PROPERTY OWNERS LIST			
BLOCK	LOT	OWNER	OWNER'S ADDRESS
4	1	OCEAN CAPITAL GROUP LLC	3050 RICHMOND AVENUE
4	2	FRANKLYN RODRIGUEZ	3060 RICHMOND AVENUE
4	3	BRUCE ROBINSON	3070 RICHMOND AVENUE
4	4	CHRISTINE L COOK	3080 RICHMOND AVENUE
4	5	WILLIE & HELEN LEE ROBINSON	3090 RICHMOND AVENUE
4	6	DEUTSCHE BANK NATIONAL TRUST CO	3100 RICHMOND AVENUE
4	9	BARBARA J CURE	2865 WILBUR AVENUE
4	630	CJB VACANT PROPERTIES LLC	2900 HIGHWAY 571
5	1	VINCENT J RUCCI	3101 RICHMOND AVENUE
5	2	AVILSAI ALEMAN	3111 RICHMOND AVENUE
5	7	LEWIS T & TINA REEVES	3100 WASHINGTON AVENUE
5	8	KENNETH W JONAS	3110 WASHINGTON AVENUE
5	2059	MAXALI LLC	2920 HIGHWAY 571
6	1965	KLP MGMT LLC & PASWIN LLC	2100 HIGHWAY 70
38.102	7	ROBERT LYNAM	114 CARDIGAN COURT
38.102	94	LEISURE RIDGE HOMEOWNERS ASSOCIATION INC	2881 HIGHWAY 571
38.102	638	RIDGEWAY PARTNERS LLC	2915 RIDGEWAY ROAD
38.102	638	MIG PROPERTIES LLC	2925 RIDGEWAY ROAD

ZONING RELIEF TABLE		
CODE SECTION	REQUIRED	PROPOSED
MINIMUM FRONT YARD SETBACK, WASHINGTON AVENUE	50 FT	27.8 FT (V)
§ 245-28 B.	1 SPACE PER 200 SF OF FLOOR AREA 9,100 / 200 = 45.5 REQUIRED PARKING: 46 SPACES	35 SPACES (V)
§ 245-28 D.(2)	PARKING FACILITIES MAY BE LOCATED IN ANY YARD SPACE, BUT SHALL NOT BE CLOSER THAN 20 FT FROM ANY STREET RIGHT-OF-WAY LINE OR ANY EASEMENT DEDICATED FOR ROADWAY PURPOSES AND SHALL NOT BE CLOSER TO A REAR PROPERTY LINE THAN 10 FT OR A DISTANCE EQUAL TO 1/2 OF THE REQUIRED REAR YARD DEPTH, WHICHEVER IS GREATER, AND SHALL NOT BE CLOSER TO A SIDE PROPERTY LINE THAN 10 FT OR 1/4 OF THE MINIMUM SIDE YARD, WHICHEVER IS GREATER.	RIDGEWAY: 11.6' (V) WASHINGTON: 5.0' (V)
§ 245-28 F.(1)	3 ADA PARKING SPACES REQUIRED	2 SPACES (V)
§ 245-27 B.(2)(a)	A WALL SIGN SHALL NOT EXCEED 40% OF ITS SIGNABLE AREA OR 60 SF	97.5 SF (V)
§ 245-27 E.(5)	THE SETBACK FOR ALL GROUND SIGNS SHALL BE AT LEAST 1 THE REQUIRED SETBACK OR FRONT YARD DEPTH AS REQUIRED FOR THE PRINCIPAL BUILDING REQUIRED: 25 FT	16.5 FT (V)

PRELIMINARY AND FINAL MAJOR SITE PLAN FOR **DOLLAR GENERAL®** PROPOSED RETAIL BUILDING

TAX MAP #1.01, BLOCK 5, LOT 2059
2920 HIGHWAY 571
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

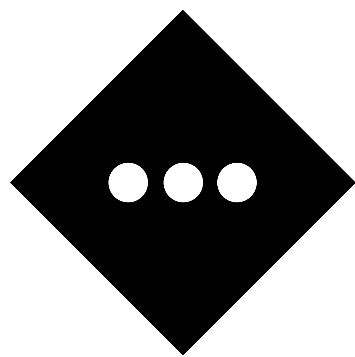


SOURCE: GOOGLE EARTH PRO, IMAGERY DATED 10/2017

AERIAL MAP

SCALE: 1" = 200'±

PLANS PREPARED BY:



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APPLICANT

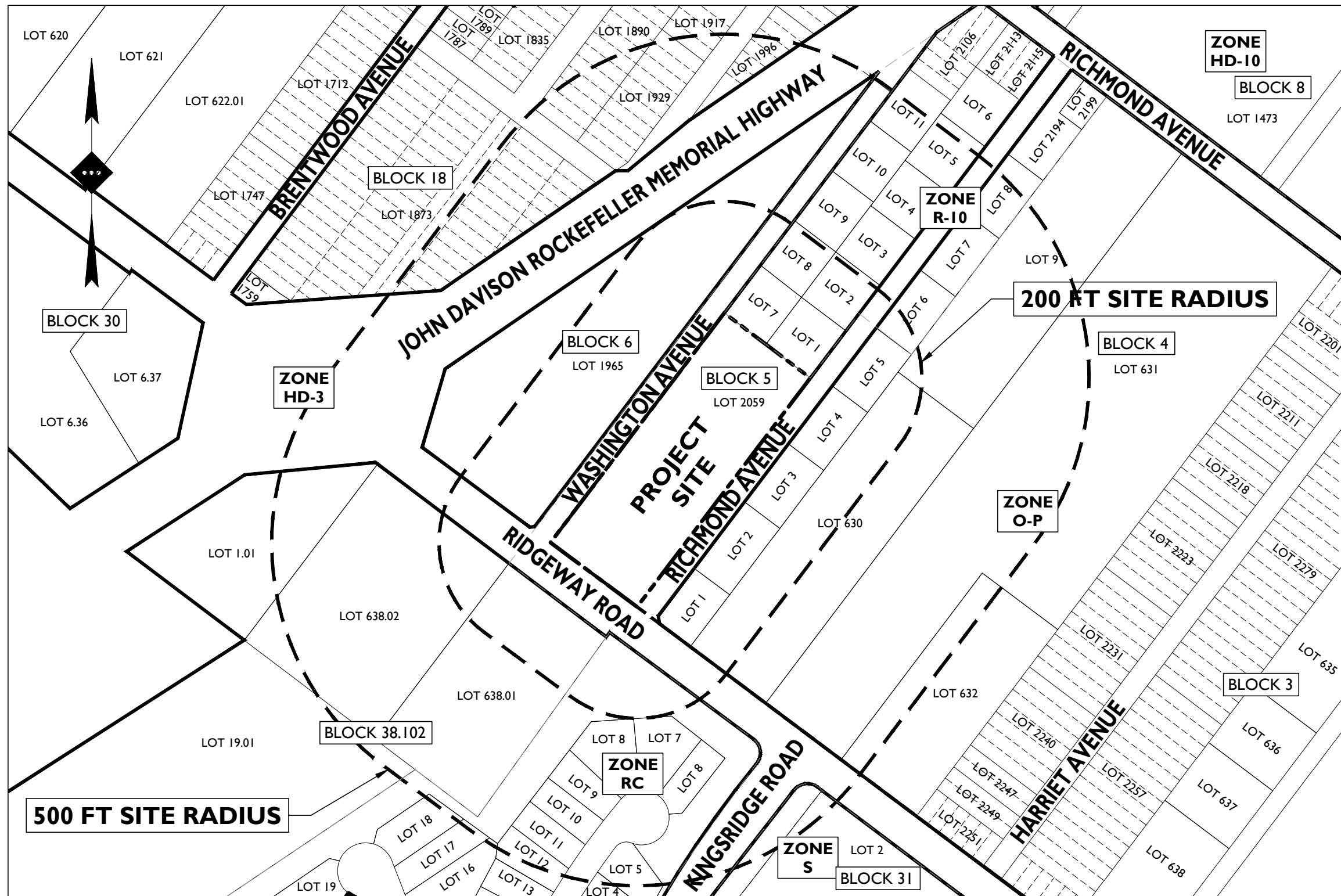
MANCHESTER (RIDGEWAY) DG, LLC
361 SUMMIT BOULEVARD, SUITE 110
BIRMINGHAM, ALABAMA 35243
(205) 281-5053

OWNER

MAXALI, LLC
5 BEVERLY ROAD
BRONXVILLE, NEW YORK 10208
(732) 614-5134

ATTORNEY

PRIME LAW
14000 HORIZON WAY, SUITE 325
MOUNT LAUREL, NEW JERSEY 08054
PHONE: (856) 273-8300
FAX: (856) 273-8383



SOURCE: TOWNSHIP OF MANCHESTER, OCEAN COUNTY, NJ TAX MAP SHEET 1.01, TOWNSHIP OF MANCHESTER ZONING MAP.

TAX MAP

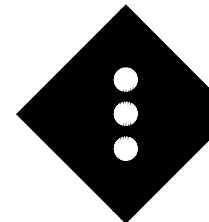
SCALE: 1" = 200'±

PLAN REFERENCE MATERIALS:

- THIS PLAN SET REFERENCES THE FOLLOWING DOCUMENTS INCLUDING, BUT NOT LIMITED TO:
 - SURVEY PREPARED BY VALLEY LAND SERVICES, LLC, DATED OCTOBER 1, 2018
 - ARCHITECTURAL PLANS PREPARED BY MJM ARCHITECTS, DATED MARCH 20, 2018
 - GEOTECHNICAL REPORT PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC, DATED DECEMBER 5, 2018
 - AERIAL MAP OBTAINED FROM GOOGLE EARTH PRO
 - LOCATION MAP OBTAINED FROM USGS MILFORD QUADRANGLE 7.5 MIN SERIES
- ALL REFERENCE MATERIAL LISTED ABOVE SHALL BE CONSIDERED A PART OF THIS PLAN SET AND ALL INFORMATION CONTAINED WITHIN THESE MATERIALS SHALL BE UTILIZED IN CONJUNCTION WITH THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN A COPY OF EACH REFERENCE AND REVIEW IT THOROUGHLY PRIOR TO THE START OF CONSTRUCTION.

SHEET INDEX	
DRAWING TITLE	SHEET #
COVER SHEET	C-1
EXISTING CONDITIONS PLAN	C-2
DEMOLITION PLAN	C-3
OVERALL SITE PLAN	C-4
SITE PLAN	C-5
GRADING PLAN	C-6
UTILITY PLAN	C-7
LIGHTING PLAN	C-8
SOIL EROSION & SEDIMENT CONTROL PLAN	C-9
LANDSCAPING PLAN	C-10
LANDSCAPING DETAILS	C-11
CONSTRUCTION DETAILS	C-12 - C-15

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2920 HIGHWAY 571
TOWNSHIP OF MANCHESTER
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JEFFREY A. MARTELL, P.E.
NEW JERSEY LICENSE No. 47290
LICENSED PROFESSIONAL ENGINEER

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SCALE: AS SHOWN PROJECT ID: Z-18116

TITLE:

COVER SHEET

DRAWING:

C-1

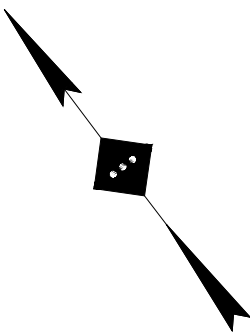
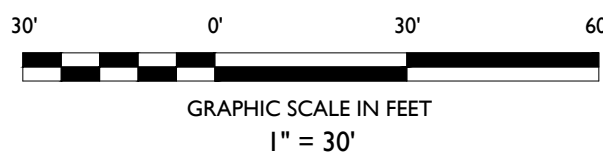
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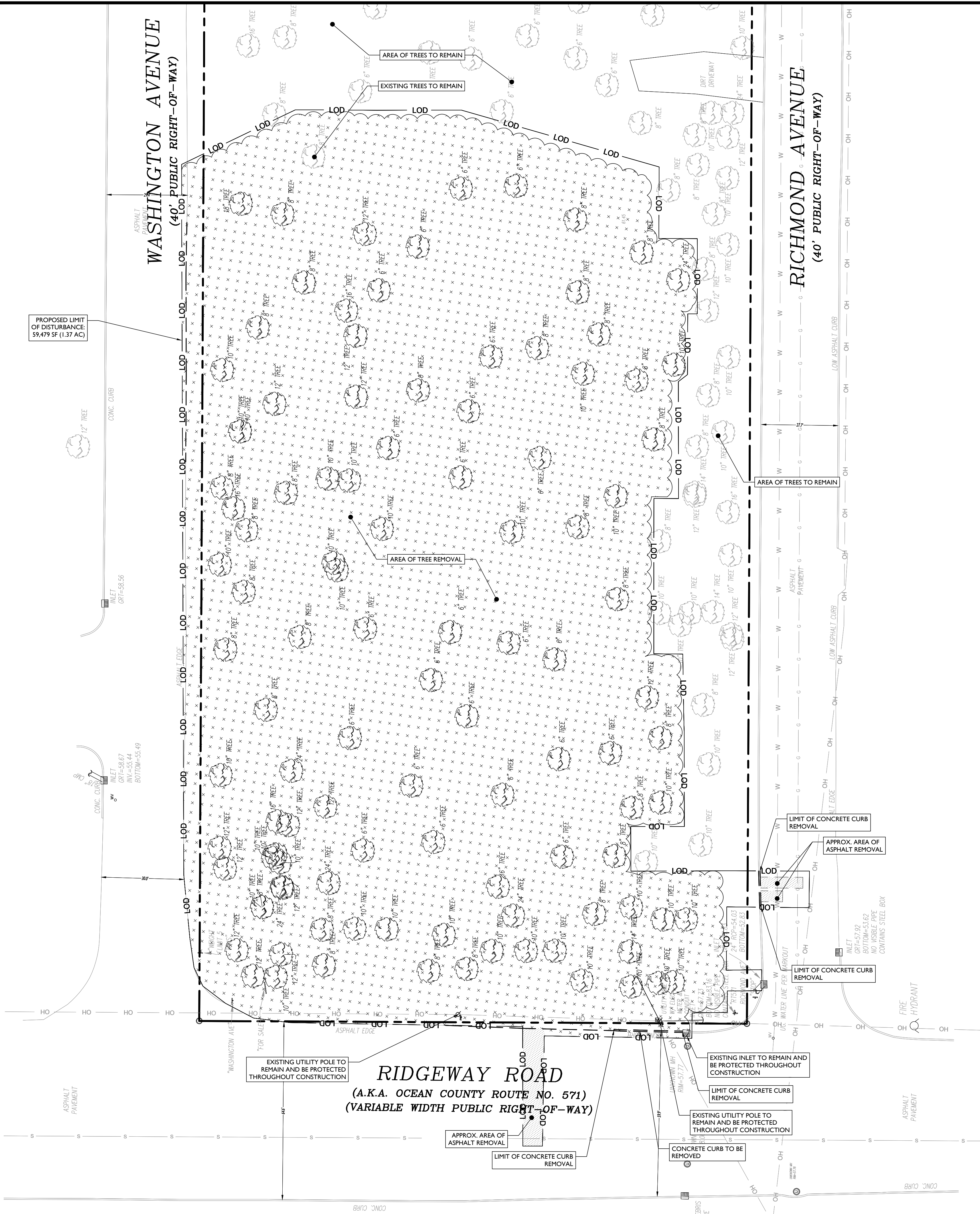
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 R.R. SPIKE SET
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 RECORD DATA
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 SURVEYED DATA
 RIGHT OF WAY
 BACK SET LINE
 REINFORCED CONC PIPE
 CORRUGATED METAL PIPE
 PLASTIC PIPE
 METAL
 ABOVE GROUND LEVEL
 LANDSCAPING
 TREE
 METAL TANK COVER
 POWERPOLE
 GUY WIRE
 LIGHT POLE
 STREET LIGHT POLE
 ELEC. TRANSFORMER
 AIR CONDITIONER
 BURIED ELECTRIC
 OVERHEAD ELECTRIC
 ELEC. LINE
 ELECTRIC METER
 WATER LINE
 WATER MANHOLE
 WATER VALVE
 WATER METER
 HYDRANT
 BACK FLOW
 PREVENTOR
 GAS VALVE
 GAS METER
 UNDERGROUND
 GAS MARKER
 GAS MANHOLE
 GAS LINE
 BOLLARD
 BORE HOLE
 MONITORING WELL
 MAIL BOX
 UNKNOWN MANHOLE
 SQUARE METAL LID
 FUEL TANK LID
 FLAG POLE
 SEWER MANHOLE
 CLEAN OUT
 STORM DRAIN MANHOLE
 STORM INLET
 CURB INLET
 PAY PHONE
 TELEPHONE BOX
 TELEPHONE MANHOLE
 TELEPHONE POLE
 TELEPHONE LINE
 UNDERGROUND
 TELEPHONE MARKER
 CABLE TELEVISION
 CABLE BOX
 UNDERGROUND
 CABLE MARKER
 TRAFFIC POLES
 TRAFFIC SIGNAL
 TRAFFIC MANHOLE
 TRAFFIC SIGNAL BOX
 STOP SIGN
 SIGN

THE SURVEY LISTED WITHIN THE PLAN REFERENCES ON THE COVER SHEET AND NOTES ON THIS SHEET SHALL BE CONSIDERED A PART OF THIS PLAN SET AND ALL INFORMATION CONTAINED WITHIN THE SURVEY AND ASSOCIATED DOCUMENTS SHALL BE UTILIZED IN CONJUNCTION WITH THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN A COPY OF THE SURVEY AND REVIEW IT THOROUGHLY PRIOR TO THE START OF CONSTRUCTION.



<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>PRELIMINARY & FINAL MAJOR SITE PLAN</p> <p>PROPOSED RETAIL STORE</p> </div> <div style="width: 50%; text-align: right;"> <p>DOLLAR GENERAL®</p> <p>TAX MAP #1.01, BLOCK 5, LOT 2059 2920 HIGHWAY 571 TOWNSHIP OF MANCHESTER OCEAN COUNTY, NEW JERSEY</p> </div> </div>										<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>STONEFIELD engineering & design</p> </div> <div style="width: 50%; text-align: right;"> <p>JEFFREY A. MARTELL, P.E. NEW JERSEY LICENSE No. 47290 LICENSED PROFESSIONAL ENGINEER</p> </div> </div>									
<p>SCALE: 1" = 30'</p>										<p>PROJECT ID: Z-18116</p>									
<p>TITLE:</p>																			
<p>EXISTING CONDITIONS PLAN</p>																			
<p>DRAWING:</p>																			
<p style="text-align: center; font-size: 2em;">C-2</p>																			

Z:\PRINCETON\22018\22018-18 114 DOLLAR GENERAL - 2500 RIDGEWAY ROAD, MANCHESTER, NEW JERSEY\22018-18.DWG



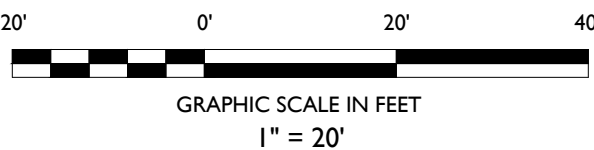
SYMBOL	DESCRIPTION
	AREA OF TREES/LANDSCAPING TO BE REMOVED / DEMOLISHED
	LIMIT OF DISTURBANCE

ALL SITE FEATURES WITHIN THE LIMIT OF DISTURBANCE INDICATED ON THIS PLAN ARE TO BE REMOVED / DEMOLISHED UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF SIGNIFICANT DISCREPANCIES ARE DISCERNED BETWEEN THIS PLAN AND FIELD CONDITIONS



Know what's below
Call before you dig.

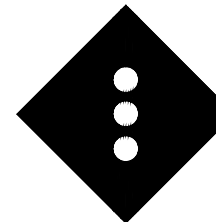
- DEMOLITION NOTES**
- THE WORK REFLECTED ON THE DEMOLITION PLAN IS TO PROVIDE GENERAL INFORMATION TOWARDS THE EXISTING ITEMS TO BE DEMOLISHED AND/OR REMOVED. THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE ENTIRE PLAN SET AND ASSOCIATED REPORTS/REFERENCE DOCUMENTS INCLUDING ALL DEMOLITION ACTIVITIES AND INCIDENTAL TASKS NECESSARY TO COMPLETE THE SITE IMPROVEMENTS.
 - THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF DEMOLITION ACTIVITIES.
 - EXPLOSIVES SHALL NOT BE USED UNLESS WRITTEN CONSENT FROM BOTH THE OWNER AND ANY APPLICABLE GOVERNING AGENCY IS OBTAINED. BEFORE THE START OF ANY EXPLOSIVE PROGRAM, THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL LOCAL, STATE, AND FEDERAL PERMITS. ADDITIONALLY, THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL SEISMIC TESTING AS REQUIRED AND ANY DAMAGES AS THE RESULT OF SAID DEMOLITION PRACTICES.
 - ALL DEMOLITION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL CODES. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL UTILITIES ARE DISCONNECTED IN ACCORDANCE WITH THE UTILITY AUTHORITY'S REQUIREMENTS PRIOR TO STARTING THE DEMOLITION OF ANY STRUCTURE. ALL EXCAVATIONS ASSOCIATED WITH DEMOLISHED STRUCTURES OR REMOVED TANKS SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO SUPPORT SITE AND BUILDING IMPROVEMENTS. A GEOTECHNICAL ENGINEER SHOULD BE PRESENT DURING BACKFILLING ACTIVITIES TO OBSERVE AND CERTIFY THAT BACKFILL MATERIAL WAS COMPACTED TO A SUITABLE CONDITION.
 - DEMOLISHED DEBRIS SHALL NOT BE BURIED ON SITE. ALL WASTE/DEBRIS GENERATED FROM DEMOLITION ACTIVITIES SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL RECORDS OF THE DISPOSAL TO DEMONSTRATE COMPLIANCE WITH THE ABOVE REGULATIONS.



ISSUE	DATE	BY	DESCRIPTION
2	12/27/2018	AMB	FOR COUNTY SUBMISSION
1	09/25/2018	CJS	FOR CLIENT REVIEW

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PRELIMINARY & FINAL MAJOR SITE PLAN

PROPOSED RETAIL STORE

DOLLAR GENERAL

TAX MAP #L01, BLOCK 5, LOT 2059
2520 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

JEFFREY A. MARTELL, P.E.
NEW JERSEY LICENSE No. 47290
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design

SCALE: 1" = 20' PROJECT ID: Z-18116

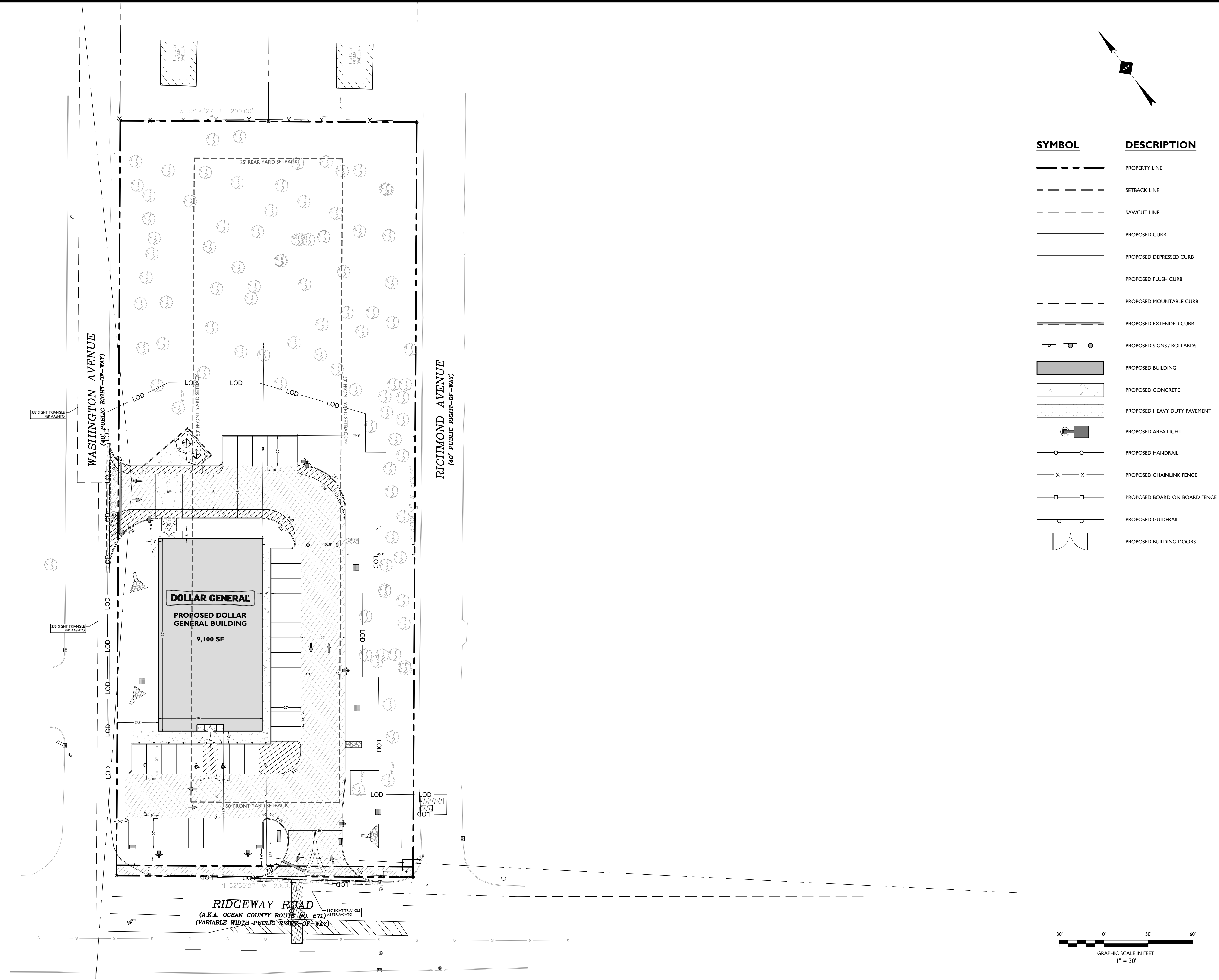
TITLE:

DEMOLITION PLAN

DRAWING:

C-3

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PRELIMINARY & FINAL MAJOR SITE PLAN

PROPOSED RETAIL STORE

DOLLAR GENERAL

TAX MAP #L01, BLOCK 5, LOT 2059
2520 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

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SCALE: 1" = 30' PROJECT ID: Z-18116

TITLE:

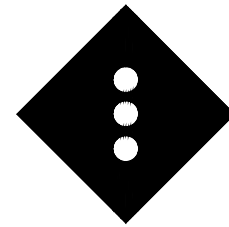
OVERALL SITE PLAN

DRAWING:

C-4

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2 12/27/2018 AMB FOR COUNTY SUBMISSION
1 09/25/2018 CJS FOR CLIENT REVIEW

ISSUE DATE BY DESCRIPTION

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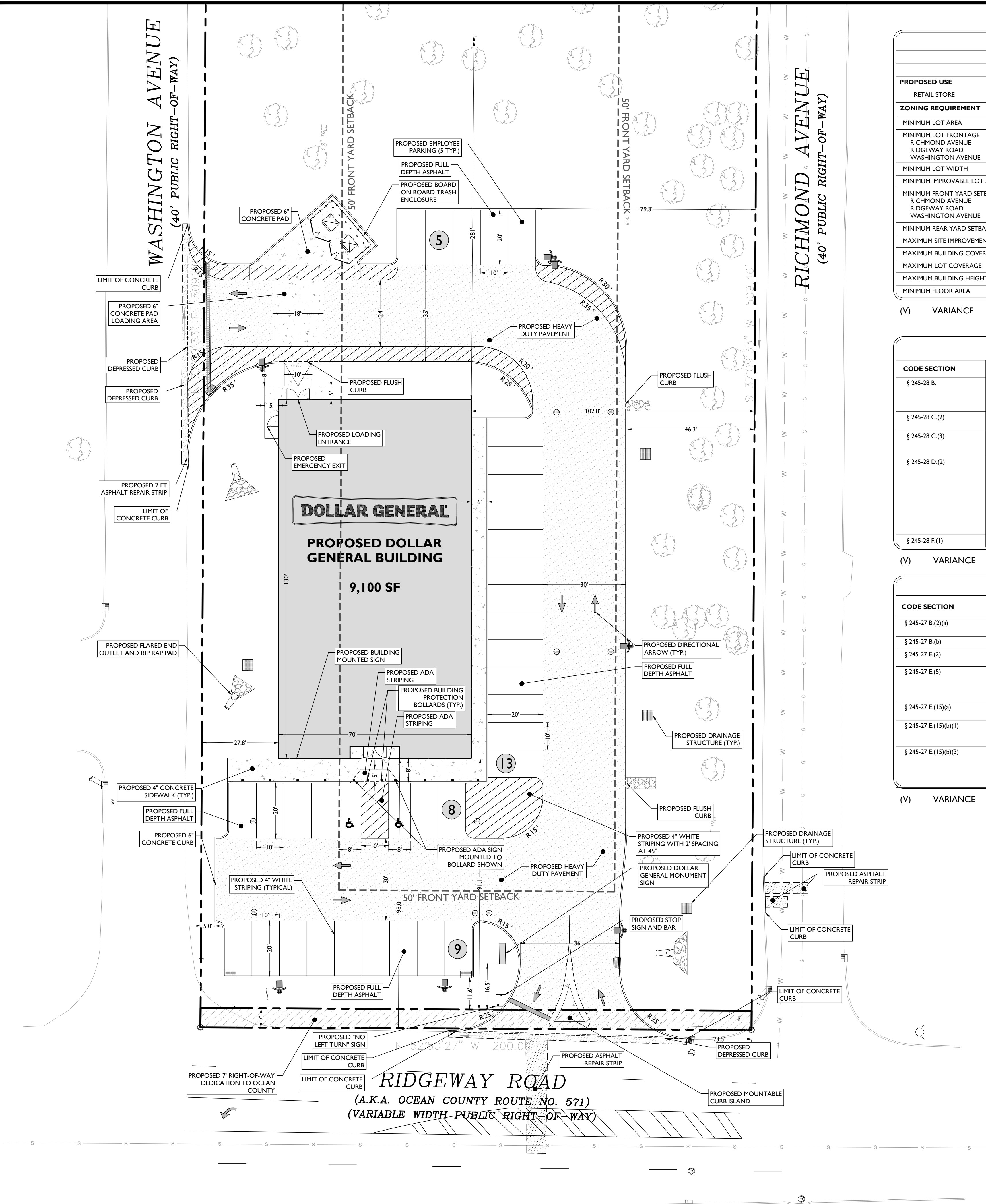


TABLE OF LAND USE AND ZONING

TAX MAP #1.01 BLOCK 5, LOT 2059
BUSINESS (B-1)

PROPOSED USE	PERMITTED USE	
ZONING REQUIREMENT	REQUIRED	PROPOSED
MINIMUM LOT AREA	43,560 SF (1 AC)	101,892.0 SF (± 2.34 AC)
MINIMUM LOT FRONTAGE	150 FT	509.5 FT
RICHMOND AVENUE	150 FT	200.0 FT
RIDGEWAY ROAD	150 FT	509.5 FT
WASHINGTON AVENUE	150 FT	200.0 FT
MINIMUM LOT WIDTH	150 FT	200.0 FT
MINIMUM IMPROVABLE LOT AREA	20,000 SF	41,154 SF
MINIMUM FRONT YARD SETBACK:		
RICHMOND AVENUE	50 FT	98.0 FT (COUNTY EASEMENT)
RIDGEWAY ROAD	50 FT	91.1 FT
WASHINGTON AVENUE	50 FT	27.8 FT (V)
MINIMUM REAR YARD SETBACK	25 FT	281.7 FT
MAXIMUM SITE IMPROVEMENT RATIO	0.20	0.09
MAXIMUM BUILDING COVERAGE	20%	8.9% (9,100 SF)
MAXIMUM LOT COVERAGE	65%	36.9% (37,624.2 SF)
MAXIMUM BUILDING HEIGHT	3 STORIES / 40 FT	1 STORY / 21 FT
MINIMUM FLOOR AREA	1,500 SF	9,100 SF

(V) VARIANCE

OFF-STREET PARKING REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 245-28 B.	1 SPACE PER 200 SF OF FLOOR AREA 9,100 / 200 = 45.5 REQUIRED PARKING: 46 SPACES	35 SPACES (V)
§ 245-28 C.(2)	EACH PARKING SPACE SHALL NOT BE LESS THAN 10 FT IN WIDTH AND 20 FT IN LENGTH	10 FT X 20 FT
§ 245-28 C.(3)	ADA PARKING SPACES SHALL BE NO LESS THAN 12 FT IN WIDTH NOR 20 FT IN DEPTH	8' SPACE, 10' AISLE 16' TOTAL WIDTH 20 FEET DEEP
§ 245-28 D.(2)	PARKING FACILITIES MAY BE LOCATED IN ANY YARD SPACE, BUT SHALL NOT BE CLOSER THAN 20 FT FROM ANY STREET RIGHT-OF-WAY LINE OR ANY EASEMENT DEDICATED FOR ROADWAY PURPOSES AND SHALL NOT BE CLOSER TO A REAR PROPERTY LINE THAN 10 FT OR A DISTANCE EQUAL TO 1/2 OF THE REQUIRED REAR YARD DEPTH, WHICHEVER IS GREATER, AND SHALL NOT BE CLOSER TO A SIDE PROPERTY LINE THAN 10 FT OR 1/4 OF THE MINIMUM SIDE YARD, WHICHEVER IS GREATER.	RIDGEWAY: 11.6' (V) (COUNTY EASMENT) WASHINGTON: 5.0' (V) RICHMOND: 79.3'
§ 245-28 F.(1)	3 ADA PARKING SPACES REQUIRED	2 SPACES (V)

(V) VARIANCE

SIGNAGE REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 245-27 B.(2)(a)	A WALL SIGN SHALL NOT EXCEED 40% OF ITS SIGNABLE AREA OR 60 SF ((XX FT X XX FT) X 0.4) = XX SF	97.5 SF (V)
§ 245-27 B.(b)	A GROUND SIGN SHALL NOT EXCEED 60 SF IN AREA	50.0 SF
§ 245-27 E.(2)	SIGNS MAY BE ILLUMINATED	INTERNAL ILLUMINATION
§ 245-27 E.(5)	THE SETBACK FOR ALL GROUND SIGNS SHALL BE AT LEAST 1/2 THE REQUIRED SETBACK OR FRONT YARD DEPTH AS REQUIRED FOR THE PRINCIPAL BUILDING REQUIRED: 25 FT	16.5 FT (V)
§ 245-27 E.(15)(a)	ONE GROUND SIGN IS PERMITTED PER SITE ON SITES OF 50 ACRES OR LESS	ONE MONUMENT SIGN
§ 245-27 E.(15)(b)(1)	WALL SIGNS SHALL BE LOCATED WITHIN THE SIGNABLE AREA OF THE BUILDING. APPLICATIONS FOR WALL SIGNS SHALL IDENTIFY THE SIGNABLE AREA	COMPLIES
§ 245-27 E.(15)(b)(3)	WHERE A BUILDING IS SO SITUATED THAT IT FRONTS UPON TWO OR MORE PUBLIC ROADS, ONE WALL SIGN MAY BE AFFIXED TO EACH WALL, PROVIDED SUCH ADDITIONAL WALLS DO NOT FRONT A RESIDENTIAL DISTRICT	ONE WALL SIGN ON RIDGEWOOD ROAD FACADE

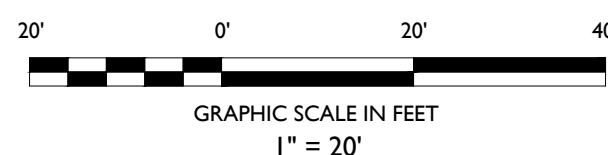
(V) VARIANCE

SYMBOL

---	PROPERTY LINE
---	SETBACK LINE
---	SAWCUT LINE
---	PROPOSED CURB
---	PROPOSED DEPRESSED CURB
---	PROPOSED FLUSH CURB
---	PROPOSED MOUNTABLE CURB
---	PROPOSED EXTENDED CURB
---	PROPOSED SIGNS / BOLLARDS
---	PROPOSED BUILDING
---	PROPOSED CONCRETE
---	PROPOSED HEAVY DUTY PAVEMENT
---	PROPOSED AREA LIGHT
---	PROPOSED HANDRAIL
---	PROPOSED CHAINLINK FENCE
---	PROPOSED BOARD-ON-BOARD FENCE
---	PROPOSED GUIDERAIL
---	PROPOSED BUILDING DOORS

GENERAL NOTES

- THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
- ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC, AND ITS SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
- THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
- THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
- THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
- THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC, WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
- THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
- THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
- THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
- SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC, BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.



PRELIMINARY & FINAL MAJOR SITE PLAN

PROPOSED RETAIL STORE

JEFFREY A. MARTELL, P.E.
NEW JERSEY LICENSE No. 47290
LICENSED PROFESSIONAL ENGINEER



SCALE: 1" = 20' PROJECT ID: Z-18116

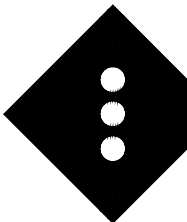
TITLE:

SITE PLAN

DRAWING:

C-5

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DOLLAR GENERAL

TAX MAP #1.01, BLOCK 5, LOT 2059
2520 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

NOT APPROVED FOR CONSTRUCTION

FOR COUNTY SUBMISSION

FOR CLIENT REVIEW

DATE

BY

ISSUE

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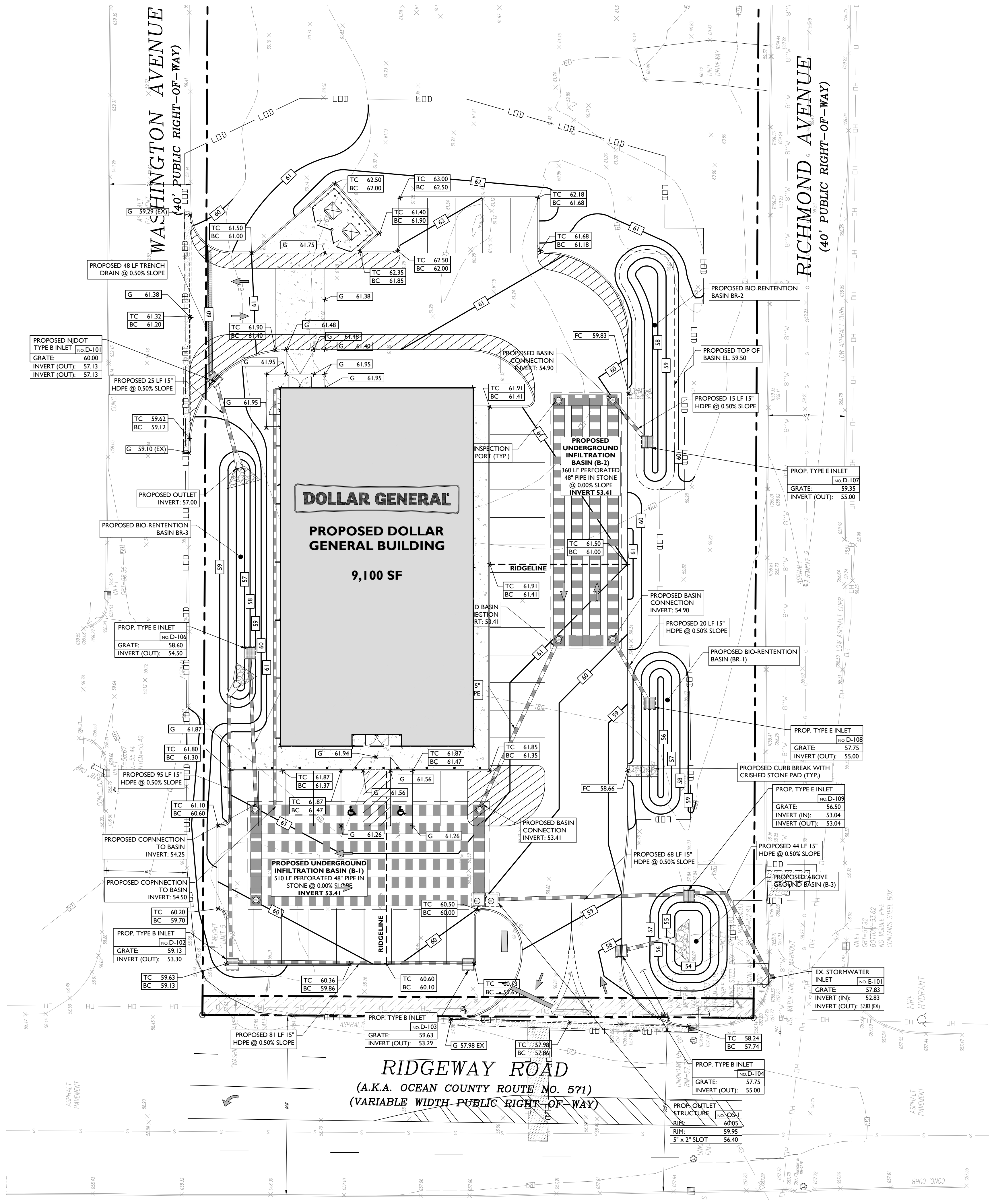
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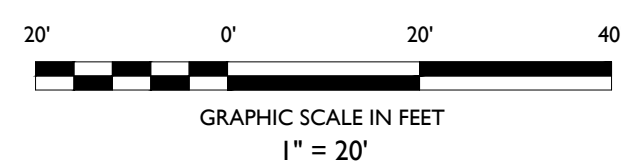
Z:\PRINCETON\22018\22018-11 DOLLAR GENERAL - 2505 RIDGEWAY ROAD - MANICHER, INC\CARDNOTED-GRADING.DWG



SYMBOL	DESCRIPTION
	PROPERTY LINE
	PROPOSED GRADING CONTOUR
	PROPOSED GRADING RIDGELINE
	PROPOSED DIRECTION OF DRAINAGE FLOW
	PROPOSED GRADE SPOT SHOT
	PROPOSED TOP OF CURB / BOTTOM OF CURB SPOT SHOT
	PROPOSED FLUSH CURB SPOT SHOT
	PROPOSED DEPRESSED CURB / BOTTOM OF CURB SPOT SHOT
	PROPOSED TOP OF WALL / BOTTOM OF WALL SPOT SHOT

- GRADING NOTES**
- ALL SOIL AND MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. ANY GROUNDWATER DE-WATERING PRACTICES SHALL BE PERFORMED UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS FOR THE DISCHARGE OF DE-WATERED GROUNDWATER. ALL SOIL IMPORTED TO THE SITE SHALL BE CERTIFIED CLEAN FILL. CONTRACTOR SHALL MAINTAIN RECORDS OF ALL FILL MATERIALS BROUGHT TO THE SITE.
 - THE CONTRACTOR IS REQUIRED TO PROVIDE TEMPORARY AND/OR PERMANENT SHORING WHERE REQUIRED DURING EXCAVATION ACTIVITIES, INCLUDING BUT NOT LIMITED TO UTILITY TRENCHES, TO ENSURE THE STRUCTURAL INTEGRITY OF NEARBY STRUCTURES AND STABILITY OF THE SURROUNDING SOILS.
 - PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 4 INCHES TO 7 INCHES ABOVE EXISTING GRADES UNLESS OTHERWISE NOTED. THE CONTRACTOR WILL SUPPLY ALL STAKEOUT CURB GRADE SHEETS TO STONEFIELD ENGINEERING & DESIGN, LLC. FOR REVIEW AND APPROVAL PRIOR TO POURING CURBS.
 - THE CONTRACTOR IS RESPONSIBLE TO SET ALL PROPOSED UTILITY COVERS AND RESET ALL EXISTING UTILITY COVERS WITHIN THE PROJECT LIMITS TO PROPOSED GRADE IN ACCORDANCE WITH ANY APPLICABLE MUNICIPAL, COUNTY, STATE AND/OR UTILITY AUTHORITY REGULATIONS.
 - MINIMUM SLOPE REQUIREMENTS TO PREVENT PONDING SHALL BE AS FOLLOWS:
 - CURB GUTTER: 0.50%
 - CONCRETE SURFACES: 1.00%
 - ASPHALT SURFACES: 1.00%
 - A MINIMUM SLOPE OF 1.00% SHALL BE PROVIDED AWAY FROM ALL BUILDINGS. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE FROM THE BUILDING IS ACHIEVED AND SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF THIS CONDITION CANNOT BE MET. FOR PROJECTS WHERE BASEMENTS ARE PROPOSED, THE DEVELOPER IS RESPONSIBLE TO DETERMINE THE DEPTH TO GROUNDWATER AT THE LOCATION OF THE PROPOSED STRUCTURE. IF GROUNDWATER IS ENCOUNTERED WITHIN THE BASEMENT AREA, SPECIAL CONSTRUCTION METHODS SHALL BE UTILIZED AND REVIEWED/APPROVED BY THE CONSTRUCTION CODE OFFICIAL. IF SUMP PUMPS ARE UTILIZED, ALL DISCHARGES SHALL BE CONNECTED DIRECTLY TO THE PUBLIC STORM SEWER SYSTEM WITH APPROVAL FROM THE GOVERNING STORM SEWER SYSTEM AUTHORITY.

- ADA NOTES**
- THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION WITHIN THE ADA PARKING SPACES AND ACCESS AISLES.
 - THE CONTRACTOR SHALL PROVIDE COMPLIANT SIGNAGE AT ALL ADA PARKING AREAS IN ACCORDANCE WITH STATE GUIDELINES.
 - THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 5.00% RUNNING SLOPE AND A MAXIMUM OF 2.00% CROSS SLOPE ALONG WALKWAYS WITHIN THE ACCESSIBLE PATH OF TRAVEL (SEE THE SITE PLAN FOR THE LOCATION OF THE ACCESSIBLE PATH). THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE ACCESSIBLE PATH OF TRAVEL IS 36 INCHES WIDE OR GREATER UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
 - THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION AT ALL LANDINGS. LANDINGS INCLUDE, BUT ARE NOT LIMITED TO, THE TOP AND BOTTOM OF AN ACCESSIBLE RAMP, AT ACCESSIBLE BUILDING ENTRANCES, AT AN AREA IN FRONT OF A WALK-UP RAMP, AND AT TURNING SPACES ALONG THE ACCESSIBLE PATH OF TRAVEL. THE LANDING AREA SHALL HAVE A MINIMUM CLEAR AREA OF 60 INCHES BY 60 INCHES UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
 - THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 8.33% RUNNING SLOPE AND A MAXIMUM 2.00% CROSS SLOPE ON ANY CURB RAMPS ALONG THE ACCESSIBLE PATH OF TRAVEL. WHERE PROVIDED, CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 10.00% IF A LANDING AREA IS PROVIDED AT THE TOP OF THE RAMP. CURB RAMPS SHALL NOT RISE MORE THAN 6 INCHES IN ELEVATION WITHOUT A HANDRAIL. THE CLEAR WIDTH OF A CURB RAMP SHALL BE NO LESS THAN 36 INCHES WIDE.
 - ACCESSIBLE RAMPS WITH A RISE GREATER THAN 6 INCHES SHALL CONTAIN COMPLIANT HANDRAILS ON BOTH SIDES OF THE RAMP AND SHALL NOT RISE MORE THAN 30" IN ELEVATION WITHOUT A LANDING AREA IN BETWEEN RAMP RUNS. LANDING AREAS SHALL ALSO BE PROVIDED AT THE TOP AND BOTTOM OF THE RAMP.
 - A SLIP RESISTANT SURFACE SHALL BE CONSTRUCTED ALONG THE ACCESSIBLE PATH AND WITHIN ADA PARKING AREAS.
 - THE CONTRACTOR SHALL ENSURE A MAXIMUM OF 1/4" INCHES VERTICAL CHANGE IN LEVEL ALONG THE ACCESSIBLE PATH. WHERE A CHANGE IN LEVEL BETWEEN 1/4" INCHES AND 1/2" INCHES EXISTS, CONTRACTOR SHALL ENSURE THAT THE TOP 1/4" INCH CHANGE IN LEVEL IS BEVELED WITH A SLOPE NOT STEEPER THAN 1 UNIT VERTICAL AND 2 UNITS HORIZONTAL (2:1 SLOPE).
 - THE CONTRACTOR SHALL ENSURE THAT ANY OPENINGS (GAPS OR HORIZONTAL SEPARATION) ALONG THE ACCESSIBLE PATH SHALL NOT ALLOW PASSAGE OF A SPHERE GREATER THAN 1/4" INCH.



FOR COUNTY SUBMISSION	FOR CLIENT REVIEW	DATE	BY	DESCRIPTION
12/27/2018	09/25/2018			
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OCEAN COUNTY, NEW JERSEY

DOLLAR GENERAL

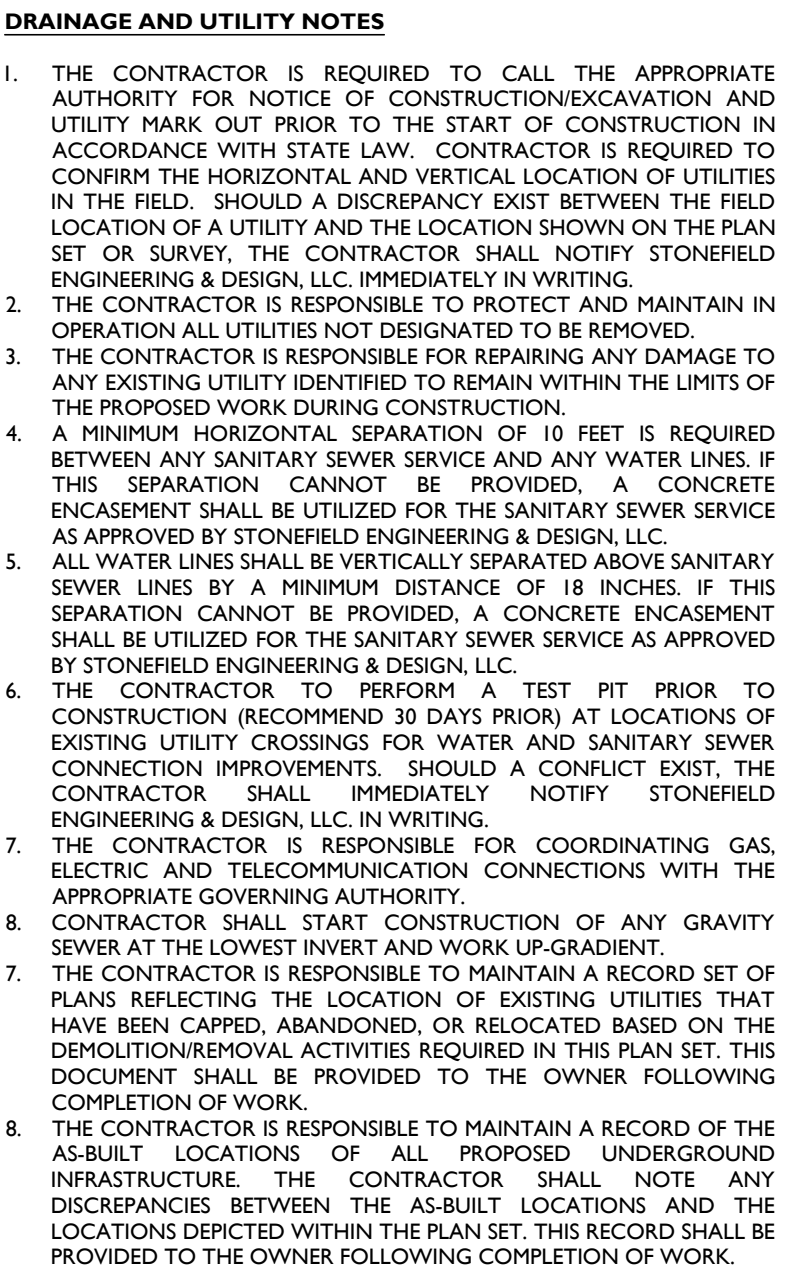
JEFFREY A. MARTELL, P.E.
NEW JERSEY LICENSE No. 47930
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design

SCALE: 1" = 20' PROJECT ID: Z-18116

TITLE:
GRADING AND DRAINAGE PLAN

DRAWING:
C-6



PROPOSED RETAIL STORE

TAX MAP #1.01, BLOCK 5, LOT 2059
2920 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

JEFFREY A. MARTELL, P.E.
NEW JERSEY LICENSE No. 47290
LICENSED PROFESSIONAL ENGINEER



SCALE: 1" = 20' PROJECT ID: Z-18116

TITLE:

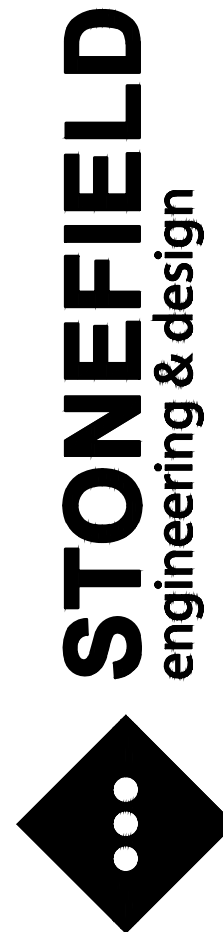
UTILITY PLAN

DRAWING:

C-7

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NOT APPROVED FOR CONSTRUCTION



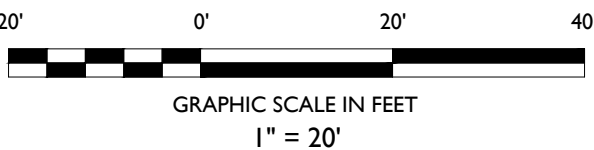
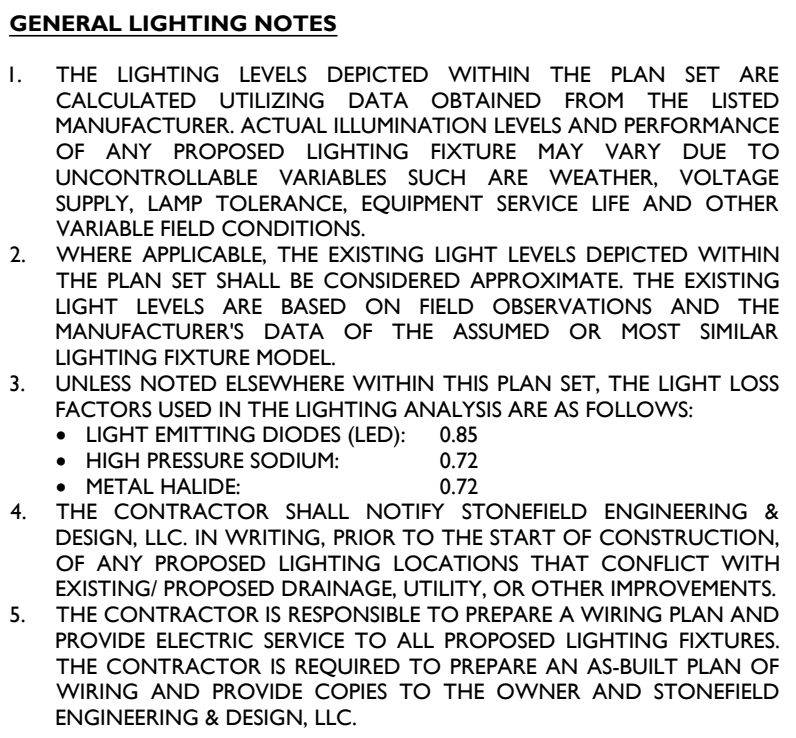
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15 Spring Street, Princeton, NJ 08542

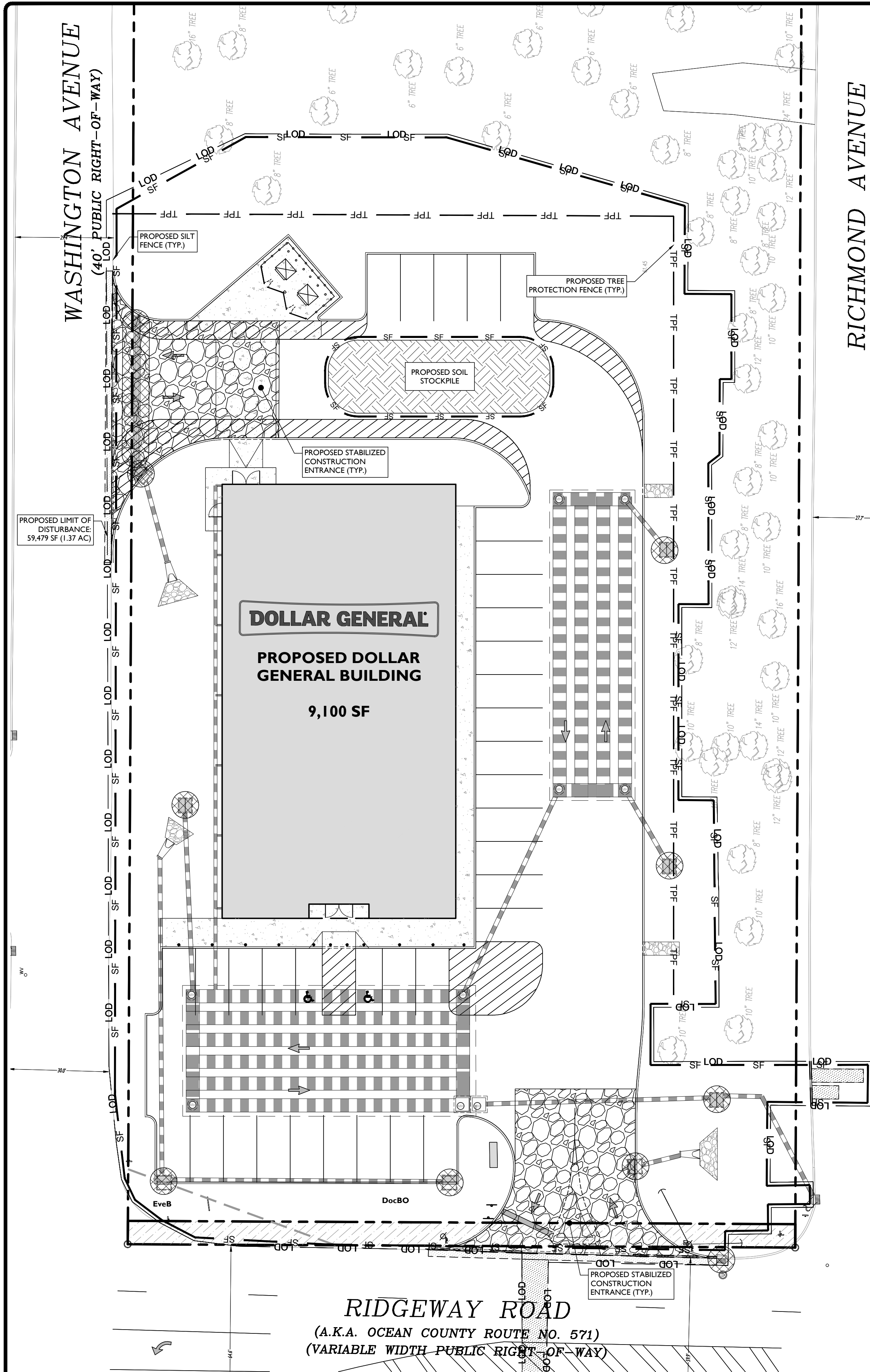
Phone 609.362.6900

LIGHTING REQUIREMENTS		
CODE SECTION	REQUIRED	PROPOSED
§ 245-86.B STREET LIGHTING	LIGHTING FOR SAFETY SHALL BE PROVIDED AT INTERSECTIONS, ALONG WALKWAYS, AT ENTR/FRWAYS, BETWEEN BUILDINGS, AND IN PARKING AREAS	COMPLIES
§ 245-86.D STREET LIGHTING	THE MAXIMUM HEIGHT OF LIGHT STANDARDS, SHALL NOT EXTEND THE MAXIMUM BUILDING HEIGHT PERMITTED, OR 25 FEET, WHICHEVER IS LESS	20 FT
§ 245-86.E STREET LIGHTING	THE HEIGHT AND SHIELDING OF LIGHTING STANDARDS SHALL PROVIDE PROPER LIGHTING WITHOUT HAZARD TO DRIVERS OR NUISANCE TO RESIDENTS, AND THE DESIGN OF LIGHTING STANDARDS SHALL BE OF A TYPE APPROPRIATE TO THE DEVELOPMENT OF THE TOWNSHIP	COMPLIES
DOLLAR GENERAL DESIGN GUIDELINES	MINIMUM OF 1.5 FOOT CANDLES REQUIRED FOR ALL PAVED AREAS EXCLUDING 15 FT PERIMETER FROM EDGE OF PAVEMENT.	1.5 FC

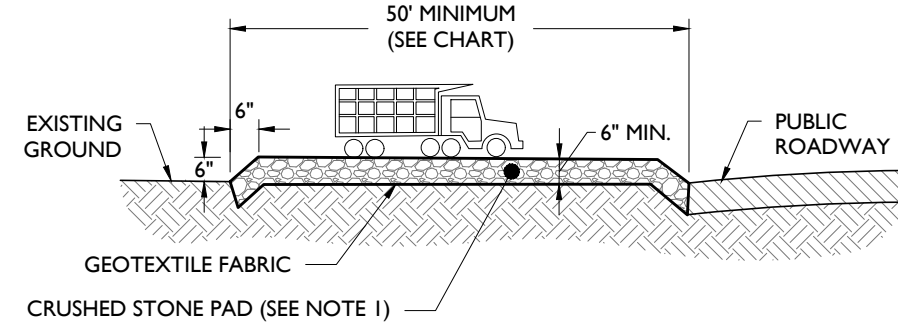


PRELIMINARY & FINAL MAJOR SITE PLAN					
PROPOSED RETAIL STORE					
<div>TAX MAP #1.01, BLOCK 5, LOT 2059 2920 HIGHWAY 57N MILLSBORO, DELAWARE NEW JERSEY</div> <div>DOLLAR GENERAL[®]</div>					
<div>JEFFREY A. MARTELL, P.E. NEW JERSEY LICENSE No. 47290 LICENSED PROFESSIONAL ENGINEER</div>					
<div>STONEFIELD engineering & design</div>					
SCALE:	1" = 20'		PROJECT ID: Z-18116		
TITLE: LIGHTING PLAN					
DRAWING: C-8					

Z:\PROJECTS\22018\22018-0114 DOLLAR GENERAL - 2500 RIDGEWAY ROAD, MANCHESTER, NEW JERSEY\DWG

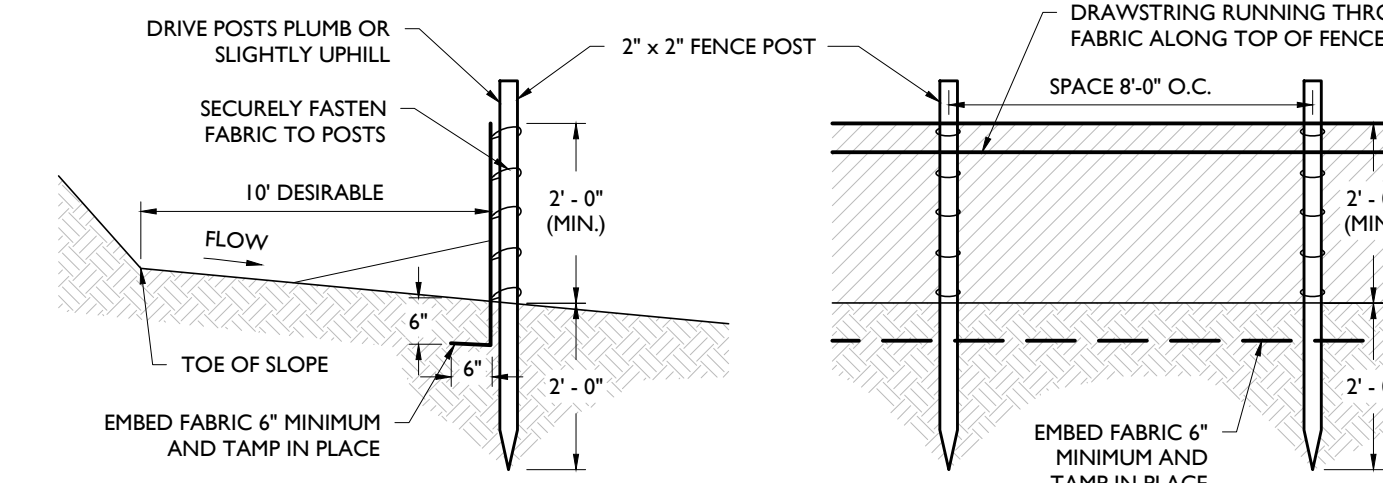


RICHMOND AVENUE
(40' PUBLIC RIGHT-OF-WAY)



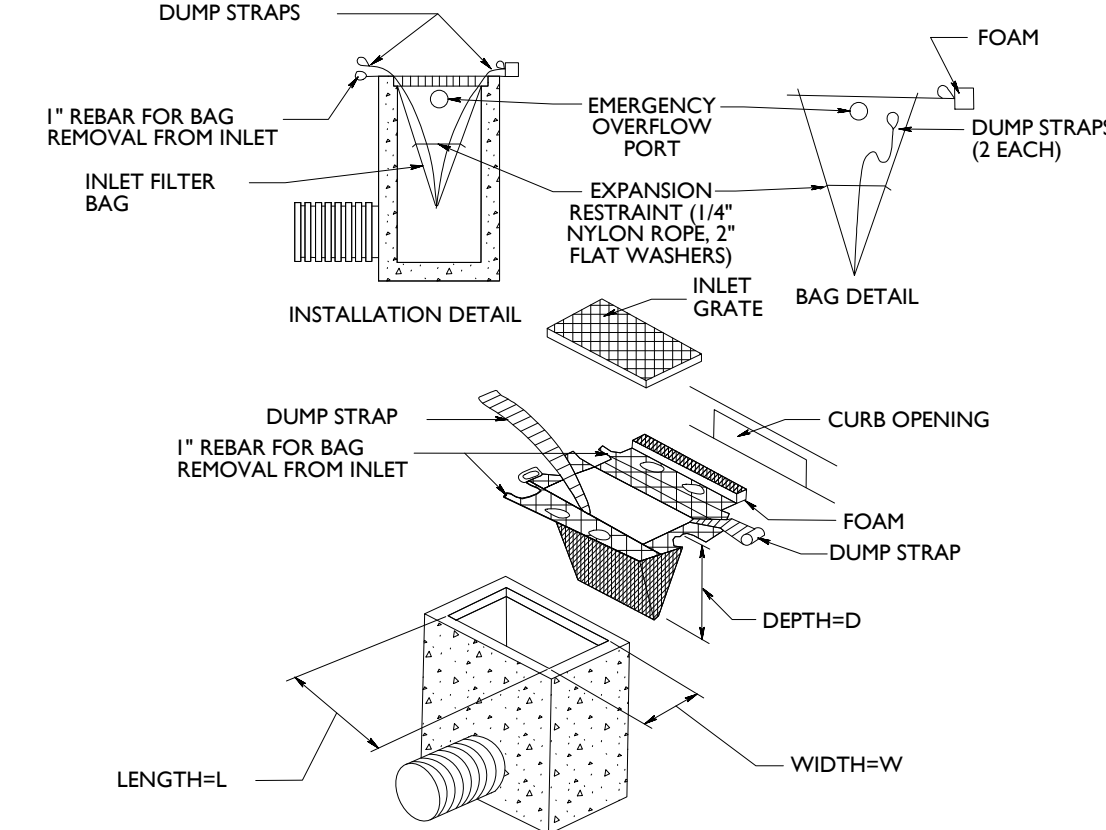
STABILIZED CONSTRUCTION ACCESS DETAIL

NOT TO SCALE



SILT FENCE DETAIL

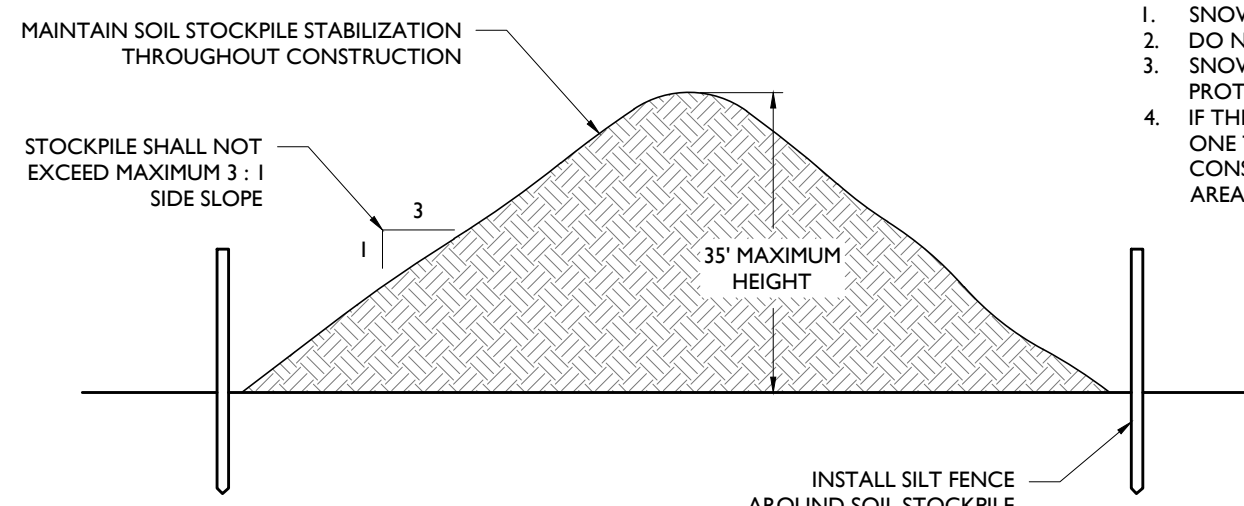
NOT TO SCALE



INLET FILTER BAG DETAIL

NOT TO SCALE

- NOTES:
1. THE FILTER BAG SHALL SAFELY PASS FLOWS GREATER THAN THE 1-YEAR 24-HOUR STORM EVENT.
 2. SEDIMENT REMOVAL AND MAINTENANCE SHALL BE PERFORMED FREQUENTLY AND AFTER EVERY STORM EVENT.



SOIL STOCKPILE DETAIL

NOT TO SCALE

- NOTES:
1. STOCKPILES SHALL BE SITUATED SO AS NOT TO OBSTRUCT NATURAL DRAINAGE OR CAUSE OFF-SITE ENVIRONMENTAL DAMAGE.
 2. STOCKPILES SHALL BE STABILIZED IN ACCORDANCE WITH THE STANDARDS FOR PERMANENT OR TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION, AS APPROPRIATE (SEE SOIL EROSION NOTES).

SLOPE OF PUBLIC ROADWAY	LENGTH OF STONE REQ'D	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0% TO 2%	50 FEET	100 FEET
2% TO 5%	100 FEET	200 FEET
> 5%	SEE NOTE 4	



Know what's below
Call before you dig.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL AIR QUALITY STANDARDS.
3. THE CONTRACTOR IS RESPONSIBLE TO INSPECT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES WEEKLY AND AFTER A PRECIPITATION EVENT GREATER THAN 1 INCH. THE CONTRACTOR SHALL MAINTAIN AN INSPECTION LOG ON SITE AND DOCUMENT CORRECTIVE ACTION TAKEN THROUGHOUT THE COURSE OF CONSTRUCTION AS REQUIRED.

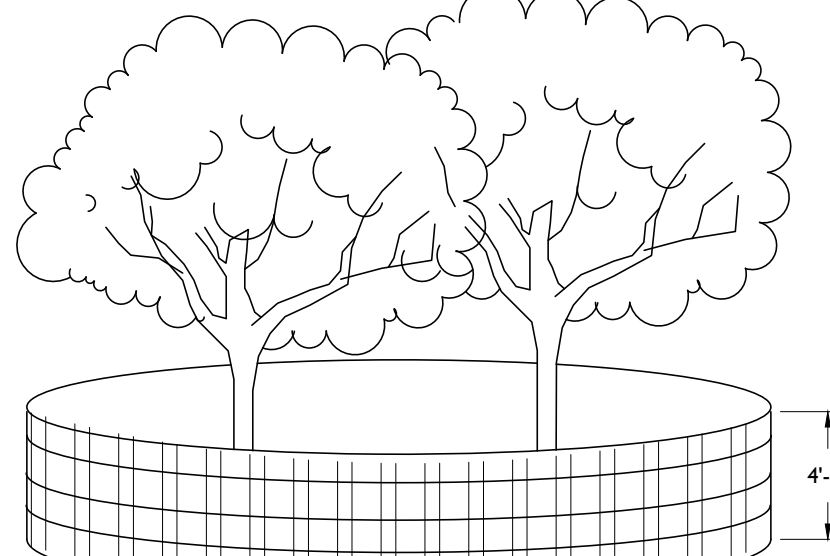
SEQUENCE OF CONSTRUCTION

1. INSTALL INLET FILTERS ON EXISTING INLETS (1 DAY).
2. INSTALL SILT FENCE, CONSTRUCTION ENTRANCE, SILT FENCING, AND TREE PROTECTION FENCING (1 DAY).
3. CLEAR TREES AND BRUSH, PERFORM DEMOLITION (7 DAYS).
4. ROUGH GRADING AND TEMPORARY SEEDING (21 DAYS).
5. CONSTRUCT CONDUIT AND STORM PIPING (21 DAYS).
6. BUILDING AND SITE CONSTRUCTION (2 MONTHS).
7. LANDSCAPING IMPROVEMENTS AND FINAL SEEDING (7 DAYS).
8. REMOVE SILT FENCE AND SOIL EROSION MEASURES (2 DAYS).

NOTE: TIME DURATIONS ARE APPROXIMATE AND ARE INTENDED TO ACT AS A GENERAL GUIDE TO THE CONSTRUCTION TIMELINE. ALL DURATIONS ARE SUBJECT TO CHANGE BY CONTRACTOR. CONTRACTOR SHALL SUBMIT CONSTRUCTION SCHEDULE TO TOWNSHIP AND ENGINEER. CONTRACTOR SHALL PHASE CONSTRUCTION ACCORDINGLY.

SOIL CHARACTERISTICS CHART

TYPE OF SOIL	DOWNER LOAMY SAND (DocBO)
PERCENT OF SITE COVERAGE	99.2%
HYDROLOGIC SOIL GROUP	A
DEPTH TO RESTRICTIVE LAYER	> 80 INCHES
SOIL PERMEABILITY	0.6 TO 6.00 IN / HR
DEPTH TO WATER TABLE	> 80 INCHES
TYPE OF SOIL	EVEBORO SAND (EvB)
PERCENT OF SITE COVERAGE	0.8%
HYDROLOGIC SOIL GROUP	A
DEPTH TO RESTRICTIVE LAYER	> 80 INCHES
SOIL PERMEABILITY	2.00 TO 20.00 IN / HR
DEPTH TO WATER TABLE	> 80 INCHES



TREE PROTECTION DETAIL

NOT TO SCALE

- NOTES:
1. SNOW FENCING IS TO BE 4'-0" HIGH AND SELF SUPPORTED.
 2. DO NOT STOCKPILE MATERIALS OR STORE EQUIPMENT WITHIN THE TREE PROTECTION FENCING.
 3. SNOW FENCE TO BE INSTALLED AT DRIP LINE OF EXISTING TREE OR TREE CLUSTER TO BE PROTECTED OR NO CLOSER THAN 6' FROM TREE TRUNK IF NECESSARY.
 4. IF THE PROJECT AREA ENCOMPASSES A PORTION OF THE DRIP LINE OF THE TREE, NO MORE THAN ONE-THIRD OF THE TOTAL AREA OF WITHIN THE DRIP LINE SHOULD BE DISTURBED BY CONSTRUCTION OR REGRADE AND A 3" THICK LAYER OF MULCH SHALL BE INSTALLED OVER THE AREA OF THE DRIP LINE WHICH IS NOT PROTECTED BY FENCING TO PROVIDE A CUSHION.

SYMBOL DESCRIPTION

---	PROPERTY BOUNDARY
---	ADJACENT PROPERTY BOUNDARY
---	PROPOSED LIMIT OF DISTURBANCE
---	PROPOSED SILT FENCE
---	PROPOSED TREE PROTECTION FENCE
---	PROPOSED STOCKPILE & EQUIPMENT STORAGE
---	PROPOSED STABILIZED CONSTRUCTION ENTRANCE
---	PROPOSED INLET PROTECTION FILTER

OCEAN COUNTY SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE OCEAN COUNTY SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED FORTY-EIGHT (48) HOURS IN ADVANCE OF ANY LAND DISTURBANCE.
2. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE STATE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL, IN NEW JERSEY.
3. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE OR IN THEIR PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
4. ANY CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLANS WILL REQUIRE THE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO THE DISTRICT. THE REVISED PLANS MUST MEET ALL CURRENT STATE SOIL EROSION AND SEDIMENT CONTROL STANDARDS. LINK TO 2014 STANDARDS: [HTTP://WWW.STATE.NJ.US/AGRICULTURE/CONSERVATION/NJRC/NJRCSOIL.HTM](http://www.state.nj.us/agriculture/conservation/njrc/njrcsoil.htm)
5. N.J.S.A. 4:24-39 ET SEQ. REQUIRES THAT NO CERTIFICATES OF OCCUPANCY BE ISSUED BEFORE THERE HAS BEEN COMPLIANCE WITH PROVISIONS OF A CERTIFIED PLAN FOR PERMANENT MEASURES. ALL SITE WORK, AND ALL WORK AROUND INDIVIDUAL LOTS IN SUBDIVISIONS, MUST BE COMPLETED PRIOR TO THE DISTRICT ISSUING A REPORT OF COMPLIANCE FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE MUNICIPALITY.
6. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN THIRTY (30) DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF 2 TO 2 1/2 TONS PER ACRE, ACCORDING TO STATE STANDARD FOR STABILIZATION WITH MULCH ONLY.
7. IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES AND ROADWAY EMBANKMENTS) WILL RECEIVE TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AT A RATE OF 1 1/2 TO 2 TONS PER ACRE, ACCORDING TO STATE STANDARDS.
8. A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS TO STABILIZE STREETS, ROADS, DRIVEWAYS, AND PARKING AREAS. IN AREAS WHERE NO UTILITIES ARE PRESENT, THE SUB-BASE SHALL BE INSTALLED WITHIN FIFTEEN (15) DAYS OF THE PRELIMINARY GRADING.
9. ANY STEEP SLOPES (3:1 OR GREATER) OR ANY EXISTING ROADWAYS RECEIVING PIPELINE INSTALLATION WILL BE BACKFILLED AND STABILIZED DAILY, AS THE INSTALLATION CONTINUES.
10. THE STANDARD FOR STABILIZED CONSTRUCTION ACCESS REQUIRES THE INSTALLATION OF A STONE PAD AT ALL CONSTRUCTION DRIVEWAYS WHERE VEHICLES WILL ACCESS PAVED ROADWAYS FROM UNPAVED AREAS OF THE SITE.
11. ALL SEDIMENT WASHED, DROPPED, SPILLED, OR TRACKED ONTO ROADWAYS (PUBLIC OR PRIVATE) OR OTHER IMPROVED SURFACES WILL BE REMOVED IMMEDIATELY.
12. PERMANENT VEGETATION IS TO BE SEEDING OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. AT THE TIME OF THE FINAL INSPECTION, YOU ARE REQUIRED TO PROVIDE CONFIRMATION THAT THE PROPER TYPE AND AMOUNT OF SEED, LIME, AND FERTILIZER HAVE BEEN USED FOR PERMANENT STABILIZATION WORK. STRAW MULCH IS REQUIRED ON ALL SEEDING.
13. AT THE TIME THAT SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROUND COVER SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT IT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATION. IF THE GROUND COVER IS REMOVED OR TREATED, THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS. NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION WILL HAVE TO BE EMPLOYED.
14. IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, ANY SOIL HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDES SHALL BE COVERED WITH A MINIMUM OF TWELVE (12) INCHES OF SOIL HAVING A PH OF 5 OR MORE PRIOR TO SEEDING PREPARATION. AREAS WHERE TREES OR SHRUBS ARE TO BE PLANTED SHALL BE COVERED WITH A MINIMUM OF TWENTY-FOUR (24) INCHES OF SOIL HAVING A PH OF 5 OR MORE.
15. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
16. UNFILTERED DEWATERING IS NOT PERMITTED. NECESSARY PRECAUTIONS MUST BE TAKEN DURING ALL DEWATERING OPERATIONS TO MINIMIZE SEDIMENT TRANSFER. ANY DEWATERING METHODS USED MUST BE IN ACCORDANCE WITH THE STANDARD FOR DEWATERING.
17. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED AS REQUIRED BY THE STANDARD FOR DUST CONTROL.
18. STOCKPILE AND STAGING LOCATIONS ESTABLISHED IN THE FIELD SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE ACCORDING TO THE CERTIFIED PLAN. STAGING AND STOCKPILES NOT LOCATED WITHIN THE LIMIT OF DISTURBANCE WILL REQUIRE CERTIFICATION OF A REVISED SOIL EROSION AND SEDIMENT CONTROL PLAN. THE DISTRICT RESERVES THE RIGHT TO DETERMINE WHEN CERTIFICATION OF A NEW AND SEPARATE SOIL EROSION AND SEDIMENT CONTROL PLAN WILL BE REQUIRED FOR THESE ACTIVITIES.
19. ALL SOIL STOCKPILES ARE TO BE TEMPORARILY STABILIZED IN ACCORDANCE WITH SOIL EROSION AND SEDIMENT CONTROL NOTE #6. STOCKPILES SHOULD BE SITUATED SO AS TO NOT OBSTRUCT NATURAL DRAINAGE OR CAUSE OFF-SITE ENVIRONMENTAL DAMAGE.
20. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR ANY EROSION OR SEDIMENTATION THAT MAY OCCUR BELOW STORMWATER OUTFALLS OR OFFSITE AS A RESULT OF CONSTRUCTION OF THE PROJECT.

SOIL COMPACTION MITIGATION NOTES

1. PROCEDURES SHALL BE USED TO MITIGATE EXCESSIVE SOIL COMPACTION PRIOR TO PLACEMENT OF TOPSOIL AND ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.
2. RESTORATION OF COMPACTED SOILS SHALL BE THROUGH DEEP SCARIFICATION/TILLAGE (6" MINIMUM DEPTH) WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.), IN THE ALTERNATIVE, ANOTHER METHOD AS SPECIFIED BY A NEW JERSEY LICENSED PROFESSIONAL ENGINEER MAY BE SUBSTITUTED SUBJECT TO DISTRICT APPROVAL.
3. SOIL COMPACTION TESTING IS NOT REQUIRED IF WHEN SUBSOIL COMPACTION REMEDIATION (SCARIFICATION/TILLAGE 6" MINIMUM DEPTH) IS PROPOSED AS PART OF THE SEQUENCE OF CONSTRUCTION.

TOPSOILING NOTES

1. TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE.
2. A UNIFORM APPLICATION TO AN AVERAGE DEPTH OF 5" (MINIMUM 4") FIRMED IN PLACE IS REQUIRED.
3. PURSUANT TO THE REQUIREMENTS IN SECTION 7 OF THE STANDARD FOR PERMANENT VEGETATIVE STABILIZATION, THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT PERMANENT VEGETATIVE COVER BECOMES ESTABLISHED ON AT LEAST 80% OF THE SOILS TO BE STABILIZED WITH VEGETATION. FAILURE TO ACHIEVE THE MINIMUM COVERAGE MAY REQUIRE ADDITIONAL WORK TO BE PERFORMED.

ADDITIONAL NOTES FOR PROJECTS WITH BASINS

1. BASIN MUST BE PROPERLY CONSTRUCTED AND PERMANENTLY STABILIZED, AND CONDUIT OUTLET PROTECTION INSTALLED, PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
2. THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL HAVE SPECIFIC REQUIREMENTS FOR TOPSOILING, THE STANDARD FOR SOIL EROSION AND SEDIMENT CONTROL, AND LAND GRADING. THE TEXT FOUND ON PAGES 4-1 (SEC. 1B), 6-2 (SEC. 2D), 7-1 (SEC. 1C), 8-2 (SEC. 3D) AND 19-4 (SECOND TO LAST SECTION) SERVE TO HELP MINIMIZE SOIL COMPACTION AND REDUCE MAINTENANCE.
3. OWNERSHIP AND RESPONSIBILITY FOR THE OPERATION AND MAINTENANCE OF THE DETENTION STRUCTURE MUST BE DETERMINED DURING DESIGN AND SHOWN ON THE PLANS AND ON THE COMPLETED "HYDRAULIC AND HYDROLOGIC DATA BASE SUMMARY FORM," TO BE EFFECTIVE OVER A LONG PERIOD OF TIME, THE STRUCTURE MUST BE PROPERLY MAINTAINED.



FOR COUNTY SUBMISSION	FOR CLIENT REVIEW	DATE	BY	ISSUE	DESCRIPTION
2	1	12/27/2018	AMB	CJS	
		09/25/2018			

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PRELIMINARY & FINAL MAJOR SITE PLAN
PROPOSED RETAIL STORE

DOLLAR GENERAL

TAX MAP #1.01, BLOCK 5, LOT 2059
2520 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

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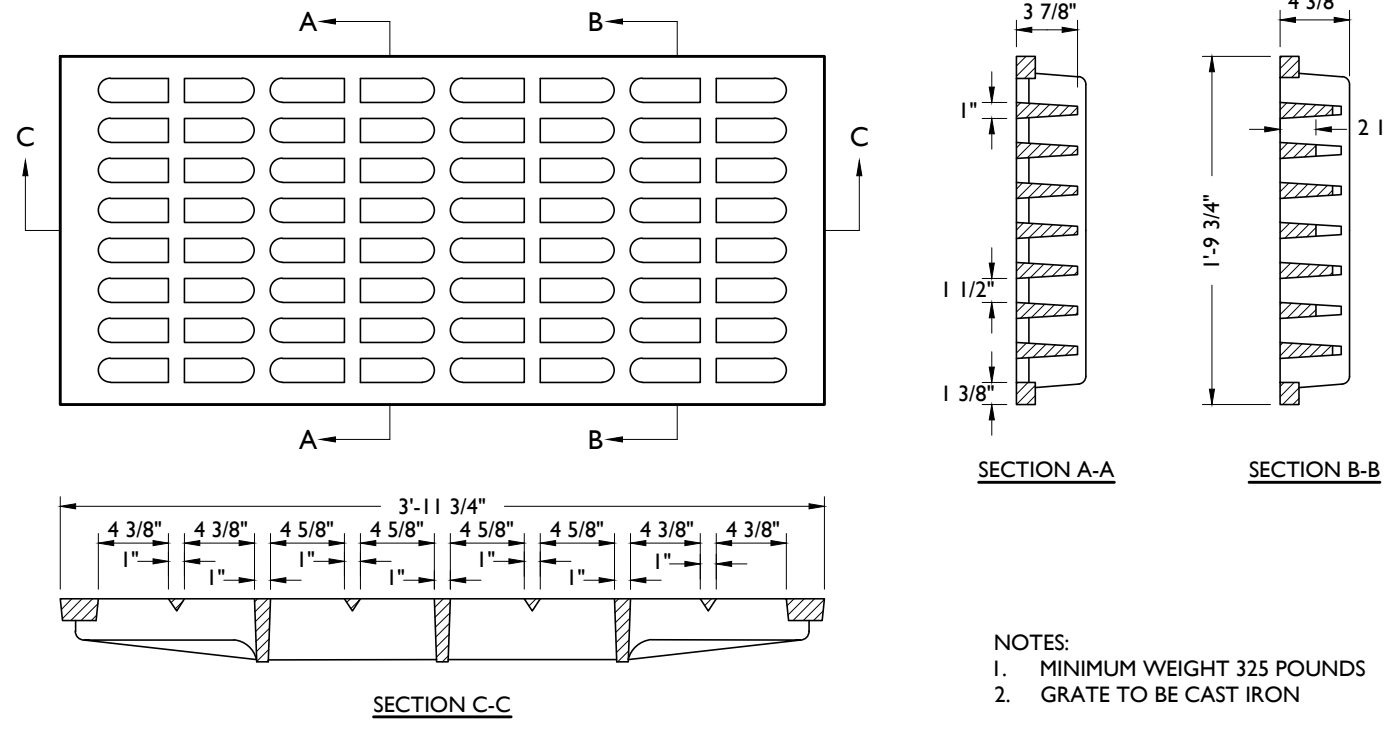
SCALE: 1" = 30' PROJECT ID: Z-18116

TITLE:
SOIL EROSION & SEDIMENT CONTROL PLAN

DRAWING:

C-9

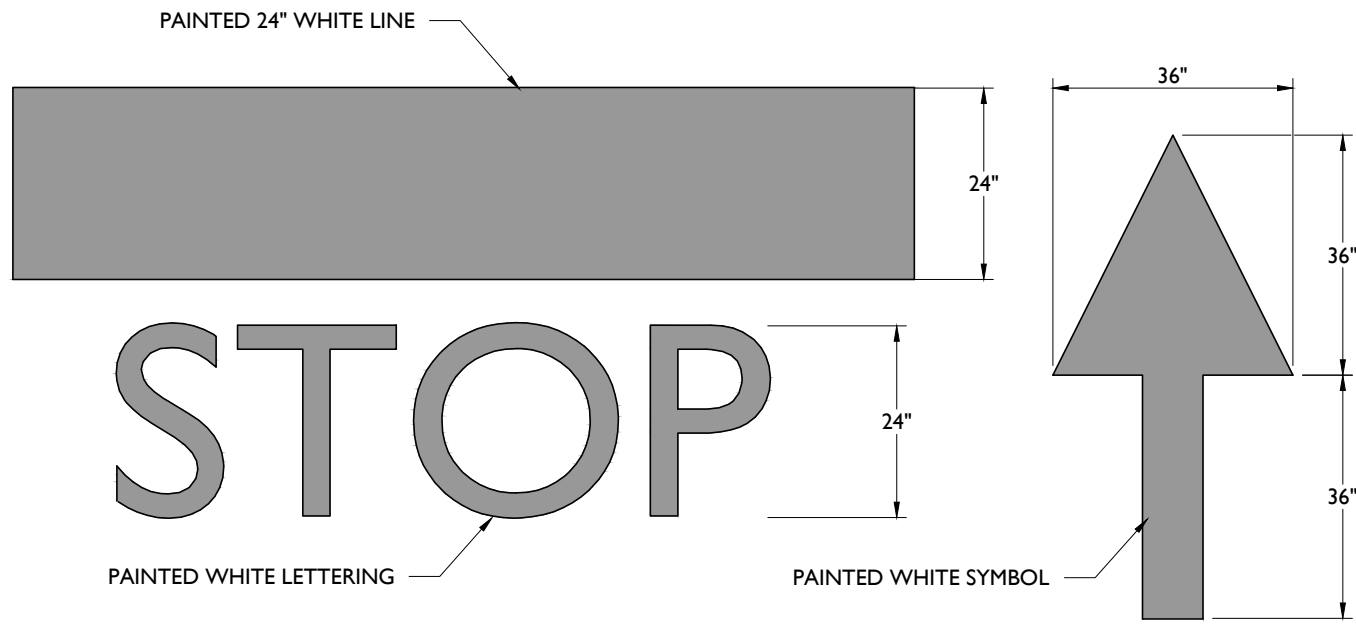
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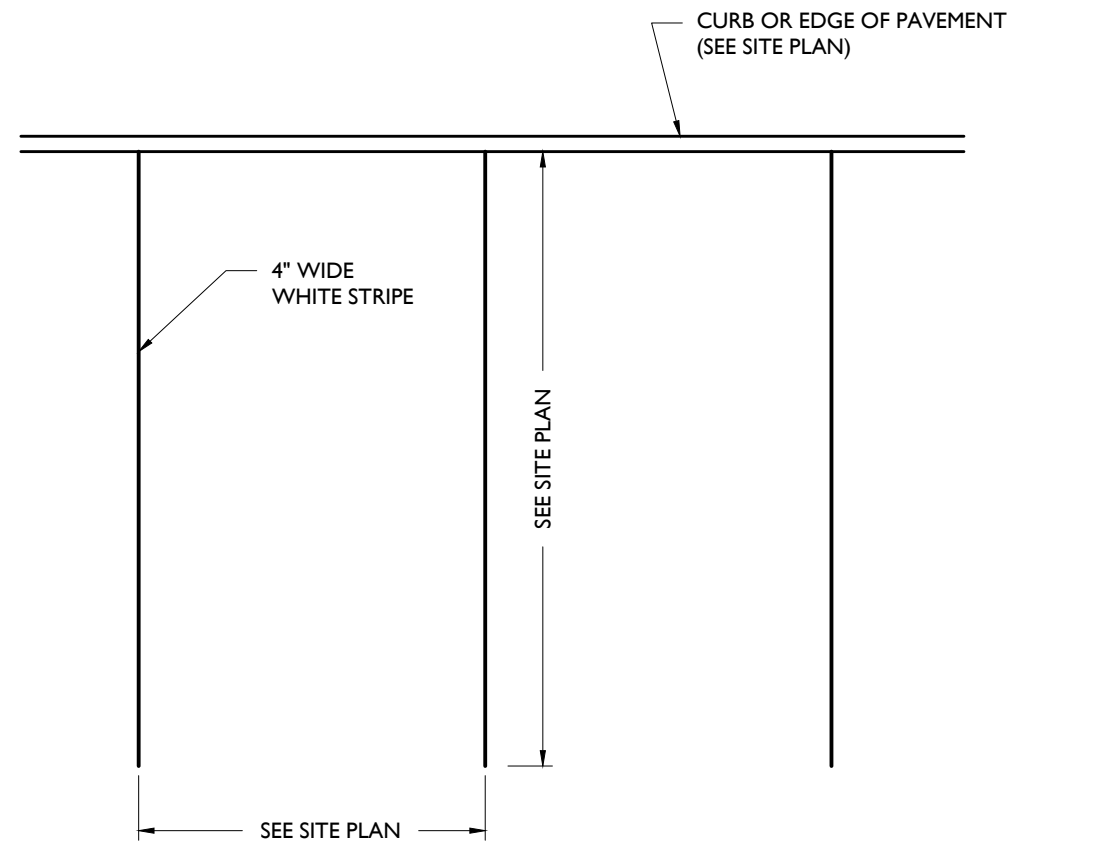
BICYCLE SAFE GRATE

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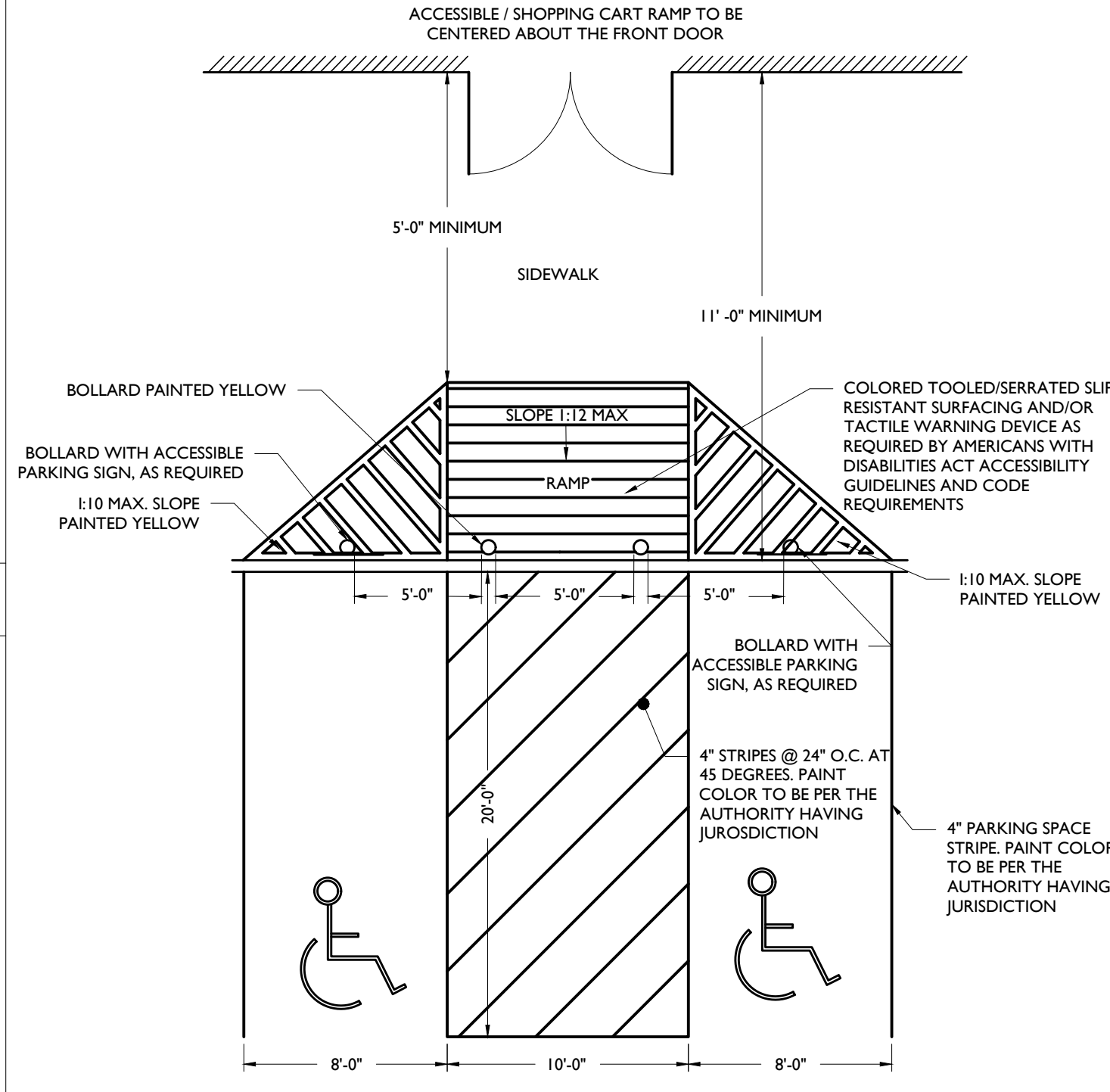
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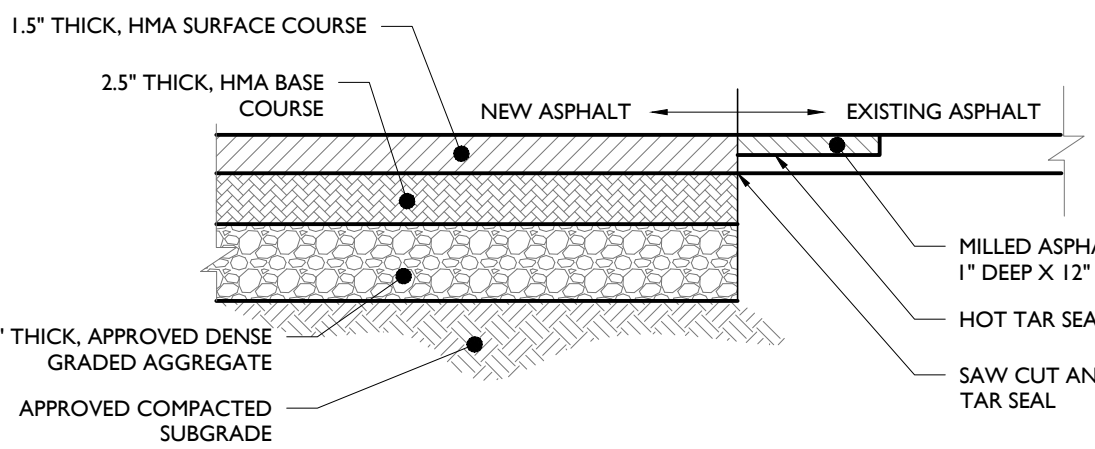
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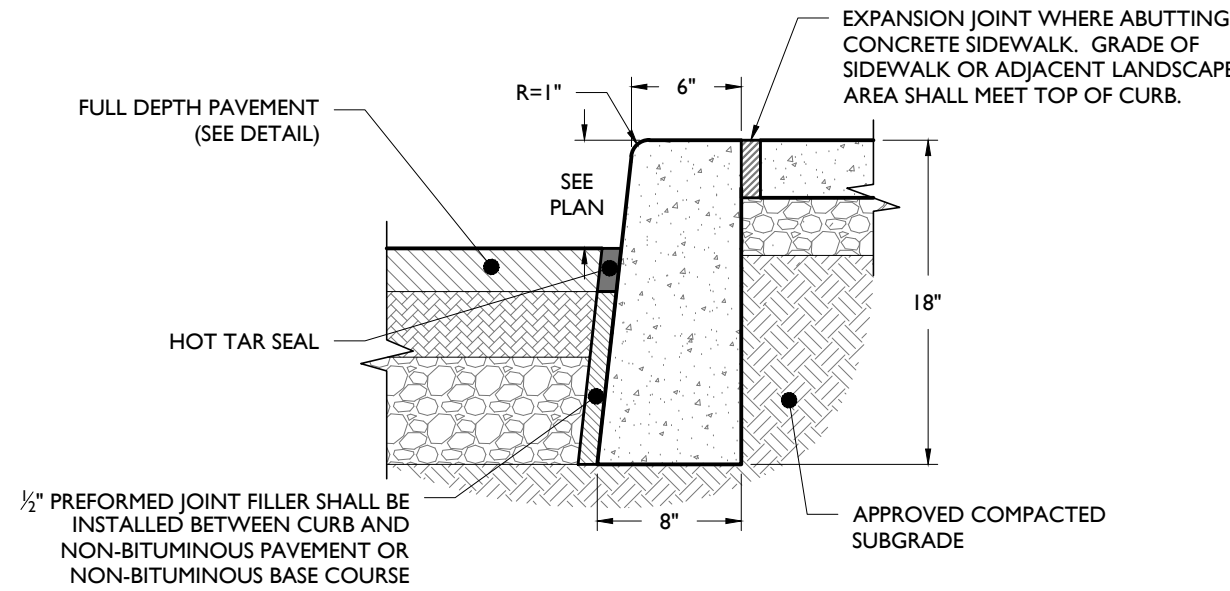


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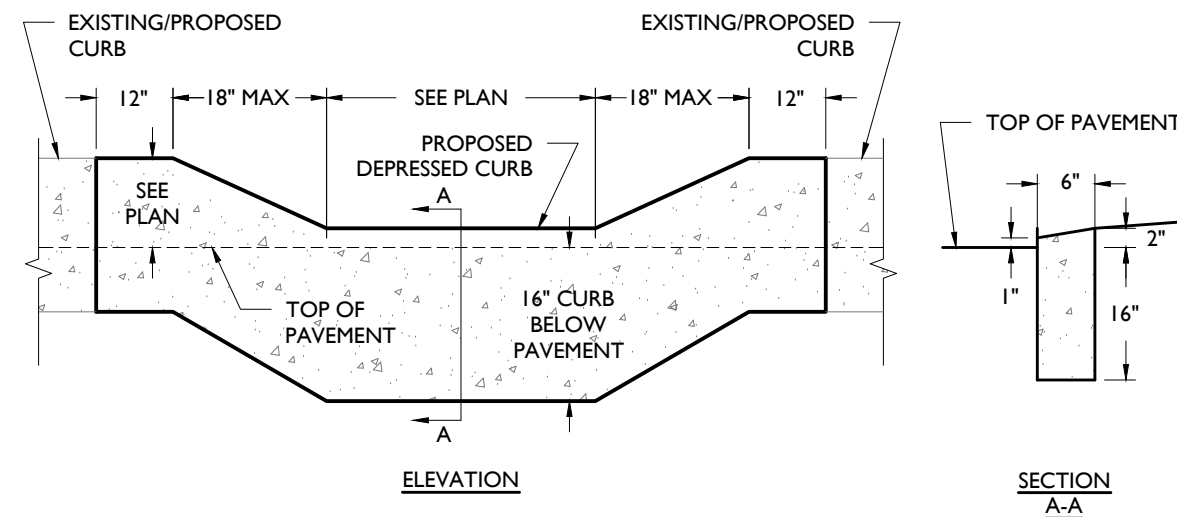
NOTE:
HMA MIX AND DENSE GRADED AGGREGATE SHALL CONFORM TO STATE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.

5

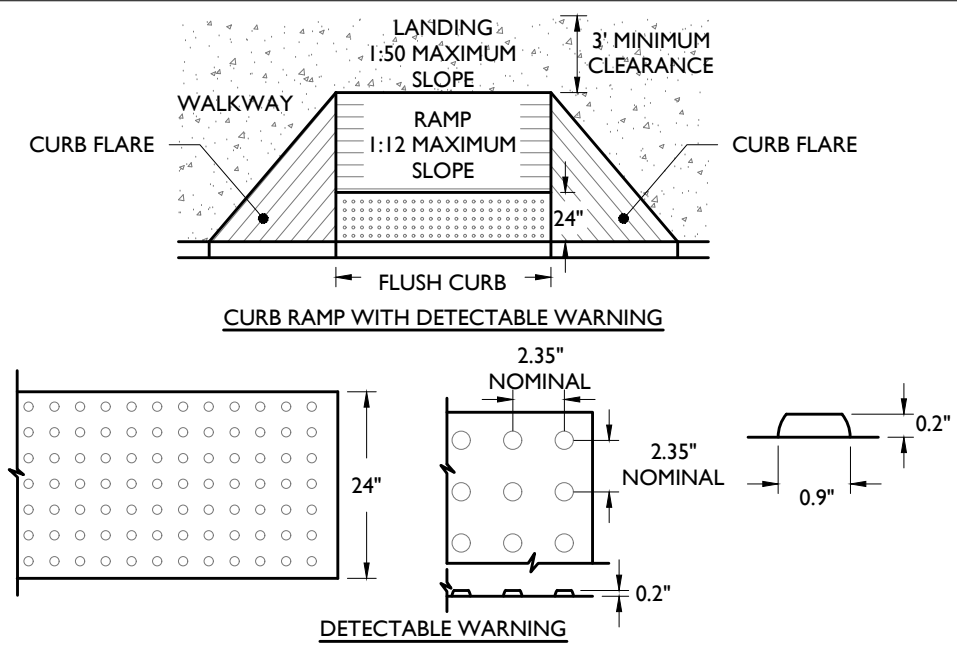


NOTES:
1. CONCRETE SHALL BE 3500 PSI AT 28 DAYS, AIR-ENTRAINED.
2. TRANSVERSE EXPANSION JOINTS SHALL BE PROVIDED AT 20 FOOT INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED 1/2" FROM SURFACE.
3. HALF DEPTH CONTRACTION JOINTS SHALL BE PROVIDED AT 10 FOOT INTERVALS.
4. 18" CURB DEPTH SHALL BE MAINTAINED AT DEPRESSED OR FLUSH CURBED AREAS.

6

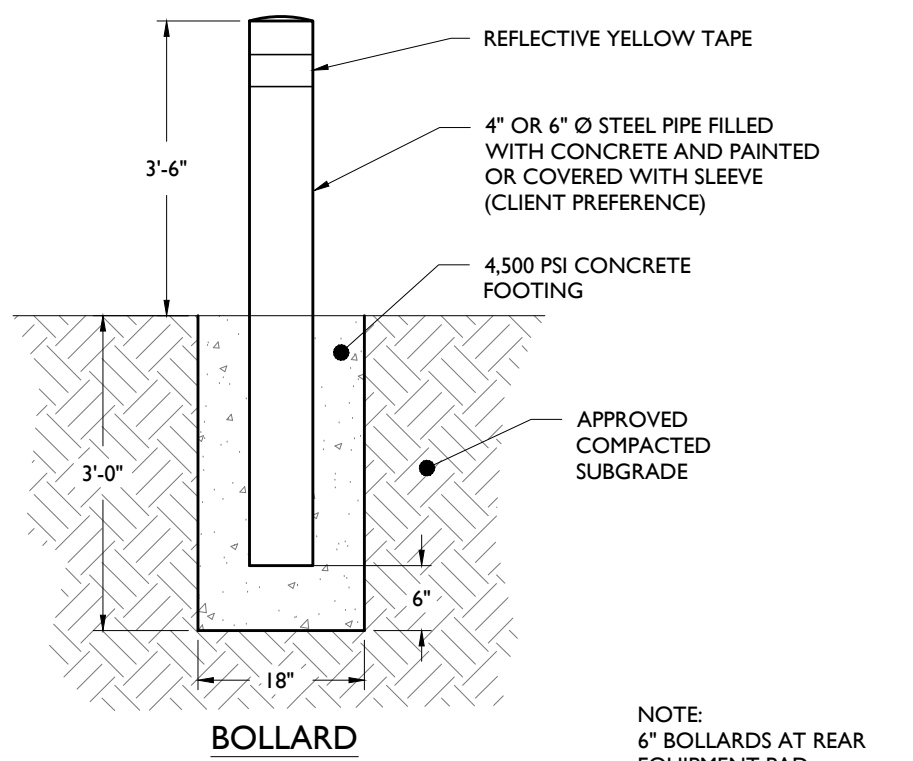


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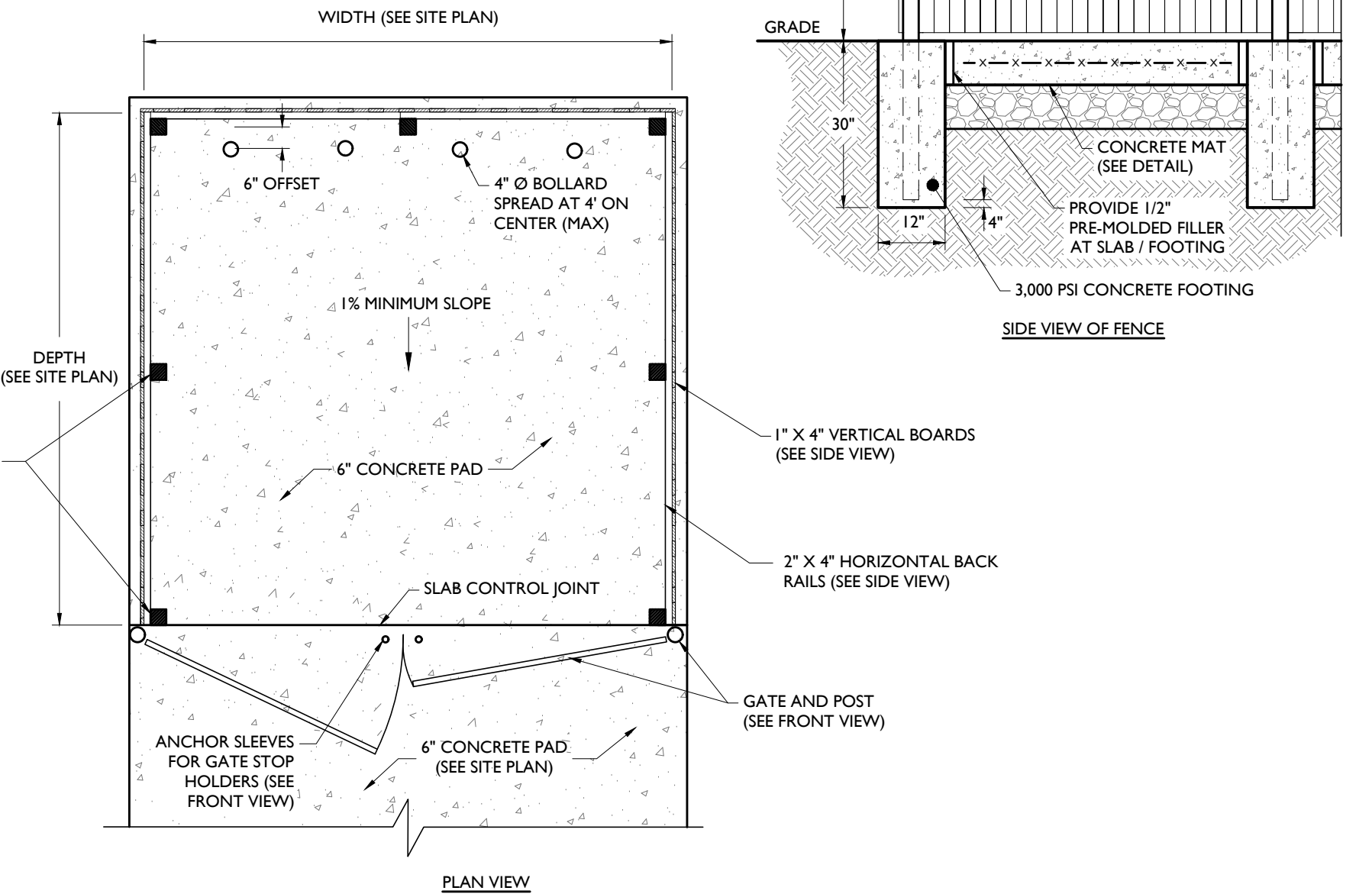
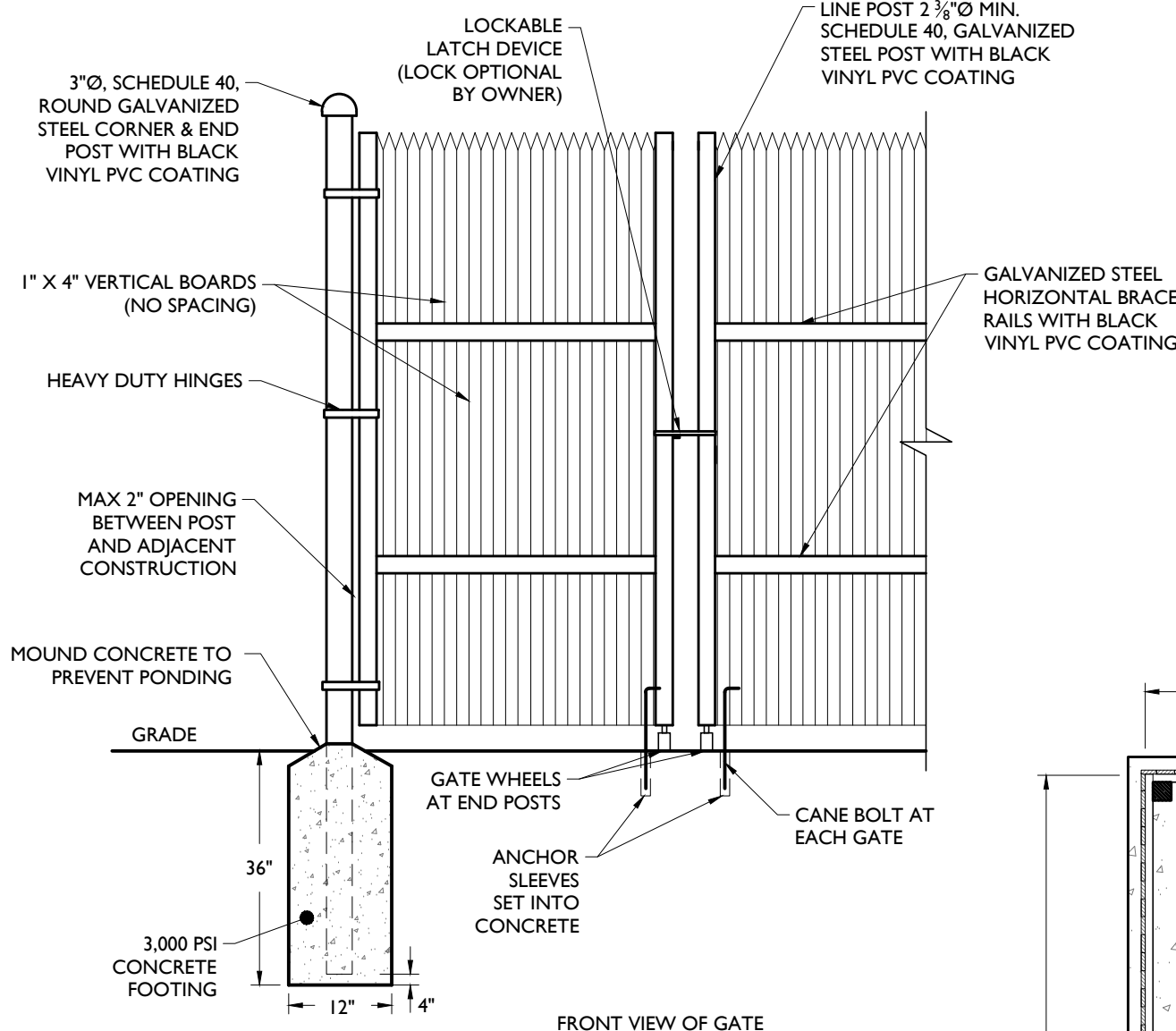


NOTES:
1. CROSS SLOPE ON RAMP SHALL NOT EXCEED 1:50 SLOPE.
2. DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
3. VISUAL CONTRAST: THERE SHALL BE A MINIMUM OF 70% CONTRAST IN LIGHT REFLECTANCE BETWEEN THE DETECTABLE WARNING AND AN ADJOINING SURFACE.
4. DETECTABLE WARNING STRIP REQUIRED WHERE RAMP DIRECTS PEDESTRIAN TRAFFIC TOWARDS VEHICLE TRAVEL WAY. WARNING STRIP SHALL BE CAST-IN-PLACE.
5. WHERE A 60" X 60" LANDING EXISTS AT THE TOP OF RAMP, RAMP FLARE SHALL NOT EXCEED 1:10 SLOPE. WHERE LANDING IS NOT PROVIDED RAMP FLARE SHALL NOT EXCEED 1:12 SLOPE.
6. A FLUSH CURB SHALL HAVE A MINIMUM WIDTH OF 36". SEE PLAN FOR EXACT WIDTH.
7. RAMP SHALL HAVE A MAXIMUM RISE OF 6" WITHOUT A HANDRAIL.

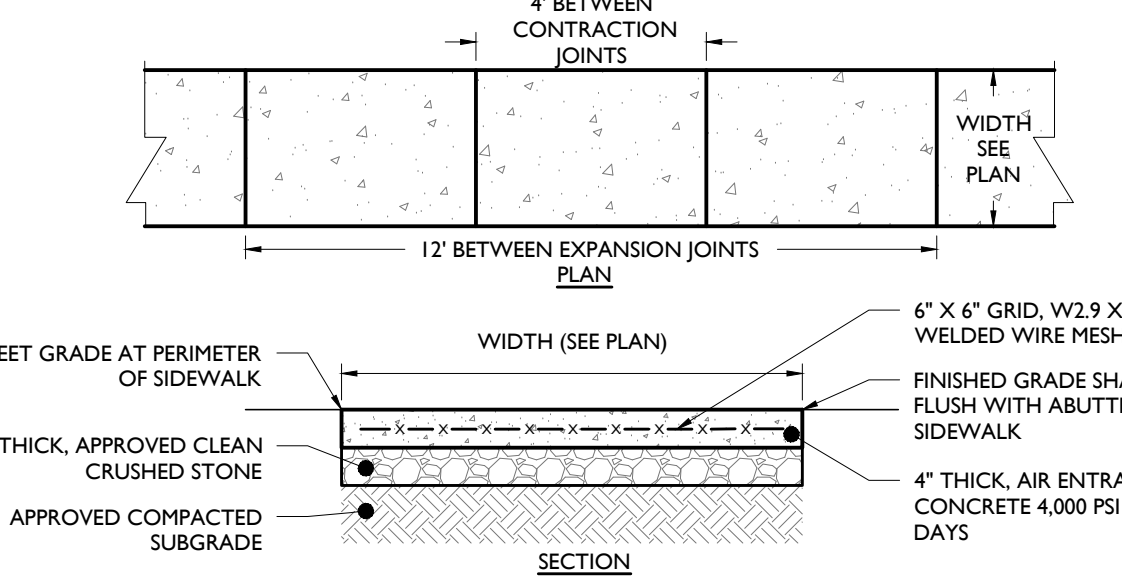
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10

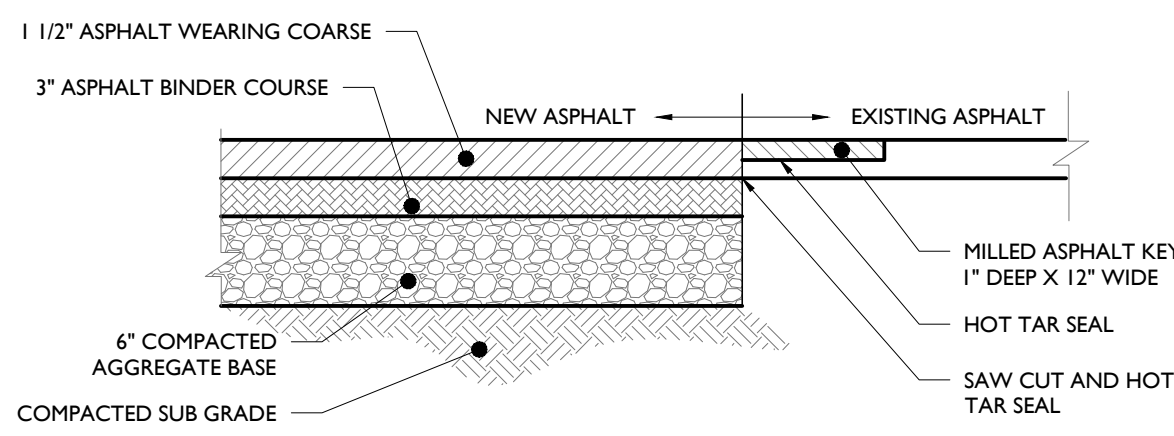


13



NOTES:
1. MAXIMUM CROSS SLOPE SHALL BE 1/4" PER FOOT.
2. 1/2" EXPANSION JOINTS SHALL BE PROVIDED AT 12' INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED 1/2" FROM THE SURFACE.
3. 1" DEEP BY 1/2" WIDE, TOOLED CONTRACTION JOINTS SHALL BE PROVIDED AT 4' INTERVALS.
4. EXPANSION JOINT SHALL BE PROVIDED WHERE ADJACENT TO A BUILDING.

11



NOTE:
HMA MIX AND DENSE GRADED AGGREGATE SHALL CONFORM TO STATE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.

12

NOTE:
ALL LUMBER SHALL BE PRESSURE TREATED.

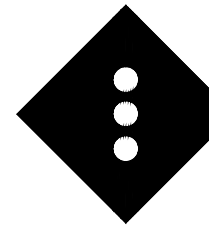
WOODEN FENCE TRASH ENCLOSURE DETAIL

NOT TO SCALE

FOR COUNTY SUBMISSION				DESCRIPTION	
FOR CLIENT REVIEW				BY	DATE
2	12/27/2018	AMB	CJS	ISSUE	
1	09/25/2018				

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PROPOSED RETAIL STORE

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2520 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

JEFFREY A. MARTELL, P.E.
NEW JERSEY LICENSE No. 47290
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design

SCALE: AS SHOWN PROJECT ID: Z-18116

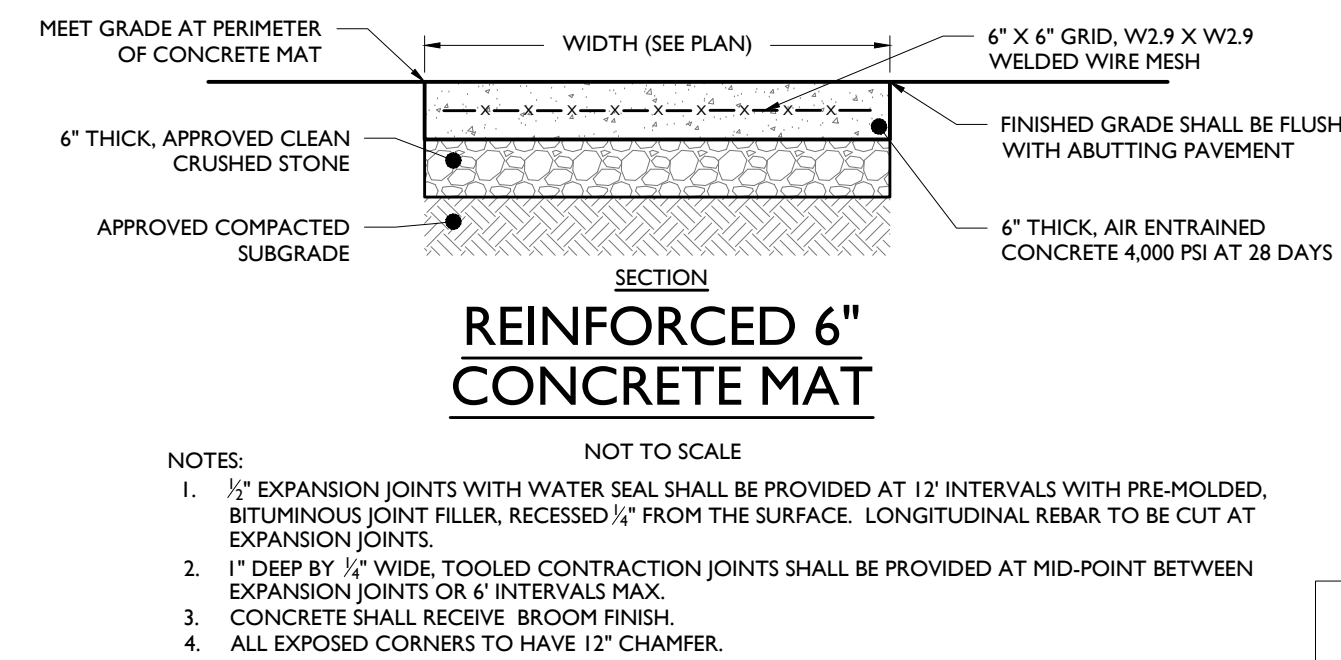
TITLE:



**CONSTRUCTION
DETAILS**

DRAWING:

C-12

Z:\PROJECTS\22018\22018-011-DOLLAR GENERAL - 2520 HIGHWAY 571 - MANCHESTER, NJ\DRAWINGS\11-12-18.DWG



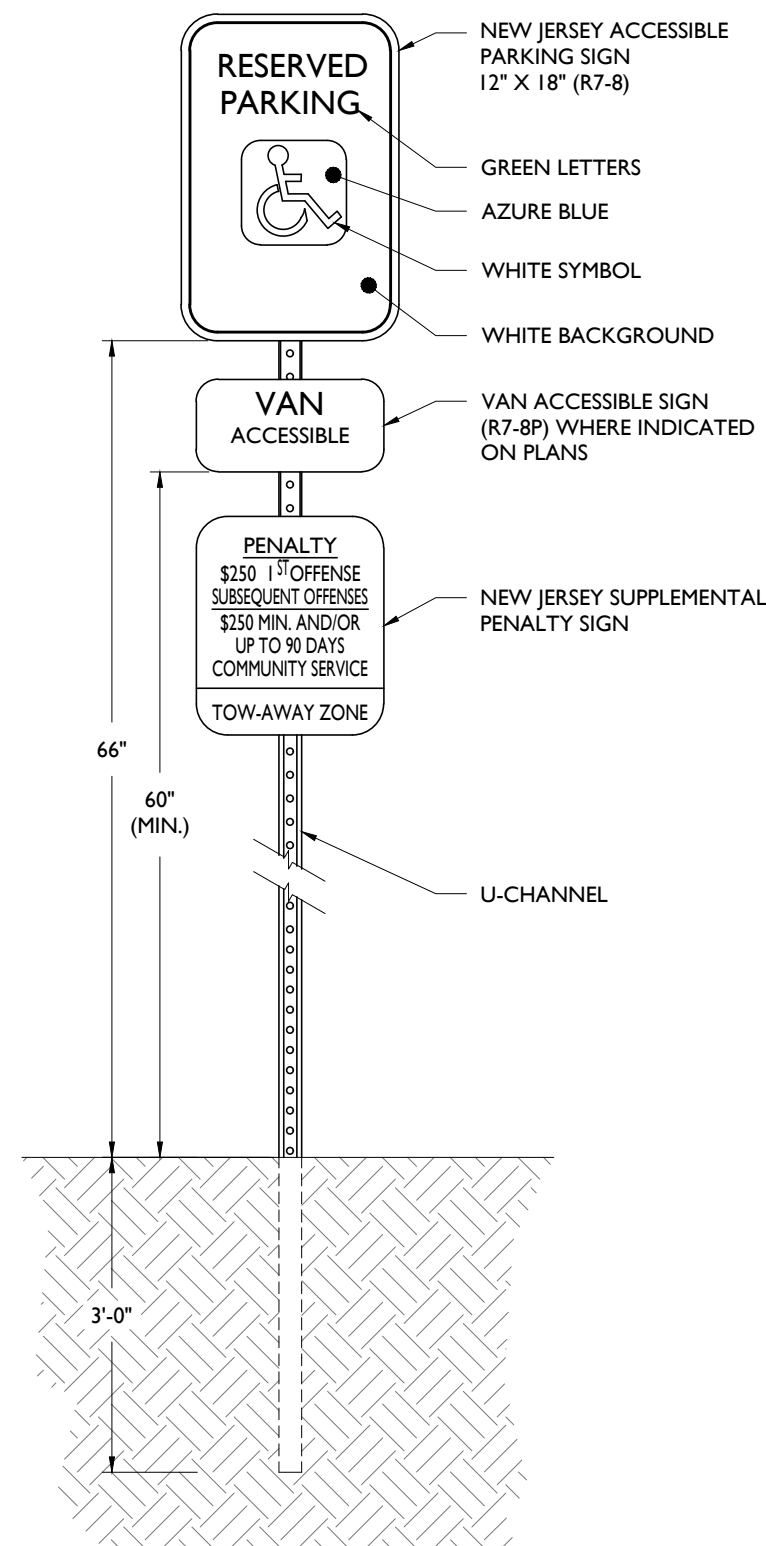
M.U.T.C.D. NUMBER	TEXT	COLOR		SIZE OF SIGN (WIDTH X HEIGHT)	TYPE OF MOUNT
		LEGEND	BACKGROUND		
STOP SIGN (R1-1)		RED	WHITE	36"x36"	GROUND
NO LEFT TURN (R3-2)		CIRCLE AND DIAGONAL: RED LEGEND: BLACK	WHITE	24"x24"	GROUND

NOTE:

1. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), EXCEPT AS NOTED
2. ALL SIGNS SHALL BE MOUNTED AS TO NOT OBSTRUCT THE SHAPE OF "STOP" (R1-1) AND "YIELD" (R1-2) SIGNS.

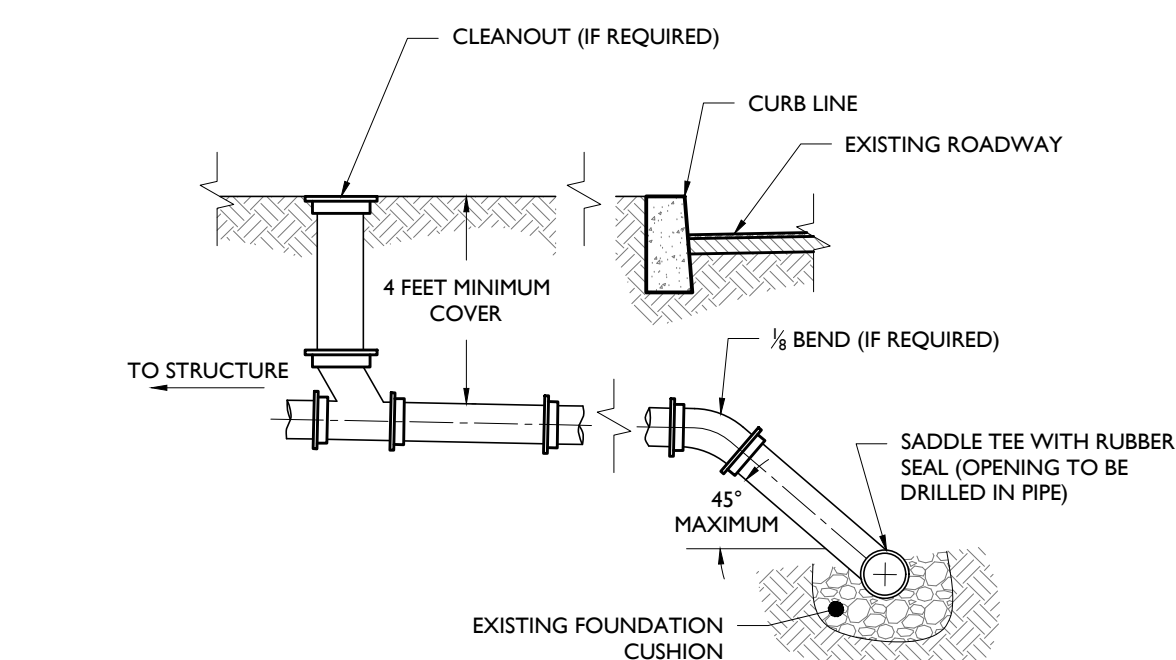
SIGN DATA TABLE

NOT TO SCALE



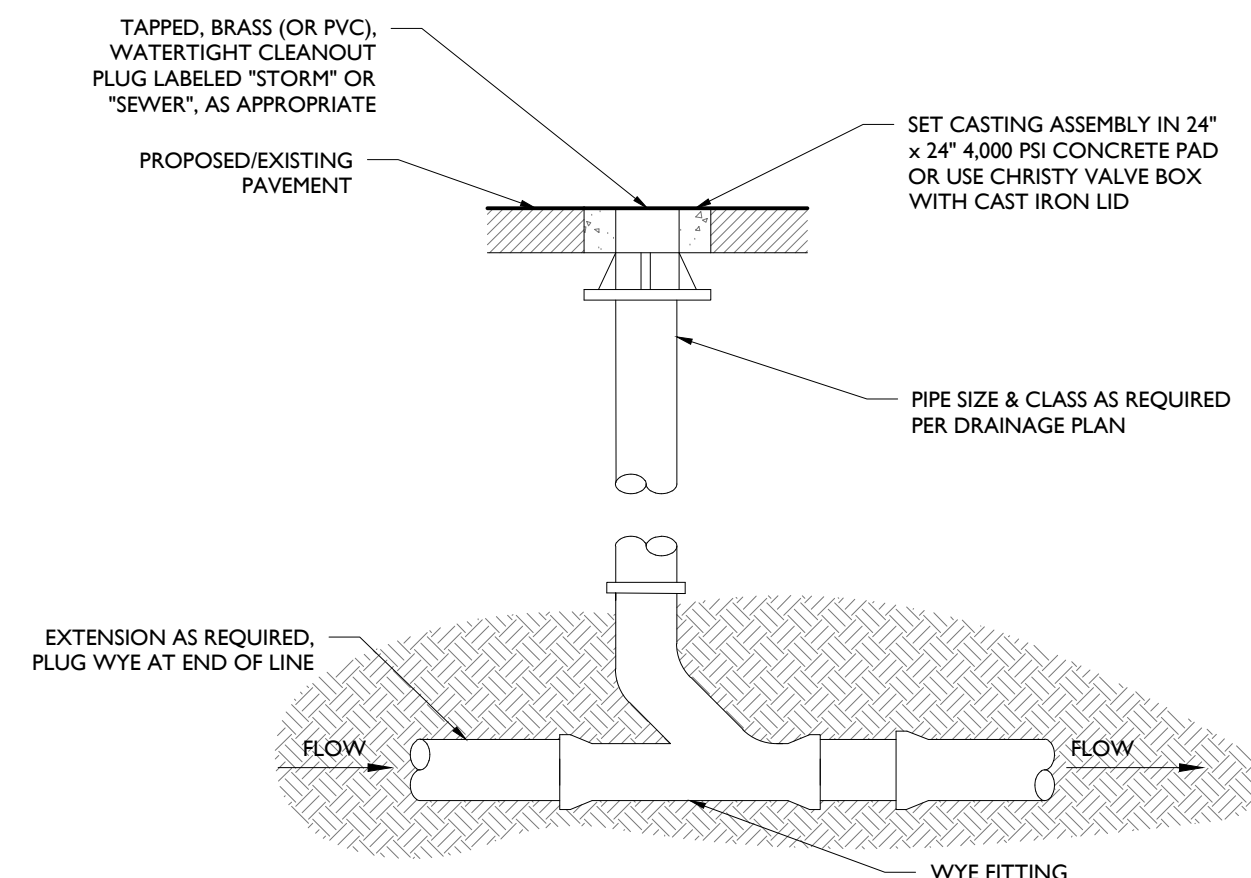
ACCESSIBLE PARKING SIGN DETAIL

NOT TO SCALE



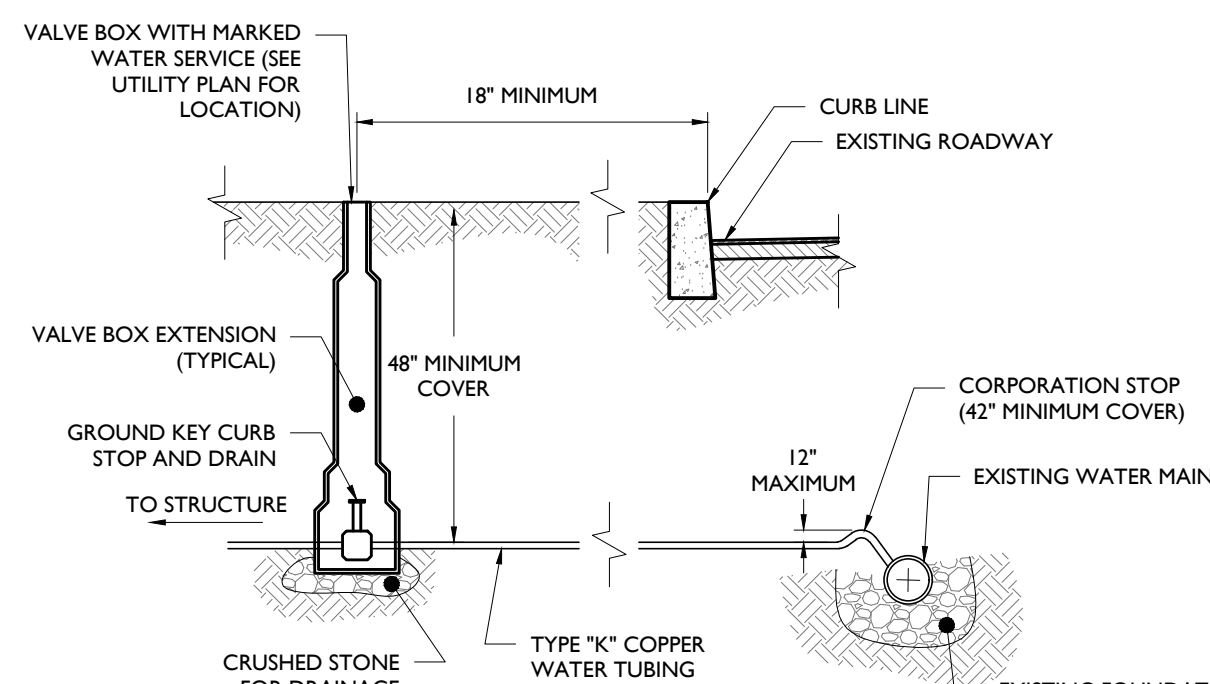
SEWER CONNECTION DETAIL

NOT TO SCALE



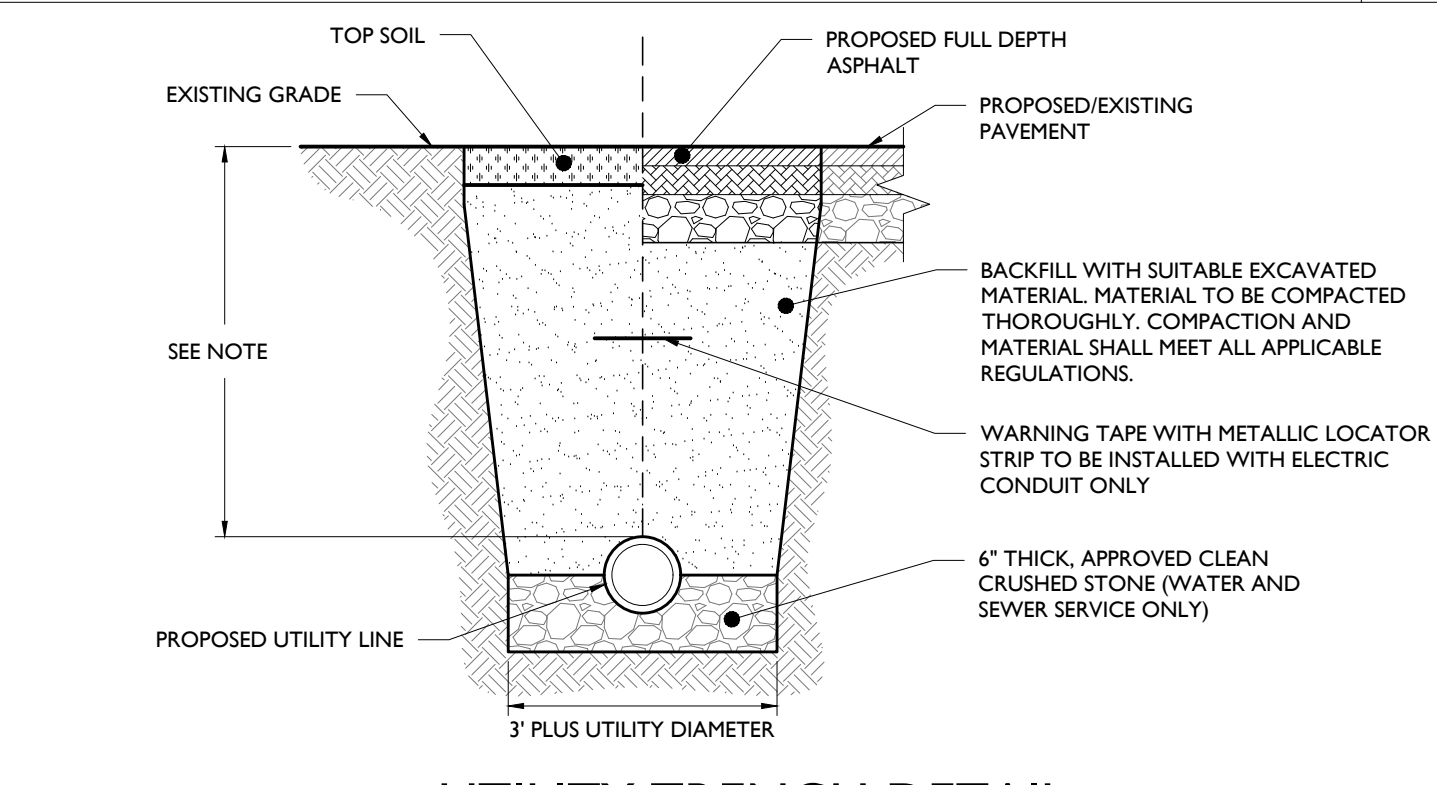
HARDSCAPE CLEAN-OUT

NOT TO SCALE



WATER CONNECTION DETAIL

NOT TO SCALE



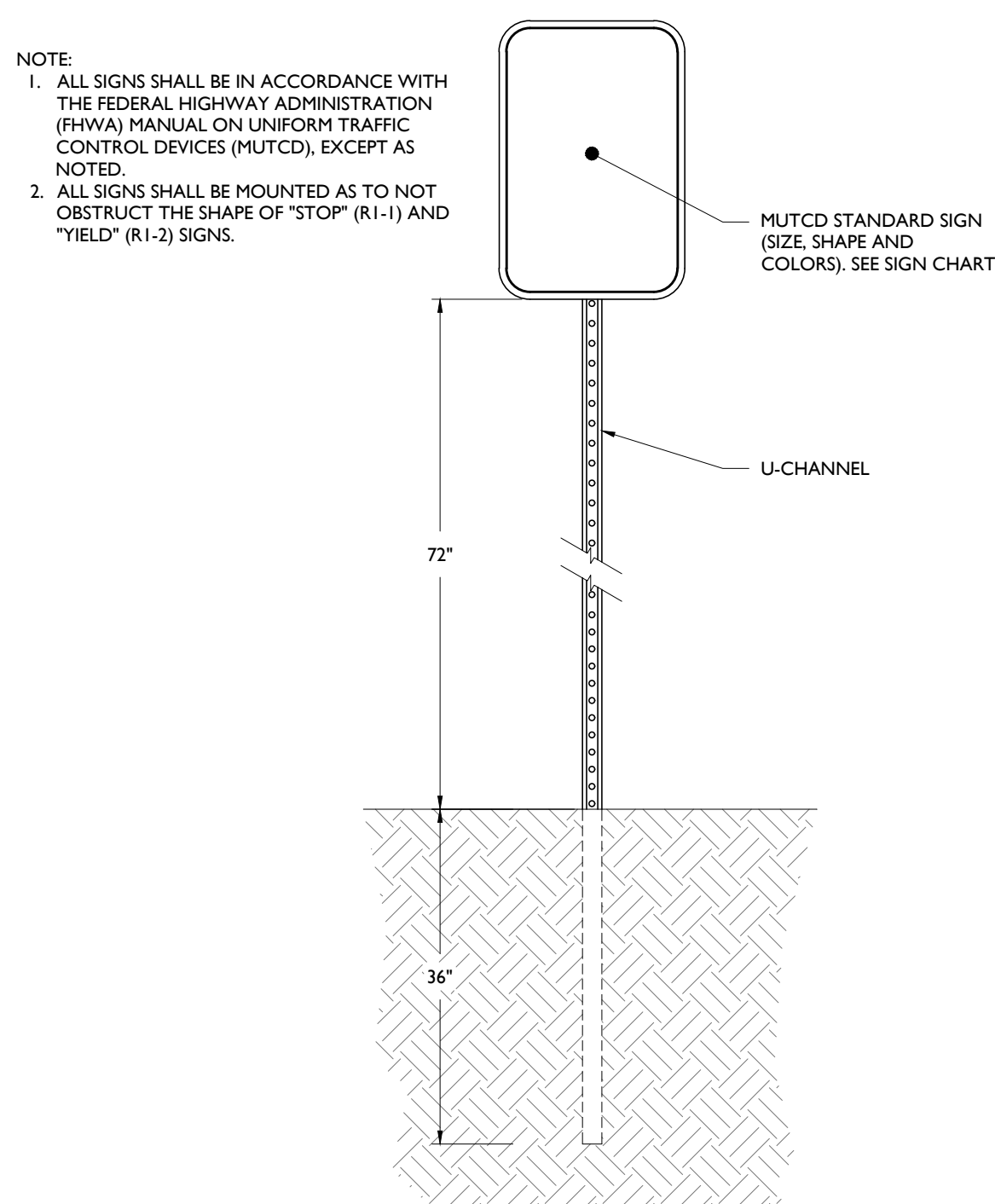
UTILITY TRENCH DETAIL

NOT TO SCALE

NOTE:

MINIMUM PIPE COVER SHALL BE AS FOLLOW:

- ELECTRIC SERVICE - PER APPLICABLE UTILITY AUTHORITY
- GAS SERVICE - PER APPLICABLE UTILITY AUTHORITY
- SEWER SERVICE - 36" MINIMUM
- WATER SERVICE - 48" MINIMUM

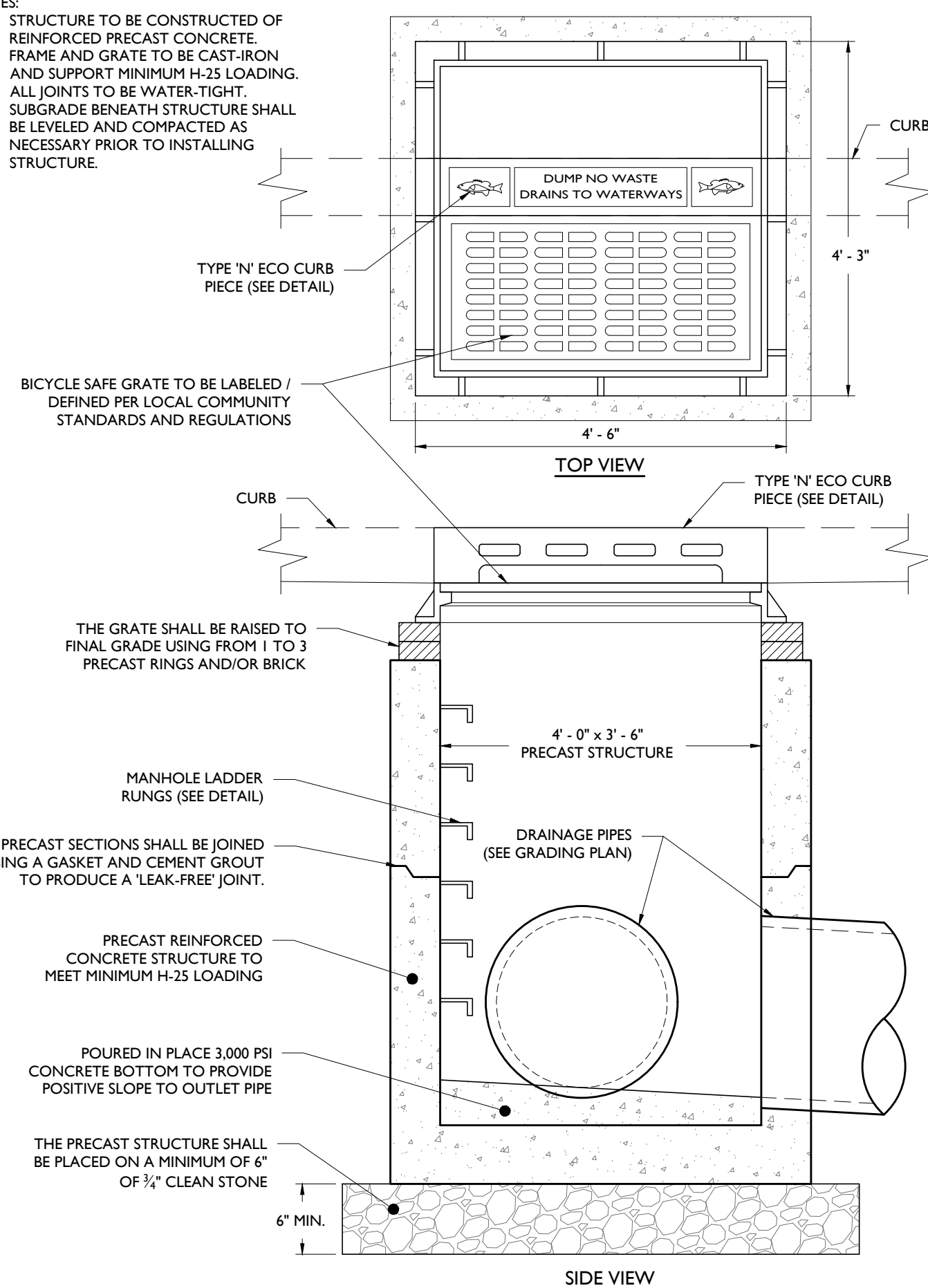


SIGN POST & DATA TABLE

NOT TO SCALE

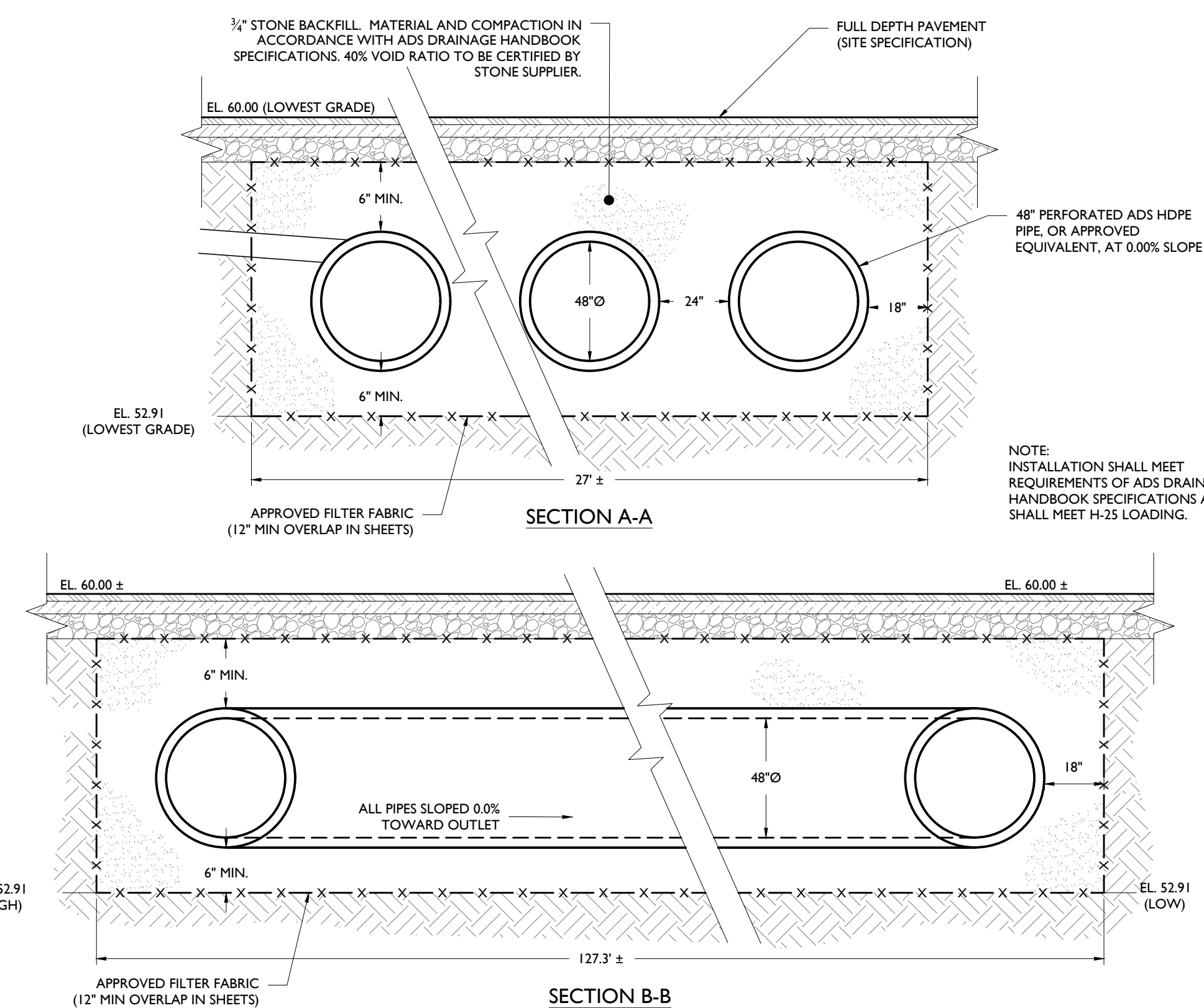
NOTES:

1. STRUCTURE TO BE CONSTRUCTED OF REINFORCED PRECAST CONCRETE.
2. FRAME AND GRATE TO BE CAST-IRON AND SUPPORT MINIMUM H-25 LOADING
3. ALL JOINTS TO BE WATER-TIGHT.
4. SUBGRADE BENEATH STRUCTURE SHALL BE LEVELED AND COMPACTED AS NECESSARY PRIOR TO INSTALLING STRUCTURE.



TYPE 'B' STORM INLET DETAIL

NOT TO SCALE



UNDERGROUND BASIN DETAIL (B-1 & B-2)

NOT TO SCALE

NOTES:

1. INSTALLATION SHALL MEET REQUIREMENTS OF ADS DRAINAGE HANDBOOK SPECIFICATIONS AND SHALL MEET H-25 LOADING
2. CONTRACTOR REQUIRED TO PROVIDE ALL BASIN COMPONENTS INCLUDING ANY PIPE HEADERS, FITTINGS, REDUCERS, WYES, AND INSPECTION PORTS.

[illegible]

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www.stonefieldeng.com

5 Spring Street, Princeton, NJ 08542

Phone 609.362.6900

PRELIMINARY & FINAL MAJOR SITE PLAN

PROPOSED RETAIL STORE

DOLLAR GENERAL

TAX MAP #1.01, BLOCK 5, LOT 2059
2920 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

JEFFREY A. MARTELL, P.E.
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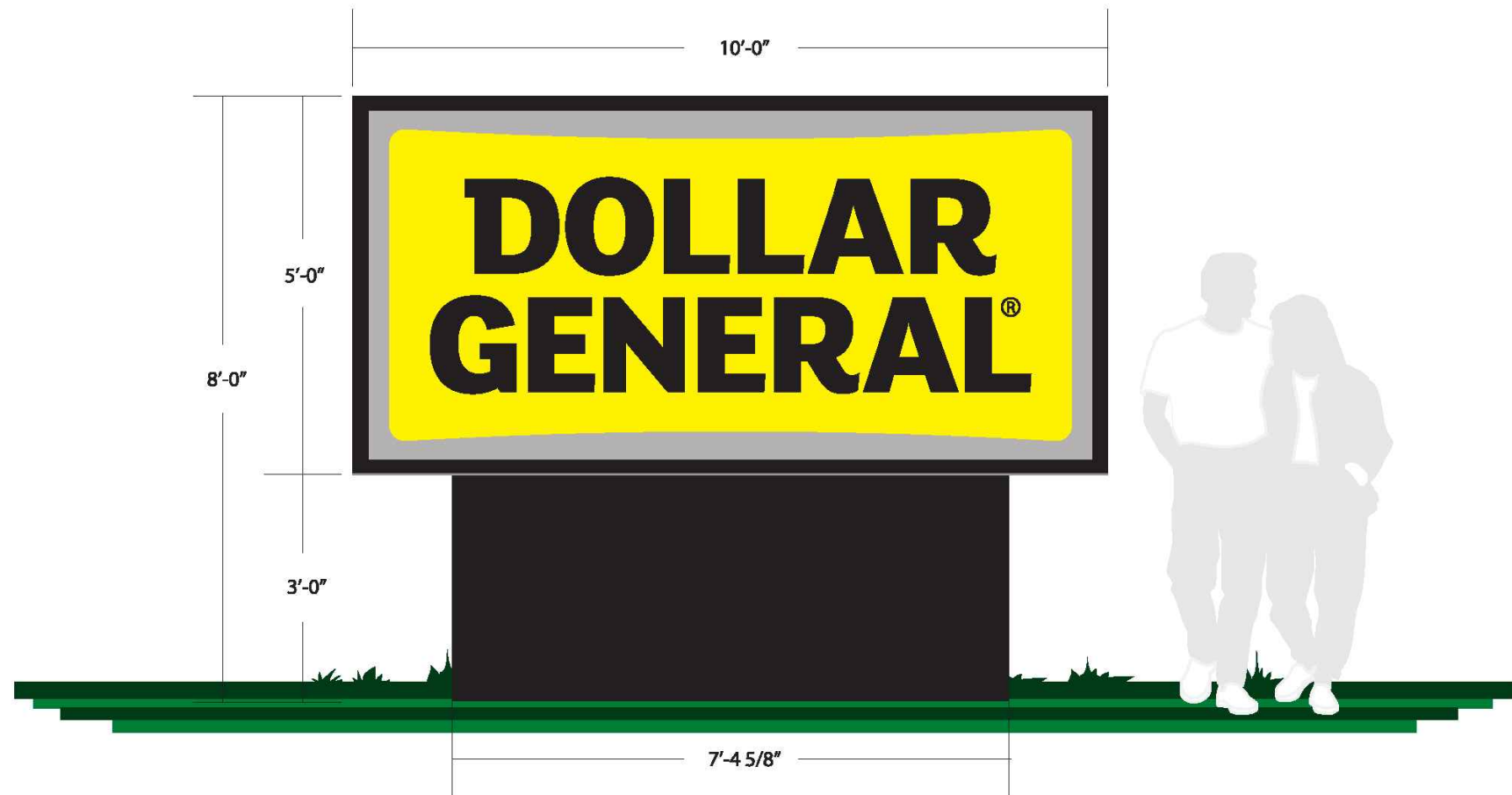
STONEFIELD
engineering & design

SCALE: AS SHOWN	PROJECT ID: Z-18116
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CONSTRUCTION DETAILS

DRAWING:

C-13



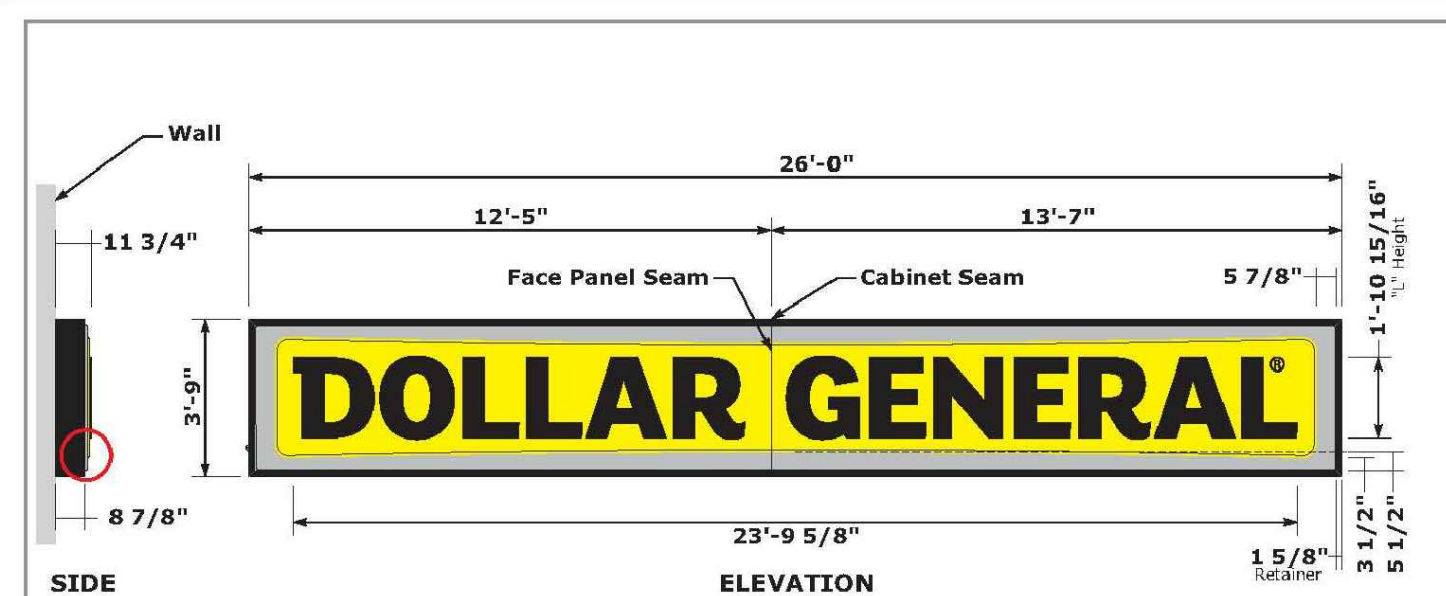
Everbrite		DISCLAIMER: Renderings are for graphic purposes only and not intended for actual construction dimensions. For window requirements, actual dimensions and mounting detail, please refer to engineering specifications and install drawings. These drawings and designs are the exclusive property of Everbrite LLC. Use of, or duplication in any manner without express written permission of Everbrite LLC is prohibited.	
Customer: Dollar General	Project No: 298739	Scale: 1/2"=1'-0"	Description: M50 @ 8' OAH
Date: 8/6/13	Drawn By: RB	Revised:	Revised:
Location & Site No:		Revised:	Revised:
Customer Approval: NOTE: Unless specified by customer, all depth of embossing will be determined by Everbrite Engineering or existing customer specifications on file. Colors and graphics on file will be used unless otherwise specified by customer. Please read carefully, check appropriate box and fax back to Everbrite:		<input type="checkbox"/> Sketch OK as is <input type="checkbox"/> New sketch required	
SIGNATURE		DATE	

DOLLAR GENERAL MONUMENT SIGN

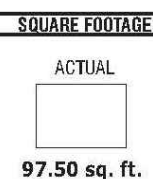
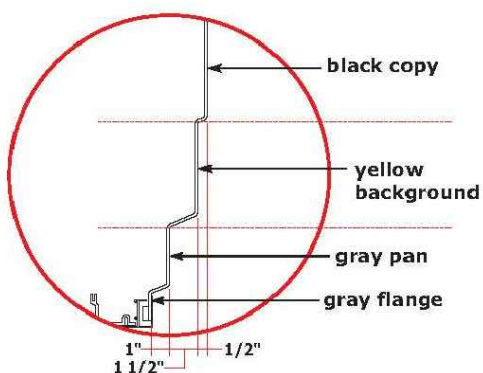
NOT TO SCALE

- NOTES:
- SIGN FACE WILL BE INTERNALLY ILLUMINATED

DOLLAR GENERAL 3'-9" x 26'-0" WALL CABINET



.150" clear UV polycarbonate (Spartech) pan formed face with Black copy over Spraylat C8-2633 Yellow on PMS Cool Gray 5 background. Cabinet to be painted Semi-Gloss Black.



COLOR SPECIFICATIONS	
Yellow:	match Spraylat CR 2633
Brushed Aluminum:	match Spraylat FM 171
Black (Copy):	match Black Polyurethane
Black (Gloss Black (Metal):	match PMS Cool Gray 5
Cool Gray:	match Sherwin Williams SW7062
Rock Bottom Gray:	match PMS 3635
Green:	

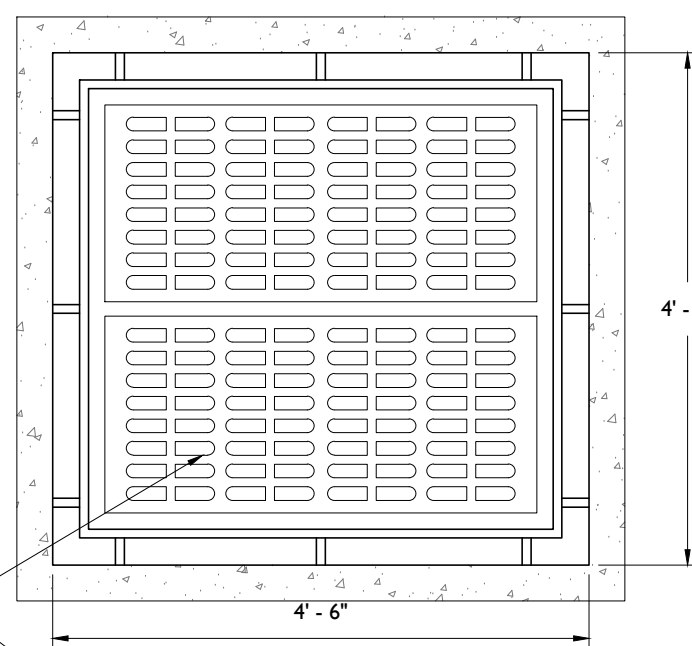
File Name: Dollar General Catechisms 2013	Page: 11 of 33
Project #: 13-0161	Date: 08/06/2013
Approved By:	

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DOLLAR GENERAL WALL SIGN

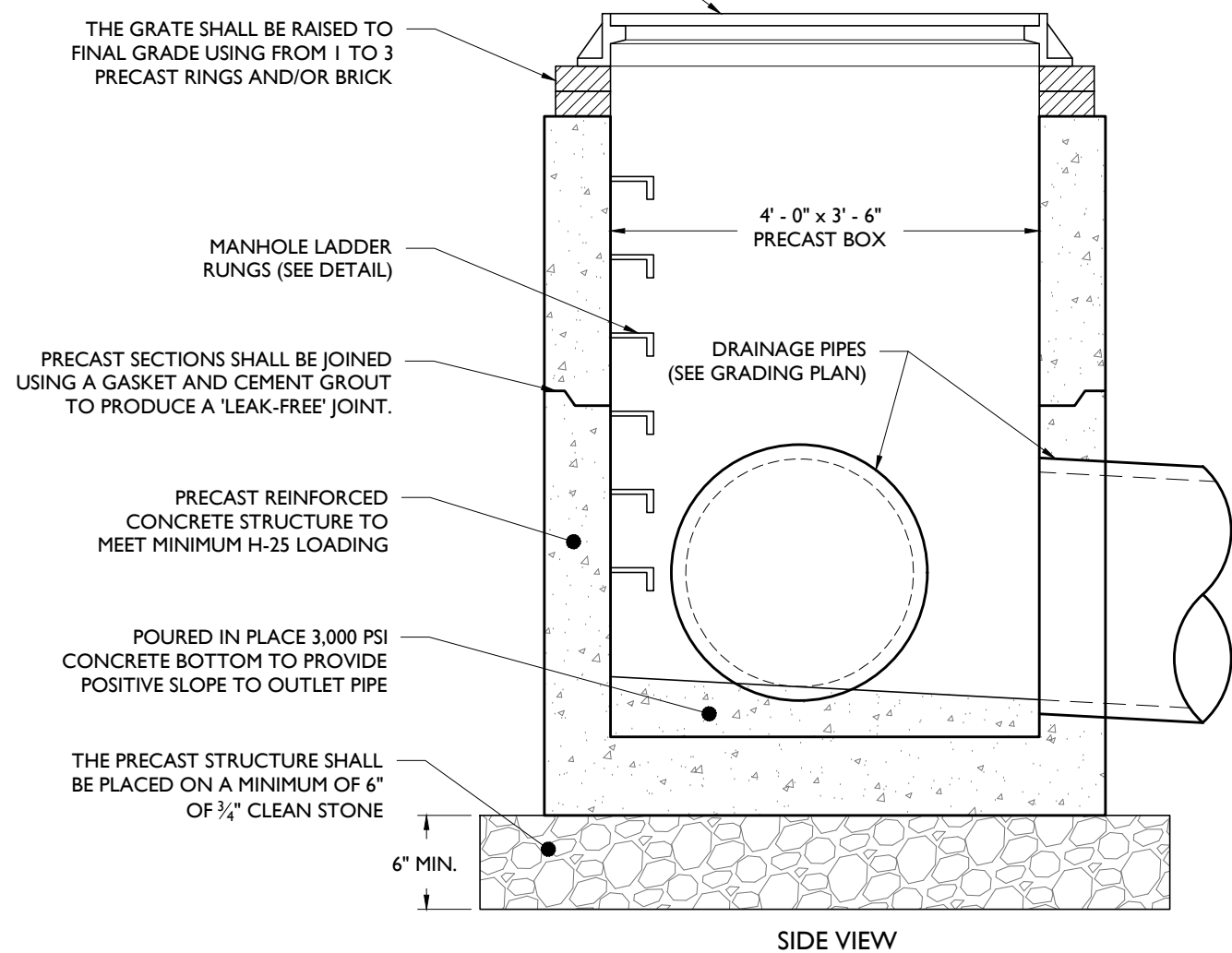
NOT TO SCALE

- NOTES:
- STRUCTURE TO BE CONSTRUCTED OF REINFORCED PRECAST CONCRETE. FRAME AND GRATE TO BE CAST-IRON AND SUPPORT MINIMUM H-25 LOADING.
 - ALL JOINTS TO BE WATER-TIGHT.
 - SUBGRADE BENEATH STRUCTURE SHALL BE LEVELED AND COMPACTED AS NECESSARY PRIOR TO INSTALLING STRUCTURE.



BICYCLE SAFE GRATE TO BE LABELED / DERIVED PER LOCAL COMMUNITY STANDARDS AND REGULATIONS

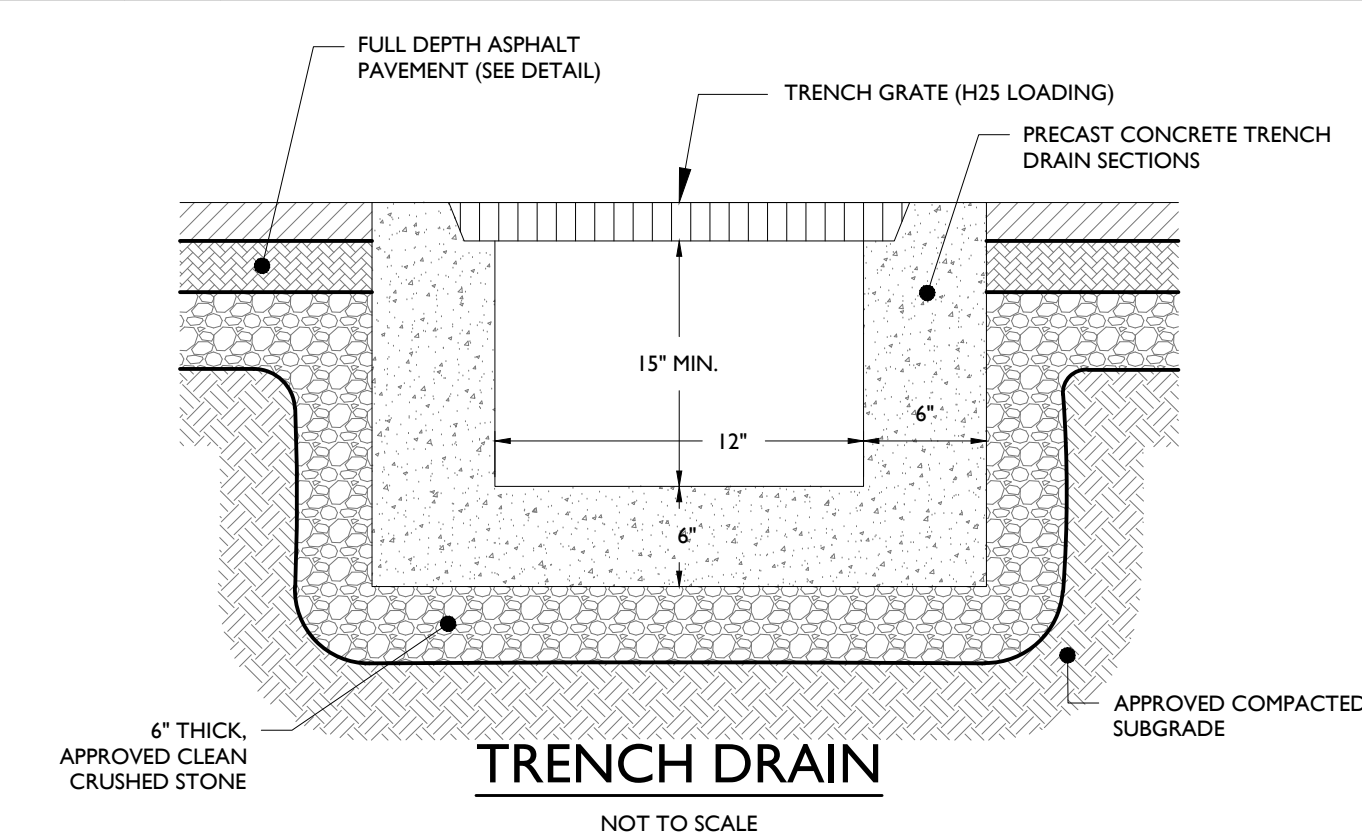
TOP VIEW



SIDE VIEW

TYPE 'E' STORM INLET DETAIL

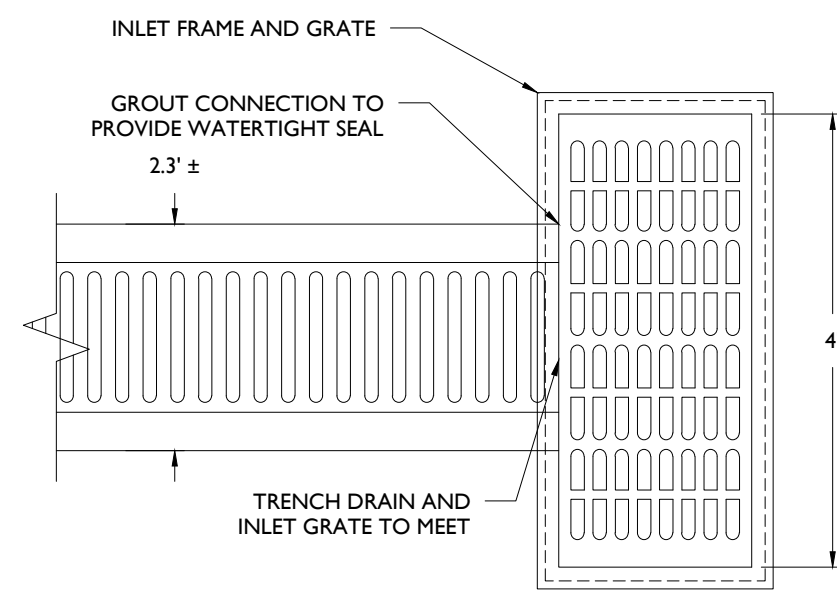
NOT TO SCALE



TRENCH DRAIN

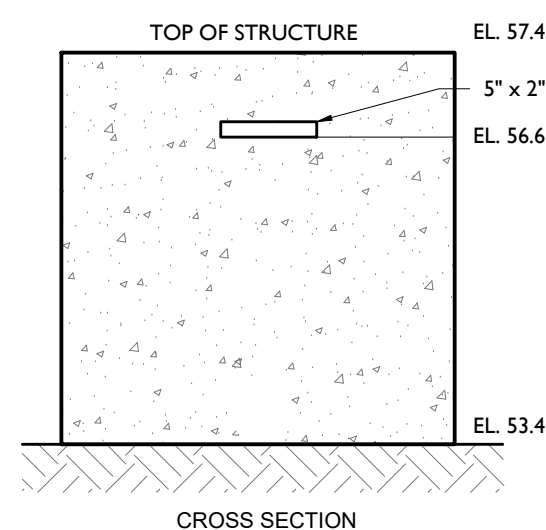
NOT TO SCALE

- NOTE:
- SEE DRAINAGE PLAN FOR DIRECTION OF INTERNAL DRAINAGE FLOWS. INTERNAL DEPTH TO VARY TO PROVIDE 0.3% SLOPE IN DIRECTION NOTED ON PLAN.

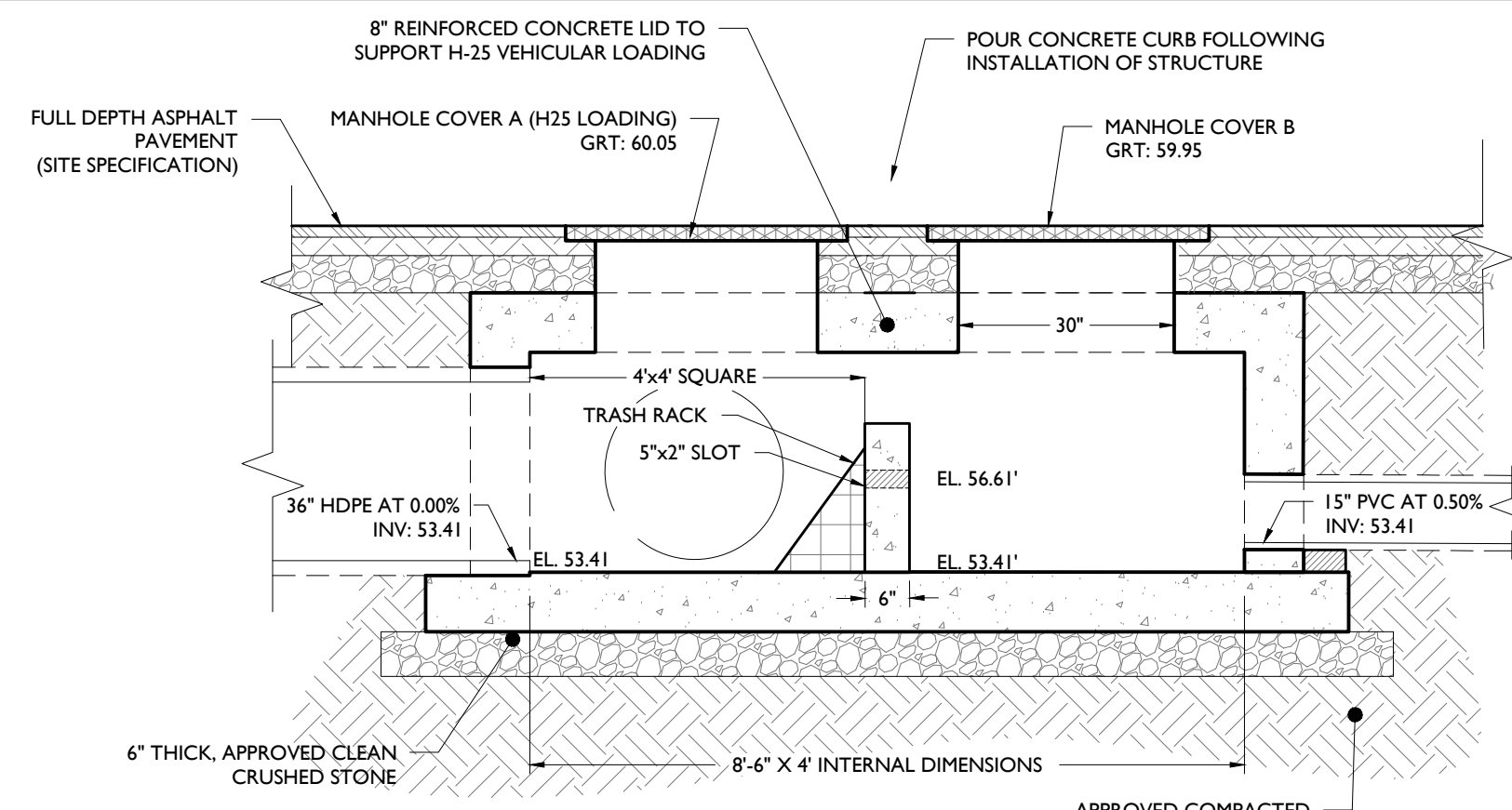


TRENCH DRAIN AND INLET CONNECTION DETAIL

NOT TO SCALE

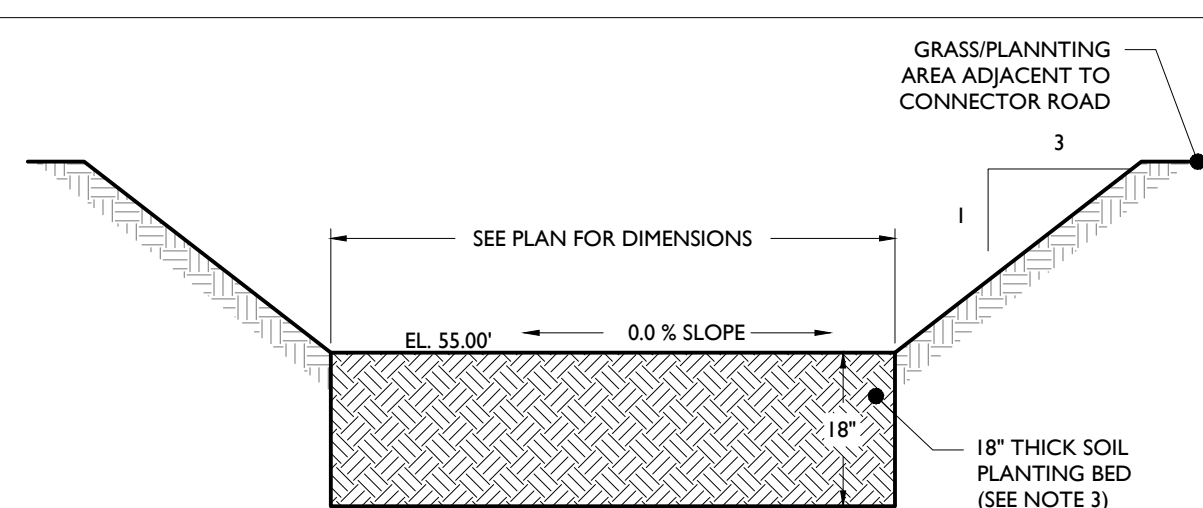


CROSS SECTION



UNDERGROUND OUTLET STRUCTURE (OS-1) DETAIL

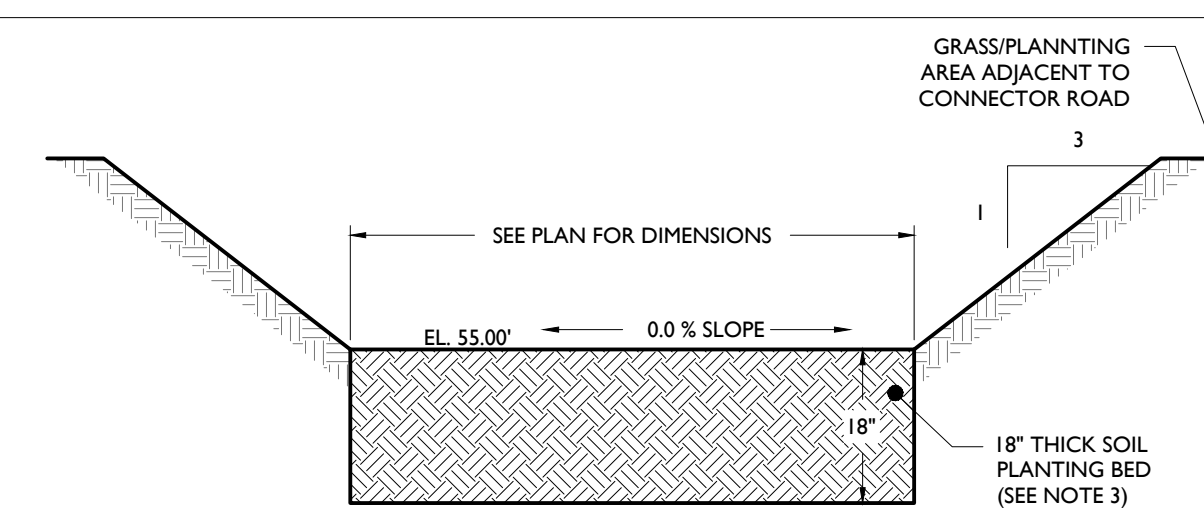
NOT TO SCALE



BIORETENTION BASIN DETAIL (BIO-1)

NOT TO SCALE

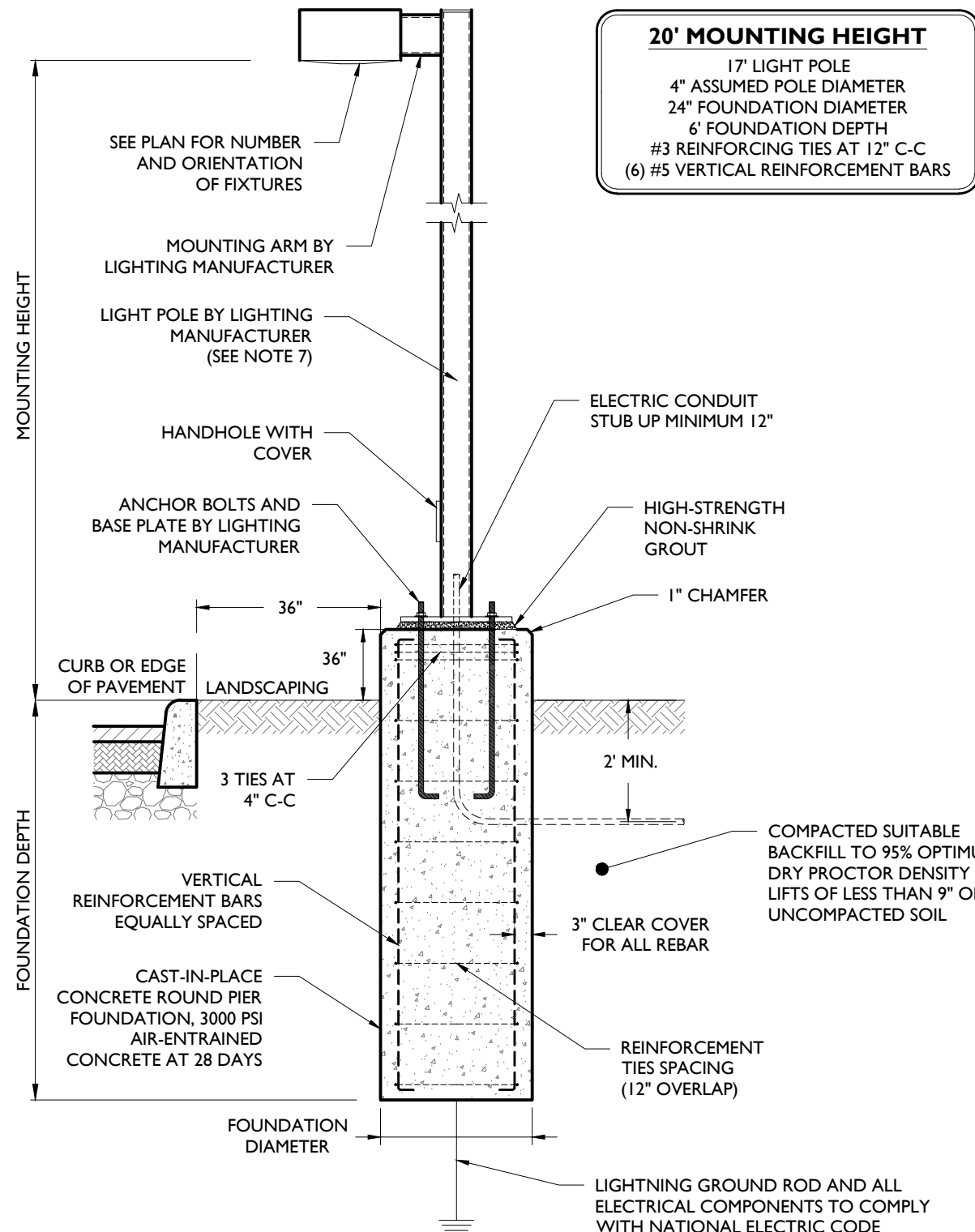
- NOTES:
- BIORETENTION AREA CONSTRUCTION MUST NOT COMPACT SOILS BELOW SOIL BED BOTTOM.
 - THE PLANTING SOIL BED SHALL CONSIST OF THE FOLLOWING MIX: 85%-95% SANDS WITH <25% OF THE SANDS CLASSIFIED AS FINE OR VERY FINE <15% SILT AND CLAY WITH 25-5% CLAY CONTENT. THE MIX SHALL BE AMENDED WITH 5%-7% ORGANICS. pH LEVELS SHALL RANGE FROM 5.5 TO 6.5. THE SOIL MIX MUST BE CERTIFIED BY EITHER THE VENDOR OR A LICENSED PROFESSIONAL ENGINEER DURING ONSITE MIXING.
 - THE PLANTING SOIL BED SHALL BE PLACED IN 12" TO 18" LIFTS.
 - REFER TO THE LANDSCAPING PLANS FOR BIORETENTION AREA PLANTINGS.



BIORETENTION BASIN DETAIL (BIO-2)

NOT TO SCALE

- NOTES:
- BIORETENTION AREA CONSTRUCTION MUST NOT COMPACT SOILS BELOW SOIL BED BOTTOM.
 - THE PLANTING SOIL BED SHALL CONSIST OF THE FOLLOWING MIX: 85%-95% SANDS WITH <25% OF THE SANDS CLASSIFIED AS FINE OR VERY FINE <15% SILT AND CLAY WITH 25-5% CLAY CONTENT. THE MIX SHALL BE AMENDED WITH 5%-7% ORGANICS. pH LEVELS SHALL RANGE FROM 5.5 TO 6.5. THE SOIL MIX MUST BE CERTIFIED BY EITHER THE VENDOR OR A LICENSED PROFESSIONAL ENGINEER DURING ONSITE MIXING.
 - THE PLANTING SOIL BED SHALL BE PLACED IN 12" TO 18" LIFTS.
 - REFER TO THE LANDSCAPING PLANS FOR BIORETENTION AREA PLANTINGS.



LIGHT POLE INSTALLATION DETAIL

NOT TO SCALE

- NOTES:
- MINIMUM SOIL BEARING PRESSURE OF 1500 PSF. SOIL FRICTION ANGLE OF 30 DEGREES, AND SOIL DRY UNIT WEIGHT OF 120 PCF SHALL BE CONFIRMED IN THE FIELD BY A QUALIFIED PROFESSIONAL.
 - CAST-IN-PLACE CONCRETE SHALL BE CONSOLIDATED USING VIBRATOR.
 - ALL REBAR TO BE NEW GRADE 60 STEEL.
 - PRE-CAST PIERS ACCEPTABLE UPON WRITTEN APPROVAL OF SHOP DRAWING BY ENGINEER.
 - CONCRETE TO BE INSTALLED A MINIMUM OF 7 DAYS PRIOR TO INSTALLING LIGHT POLE. POURED CONCRETE MIX REQUIRED TO OBTAIN 80% OF DESIGN STRENGTH PRIOR TO INSTALLING LIGHT POLE.
 - CONCRETE SHALL HAVE A MAXIMUM SLUMP OF 4" (WITHIN 1" TOLERANCE).
 - POLE SHALL BE RATED FOR 10 MPH HIGHER THAN MAXIMUM WIND SPEED 33FT ABOVE GROUND FOR THE AREA BASED ON ANSI/ASCE 7-93.
 - POUR TO BE TERMINATED AT A FORM.
 - WORK SHALL CONFORM TO ACI BEST PRACTICES FOR APPROPRIATE TEMPERATURE AND WEATHER CONDITIONS.
 - CONTRACTOR TO TEMPORARILY SUPPORT ADJACENT SOIL AND STRUCTURES DURING EXCAVATION IF REQUIRED.

PRELIMINARY & FINAL MAJOR SITE PLAN

PROPOSED RETAIL STORE

DOLLAR GENERAL

TAX MAP #L01, BLOCK 5, LOT 2059
2920 HIGHWAY 571
TOWNSHIP OF MANCHESTER
OCEAN COUNTY, NEW JERSEY

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LICENSED PROFESSIONAL ENGINEER

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engineering & design

SCALE: AS SHOWN PROJECT ID: Z-18116

TITLE:

CONSTRUCTION
DETAILS

DRAWING:

C-14

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www.stonefieldeng.com

15 Spring Street, Princeton, NJ 08542
Phone 609.362.6900

DESCRIPTION

DATE

ISSUE

BY

FOR COUNTY SUBMISSION

FOR CLIENT REVIEW

2 12/27/2018 AMB

1 09/25/2018 CJS

Diagram illustrating the cross-section of a concrete curb and joint filler strip. The curb is 8" wide and 1" high. The joint filler strip is 1/2" thick and 1 1/4" high. The curb is labeled "CONCRETE, CLASS B". The joint filler strip is labeled "JOINT SEALER". The pavement surface is labeled "PAVEMENT SURFACE". The depth of the joint filler strip is labeled "DEPTH OF JOINT FILLER STRIP EQUAL TO THE THICKNESS OF THE PAVEMENT LESS 1/2\".

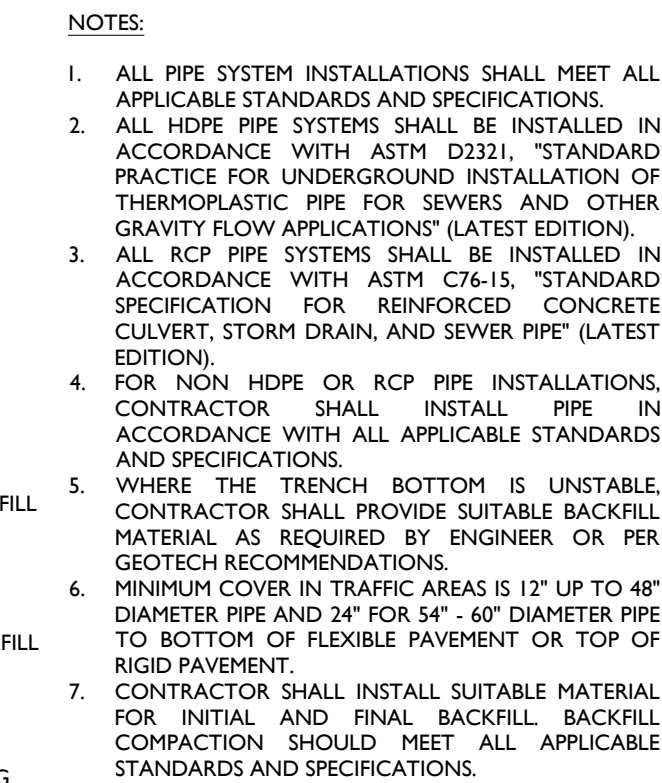
THIS FACE MAY BE CONSTRUCTED ON THE SAME BATTER AS UPPER FACE WHEN CURB IS CONSTRUCTED ADJACENT TO H.M.A. PAVEMENT.

1/2" PREFORMED EXPANSION JOINT FILLER, BITUMINOUS TYPE, TO BE INSTALLED BETWEEN CURB AND CONCRETE PAVEMENT OR CONCRETE BASE COURSE.

CONCRETE VERTICAL CURB

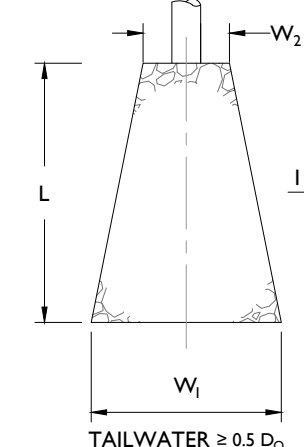


- NOTES:
1. BIOTRENTATION AREA CONSTRUCTION MUST NOT COMPACT SOILS BELOW SOIL BED BOTTOM.
2. THE PLANTING SOIL BED SHALL CONSIST OF THE FOLLOWING MIX: 85%-95% SANDS WITH <2% OF THE SANDS CLASSIFIED AS FINE OR VERY FINE. <1% SILT AND CLAY WITH 2%-5% CLAY CONTENT. THE MIX SHALL BE AMENDED WITH 3%-7% ORGANICS. pH LEVELS SHALL RANGE FROM 5.5 TO 6.5. THE SOIL MIX MUST BE CERTIFIED BY EITHER THE VENDOR OR A LICENSED PROFESSIONAL ENGINEER DURING ONSITE MIXING.
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4. REFER TO THE LANDSCAPING PLANS FOR BIOTRENTATION AREA PLANTINGS.



STORM TRENCH DETAIL

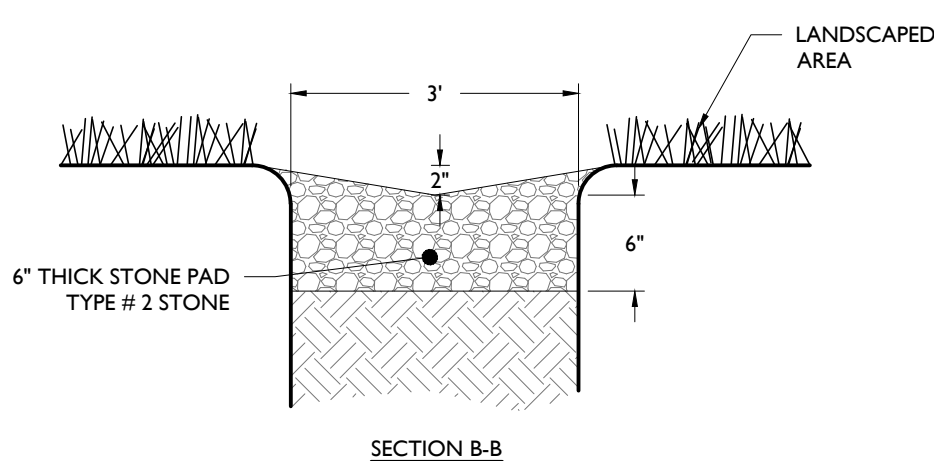
NOT TO SCALE



(*) = MINIMUM APRON THICKNESS SHALL BE TWO TIMES THE D_{50} SIZE FOR THE APRON.

RIP-RAP PAD

NOT TO SCALE



CRUSHED STONE MAT DETAIL

NOT TO SCALE



NOT TO SCALE

- NOTES:
BASIN CONSTRUCTION MUST NOT COMPACT SOILS BELOW BASIN BOTTOM.



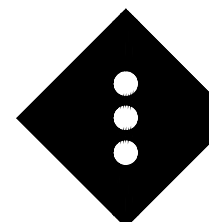
METHOD OF DEPRESSING CURB AT DRIVEWAYS

CELL LIBRARY - F:\CADD STANDARDS\CELL\V8\OC5YMB.CE
CELL NAME - CURBDP

6

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SCALE:	AS SHOWN	PROJECT ID:	Z-18116
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TITLE

COUNTY CONSTRUCTION DETAILS

DRAWING

C-15

Z:\PRINCETON\Z2018\Z-18116 DOLLAR GENERAL - 2920 RIDGEWAY ROAD, MANCHESTER, NJ\CADD\PLOT\DP-11-DETLDWG