MHE
ENGINEERING

TOWN OF NEWBURGH
PLANNING BOARD
TECHNICAL REVIEW COMMENTS

PROJECT NAME:	**FABULOUS EVENTS, INC.**
PROJECT NO.:	**22-23**
PROJECT LOCATION:	**SECTION 34, BLOCK 2, LOT 25.2, 54, 76, 77**
REVIEW DATE:	**30 AUGUST 2023**
MEETING DATE:	**7 SEPTEMBER 2023**
PROJECT REPRESENTATIVE:	**LANC & TULLY – JOHN QUEENAN, P.E.**

1. A Lot Consolidation Plan must be provided as part of the plan set.
2. The response to the previous comment regarding land banking parking identifies that the land bank parking has been removed, however the parking requirements on Sheet 3 of 15 continued to identify 35 land bank parking spaces.
3. The project requires a NYSDOT Permit for access and utilities.
4. Additional information regarding the Tree Protection regulation is required. Comparison of the number of trees removed versus trees to remain must be provided. Calculation for tree planting replacement or fee must be added to the plans.
5. The Lighting Plan does not depict site lighting.
6. Standard parking lot striping for Town of Newburgh should be depicted on the plans. (copy attached)
7. A restraint joint pipe chart must be added to the plans in compliance with Town of Newburgh Water System requirements.
8. Stormwater Pollution Prevention Plan (SWPPP) is under review by this office.
9. The Habitat Report submitted identifies tree clearing restrictions for protection of Bat Species. Notes should be added to the plans identifying the tree clearing restrictions.

Respectfully submitted,

MHE Engineering, D.P.C.

Patrick J. Hines
Principal

PJH/kbw

August 24, 2023

Town of Newburgh Planning Board
Mr. John Ewasutyn - Chairman
Town of Newburgh Planning Board
21 Hudson Valley Professional Plaza
Newburgh, NY 12550

Re: Fabulous Events, Inc.
SBL: 34-2-25.2, 54, 76, 77
Site Plan – NYS Route 32

Dear Chairman Ewasutyn and Planning Board Members:

Enclosed are 11 copies of the following materials for the Board's continued review of the application at the upcoming September 2023 Planning Board Meeting:

- Revised Site Plan entitled "Site Plan Prepared for Fabulous Events, Inc." last revised on August 24, 2023
- Stormwater Pollution Prevention Plan dated August 24, 2023
- Traffic Impact Study entitled "Traffic Impact Study – Fabulous Events – NYS Route 32" dated May 26, 2023 as prepared by Colliers Engineering
- Habitat Study entitled "Threatened and Endangered Species Habitat Suitability Assessment Report – Fabulous Events Site" dated March 31, 2023 as prepared by Ecological Solutions, LLC

MHE Engineering comments dated May 12, 2023

1. A Lot Consolidation Plan which can be filed with the County should be included as part of the set.

   Response: A Lot Consolidation Plan will be provided in a future submission.

2. The driveway access location has been moved further north on Route 32. It is now located on the opposite side of the proposed structure.

   Response: No response necessary.

3. The applicants are proposing "land banking" 16 of the required parking space. This office is aware of a court decision in the RAM Hotel matter which required the required parking must be provided on a site.

Response: The site plan has been revised to remove "land banking". There are now 99 parking spaces being proposed to be constructed, per code.

4. The subsurface sanitary sewer disposal system has been designed based on 18 employees and 10 customers per day at 15 gallons per day, per employee/customer. Use of the facilities should be restricted based on the subsurface sanitary sewer disposal system design to the 18 employees and max 10 customers. Any changes in the intensity of use may impact the subsurface sanitary sewer disposal system.

   Response: Comment noted.

5. Results of deep test pits should be identified on the plans. Location of deep test and percolation testing should be depicted on the plan.

   Response: The results and locations of all soils testing are shown on Sheet 6, "Sewage Disposal System Design & Details"

6. Pre-cast pump chamber detail should identify 1 inch force main to distribution box to maintain positive slope.

   Response: Note 11 of the Pump Chamber Detail specifies positive slope to the distribution box.

7. This office is awaiting submission of an SWPPP for the project.

   Response: The project SWPPP is enclosed.

8. County Planning 239 referral is required, however SWPPP must be included in the referral submission.

   Response: The project SWPPP is enclosed.

9. Town of Newburgh Water and Sewer Notes are required on the plans. (Copies Attached)

   Response: The requested notes have been added to Sheet 4, "Grading and Utility Plan"

10. A bio-retention detail exists on the plans however it appears that underground stormwater treatment is proposed.

    Response: The stormwater design has been further developed. There is now a bio retention area being proposed along the frontage of the site for water quality treatment as well as underground chamber systems for detention.

11. Code Department's comments regarding the refuse area a butting the rear structures should be received.

Response: The refuse area has been relocated as requested.

KALA – Comments dated May 12, 2023

1. Section 172-5 of the new Tree Preservation and Protection Local Law requires a tree survey for the entire site showing location, diameter, and species of all Significant trees on the site, and an identification of all Specimen Trees and Protected Trees. It also requires identification of which Significant Trees and Specimen Trees are to be protected, preserved, or undisturbed, to be removed or disturbed, and exempt from the calculation. Trees which are dead, diseased, or have been damaged must also be identified.

   Response: A tree survey was completed and is provided on Sheet 9, "Tree Removal Plan". A chart has also been provided which includes the trees to be removed. Our office is currently in the process of identifying the tree species.

2. Trees that are inventoried should be tagged with metal tags and numbered according to the inventory. Numbered trees and corresponding inventory must be shown on the site plan. Please use aluminum nails when attaching metal tags to trees.

   Response: All trees were tagged with metal tags and numbered as requested.

3. Could four or five parking spaces on the northeast side of the rear parking area be relocated so the entire site development can move 5' or so away from Route 32 to allow more space for screening and landscaping in the front of the site? Setback lines are not shown on any plan so it is difficult to determine if this is a possibility.

   Response: The site layout has been moderately revised to provide a larger area for screening and landscaping in front of the line. Setback lines are shown on Sheet 3, "Site Plan".

4. Can the sidewalk in front of the building be removed? This will allow some space for landscaping.

   Response: The sidewalk in front of the building cannot be removed as it is necessary for pedestrian access to the office.

5. Will curbs be installed to help protect landscaping between the driveways and the building?

   Response: Yes, curbs are proposed.

6. Will trucks enter from Crab Apple Court? If so, could the sidewalk on the side of the building be removed? There will be minimal pedestrian traffic as there are not many parking spaces. At the very least, please move the sidewalk so it runs alongside the drive to eliminate narrow planting strips that will be difficult to maintain and to establish desirable vegetation.

Response: No, Crab Apple Court will only be used for emergency vehicles. A gate is proposed to facilitate this.

7. A stone wall exists on site. These stones could be salvaged and a new stone wall built along the front of the property to be in keeping with other commercial projects built in the corridor. The stone wall should be a minimum of 30'. This will be especially important between the property line and the proposed stormwater area since there is minimal space for planting, even if the site is moved 5'.

 Response: The front of the site has been revised to allow for about 80 feet between NYS Route 32 and the front of the proposed retaining wall. There are additional plantings being proposed within the bio retention area. Screening will be provided with these plantings and the proposed retaining wall.

8. Even if the site development is moved back and sidewalks removed, there is little space for landscaping. The building will be very visible, making architecture of the building a priority to create an aesthetically pleasing site.

 Response: As per the previous comments, the site has been revised in order to provide a practical landscape buffer. A Landscape Plan has been prepared and included in the Site Plan.

9. Large shade trees should be planted along the front and side property lines to provide screening and softening of the building. They could be planted like a forest, as close together as 10' and staggered. Native trees should be chosen. Where overhead utilities exist, trees will have to be a species that matures to a height lower than the wires. The objective is to provide a high functioning aviary and pollinator habitat, soften the views of the building, provide cooling to paved areas, and help the project blend in with existing deciduous forest landscapes.

 Response: A Landscape Plan has been prepared and included in the Site Plan as Sheet 10 of 15.

10. Town of Newburgh Design Guidelines, under Section D, Commercial Area Design, Subsection 1 says the following:
 Provide natura/landscape buffers, in addition to walls, and/or fences to soften the visual impact between parking areas, commercial buildings, street frontages, and adjacent properties.

Please show natural landscape buffers along rear and side property lines in accordance with the Design Guidelines.

 Response: A Landscape Plan has been prepared and included in the Site Plan as Sheet 10 of 15. Buffers have been provided along rear and side property lines in accordance with the Design Guidelines.

If you should require any additional information or have any questions, please do not hesitate to contact our office.

Very truly yours,

Lanc & Tully, P.C.

John Queenan, P.E.

Colliers
Engineering & Design

Traffic Impact Study

May 26, 2023

Fabulous Events – NYS Route 32
Town of Newburgh, Orange County, New York

Prepared for:

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Project No. 23005442A

Table of contents

Appendices

I. Introduction

A. Project Description and Location

(Figure No. 1)

This report has been prepared to evaluate the potential traffic impacts associated with the proposed Fabulous Events Rentals development ("the Project"), which is planned to be developed on the property located on the north side of NYS Route 32 (N. Plank Road) west of Crab Apple Court in the Town of Newburgh, Orange County, New York. The site is proposed to consist of an approximately 56,000 sq.ft. building that will house the Fabulous Events party rental company. The building will include 8,000 sq.ft of office space, a 7,000 sq. ft. showroom as well as a repair area, staging area, and storage space. The Applicant has indicated that 18-20 employees are anticipated to work at the facility Monday through Friday. The facility will be closed on Saturdays and customers will be accommodated on Sundays by appointment only. As shown on Figure No. 1, access to the development is proposed via a driveway connection from NYS Route 32 and an emergency driveway connection via Crab Apple Court.

A Design Year of 2026 has been utilized in completing the traffic analysis in order to evaluate future traffic conditions associated with this proposed development.

B. Scope of Study

This study has been prepared to identify current and future traffic operating conditions on the surrounding roadway network and to assess the potential traffic impacts of the Project.

All available traffic count data for the study area intersections were obtained from previous reports prepared by our office. These data were supplemented with new traffic counts collected by representatives of Colliers Engineering & Design CT, P.C. These data were also compared to count data obtained from the New York State Department of Transportation (NYSDOT). Together these data were utilized to establish the 2023 Existing Traffic Volumes representing existing traffic conditions in the vicinity of the site.

The 2023 Existing Traffic Volumes were then projected to the 2026 Design Year to take into account background traffic growth. In addition, traffic for other specific potential or approved developments in the area were estimated and then added to the Projected Traffic Volumes to obtain the 2026 No-Build Traffic Volumes.

Estimates were then made of the potential traffic that the proposed development would generate during each of the peak hours (see Section III-C for further discussion). The resulting site generated traffic volumes were then added to the roadway system and combined with the 2026 No-Build Traffic Volumes resulting in the 2026 Build Traffic Volumes.

The Existing, No-Build and Build Traffic Volumes were then compared to roadway capacities based on the procedures from the Highway Capacity Manual to determine existing and future Levels of Service and operating conditions. Recommendations for improvements were made where necessary to serve the existing and/or future traffic volumes.

II. Existing Roadway and Traffic Descriptions

A. Description of Existing Roadways

As shown on Figure No. 1, the Project will be accessed from NYS Route 32 via a single driveway connection located approximately 700 ft. northwest of Crab Apple Court. The following is a brief description of the roadways located within the study area. In addition, Section III-F provides a further description of the existing geometrics, traffic control and a summary of the existing and future Levels of Service and any recommended improvements for each of the study area intersections. Appendix “D” contains copies of the capacity analyses which indicate the existing geometrics (including lane widths) and other characteristics for each of the individual intersections studied.

1. NYS Route 32

NYS Route 32 is classified as an urban minor arterial roadway under the jurisdiction of the New York State Department of Transportation (NYSDOT). The roadway traverses in a generally northwest/southeast direction until its intersection with NYS Route 300 where it turns in a northerly direction. In the area of the site, NYS Route 32 is a two-lane roadway with a double yellow centerline, white edge (fog) line, and narrow paved shoulders. The posted speed limit in this area is 45 MPH.

2. NYS Route 300

NYS Route 300 is classified as an urban minor arterial roadway under the jurisdiction of the NYSDOT and traverses in a generally north/south direction until its intersection with NYS Route 32 where it turns in a westerly direction. In the area of the site, NYS Route 300 is a two-lane roadway with a double yellow centerline, white edge (fog) line, and narrow paved shoulders. The roadway has a posted speed limit of 45 MPH.

3. New Road

New Road is a two-lane roadway that traverses in a generally north/south direction. It begins at its intersection with NYS Route 32 and terminates to the north at its intersection with Fostertown Road. New Road has a double yellow centerline, white edge (fog) line, and narrow paved shoulders in some areas. The roadway has a posted speed limit of 30 MPH.

4. Crab Apple Court

Crab Apple Court is a two-lane unpaved roadway. There is no posted speed limit on this roadway, and it meets an unsignalized T-intersection with NYS Route 32.

B. 2023 Existing Traffic Volumes

(Figures No. 2 and 3, Appendix E)

Manual turning movement traffic counts were collected by representatives of Colliers Engineering & Design CT, P.C. on Wednesday, March 15, 2023 and Thursday, April 20, 2023, for the AM and PM Peak Hours to determine the existing traffic volume conditions at the study area intersections. The manual turning movement traffic counts were then compared to traffic volume data from previous traffic studies conducted by our office and to traffic volume data available from NYSDOT for the NYS Route 32 and NYS Route 300 corridors. Based on this information, the 2023 Existing Traffic Volumes were established for the Weekday Peak AM and Weekday Peak PM Hours at the following study area intersections.

- NYS Route 32 and Crab Apple Court
- NYS Route 32 and NYS Route 300
- NYS Route 32 and New Road

Based upon a review of the traffic counts, the peak hours were generally identified as follows:

- Weekday Peak AM Hour 7:30 AM – 8:30 AM
- Weekday Peak PM Hour 4:00 PM – 5:00 PM

The resulting 2023 Existing Traffic Volumes are shown on Figures No. 2 and 3 for the Weekday Peak AM Hour and Weekday Peak PM Hour, respectively. The relevant traffic volume data utilized to determine the 2023 Existing Traffic Volumes are provided in Appendix E for reference.

III. Evaluation of Future Traffic Conditions

A. 2026 No-Build Traffic Volumes

(Figure No. 4 through 9, Appendix F)

The 2023 Existing Traffic Volumes were increased by a growth factor of 1.0% per year to account for general background growth resulting in the 2026 Projected Traffic Volumes which are shown on Figures No. 4 and 5 for each of the Peak Hours. In addition, traffic from other specific potential developments in the area as identified by the Town of Goshen were identified. These potential other developments are summarized in the below table.

Summary of Potential Other Development Projects

Project Name	Newburgh Project No.	Project Location	Project Proposal	Traffic Study
Gardner Ridge	2002-029	Gardnertown Road at Creek Run Road (74-1-4.12)	144 Units Multi-Family Residential	CED Study 12/8/2021 See Appendix F
Polo Club	2018-121	1582 Route 300	246 Units Multi-Family Residential	CED Study 12/9/2019 See Appendix F
Monarch Woods	2019-028	Monarch Drive at NYS Route 52 (103-7-18)	102 Units Senior Housing	DTS Provident Study 12/17/2021 See Appendix F
Farrell Industrial Park	2020-016	NYS Route 300 north of Jeanne Drive (34-2-51)	290,000 sq. ft. Warehouse/ Industrial Park	JMC Study 12/3/2020 See Appendix F
Route 300 Matrix Warehouse (Matrix Logistics Center)	2020-017	Former Ridge Project Site	1,130,200 sq. ft. Warehouse	Langan TIS 5/14/2021 & Supplemental Analysis 8/18/2021 See Appendix F
Elm Farm	2021-015	Fostertown Road west of Wells Road (39-1-12.44)	52 Lot Subdivision - Single Family Homes	DTS Provident Study 1/21/2022 See Appendix F
O'Donnell	2022-001	NYS Route 52 east of Monarch Drive (47-1-48)	5,200 sq. ft. Commercial	No TIS Assumed part of background growth
WellNow	2022-011	1425 Route 300 (60-3-32.11)"	3,515 sq. ft. Urgent Care	Under construction. Assumed part of background growth
SAM Newburgh	2022-020	1420 Route 300 (60-3-22.222)"	85,000 sq. ft. Self Storage	No TIS Assumed part of background growth

Project Name	Newburgh Project No.	Project Location	Project Proposal	Traffic Study
32 Express	2022-021	689 Route 32 (4-2-6)"	4,320 sq. ft. Convenience Store & Fueling Facility	No TIS Assumed part of background growth
MKJ Park Warehouse	2022-023	N. Plank Road (Route 32)	166,000 sq. ft. Warehouse	CED 4/6/2023 Traffic Study See Appendix F
The Enclave	2022-025	1565 Route 300	247 Units Multi-Family Residential	CED 11/11/2022 Initial Study See Appendix F
Hillside Land Development Warehouse	2022-027	Jeane Drive (34-2-24/66)"	26,578 sq. ft. Warehouse	ITE Estimates See Appendix F

The specific backup data utilized to determine the traffic volumes associated with each of the other developments listed above is provided in Appendix F for reference. The resulting total traffic volumes through the study area intersections associated with these other developments are shown on Figures No. 6 and 7 for each of the peak hours. These volumes were added to the 2026 Projected Traffic Volumes resulting in the 2026 No-Build Traffic Volumes which are shown on Figures No. 8 and 9 for the Weekday Peak AM and Weekday Peak PM Hours, respectively.

B. Site Generated Traffic Volumes

(Tables No. 1)

The Institute of Transportation Engineers (ITE) report entitled "Trip Generation", 11th Edition, 2021 does not provide trip generation data for a party rental facility comparable to the proposed use. Based on our review of the use and the anticipated number of employees and operation of the facility, it was determined that the most similar use for which ITE data is provided is ITE Land Use 150- Warehousing. Estimates of the amount of traffic to be generated by the Project during each of the peak hours were therefore developed based on the ITE data for Land Use Code 150 as summarized in Table No. 1, contained in Appendix B. The table summarizes the hourly trip generation rates and corresponding site generated traffic volumes for the Weekday Peak AM and Weekday Peak PM Hours.

C. Arrival/Departure Distribution

(Figures No. 10 and 11)

It was necessary to establish arrival and departure distributions to assign the site generated traffic volumes to the surrounding roadway network. Based on a review of the Existing Traffic Volumes and the expected travel patterns on the surrounding roadway network, the distributions were identified. The anticipated arrival and departure distributions are shown on Figures No. 10 and 11, respectively.

D. 2026 Build Conditions Traffic Volumes

(Figures No. 12 through 15)

The site generated traffic volumes contained in Table No. 1 were assigned to the roadway network based on the arrival and departure distributions referenced above. The resulting site generated traffic volumes for each of the study area intersections are shown on Figures No. 12 and 13 for each of the peak hours, respectively. The site generated traffic volumes were then added to the 2026 No-Build Traffic Volumes to obtain the 2026 Build Traffic Volumes. The resulting 2026 Build Traffic Volumes are shown on Figures No. 14 and 15 for the Weekday Peak AM and Weekday Peak PM Hours, respectively.

E. Description of Analysis Procedures

It was necessary to perform capacity analyses in order to determine existing and future traffic operating conditions at the study area intersections. The following is a brief description of the analysis method utilized in this report:

1. **Signalized Intersection Capacity Analysis**

   The capacity analysis for a signalized intersection was performed in accordance with the procedures described in the Highway Capacity Manual, 6th Edition, dated 2016, published by the Transportation Research Board. The terminology used in identifying traffic flow conditions is Levels of Service. A Level of Service "A" represents the best condition and a Level of Service "F" represents the worst condition. A Level of Service "C" is generally used as a design standard while a Level of Service "D" is acceptable during peak periods. A Level of Service "E" represents an operation near capacity. In order to identify an intersection's Level of Service, the average amount of vehicle delay is computed for each approach to the intersection as well as for the overall intersection.

2. **Unsignalized Intersection Capacity Analysis**

   The unsignalized intersection capacity analysis method utilized in this report was also performed in accordance with the procedures described in the Highway Capacity Manual, 6th Edition, dated 2016. The procedure is based on total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. The average total delay for any particular critical movement is a function of the service rate or capacity of the approach and the degree of saturation. In order to identify the Level of Service, the average amount of vehicle delay is computed for each critical movement to the intersection.

Additional information concerning signalized and unsignalized Levels of Service can be found in Appendix "C" of this report.

F. Results of Analysis

(Table No. 2 and Appendix D)

Capacity analyses which take into consideration appropriate truck percentages, pedestrian activity, roadway grades and other factors were performed at the study area intersections utilizing the procedures described above to determine the Levels of Service and average vehicle delays. Summarized below are a description of the existing geometrics, traffic control and a summary of the existing and future Levels of Service as well as any recommended improvements.

Table No. 2 summarizes the results of the capacity analysis for the 2023 Existing, 2026 No-Build and 2026 Build Conditions. Appendix D contains copies of the capacity analysis which also indicate the existing geometrics (including lane widths) and other characteristics for each of the individual intersections studied.

1. NYS Route 32 and NYS Route 300 (NYSDOT Signal No. O-34)

NYS Route 32 and NYS Route 300 intersect at a signalized full movement intersection. NYS Route 32 forms the westbound and southbound approaches to the intersection, while NYS Route 300 forms the northbound and eastbound approaches to the intersection. The NYS Route 32 westbound approach consists of a single through lane with 250 ft. left turn lane and 250 ft. separate right turn lane. The southbound approach consists of a shared through/right turn lane and an approximately 240 ft. long separate left turn lane. The NYS Route 300 northbound approach consists of a shared through/right turn lane and an approximately 250 ft. long separate left turn lane. The NYS Route 300 eastbound approach consists of a shared through/right turn lane and an approximately 100 ft. long separate left turn lane.

Capacity analysis was conducted for this intersection utilizing the 2023 Existing Traffic Volumes. The analysis results indicate that the intersection is currently operating at an overall Level of Service “C” during the AM and PM Peak Hours.

The capacity analysis was recomputed using the 2026 No-Build and Build Traffic volumes. These results indicate that the intersection is expected to experience Levels of Service “C” during the AM Peak Hour and Level of Service “D” during PM Peak Hours under future conditions.

It is noted that the northbound approach experiences some delays during the PM Peak Hour under existing conditions, which are projected to be exacerbated under future No-Build and Build conditions as a result of the cumulative traffic growth from all developments proposed in the area. The capacity analysis was reviewed further to identify traffic signal timing modifications that could be implemented to improve the operation of the northbound approach and the overall intersection. These traffic signal timing modifications are recommended for the intersection of NYS Route 300 at NYS Route 32 regardless of the proposed Project and can be presented to and coordinated with NYSDOT as part of the Highway Work Permit application and review process.

2. **NYS Route 32 and New Road/Paffendorf Drive**

   New Road intersects NYS Route 32 at an offset four-way unsignalized intersection with Paffendorf Drive. All approaches to the intersection consist of one lane and the New Road and Paffendorf Drive approaches are each controlled by a "Stop" sign.

   Capacity analysis was conducted for this intersection utilizing the 2023 Existing Traffic Volumes. The analysis results indicate that the intersection is currently operating at an overall Level of Service "C" or better during the AM and PM Peak Hours.

   The capacity analysis was recomputed using the 2026 No-Build and Build Traffic volumes. These results indicate that the intersection is expected to experience Levels of Service "D" or better during the AM and PM Peak Hours under future conditions.

3. **NYS Route 32 and Proposed Site Access**

   The Project site is proposed to be access via a new driveway connection to NYS Route 32 located approximately 700 ft. northwest of Crab Apple Court. The site access driveway is proposed to consist of an approximately 26 ft. wide roadway accommodating all entering and exiting traffic to and from the site. The intersection will be an unsignalized intersection with the site access approach controlled by a "Stop" sign. A NYSDOT Highway Work Permit will be required for the construction of the site access connection to the state highway.

   The capacity analysis was computed using the 2026 No-Build and Build Traffic volumes. These results indicate that the intersection is expected to experience Levels of Service "C" or better during the AM and PM Peak Hours under future conditions.

   Sight distance for the proposed driveway location were reviewed based on NYSDOT criteria for Stopping and Intersection Sight Distance. In order to assess the sight distances at the proposed sight access location, field measurements of the existing available sight distance were conducted by our office along with the collection of traffic volume, speed and vehicle classification data along N. Plank Road. The traffic data was collected by the use of an Automatic Traffic Recorder (ATR) machine installed along N. Plank Road in the vicinity of the proposed access driveway for the period beginning Monday February 13, 2023, through Friday February 17, 2023. Based on the speed data the 85th Percentile operating speeds along N. Plank Road are 51 MPH in the southeast-bound direction and 52 MPH in the northwest-bound direction. It should be noted that N. Plank Road has a posted speed limit of 45 MPH in the vicinity of the Site.

   Based on the observed speeds, the minimum required stopping sight distance and recommended intersection sight distance for the proposed site access intersection as identified by the American Association of State Highway Transportation Officials (AASHTO) and the New York State Department of Transportation (NYSDOT), are identified below for vehicles entering and exiting the Site. The measured available sight distances are also summarized in the table below for comparison to the AASHTO and NYSDOT requirements.

As summarized in Exhibit No. 1 below the required stopping and intersection sight distances will be exceeded for the proposed site access driveway location for all vehicle movements at the driveway.

Exhibit No. 1 – AASHTO Sight Distances

Sight Line		Measured Available Sight Distance (Feet)	AASHTO Sight Distances	
			Stopping Sight Distance (Feet)	Intersection Sight Distance (Feet)
Site Plan Site Access Location				
Left Turn from Site Access	Looking Left (Southeast)	890	451	574
	Looking Right (Northwest)	1000±	437	563
Left Turn from Major Road	Left Turn Entry (Ahead)	890	451	413
	Left Turn Entry (Rear End)	1000±	437	---

Notes:

1. Stopping Sight Distances have been adjusted per AASHTO Equations 3-2 and 3-3 for observed 85th Percentile operating speeds as specified in the Green Book 7th Edition.
2. Intersection Sight Distances for both passenger cars and combination trucks have been adjusted per AASHTO Equations 9-1 and appropriate time gaps for each movement type as specified in the Green Book 7th Edition.

4. NYS Route 32 and Crab Apple Court

NYS Route 32 and Crab Apple Court intersect at a “T” type intersection. All approaches consist of one lane. There is no signed traffic control at this intersection; however, vehicles exiting Crab Apple Court are required to stop before entering the State highway according to State law.

Capacity analysis was conducted for this intersection utilizing the 2023 Existing Traffic Volumes. The analysis results indicate that the intersection is currently operating at an overall Level of Service “C” during the AM and PM Peak Hours.

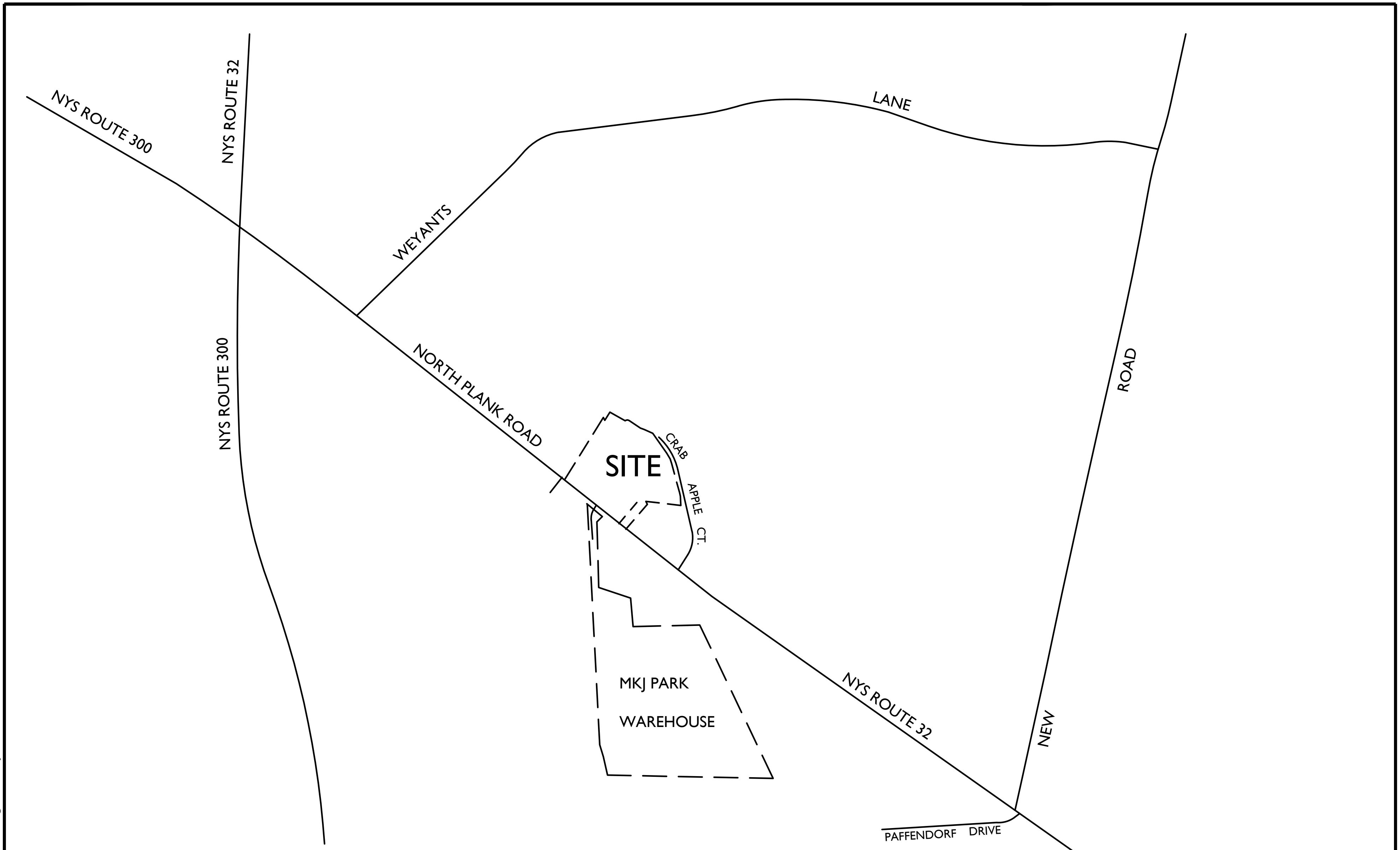
The capacity analysis was recomputed using the 2026 No-Build and Build Traffic volumes. These results indicate that the intersection is expected to experience Levels of Service “C” during the AM and PM Peak Hours under future conditions.

IV. Summary and Conclusion

Based on the above analysis, similar Levels of Service and delays will be experienced at the area intersections under the future No-Build and future Build Conditions. Thus, the proposed Project development traffic is not expected to cause any significant impacts in overall traffic operations. As identified herein, some traffic signal timing modifications are recommended for the intersection of NYS Route 300 at NYS Route 32 regardless of the proposed Project. These traffic signal timing modifications can be recommended to and coordinated with NYSDOT as part of the Highway Work Permit application and review process. Furthermore, a Highway Work Permit will be required to be obtained by the Applicant for the construction of the Site Access as well as any other proposed modifications within the State right-of-way.

Traffic Impact Study

Appendix A | Traffic Figures



NOTE: LINE DIAGRAM NOT TO SCALE

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FABULOUS EVENTS
NEWBURGH

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TRAFFIC IMPACT STUDY

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	4/25/23	R.H.	R.G.D.

PROJECT NUMBER:	DRAWING NAME:
23005442A	230515RD_FIGURE

SHEET TITLE: FIELD BOOK: XX PAGE: XX

SITE LOCATION MAP

SHEET NUMBER:
1

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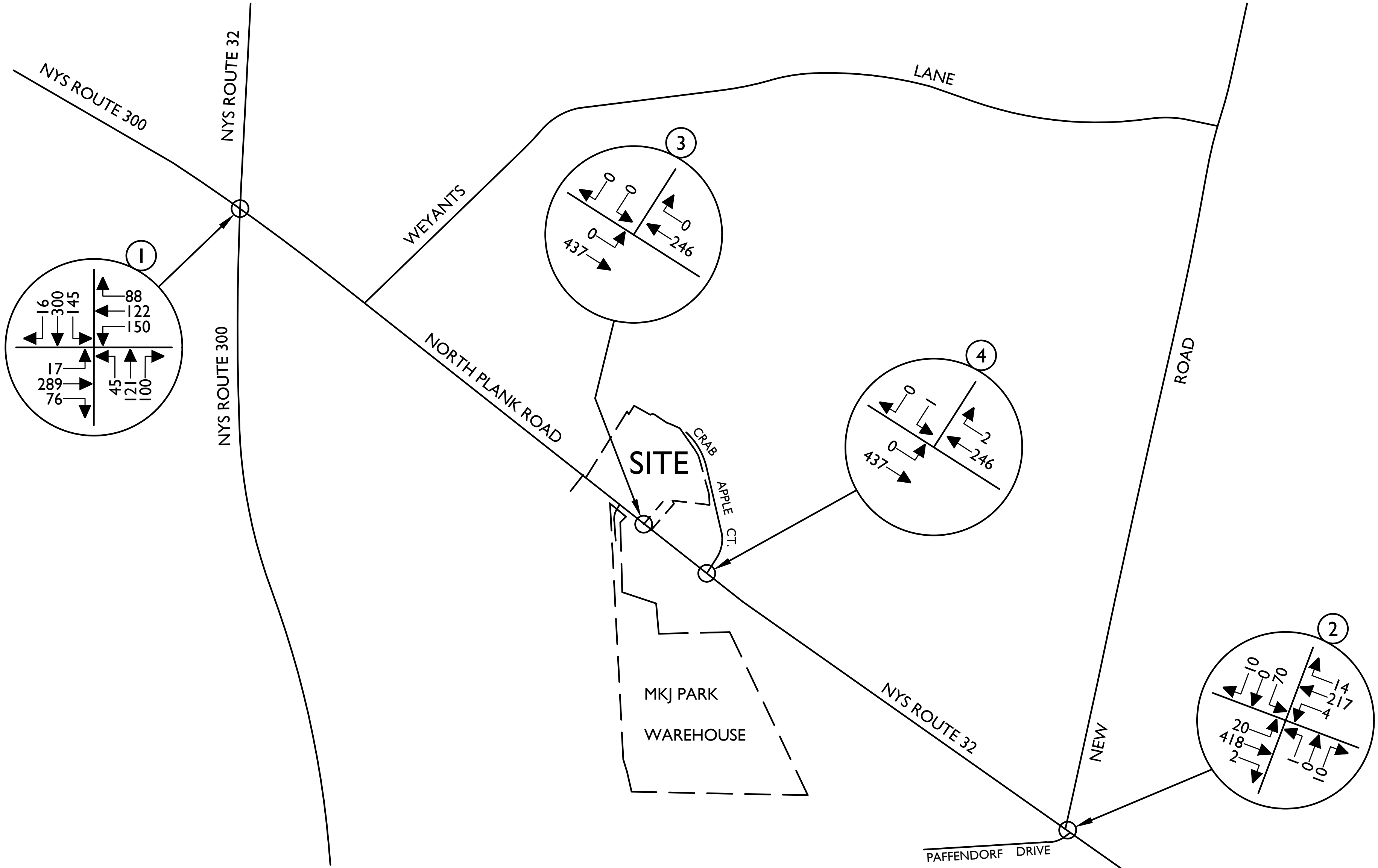

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SHEET TITLE: FIELD BOOK: XX PAGE: XX

2023 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
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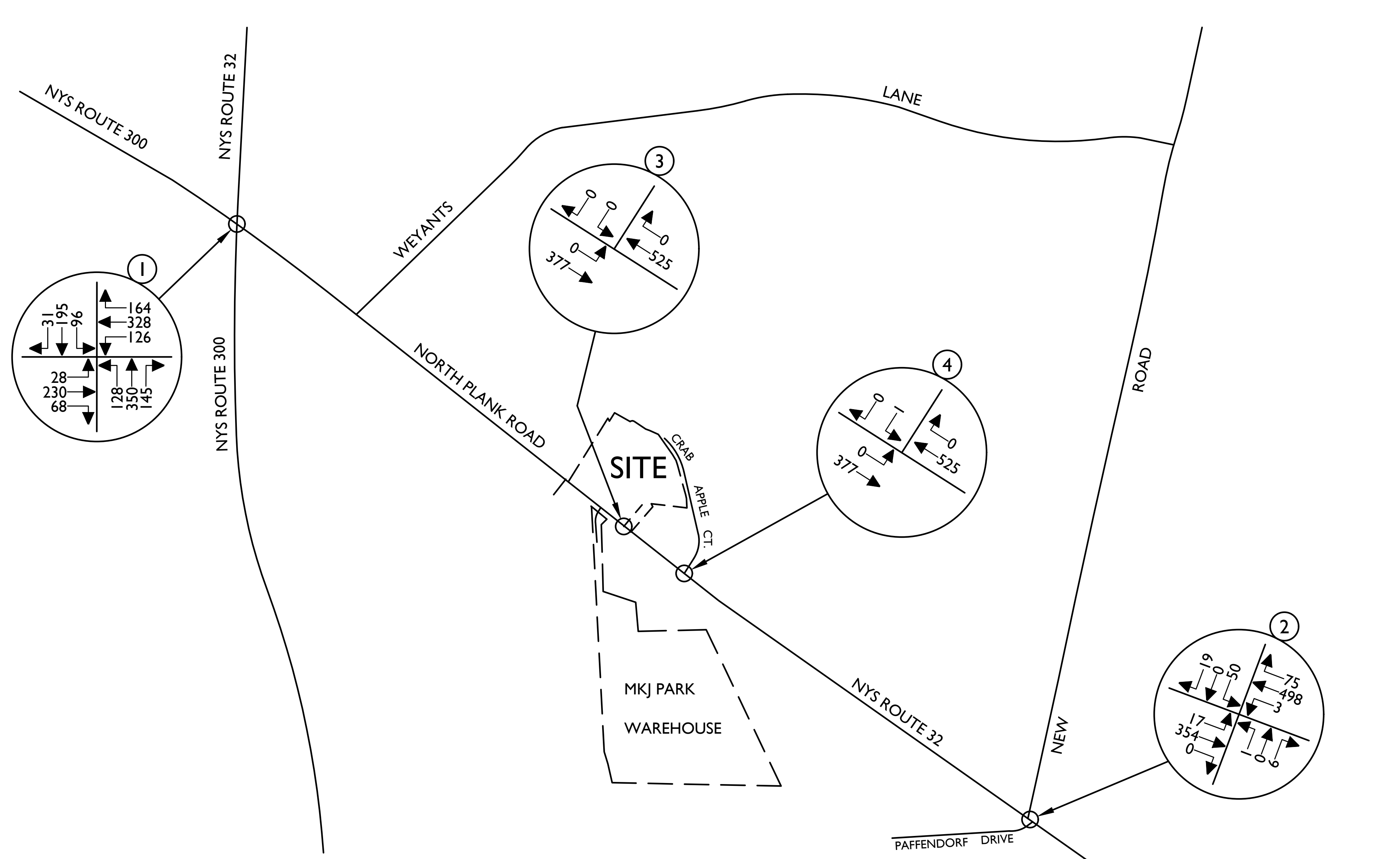

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SHEET TITLE: FIELD BOOK: XX PAGE: XX

2023 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
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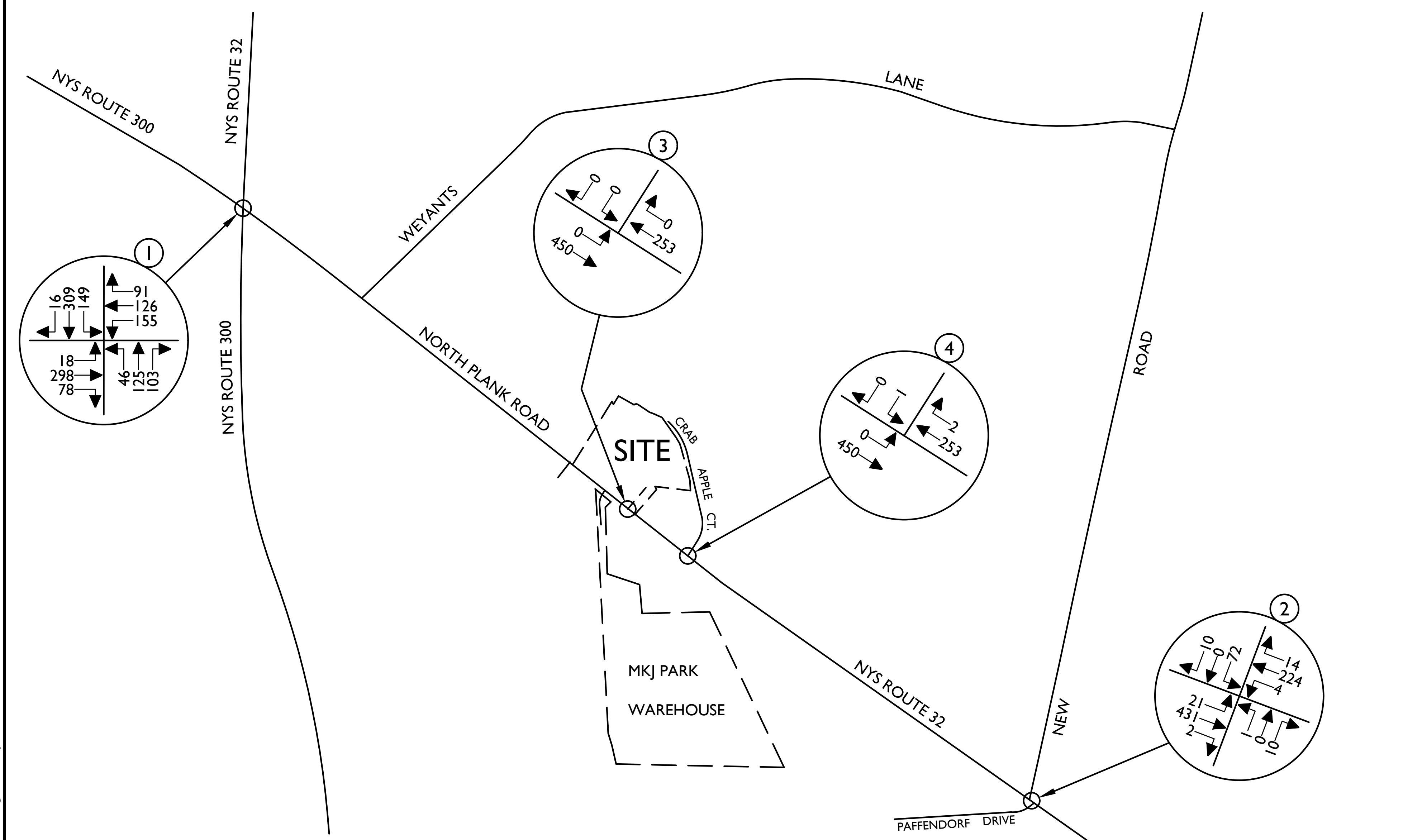

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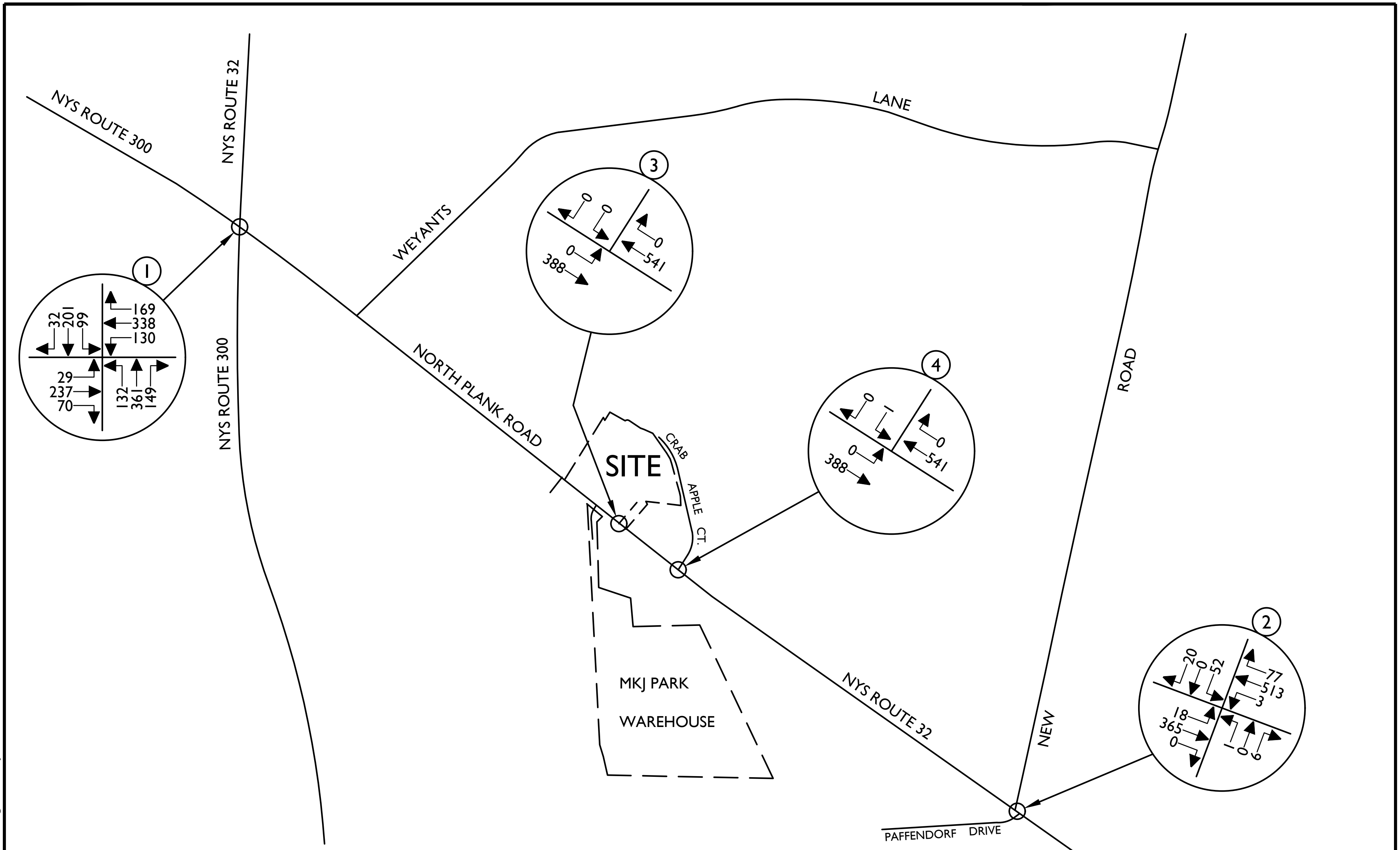
SHEET TITLE: FIELD BOOK: XX PAGE: XX

2026 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
4



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2026 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
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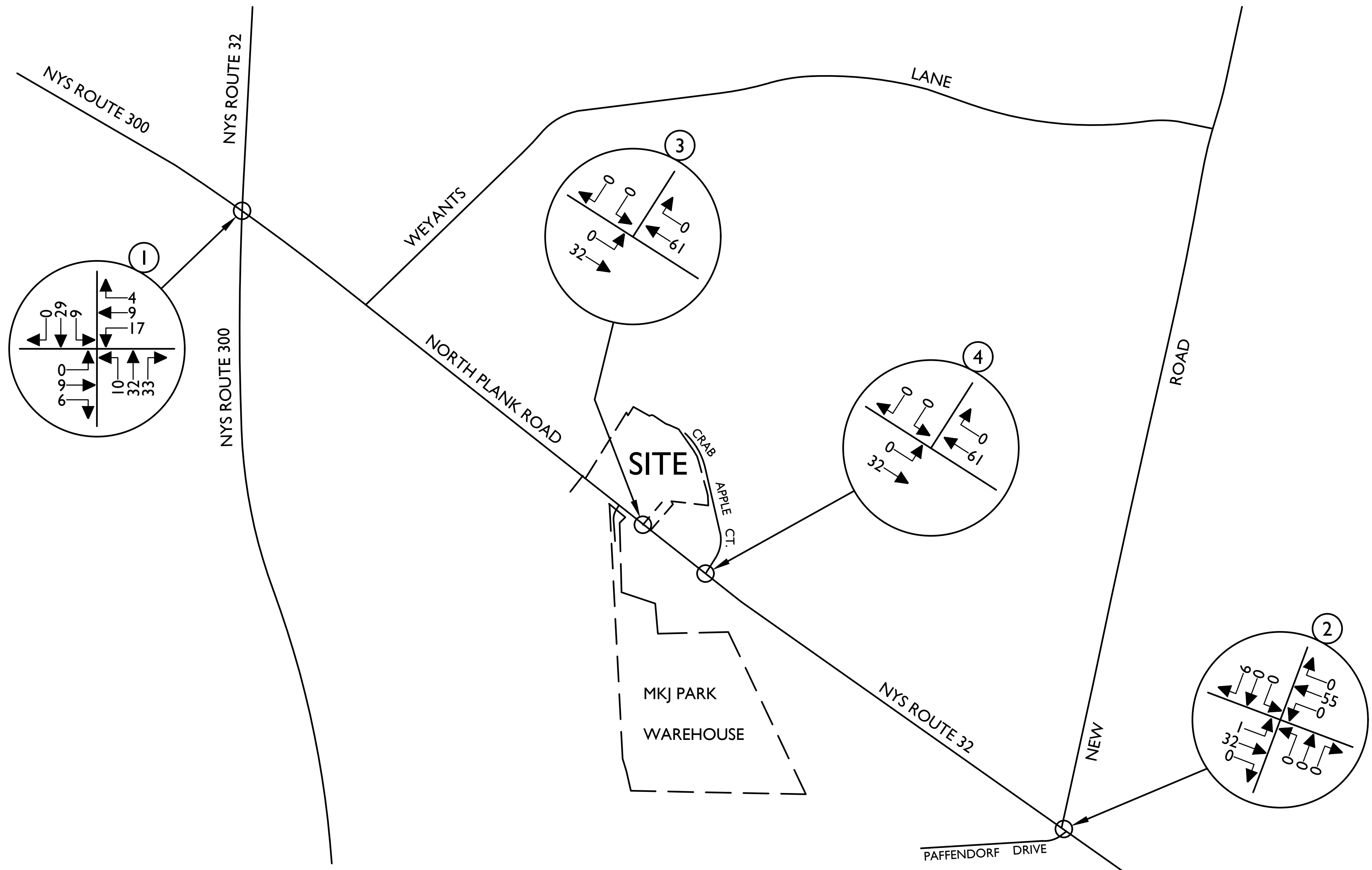

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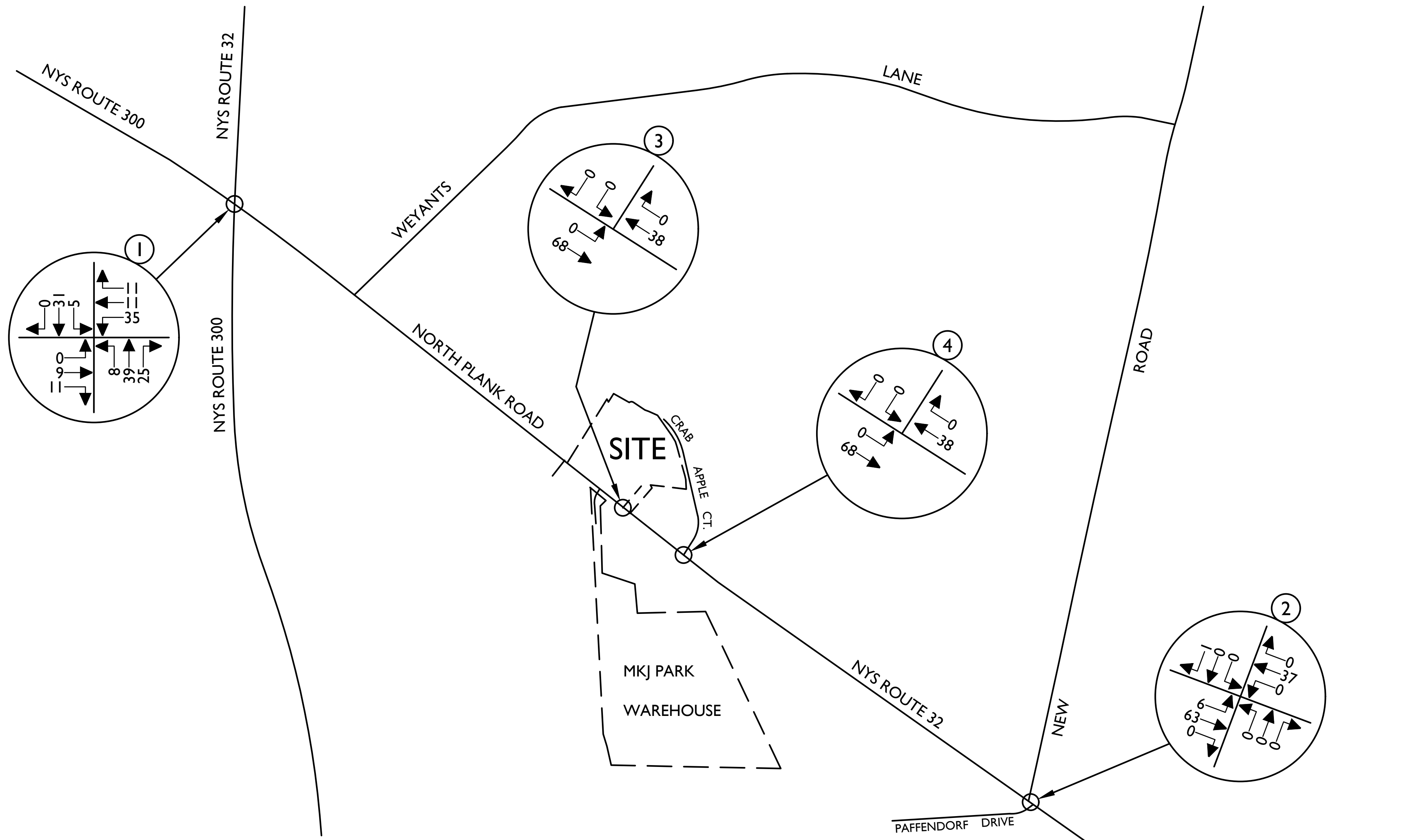
TOTAL OTHER DEVELOPMENT
TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
6



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SHEET TITLE: FIELD BOOK: XX PAGE: XX
TOTAL OTHER DEVELOPMENT
TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
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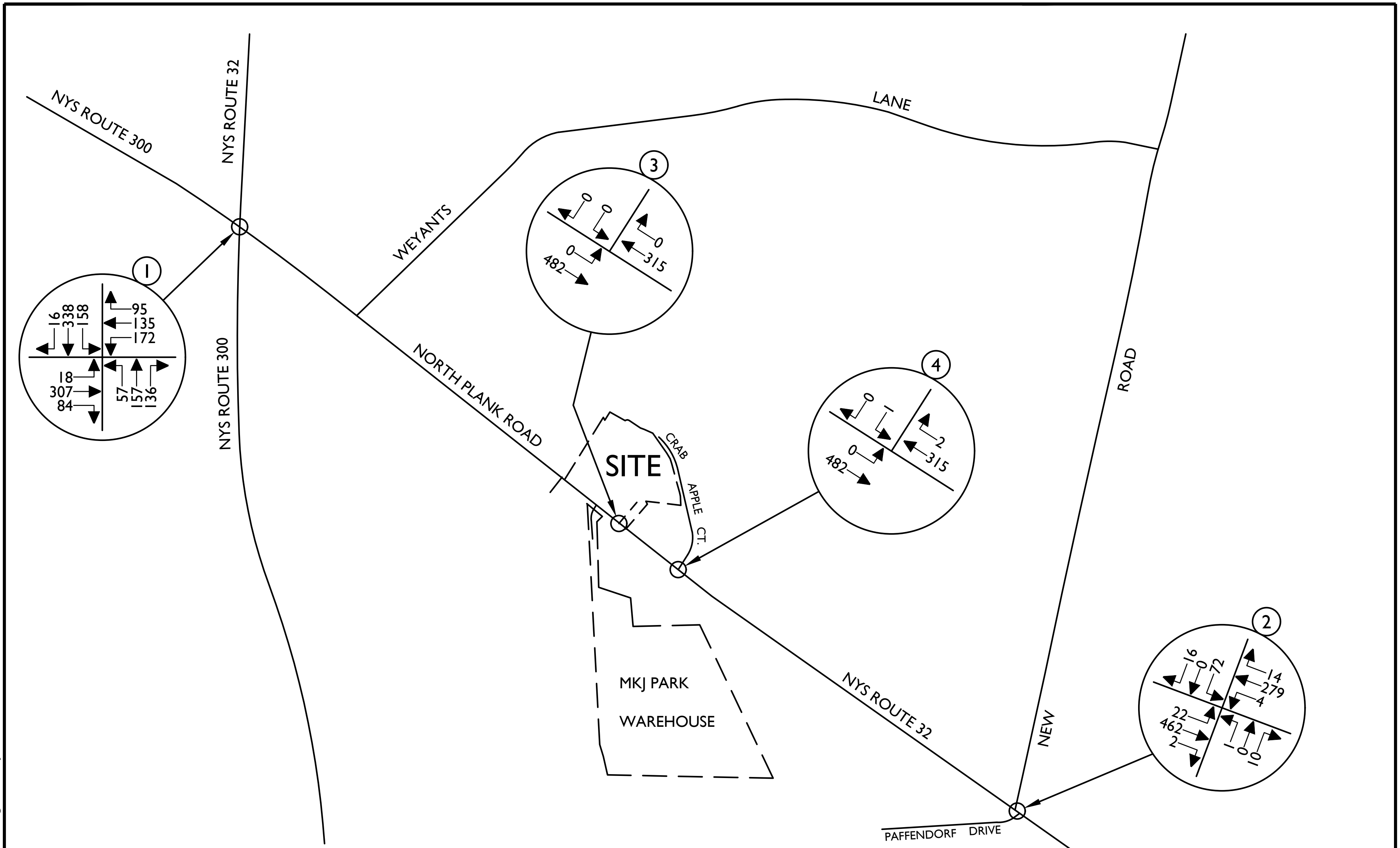

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2026 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
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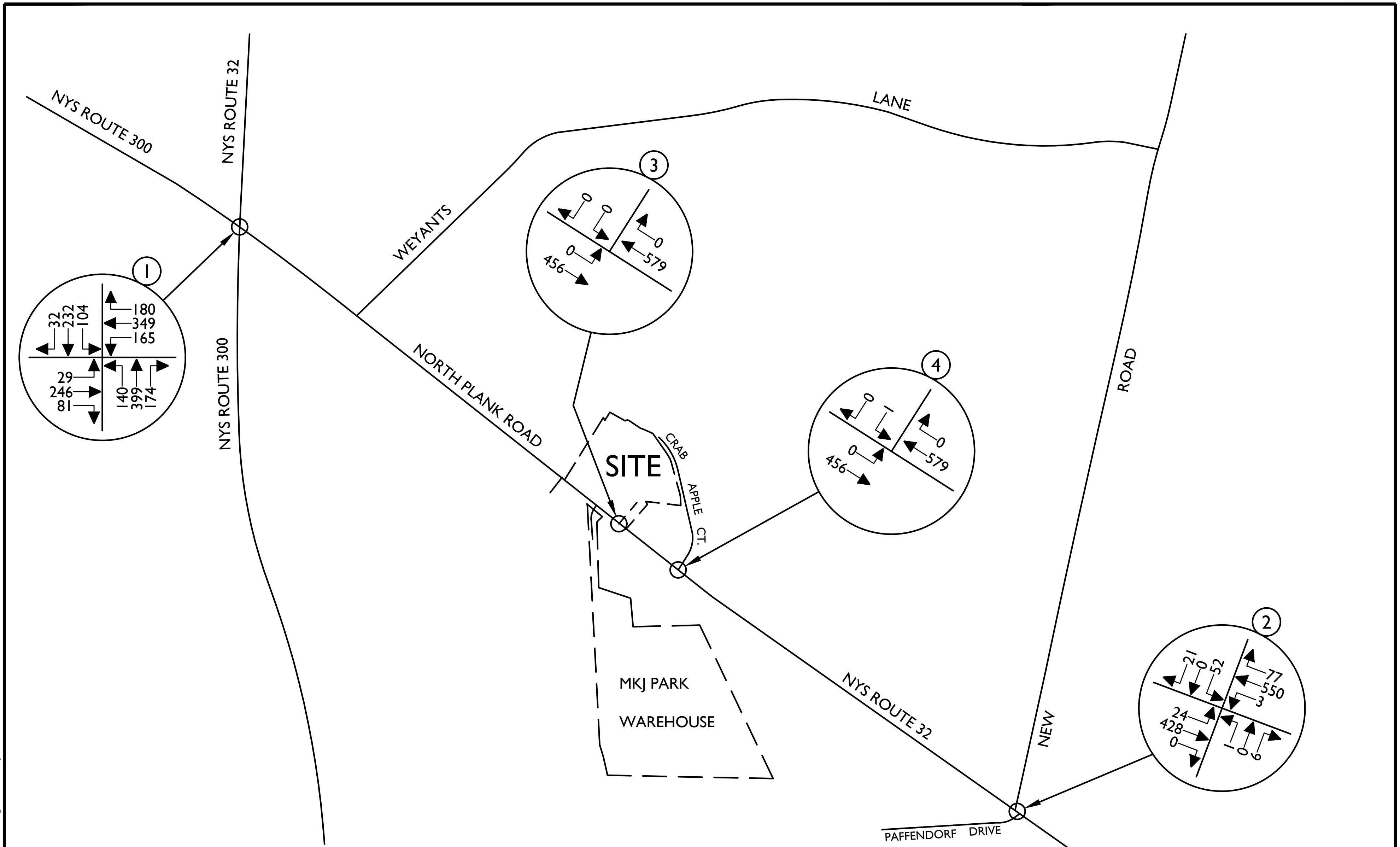

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2026 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
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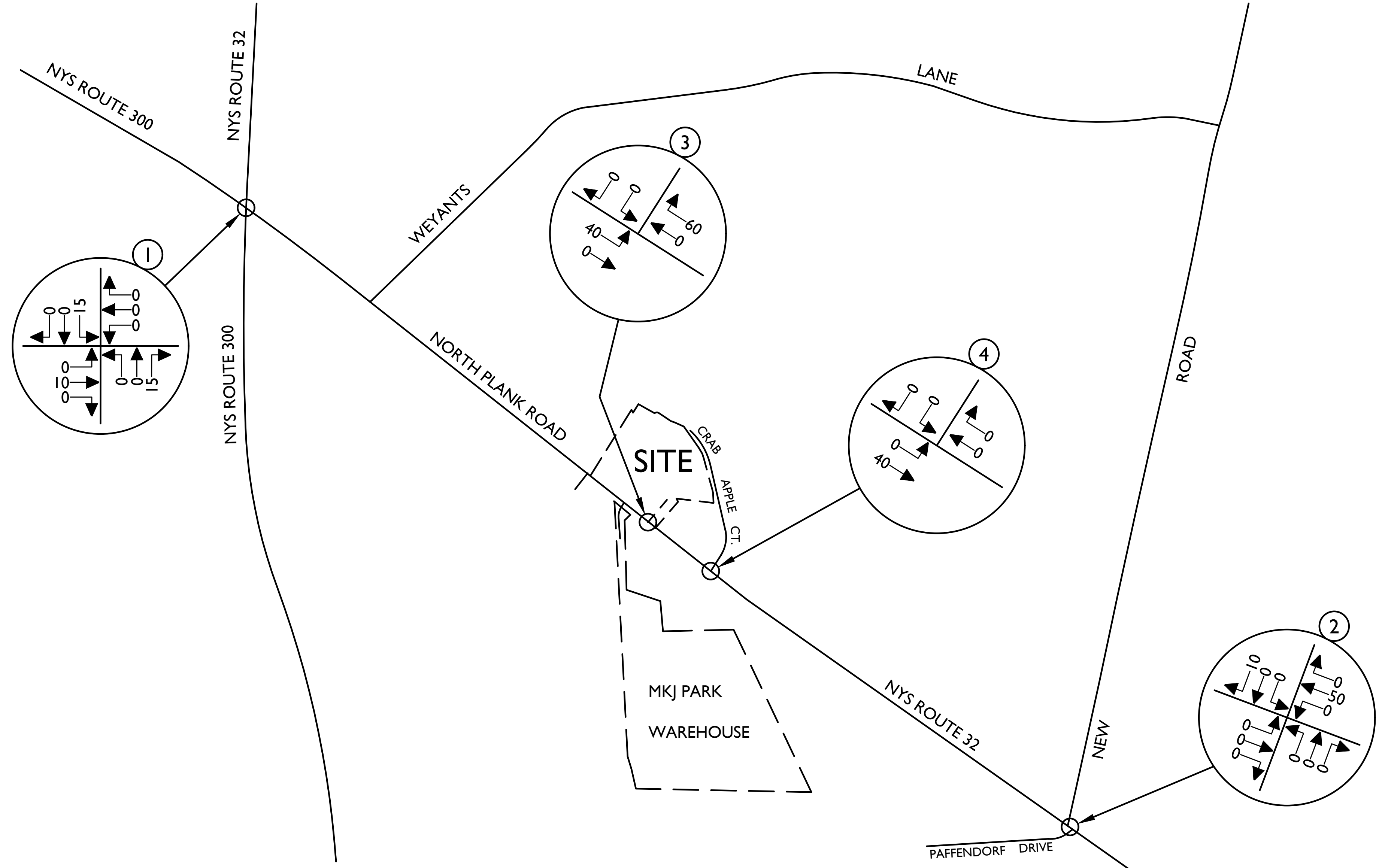

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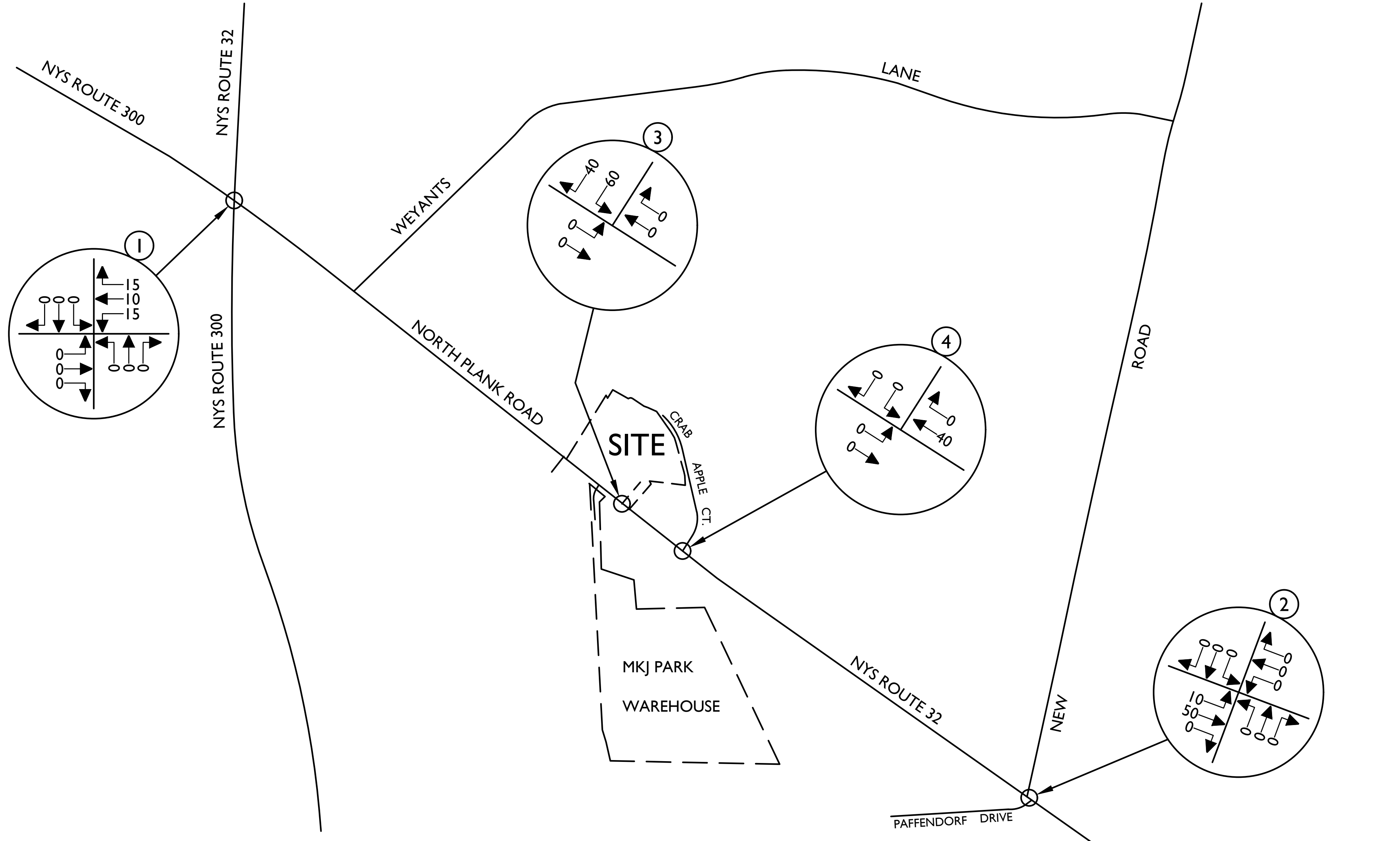

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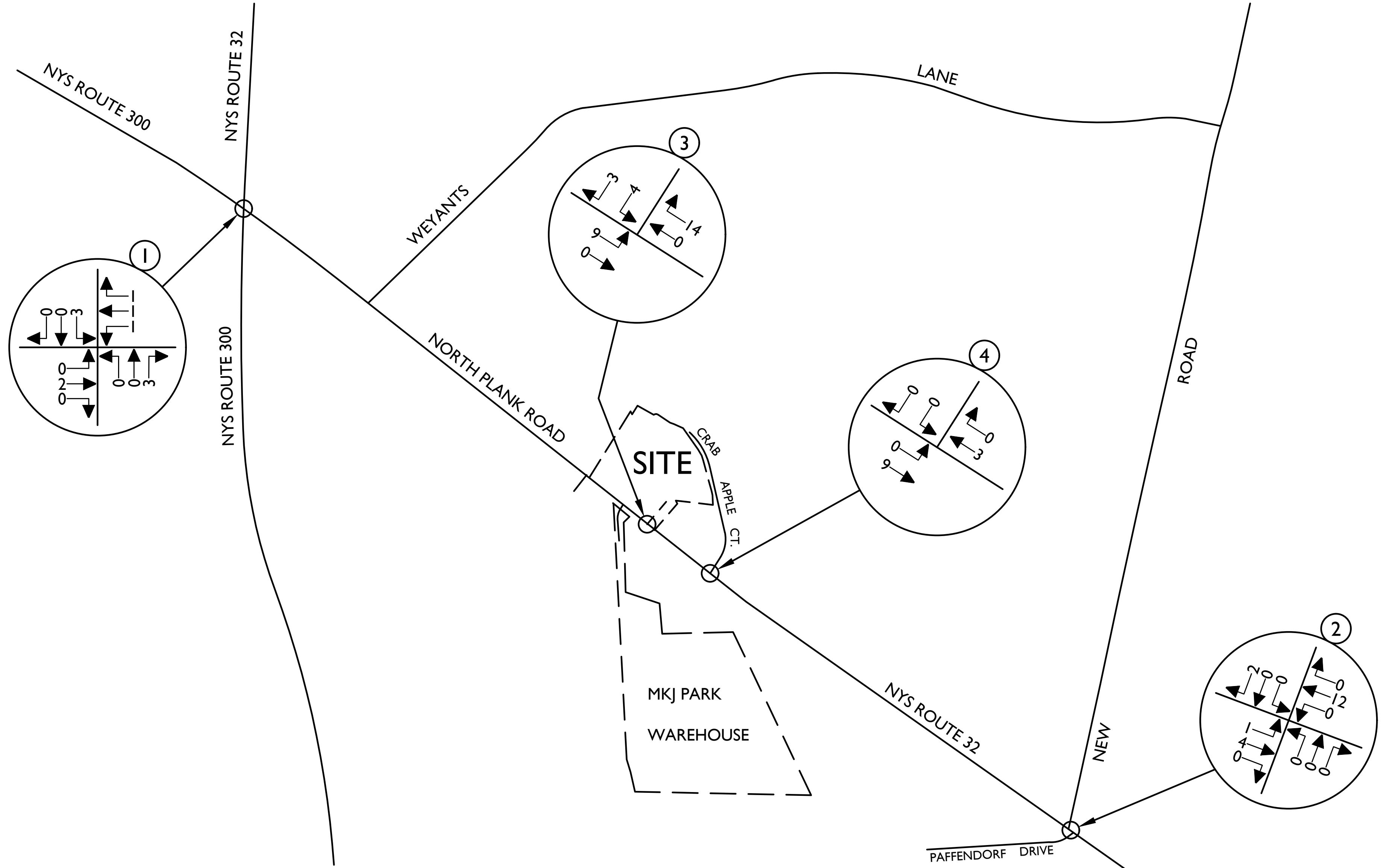

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SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
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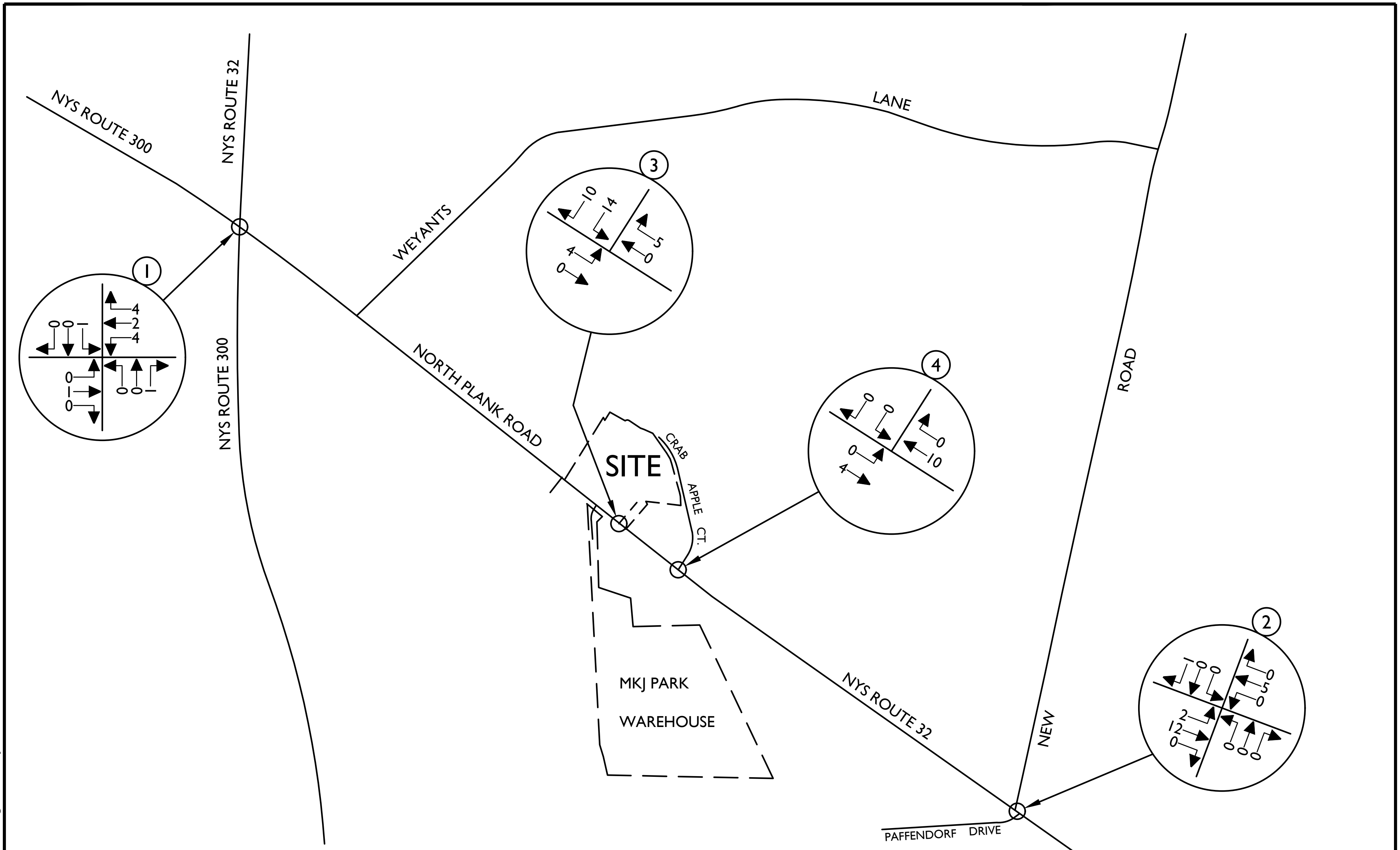

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PROJECT NUMBER: 23005442A		DRAWING NAME: 230515RD_FIGURE	

SHEET TITLE: FIELD BOOK: XX PAGE: XX
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
13

By: RDANDREA
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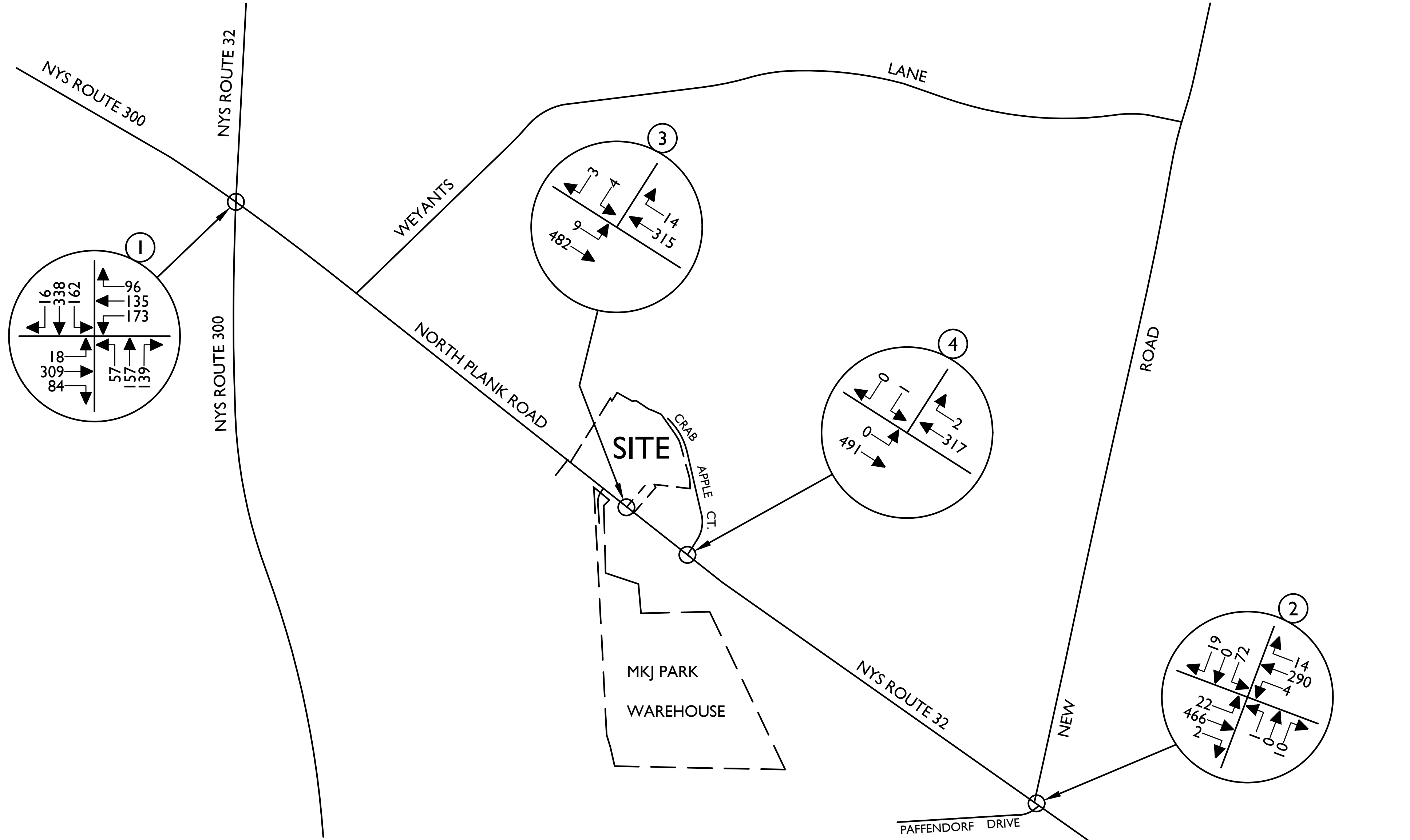

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NOTE: LINE DIAGRAM NOT TO SCALE

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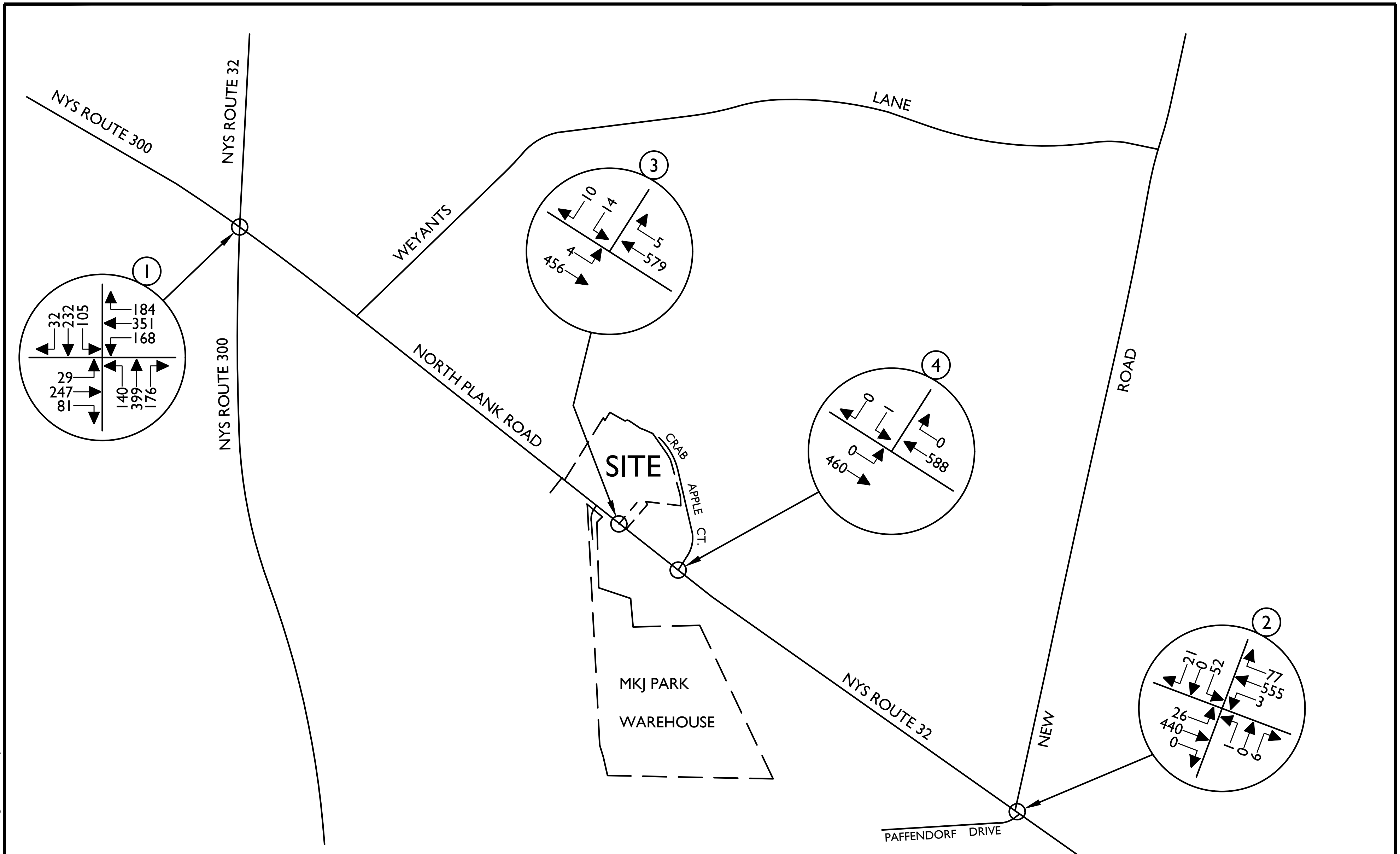
PROJECT NUMBER:	DRAWING NAME:
23005442A	230515RD_FIGURE

SHEET TITLE: FIELD BOOK: XX PAGE: XX
2026 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
14



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TRAFFIC IMPACT STUDY

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	4/25/23	R.H.	R.G.D.

PROJECT NUMBER: 23005442A
DRAWING NAME: 230515RD_FIGURE

SHEET TITLE: FIELD BOOK: XX PAGE: XX

2026 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER: 15

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Traffic Impact Study

Appendix B | Tables

Table No. 1
Hourly Trip Generation Rates (HTGR) and
Anticipated Site Generated Traffic Volumes

Fabulous Events Newburgh Town of Newburgh, NY	Entry		Exit	
	HTGR[1]	Volume	HTGR[1]	Volume
Warehouse (56,000 Sq. Ft.)				
Peak AM Hour	0.41	23	0.13	7
Peak PM Hour	0.16	9	0.43	24

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 11TH EDITION, 2021. ITE LAND USE CODE - 150 - WAREHOUSE.

Table No. 2
Level of Service Summary Table
Weekday Peak AM Hour

				2023 Existing			2026 No-Build			2026 Build			Change in Delay
				v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	No-Build to Build
1	**NYS Route 32 & NYS Route 300**	**Signalized**											
	NYS Route 300	EB	L	0.04	B	17.8	0.05	C	20.5	0.05	C	20.7	0.2
			TR	0.88	D	35.8	0.92	D	49.6	0.92	D	50.7	1.1
		EB Approach		-	D	35.0	-	D	48.3	-	D	49.4	1.1
	NYS Route 32 (N. Plank Road)	WB	L	0.52	B	18.1	0.64	C	23.4	0.65	C	23.9	0.5
			T	0.20	B	15.7	0.21	B	17.9	0.21	B	18.1	0.2
			R	0.16	B	15.5	0.17	B	17.6	0.17	B	17.8	0.2
		WB Approach		-	B	16.6	-	C	20.2	-	C	20.5	0.3
	NYS Route 300	NB	L	0.19	C	21.3	0.23	C	22.6	0.23	C	22.7	0.1
			TR	0.82	C	32.3	0.88	D	44.5	0.88	D	45.5	1.0
		NB Approach		-	C	30.4	-	D	40.9	-	D	41.9	1.0
	C.R. 50	SB	L	0.47	C	21.0	0.56	C	23.6	0.58	C	24.1	0.5
			TR	0.76	C	27.5	0.73	C	30.6	0.72	C	30.6	0.0
		SB Approach		-	C	25.4	-	C	28.5	-	C	28.6	0.1
		Overall		**-**	**C**	**26.7**	**-**	**C**	**33.9**	**-**	**C**	**34.5**	**0.6**
2	**NYS Route 32 (N. Plank Road) & New Road/Paffendorf Drive**	**Unsignalized**											
	NYS Route 32 (N. Plank Road)	SEB	LTR	0.02	A	8.3	0.03	A	8.5	0.03	A	8.6	0.1
	NYS Route 32 (N. Plank Road)	NWB	LTR	0.00	A	8.4	0.01	A	8.5	0.01	A	8.7	0.2
	Paffendorf Drive	NB	LTR	0.03	B	12.4	0.03	B	13.3	0.03	B	13.4	0.1
	New Road	SB	LTR	0.30	C	21.4	0.39	D	26.7	0.41	D	27.4	0.7
3	**NYS Route 32 (N. Plank Road) & Site Access**	**Unsignalized**											
	NYS Route 32 (N. Plank Road)	SEB	LT	-	-	-	-	-	-	0.01	A	8.0	-
	Site Access	SWB	LR	-	-	-	-	-	-	0.02	B	13.8	-
4	**NYS Route 32 (N. Plank Road) & Crab Apple Court**	**Unsignalized**											
	NYS Route 32 (N. Plank Road)	SEB	LT	-	A	0	-	A	0	-	A	0	-
	Site Access	SWB	LR	0.01	C	19	0.01	C	22.1	0.01	C	22.4	-

NOTES:

1) THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH OF THE UNSIGNALIZED INTERSECTIONS AS WELL AS FOR EACH APPROACH AND THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTIONS. SEE APPENDIX "C" FOR A DESCRIPTION OF THE LEVELS OF SERVICE.

Table No. 2
Level of Service Summary Table
Weekday Peak PM Hour

				2023 Existing			2026 No-Build			2026 Build			Change in Delay
				v/c	LOS	Delay	v/c	LOS	Delay	v/c	LOS	Delay	No-Build to Build
1	**NYS Route 32 & NYS Route 300**	**Signalized**											
	NYS Route 300	EB	L	0.13	C	23.0	0.13	C	23.1	0.13	C	23.2	0.1
			TR	0.86	D	38.3	0.88	D	43.7	0.88	D	44.0	0.3
		EB Approach		-	D	37.0	-	D	42.0	-	D	42.3	0.3
	NYS Route 32 (N. Plank Road)	WB	L	0.47	C	22.1	0.59	C	23.2	0.60	C	23.4	0.2
			T	0.62	C	25.3	0.60	C	25.0	0.61	C	25.0	0.0
			R	0.37	C	22.1	0.36	C	21.7	0.37	C	21.8	0.1
		WB Approach		-	C	23.8	-	C	23.7	-	C	23.8	0.1
	NYS Route 300	NB	L	0.30	B	16.7	0.36	B	18.8	0.37	B	18.9	0.1
			TR	0.96	E	55.4	1.18	F	126.5	1.19	F	130.1	3.6
		NB Approach		-	D	47.5	-	F	105.4	-	F	108.4	3.0
	C.R. 50	SB	L	0.44	C	20.9	0.51	C	23.1	0.51	C	23.2	0.1
			TR	0.43	C	21.9	0.53	C	25.1	0.53	C	25.2	0.1
		SB Approach		-	C	21.6	-	C	24.6	-	C	24.7	0.1
		Overall		**-**	**C**	**33.5**	**-**	**D**	**54.2**	**-**	**E**	**55.2**	**1.0**
	With Traffic Signal Timing Modifications												
	NYS Route 300	EB	L	-	-	-	0.16	C	26.0	0.16	C	26.1	0.1
			TR	-	-	-	0.91	D	54.6	0.91	D	54.9	0.3
		EB Approach		-	-	-	-	D	52.3	-	D	52.5	0.2
	NYS Route 32 (N. Plank Road)	WB	L	-	-	-	0.76	D	40.8	0.77	D	42.5	1.7
			T	-	-	-	0.68	C	31.5	0.68	C	31.6	0.1
			R	-	-	-	0.41	C	26.2	0.42	C	26.3	0.1
		WB Approach		-	-	-	-	C	32.3	-	C	32.8	0.5
	NYS Route 300	NB	L	-	-	-	0.32	B	16.7	0.32	B	16.8	0.1
			TR	-	-	-	0.96	D	53.7	0.97	E	55.0	1.3
		NB Approach		-	-	-	-	D	46.5	-	D	47.5	1.0
	C.R. 50	SB	L	-	-	-	0.51	C	23.1	0.53	C	23.3	0.2
			TR	-	-	-	0.42	C	21.6	0.42	C	21.6	0.0
		SB Approach		-	-	-	-	C	22.0	-	C	22.1	0.1
		Overall		**-**	**-**	**-**	**-**	**D**	**38.6**	**-**	**D**	**39.1**	**0.5**
2	**NYS Route 32 (N. Plank Road) & New Road/Paffendorf Drive**	**Unsignalized**											
	NYS Route 32 (N. Plank Road)	SEB	LTR	0.02	A	8.9	0.03	A	9.2	0.03	A	9.2	0.0
	NYS Route 32 (N. Plank Road)	NWB	LTR	0.00	A	8.0	0.00	A	8.3	0.00	A	8.3	0.0
	Paffendorf Drive	NB	LTR	0.02	B	12.3	0.02	B	13.6	0.02	B	13.8	0.2
	New Road	SB	LTR	0.29	C	24.6	0.38	D	32.6	0.39	D	33.9	1.3
3	**NYS Route 32 (N. Plank Road) & Site Access**	**Unsignalized**											
	NYS Route 32 (N. Plank Road)	SEB	LT	-	-	-	-	-	-	0.00	A	8.7	-
	Site Access	SWB	LR	-	-	-	-	-	-	0.09	C	18.5	-
4	**NYS Route 32 (N. Plank Road) & Crab Apple Court**	**Unsignalized**											
	NYS Route 32 (N. Plank Road)	SEB	LT	-	A	0	-	A	0	-	A	0	-
	Site Access	SWB	LR	0.01	C	19.9	0.01	C	23.6	0.01	C	24	-

NOTES:

1) THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH OF THE UNSIGNALIZED INTERSECTIONS AS WELL AS FOR EACH APPROACH AND THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTIONS. SEE APPENDIX "C" FOR A DESCRIPTION OF THE LEVELS OF SERVICE.

Traffic Impact Study

Appendix C | Level of Service Standards

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Level of Service Standards

Level of Service for Signalized Intersections

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a measure of driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group.

- **LOS A** describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
- **LOS B** describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.
- **LOS C** describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate.
- **LOS D** describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long.
- **LOS E** describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long.
- **LOS F** describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long.

A lane group can incur a delay less than 80 s/veh when the volume-to-capacity ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and volume-to-capacity ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

The Level of Service Criteria for signalized intersections are given in Exhibit 19-8 from the *Highway Capacity Manual, 6th Edition* published by the Transportation Research Board.

Exhibit 19-8 LOS by Volume-to-Capacity Ratio

Control Delay (s/veh)	v/c ≤ 1.0	v/c ≥ 1.0
≤10	A	F
>10-20	B	F
>20-35	C	F
>35-55	D	F
>55-80	E	F
>80	F	F

For approach-based and intersection wide assessments, LOS is defined solely by control delay.

Level of Service Criteria
For Two-Way Stop-Controlled (TWSC) Unsignalized Intersections

Level of Service (LOS) for a two-way stop-controlled (TWSC) intersection is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. LOS is not defined for the intersection as a whole or for major-street approaches.

The Level of Service Criteria for TWSC unsignalized intersections are given in Exhibit 20-2 from the Highway Capacity Manual, 6th Edition published by the Transportation Research Board.

Exhibit 20-2 LOS by Volume-to-Capacity Ratio

Control Delay (s/veh)	v/c ≤ 1.0	v/c ≥ 1.0
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

The LOS criteria apply to each lane on a given approach and to each approach on the minor street.
LOS is not calculated for major-street approaches or for the intersection as a whole.

As Exhibit 20-2 notes, LOS F is assigned to the movement if the volume-to-capacity ratio for the movement exceeds 1.0, regardless of the control delay.

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.

Level of Service Criteria For All-Way Stop-Controlled (AWSC) Unsignalized Intersections

The Levels of Service (LOS) for all-way stop-controlled (AWSC) intersections are given in Exhibit 21-8. As the exhibit notes, LOS F is assigned if the volume-to-capacity (v/c) ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

The Level of Service Criteria for AWSC unsignalized intersections are given in Exhibit 21-8 from the *Highway* Capacity *Manual, 6th Edition* published by the Transportation Research Board.

Exhibit 21-8 LOS by Volume-to-Capacity Ratio

Control Delay (s/veh)	v/c ≤ 1.0	v/c ≥ 1.0
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

For approaches and intersection wide assessment, LOS is defined solely by control delay.

Traffic Impact Study

Appendix D | Capacity Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↱		↰	↑↱	
Traffic Volume (vph)	17	289	76	150	122	88	45	121	100	145	300	16
Future Volume (vph)	17	289	76	150	122	88	45	121	100	145	300	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	11	10	10	11	11	10	11	11
Grade (%)		5%			-2%			3%			-2%	
Storage Length (ft)	100		0	245		245	255		0	245		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969				0.850		0.932			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1643	1671	0	1575	1734	1478	1495	1419	0	1652	1784	0
Flt Permitted	0.673			0.240			0.433			0.404		
Satd. Flow (perm)	1164	1671	0	398	1734	1478	681	1419	0	703	1784	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				182		45			3	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		736			763			725			720	
Travel Time (s)		11.2			11.6			11.0			10.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	7%	8%	7%	3%	11%	12%	27%	3%	3%	6%
Adj. Flow (vph)	18	311	82	161	131	95	48	130	108	156	323	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	393	0	161	131	95	48	238	0	156	340	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.08	1.03	1.08	1.11	1.07	1.07	1.08	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2		2	2	
Detector Template												
Leading Detector (ft)	83	83		83	83	83	83	83		83	83	
Trailing Detector (ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	43	43		43	43	43	43	43		43	43	
Detector 2 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		7	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	9.0	16.0		9.0	16.0	
Total Split (s)	15.0	30.0		15.0	30.0	30.0	15.0	30.0		15.0	30.0	
Total Split (%)	16.7%	33.3%		16.7%	33.3%	33.3%	16.7%	33.3%		16.7%	33.3%	
Maximum Green (s)	9.0	24.0		9.0	24.0	24.0	9.0	24.0		9.0	24.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
v/c Ratio	0.04	0.86		0.53	0.19	0.14	0.17	0.69		0.44	0.63	
Control Delay	14.8	48.9		22.3	21.0	0.4	17.1	35.1		20.7	32.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	14.8	48.9		22.3	21.0	0.4	17.1	35.1		20.7	32.9	
Queue Length 50th (ft)	5	190		50	40	0	16	94		54	168	
Queue Length 95th (ft)	18	#368		99	104	0	36	173		95	#272	
Internal Link Dist (ft)		656			683			645			640	
Turn Bay Length (ft)	100			245		245	255			245		
Base Capacity (vph)	495	513		305	682	692	316	459		363	559	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.04	0.77		0.53	0.19	0.14	0.15	0.52		0.43	0.61	

Intersection Summary

Area Type: Other

Cycle Length: 90

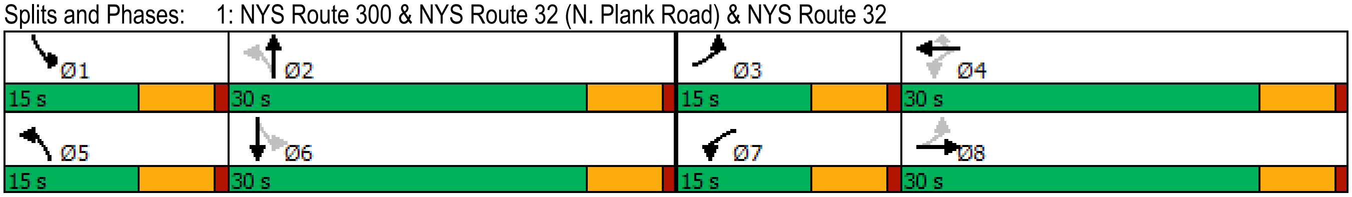
Actuated Cycle Length: 81

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NYS Route 300 & NYS Route 32 (N. Plank Road) & NYS Route 32



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	289	76	150	122	88	45	121	100	145	300	16
Future Volume (veh/h)	17	289	76	150	122	88	45	121	100	145	300	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1753	1708	1649	1859	1874	1934	1684	1669	1447	1934	1934	1889
Adj Flow Rate, veh/h	18	311	82	161	131	95	48	130	108	156	323	17
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	3	7	8	7	3	11	12	27	3	3	6
Cap, veh/h	420	355	93	312	660	577	253	159	132	332	424	22
Arrive On Green	0.01	0.27	0.27	0.09	0.35	0.35	0.05	0.19	0.19	0.10	0.23	0.23
Sat Flow, veh/h	1669	1303	344	1770	1874	1639	1604	843	700	1842	1821	96
Grp Volume(v), veh/h	18	0	393	161	131	95	48	0	238	156	0	340
Grp Sat Flow(s),veh/h/ln	1669	0	1646	1770	1874	1639	1604	0	1543	1842	0	1916
Q Serve(g_s), s	0.5	0.0	15.7	4.2	3.3	2.7	1.6	0.0	10.2	4.5	0.0	11.4
Cycle Q Clear(g_c), s	0.5	0.0	15.7	4.2	3.3	2.7	1.6	0.0	10.2	4.5	0.0	11.4
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.45	1.00		0.05
Lane Grp Cap(c), veh/h	420	0	448	312	660	577	253	0	292	332	0	447
V/C Ratio(X)	0.04	0.00	0.88	0.52	0.20	0.16	0.19	0.00	0.82	0.47	0.00	0.76
Avail Cap(c_a), veh/h	618	0	574	380	660	577	378	0	538	394	0	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	23.9	16.8	15.5	15.3	20.9	0.0	26.7	20.0	0.0	24.6
Incr Delay (d2), s/veh	0.0	0.0	11.9	1.3	0.1	0.1	0.4	0.0	5.5	1.0	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	6.8	1.6	1.3	0.9	0.6	0.0	3.8	1.8	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.8	0.0	35.8	18.1	15.7	15.5	21.3	0.0	32.3	21.0	0.0	27.5
LnGrp LOS	B	A	D	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h		411			387			286			496	
Approach Delay, s/veh		35.0			16.6			30.4			25.4	
Approach LOS		D			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	19.0	6.9	30.2	9.7	22.0	12.4	24.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	9.0	24.0	9.0	24.0	9.0	24.0	9.0	24.0
Max Q Clear Time (g_c+I1), s	6.5	12.2	2.5	5.3	3.6	13.4	6.2	17.7
Green Ext Time (p_c), s	0.1	0.8	0.0	0.9	0.0	1.2	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	26.7
HCM 6th LOS	C

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	1	0	10	70	0	10	20	418	2	4	217	14
Future Volume (vph)	1	0	10	70	0	10	20	418	2	4	217	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	11	11	11	11	11	11
Grade (%)		-1%			-1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.875			0.983			0.999			0.992	
Flt Protected		0.996			0.958			0.998			0.999	
Satd. Flow (prot)	0	1442	0	0	1681	0	0	1760	0	0	1759	0
Flt Permitted		0.996			0.958			0.998			0.999	
Satd. Flow (perm)	0	1442	0	0	1681	0	0	1760	0	0	1759	0
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		361			963			1326			459	
Travel Time (s)		8.2			21.9			20.1			7.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	100%	0%	0%	1%	0%	20%	35%	2%	0%	0%	4%	14%
Adj. Flow (vph)	1	0	12	83	0	12	24	498	2	5	258	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	95	0	0	524	0	0	280	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	1.05	1.05	1.05	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.7

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	1	0	10	70	0	10	20	418	2	4	217	14
Future Vol, veh/h	1	0	10	70	0	10	20	418	2	4	217	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	1	-	-	-2	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	100	0	0	1	0	20	35	2	0	0	4	14
Mvmt Flow	1	0	12	83	0	12	24	498	2	5	258	17

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	830	832	499	830	825	267	275	0	0	500	0	0
Stage 1	547	547	-	277	277	-	-	-	-	-	-	-
Stage 2	283	285	-	553	548	-	-	-	-	-	-	-
Critical Hdwy	7.9	6.3	6.1	6.91	6.3	6.3	4.45	-	-	4.1	-	-
Critical Hdwy Stg 1	6.9	5.3	-	5.91	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.9	5.3	-	5.91	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.3	3.509	4	3.48	2.515	-	-	2.2	-	-
Pot Cap-1 Maneuver	211	322	584	304	324	736	1120	-	-	1075	-	-
Stage 1	393	537	-	743	695	-	-	-	-	-	-	-
Stage 2	563	690	-	535	536	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	202	310	584	290	312	736	1120	-	-	1075	-	-
Mov Cap-2 Maneuver	202	310	-	290	312	-	-	-	-	-	-	-
Stage 1	381	521	-	721	691	-	-	-	-	-	-	-
Stage 2	551	686	-	508	520	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	12.4	21.4	0.4	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	498	1075	-	-	1120	-	-	314
HCM Lane V/C Ratio	0.026	0.004	-	-	0.021	-	-	0.303
HCM Control Delay (s)	12.4	8.4	0	-	8.3	0	-	21.4
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	1.2

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	437	246	2	1	0
Future Volume (vph)	0	437	246	2	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	10	10
Grade (%)		0%	0%		2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected					0.950	
Satd. Flow (prot)	0	1766	1732	0	834	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1766	1732	0	834	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1219	862		319	
Travel Time (s)		27.7	19.6		7.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	4%	6%	0%	100%	0%
Adj. Flow (vph)	0	460	259	2	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	460	261	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.11	1.11
Turning Speed (mph)	60			60	60	60
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	437	246	2	1	0
Future Vol, veh/h	0	437	246	2	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	6	0	100	0
Mvmt Flow	0	460	259	2	1	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	261	0	-	0	720	260
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	460	-
Critical Hdwy	4.1	-	-	-	7.8	6.4
Critical Hdwy Stg 1	-	-	-	-	6.8	-
Critical Hdwy Stg 2	-	-	-	-	6.8	-
Follow-up Hdwy	2.2	-	-	-	4.4	3.3
Pot Cap-1 Maneuver	1315	-	-	-	259	772
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1315	-	-	-	259	772
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	449	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1315	-	259
HCM Lane V/C Ratio	-	-	-	-	0.004
HCM Control Delay (s)	-	-	0	-	19
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	307	84	172	135	95	57	157	136	158	338	16
Future Volume (vph)	18	307	84	172	135	95	57	157	136	158	338	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	11	10	10	11	11	10	11	11
Grade (%)		5%			-2%			3%			-2%	
Storage Length (ft)	100		0	245		245	255		0	245		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968				0.850		0.930			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1643	1669	0	1575	1734	1478	1495	1414	0	1652	1786	0
Flt Permitted	0.665			0.212			0.312			0.307		
Satd. Flow (perm)	1150	1669	0	352	1734	1478	491	1414	0	534	1786	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				182		47			3	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		736			763			725			720	
Travel Time (s)		11.2			11.6			11.0			10.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	7%	8%	7%	3%	11%	12%	27%	3%	3%	6%
Adj. Flow (vph)	19	330	90	185	145	102	61	169	146	170	363	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	420	0	185	145	102	61	315	0	170	380	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.08	1.03	1.08	1.11	1.07	1.07	1.08	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2		2	2	
Detector Template												
Leading Detector (ft)	83	83		83	83	83	83	83		83	83	
Trailing Detector (ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	43	43		43	43	43	43	43		43	43	
Detector 2 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		7	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	9.0	16.0		9.0	16.0	
Total Split (s)	15.0	30.0		15.0	30.0	30.0	15.0	30.0		15.0	30.0	
Total Split (%)	16.7%	33.3%		16.7%	33.3%	33.3%	16.7%	33.3%		16.7%	33.3%	
Maximum Green (s)	9.0	24.0		9.0	24.0	24.0	9.0	24.0		9.0	24.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
v/c Ratio	0.04	0.91		0.66	0.21	0.15	0.25	0.85		0.55	0.75	
Control Delay	15.2	56.4		29.6	21.8	0.5	18.2	48.0		24.2	39.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	15.2	56.4		29.6	21.8	0.5	18.2	48.0		24.2	39.8	
Queue Length 50th (ft)	6	222		64	49	0	20	141		59	195	
Queue Length 95th (ft)	19	#405		#134	114	2	44	#271		103	#341	
Internal Link Dist (ft)		656			683			645			640	
Turn Bay Length (ft)	100			245		245	255			245		
Base Capacity (vph)	484	485		281	676	687	276	435		314	522	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.04	0.87		0.66	0.21	0.15	0.22	0.72		0.54	0.73	

Intersection Summary

Area Type: Other

Cycle Length: 90

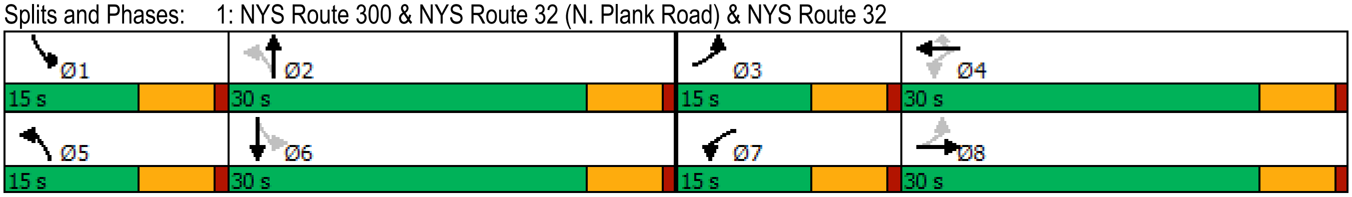
Actuated Cycle Length: 85.1

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NYS Route 300 & NYS Route 32 (N. Plank Road) & NYS Route 32



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	307	84	172	135	95	57	157	136	158	338	16
Future Volume (veh/h)	18	307	84	172	135	95	57	157	136	158	338	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1753	1708	1649	1859	1874	1934	1684	1669	1447	1934	1934	1889
Adj Flow Rate, veh/h	19	330	90	185	145	102	61	169	146	170	363	17
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	3	7	8	7	3	11	12	27	3	3	6
Cap, veh/h	407	360	98	290	677	592	260	192	166	302	500	23
Arrive On Green	0.01	0.28	0.28	0.10	0.36	0.36	0.05	0.23	0.23	0.09	0.27	0.27
Sat Flow, veh/h	1669	1292	352	1770	1874	1639	1604	827	714	1842	1832	86
Grp Volume(v), veh/h	19	0	420	185	145	102	61	0	315	170	0	380
Grp Sat Flow(s),veh/h/ln	1669	0	1645	1770	1874	1639	1604	0	1541	1842	0	1918
Q Serve(g_s), s	0.7	0.0	19.9	5.6	4.3	3.4	2.3	0.0	15.8	5.5	0.0	14.4
Cycle Q Clear(g_c), s	0.7	0.0	19.9	5.6	4.3	3.4	2.3	0.0	15.8	5.5	0.0	14.4
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.46	1.00		0.04
Lane Grp Cap(c), veh/h	407	0	458	290	677	592	260	0	358	302	0	523
V/C Ratio(X)	0.05	0.00	0.92	0.64	0.21	0.17	0.23	0.00	0.88	0.56	0.00	0.73
Avail Cap(c_a), veh/h	572	0	492	317	677	592	354	0	460	334	0	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.4	0.0	28.1	19.7	17.7	17.5	22.1	0.0	29.8	21.9	0.0	26.5
Incr Delay (d2), s/veh	0.0	0.0	21.5	3.7	0.2	0.1	0.5	0.0	14.7	1.7	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	9.8	2.3	1.7	1.2	0.8	0.0	6.8	2.3	0.0	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.5	0.0	49.6	23.4	17.9	17.6	22.6	0.0	44.5	23.6	0.0	30.6
LnGrp LOS	C	A	D	C	B	B	C	A	D	C	A	C
Approach Vol, veh/h		439			432			376			550	
Approach Delay, s/veh		48.3			20.2			40.9			28.5	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.6	24.6	7.0	35.0	10.3	27.9	13.7	28.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	9.0	24.0	9.0	24.0	9.0	24.0	9.0	24.0
Max Q Clear Time (g_c+I1), s	7.5	17.8	2.7	6.3	4.3	16.4	7.6	21.9
Green Ext Time (p_c), s	0.1	0.8	0.0	1.0	0.1	1.1	0.1	0.5

Intersection Summary			
HCM 6th Ctrl Delay			33.9
HCM 6th LOS			C

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	1	0	10	72	0	16	22	462	2	4	279	14
Future Volume (vph)	1	0	10	72	0	16	22	462	2	4	279	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	11	11	11	11	11	11
Grade (%)		-1%			-1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.875			0.976						0.994	
Flt Protected		0.996			0.961			0.998			0.999	
Satd. Flow (prot)	0	1442	0	0	1658	0	0	1763	0	0	1764	0
Flt Permitted		0.996			0.961			0.998			0.999	
Satd. Flow (perm)	0	1442	0	0	1658	0	0	1763	0	0	1764	0
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		361			963			1326			459	
Travel Time (s)		8.2			21.9			20.1			7.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	100%	0%	0%	1%	0%	20%	35%	2%	0%	0%	4%	14%
Adj. Flow (vph)	1	0	12	86	0	19	26	550	2	5	332	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	105	0	0	578	0	0	354	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	1.05	1.05	1.05	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.1

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	1	0	10	72	0	16	22	462	2	4	279	14
Future Vol, veh/h	1	0	10	72	0	16	22	462	2	4	279	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	1	-	-	-2	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	100	0	0	1	0	20	35	2	0	0	4	14
Mvmt Flow	1	0	12	86	0	19	26	550	2	5	332	17

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	963	962	551	960	955	341	349	0	0	552	0	0
Stage 1	603	603	-	351	351	-	-	-	-	-	-	-
Stage 2	360	359	-	609	604	-	-	-	-	-	-	-
Critical Hdwy	7.9	6.3	6.1	6.91	6.3	6.3	4.45	-	-	4.1	-	-
Critical Hdwy Stg 1	6.9	5.3	-	5.91	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.9	5.3	-	5.91	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.3	3.509	4	3.48	2.515	-	-	2.2	-	-
Pot Cap-1 Maneuver	168	272	546	250	275	669	1048	-	-	1028	-	-
Stage 1	364	508	-	681	648	-	-	-	-	-	-	-
Stage 2	507	643	-	501	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	158	261	546	237	263	669	1048	-	-	1028	-	-
Mov Cap-2 Maneuver	158	261	-	237	263	-	-	-	-	-	-	-
Stage 1	351	490	-	656	644	-	-	-	-	-	-	-
Stage 2	490	639	-	472	490	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	13.3	26.7	0.4	0.1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	446	1028	-	-	1048	-	-	269
HCM Lane V/C Ratio	0.029	0.005	-	-	0.025	-	-	0.389
HCM Control Delay (s)	13.3	8.5	0	-	8.5	0	-	26.7
HCM Lane LOS	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	1.8

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	482	315	2	1	0
Future Volume (vph)	0	482	315	2	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	10	10
Grade (%)		0%	0%		2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected					0.950	
Satd. Flow (prot)	0	1766	1732	0	834	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1766	1732	0	834	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1219	862		319	
Travel Time (s)		27.7	19.6		7.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	4%	6%	0%	100%	0%
Adj. Flow (vph)	0	507	332	2	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	507	334	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.11	1.11
Turning Speed (mph)	60			60	60	60
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection						
Int Delay, s/veh	0					
Movement	**SEL**	**SET**	**NWT**	**NWR**	**SWL**	**SWR**
Lane Configurations						
Traffic Vol, veh/h	0	482	315	2	1	0
Future Vol, veh/h	0	482	315	2	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	6	0	100	0
Mvmt Flow	0	507	332	2	1	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	334	0	-	0	840	333
Stage 1	-	-	-	-	333	-
Stage 2	-	-	-	-	507	-
Critical Hdwy	4.1	-	-	-	7.8	6.4
Critical Hdwy Stg 1	-	-	-	-	6.8	-
Critical Hdwy Stg 2	-	-	-	-	6.8	-
Follow-up Hdwy	2.2	-	-	-	4.4	3.3
Pot Cap-1 Maneuver	1237	-	-	-	212	700
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	421	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1237	-	-	-	212	700
Mov Cap-2 Maneuver	-	-	-	-	212	-
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	421	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	22.1
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1237	-	212
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	-	-	0	-	22.1
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	309	84	173	135	96	57	157	139	162	338	16
Future Volume (vph)	18	309	84	173	135	96	57	157	139	162	338	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	11	10	10	11	11	10	11	11
Grade (%)		5%			-2%			3%			-2%	
Storage Length (ft)	100		0	245		245	255		0	245		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968				0.850		0.930			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1643	1669	0	1575	1734	1478	1495	1414	0	1652	1786	0
Flt Permitted	0.665			0.209			0.314			0.305		
Satd. Flow (perm)	1150	1669	0	347	1734	1478	494	1414	0	530	1786	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				182		48			3	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		736			763			725			720	
Travel Time (s)		11.2			11.6			11.0			10.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	3%	7%	8%	7%	3%	11%	12%	27%	3%	3%	6%
Adj. Flow (vph)	19	332	90	186	145	103	61	169	149	174	363	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	422	0	186	145	103	61	318	0	174	380	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.08	1.03	1.08	1.11	1.07	1.07	1.08	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2		2	2	
Detector Template												
Leading Detector (ft)	83	83		83	83	83	83	83		83	83	
Trailing Detector (ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	43	43		43	43	43	43	43		43	43	
Detector 2 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		7	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	9.0	16.0		9.0	16.0	
Total Split (s)	15.0	30.0		15.0	30.0	30.0	15.0	30.0		15.0	30.0	
Total Split (%)	16.7%	33.3%		16.7%	33.3%	33.3%	16.7%	33.3%		16.7%	33.3%	
Maximum Green (s)	9.0	24.0		9.0	24.0	24.0	9.0	24.0		9.0	24.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
v/c Ratio	0.04	0.92		0.67	0.21	0.15	0.25	0.85		0.56	0.74	
Control Delay	15.3	57.1		30.3	21.9	0.6	18.2	48.1		24.7	39.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	15.3	57.1		30.3	21.9	0.6	18.2	48.1		24.7	39.5	
Queue Length 50th (ft)	6	224		65	49	0	20	143		61	195	
Queue Length 95th (ft)	19	#407		#136	114	2	44	#275		105	#341	
Internal Link Dist (ft)		656			683			645			640	
Turn Bay Length (ft)	100			245		245	255			245		
Base Capacity (vph)	484	483		279	675	686	276	434		313	523	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.04	0.87		0.67	0.21	0.15	0.22	0.73		0.56	0.73	

Intersection Summary

Area Type: Other

Cycle Length: 90

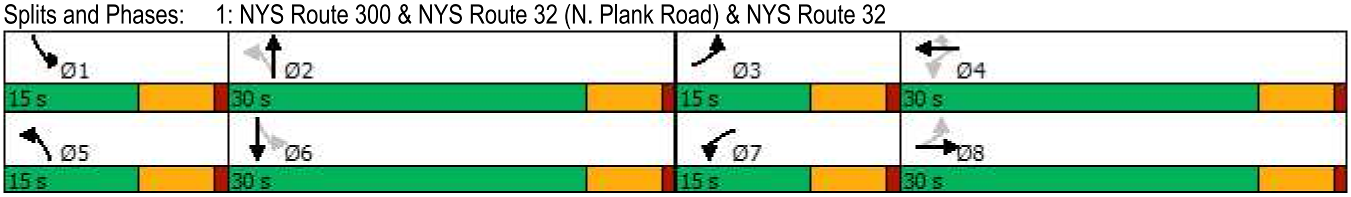
Actuated Cycle Length: 85.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NYS Route 300 & NYS Route 32 (N. Plank Road) & NYS Route 32



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	309	84	173	135	96	57	157	139	162	338	16
Future Volume (veh/h)	18	309	84	173	135	96	57	157	139	162	338	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1753	1708	1649	1859	1874	1934	1684	1669	1447	1934	1934	1889
Adj Flow Rate, veh/h	19	332	90	186	145	103	61	169	149	174	363	17
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	3	7	8	7	3	11	12	27	3	3	6
Cap, veh/h	406	360	98	288	678	593	262	191	169	302	505	24
Arrive On Green	0.01	0.28	0.28	0.10	0.36	0.36	0.05	0.23	0.23	0.10	0.28	0.28
Sat Flow, veh/h	1669	1294	351	1770	1874	1639	1604	818	721	1842	1832	86
Grp Volume(v), veh/h	19	0	422	186	145	103	61	0	318	174	0	380
Grp Sat Flow(s),veh/h/ln	1669	0	1645	1770	1874	1639	1604	0	1539	1842	0	1918
Q Serve(g_s), s	0.7	0.0	20.2	5.7	4.3	3.5	2.3	0.0	16.2	5.7	0.0	14.5
Cycle Q Clear(g_c), s	0.7	0.0	20.2	5.7	4.3	3.5	2.3	0.0	16.2	5.7	0.0	14.5
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.47	1.00		0.04
Lane Grp Cap(c), veh/h	406	0	458	288	678	593	262	0	360	302	0	529
V/C Ratio(X)	0.05	0.00	0.92	0.65	0.21	0.17	0.23	0.00	0.88	0.58	0.00	0.72
Avail Cap(c_a), veh/h	569	0	487	313	678	593	354	0	455	330	0	567
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	28.4	19.9	17.9	17.6	22.2	0.0	30.0	22.1	0.0	26.5
Incr Delay (d2), s/veh	0.0	0.0	22.3	4.0	0.2	0.1	0.4	0.0	15.5	2.1	0.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	10.0	2.4	1.7	1.2	0.8	0.0	7.0	2.4	0.0	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.7	0.0	50.7	23.9	18.1	17.8	22.7	0.0	45.5	24.1	0.0	30.6
LnGrp LOS	C	A	D	C	B	B	C	A	D	C	A	C
Approach Vol, veh/h		441			434			379			554	
Approach Delay, s/veh		49.4			20.5			41.9			28.6	
Approach LOS		D			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.8	25.0	7.0	35.4	10.3	28.4	13.8	28.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	9.0	24.0	9.0	24.0	9.0	24.0	9.0	24.0				
Max Q Clear Time (g_c+I1), s	7.7	18.2	2.7	6.3	4.3	16.5	7.7	22.2				
Green Ext Time (p_c), s	0.1	0.8	0.0	1.0	0.1	1.1	0.1	0.4				
Intersection Summary												
HCM 6th Ctrl Delay			34.5									
HCM 6th LOS			C									

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	1	0	10	72	0	19	22	466	2	4	290	14
Future Volume (vph)	1	0	10	72	0	19	22	466	2	4	290	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	11	11	11	11	11	11
Grade (%)		-1%			-1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.875			0.972						0.994	
Flt Protected		0.996			0.962			0.998			0.999	
Satd. Flow (prot)	0	1442	0	0	1644	0	0	1763	0	0	1764	0
Flt Permitted		0.996			0.962			0.998			0.999	
Satd. Flow (perm)	0	1442	0	0	1644	0	0	1763	0	0	1764	0
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		361			963			1326			459	
Travel Time (s)		8.2			21.9			20.1			7.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	100%	0%	0%	1%	0%	20%	35%	2%	0%	0%	4%	14%
Adj. Flow (vph)	1	0	12	86	0	23	26	555	2	5	345	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	109	0	0	583	0	0	367	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	1.05	1.05	1.05	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.2

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	1	0	10	72	0	19	22	466	2	4	290	14
Future Vol, veh/h	1	0	10	72	0	19	22	466	2	4	290	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	1	-	-	-2	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	100	0	0	1	0	20	35	2	0	0	4	14
Mvmt Flow	1	0	12	86	0	23	26	555	2	5	345	17

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	983	980	556	978	973	354	362	0	0	557	0	0
Stage 1	608	608	-	364	364	-	-	-	-	-	-	-
Stage 2	375	372	-	614	609	-	-	-	-	-	-	-
Critical Hdwy	7.9	6.3	6.1	6.91	6.3	6.3	4.45	-	-	4.1	-	-
Critical Hdwy Stg 1	6.9	5.3	-	5.91	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.9	5.3	-	5.91	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.3	3.509	4	3.48	2.515	-	-	2.2	-	-
Pot Cap-1 Maneuver	163	266	543	244	268	657	1036	-	-	1024	-	-
Stage 1	362	506	-	670	640	-	-	-	-	-	-	-
Stage 2	497	635	-	498	505	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	152	255	543	231	257	657	1036	-	-	1024	-	-
Mov Cap-2 Maneuver	152	255	-	231	257	-	-	-	-	-	-	-
Stage 1	349	488	-	646	636	-	-	-	-	-	-	-
Stage 2	477	631	-	470	487	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	13.4	27.4	0.4	0.1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	440	1024	-	-	1036	-	-	267
HCM Lane V/C Ratio	0.03	0.005	-	-	0.025	-	-	0.406
HCM Control Delay (s)	13.4	8.5	0	-	8.6	0	-	27.4
HCM Lane LOS	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	1.9

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	491	317	2	1	0
Future Volume (vph)	0	491	317	2	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	10	10
Grade (%)		0%	0%		2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999			
Flt Protected					0.950	
Satd. Flow (prot)	0	1766	1732	0	834	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1766	1732	0	834	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		472	862		319	
Travel Time (s)		10.7	19.6		7.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	4%	6%	0%	100%	0%
Adj. Flow (vph)	0	517	334	2	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	517	336	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.11	1.11
Turning Speed (mph)	60			60	60	60
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	491	317	2	1	0
Future Vol, veh/h	0	491	317	2	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	6	0	100	0
Mvmt Flow	0	517	334	2	1	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	336	0	-	0	852	335
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	517	-
Critical Hdwy	4.1	-	-	-	7.8	6.4
Critical Hdwy Stg 1	-	-	-	-	6.8	-
Critical Hdwy Stg 2	-	-	-	-	6.8	-
Follow-up Hdwy	2.2	-	-	-	4.4	3.3
Pot Cap-1 Maneuver	1235	-	-	-	208	698
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	416	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1235	-	-	-	208	698
Mov Cap-2 Maneuver	-	-	-	-	208	-
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	416	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	22.4
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1235	-	208
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	-	-	0	-	22.4
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	9	482	315	14	4	3
Future Volume (vph)	9	482	315	14	4	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.942	
Flt Protected		0.999			0.972	
Satd. Flow (prot)	0	1861	1852	0	1706	0
Flt Permitted		0.999			0.972	
Satd. Flow (perm)	0	1861	1852	0	1706	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		747	472		158	
Travel Time (s)		17.0	10.7		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	524	342	15	4	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	534	357	0	7	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60			60	60	60
Sign Control		Stop	Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	230	68	126	328	164	128	350	145	96	195	31
Future Volume (vph)	28	230	68	126	328	164	128	350	145	96	195	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	11	10	10	11	11	10	11	11
Grade (%)		5%			-2%			3%			-2%	
Storage Length (ft)	100		0	245		245	255		0	245		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966				0.850		0.956			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	1704	0	1547	1801	1493	1627	1656	0	1685	1727	0
Flt Permitted	0.451			0.318			0.536			0.158		
Satd. Flow (perm)	750	1704	0	518	1801	1493	918	1656	0	280	1727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16				182		23			9	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		736			763			725			720	
Travel Time (s)		11.2			11.6			11.0			10.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	10%	3%	2%	2%	3%	8%	1%	5%	6%
Adj. Flow (vph)	29	242	72	133	345	173	135	368	153	101	205	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	314	0	133	345	173	135	521	0	101	238	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.08	1.03	1.08	1.11	1.07	1.07	1.08	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2		2	2	
Detector Template												
Leading Detector (ft)	83	83		83	83	83	83	83		83	83	
Trailing Detector (ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	43	43		43	43	43	43	43		43	43	
Detector 2 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		7	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	9.0	16.0		9.0	16.0	
Total Split (s)	15.0	30.0		15.0	30.0	30.0	15.0	30.0		15.0	30.0	
Total Split (%)	16.7%	33.3%		16.7%	33.3%	33.3%	16.7%	33.3%		16.7%	33.3%	
Maximum Green (s)	9.0	24.0		9.0	24.0	24.0	9.0	24.0		9.0	24.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
v/c Ratio	0.10	0.75		0.44	0.60	0.29	0.30	0.94		0.39	0.42	
Control Delay	16.1	40.0		21.2	29.5	5.2	17.2	58.2		19.9	27.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.1	40.0		21.2	29.5	5.2	17.2	58.2		19.9	27.9	
Queue Length 50th (ft)	9	150		45	132	0	42	~309		31	103	
Queue Length 95th (ft)	25	244		84	271	42	84	#537		65	183	
Internal Link Dist (ft)		656			683			645			640	
Turn Bay Length (ft)	100			245		245	255			245		
Base Capacity (vph)	343	565		311	677	675	461	554		284	567	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.08	0.56		0.43	0.51	0.26	0.29	0.94		0.36	0.42	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 78.6

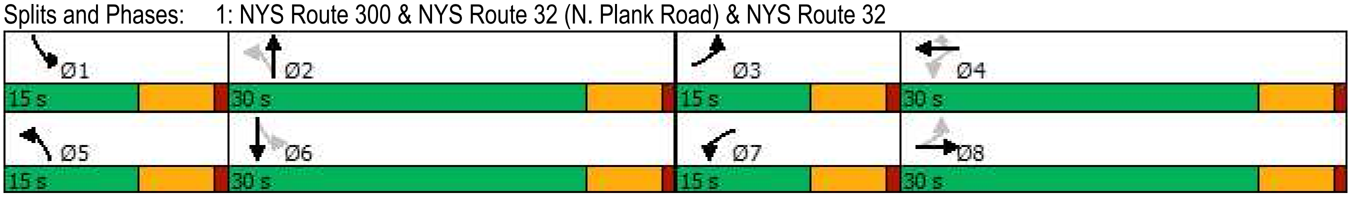
Natural Cycle: 70

Control Type: Actuated-Uncoordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NYS Route 300 & NYS Route 32 (N. Plank Road) & NYS Route 32



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	230	68	126	328	164	128	350	145	96	195	31
Future Volume (veh/h)	28	230	68	126	328	164	128	350	145	96	195	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1693	1723	1753	1829	1934	1949	1817	1803	1728	1964	1904	1889
Adj Flow Rate, veh/h	29	242	72	133	345	173	135	368	153	101	205	33
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	2	0	10	3	2	2	3	8	1	5	6
Cap, veh/h	230	281	84	281	554	473	452	382	159	229	479	77
Arrive On Green	0.02	0.22	0.22	0.08	0.29	0.29	0.08	0.32	0.32	0.06	0.30	0.30
Sat Flow, veh/h	1613	1275	379	1741	1934	1651	1731	1209	503	1870	1600	258
Grp Volume(v), veh/h	29	0	314	133	345	173	135	0	521	101	0	238
Grp Sat Flow(s),veh/h/ln	1613	0	1655	1741	1934	1651	1731	0	1712	1870	0	1857
Q Serve(g_s), s	1.1	0.0	13.9	4.3	11.8	6.4	4.0	0.0	22.8	2.8	0.0	7.8
Cycle Q Clear(g_c), s	1.1	0.0	13.9	4.3	11.8	6.4	4.0	0.0	22.8	2.8	0.0	7.8
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.29	1.00		0.14
Lane Grp Cap(c), veh/h	230	0	365	281	554	473	452	0	540	229	0	556
V/C Ratio(X)	0.13	0.00	0.86	0.47	0.62	0.37	0.30	0.00	0.96	0.44	0.00	0.43
Avail Cap(c_a), veh/h	390	0	522	340	610	521	517	0	540	331	0	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.7	0.0	28.5	20.8	23.6	21.6	16.3	0.0	25.6	19.6	0.0	21.4
Incr Delay (d2), s/veh	0.2	0.0	9.8	1.2	1.7	0.5	0.4	0.0	29.8	1.3	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	6.0	1.7	5.1	2.3	1.4	0.0	12.6	1.1	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.0	0.0	38.3	22.1	25.3	22.1	16.7	0.0	55.4	20.9	0.0	21.9
LnGrp LOS	C	A	D	C	C	C	B	A	E	C	A	C
Approach Vol, veh/h		343			651			656			339	
Approach Delay, s/veh		37.0			23.8			47.5			21.6	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	30.0	7.4	27.8	12.1	28.8	12.4	22.8
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	9.0	24.0	9.0	24.0	9.0	24.0	9.0	24.0
Max Q Clear Time (g_c+I1), s	4.8	24.8	3.1	13.8	6.0	9.8	6.3	15.9
Green Ext Time (p_c), s	0.1	0.0	0.0	1.9	0.1	0.9	0.1	0.9

Intersection Summary	
HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	1	0	6	50	0	19	17	354	0	3	498	75
Future Volume (vph)	1	0	6	50	0	19	17	354	0	3	498	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	11	11	11	11	11	11
Grade (%)		-1%			-1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.882			0.962						0.982	
Flt Protected		0.994			0.965			0.998				
Satd. Flow (prot)	0	1360	0	0	1555	0	0	1785	0	0	1779	0
Flt Permitted		0.994			0.965			0.998				
Satd. Flow (perm)	0	1360	0	0	1555	0	0	1785	0	0	1779	0
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		361			963			1326			459	
Travel Time (s)		8.2			21.9			20.1			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	17%	6%	0%	21%	6%	2%	0%	0%	2%	5%
Adj. Flow (vph)	1	0	7	54	0	21	18	385	0	3	541	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	75	0	0	403	0	0	626	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	1.05	1.05	1.05	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.9

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	1	0	6	50	0	19	17	354	0	3	498	75
Future Vol, veh/h	1	0	6	50	0	19	17	354	0	3	498	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	1	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	17	6	0	21	6	2	0	0	2	5
Mvmt Flow	1	0	7	54	0	21	18	385	0	3	541	82

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1020	1050	385	1013	1009	582	623	0	0	385	0	0
Stage 1	421	421	-	588	588	-	-	-	-	-	-	-
Stage 2	599	629	-	425	421	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	6.27	6.96	6.3	6.31	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.453	3.554	4	3.489	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	230	243	638	226	256	487	939	-	-	1185	-	-
Stage 1	629	606	-	504	516	-	-	-	-	-	-	-
Stage 2	508	495	-	614	606	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	216	236	638	219	249	487	939	-	-	1185	-	-
Mov Cap-2 Maneuver	216	236	-	219	249	-	-	-	-	-	-	-
Stage 1	614	591	-	492	514	-	-	-	-	-	-	-
Stage 2	485	493	-	593	591	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	12.3	24.6	0.4	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	499	1185	-	-	939	-	-	258
HCM Lane V/C Ratio	0.015	0.003	-	-	0.02	-	-	0.291
HCM Control Delay (s)	12.3	8	0	-	8.9	0	-	24.6
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	1.2

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	377	525	0	1	0
Future Volume (vph)	0	377	525	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	10	10
Grade (%)		0%	0%		2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	1801	1818	0	1668	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1801	1818	0	1668	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1219	862		319	
Travel Time (s)		27.7	19.6		7.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Adj. Flow (vph)	0	419	583	0	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	419	583	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	377	525	0	1	0
Future Vol, veh/h	0	377	525	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	0	419	583	0	1	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	583	0	-	0	1002	583
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	419	-
Critical Hdwy	4.1	-	-	-	6.8	6.4
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1001	-	-	-	243	500
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	638	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1001	-	-	-	243	500
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	638	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1001	-	243
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	-	-	0	-	19.9
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0

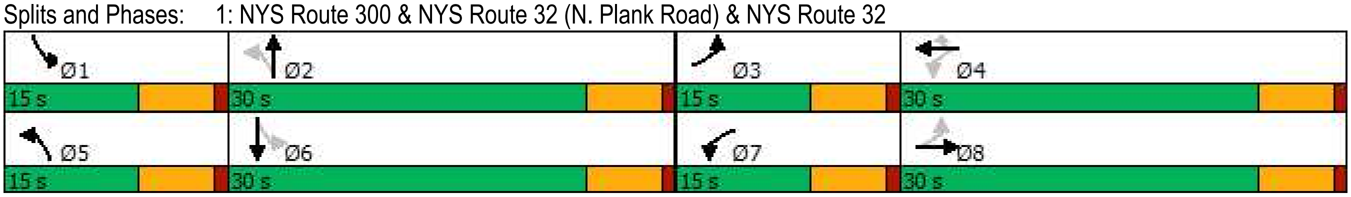
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	246	81	165	349	180	140	399	174	104	232	32
Future Volume (vph)	29	246	81	165	349	180	140	399	174	104	232	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	11	10	10	11	11	10	11	11
Grade (%)		5%			-2%			3%			-2%	
Storage Length (ft)	100		0	245		245	255		0	245		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963				0.850		0.954			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	1699	0	1547	1801	1493	1627	1651	0	1685	1733	0
Flt Permitted	0.442			0.272			0.404			0.178		
Satd. Flow (perm)	735	1699	0	443	1801	1493	692	1651	0	316	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				189		24			8	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		736			763			725			720	
Travel Time (s)		11.2			11.6			11.0			10.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	10%	3%	2%	2%	3%	8%	1%	5%	6%
Adj. Flow (vph)	31	259	85	174	367	189	147	420	183	109	244	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	344	0	174	367	189	147	603	0	109	278	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.08	1.03	1.08	1.11	1.07	1.07	1.08	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2		2	2	
Detector Template												
Leading Detector (ft)	83	83		83	83	83	83	83		83	83	
Trailing Detector (ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	43	43		43	43	43	43	43		43	43	
Detector 2 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		7	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	9.0	16.0		9.0	16.0	
Total Split (s)	15.0	30.0		15.0	30.0	30.0	15.0	30.0		15.0	30.0	
Total Split (%)	16.7%	33.3%		16.7%	33.3%	33.3%	16.7%	33.3%		16.7%	33.3%	
Maximum Green (s)	9.0	24.0		9.0	24.0	24.0	9.0	24.0		9.0	24.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
v/c Ratio	0.10	0.82		0.59	0.61	0.30	0.41	1.19		0.45	0.63	
Control Delay	16.1	45.2		26.3	31.5	5.5	19.4	134.1		21.6	34.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.1	45.2		26.3	31.5	5.5	19.4	134.1		21.6	34.3	
Queue Length 50th (ft)	10	169		61	184	0	49	~426		35	130	
Queue Length 95th (ft)	26	#291		#108	#298	49	91	#647		69	216	
Internal Link Dist (ft)		656			683			645			640	
Turn Bay Length (ft)	100			245		245	255			245		
Base Capacity (vph)	352	516		297	600	623	366	506		267	519	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.09	0.67		0.59	0.61	0.30	0.40	1.19		0.41	0.54	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 82.6	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NYS Route 300 & NYS Route 32 (N. Plank Road) & NYS Route 32



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	246	81	165	349	180	140	399	174	104	232	32
Future Volume (veh/h)	29	246	81	165	349	180	140	399	174	104	232	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1693	1723	1753	1829	1934	1949	1817	1803	1728	1964	1904	1889
Adj Flow Rate, veh/h	31	259	85	174	367	189	147	420	183	109	244	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	2	0	10	3	2	2	3	8	1	5	6
Cap, veh/h	240	294	96	295	607	518	404	357	155	215	460	64
Arrive On Green	0.02	0.24	0.24	0.10	0.31	0.31	0.09	0.30	0.30	0.07	0.28	0.28
Sat Flow, veh/h	1613	1242	408	1741	1934	1651	1731	1190	519	1870	1635	228
Grp Volume(v), veh/h	31	0	344	174	367	189	147	0	603	109	0	278
Grp Sat Flow(s),veh/h/ln	1613	0	1650	1741	1934	1651	1731	0	1709	1870	0	1863
Q Serve(g_s), s	1.2	0.0	16.1	5.7	12.9	7.1	4.7	0.0	24.0	3.2	0.0	10.1
Cycle Q Clear(g_c), s	1.2	0.0	16.1	5.7	12.9	7.1	4.7	0.0	24.0	3.2	0.0	10.1
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.30	1.00		0.12
Lane Grp Cap(c), veh/h	240	0	390	295	607	518	404	0	512	215	0	524
V/C Ratio(X)	0.13	0.00	0.88	0.59	0.60	0.36	0.36	0.00	1.18	0.51	0.00	0.53
Avail Cap(c_a), veh/h	389	0	495	321	607	518	451	0	512	300	0	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	0.0	29.5	20.7	23.3	21.3	18.3	0.0	28.0	21.2	0.0	24.3
Incr Delay (d2), s/veh	0.2	0.0	14.2	2.4	1.7	0.4	0.6	0.0	98.5	1.9	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	7.4	2.3	5.6	2.6	1.7	0.0	22.8	1.4	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.1	0.0	43.7	23.2	25.0	21.7	18.8	0.0	126.5	23.1	0.0	25.1
LnGrp LOS	C	A	D	C	C	C	B	A	F	C	A	C
Approach Vol, veh/h		375			730			750			387	
Approach Delay, s/veh		42.0			23.7			105.4			24.6	
Approach LOS		D			C			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	30.0	7.6	31.1	12.8	28.5	13.8	24.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	9.0	24.0	9.0	24.0	9.0	24.0	9.0	24.0				
Max Q Clear Time (g_c+I1), s	5.2	26.0	3.2	14.9	6.7	12.1	7.7	18.1				
Green Ext Time (p_c), s	0.1	0.0	0.0	1.9	0.1	1.0	0.1	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			54.2									
HCM 6th LOS			D									

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	1	0	6	52	0	21	24	428	0	3	550	77
Future Volume (vph)	1	0	6	52	0	21	24	428	0	3	550	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	11	11	11	11	11	11
Grade (%)		-1%			-1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.882			0.961						0.983	
Flt Protected		0.994			0.966			0.997				
Satd. Flow (prot)	0	1360	0	0	1553	0	0	1783	0	0	1781	0
Flt Permitted		0.994			0.966			0.997				
Satd. Flow (perm)	0	1360	0	0	1553	0	0	1783	0	0	1781	0
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		361			963			1326			459	
Travel Time (s)		8.2			21.9			20.1			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	17%	6%	0%	21%	6%	2%	0%	0%	2%	5%
Adj. Flow (vph)	1	0	7	57	0	23	26	465	0	3	598	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	80	0	0	491	0	0	685	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	1.05	1.05	1.05	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.3

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	1	0	6	52	0	21	24	428	0	3	550	77
Future Vol, veh/h	1	0	6	52	0	21	24	428	0	3	550	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	1	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	17	6	0	21	6	2	0	0	2	5
Mvmt Flow	1	0	7	57	0	23	26	465	0	3	598	84

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1175	1205	465	1167	1163	640	682	0	0	465	0	0
Stage 1	517	517	-	646	646	-	-	-	-	-	-	-
Stage 2	658	688	-	521	517	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	6.27	6.96	6.3	6.31	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.453	3.554	4	3.489	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	181	198	575	179	209	451	892	-	-	1107	-	-
Stage 1	561	553	-	470	487	-	-	-	-	-	-	-
Stage 2	474	468	-	547	553	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	166	189	575	171	200	451	892	-	-	1107	-	-
Mov Cap-2 Maneuver	166	189	-	171	200	-	-	-	-	-	-	-
Stage 1	539	531	-	452	485	-	-	-	-	-	-	-
Stage 2	448	466	-	520	531	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	13.6	32.6	0.5	0
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	425	1107	-	-	892	-	-	208
HCM Lane V/C Ratio	0.018	0.003	-	-	0.029	-	-	0.381
HCM Control Delay (s)	13.6	8.3	0	-	9.2	0	-	32.6
HCM Lane LOS	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	1.7

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	456	579	0	1	0
Future Volume (vph)	0	456	579	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	10	10
Grade (%)		0%	0%		2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	1801	1818	0	1668	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1801	1818	0	1668	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1219	862		319	
Travel Time (s)		27.7	19.6		7.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Adj. Flow (vph)	0	507	643	0	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	507	643	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection						
Int Delay, s/veh	0					

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	456	579	0	1	0
Future Vol, veh/h	0	456	579	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	0	507	643	0	1	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	643	0	-	0	1150	643
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	507	-
Critical Hdwy	4.1	-	-	-	6.8	6.4
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	951	-	-	-	195	460
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	576	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	951	-	-	-	195	460
Mov Cap-2 Maneuver	-	-	-	-	195	-
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	576	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	23.6
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	951	-	195
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	-	-	0	-	23.6
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	247	81	168	351	184	140	399	176	105	232	32
Future Volume (vph)	29	247	81	168	351	184	140	399	176	105	232	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	11	10	10	11	11	10	11	11
Grade (%)		5%			-2%			3%			-2%	
Storage Length (ft)	100		0	245		245	255		0	245		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963				0.850		0.954			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	1699	0	1547	1801	1493	1627	1651	0	1685	1733	0
Flt Permitted	0.439			0.272			0.404			0.178		
Satd. Flow (perm)	730	1699	0	443	1801	1493	692	1651	0	316	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				194		24			8	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		736			763			725			720	
Travel Time (s)		11.2			11.6			11.0			10.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	10%	3%	2%	2%	3%	8%	1%	5%	6%
Adj. Flow (vph)	31	260	85	177	369	194	147	420	185	111	244	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	345	0	177	369	194	147	605	0	111	278	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.08	1.03	1.08	1.11	1.07	1.07	1.08	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2		2	2	
Detector Template												
Leading Detector (ft)	83	83		83	83	83	83	83		83	83	
Trailing Detector (ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	43	43		43	43	43	43	43		43	43	
Detector 2 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		7	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	9.0	16.0		9.0	16.0	
Total Split (s)	15.0	30.0		15.0	30.0	30.0	15.0	30.0		15.0	30.0	
Total Split (%)	16.7%	33.3%		16.7%	33.3%	33.3%	16.7%	33.3%		16.7%	33.3%	
Maximum Green (s)	9.0	24.0		9.0	24.0	24.0	9.0	24.0		9.0	24.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
v/c Ratio	0.10	0.82		0.60	0.61	0.31	0.41	1.20		0.45	0.63	
Control Delay	16.1	45.3		26.8	31.6	5.5	19.4	136.6		21.7	34.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	16.1	45.3		26.8	31.6	5.5	19.4	136.6		21.7	34.3	
Queue Length 50th (ft)	10	170		62	185	0	49	~430		36	130	
Queue Length 95th (ft)	26	#292		#113	#303	49	91	#650		71	216	
Internal Link Dist (ft)		656			683			645			640	
Turn Bay Length (ft)	100			245		245	255			245		
Base Capacity (vph)	351	516		297	601	627	365	505		266	519	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.09	0.67		0.60	0.61	0.31	0.40	1.20		0.42	0.54	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 82.7

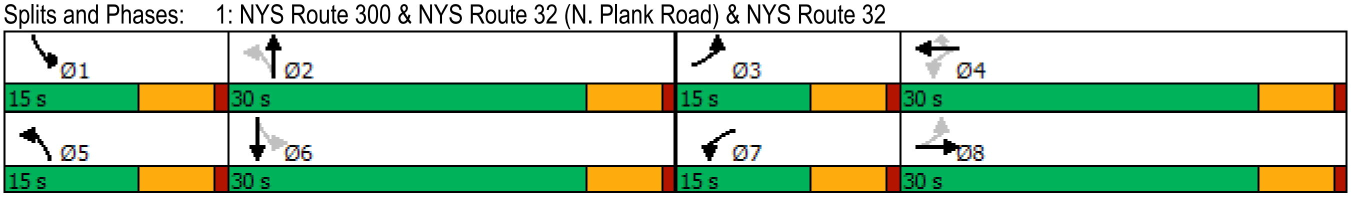
Natural Cycle: 90

Control Type: Actuated-Uncoordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NYS Route 300 & NYS Route 32 (N. Plank Road) & NYS Route 32



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	247	81	168	351	184	140	399	176	105	232	32
Future Volume (veh/h)	29	247	81	168	351	184	140	399	176	105	232	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1693	1723	1753	1829	1934	1949	1817	1803	1728	1964	1904	1889
Adj Flow Rate, veh/h	31	260	85	177	369	194	147	420	185	111	244	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	2	0	10	3	2	2	3	8	1	5	6
Cap, veh/h	240	294	96	296	610	521	403	354	156	216	459	64
Arrive On Green	0.02	0.24	0.24	0.10	0.32	0.32	0.09	0.30	0.30	0.07	0.28	0.28
Sat Flow, veh/h	1613	1243	407	1741	1934	1651	1731	1186	522	1870	1635	228
Grp Volume(v), veh/h	31	0	345	177	369	194	147	0	605	111	0	278
Grp Sat Flow(s),veh/h/ln	1613	0	1650	1741	1934	1651	1731	0	1708	1870	0	1863
Q Serve(g_s), s	1.2	0.0	16.2	5.8	13.0	7.3	4.7	0.0	24.0	3.3	0.0	10.1
Cycle Q Clear(g_c), s	1.2	0.0	16.2	5.8	13.0	7.3	4.7	0.0	24.0	3.3	0.0	10.1
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.31	1.00		0.12
Lane Grp Cap(c), veh/h	240	0	391	296	610	521	403	0	510	216	0	523
V/C Ratio(X)	0.13	0.00	0.88	0.60	0.61	0.37	0.37	0.00	1.19	0.51	0.00	0.53
Avail Cap(c_a), veh/h	388	0	493	320	610	521	449	0	510	299	0	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	0.0	29.6	20.8	23.3	21.3	18.4	0.0	28.2	21.3	0.0	24.4
Incr Delay (d2), s/veh	0.2	0.0	14.4	2.7	1.7	0.4	0.6	0.0	101.9	1.9	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	7.4	2.3	5.6	2.6	1.8	0.0	23.2	1.4	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.2	0.0	44.0	23.4	25.0	21.8	18.9	0.0	130.1	23.2	0.0	25.2
LnGrp LOS	C	A	D	C	C	C	B	A	F	C	A	C
Approach Vol, veh/h		376			740			752			389	
Approach Delay, s/veh		42.3			23.8			108.4			24.7	
Approach LOS		D			C			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	30.0	7.6	31.3	12.8	28.6	13.9	25.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	9.0	24.0	9.0	24.0	9.0	24.0	9.0	24.0
Max Q Clear Time (g_c+I1), s	5.3	26.0	3.2	15.0	6.7	12.1	7.8	18.2
Green Ext Time (p_c), s	0.1	0.0	0.0	1.9	0.1	1.0	0.1	0.8

Intersection Summary		
HCM 6th Ctrl Delay		55.2
HCM 6th LOS		E

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	1	0	6	52	0	21	26	440	0	3	555	77
Future Volume (vph)	1	0	6	52	0	21	26	440	0	3	555	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	11	11	11	11	11	11
Grade (%)		-1%			-1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.882			0.961						0.984	
Flt Protected		0.994			0.966			0.997				
Satd. Flow (prot)	0	1360	0	0	1553	0	0	1782	0	0	1783	0
Flt Permitted		0.994			0.966			0.997				
Satd. Flow (perm)	0	1360	0	0	1553	0	0	1782	0	0	1783	0
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		361			963			1326			459	
Travel Time (s)		8.2			21.9			20.1			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	17%	6%	0%	21%	6%	2%	0%	0%	2%	5%
Adj. Flow (vph)	1	0	7	57	0	23	28	478	0	3	603	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	80	0	0	506	0	0	690	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	1.05	1.05	1.05	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.4

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	1	0	6	52	0	21	26	440	0	3	555	77
Future Vol, veh/h	1	0	6	52	0	21	26	440	0	3	555	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	1	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	17	6	0	21	6	2	0	0	2	5
Mvmt Flow	1	0	7	57	0	23	28	478	0	3	603	84

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1197	1227	478	1189	1185	645	687	0	0	478	0	0
Stage 1	534	534	-	651	651	-	-	-	-	-	-	-
Stage 2	663	693	-	538	534	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	6.27	6.96	6.3	6.31	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.453	3.554	4	3.489	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	176	193	565	173	204	448	888	-	-	1095	-	-
Stage 1	550	544	-	467	485	-	-	-	-	-	-	-
Stage 2	471	465	-	536	544	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	161	184	565	165	194	448	888	-	-	1095	-	-
Mov Cap-2 Maneuver	161	184	-	165	194	-	-	-	-	-	-	-
Stage 1	526	521	-	447	483	-	-	-	-	-	-	-
Stage 2	445	463	-	507	521	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	13.8	33.9	0.5	0
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	416	1095	-	-	888	-	-	202
HCM Lane V/C Ratio	0.018	0.003	-	-	0.032	-	-	0.393
HCM Control Delay (s)	13.8	8.3	0	-	9.2	0	-	33.9
HCM Lane LOS	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	1.7

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	460	588	0	1	0
Future Volume (vph)	0	460	588	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	10	10
Grade (%)		0%	0%		2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	1801	1818	0	1668	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1801	1818	0	1668	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		472	862		319	
Travel Time (s)		10.7	19.6		7.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Adj. Flow (vph)	0	511	653	0	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	511	653	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	460	588	0	1	0
Future Vol, veh/h	0	460	588	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	0	511	653	0	1	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	653	0	-	0	1164	653
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	511	-
Critical Hdwy	4.1	-	-	-	6.8	6.4
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	943	-	-	-	191	454
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	573	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	943	-	-	-	191	454
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	573	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	24
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	943	-	191
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	-	-	0	-	24
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	4	456	579	5	14	10
Future Volume (vph)	4	456	579	5	14	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.943	
Flt Protected					0.972	
Satd. Flow (prot)	0	1863	1861	0	1707	0
Flt Permitted					0.972	
Satd. Flow (perm)	0	1863	1861	0	1707	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		747	472		158	
Travel Time (s)		17.0	10.7		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	496	629	5	15	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	500	634	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.5

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	4	456	579	5	14	10
Future Vol, veh/h	4	456	579	5	14	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	496	629	5	15	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	634	0	-	0	1136	632
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	504	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	949	-	-	-	223	480
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	949	-	-	-	222	480
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	607	-

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	949	-	286
HCM Lane V/C Ratio	-	-	0.005	-	0.091
HCM Control Delay (s)	-	-	8.8	0	18.8
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0	-	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	230	68	126	328	164	128	350	145	96	195	31
Future Volume (vph)	28	230	68	126	328	164	128	350	145	96	195	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	11	10	10	11	11	10	11	11
Grade (%)		5%			-2%			3%			-2%	
Storage Length (ft)	100		0	245		245	255		0	245		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966				0.850		0.956			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	1704	0	1547	1801	1493	1627	1656	0	1685	1727	0
Flt Permitted	0.402			0.347			0.564			0.209		
Satd. Flow (perm)	668	1704	0	565	1801	1493	966	1656	0	371	1727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16				182		26			10	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		736			763			725			720	
Travel Time (s)		11.2			11.6			11.0			10.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	10%	3%	2%	2%	3%	8%	1%	5%	6%
Adj. Flow (vph)	29	242	72	133	345	173	135	368	153	101	205	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	314	0	133	345	173	135	521	0	101	238	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.08	1.03	1.08	1.11	1.07	1.07	1.08	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2		2	2	
Detector Template												
Leading Detector (ft)	83	83		83	83	83	83	83		83	83	
Trailing Detector (ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	43	43		43	43	43	43	43		43	43	
Detector 2 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		7	4	4	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	9.0	16.0		9.0	16.0	
Total Split (s)	12.0	28.0		12.0	28.0	28.0	12.0	38.0		12.0	38.0	
Total Split (%)	13.3%	31.1%		13.3%	31.1%	31.1%	13.3%	42.2%		13.3%	42.2%	
Maximum Green (s)	6.0	22.0		6.0	22.0	22.0	6.0	32.0		6.0	32.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
v/c Ratio	0.11	0.74		0.50	0.64	0.30	0.29	0.84		0.38	0.37	
Control Delay	19.0	40.8		27.7	33.7	5.8	15.1	38.0		16.9	22.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	19.0	40.8		27.7	33.7	5.8	15.1	38.0		16.9	22.1	
Queue Length 50th (ft)	10	157		51	148	0	40	255		29	93	
Queue Length 95th (ft)	28	#272		93	#315	45	75	#445		58	158	
Internal Link Dist (ft)		656			683			645			640	
Turn Bay Length (ft)	100			245		245	255			245		
Base Capacity (vph)	276	544		268	640	648	463	768		268	792	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.11	0.58		0.50	0.54	0.27	0.29	0.68		0.38	0.30	

Intersection Summary

Area Type: Other

Cycle Length: 90

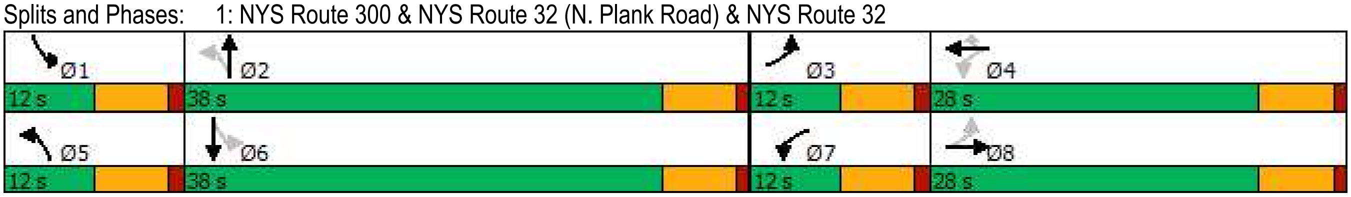
Actuated Cycle Length: 77.8

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NYS Route 300 & NYS Route 32 (N. Plank Road) & NYS Route 32



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	230	68	126	328	164	128	350	145	96	195	31
Future Volume (veh/h)	28	230	68	126	328	164	128	350	145	96	195	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1693	1723	1753	1829	1934	1949	1817	1803	1728	1964	1904	1889
Adj Flow Rate, veh/h	29	242	72	133	345	173	135	368	153	101	205	33
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	2	0	10	3	2	2	3	8	1	5	6
Cap, veh/h	217	278	83	262	534	456	471	407	169	250	515	83
Arrive On Green	0.02	0.22	0.22	0.08	0.28	0.28	0.08	0.34	0.34	0.06	0.32	0.32
Sat Flow, veh/h	1613	1275	379	1741	1934	1651	1731	1209	503	1870	1600	258
Grp Volume(v), veh/h	29	0	314	133	345	173	135	0	521	101	0	238
Grp Sat Flow(s),veh/h/ln	1613	0	1655	1741	1934	1651	1731	0	1712	1870	0	1857
Q Serve(g_s), s	1.1	0.0	14.3	4.5	12.3	6.6	4.0	0.0	22.7	2.8	0.0	7.8
Cycle Q Clear(g_c), s	1.1	0.0	14.3	4.5	12.3	6.6	4.0	0.0	22.7	2.8	0.0	7.8
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.29	1.00		0.14
Lane Grp Cap(c), veh/h	217	0	360	262	534	456	471	0	577	250	0	597
V/C Ratio(X)	0.13	0.00	0.87	0.51	0.65	0.38	0.29	0.00	0.90	0.40	0.00	0.40
Avail Cap(c_a), veh/h	311	0	466	262	545	465	471	0	701	279	0	761
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	29.5	22.2	24.9	22.9	15.8	0.0	24.7	19.0	0.0	20.6
Incr Delay (d2), s/veh	0.3	0.0	13.4	1.6	2.6	0.5	0.3	0.0	13.3	1.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	6.5	1.8	5.5	2.4	1.4	0.0	10.2	1.1	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.9	0.0	42.9	23.9	27.5	23.4	16.1	0.0	38.0	20.1	0.0	21.0
LnGrp LOS	C	A	D	C	C	C	B	A	D	C	A	C
Approach Vol, veh/h		343			651			656			339	
Approach Delay, s/veh		41.3			25.7			33.5			20.8	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	32.3	7.4	27.6	12.0	31.1	12.0	23.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	32.0	6.0	22.0	6.0	32.0	6.0	22.0
Max Q Clear Time (g_c+I1), s	4.8	24.7	3.1	14.3	6.0	9.8	6.5	16.3
Green Ext Time (p_c), s	0.0	1.7	0.0	1.6	0.0	1.0	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	30.1
HCM 6th LOS	C

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (vph)	1	0	6	50	0	19	17	354	0	3	498	75
Future Volume (vph)	1	0	6	50	0	19	17	354	0	3	498	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	11	11	11	11	11	11
Grade (%)		-1%			-1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.882			0.962						0.982	
Flt Protected		0.994			0.965			0.998				
Satd. Flow (prot)	0	1360	0	0	1555	0	0	1785	0	0	1779	0
Flt Permitted		0.994			0.965			0.998				
Satd. Flow (perm)	0	1360	0	0	1555	0	0	1785	0	0	1779	0
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		361			963			1326			459	
Travel Time (s)		8.2			21.9			20.1			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	17%	6%	0%	21%	6%	2%	0%	0%	2%	5%
Adj. Flow (vph)	1	0	7	54	0	21	18	385	0	3	541	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	75	0	0	403	0	0	626	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	1.05	1.05	1.05	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.9

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	1	0	6	50	0	19	17	354	0	3	498	75
Future Vol, veh/h	1	0	6	50	0	19	17	354	0	3	498	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	1	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	17	6	0	21	6	2	0	0	2	5
Mvmt Flow	1	0	7	54	0	21	18	385	0	3	541	82

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1020	1050	385	1013	1009	582	623	0	0	385	0	0
Stage 1	421	421	-	588	588	-	-	-	-	-	-	-
Stage 2	599	629	-	425	421	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	6.27	6.96	6.3	6.31	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.453	3.554	4	3.489	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	230	243	638	226	256	487	939	-	-	1185	-	-
Stage 1	629	606	-	504	516	-	-	-	-	-	-	-
Stage 2	508	495	-	614	606	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	216	236	638	219	249	487	939	-	-	1185	-	-
Mov Cap-2 Maneuver	216	236	-	219	249	-	-	-	-	-	-	-
Stage 1	614	591	-	492	514	-	-	-	-	-	-	-
Stage 2	485	493	-	593	591	-	-	-	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	12.3	24.6	0.4	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	499	1185	-	-	939	-	-	258
HCM Lane V/C Ratio	0.015	0.003	-	-	0.02	-	-	0.291
HCM Control Delay (s)	12.3	8	0	-	8.9	0	-	24.6
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	1.2

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	377	525	0	1	0
Future Volume (vph)	0	377	525	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	10	10
Grade (%)		0%	0%		2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	1801	1818	0	1668	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1801	1818	0	1668	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1219	862		319	
Travel Time (s)		27.7	19.6		7.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Adj. Flow (vph)	0	419	583	0	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	419	583	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	377	525	0	1	0
Future Vol, veh/h	0	377	525	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	0	419	583	0	1	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	583	0	-	0	1002	583
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	419	-
Critical Hdwy	4.1	-	-	-	6.8	6.4
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1001	-	-	-	243	500
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	638	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1001	-	-	-	243	500
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	638	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	19.9
HCM LOS			C

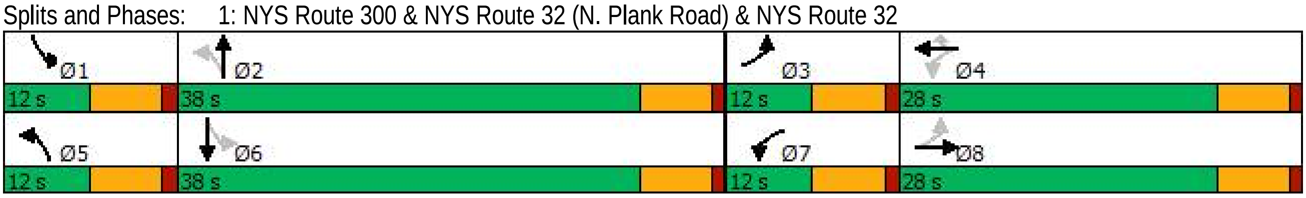
Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	1001	-	243
HCM Lane V/C Ratio	-	-	-	-	0.005
HCM Control Delay (s)	-	-	0	-	19.9
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	247	81	168	351	184	140	399	176	105	232	32
Future Volume (vph)	29	247	81	168	351	184	140	399	176	105	232	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	10	11	10	10	11	11	10	11	11
Grade (%)		5%			-2%			3%			-2%	
Storage Length (ft)	100		0	245		245	255		0	245		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963				0.850		0.954			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	1699	0	1547	1801	1493	1627	1651	0	1685	1733	0
Flt Permitted	0.350			0.275			0.476			0.134		
Satd. Flow (perm)	582	1699	0	448	1801	1493	815	1651	0	238	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				194		27			9	
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		736			763			725			720	
Travel Time (s)		11.2			11.6			11.0			10.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	0%	10%	3%	2%	2%	3%	8%	1%	5%	6%
Adj. Flow (vph)	31	260	85	177	369	194	147	420	185	111	244	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	345	0	177	369	194	147	605	0	111	278	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			10			10	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.13	1.08	1.08	1.08	1.03	1.08	1.11	1.07	1.07	1.08	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2		2	2	2	2	2		2	2	
Detector Template												
Leading Detector (ft)	83	83		83	83	83	83	83		83	83	
Trailing Detector (ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5	-5	-5	-5		-5	-5	
Detector 1 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)	43	43		43	43	43	43	43		43	43	
Detector 2 Size(ft)	40	40		40	40	40	40	40		40	40	
Detector 2 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4		4	2			6		
Detector Phase	3	8		7	4	4	5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	3.0	10.0		3.0	10.0	10.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	16.0		9.0	16.0	16.0	9.0	16.0		9.0	16.0	
Total Split (s)	12.0	28.0		12.0	28.0	28.0	12.0	38.0		12.0	38.0	
Total Split (%)	13.3%	31.1%		13.3%	31.1%	31.1%	13.3%	42.2%		13.3%	42.2%	
Maximum Green (s)	6.0	22.0		6.0	22.0	22.0	6.0	32.0		6.0	32.0	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	None		None	None	
v/c Ratio	0.13	0.85		0.78	0.70	0.34	0.36	0.94		0.55	0.46	
Control Delay	19.4	51.6		48.8	38.4	6.2	16.2	52.2		24.0	24.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	19.4	51.6		48.8	38.4	6.2	16.2	52.2		24.0	24.2	
Queue Length 50th (ft)	11	176		70	200	0	45	~329		33	115	
Queue Length 95th (ft)	29	#316		#170	#349	52	81	#559		#64	187	
Internal Link Dist (ft)		656			683			645			640	
Turn Bay Length (ft)	100			245		245	255			245		
Base Capacity (vph)	246	454		226	526	573	410	641		201	661	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.13	0.76		0.78	0.70	0.34	0.36	0.94		0.55	0.42	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 85.4	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: NYS Route 300 & NYS Route 32 (N. Plank Road) & NYS Route 32



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	247	81	168	351	184	140	399	176	105	232	32
Future Volume (veh/h)	29	247	81	168	351	184	140	399	176	105	232	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1693	1723	1753	1829	1934	1949	1817	1803	1728	1964	1904	1889
Adj Flow Rate, veh/h	31	260	85	177	369	194	147	420	185	111	244	34
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	2	0	10	3	2	2	3	8	1	5	6
Cap, veh/h	198	287	94	229	540	461	463	434	191	211	584	81
Arrive On Green	0.02	0.23	0.23	0.07	0.28	0.28	0.07	0.37	0.37	0.06	0.36	0.36
Sat Flow, veh/h	1613	1243	407	1741	1934	1651	1731	1186	522	1870	1635	228
Grp Volume(v), veh/h	31	0	345	177	369	194	147	0	605	111	0	278
Grp Sat Flow(s),veh/h/ln	1613	0	1650	1741	1934	1651	1731	0	1708	1870	0	1863
Q Serve(g_s), s	1.3	0.0	17.8	6.0	14.9	8.4	4.7	0.0	30.4	3.2	0.0	9.9
Cycle Q Clear(g_c), s	1.3	0.0	17.8	6.0	14.9	8.4	4.7	0.0	30.4	3.2	0.0	9.9
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.31	1.00		0.12
Lane Grp Cap(c), veh/h	198	0	380	229	540	461	463	0	626	211	0	666
V/C Ratio(X)	0.16	0.00	0.91	0.77	0.68	0.42	0.32	0.00	0.97	0.53	0.00	0.42
Avail Cap(c_a), veh/h	277	0	415	229	540	461	463	0	626	227	0	682
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	32.7	27.7	28.0	25.7	16.4	0.0	27.2	21.2	0.0	21.2
Incr Delay (d2), s/veh	0.4	0.0	22.1	14.8	3.5	0.6	0.4	0.0	27.8	2.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	8.9	3.6	6.9	3.1	1.7	0.0	15.9	1.4	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.1	0.0	54.9	42.5	31.6	26.3	16.8	0.0	55.0	23.3	0.0	21.6
LnGrp LOS	C	A	D	D	C	C	B	A	E	C	A	C
Approach Vol, veh/h		376			740			752			389	
Approach Delay, s/veh		52.5			32.8			47.5			22.1	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	38.0	7.7	30.4	12.0	37.2	12.0	26.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	32.0	6.0	22.0	6.0	32.0	6.0	22.0
Max Q Clear Time (g_c+I1), s	5.2	32.4	3.3	16.9	6.7	11.9	8.0	19.8
Green Ext Time (p_c), s	0.0	0.0	0.0	1.3	0.0	1.2	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	39.1
HCM 6th LOS	D

Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	1	0	6	52	0	21	26	440	0	3	555	77
Future Volume (vph)	1	0	6	52	0	21	26	440	0	3	555	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	11	11	11	11	11	11	11	11	11
Grade (%)		-1%			-1%			1%			-2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.882			0.961						0.984	
Flt Protected		0.994			0.966			0.997				
Satd. Flow (prot)	0	1360	0	0	1553	0	0	1782	0	0	1783	0
Flt Permitted		0.994			0.966			0.997				
Satd. Flow (perm)	0	1360	0	0	1553	0	0	1782	0	0	1783	0
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		361			963			1326			459	
Travel Time (s)		8.2			21.9			20.1			7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	17%	6%	0%	21%	6%	2%	0%	0%	2%	5%
Adj. Flow (vph)	1	0	7	57	0	23	28	478	0	3	603	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	80	0	0	506	0	0	690	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.04	1.04	1.04	1.05	1.05	1.05	1.03	1.03	1.03
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection												
Int Delay, s/veh	2.4											
Movement	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**SEL**	**SET**	**SER**	**NWL**	**NWT**	**NWR**
Lane Configurations												
Traffic Vol, veh/h	1	0	6	52	0	21	26	440	0	3	555	77
Future Vol, veh/h	1	0	6	52	0	21	26	440	0	3	555	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	1	-	-	-2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	17	6	0	21	6	2	0	0	2	5
Mvmt Flow	1	0	7	57	0	23	28	478	0	3	603	84

Major/Minor	Minor1			Minor2			Major1			Major2		
Conflicting Flow All	1197	1227	478	1189	1185	645	687	0	0	478	0	0
Stage 1	534	534	-	651	651	-	-	-	-	-	-	-
Stage 2	663	693	-	538	534	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	6.27	6.96	6.3	6.31	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	5.96	5.3	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.453	3.554	4	3.489	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	176	193	565	173	204	448	888	-	-	1095	-	-
Stage 1	550	544	-	467	485	-	-	-	-	-	-	-
Stage 2	471	465	-	536	544	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	161	184	565	165	194	448	888	-	-	1095	-	-
Mov Cap-2 Maneuver	161	184	-	165	194	-	-	-	-	-	-	-
Stage 1	526	521	-	447	483	-	-	-	-	-	-	-
Stage 2	445	463	-	507	521	-	-	-	-	-	-	-

Approach	NB			SB			SE			NW		
HCM Control Delay, s	13.8			33.9			0.5			0		
HCM LOS	B			D								

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	NWR	SEL	SET	SER	SBLn1
Capacity (veh/h)	416	1095	-	-	888	-	-	202
HCM Lane V/C Ratio	0.018	0.003	-	-	0.032	-	-	0.393
HCM Control Delay (s)	13.8	8.3	0	-	9.2	0	-	33.9
HCM Lane LOS	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	1.7

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	0	460	588	0	1	0
Future Volume (vph)	0	460	588	0	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	10	10
Grade (%)		0%	0%		2%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	1801	1818	0	1668	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1801	1818	0	1668	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		507	862		319	
Travel Time (s)		11.5	19.6		7.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	1%	0%	0%	0%
Adj. Flow (vph)	0	511	653	0	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	511	653	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		10	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.04	1.04	1.04	1.04	1.11	1.11
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection						
Int Delay, s/veh	0					

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	0	460	588	0	1	0
Future Vol, veh/h	0	460	588	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	2	1	0	0	0
Mvmt Flow	0	511	653	0	1	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	653	0	-	0	1164	653
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	511	-
Critical Hdwy	4.1	-	-	-	6.8	6.4
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	943	-	-	-	191	454
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	573	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	943	-	-	-	191	454
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	573	-

Approach	SE	NW	SW
HCM Control Delay, s	0	0	24
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	943	-	191
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	-	-	0	-	24
HCM Lane LOS	-	-	A	-	C
HCM 95th %tile Q(veh)	-	-	0	-	0

Lane Group	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	4	456	579	5	14	10
Future Volume (vph)	4	456	579	5	14	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.943	
Flt Protected					0.972	
Satd. Flow (prot)	0	1863	1861	0	1707	0
Flt Permitted					0.972	
Satd. Flow (perm)	0	1863	1861	0	1707	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		712	507		177	
Travel Time (s)		16.2	11.5		4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	496	629	5	15	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	500	634	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection						
Int Delay, s/veh	0.5					

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	4	456	579	5	14	10
Future Vol, veh/h	4	456	579	5	14	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	496	629	5	15	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	634	0	-	0	1136	632
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	504	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	949	-	-	-	223	480
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	607	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	949	-	-	-	222	480
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	607	-

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	18.8
HCM LOS			C

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SWLn1
Capacity (veh/h)	-	-	949	-	286
HCM Lane V/C Ratio	-	-	0.005	-	0.091
HCM Control Delay (s)	-	-	8.8	0	18.8
HCM Lane LOS	-	-	A	A	C
HCM 95th %tile Q(veh)	-	-	0	-	0.3

Colliers
Engineering & Design

Traffic Impact Study

Appendix E | Traffic Volume Data

Intersection 1: NYS Route 300 at NYS Route 32

Colliers Engineering & Design

400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : 1-NYS_Route_300_and_NYS_Route_32_1049624_03-21-2023
Site Code :
Start Date : 3/21/2023
Page No : 1

Groups Printed- Lights - Buses - Trucks - Pedestrians

	NYS RT 32 From North					NYS RT 300 From East					NYS RT 32 From South					NYS RT 300 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	50	36	0	86	13	27	18	0	58	6	11	1	0	18	16	61	2	0	79	241
06:45 AM	4	58	24	0	86	12	31	15	0	58	7	15	14	0	36	11	57	2	0	70	250
Total	4	108	60	0	172	25	58	33	0	116	13	26	15	0	54	27	118	4	0	149	491
07:00 AM	6	51	32	0	89	16	25	18	0	59	10	16	8	0	34	17	66	11	0	94	276
07:15 AM	7	55	28	0	90	16	28	17	0	61	3	24	10	0	37	16	66	8	0	90	278
07:30 AM	4	72	42	0	118	26	37	23	0	86	5	28	9	0	42	24	90	3	0	117	363
07:45 AM	6	79	36	0	121	20	28	37	0	85	18	27	12	0	57	16	71	3	0	90	353
Total	23	257	138	0	418	78	118	95	0	291	36	95	39	0	170	73	293	25	0	391	1270
08:00 AM	3	45	28	0	76	16	24	32	0	72	21	26	14	0	61	18	65	3	0	86	295
08:15 AM	3	55	39	0	97	26	33	33	0	92	16	40	10	0	66	18	63	8	0	89	344
08:30 AM	4	64	33	0	101	16	25	34	0	75	15	38	12	0	65	12	71	3	0	86	327
08:45 AM	1	72	37	0	110	27	33	30	0	90	16	29	15	0	60	24	57	3	0	84	344
Total	11	236	137	0	384	85	115	129	0	329	68	133	51	0	252	72	256	17	0	345	1310
09:00 AM	6	53	27	0	86	15	28	29	0	72	18	32	7	0	57	20	56	6	0	82	297
09:15 AM	2	43	28	0	73	16	30	45	0	91	14	37	24	0	75	25	59	4	0	88	327
Grand Total	46	697	390	0	1133	219	349	331	0	899	149	323	136	0	608	217	782	56	0	1055	3695
Apprch %	4.1	61.5	34.4	0		24.4	38.8	36.8	0		24.5	53.1	22.4	0		20.6	74.1	5.3	0		
Total %	1.2	18.9	10.6	0	30.7	5.9	9.4	9	0	24.3	4	8.7	3.7	0	16.5	5.9	21.2	1.5	0	28.6	
Lights	43	674	376	0	1093	210	327	311	0	848	117	290	122	0	529	205	743	56	0	1004	3474
% Lights	93.5	96.7	96.4	0	96.5	95.9	93.7	94	0	94.3	78.5	89.8	89.7	0	87	94.5	95	100	0	95.2	94
Buses	1	4	3	0	8	2	11	11	0	24	16	5	6	0	27	3	13	0	0	16	75
% Buses	2.2	0.6	0.8	0	0.7	0.9	3.2	3.3	0	2.7	10.7	1.5	4.4	0	4.4	1.4	1.7	0	0	1.5	2
Trucks	2	19	11	0	32	7	11	9	0	27	16	28	8	0	52	9	26	0	0	35	146
% Trucks	4.3	2.7	2.8	0	2.8	3.2	3.2	2.7	0	3	10.7	8.7	5.9	0	8.6	4.1	3.3	0	0	3.3	4
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Colliers Engineering & Design
400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : 1-NYS_Route_300_and_NYS_Route_32_1049624_03-21-2023
Site Code :
Start Date : 3/21/2023

	NYS RT 32 From North					NYS RT 300 From East					NYS RT 32 From South					NYS RT 300 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 09:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	4	72	42	0	118	26	37	23	0	86	5	28	9	0	42	24	90	3	0	117	363
07:45 AM	6	79	36	0	121	20	28	37	0	85	18	27	12	0	57	16	71	3	0	90	353
08:00 AM	3	45	28	0	76	16	24	32	0	72	21	26	14	0	61	18	65	3	0	86	295
08:15 AM	3	55	39	0	97	26	33	33	0	92	16	40	10	0	66	18	63	8	0	89	344
Total Volume	16	251	145	0	412	88	122	125	0	335	60	121	45	0	226	76	289	17	0	382	1355
% App. Total	3.9	60.9	35.2	0		26.3	36.4	37.3	0		26.5	53.5	19.9	0		19.9	75.7	4.5	0		
PHF	.667	.794	.863	.000	.851	.846	.824	.845	.000	.910	.714	.756	.804	.000	.856	.792	.803	.531	.000	.816	.933
Lights	15	244	141	0	400	85	114	115	0	314	44	107	40	0	191	71	280	17	0	368	1273
% Lights	93.8	97.2	97.2	0	97.1	96.6	93.4	92.0	0	93.7	73.3	88.4	88.9	0	84.5	93.4	96.9	100	0	96.3	93.9
Buses	0	3	0	0	3	2	3	6	0	11	7	1	2	0	10	2	5	0	0	7	31
% Buses	0	1.2	0	0	0.7	2.3	2.5	4.8	0	3.3	11.7	0.8	4.4	0	4.4	2.6	1.7	0	0	1.8	2.3
Trucks	1	4	4	0	9	1	5	4	0	10	9	13	3	0	25	3	4	0	0	7	51
% Trucks	6.3	1.6	2.8	0	2.2	1.1	4.1	3.2	0	3.0	15.0	10.7	6.7	0	11.1	3.9	1.4	0	0	1.8	3.8
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

File Name : 1-NYS_Route_300_and_NYS_Route_32_1049624_03-21-2023
Site Code :
Start Date : 3/21/2023
Page No : 1

Groups Printed- Lights - Buses - Trucks - Pedestrians

	NYS RT 32 From North					NYS RT 300 From East					NYS RT 32 From South					NYS RT 300 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:30 PM	6	33	21	0	60	20	49	34	0	103	37	71	26	0	134	15	37	5	0	57	354
03:45 PM	3	38	26	0	67	32	64	25	0	121	48	70	31	0	149	11	59	10	0	80	417
Total	9	71	47	0	127	52	113	59	0	224	85	141	57	0	283	26	96	15	0	137	771
04:00 PM	9	31	19	0	59	48	88	37	0	173	38	77	29	0	144	17	61	7	0	85	461
04:15 PM	6	50	21	0	77	42	99	36	0	177	32	77	30	0	139	20	54	8	0	82	475
04:30 PM	13	41	30	0	84	42	77	28	0	147	27	78	38	0	143	20	56	3	0	79	453
04:45 PM	6	55	22	0	83	42	72	24	0	138	25	63	32	0	120	14	52	7	0	73	414
Total	34	177	92	0	303	174	336	125	0	635	122	295	129	0	546	71	223	25	0	319	1803
05:00 PM	5	41	17	0	63	35	95	23	0	153	32	84	30	0	146	14	46	8	0	68	430
05:15 PM	9	44	26	0	79	44	82	26	0	152	28	86	41	0	155	15	62	6	0	83	469
05:30 PM	8	52	24	0	84	38	85	19	0	142	31	88	25	0	144	20	52	2	0	74	444
05:45 PM	7	37	10	5	59	49	69	25	0	143	24	70	34	0	128	16	56	5	0	77	407
Total	29	174	77	5	285	166	331	93	0	590	115	328	130	0	573	65	216	21	0	302	1750
06:00 PM	1	39	23	0	63	41	67	23	0	131	31	64	22	0	117	19	43	10	0	72	383
06:15 PM	6	42	30	0	78	25	54	16	0	95	18	40	22	0	80	19	59	8	0	86	339
Grand Total	79	503	269	5	856	458	901	316	0	1675	371	868	360	0	1599	200	637	79	0	916	5046
Apprch %	9.2	58.8	31.4	0.6		27.3	53.8	18.9	0		23.2	54.3	22.5	0		21.8	69.5	8.6	0		
Total %	1.6	10	5.3	0.1	17	9.1	17.9	6.3	0	33.2	7.4	17.2	7.1	0	31.7	4	12.6	1.6	0	18.2	
Lights	76	486	266	0	828	452	881	295	0	1628	351	853	355	0	1559	197	624	78	0	899	4914
% Lights	96.2	96.6	98.9	0	96.7	98.7	97.8	93.4	0	97.2	94.6	98.3	98.6	0	97.5	98.5	98	98.7	0	98.1	97.4
Buses	1	3	2	0	6	2	6	7	0	15	7	4	3	0	14	2	2	0	0	4	39
% Buses	1.3	0.6	0.7	0	0.7	0.4	0.7	2.2	0	0.9	1.9	0.5	0.8	0	0.9	1	0.3	0	0	0.4	0.8
Trucks	2	14	1	0	17	4	14	14	0	32	13	11	2	0	26	1	11	1	0	13	88
% Trucks	2.5	2.8	0.4	0	2	0.9	1.6	4.4	0	1.9	3.5	1.3	0.6	0	1.6	0.5	1.7	1.3	0	1.4	1.7
Pedestrians	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
% Pedestrians	0	0	0	100	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1

Colliers Engineering & Design
400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : 1-NYS_Route_300_and_NYS_Route_32_1049624_03-21-2023
Site Code :
Start Date : 3/21/2023

	NYS RT 32 From North					NYS RT 300 From East					NYS RT 32 From South					NYS RT 300 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	3	38	26	0	67	32	64	25	0	121	48	70	31	0	149	11	59	10	0	80	417
04:00 PM	9	31	19	0	59	48	88	37	0	173	38	77	29	0	144	17	61	7	0	85	461
04:15 PM	6	50	21	0	77	42	99	36	0	177	32	77	30	0	139	20	54	8	0	82	475
04:30 PM	13	41	30	0	84	42	77	28	0	147	27	78	38	0	143	20	56	3	0	79	453
Total Volume	31	160	96	0	287	164	328	126	0	618	145	302	128	0	575	68	230	28	0	326	1806
% App. Total	10.8	55.7	33.4	0		26.5	53.1	20.4	0		25.2	52.5	22.3	0		20.9	70.6	8.6	0		
PHF	.596	.800	.800	.000	.854	.854	.828	.851	.000	.873	.755	.968	.842	.000	.965	.850	.943	.700	.000	.959	.951
Lights	29	152	95	0	276	161	317	114	0	592	134	293	125	0	552	68	226	27	0	321	1741
% Lights	93.5	95.0	99.0	0	96.2	98.2	96.6	90.5	0	95.8	92.4	97.0	97.7	0	96.0	100	98.3	96.4	0	98.5	96.4
Buses	1	3	1	0	5	1	3	6	0	10	3	3	2	0	8	0	1	0	0	1	24
% Buses	3.2	1.9	1.0	0	1.7	0.6	0.9	4.8	0	1.6	2.1	1.0	1.6	0	1.4	0	0.4	0	0	0.3	1.3
Trucks	1	5	0	0	6	2	8	6	0	16	8	6	1	0	15	0	3	1	0	4	41
% Trucks	3.2	3.1	0	0	2.1	1.2	2.4	4.8	0	2.6	5.5	2.0	0.8	0	2.6	0	1.3	3.6	0	1.2	2.3
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection 2: NYS Route 32 at New Road/ Paffendorf Drive

Colliers Engineering & Design

400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : 2-NYS_Route_32_and_New_Road_1049630_03-21-2023
Site Code :
Start Date : 3/21/2023

Groups Printed- Lights - Buses - Trucks - Pedestrians

	NEW RD From North					NYS RT 32 From East					NEW RD From South					NYS RT 32 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	0	11	0	12	2	34	0	0	36	2	0	0	0	2	0	88	1	0	89	139
06:45 AM	5	0	20	0	25	3	48	0	0	51	3	0	0	0	3	0	87	2	0	89	168
Total	6	0	31	0	37	5	82	0	0	87	5	0	0	0	5	0	175	3	0	178	307
07:00 AM	5	0	14	0	19	4	44	1	0	49	3	0	0	0	3	0	91	9	0	100	171
07:15 AM	0	0	9	0	9	7	52	0	0	59	1	0	0	0	1	0	96	1	0	97	166
07:30 AM	3	0	24	0	27	2	53	2	0	57	5	0	1	0	6	0	135	4	0	139	229
07:45 AM	2	0	23	0	25	6	58	0	0	64	2	0	0	0	2	1	90	6	0	97	188
Total	10	0	70	0	80	19	207	3	0	229	11	0	1	0	12	1	412	20	0	433	754
08:00 AM	1	0	14	0	15	4	38	0	0	42	2	0	0	0	2	1	99	3	0	103	162
08:15 AM	4	0	9	0	13	2	68	2	0	72	1	0	0	0	1	0	94	7	0	101	187
08:30 AM	0	0	6	0	6	3	50	0	0	53	3	0	0	0	3	0	106	1	0	107	169
08:45 AM	8	0	22	0	30	5	57	1	0	63	0	0	0	0	0	0	103	3	0	106	199
Total	13	0	51	0	64	14	213	3	0	230	6	0	0	0	6	1	402	14	0	417	717
09:00 AM	7	0	7	0	14	5	56	0	0	61	0	0	0	0	0	0	85	3	0	88	163
09:15 AM	7	0	10	0	17	5	44	1	0	50	0	0	0	0	0	1	76	3	0	80	147
Grand Total	43	0	169	0	212	48	602	7	0	657	22	0	1	0	23	3	1150	43	0	1196	2088
Apprch %	20.3	0	79.7	0		7.3	91.6	1.1	0		95.7	0	4.3	0		0.3	96.2	3.6	0		
Total %	2.1	0	8.1	0	10.2	2.3	28.8	0.3	0	31.5	1.1	0	0	0	1.1	0.1	55.1	2.1	0	57.3	
Lights	35	0	161	0	196	41	569	7	0	617	21	0	0	0	21	2	1102	31	0	1135	1969
% Lights	81.4	0	95.3	0	92.5	85.4	94.5	100	0	93.9	95.5	0	0	0	91.3	66.7	95.8	72.1	0	94.9	94.3
Buses	4	0	5	0	9	5	13	0	0	18	0	0	1	0	1	0	12	5	0	17	45
% Buses	9.3	0	3	0	4.2	10.4	2.2	0	0	2.7	0	0	100	0	4.3	0	1	11.6	0	1.4	2.2
Trucks	4	0	3	0	7	2	20	0	0	22	1	0	0	0	1	1	36	7	0	44	74
% Trucks	9.3	0	1.8	0	3.3	4.2	3.3	0	0	3.3	4.5	0	0	0	4.3	33.3	3.1	16.3	0	3.7	3.5
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Colliers Engineering & Design

400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : 2-NYS_Route_32_and_New_Road_1049630_03-21-2023
Site Code :
Start Date : 3/21/2023
Page No : 2

	NEW RD From North					NYS RT 32 From East					NEW RD From South					NYS RT 32 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 09:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	3	0	24	0	27	2	53	2	0	57	5	0	1	0	6	0	135	4	0	139	229
07:45 AM	2	0	23	0	25	6	58	0	0	64	2	0	0	0	2	1	90	6	0	97	188
08:00 AM	1	0	14	0	15	4	38	0	0	42	2	0	0	0	2	1	99	3	0	103	162
08:15 AM	4	0	9	0	13	2	68	2	0	72	1	0	0	0	1	0	94	7	0	101	187
Total Volume	10	0	70	0	80	14	217	4	0	235	10	0	1	0	11	2	418	20	0	440	766
% App. Total	12.5	0	87.5	0		6	92.3	1.7	0		90.9	0	9.1	0		0.5	95	4.5	0		
PHF	.625	.000	.729	.000	.741	.583	.798	.500	.000	.816	.500	.000	.250	.000	.458	.500	.774	.714	.000	.791	.836
Lights	8	0	69	0	77	12	207	4	0	223	10	0	0	0	10	2	409	13	0	424	734
% Lights	80.0	0	98.6	0	96.3	85.7	95.4	100	0	94.9	100	0	0	0	90.9	100	97.8	65.0	0	96.4	95.8
Buses	1	0	1	0	2	2	4	0	0	6	0	0	1	0	1	0	3	3	0	6	15
% Buses	10.0	0	1.4	0	2.5	14.3	1.8	0	0	2.6	0	0	100	0	9.1	0	0.7	15.0	0	1.4	2.0
Trucks	1	0	0	0	1	0	6	0	0	6	0	0	0	0	0	0	6	4	0	10	17
% Trucks	10.0	0	0	0	1.3	0	2.8	0	0	2.6	0	0	0	0	0	0	1.4	20.0	0	2.3	2.2
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Colliers Engineering & Design

400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : 2-NYS_Route_32_and_New_Road_1049630_03-21-2023
Site Code :
Start Date : 3/21/2023
Page No : 1

Groups Printed- Lights - Buses - Trucks - Pedestrians

	NEW RD From North					NYS RT 32 From East					NEW RD From South					NYS RT 32 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:30 PM	6	0	9	0	15	22	84	1	0	107	0	0	0	0	0	0	58	7	0	65	187
03:45 PM	1	0	15	0	16	16	93	2	0	111	2	0	0	0	2	0	83	10	0	93	222
Total	7	0	24	0	31	38	177	3	0	218	2	0	0	0	2	0	141	17	0	158	409
04:00 PM	6	0	13	0	19	18	141	1	0	160	0	0	1	0	1	0	92	5	0	97	277
04:15 PM	7	0	17	0	24	27	127	0	0	154	2	0	0	0	2	0	92	4	0	96	276
04:30 PM	1	0	9	0	10	14	119	1	0	134	2	0	0	0	2	0	83	5	0	88	234
04:45 PM	5	0	11	0	16	16	111	1	0	128	2	0	0	0	2	0	87	3	0	90	236
Total	19	0	50	0	69	75	498	3	0	576	6	0	1	0	7	0	354	17	0	371	1023
05:00 PM	5	0	9	0	14	21	132	2	0	155	1	0	0	0	1	0	82	8	0	90	260
05:15 PM	3	0	9	0	12	26	142	1	0	169	2	1	0	0	3	0	93	7	0	100	284
05:30 PM	5	0	13	0	18	25	112	0	0	137	0	0	0	0	0	0	75	1	0	76	231
05:45 PM	3	0	8	0	11	14	124	0	0	138	1	0	0	0	1	0	69	3	0	72	222
Total	16	0	39	0	55	86	510	3	0	599	4	1	0	0	5	0	319	19	0	338	997
06:00 PM	5	0	8	0	13	22	113	1	0	136	1	0	0	0	1	0	68	1	0	69	219
06:15 PM	0	0	9	0	9	16	100	1	0	117	2	0	0	0	2	0	80	2	0	82	210
Grand Total	47	0	130	0	177	237	1398	11	0	1646	15	1	1	0	17	0	962	56	0	1018	2858
Apprch %	26.6	0	73.4	0		14.4	84.9	0.7	0		88.2	5.9	5.9	0		0	94.5	5.5	0		
Total %	1.6	0	4.5	0	6.2	8.3	48.9	0.4	0	57.6	0.5	0	0	0	0.6	0	33.7	2	0	35.6	
Lights	40	0	126	0	166	227	1373	11	0	1611	14	1	1	0	16	0	945	51	0	996	2789
% Lights	85.1	0	96.9	0	93.8	95.8	98.2	100	0	97.9	93.3	100	100	0	94.1	0	98.2	91.1	0	97.8	97.6
Buses	3	0	4	0	7	6	6	0	0	12	1	0	0	0	1	0	7	2	0	9	29
% Buses	6.4	0	3.1	0	4	2.5	0.4	0	0	0.7	6.7	0	0	0	5.9	0	0.7	3.6	0	0.9	1
Trucks	4	0	0	0	4	4	19	0	0	23	0	0	0	0	0	0	10	3	0	13	40
% Trucks	8.5	0	0	0	2.3	1.7	1.4	0	0	1.4	0	0	0	0	0	0	1	5.4	0	1.3	1.4
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Colliers Engineering & Design

400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : 2-NYS_Route_32_and_New_Road_1049630_03-21-2023
Site Code :
Start Date : 3/21/2023

	NEW RD From North					NYS RT 32 From East					NEW RD From South					NYS RT 32 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	6	0	13	0	19	18	141	1	0	160	0	0	1	0	1	0	92	5	0	97	277
04:15 PM	7	0	17	0	24	27	127	0	0	154	2	0	0	0	2	0	92	4	0	96	276
04:30 PM	1	0	9	0	10	14	119	1	0	134	2	0	0	0	2	0	83	5	0	88	234
04:45 PM	5	0	11	0	16	16	111	1	0	128	2	0	0	0	2	0	87	3	0	90	236
Total Volume	19	0	50	0	69	75	498	3	0	576	6	0	1	0	7	0	354	17	0	371	1023
% App. Total	27.5	0	72.5	0		13	86.5	0.5	0		85.7	0	14.3	0		0	95.4	4.6	0		
PHF	.679	.000	.735	.000	.719	.694	.883	.750	.000	.900	.750	.000	.250	.000	.875	.000	.962	.850	.000	.956	.923
Lights	15	0	47	0	62	71	484	3	0	558	5	0	1	0	6	0	348	16	0	364	990
% Lights	78.9	0	94.0	0	89.9	94.7	97.2	100	0	96.9	83.3	0	100	0	85.7	0	98.3	94.1	0	98.1	96.8
Buses	2	0	3	0	5	3	5	0	0	8	1	0	0	0	1	0	4	1	0	5	19
% Buses	10.5	0	6.0	0	7.2	4.0	1.0	0	0	1.4	16.7	0	0	0	14.3	0	1.1	5.9	0	1.3	1.9
Trucks	2	0	0	0	2	1	9	0	0	10	0	0	0	0	0	0	2	0	0	2	14
% Trucks	10.5	0	0	0	2.9	1.3	1.8	0	0	1.7	0	0	0	0	0	0	0.6	0	0	0.5	1.4
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection 3: NYS Route 32 at Crab Apple Court

Colliers Engineering & Design

400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : NYS_ROUTE_32_AT_CRAB_APPLE_COURT_1064689_04-20-2023
Site Code :
Start Date : 4/20/2023
Page No : 1

Groups Printed- Lights - Buses - Trucks - Pedestrians

	CRAB APPLE COURT From North					NYS ROUTE 32 From East					From South					NYS ROUTE 32 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	0	0	0	0	1	47	0	0	48	0	0	0	0	0	0	96	0	0	96	144
06:45 AM	0	0	0	0	0	1	45	0	0	46	0	0	0	0	0	0	103	0	0	103	149
Total	0	0	0	0	0	2	92	0	0	94	0	0	0	0	0	0	199	0	0	199	293
07:00 AM	0	0	1	0	1	0	42	0	0	42	0	0	0	0	0	0	96	0	0	96	139
07:15 AM	0	0	1	0	1	1	54	0	0	55	0	0	0	0	0	0	95	0	0	95	151
07:30 AM	0	0	0	0	0	2	52	0	0	54	0	0	0	0	0	0	113	0	0	113	167
07:45 AM	0	0	0	0	0	0	60	0	0	60	0	0	0	0	0	0	110	0	0	110	170
Total	0	0	2	0	2	3	208	0	0	211	0	0	0	0	0	0	414	0	0	414	627
08:00 AM	0	0	0	0	0	0	64	0	0	64	0	0	0	0	0	0	105	0	0	105	169
08:15 AM	0	0	1	0	1	0	70	0	0	70	0	0	0	0	0	0	109	0	0	109	180
08:30 AM	0	0	0	0	0	0	66	0	0	66	0	0	0	0	0	0	98	0	0	98	164
08:45 AM	0	0	0	0	0	0	74	0	0	74	0	0	0	0	0	0	93	0	0	93	167
Total	0	0	1	0	1	0	274	0	0	274	0	0	0	0	0	0	405	0	0	405	680
09:00 AM	0	0	0	0	0	1	47	0	0	48	0	0	0	0	0	0	94	1	0	95	143
09:15 AM	1	0	2	0	3	0	59	0	0	59	0	0	0	0	0	0	100	0	0	100	162
Grand Total	1	0	5	0	6	6	680	0	0	686	0	0	0	0	0	0	1212	1	0	1213	1905
Apprch %	16.7	0	83.3	0		0.9	99.1	0	0		0	0	0	0		0	99.9	0.1	0		
Total %	0.1	0	0.3	0	0.3	0.3	35.7	0	0	36	0	0	0	0	0	0	63.6	0.1	0	63.7	
Lights	0	0	4	0	4	6	639	0	0	645	0	0	0	0	0	0	1153	1	0	1154	1803
% Lights	0	0	80	0	66.7	100	94	0	0	94	0	0	0	0	0	0	95.1	100	0	95.1	94.6
Buses	0	0	0	0	0	0	18	0	0	18	0	0	0	0	0	0	17	0	0	17	35
% Buses	0	0	0	0	0	0	2.6	0	0	2.6	0	0	0	0	0	0	1.4	0	0	1.4	1.8
Trucks	1	0	1	0	2	0	23	0	0	23	0	0	0	0	0	0	42	0	0	42	67
% Trucks	100	0	20	0	33.3	0	3.4	0	0	3.4	0	0	0	0	0	0	3.5	0	0	3.5	3.5
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Colliers Engineering & Design

400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : NYS_ROUTE_32_AT_CRAB_APPLE_COURT_1064689_04-20-2023
Site Code :
Start Date : 4/20/2023
Page No : 2

	CRAB APPLE COURT From North					NYS ROUTE 32 From East					From South					NYS ROUTE 32 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 09:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	**2**	52	0	0	54	0	0	0	0	0	0	**113**	0	0	**113**	167
07:45 AM	0	0	0	0	0	0	60	0	0	60	0	0	0	0	0	0	110	0	0	110	170
08:00 AM	0	0	0	0	0	0	64	0	0	64	0	0	0	0	0	0	105	0	0	105	169
08:15 AM	0	0	**1**	0	**1**	0	**70**	0	0	**70**	0	0	0	0	0	0	109	0	0	109	**180**
Total Volume	0	0	1	0	1	2	246	0	0	248	0	0	0	0	0	0	437	0	0	437	686
% App. Total	0	0	100	0		0.8	99.2	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.250	.000	.250	.250	.879	.000	.000	.886	.000	.000	.000	.000	.000	.000	.967	.000	.000	.967	.953
Lights	0	0	0	0	0	2	231	0	0	233	0	0	0	0	0	0	420	0	0	420	653
% Lights	0	0	0	0	0	100	93.9	0	0	94.0	0	0	0	0	0	0	96.1	0	0	96.1	95.2
Buses	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	8
% Buses	0	0	0	0	0	0	2.0	0	0	2.0	0	0	0	0	0	0	0.7	0	0	0.7	1.2
Trucks	0	0	1	0	1	0	10	0	0	10	0	0	0	0	0	0	14	0	0	14	25
% Trucks	0	0	100	0	100	0	4.1	0	0	4.0	0	0	0	0	0	0	3.2	0	0	3.2	3.6
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Colliers Engineering & Design

400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : NYS_ROUTE_32_AT_CRAB_APPLE_COURT_1064689_04-20-2023
Site Code :
Start Date : 4/20/2023
Page No : 1

Groups Printed- Lights - Buses - Trucks - Pedestrians

	CRAB APPLE COURT From North					NYS ROUTE 32 From East					From South					NYS ROUTE 32 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:30 PM	0	0	0	0	0	0	104	0	0	104	0	0	0	0	0	0	66	0	0	66	170
03:45 PM	1	0	1	0	2	0	114	0	0	114	0	0	0	0	0	0	103	1	0	104	220
Total	1	0	1	0	2	0	218	0	0	218	0	0	0	0	0	0	169	1	0	170	390
04:00 PM	0	0	0	0	0	0	122	0	0	122	0	0	0	0	0	0	95	0	0	95	217
04:15 PM	0	0	0	0	0	0	119	0	0	119	0	0	0	0	0	0	91	0	0	91	210
04:30 PM	0	0	0	0	0	0	131	0	0	131	0	0	0	0	0	0	87	0	0	87	218
04:45 PM	0	0	0	0	0	0	112	0	0	112	0	0	0	0	0	0	79	0	0	79	191
Total	0	0	0	0	0	0	484	0	0	484	0	0	0	0	0	0	352	0	0	352	836
05:00 PM	0	0	0	0	0	0	145	0	0	145	0	0	0	0	0	0	105	0	0	105	250
05:15 PM	0	0	0	0	0	0	139	0	0	139	0	0	0	0	0	0	99	0	0	99	238
05:30 PM	0	0	0	0	0	0	113	0	0	113	0	0	0	0	0	0	92	0	0	92	205
05:45 PM	0	0	1	0	1	0	128	0	0	128	0	0	0	0	0	0	81	0	0	81	210
Total	0	0	1	0	1	0	525	0	0	525	0	0	0	0	0	0	377	0	0	377	903
06:00 PM	0	0	0	0	0	0	122	0	0	122	0	0	0	0	0	0	84	0	0	84	206
06:15 PM	0	0	0	0	0	0	100	0	0	100	0	0	0	0	0	0	65	0	0	65	165
Grand Total	1	0	2	0	3	0	1449	0	0	1449	0	0	0	0	0	0	1047	1	0	1048	2500
Apprch %	33.3	0	66.7	0		0	100	0	0		0	0	0	0		0	99.9	0.1	0		
Total %	0	0	0.1	0	0.1	0	58	0	0	58	0	0	0	0	0	0	41.9	0	0	41.9	
Lights	1	0	1	0	2	0	1418	0	0	1418	0	0	0	0	0	0	1016	0	0	1016	2436
% Lights	100	0	50	0	66.7	0	97.9	0	0	97.9	0	0	0	0	0	0	97	0	0	96.9	97.4
Buses	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	13	0	0	13	22
% Buses	0	0	0	0	0	0	0.6	0	0	0.6	0	0	0	0	0	0	1.2	0	0	1.2	0.9
Trucks	0	0	1	0	1	0	22	0	0	22	0	0	0	0	0	0	18	1	0	19	42
% Trucks	0	0	50	0	33.3	0	1.5	0	0	1.5	0	0	0	0	0	0	1.7	100	0	1.8	1.7
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Colliers Engineering & Design

400 Columbus Avenue - Suite 180E
Valhalla, New York 10595
Accelerating Success

File Name : NYS_ROUTE_32_AT_CRAB_APPLE_COURT_1064689_04-20-2023
Site Code :
Start Date : 4/20/2023
Page No : 2

	CRAB APPLE COURT From North					NYS ROUTE 32 From East					From South					NYS ROUTE 32 From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	**145**	0	0	**145**	0	0	0	0	0	0	**105**	0	0	**105**	**250**
05:15 PM	0	0	0	0	0	0	139	0	0	139	0	0	0	0	0	0	99	0	0	99	238
05:30 PM	0	0	0	0	0	0	113	0	0	113	0	0	0	0	0	0	92	0	0	92	205
05:45 PM	0	0	**1**	0	**1**	0	128	0	0	128	0	0	0	0	0	0	81	0	0	81	210
Total Volume	0	0	1	0	1	0	525	0	0	525	0	0	0	0	0	0	377	0	0	377	903
% App. Total	0	0	100	0		0	100	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.250	.000	.250	.000	.905	.000	.000	.905	.000	.000	.000	.000	.000	.000	.898	.000	.000	.898	.903
Lights	0	0	1	0	1	0	517	0	0	517	0	0	0	0	0	0	371	0	0	371	889
% Lights	0	0	100	0	100	0	98.5	0	0	98.5	0	0	0	0	0	0	98.4	0	0	98.4	98.4
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
% Buses	0	0	0	0	0	0	0.2	0	0	0.2	0	0	0	0	0	0	0.5	0	0	0.5	0.3
Trucks	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	4	0	0	4	11
% Trucks	0	0	0	0	0	0	1.3	0	0	1.3	0	0	0	0	0	0	1.1	0	0	1.1	1.2
Pedestrians	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ATR Machine Data

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283
N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/13/23	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	6	214	53	3	20	3	0	2	0	0	0	0	0	0	301
13:00	6	187	52	0	28	2	0	1	0	0	0	0	0	0	276
14:00	2	217	42	1	30	4	0	3	1	0	0	0	0	0	300
15:00	1	222	41	6	32	1	1	1	0	0	0	0	0	0	305
16:00	3	256	58	0	19	1	0	0	1	0	0	0	0	0	338
17:00	5	257	57	2	21	2	0	4	0	0	0	0	0	0	348
18:00	0	179	36	0	13	0	0	0	0	0	0	0	0	0	228
19:00	2	120	19	0	5	0	0	0	0	0	0	0	0	0	146
20:00	0	105	17	0	3	0	0	0	0	1	0	0	0	0	126
21:00	0	66	11	0	3	0	0	0	0	0	0	0	0	0	80
22:00	0	48	7	0	0	1	0	0	0	0	0	0	0	0	56
23:00	0	26	6	0	3	0	0	0	0	0	0	0	0	0	35
Total	25	1897	399	12	177	14	1	11	2	1	0	0	0	0	2539
Percent	1.0%	74.7%	15.7%	0.5%	7.0%	0.6%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak															
Vol.															
PM Peak	12:00	17:00	16:00	15:00	15:00	14:00	15:00	17:00	14:00	20:00					
Vol.	6	257	58	6	32	4	1	4	1	1					

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/14/23	0	11	1	0	0	0	0	0	0	0	0	0	0	0	12
01:00	0	7	0	0	1	0	0	0	0	0	0	0	0	0	8
02:00	0	6	5	0	1	0	0	0	0	0	0	0	0	0	12
03:00	0	13	5	0	2	0	0	0	0	0	0	0	0	0	20
04:00	0	56	8	2	9	0	0	0	0	0	0	0	0	0	75
05:00	0	118	30	3	16	0	0	0	0	0	0	0	0	0	167
06:00	0	240	59	3	31	1	0	1	0	0	0	0	0	0	335
07:00	2	270	64	3	36	1	0	1	0	0	0	0	0	0	377
08:00	2	296	70	11	53	0	0	1	0	0	0	0	0	0	433
09:00	2	209	54	2	20	2	0	2	1	0	0	0	0	0	292
10:00	0	193	69	2	22	1	0	0	1	0	0	0	0	0	288
11:00	2	181	51	0	30	3	0	3	1	1	0	0	0	0	272
12 PM	5	197	44	3	31	2	0	2	0	0	0	0	0	0	284
13:00	1	217	55	3	28	1	0	3	1	0	0	0	0	0	309
14:00	4	226	49	4	25	3	0	4	0	0	0	0	0	0	315
15:00	3	248	56	4	23	2	0	0	0	0	0	0	0	0	336
16:00	3	258	66	1	19	2	0	0	0	0	0	0	0	0	349
17:00	5	276	52	0	23	1	0	2	0	0	0	0	0	0	359
18:00	3	196	48	0	12	1	0	0	0	0	0	0	0	0	260
19:00	2	122	31	0	8	0	0	0	0	0	0	0	0	0	163
20:00	1	99	15	0	4	0	0	0	0	0	0	0	0	0	119
21:00	0	86	7	0	3	0	0	0	0	0	0	0	0	0	96
22:00	0	45	9	0	1	0	0	0	0	0	0	0	0	0	55
23:00	0	31	4	0	1	0	0	0	0	0	0	0	0	0	36
Total	35	3601	852	41	399	20	0	19	4	1	0	0	0	0	4972
Percent	0.7%	72.4%	17.1%	0.8%	8.0%	0.4%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	08:00	08:00	11:00		11:00	09:00	11:00					
Vol.	2	296	70	11	53	3		3	1	1					
PM Peak	12:00	17:00	16:00	14:00	12:00	14:00		14:00	13:00						
Vol.	5	276	66	4	31	3		4	1						

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/15/23	0	13	4	0	1	0	0	0	0	0	0	0	0	0	18
01:00	0	9	3	0	0	0	0	0	0	0	0	0	0	0	12
02:00	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8
03:00	0	19	4	0	2	0	0	0	0	0	0	0	0	0	25
04:00	1	53	13	2	9	0	0	0	0	1	0	0	0	0	79
05:00	0	124	34	2	13	0	0	0	0	0	0	0	0	0	173
06:00	6	237	52	0	25	1	0	0	0	0	0	0	0	0	321
07:00	1	280	67	1	38	2	0	3	0	0	0	0	0	0	392
08:00	4	283	62	9	37	3	0	2	1	0	0	0	0	0	401
09:00	3	225	52	3	26	2	0	1	0	0	0	0	0	0	312
10:00	1	189	56	1	16	1	0	0	2	0	0	0	0	0	266
11:00	0	213	49	0	30	2	0	0	1	0	0	0	0	0	295
12 PM	1	196	58	1	22	1	0	1	1	0	0	0	0	0	281
13:00	4	176	49	1	22	2	0	3	1	0	0	0	0	0	258
14:00	5	163	48	3	25	3	0	1	1	0	0	0	0	0	249
15:00	3	219	60	4	25	5	1	0	1	0	0	0	0	0	318
16:00	6	238	66	1	30	1	0	1	0	0	0	0	0	0	343
17:00	2	249	64	0	28	1	0	2	0	0	0	0	0	0	346
18:00	4	225	45	0	15	2	0	0	0	0	0	0	0	0	291
19:00	1	151	21	0	11	0	0	0	1	0	0	0	0	0	185
20:00	0	85	20	0	5	1	0	0	0	0	0	0	0	0	111
21:00	0	76	21	0	4	0	0	0	0	0	0	0	0	0	101
22:00	0	39	7	0	1	0	0	0	0	1	0	0	0	0	48
23:00	0	26	5	0	5	0	0	0	0	0	0	0	0	0	36
Total	42	3496	860	28	390	27	1	14	9	2	0	0	0	0	4869
Percent	0.9%	71.8%	17.7%	0.6%	8.0%	0.6%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	08:00	07:00	08:00	07:00	08:00		07:00	10:00	04:00					
Vol.	6	283	67	9	38	3		3	2	1					
PM Peak	16:00	17:00	16:00	15:00	16:00	15:00	15:00	13:00	12:00	22:00					
Vol.	6	249	66	4	30	5	1	3	1	1					

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/16/23	0	7	2	0	1	0	0	0	0	0	0	0	0	0	10
01:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	7	1	0	0	0	0	0	0	0	0	0	0	0	8
03:00	0	19	6	0	2	0	0	0	0	1	0	0	0	0	28
04:00	0	49	11	0	8	0	0	0	0	0	0	0	0	0	68
05:00	0	115	31	1	15	0	0	0	0	0	0	0	0	0	162
06:00	3	239	44	4	20	0	0	2	0	0	0	0	0	0	312
07:00	6	295	70	4	32	1	0	1	0	0	0	0	0	0	409
08:00	2	290	80	10	32	1	1	8	2	0	0	0	0	0	426
09:00	2	249	59	0	23	2	0	0	1	0	0	0	0	0	336
10:00	1	195	40	1	24	1	0	3	0	0	0	0	0	0	265
11:00	5	192	47	3	34	1	0	2	2	0	0	0	0	0	286
12 PM	3	226	55	0	17	2	1	3	1	1	0	0	0	0	309
13:00	3	184	56	0	27	2	0	2	0	0	0	0	0	0	274
14:00	3	189	50	3	22	1	0	2	1	0	0	0	0	0	271
15:00	3	213	49	5	23	4	0	1	0	0	0	0	0	0	298
16:00	6	241	50	2	27	3	0	1	0	0	0	0	0	0	330
17:00	10	259	45	0	18	0	0	1	0	0	0	0	0	0	333
18:00	3	184	38	0	12	4	0	0	0	0	0	0	0	0	241
19:00	3	107	16	1	7	0	0	0	0	0	0	0	0	0	134
20:00	1	109	22	0	5	1	0	0	0	0	0	0	0	0	138
21:00	0	96	10	0	1	0	0	0	0	0	0	0	0	0	107
22:00	0	42	4	0	2	0	0	0	1	0	0	0	0	0	49
23:00	0	33	9	0	3	0	0	0	0	0	0	0	0	0	45
Total	54	3544	796	34	355	23	2	26	8	2	0	0	0	0	4844
Percent	1.1%	73.2%	16.4%	0.7%	7.3%	0.5%	0.0%	0.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	08:00	08:00	11:00	09:00	08:00	08:00	08:00	03:00					
Vol.	6	295	80	10	34	2	1	8	2	1					
PM Peak	17:00	17:00	13:00	15:00	13:00	15:00	12:00	12:00	12:00	12:00					
Vol.	10	259	56	5	27	4	1	3	1	1					

Colliers Engineering & Design

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/17/23	0	13	4	0	0	0	0	0	0	0	0	0	0	0	17
01:00	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
02:00	0	5	0	0	1	0	0	0	0	0	0	0	0	0	6
03:00	0	13	4	0	1	0	0	0	2	0	0	0	0	0	20
04:00	1	47	11	1	9	1	0	0	0	0	0	0	0	0	70
05:00	3	121	30	5	19	0	0	0	0	0	0	0	0	0	178
06:00	14	204	54	4	34	1	0	0	0	0	0	0	0	0	311
07:00	21	223	83	1	48	1	0	4	0	0	0	0	0	0	381
08:00	16	278	86	9	46	2	0	2	0	0	0	0	0	0	439
09:00	7	216	58	2	27	1	0	5	0	0	0	0	0	0	316
10:00	5	196	49	1	16	0	0	1	0	0	0	0	0	0	268
11:00	9	208	40	0	17	1	0	1	2	0	0	0	0	0	278
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	76	1531	419	23	218	7	0	13	4	0	0	0	0	0	2291
Percent	3.3%	66.8%	18.3%	1.0%	9.5%	0.3%	0.0%	0.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	08:00	07:00	08:00		09:00	03:00						
Vol.	21	278	86	9	48	2		5	2						
PM Peak															
Vol.															
Grand Total	232	14069	3326	138	1539	91	4	83	27	6	0	0	0	0	19515
Percent	1.2%	72.1%	17.0%	0.7%	7.9%	0.5%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/13/23	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	3	213	48	1	13	1	0	0	2	0	0	0	0	0	281
13:00	5	199	37	5	21	4	0	3	2	0	0	0	0	0	276
14:00	5	247	76	2	28	3	0	1	0	0	0	0	0	0	362
15:00	1	294	74	2	31	1	0	3	1	1	0	0	0	0	408
16:00	3	346	86	4	35	1	0	1	0	0	0	0	0	0	476
17:00	8	355	87	1	25	0	0	0	1	0	0	0	0	0	477
18:00	0	267	64	1	21	0	1	0	0	0	0	0	0	0	354
19:00	1	179	45	1	11	2	0	0	0	0	0	0	0	0	239
20:00	0	151	35	0	3	0	0	0	0	0	0	0	0	0	189
21:00	0	118	13	0	4	0	0	0	0	0	0	0	0	0	135
22:00	1	67	10	0	4	0	0	0	1	0	0	0	0	0	83
23:00	0	50	6	0	0	0	0	0	0	0	0	0	0	0	56
Total	27	2486	581	17	196	12	1	8	7	1	0	0	0	0	3336
Percent	0.8%	74.5%	17.4%	0.5%	5.9%	0.4%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak															
Vol.															
PM Peak	17:00	17:00	17:00	13:00	16:00	13:00	18:00	13:00	12:00	15:00					
Vol.	8	355	87	5	35	4	1	3	2	1					

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/14/23	0	28	3	0	2	0	0	0	0	0	0	0	0	0	33
01:00	0	5	3	0	1	0	0	0	0	0	0	0	0	0	9
02:00	0	7	2	0	1	0	0	0	0	0	0	0	0	0	10
03:00	0	4	5	0	0	0	0	0	0	0	0	0	0	0	9
04:00	0	18	2	0	4	1	0	0	0	0	0	0	0	0	25
05:00	0	22	6	0	4	0	0	0	0	0	0	0	0	0	32
06:00	0	91	25	2	7	0	0	0	1	0	0	0	0	0	126
07:00	4	140	44	3	23	2	0	3	0	0	0	0	0	0	219
08:00	2	169	39	7	13	1	1	0	0	0	0	0	0	0	232
09:00	4	145	51	1	14	2	0	2	0	0	0	0	0	0	219
10:00	3	167	34	2	11	2	0	0	0	0	0	0	0	0	219
11:00	1	193	53	1	18	2	0	0	0	0	0	0	0	0	268
12 PM	4	205	48	1	19	1	0	0	0	0	0	0	0	0	278
13:00	2	214	57	1	17	3	0	2	0	0	0	0	0	0	296
14:00	7	255	65	1	28	3	0	3	1	0	0	0	0	0	363
15:00	3	296	87	3	47	2	0	2	0	0	0	0	0	0	440
16:00	3	363	90	4	26	1	0	2	0	0	0	0	0	0	489
17:00	4	434	80	2	33	1	0	1	0	0	0	0	0	0	555
18:00	2	300	54	0	10	0	0	0	0	0	0	0	0	0	366
19:00	2	209	53	1	12	0	0	0	0	0	0	0	0	0	277
20:00	0	144	26	0	6	0	0	1	0	0	0	0	0	0	177
21:00	0	129	12	1	6	0	0	0	0	0	0	0	0	0	148
22:00	0	76	17	0	4	0	0	0	0	0	0	0	0	0	97
23:00	0	67	5	0	1	0	0	0	0	0	0	0	0	0	73
Total	41	3681	861	30	307	21	1	16	2	0	0	0	0	0	4960
Percent	0.8%	74.2%	17.4%	0.6%	6.2%	0.4%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	11:00	11:00	08:00	07:00	07:00	08:00	07:00	06:00						
Vol.	4	193	53	7	23	2	1	3	1						
PM Peak	14:00	17:00	16:00	16:00	15:00	13:00		14:00	14:00						
Vol.	7	434	90	4	47	3		3	1						

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/15/23	0	29	4	0	0	0	0	0	0	0	0	0	0	0	33
01:00	0	22	3	0	0	0	0	0	0	0	0	0	0	0	25
02:00	0	9	3	0	1	0	0	0	0	0	0	0	0	0	13
03:00	0	6	3	0	1	0	0	0	0	0	0	0	0	0	10
04:00	0	16	3	0	0	2	0	0	2	0	0	0	0	0	23
05:00	0	22	11	0	0	0	0	0	0	0	0	0	0	0	33
06:00	4	86	31	3	15	1	0	0	0	1	0	0	0	0	141
07:00	1	164	50	4	18	0	0	4	1	0	0	0	0	0	242
08:00	4	152	44	3	14	3	1	0	1	0	0	0	0	0	222
09:00	3	158	45	1	19	1	0	0	1	0	0	0	0	0	228
10:00	1	148	34	2	19	2	0	3	2	0	0	0	0	0	211
11:00	1	195	42	4	20	0	0	0	0	0	0	0	0	0	262
12 PM	2	192	52	2	18	1	0	2	2	0	0	0	0	0	271
13:00	4	245	46	0	16	2	0	1	2	0	0	0	0	0	316
14:00	4	243	73	4	30	2	0	4	1	1	0	0	0	0	362
15:00	3	283	98	2	29	3	0	2	2	0	0	0	0	0	422
16:00	7	379	96	1	41	1	0	1	0	0	0	0	0	0	526
17:00	4	372	77	1	23	0	1	1	0	0	0	0	0	0	479
18:00	6	259	73	0	19	0	0	0	0	0	0	0	0	0	357
19:00	1	211	36	0	11	0	0	0	0	0	0	0	0	0	259
20:00	2	142	25	0	12	0	0	0	0	0	0	0	0	0	181
21:00	0	124	18	0	2	0	0	0	0	0	0	0	0	0	144
22:00	0	88	14	0	0	0	0	0	0	0	0	0	0	0	102
23:00	0	52	12	0	6	0	0	0	0	0	0	0	0	0	70
Total	47	3597	893	27	314	18	2	18	14	2	0	0	0	0	4932
Percent	1.0%	72.9%	18.1%	0.5%	6.4%	0.4%	0.0%	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	11:00	07:00	07:00	11:00	08:00	08:00	07:00	04:00	06:00					
Vol.	4	195	50	4	20	3	1	4	2	1					
PM Peak	16:00	16:00	15:00	14:00	16:00	15:00	17:00	14:00	12:00	14:00					
Vol.	7	379	98	4	41	3	1	4	2	1					

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/16/23	0	33	9	0	1	0	0	0	0	0	0	0	0	0	43
01:00	0	10	4	0	1	0	0	0	0	0	0	0	0	0	15
02:00	0	10	2	0	0	0	0	0	0	0	0	0	0	0	12
03:00	0	6	5	0	0	0	0	0	0	0	0	0	0	0	11
04:00	0	13	6	1	1	0	0	0	0	0	0	0	0	0	21
05:00	0	25	8	0	1	2	0	0	0	0	0	0	0	0	36
06:00	2	89	31	4	10	1	0	0	0	0	0	0	0	0	137
07:00	4	148	34	4	21	2	0	2	1	0	0	0	0	0	216
08:00	3	166	45	3	14	0	0	1	0	0	0	0	0	0	232
09:00	2	145	45	2	17	0	0	1	1	0	0	0	0	0	213
10:00	1	180	40	5	18	0	0	1	1	0	0	0	0	0	246
11:00	2	193	50	1	20	5	0	2	1	0	0	0	0	0	274
12 PM	6	199	56	3	16	1	0	2	2	0	0	0	0	0	285
13:00	2	212	44	4	21	3	0	1	1	0	0	0	0	0	288
14:00	2	238	64	1	22	1	0	4	0	0	0	0	0	0	332
15:00	2	289	92	1	28	1	0	1	0	0	0	0	0	0	414
16:00	5	347	90	1	20	2	0	0	0	0	0	0	0	0	465
17:00	7	386	70	0	24	1	0	0	0	0	0	0	0	0	488
18:00	5	278	39	1	19	1	0	3	0	0	0	0	0	0	346
19:00	3	197	35	0	11	0	0	0	0	0	0	0	0	0	246
20:00	1	145	32	0	5	0	0	0	0	0	0	0	0	0	183
21:00	0	117	25	1	3	0	0	0	0	0	0	0	0	0	146
22:00	0	82	14	0	1	0	0	0	0	0	0	0	0	0	97
23:00	0	53	13	0	1	0	0	0	0	0	0	0	0	0	67
Total	47	3561	853	32	275	20	0	18	7	0	0	0	0	0	4813
Percent	1.0%	74.0%	17.7%	0.7%	5.7%	0.4%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	11:00	11:00	10:00	07:00	11:00		07:00	07:00						
Vol.	4	193	50	5	21	5		2	1						
PM Peak	17:00	17:00	15:00	13:00	15:00	13:00		14:00	12:00						
Vol.	7	386	92	4	28	3		4	2						

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283
N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
02/17/23	0	35	6	0	2	0	0	0	1	0	0	0	0	0	44
01:00	0	10	3	0	1	0	0	0	1	0	0	0	0	0	15
02:00	0	8	1	0	0	0	0	0	0	0	0	0	0	0	9
03:00	0	8	3	0	0	0	0	0	0	0	0	0	0	0	11
04:00	0	16	4	0	3	1	0	0	0	0	0	0	0	0	24
05:00	0	22	7	0	1	1	0	0	0	0	0	0	0	0	31
06:00	2	90	21	4	15	0	0	0	1	0	0	0	0	0	133
07:00	2	140	47	4	24	2	0	1	0	1	0	0	0	0	221
08:00	8	148	46	5	21	2	0	0	0	0	0	0	0	0	230
09:00	5	172	44	3	13	1	0	2	0	0	0	0	0	0	240
10:00	2	166	34	1	20	4	0	2	0	0	0	0	0	0	229
11:00	2	177	31	3	15	1	0	2	0	0	0	0	0	0	231
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	21	992	247	20	115	12	0	7	3	1	0	0	0	0	1418
Percent	1.5%	70.0%	17.4%	1.4%	8.1%	0.8%	0.0%	0.5%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	07:00	08:00	07:00	10:00		09:00	00:00	07:00					
Vol.	8	177	47	5	24	4		2	1	1					
PM Peak															
Vol.															
Grand Total	183	14317	3435	126	1207	83	4	67	33	4	0	0	0	0	19459
Percent	0.9%	73.6%	17.7%	0.6%	6.2%	0.4%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
02/13/23	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	9	0	0	1	4	21	53	121	74	15	2	0	0	0	300	53	56
13:00	8	0	0	0	2	11	65	120	58	10	2	0	0	0	276	52	55
14:00	5	0	**2**	**2**	**5**	5	52	**144**	64	**18**	2	**1**	0	0	300	53	56
15:00	**12**	0	1	0	2	14	61	126	69	15	**5**	1	0	0	306	53	56
16:00	12	**1**	2	2	3	22	90	121	**75**	9	0	1	0	0	338	52	55
17:00	11	0	0	0	5	**27**	**130**	125	46	2	1	0	**1**	0	**348**	50	53
18:00	0	0	1	0	2	14	65	81	52	12	2	0	0	0	229	53	56
19:00	3	0	0	0	0	5	31	53	45	7	1	1	0	0	146	53	56
20:00	0	0	0	0	2	7	24	44	35	11	2	1	0	0	126	54	58
21:00	2	0	0	0	1	10	14	31	20	3	0	0	0	0	81	52	55
22:00	0	0	0	0	1	0	15	21	15	4	0	0	0	0	56	53	56
23:00	0	0	0	0	0	1	6	15	9	1	2	1	0	0	35	54	63
Total	62	1	6	5	27	137	606	1002	562	107	19	6	1	0	2541		
Percent	2.4%	0.0%	0.2%	0.2%	1.1%	5.4%	23.8%	39.4%	22.1%	4.2%	0.7%	0.2%	0.0%	0.0%			
AM Peak Vol.																	
PM Peak	15:00	16:00	14:00	14:00	14:00	17:00	17:00	14:00	16:00	14:00	15:00	14:00	17:00		17:00		
Vol.	12	1	2	2	5	27	130	144	75	18	5	1	1		348		

Colliers Engineering & Design

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595

Accelerating Success

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76		85th	95th
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Percent	Percent
02/14/23	0	0	0	0	0	1	0	4	5	2	0	0	0	0	12	55	58
01:00	0	0	0	1	0	0	2	3	1	0	1	0	0	0	8	54	62
02:00	0	0	0	0	0	0	1	6	2	1	1	1	0	0	12	60	67
03:00	0	0	0	0	0	1	2	7	6	3	0	1	0	0	20	56	63
04:00	0	0	0	0	0	1	10	23	26	9	**5**	0	0	**1**	75	56	61
05:00	0	0	0	0	0	2	16	69	49	**29**	1	1	0	0	167	56	59
06:00	2	0	0	0	2	8	65	137	90	28	1	**3**	0	0	336	54	57
07:00	6	0	0	1	**6**	**16**	55	167	**102**	24	1	0	0	0	378	53	56
08:00	**12**	0	**1**	**4**	6	13	**93**	**207**	85	13	0	0	0	0	**434**	51	54
09:00	5	0	0	0	3	13	64	123	73	12	0	0	0	0	293	52	55
10:00	3	0	1	1	5	11	82	104	68	9	3	0	**1**	0	288	52	55
11:00	5	0	0	0	1	9	70	117	58	9	3	0	0	0	272	52	55
12 PM	9	0	1	1	**6**	9	72	117	61	6	1	0	0	0	283	52	54
13:00	6	0	0	0	1	6	60	149	63	**20**	**5**	0	0	0	310	53	57
14:00	9	0	**2**	0	2	16	79	126	65	13	3	0	0	0	315	52	55
15:00	6	0	2	0	3	14	67	**167**	64	10	4	0	0	0	337	52	55
16:00	6	**1**	0	**2**	2	13	78	134	**91**	19	3	**1**	0	0	350	53	56
17:00	**17**	0	0	1	5	**23**	**116**	136	47	13	2	0	0	0	**360**	51	55
18:00	7	0	1	1	2	8	85	118	34	4	1	0	0	0	261	50	53
19:00	3	0	0	0	0	5	38	69	37	7	3	1	0	0	163	53	56
20:00	1	0	0	0	1	3	29	50	26	8	1	0	0	0	119	53	56
21:00	3	0	0	0	1	4	16	38	26	8	0	0	0	0	96	53	56
22:00	0	0	0	0	0	1	13	26	14	1	0	0	0	0	55	52	54
23:00	0	0	0	0	1	4	6	10	10	1	2	1	**1**	0	36	55	64
Total	100	1	8	12	47	181	1119	2107	1103	249	41	9	2	1	4980		
Percent	2.0%	0.0%	0.2%	0.2%	0.9%	3.6%	22.5%	42.3%	22.1%	5.0%	0.8%	0.2%	0.0%	0.0%			
AM Peak	08:00		08:00	08:00	07:00	07:00	08:00	08:00	07:00	05:00	04:00	06:00	10:00	04:00	08:00		
Vol.	12		1	4	6	16	93	207	102	29	5	3	1	1	434		
PM Peak	17:00	16:00	14:00	16:00	12:00	17:00	17:00	15:00	16:00	13:00	13:00	16:00	23:00		17:00		
Vol.	17	1	2	2	6	23	116	167	91	20	5	1	1		360		

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283
N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start	1	16	21	26	31	36	41	46	51	56	61	66	71	76		85th	95th
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Percent	Percent
02/15/23	0	0	0	0	0	2	7	3	5	1	0	0	0	0	18	53	56
01:00	0	0	0	0	0	0	6	3	2	0	0	**1**	0	0	12	52	66
02:00	0	0	1	0	0	0	2	3	1	0	1	0	0	0	8	54	62
03:00	0	0	0	0	0	0	6	9	6	2	2	0	0	0	25	56	61
04:00	1	0	0	0	0	2	12	29	21	13	2	0	0	0	80	56	59
05:00	0	0	0	0	0	1	25	58	67	19	3	0	0	0	173	55	58
06:00	8	0	1	1	5	9	69	135	69	14	**7**	1	**1**	0	320	53	57
07:00	**11**	0	0	**4**	3	14	**81**	**162**	**97**	16	3	1	0	0	392	52	56
08:00	11	**3**	**6**	3	7	22	71	162	96	**20**	1	0	0	0	**402**	52	55
09:00	6	0	0	1	4	19	79	135	61	6	0	1	0	0	312	51	54
10:00	3	3	5	3	**8**	**23**	74	81	52	12	2	1	0	0	267	52	56
11:00	3	0	0	1	2	21	77	118	68	2	3	0	0	0	295	52	54
12 PM	7	0	0	1	7	18	77	117	48	6	1	0	0	0	282	51	54
13:00	5	0	0	**2**	**8**	11	57	105	**57**	12	1	1	0	0	259	52	56
14:00	3	0	0	2	0	15	60	96	51	**17**	**2**	**2**	**1**	0	249	53	57
15:00	**15**	0	**6**	2	2	16	86	126	49	16	0	0	0	0	318	51	55
16:00	13	0	0	1	6	19	95	145	54	9	2	0	0	0	344	51	54
17:00	9	0	0	1	2	19	108	**151**	46	9	0	0	1	0	**346**	50	54
18:00	10	0	0	1	1	**28**	**114**	94	33	8	0	1	0	**1**	291	50	54
19:00	7	0	0	0	1	7	48	75	36	9	1	2	0	0	186	52	56
20:00	3	0	0	0	0	9	24	50	20	4	1	0	0	0	111	51	55
21:00	2	0	0	1	0	4	18	50	24	2	1	0	0	0	102	52	55
22:00	0	0	0	0	0	3	6	25	10	3	1	0	0	0	48	53	57
23:00	0	0	0	0	1	1	12	10	8	2	1	0	0	1	36	53	58
Total	117	6	19	24	57	263	1214	1942	981	202	35	11	3	2	4876		
Percent	2.4%	0.1%	0.4%	0.5%	1.2%	5.4%	24.9%	39.8%	20.1%	4.1%	0.7%	0.2%	0.1%	0.0%			
AM Peak	07:00	08:00	08:00	07:00	10:00	10:00	07:00	07:00	07:00	08:00	06:00	01:00	06:00		08:00		
Vol.	11	3	6	4	8	23	81	162	97	20	7	1	1		402		
PM Peak	15:00		15:00	13:00	13:00	18:00	18:00	17:00	13:00	14:00	14:00	14:00	14:00	18:00	17:00		
Vol.	15		6	2	8	28	114	151	57	17	2	2	1	1	346		

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
02/16/23	0	0	0	0	0	1	1	3	3	2	0	0	0	0	10	56	58
01:00	0	0	0	1	0	0	2	2	0	0	0	0	0	0	5	48	49
02:00	0	0	0	0	0	0	3	1	3	1	0	0	0	0	8	55	57
03:00	0	0	0	0	0	2	4	12	7	2	1	0	0	0	28	54	59
04:00	0	0	0	0	0	2	4	25	21	11	2	**3**	0	0	68	57	63
05:00	0	0	0	0	0	4	14	53	78	10	1	2	0	0	162	54	57
06:00	2	0	1	0	2	20	49	140	75	16	**4**	3	0	0	312	53	57
07:00	**15**	0	0	0	2	20	80	165	**100**	**26**	2	0	0	0	410	53	56
08:00	5	**2**	**4**	**7**	**20**	23	**110**	**169**	73	12	2	0	0	0	**427**	51	54
09:00	6	0	0	0	1	18	88	142	65	15	1	0	**1**	0	337	52	55
10:00	0	0	1	3	6	13	71	117	45	8	1	0	0	0	265	51	55
11:00	9	1	2	1	1	**25**	61	105	68	11	0	1	0	**1**	286	52	55
12 PM	4	0	0	**2**	**8**	21	77	**143**	43	9	2	0	0	0	309	51	54
13:00	4	0	0	1	0	17	77	110	**58**	6	1	0	0	0	274	52	54
14:00	7	1	**1**	2	2	13	74	106	51	**12**	**3**	0	0	0	272	52	56
15:00	6	**3**	0	0	6	**34**	105	102	31	10	1	0	**1**	0	299	50	54
16:00	15	0	0	1	3	15	124	121	40	10	2	0	0	0	331	50	54
17:00	**19**	0	0	0	2	23	**127**	107	49	6	1	0	0	0	**334**	50	54
18:00	6	0	0	0	1	30	79	95	24	6	0	**1**	0	0	242	50	54
19:00	4	0	0	0	3	2	33	52	33	4	3	0	0	0	134	52	56
20:00	3	0	0	0	1	14	29	41	39	10	1	0	0	0	138	53	56
21:00	0	0	1	0	1	4	45	34	19	2	1	0	0	0	107	51	54
22:00	0	0	0	0	0	3	21	9	13	3	0	0	0	0	49	53	56
23:00	0	0	0	0	0	2	4	22	12	5	0	0	0	0	45	54	57
Total	105	7	10	18	59	306	1282	1876	950	197	29	10	2	1	4852		
Percent	2.2%	0.1%	0.2%	0.4%	1.2%	6.3%	26.4%	38.7%	19.6%	4.1%	0.6%	0.2%	0.0%	0.0%			
AM Peak	07:00	08:00	08:00	08:00	08:00	11:00	08:00	08:00	07:00	07:00	06:00	04:00	09:00	11:00	08:00		
Vol.	15	2	4	7	20	25	110	169	100	26	4	3	1	1	427		
PM Peak	17:00	15:00	14:00	12:00	12:00	15:00	17:00	12:00	13:00	14:00	14:00	18:00	15:00		17:00		
Vol.	19	3	1	2	8	34	127	143	58	12	3	1	1		334		

Colliers Engineering & Design

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283
N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
02/17/23	0	0	0	0	0	1	5	3	5	3	0	0	0	0	17	55	58
01:00	0	0	0	0	0	0	3	3	0	1	0	0	0	0	7	51	58
02:00	0	0	0	0	0	0	3	1	1	1	0	0	0	0	6	55	58
03:00	0	0	0	0	1	1	7	8	1	1	1	0	0	0	20	51	59
04:00	2	0	0	0	0	1	13	24	19	10	1	1	0	0	71	55	59
05:00	6	0	0	0	0	1	22	71	50	23	**5**	0	**1**	0	179	55	59
06:00	**29**	0	0	2	1	8	56	100	89	20	3	**3**	1	0	312	53	57
07:00	28	0	0	0	1	8	37	145	**118**	**43**	2	0	0	0	382	54	57
08:00	28	**1**	0	**3**	3	18	86	**196**	78	24	3	1	0	0	**441**	52	56
09:00	19	0	0	2	**17**	20	**116**	97	41	4	0	0	1	0	317	50	53
10:00	18	0	1	2	7	**33**	76	88	34	7	2	0	0	0	268	50	54
11:00	16	0	**2**	3	15	30	103	84	25	1	0	0	0	0	279	49	52
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	146	1	3	12	45	121	527	820	461	138	17	5	3	0	2299		
Percent	6.4%	0.0%	0.1%	0.5%	2.0%	5.3%	22.9%	35.7%	20.1%	6.0%	0.7%	0.2%	0.1%	0.0%			
AM Peak	06:00	08:00	11:00	08:00	09:00	10:00	09:00	08:00	07:00	07:00	05:00	06:00	05:00		08:00		
Vol.	29	1	2	3	17	33	116	196	118	43	5	3	1		441		
PM Peak																	
Vol.																	
Total	530	16	46	71	235	1008	4748	7747	4057	893	141	41	11	4	19548		
Percent	2.7%	0.1%	0.2%	0.4%	1.2%	5.2%	24.3%	39.6%	20.8%	4.6%	0.7%	0.2%	0.1%	0.0%			

	15th Percentile :	40 MPH
	50th Percentile :	46 MPH
	85th Percentile :	52 MPH
	95th Percentile :	56 MPH
Stats	10 MPH Pace Speed :	43-52 MPH
	Number in Pace :	11957
	Percent in Pace :	61.2%
	Number of Vehicles > 55 MPH :	1090
	Percent of Vehicles > 55 MPH :	5.6%
	Mean Speed(Average) :	46 MPH

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
02/13/23	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	13	0	0	**3**	**17**	9	65	98	58	**14**	1	**2**	**1**	0	281	52	56
13:00	6	0	0	1	3	15	61	125	58	7	1	0	0	0	277	52	55
14:00	8	1	0	1	4	28	87	172	47	12	0	1	0	0	361	51	54
15:00	12	0	0	1	7	23	92	182	**74**	14	2	0	0	**1**	408	51	55
16:00	13	**3**	0	0	7	**43**	143	196	59	12	1	0	0	0	**477**	50	54
17:00	**15**	1	1	0	0	34	**158**	**197**	62	7	1	1	0	0	477	50	53
18:00	4	0	0	0	4	30	110	160	35	8	2	0	1	0	354	50	54
19:00	2	0	0	0	1	11	53	129	34	9	0	0	0	0	239	51	54
20:00	1	1	**2**	2	0	5	43	80	37	14	**4**	0	0	0	189	53	58
21:00	1	0	0	0	3	7	23	69	20	11	1	0	0	0	135	52	57
22:00	0	0	0	1	0	3	18	30	22	9	0	0	0	0	83	54	57
23:00	0	0	0	0	0	3	12	19	11	10	1	0	0	0	56	56	59
Total	75	6	3	9	46	211	865	1457	517	127	14	4	2	1	3337		
Percent	2.2%	0.2%	0.1%	0.3%	1.4%	6.3%	25.9%	43.7%	15.5%	3.8%	0.4%	0.1%	0.1%	0.0%			
AM Peak Vol.																	
PM Peak	17:00	16:00	20:00	12:00	12:00	16:00	17:00	17:00	15:00	12:00	20:00	12:00	12:00	15:00	16:00		
Vol.	15	3	2	3	17	43	158	197	74	14	4	2	1	1	477		

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
02/14/23	0	0	0	0	0	2	5	13	4	7	**2**	0	0	0	33	57	61
01:00	0	0	0	0	0	1	3	3	1	0	0	**1**	0	0	9	53	67
02:00	0	0	0	0	0	0	0	4	4	1	0	1	0	0	10	57	67
03:00	0	0	0	0	0	0	3	3	2	1	0	0	0	0	9	54	57
04:00	0	0	0	**1**	0	1	8	6	4	3	2	0	0	0	25	57	61
05:00	0	0	0	0	2	2	6	15	6	0	1	0	0	0	32	51	55
06:00	3	**1**	0	0	3	7	22	54	31	4	2	0	0	0	127	52	55
07:00	9	0	**1**	0	**6**	14	56	65	**55**	11	2	0	0	0	219	53	56
08:00	**11**	0	0	0	4	2	65	99	43	6	2	0	0	0	232	51	55
09:00	7	0	0	1	6	**18**	45	96	36	8	2	0	0	0	219	51	55
10:00	7	0	0	0	1	9	45	100	50	7	1	0	0	0	220	52	55
11:00	6	0	0	1	1	14	**75**	**118**	40	**13**	1	0	0	0	**269**	51	55
12 PM	7	0	0	0	1	18	57	110	66	**14**	4	**1**	0	0	278	53	56
13:00	8	0	0	0	**7**	16	84	110	61	8	2	0	0	0	296	52	55
14:00	9	0	1	0	0	18	101	163	56	12	1	1	0	**1**	363	51	55
15:00	9	**3**	**3**	5	6	**34**	96	199	75	10	0	0	0	0	440	51	54
16:00	7	0	0	0	1	22	156	204	**86**	9	2	1	0	0	488	51	54
17:00	**15**	2	3	**6**	7	29	**161**	**252**	73	6	1	0	0	0	**555**	50	53
18:00	6	0	0	0	3	15	129	152	45	14	2	1	0	0	367	51	55
19:00	6	0	0	0	1	13	72	120	59	6	1	0	0	0	278	51	54
20:00	4	0	0	0	2	7	39	88	30	7	0	0	0	0	177	51	55
21:00	1	0	0	0	0	3	32	69	36	6	2	0	0	0	149	52	56
22:00	0	0	0	0	0	3	24	44	20	3	3	0	0	0	97	52	56
23:00	0	0	0	0	1	5	12	28	18	3	**6**	0	0	0	73	54	61
Total	115	6	8	14	52	253	1296	2115	901	159	39	6	0	1	4965		
Percent	2.3%	0.1%	0.2%	0.3%	1.0%	5.1%	26.1%	42.6%	18.1%	3.2%	0.8%	0.1%	0.0%	0.0%			
AM Peak	08:00	06:00	07:00	04:00	07:00	09:00	11:00	11:00	07:00	11:00	00:00	01:00			11:00		
Vol.	11	1	1	1	6	18	75	118	55	13	2	1			269		
PM Peak	17:00	15:00	15:00	17:00	13:00	15:00	17:00	17:00	16:00	12:00	23:00	12:00		14:00	17:00		
Vol.	15	3	3	6	7	34	161	252	86	14	6	1		1	555		

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283
N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
02/15/23	0	0	0	0	0	1	3	12	11	4	**2**	0	0	0	33	56	61
01:00	0	0	0	0	0	2	4	11	7	1	0	0	0	0	25	53	55
02:00	0	0	0	0	0	0	3	5	4	1	0	0	0	0	13	53	56
03:00	0	0	0	0	0	0	1	5	4	0	0	0	0	0	10	53	54
04:00	0	0	0	2	0	0	5	9	4	1	2	0	0	0	23	54	62
05:00	0	0	0	0	0	1	10	11	8	3	0	0	0	0	33	53	57
06:00	9	**1**	**1**	2	2	9	25	58	29	4	1	0	0	0	141	52	55
07:00	8	1	1	0	1	16	53	97	**56**	9	1	0	0	0	243	52	55
08:00	12	1	0	1	0	20	66	84	28	9	1	0	0	0	222	50	55
09:00	**14**	0	0	**5**	6	13	62	81	37	**10**	0	**1**	0	0	229	51	55
10:00	6	0	0	0	3	19	67	82	31	4	0	0	0	0	212	50	54
11:00	5	0	0	2	**11**	**27**	**76**	**99**	35	7	0	0	0	0	**262**	50	54
12 PM	4	0	0	**2**	5	22	84	103	43	8	0	0	0	0	271	51	54
13:00	9	0	0	0	**10**	19	96	121	53	5	2	0	0	0	315	51	54
14:00	9	0	0	0	5	32	103	143	59	7	**3**	0	0	0	361	51	54
15:00	13	0	0	1	4	30	122	177	55	**18**	1	0	0	**1**	422	51	55
16:00	**14**	0	0	0	6	**35**	**159**	**210**	**94**	7	1	0	0	0	**526**	51	54
17:00	8	**1**	0	1	8	35	148	209	62	7	0	0	0	0	479	50	53
18:00	12	1	0	0	5	15	102	153	57	11	1	0	**1**	0	358	51	54
19:00	5	1	0	2	2	11	57	130	41	9	1	0	0	0	259	51	55
20:00	2	0	0	2	5	7	42	81	36	6	0	**1**	0	0	182	52	55
21:00	0	0	0	1	0	3	36	66	28	6	3	0	1	0	144	52	57
22:00	0	0	0	0	0	3	15	53	25	5	1	0	0	0	102	53	56
23:00	1	0	0	0	0	6	7	30	16	6	1	1	1	1	70	54	59
Total	131	6	2	21	73	326	1346	2030	823	148	21	3	3	2	4935		
Percent	2.7%	0.1%	0.0%	0.4%	1.5%	6.6%	27.3%	41.1%	16.7%	3.0%	0.4%	0.1%	0.1%	0.0%			
AM Peak	09:00	06:00	06:00	09:00	11:00	11:00	11:00	11:00	07:00	09:00	00:00	09:00			11:00		
Vol.	14	1	1	5	11	27	76	99	56	10	2	1			262		
PM Peak	16:00	17:00		12:00	13:00	16:00	16:00	16:00	16:00	15:00	14:00	20:00	18:00	15:00	16:00		
Vol.	14	1		2	10	35	159	210	94	18	3	1	1	1	526		

Colliers Engineering & Design

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595

Accelerating Success

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
02/16/23	0	0	**1**	0	1	2	7	15	9	5	1	**1**	1	0	43	56	62
01:00	0	0	0	0	0	0	3	6	0	5	1	0	0	0	15	58	61
02:00	0	0	0	0	0	0	5	5	2	0	0	0	0	0	12	50	53
03:00	0	0	0	0	0	0	1	7	2	1	0	0	0	0	11	53	57
04:00	0	0	0	1	0	3	3	7	5	1	1	0	0	0	21	54	59
05:00	0	0	0	1	1	1	2	15	10	6	0	0	0	0	36	55	58
06:00	5	0	1	0	0	12	41	43	27	4	**3**	1	0	0	137	52	56
07:00	**13**	**1**	0	0	6	9	45	77	45	**17**	2	1	0	**1**	217	53	57
08:00	11	0	0	0	2	11	46	102	**48**	9	3	0	0	0	232	52	55
09:00	5	0	0	2	1	11	66	87	34	6	1	0	0	0	213	51	54
10:00	3	0	0	0	4	16	57	**111**	48	4	3	0	0	0	246	51	54
11:00	11	0	0	**8**	**15**	**25**	**83**	96	28	6	0	0	**2**	0	**274**	50	53
12 PM	5	**2**	0	**1**	**6**	31	86	110	39	5	0	0	0	0	285	50	53
13:00	7	0	0	0	5	18	94	110	47	7	0	0	0	0	288	51	54
14:00	8	0	0	1	2	18	91	136	**68**	6	2	0	0	0	332	51	54
15:00	11	0	0	0	3	32	131	169	54	**10**	**3**	**1**	0	0	414	50	54
16:00	11	0	0	0	4	24	136	**221**	60	8	1	0	0	0	465	50	53
17:00	**13**	1	0	0	2	**44**	**160**	203	61	4	1	0	0	0	**489**	50	53
18:00	6	0	0	0	3	34	139	127	34	3	1	0	0	0	347	49	53
19:00	5	0	0	0	0	5	69	123	39	5	0	0	0	0	246	51	54
20:00	2	0	0	1	3	18	56	80	17	6	0	1	0	0	184	50	54
21:00	1	0	0	0	1	11	31	65	32	4	1	0	0	0	146	52	55
22:00	0	0	0	0	0	3	20	44	22	7	1	0	0	0	97	53	57
23:00	0	0	0	0	0	1	18	26	17	5	0	0	0	0	67	53	56
Total	117	4	2	15	59	329	1390	1985	748	134	25	5	3	1	4817		
Percent	2.4%	0.1%	0.0%	0.3%	1.2%	6.8%	28.9%	41.2%	15.5%	2.8%	0.5%	0.1%	0.1%	0.0%			
AM Peak	07:00	07:00	00:00	11:00	11:00	11:00	11:00	10:00	08:00	07:00	06:00	00:00	11:00	07:00	11:00		
Vol.	13	1	1	8	15	25	83	111	48	17	3	1	2	1	274		
PM Peak	17:00	12:00		12:00	12:00	17:00	17:00	16:00	14:00	15:00	15:00	15:00			17:00		
Vol.	13	2		1	6	44	160	221	68	10	3	1			489		

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
02/17/23	0	0	0	0	0	5	5	17	10	6	1	0	0	0	44	55	59
01:00	0	0	0	0	0	2	2	6	2	1	1	1	0	0	15	58	66
02:00	0	0	0	0	0	0	3	5	1	0	0	0	0	0	9	50	52
03:00	0	0	0	0	0	1	3	4	3	0	0	0	0	0	11	52	54
04:00	0	0	0	1	0	1	5	10	3	2	2	0	0	0	24	56	61
05:00	1	0	0	0	3	0	6	11	7	3	0	0	0	0	31	53	57
06:00	10	0	1	1	0	4	40	43	23	7	3	0	0	0	132	52	57
07:00	**20**	**3**	0	1	1	11	39	**79**	**46**	**17**	2	**2**	0	**1**	222	53	57
08:00	16	1	0	1	1	30	70	56	38	13	**4**	1	0	0	231	52	57
09:00	9	1	0	**3**	3	35	88	78	18	4	0	0	0	0	**239**	49	52
10:00	8	0	0	1	**12**	42	84	60	16	6	0	0	0	0	229	49	53
11:00	11	2	**4**	1	9	**43**	**89**	60	11	0	1	0	0	0	231	47	50
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	75	7	5	9	29	174	434	429	178	59	14	4	0	1	1418		
Percent	5.3%	0.5%	0.4%	0.6%	2.0%	12.3%	30.6%	30.3%	12.6%	4.2%	1.0%	0.3%	0.0%	0.1%			
AM Peak	07:00	07:00	11:00	09:00	10:00	11:00	11:00	07:00	07:00	07:00	08:00	07:00		07:00	09:00		
Vol.	20	3	4	3	12	43	89	79	46	17	4	2		1	239		
PM Peak																	
Vol.																	
Total	513	29	20	68	259	1293	5331	8016	3167	627	113	22	8	6	19472		
Percent	2.6%	0.1%	0.1%	0.3%	1.3%	6.6%	27.4%	41.2%	16.3%	3.2%	0.6%	0.1%	0.0%	0.0%			

	15th Percentile :	39 MPH
	50th Percentile :	46 MPH
	85th Percentile :	51 MPH
	95th Percentile :	55 MPH
Stats	10 MPH Pace Speed :	42-51 MPH
	Number in Pace :	12292
	Percent in Pace :	63.1%
	Number of Vehicles > 55 MPH :	776
	Percent of Vehicles > 55 MPH :	4.0%
	Mean Speed(Average) :	45 MPH

Colliers Engineering & Design

Project: MKJ PARK WAREHOUSE
Location: NEWBURGH, NY
Job No. 23003223A

400 Columbus Avenue, Suite 180 E
Valhalla NY 10595
Accelerating Success

Site Code: 23003223 888
Station ID:
N. PLANK ROAD (APPROXI. 40' EAST OF 283 N. PLANK ROAD)
Latitude: 0' 0.0000 Undefined

Start	13-Feb-23		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	12	33	18	33	10	43	17	44	14	38	*	*	*	*
01:00	*	*	8	9	12	25	5	15	7	15	8	16	*	*	*	*
02:00	*	*	12	10	8	13	8	12	6	9	8	11	*	*	*	*
03:00	*	*	20	9	25	10	28	11	20	11	23	10	*	*	*	*
04:00	*	*	75	25	80	23	68	21	71	24	74	23	*	*	*	*
05:00	*	*	167	32	173	33	162	36	179	31	170	33	*	*	*	*
06:00	*	*	336	127	320	141	312	137	312	132	320	134	*	*	*	*
07:00	*	*	378	219	392	243	410	217	382	222	390	225	*	*	*	*
08:00	*	*	**434**	232	**402**	222	**427**	232	**441**	231	**426**	229	*	*	*	*
09:00	*	*	293	219	312	229	337	213	317	**239**	315	225	*	*	*	*
10:00	*	*	288	220	267	212	265	246	268	229	272	227	*	*	*	*
11:00	*	*	272	**269**	295	**262**	286	**274**	279	231	283	**259**	*	*	*	*
12:00 PM	300	281	283	278	282	271	309	285	**9**	**10**	237	225	*	*	*	*
01:00	276	277	310	296	259	315	274	288	*	*	280	294	*	*	*	*
02:00	300	361	315	363	249	361	272	332	*	*	284	354	*	*	*	*
03:00	306	408	337	440	318	422	299	414	*	*	315	421	*	*	*	*
04:00	338	**477**	350	488	344	**526**	331	465	*	*	341	489	*	*	*	*
05:00	**348**	477	**360**	**555**	**346**	479	**334**	**489**	*	*	**347**	**500**	*	*	*	*
06:00	229	354	261	367	291	358	242	347	*	*	256	356	*	*	*	*
07:00	146	239	163	278	186	259	134	246	*	*	157	256	*	*	*	*
08:00	126	189	119	177	111	182	138	184	*	*	124	183	*	*	*	*
09:00	81	135	96	149	102	144	107	146	*	*	96	144	*	*	*	*
10:00	56	83	55	97	48	102	49	97	*	*	52	95	*	*	*	*
11:00	35	56	36	73	36	70	45	67	*	*	38	66	*	*	*	*
Total	2541	3337	4980	4965	4876	4935	4852	4817	2308	1428	4830	4813	0	0	0	0
Day	5878		9945		9811		9669		3736		9643		0		0	
AM Peak	-	-	08:00	11:00	08:00	11:00	08:00	11:00	08:00	09:00	08:00	11:00	-	-	-	-
Vol.	-	-	434	269	402	262	427	274	441	239	426	259	-	-	-	-
PM Peak	17:00	16:00	17:00	17:00	17:00	16:00	17:00	17:00	12:00	12:00	17:00	17:00	-	-	-	-
Vol.	348	477	360	555	346	526	334	489	9	10	347	500	-	-	-	-
Comb. Total	5878		9945		9811		9669		3736		9643		0		0	

ADT ADT 9,644 AADT 9,644

NYSDOT Traffic Volume Data

Colliers Engineering & Design

NYSDOT VOLUME DATA SUMMARY

ROADWAY: NYS ROUTE 32
SEGMENT: FROM GARDNERTOWN ROAD TO ROUTE 300
LOCATION: 900' W OF OLD N PLANK RD
START DATE OF COUNT: Tuesday, May 15, 2018
NYSDOT COUNT STATION: 830241
FUNCTIONAL CLASS: 16 - URBAN MINOR ARTERIAL
FACTOR GROUP: 30
SEASONAL FACTOR: 1.093

TIME PERIOD		DIRECTIONAL VOLUMES		TOTAL VOLUME
START	FINISH	EASTBOUND	WESTBOUND	
12:00 AM	1:00 AM	35	65	100
1:00 AM	2:00 AM	16	43	59
2:00 AM	3:00 AM	19	23	42
3:00 AM	4:00 AM	29	14	43
4:00 AM	5:00 AM	81	28	109
5:00 AM	6:00 AM	243	60	303
6:00 AM	7:00 AM	463	176	639
7:00 AM	8:00 AM	613	276	889
8:00 AM	9:00 AM	567	312	879
9:00 AM	10:00 AM	468	295	763
10:00 AM	11:00 AM	380	342	722
11:00 AM	12:00 PM	396	364	760
12:00 PM	1:00 PM	437	404	841
1:00 PM	2:00 PM	399	459	858
2:00 PM	3:00 PM	402	481	883
3:00 PM	4:00 PM	426	546	972
4:00 PM	5:00 PM	439	671	1110
5:00 PM	6:00 PM	524	704	1228
6:00 PM	7:00 PM	492	615	1107
7:00 PM	8:00 PM	386	544	930
8:00 PM	9:00 PM	257	419	676
9:00 PM	10:00 PM	200	296	496
10:00 PM	11:00 PM	115	200	315
11:00 PM	12:00 AM	57	141	198
AVERAGE WEEKDAY DAILY TRAFFIC		**7444**	**7478**	**14922**
	AADT	**6811**	**6842**	**13653**

NOTES:

1) DATA SOURCE: NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) TRAFFIC DATA VIEWER AVERAGE WEEKDAY VOLUMES

NYSDOT VOLUME DATA SUMMARY

ROADWAY: NYS ROUTE 300
SEGMENT: FROM NYS ROUTE 32 TO NYS ROUTE 52
LOCATION: 320' S OF TOMS LN
START DATE OF COUNT: Tuesday, May 15, 2018
NYSDOT COUNT STATION: 830074
FUNCTIONAL CLASS: 16 - URBAN MINOR ARTERIAL
FACTOR GROUP: 30
SEASONAL FACTOR: 1.093

TIME PERIOD		DIRECTIONAL VOLUMES		TOTAL VOLUME
START	FINISH	NORTHBOUND	SOUTHBOUND	
12:00 AM	1:00 AM	48	32	80
1:00 AM	2:00 AM	32	19	51
2:00 AM	3:00 AM	23	20	43
3:00 AM	4:00 AM	22	44	66
4:00 AM	5:00 AM	45	96	141
5:00 AM	6:00 AM	62	230	292
6:00 AM	7:00 AM	170	428	598
7:00 AM	8:00 AM	260	562	822
8:00 AM	9:00 AM	313	536	849
9:00 AM	10:00 AM	319	469	788
10:00 AM	11:00 AM	299	424	723
11:00 AM	12:00 PM	341	424	765
12:00 PM	1:00 PM	407	462	869
1:00 PM	2:00 PM	388	454	842
2:00 PM	3:00 PM	435	370	805
3:00 PM	4:00 PM	562	442	1004
4:00 PM	5:00 PM	387	375	762
5:00 PM	6:00 PM	417	355	772
6:00 PM	7:00 PM	469	412	881
7:00 PM	8:00 PM	434	328	762
8:00 PM	9:00 PM	267	236	503
9:00 PM	10:00 PM	190	158	348
10:00 PM	11:00 PM	124	98	222
11:00 PM	12:00 AM	82	54	136
AVERAGE WEEKDAY DAILY TRAFFIC		**6096**	**7028**	**13124**
	AADT	**5577**	**6430**	**12007**

NOTES:

1) DATA SOURCE: NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) TRAFFIC DATA VIEWER AVERAGE WEEKDAY VOLUMES

Traffic Impact Study

Appendix F | Other Potential Development Data

Gardner Ridge – CED Study 12/8/ 2021 Excerpts

Traffic Impact Study

Gardner Ridge
Town of Newburgh
Orange County, NY
Project No. 14000375A

August 13, 2021

Revised December 8, 2021

Prepared for:

Gardner Ridge Associates
134 Fairview Road
Rockaway, NJ 07866

Prepared by:

Philip J. Grealy, Ph.D., P.E.
Geographic Discipline Leader
NY Professional Engineer
License No. 59858

400 Columbus Avenue
Suite 180E
Valhalla New York 10595
Main: 877-627-3772
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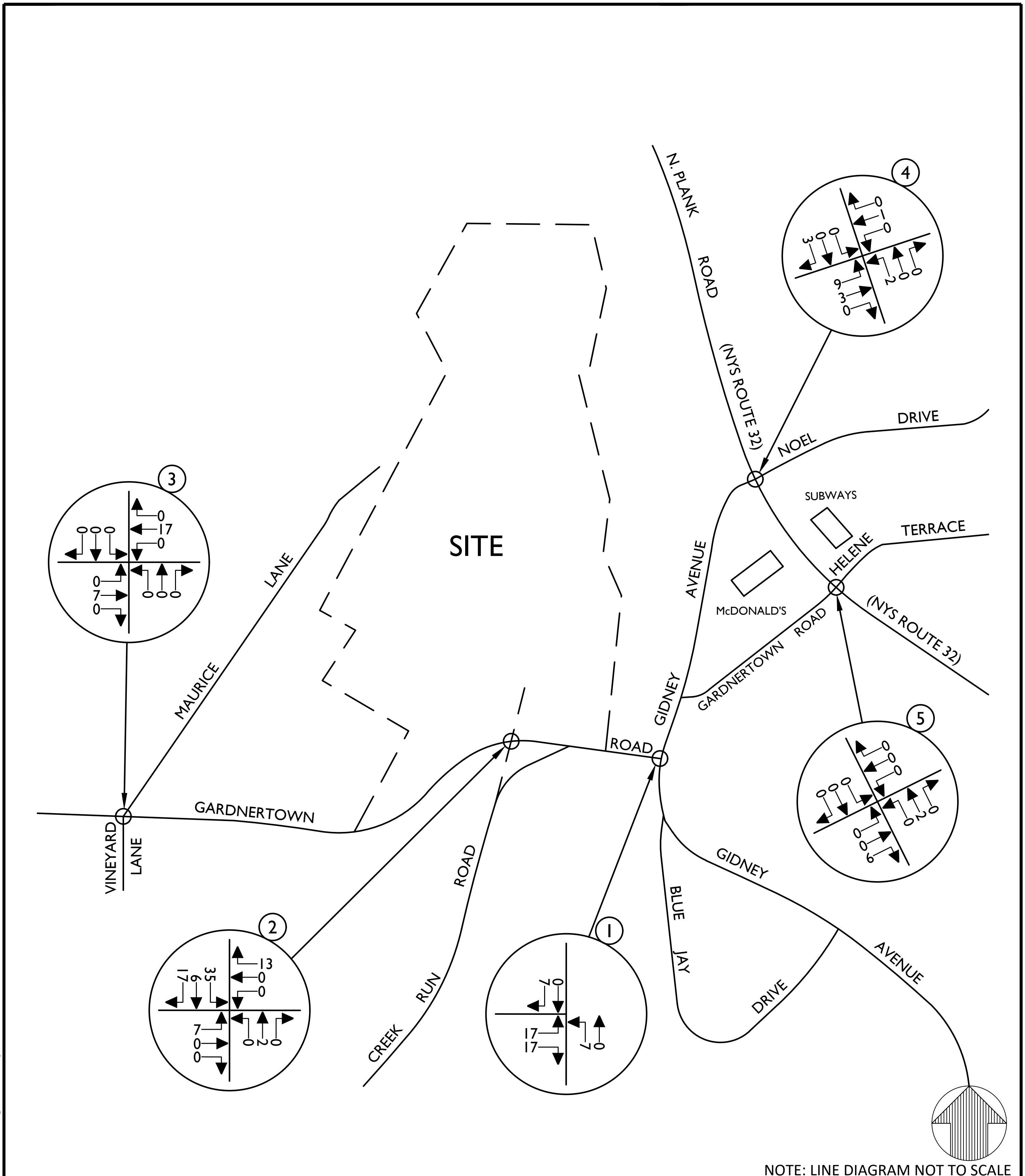

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TOWN OF NEWBURGH
ORANGE COUNTY
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Valhalla, NY 10595
Phone: 914.347.7500
COLLIERS ENGINEERING & DESIGN CT, P.C. DOING BUSINESS AS MASER CONSULTING ENGINEERING & LAND SURVEYING

TRAFFIC IMPACT STUDY

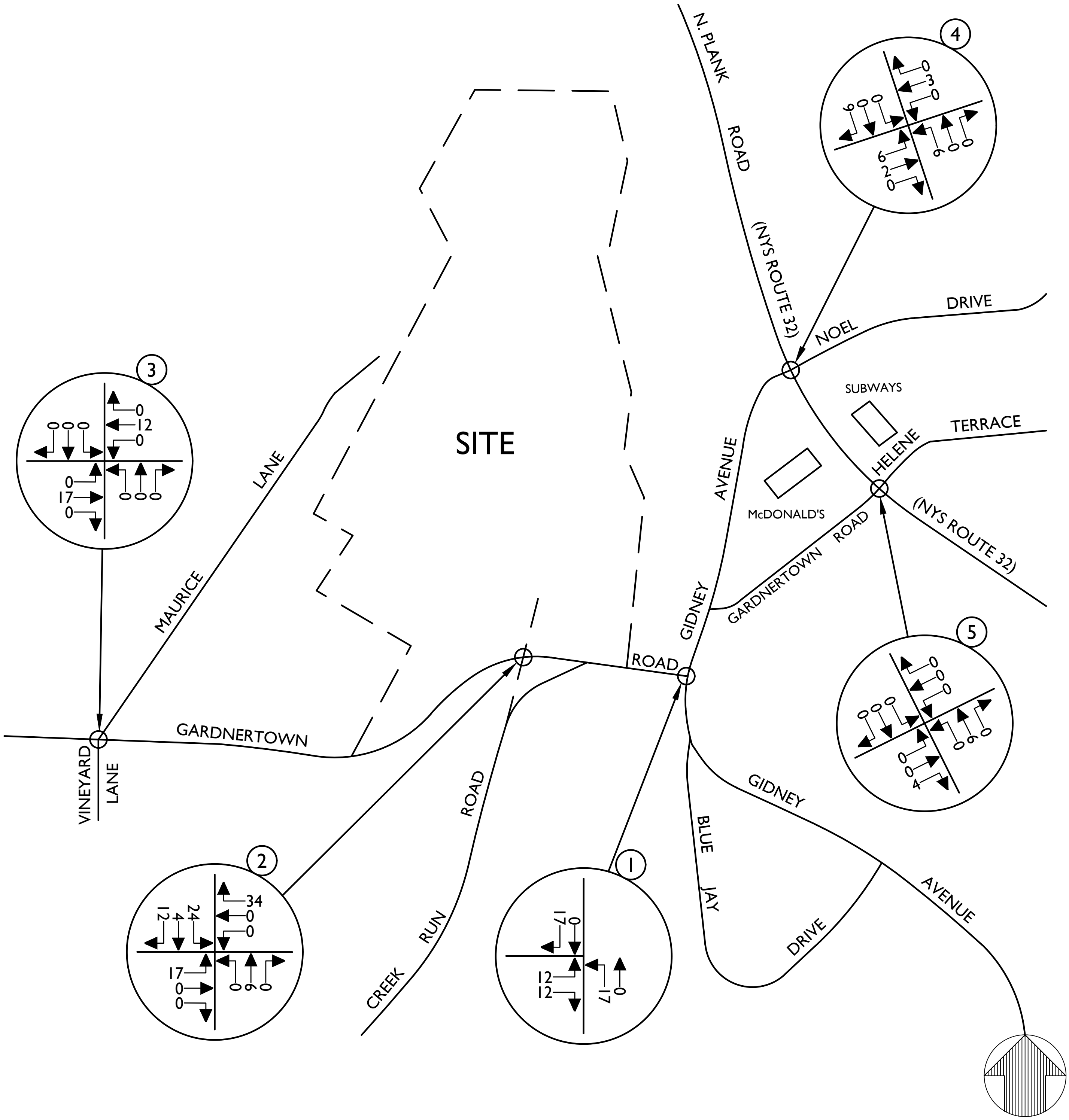
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	11/12/21	R.H.	P.J.G.

PROJECT NUMBER:	DRAWING NAME:
14000375A	211112RH_FIGURE

SHEET TITLE:
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
12

0375A\Reports\Traffic\Figures\211112RH_FIGURE.dwg\12 By: RHILARIO



NOTE: LINE DIAGRAM NOT TO SCALE

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TRAFFIC IMPACT STUDY

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	11/12/21	R.H.	P.J.G.

PROJECT NUMBER:	DRAWING NAME:
14000375A	211112RH_FIGURE

SHEET TITLE:
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
13

0375A\Reports\Traffic\Figures\211112RH_FIGURE.dwg\13 By: RHILARIO

Table No. 1
Hourly Trip Generation Rates (HTGR) and
Anticipated Site Generated Traffic Volumes

Gardner Ridge Town of Newburgh, NY	Entry		Exit	
	HTGR[1]	Volume	HTGR1	HTGR[1]
Multi-Family Housing (144 Units)				
Peak AM Hour	0.15	22	0.40	58
Peak PM Hour	0.40	57	0.28	40

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 10TH EDITION, 2017. ITE LAND USE CODE - 220 - MULTIFAMILY HOUSING.

2) NOTE THAT ALTHOUGH A PORTION OF THE UNITS MAYBE AGE RESTRICTED, NO ADJUSTMENT WAS MADE IN THE TRIP RATES SHOWN. THUS, THE VOLUMES SHOWN ABOVE ARE SOMEWHAT CONSERVATIVE SINCE AGE - RESTRICTED UNITS TYPICALLY GENERATE LOWER PEAK HOUR TRAFFIC VOLUMES.

Polo Club – CED Study 12/9/ 2019 Excerpts

Engineers Planners Surveyors Landscape Architects Environmental Scientists

MASER
CONSULTING P.A.

Traffic Impact Study

Polo Club
Town of Newburgh, Orange County, New York

December 9, 2019

Prepared For

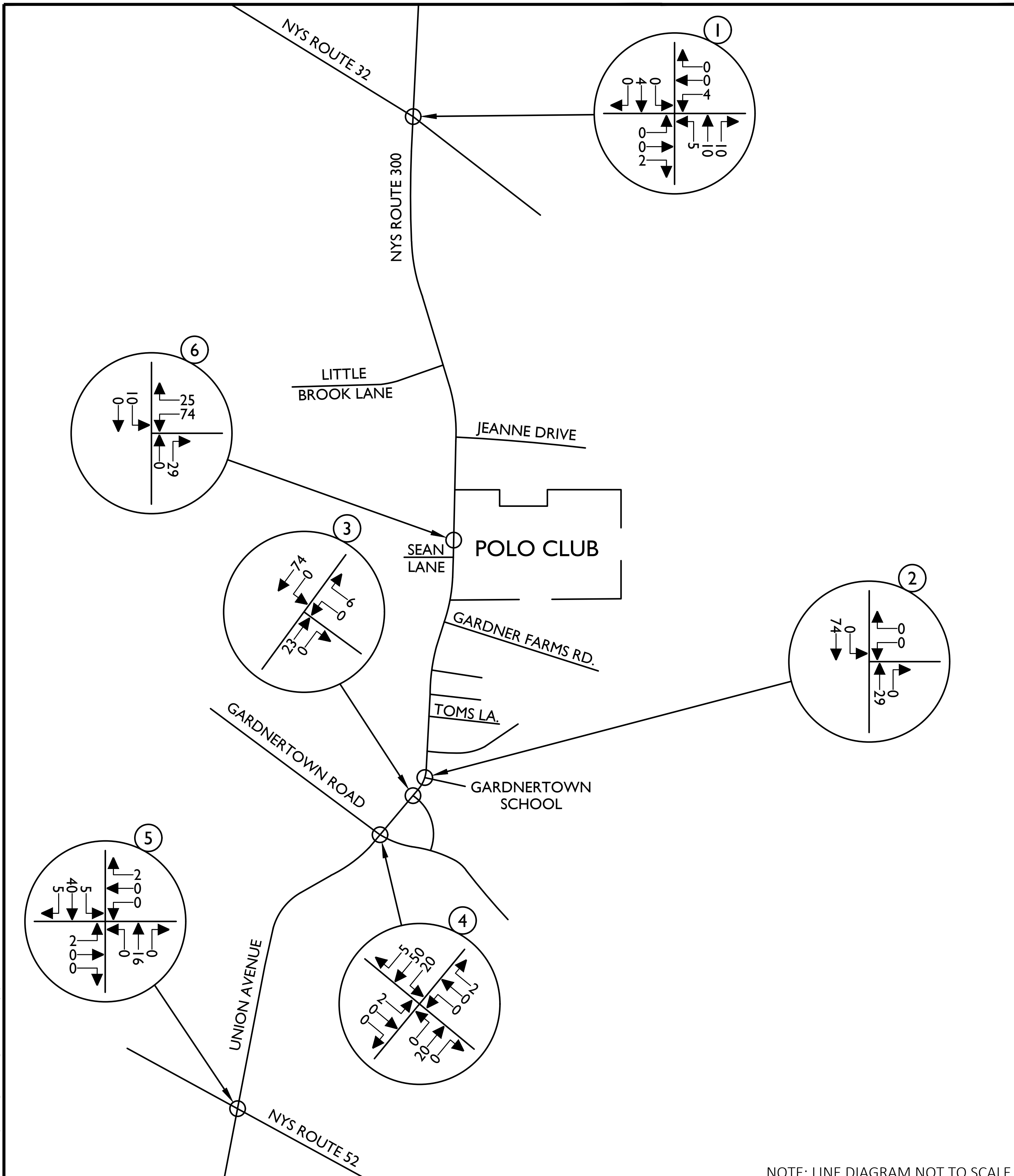
Spruce Creek, LLC
56 Far Horizons
Newburgh, NY 12550

Prepared By

Maser Consulting P.A.
400 Columbus Avenue, Suite 180E
Valhalla, NY 10595
914.347.7500

Philip J. Grealy, Ph.D., P.E.; Principal
License No. 59858

MC Project No. 19004111A



NOTE: LINE DIAGRAM NOT TO SCALE

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- **NORTH CAROLINA** • Charlotte • Raleigh
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ORANGE COUNTY
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TRAFFIC IMPACT STUDY

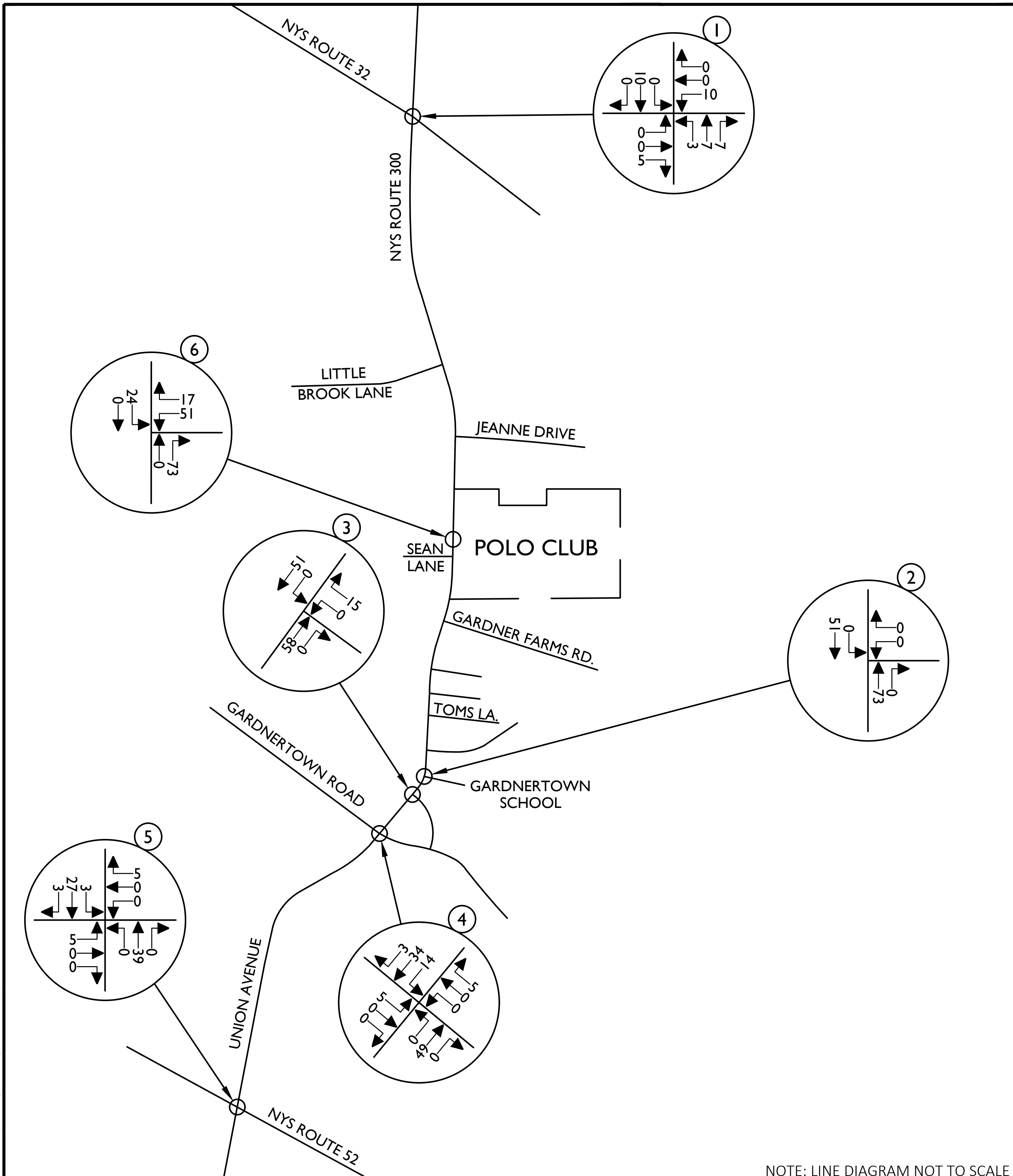
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/16/19	J.F.M.	P.J.G.

PROJECT NUMBER:	DRAWING NAME:
19004111A	191016JFM_FIGURES

SHEET TITLE:
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
12

4111A_Polo Club 2019\Reports\Traffic\Figures\191016JFM_Figures.dwg\12 By: JMUCCIN



NOTE: LINE DIAGRAM NOT TO SCALE

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THE POLO CLUB

NYS ROUTE 300
TOWN OF NEWBURH
ORANGE COUNTY
NEW YORK

WESTCHESTER OFFICE
400 Columbus Avenue
Suite 180E
Valhalla, NY 10595

Phone: 914.347.7500
Fax: 914.347.7266

TRAFFIC IMPACT STUDY

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/16/19	J.F.M.	P.J.G.

PROJECT NUMBER:	DRAWING NAME:
19004111A	191016JFM_FIGURES

SHEET TITLE:
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
13

4111A_Polo Club 2019\Reports\Traffic\Figures\191016JFM_Figures.dwg\13 By: JMUCCIN

TABLE NO. 1

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

POLO CLUB NEWBURGH, NEW YORK	ENTRY		EXIT	
	HTGR[1]	VOLUME	HTGR[1]	VOLUME
MULTI-FAMILY RESIDENTIAL (246 UNITS)				
PEAK AM HOUR	0.16	39	0.40	99
PEAK PM HOUR	0.39	97	0.28	68

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 10TH EDITION, 2017. ITE LAND USE CODE - 220 - MULTI-FAMILY RESIDENTIAL. NOTE THAT THE TRIP RATES SHOWN REFLECT THE PEAK HOUR OF GENERATOR DATA.

Monarch Woods – DTS Provident Study 12/17/2021 Excerpts

DTS • PROVIDENT
Intelligent Land Use

TRAFFIC IMPACT STUDY

MONARCH WOODS SENIOR COMMUNITY

Monarch Drive
Town of Newburgh, Orange County, New York

Prepared for
ENGINEERING & SURVEYING PROPERTIES
71 Clinton Street
Montgomery, New York 12549

Prepared by
DTS Provident Design Engineering, LLP
One North Broadway
White Plains, New York 10601

December 17, 2021

DTS Provident Project No. 0871

Table No. 3

Trip Generation Table*

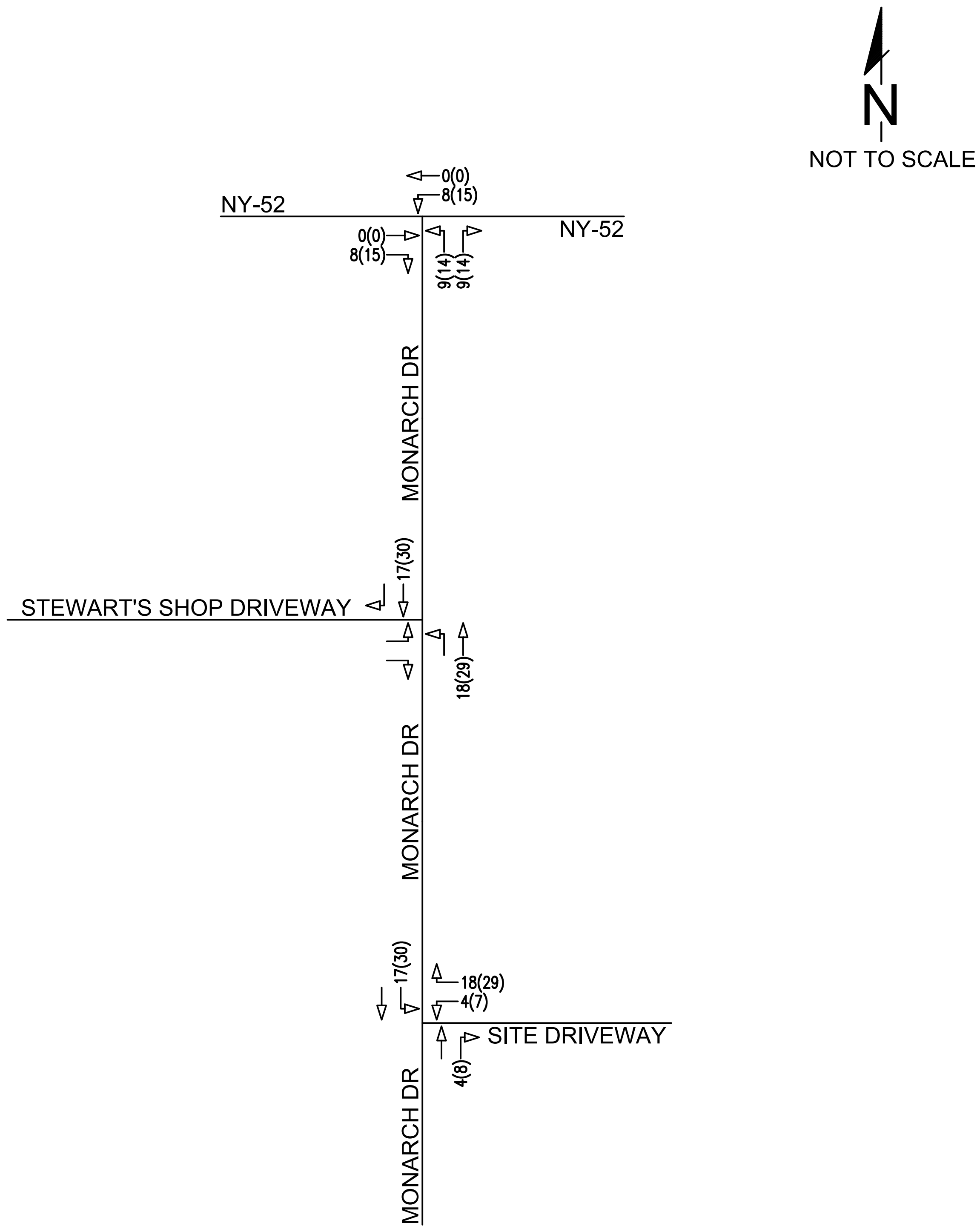
Land Use Code	Size	Unit	***Weekday AM Peak Hour (7:15 AM – 8:15 AM)***		***Weekday PM Peak Hour (4:15 PM – 5:15 PM)***	
			IN	OUT	IN	OUT
Senior Adult Housing – Multifamily (ITE Land Use Code 252)	100	Dwelling Units	7	13	14	11
Drive In Bank (ITE Land Use Code 912)	3,150	SF	18	13	33	33
Bank Pass-By/Diverted-Link Trips			-4	-4	-8	-8
Total Primary Trips			21	22	39	36

*Trip Generation based upon information contained in the Institute of Transportation Engineers' (ITE) publication entitled "Trip Generation", 11th Edition. Trips estimated per Land Uses 252 (Senior Housing) and 912 (Drive-In Bank) using the Average Rate for the Peak Hour of Adjacent Street Traffic.

The estimated traffic volumes listed in the Trip Generation table above were assigned to the roadway network in accordance with the Arrival and Departure Distributions to form the Site-generated Traffic Volumes, which are illustrated on Figure No. 7 in Appendix B.

2.5 2024 BUILD TRAFFIC VOLUMES

The Site-generated Traffic Volumes were then combined with the 2024 No-Build Traffic Volumes to form the 2024 Build Traffic Volumes, which are illustrated on Figure No. 8 in Appendix B.



LEGEND

00 - VPH-PEAK AM HOUR (7:15-8:15)
(00) - VPH-PEAK PM HOUR (4:15-5:15)

Q:\PROJECTS-DTSP\0871 - Newburgh - Monarch Woods\AutoCAD\Traffic\TrafficFigures 8.5x11 Portrait.dwg

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F: 914.428.0017

Project No. 0871
N.T.S
December 2021

Primary Site Generated Traffic Volumes
Monarch Drive
Newburgh, Orange County, NY

Figure No. 07

Farrell Industrial Park – JMC Study 12/3/2020 Excerpts

TRAFFIC STUDY

FARRELL INDUSTRIAL PARK

ROUTE 300
TOWN OF NEWBURGH, NEW YORK

Prepared for: **Farrell Building Company**
2317 Montauk Highway
Bridgehampton, NY 11932

Prepared by: JMC

JMC Project **18156**
Town of Newburgh Project No. 2020-16

Date: December 3, 2020

TABLE 1

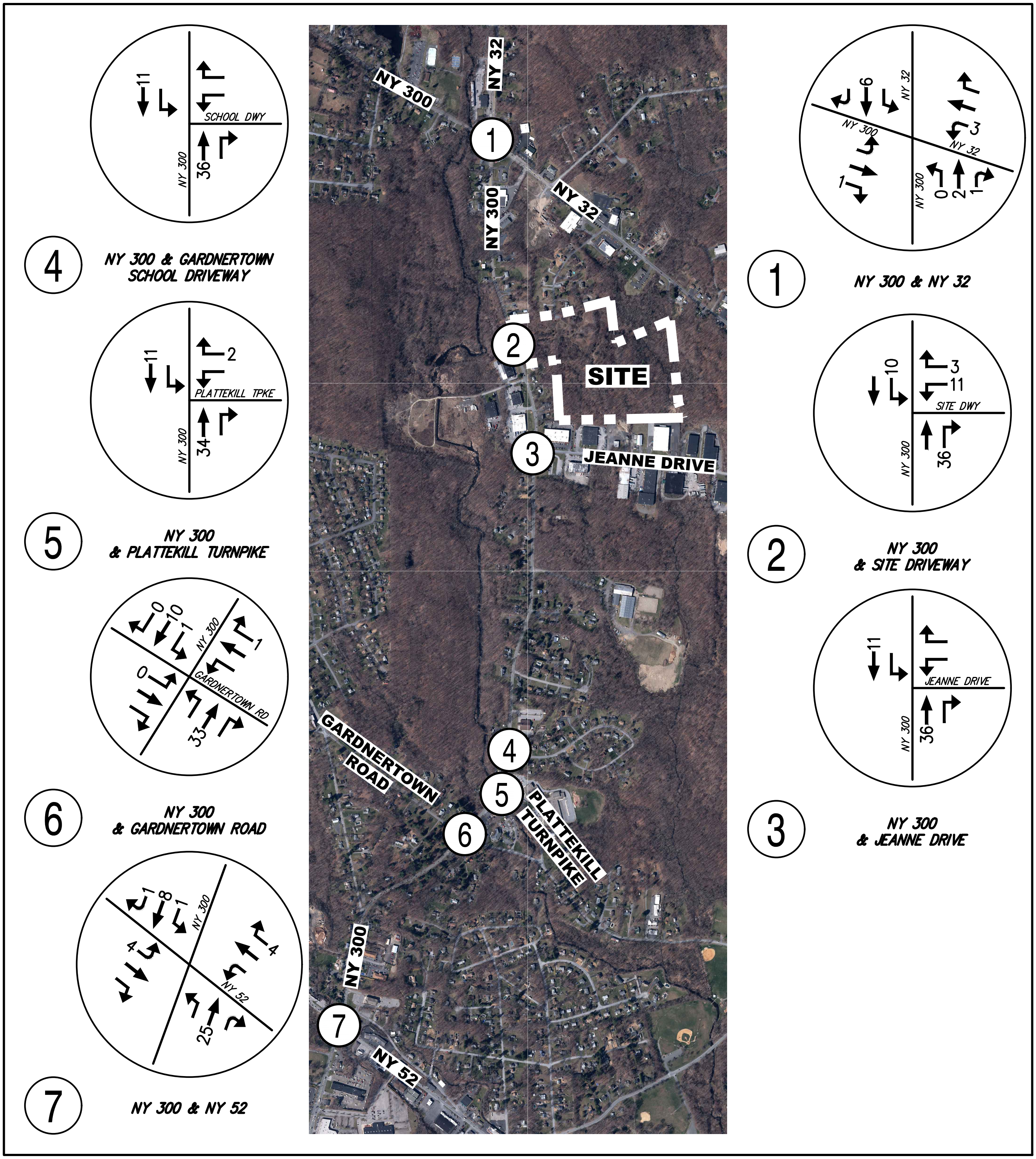
PROPOSED DEVELOPMENT VOLUMES[1]

DESCRIPTION	PEAK WEEKDAY AM HOUR			PEAK WEEKDAY PM HOUR		
	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Proposed 290,000 Square Foot Warehouse Driveway Volumes (ITE Code 150)[2]	46	14	60	17	46	63

Notes:

(1) Trip generation is based on ITE (Institute of Transportation Engineers) Trip Generation Manual, 10th Edition.

(2) Warehousing (ITE Code 150) is defined by ITE as a warehouse primarily devoted to the storage of materials, but it may also include office and maintenance areas.



FARRELL INDUSTRIAL PARK

ROUTE 300 TOWN OF NEWBURGH, NY

PRIMARY VOLUMES

PEAK WEEKDAY AM HOUR

DATE: 12/03/2020 JMC PROJECT: 18156

FIGURE: 10 SCALE: 1" = 1,500'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

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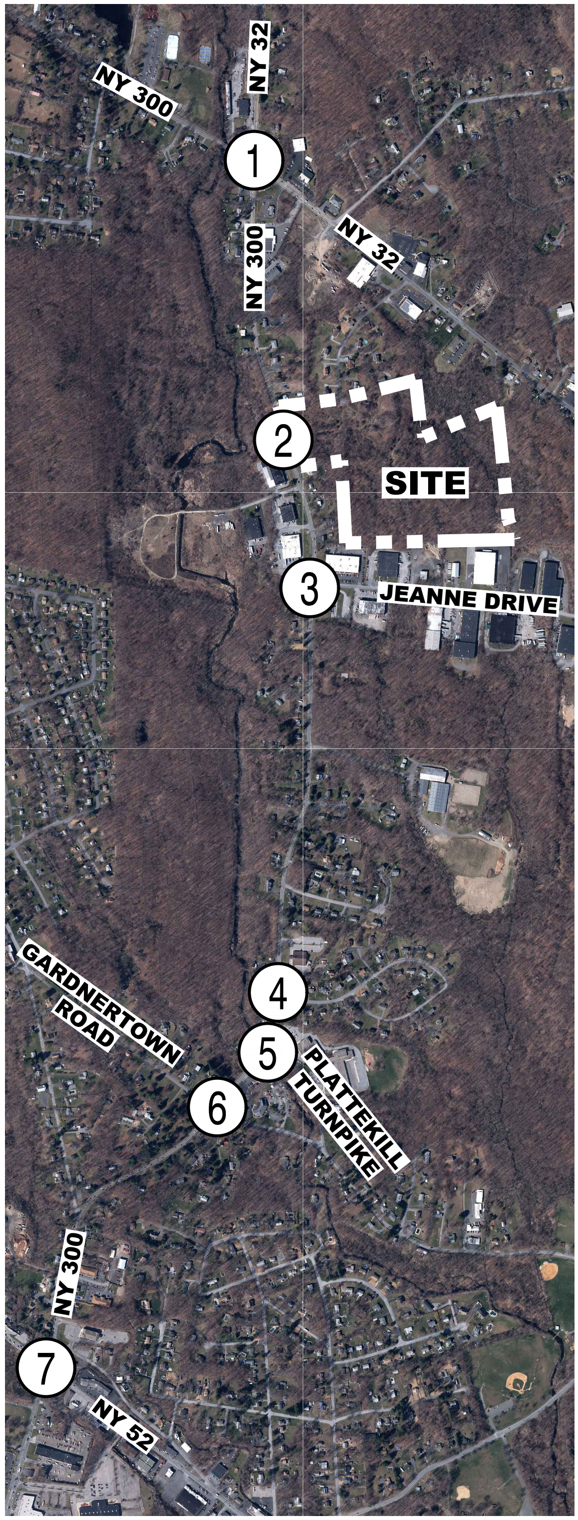
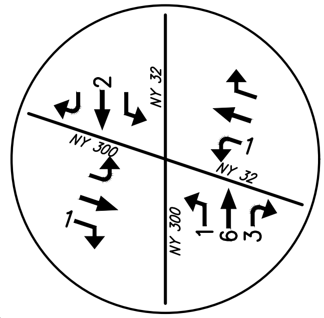
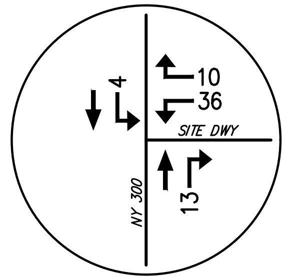
18156-TRAFFIC-FIG.dwg; TRAFFIC-FIGS.tab

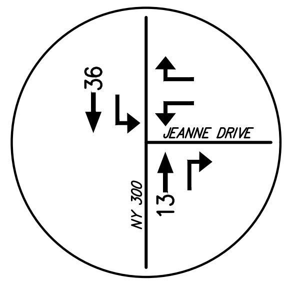




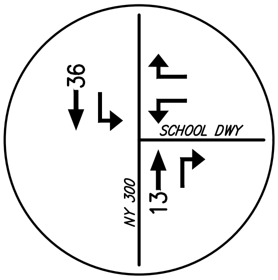
1 NY 300 & NY 32



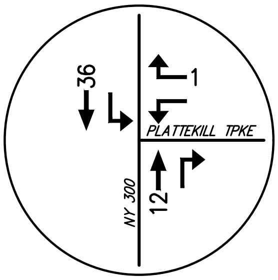
2 NY 300 & SITE DRIVEWAY



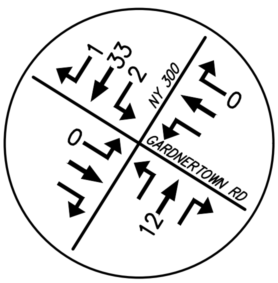
3 NY 300 & JEANNE DRIVE



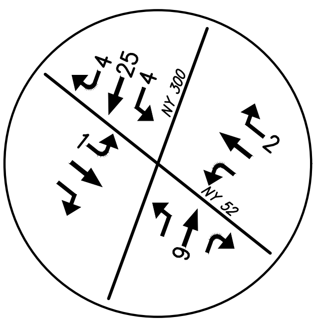
4 NY 300 & GARDNERTOWN SCHOOL DRIVEWAY



5 NY 300 & PLATTEKILL TURNPIKE



6 NY 300 & GARDNERTOWN ROAD



7 NY 300 & NY 52

FARRELL INDUSTRIAL PARK

ROUTE 300 TOWN OF NEWBURGH, NY

PRIMARY VOLUMES

PEAK WEEKDAY PM HOUR

DATE: 12/03/2020 JMC PROJECT: 18156

FIGURE: 11 SCALE: 1" = 1,500'

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18156-TRAFFIC-FIG.dwg; TRAFFIC-FIGS.tab

Matrix Logistics Center – Langan Study 5/14/2021 Excerpts

TRAFFIC IMPACT STUDY

For

Matrix Logistics Center at Newburgh
Town of Newburgh
Orange County, New York

Prepared For:

Matrix Development Group
3 Centre Drive
Monroe Township, NJ 08831

Prepared By:

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, New York 10601

Karl A. Pehnke, P.E., PTOE
P.E. License No. 066801-1

Kerry A. Pehnke

LANGAN

14 May 2021
190063301

conservative trip generator. Moreover, to be very conservative in the analysis we increased the trip generation estimates based on Land Use Code 150 (Warehousing) by a factor of 3.0 to provide more flexibility in accommodating varying traffic generation associated with the operations of different potential tenants. Actual traffic generation is likely to be much less than as analyzed herein.

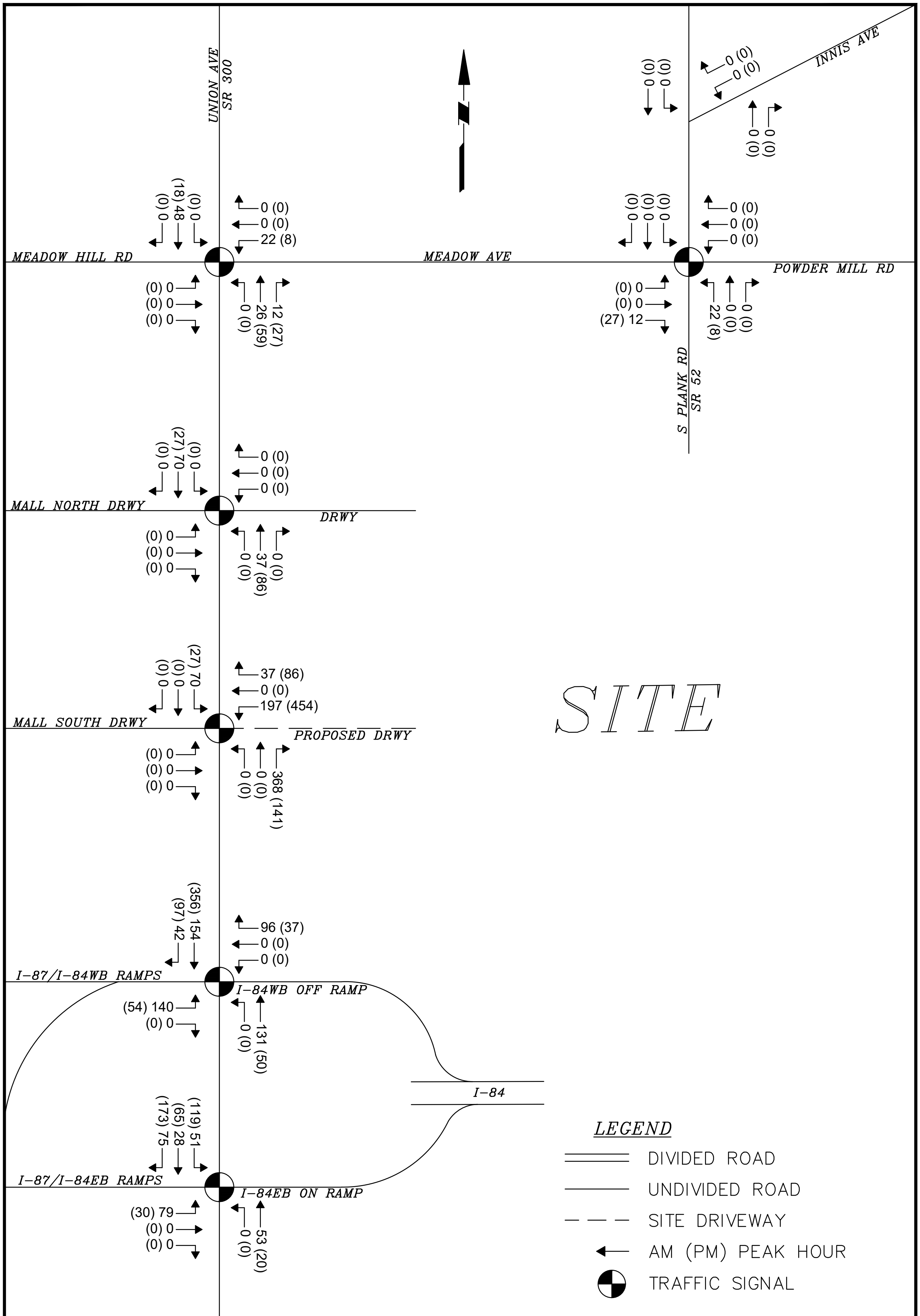
Table 1 summarizes the trip generation estimates for the weekday morning and evening peak hours with a breakdown of vehicle types.

Table 1 – Trip Generation Estimates

Location	Use	Vehicle Breakdown	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
Building A	927,000 sf Warehouse Land Use 150	Cars	116	61	177	45	144	189
		Trucks	17	10	27	8	25	33
		Total	**133**	**71**	**204**	**53**	**169**	**222**
Building B	215,200 sf Warehouse Land Use 150	Cars	30	17	47	11	36	47
		Trucks	5	2	7	2	6	8
		Total	**35**	**19**	**54**	**13**	**42**	**55**
Total Trips								
Full Site	1,142,200 sf Warehouse Land Use 150	Cars	146	78	224	56	180	236
		Trucks	22	12	34	10	31	41
		Total	**168**	**90**	**258**	**66**	**211**	**277**
Total Trips Factored By 3.0								
Full Site	1,142,200 sf Warehouse Land Use 150	Cars	438	234	672	168	540	708
		Trucks	66	36	102	30	93	123
		Total	**504**	**270**	**774**	**198**	**633**	**831**

Additionally, we have prepared a comparison to the traffic generation of the property as a warehouse based on the amended site plan to the original approval of the 850,000 sf shopping center. Since the John Collins Engineers, P.C. original traffic study and Memo only evaluated the PM and Saturday peak hours, we have prepared AM peak hour traffic volume estimates for the approved shopping center development of the property utilizing data as published by the ITE in the publication Trip Generation, 10th edition. The PM peak hour estimates are as documented in the Traffic Impact Study dated September 14, 2005 and a November 8, 2006 Memo prepared by John Collins Engineers, P.C. for The Ridge (aka The Marketplace at Newburgh). The Memo is included in Appendix C of the Final Environmental Impact Statement (FEIS) dated March 15, 2007 for The Ridge (aka The Marketplace at Newburgh).

The following table summarizes the estimated traffic generation and comparison of uses. The comparison was done in two ways. The first compares the proposed amended trip generation, from Table 1, to the overall site generated trips from the approved FEIS, which incorporated a 25% credit for pass-by trips. The second compares the proposed amended trip generation, from



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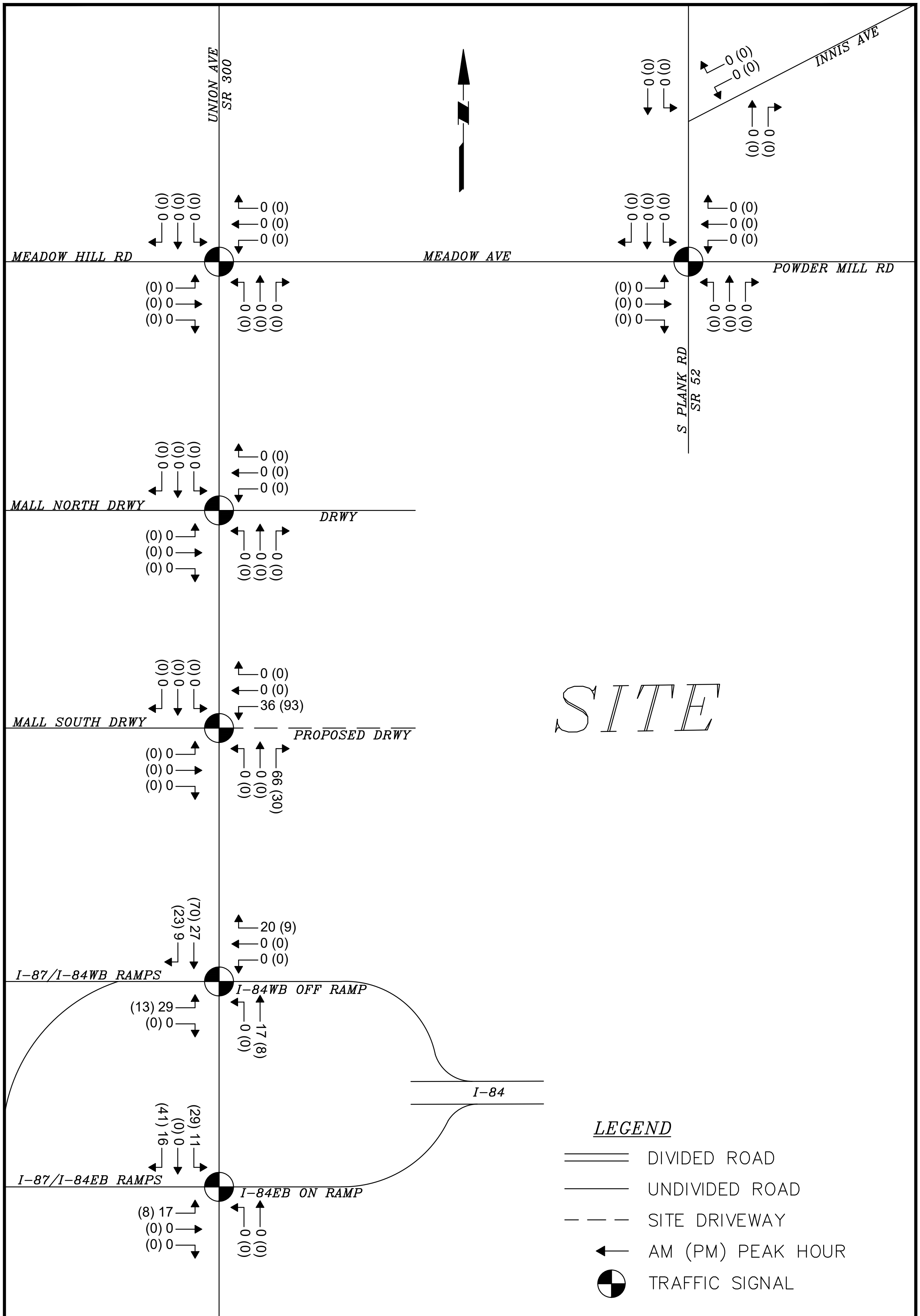
Project: MATRIX LOGISTICS CENTER AT NEWBURGH, TOWN OF NEWBURGH, ORANGE COUNTY, NEW YORK	Drawing Title: SITE-GENERATED TRIPS PASSENGER CARS	Project No. 190063301; Date 05/13/2021; Scale N.T.S.; Drawn By TJM; Checked By KAMP; Submission Date MAY 2021	Drawing No. FIGURE 8; Sheet 16 of 19

Filename: \\langan.com\data\WPW\data3\190063301\Project Data_Discipline\Traffic\Figures & Tables\2021-05 TIS Use Figures x3 trips\2021-05 TIS Figures Matrix Newburgh x3 Trips.dwg Date: 5/13/2021 Time: 15:41 User: kapehnke Style Table: Langan.stb Layout: 8-TripsCars



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Collectively known as Langan
NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

MATRIX LOGISTICS CENTER AT NEWBURGH

TOWN OF NEWBURGH

ORANGE COUNTY NEW YORK

Drawing Title

SITE-GENERATED TRIPS TRUCKS

Project No. 190063301	Drawing No.
Date 05/13/2021	**FIGURE 9**
Scale N.T.S.	
Drawn By TJM / Checked By KAMP	
Submission Date MAY 2021	Sheet 17 of 19

Filename: \\langan.com\data\WPW\data3\190063301\Project Data_Discipline\Traffic\Figures & Tables\2021-05 TIS Use Figures x3 trips\2021-05 TIS Figures Matrix Newburgh x3 Trips.dwg Date: 5/13/2021 Time: 15:41 User: kapehnke Style Table: Langan.stb Layout: 9-TripsTrucks

Elm Farm – DTS Provident Study 1/21/2022 Excerpts

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Intelligent Land Use

TRAFFIC IMPACT STUDY

ELM FARM SUBDIVISION

Fostertown Road and Wells Road
Town of Newburgh, Orange County, New York

Prepared for

PITINGARO & DOETSCH CONSULTING ENGINEERS, P.C.
15 Industrial Drive
Middletown, New York 10941

Prepared by

DTS Provident Design Engineering, LLP
One North Broadway
White Plains, New York 10601

January 21, 2022

DTS Provident Project No. 0879

TABLE NO. 4 TRIP GNERATION SUMMARY TABLE				
TYPE OF DEVELOPMENT	AM PEAK HOUR		PM PEAK HR	
	ENTER	EXIT	ENTER	EXIT
52 Single Family Detached Housing Units - LU 210 – Peak Hour of Adjacent Street Traffic - Formula	11	30	34	20
TOTAL	41		54	

*Trip Generation based upon Institute of Transportation Engineers Trip Generation Manual, 11th Edition

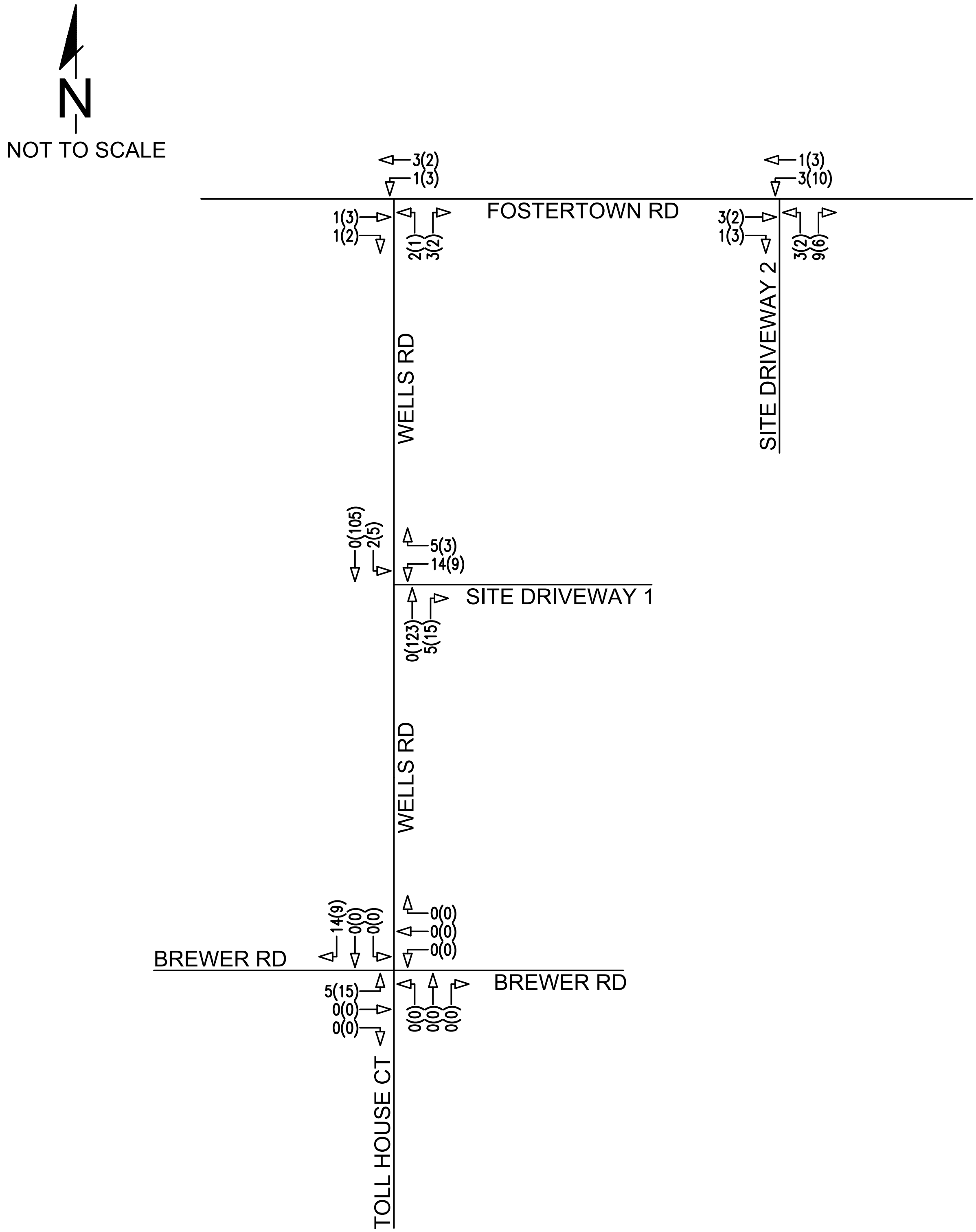
The estimated traffic volumes listed in the Trip Generation table above were assigned to the roadway network in accordance with the Arrival and Departure Distributions to form the Site-generated Traffic Volumes, which are illustrated on Figure No. 6 in Appendix B.

2.5 2025 BUILD TRAFFIC VOLUMES

The Site-generated Traffic Volumes were then combined with the 2025 No-Build Traffic Volumes to form the 2025 Build Traffic Volumes, which are illustrated on Figure No. 7 in Appendix B.

2.6 SIGHT DISTANCE

A sight distance analysis was performed by DTS Provident for the proposed Site Driveways. Below is a summary table of the analysis.



LEGEND

00 - VPH-PEAK AM HOUR (7:30-8:30)
(00) - VPH-PEAK PM HOUR (3:30-4:30)

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DTS Provident Design Engineering, LLP
One North Broadway
White Plains, NY 10601
P: 914.428.0010
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Site Generated Traffic Volumes
Newburgh Elm Farm Subdivision
Newburgh, Orange County, NY

Project No. 0879
N.T.S
January 2022

Figure No. 06

MKJ Park Warehouse – CED Study April 6 2023

Colliers
Engineering & Design

Traffic Impact Study

April 6, 2023

MKJ Park Warehouse – NYS Route 32
Town of Newburgh, Orange County, New York

Prepared for:

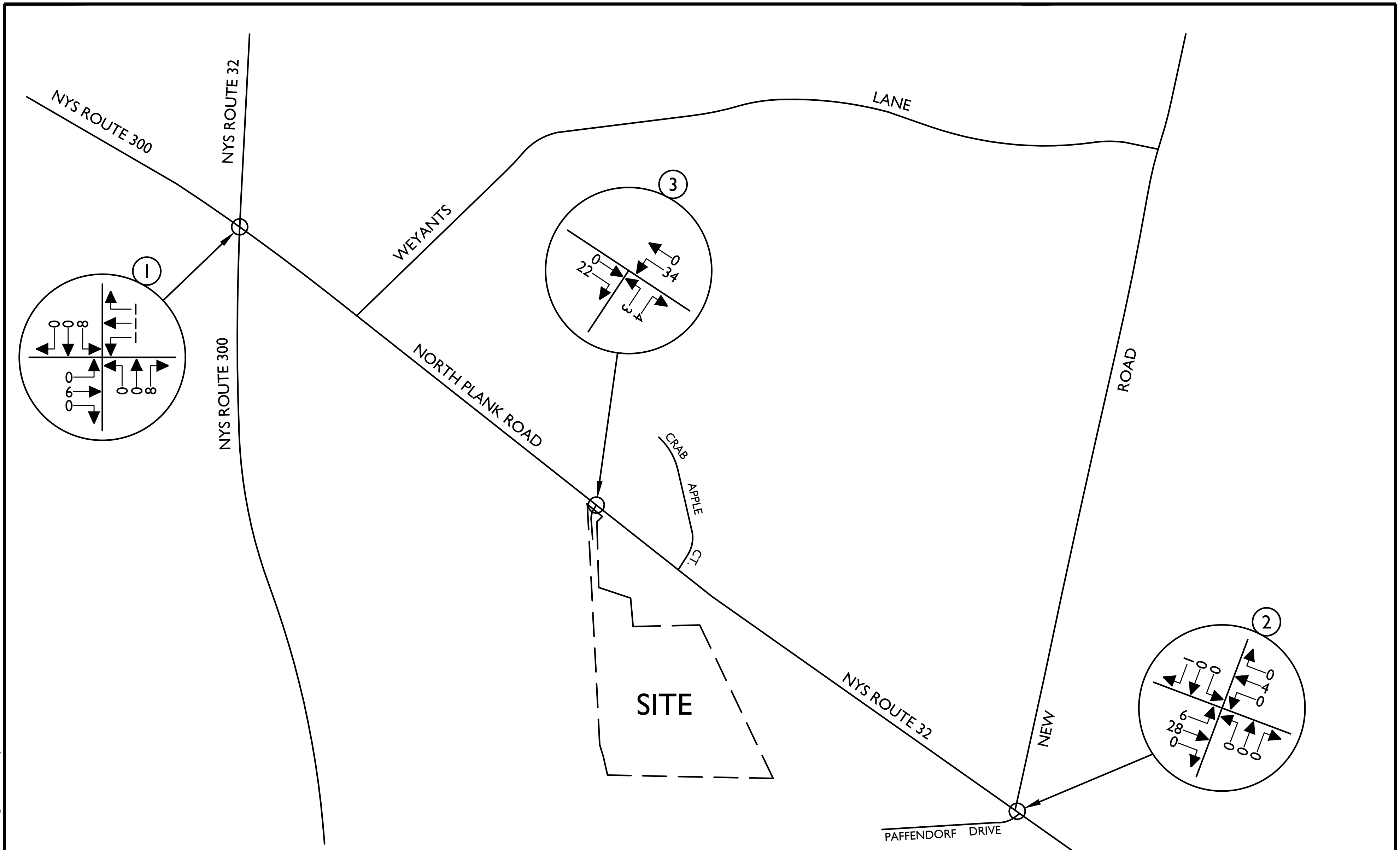
MKJ Park, LLC
208 South Plank Road
Newburgh, NY 12550

Prepared by:

Richard G. D'Andrea, P.E., PTOE
Asst. Department Manager
New York Professional Engineer
License No. 090241

Colliers Engineering & Design
400 Columbus Avenue
Suite 180E
Valhalla New York 10595
Main: 877 627 3772
Colliersengineering.com

Project No. 23003223A



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PASSENGER CARS
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
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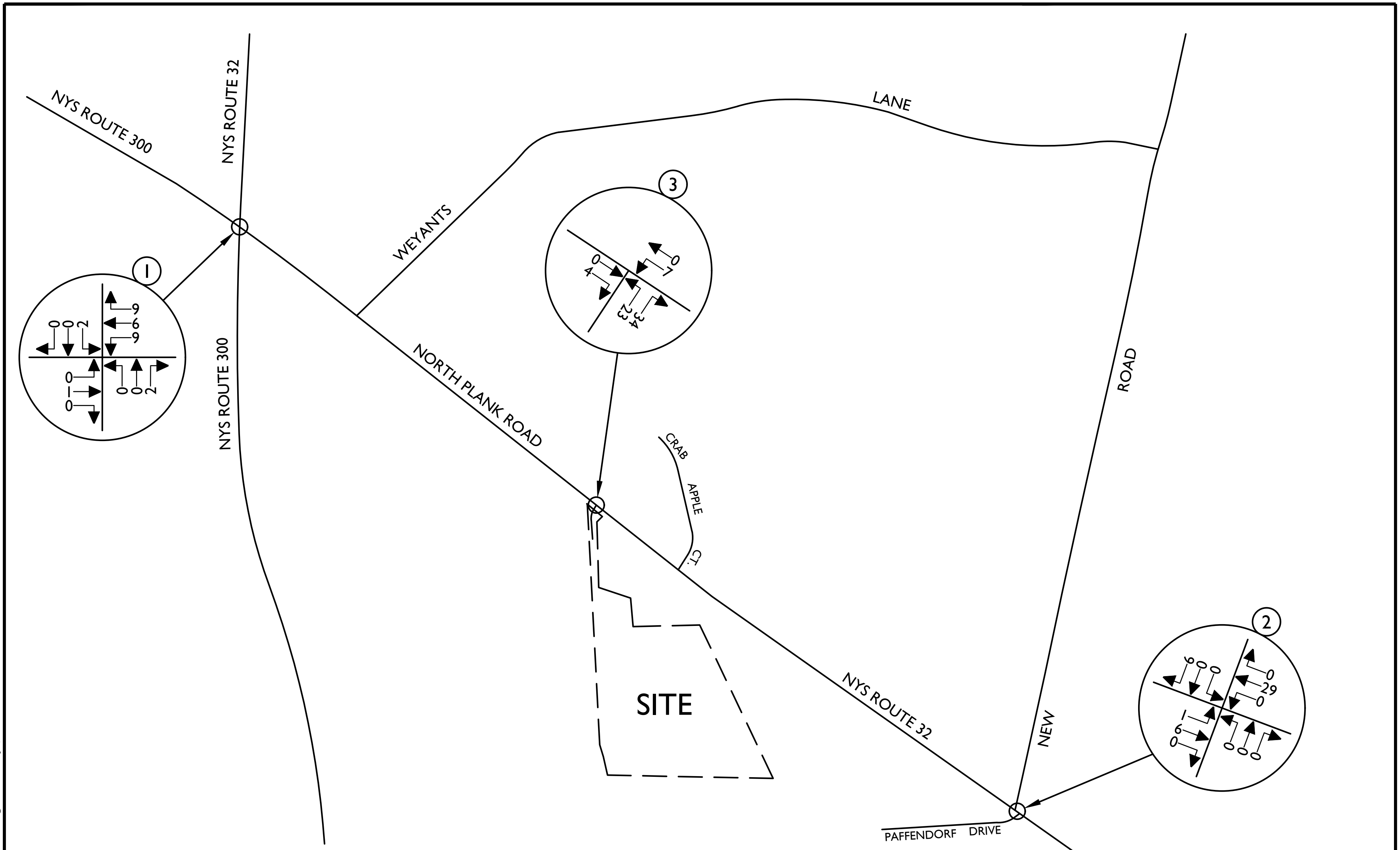

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PASSENGER CARS
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
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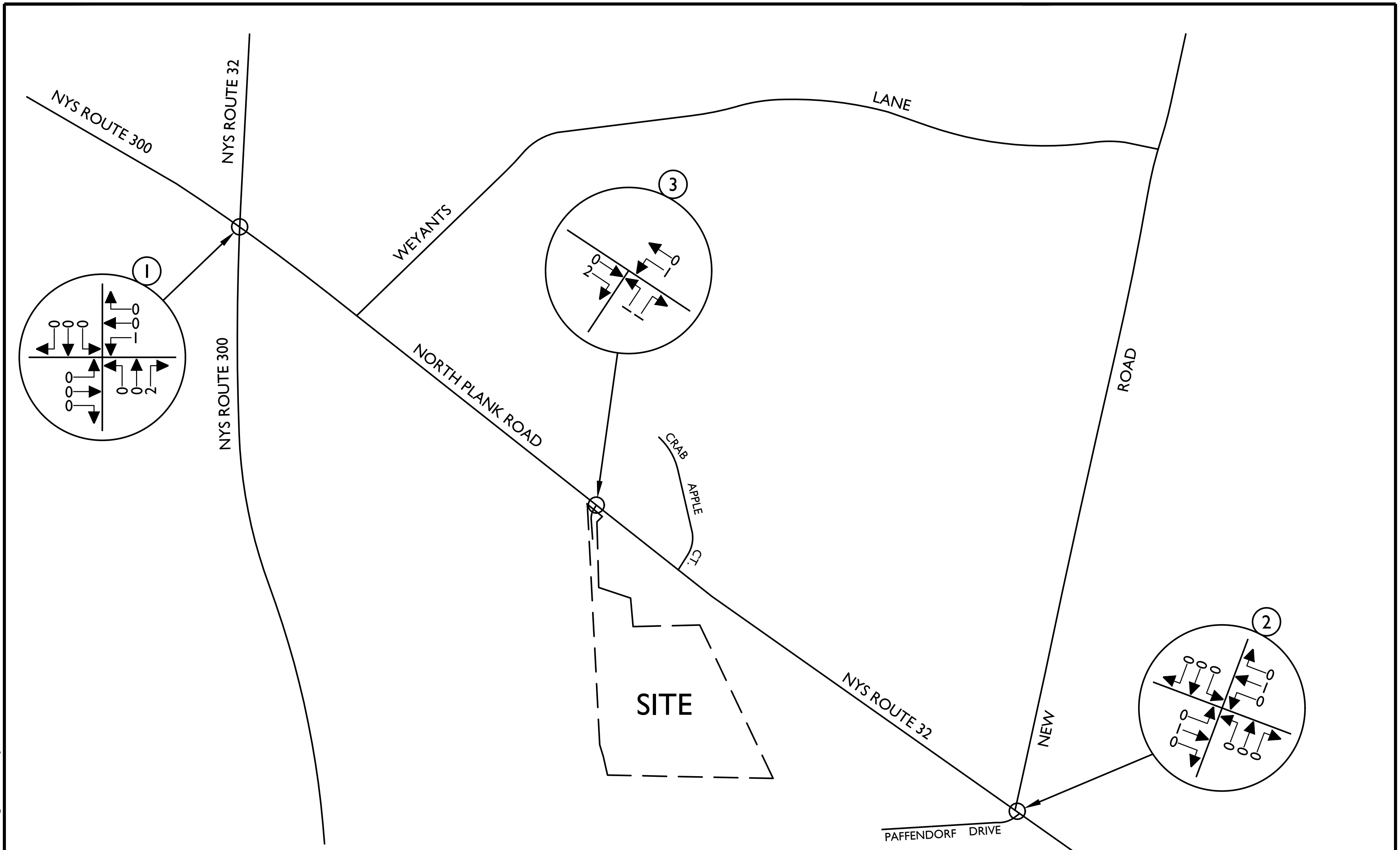

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SHEET TITLE: FIELD BOOK: XX PAGE: XX

TRUCKS
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
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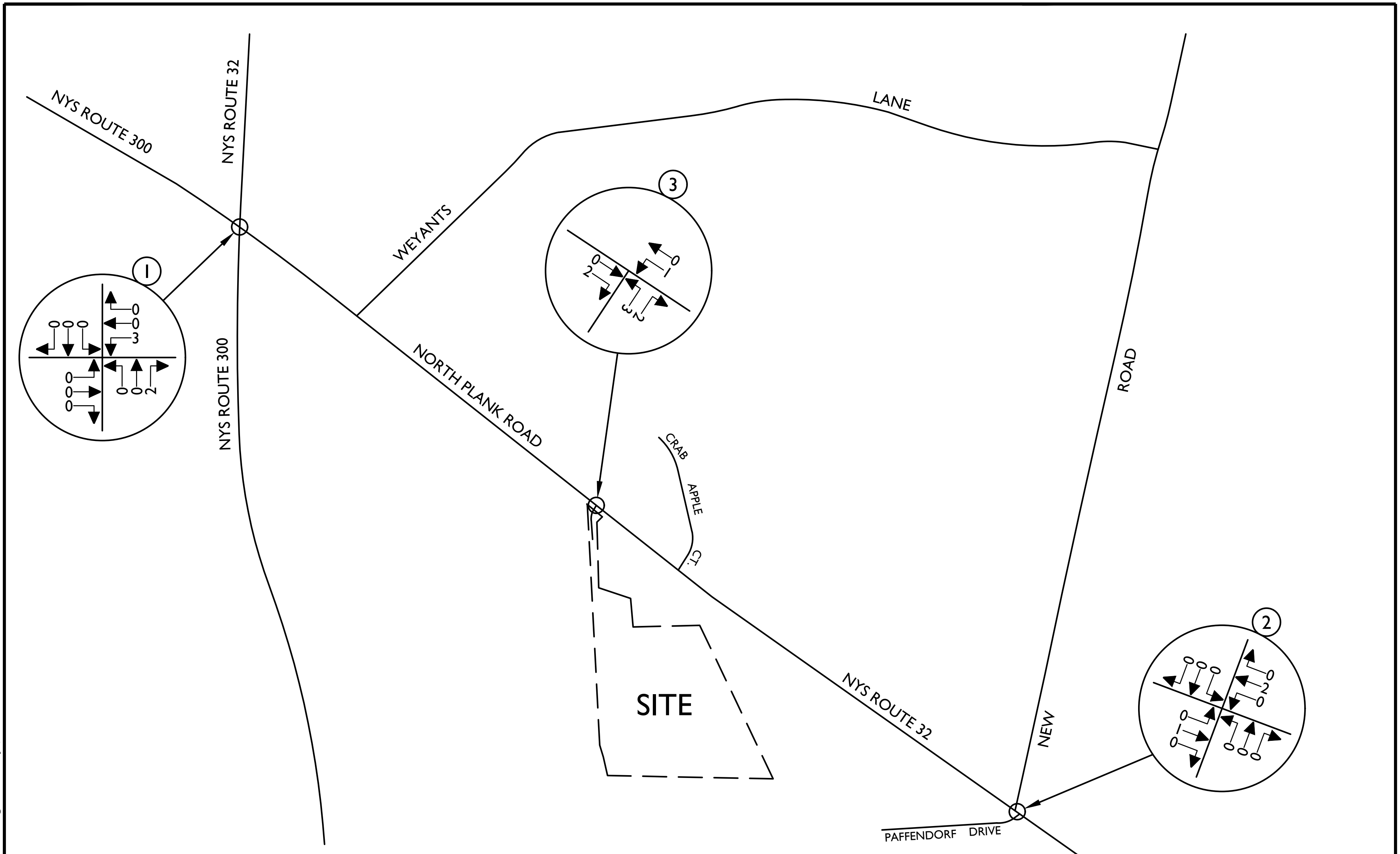

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MKJ PARK WAREHOUSE

TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

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TRAFFIC IMPACT STUDY

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	3/16/23	R.H.	P.J.G.

PROJECT NUMBER:	DRAWING NAME:
23003223A	230310RH_FIGURE

SHEET TITLE: FIELD BOOK: XX PAGE: XX
TRUCKS
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
17

Table No. 1
Hourly Trip Generation Rates (HTGR) and
Anticipated Site Generated Traffic Volumes

MKJ Park Warehouse Town of Newburgh, New York	Entry				Exit			
	HTGR[1]	Passenger Cars	Trucks	Total	HTGR[1]	Passenger Cars	Trucks	Total
Warehouse (166,000 Sq. Ft.)								
Peak AM Hour	0.20	32	2	34	0.06	9	1	10
Peak PM Hour	0.08	10	3	13	0.20	31	2	33

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 11TH EDITION, 2021. ITE LAND USE CODE - 150 - WAREHOUSING.

Table No. 1A
Hourly Trip Generation Rates (HTGR) and
Anticipated Site Generated Traffic Volumes

MKJ Park Warehouse Town of Newburgh, New York	Entry				Exit			
	HTGR[1]	Passenger Cars	Trucks	Total	HTGR[1]	Passenger Cars	Trucks	Total
Industrial Park (166,000 Sq. Ft.)								
Peak AM Hour	0.36	56	3	59	0.05	7	2	9
Peak PM Hour	0.08	11	3	14	0.31	47	5	52

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 11TH EDITION, 2021. ITE LAND USE CODE - 130 - INDUSTRIAL PARK.

The Enclave – CED Study 11/11/2022 Excerpts

Traffic Impact Study

November 11, 2022

Proposed Gardnertown Mutli-Family Residential Development
NYS Route 300 & Gardnertown Road
Town of Newburgh, Orange County, New York

Prepared for:

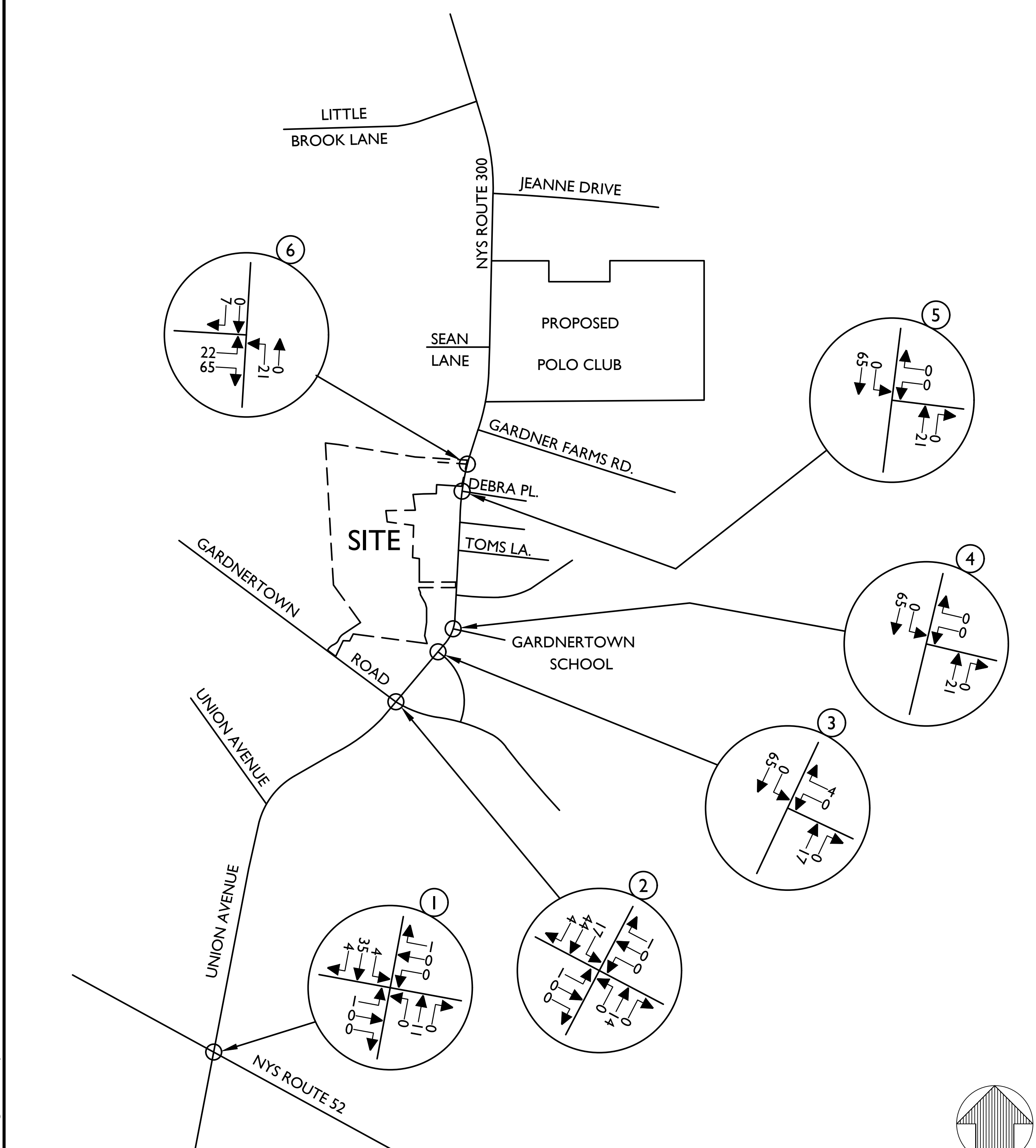
Diversified Acquisitions, LLC
350 Main Road, Suite 201
Montville, NJ 07045

Prepared by:

Philip J. Grealy, Ph.D., P.E.
Geographic Discipline Leader
New York Professional Engineer
License No. 59858

Colliers Engineering & Design
400 Columbus Avenue
Suite 180E
Valhalla New York 10595
Main: 877 627 3772
Colliersengineering.com

Project No. 22011000A



NOTE: LINE DIAGRAM NOT TO SCALE

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TRAFFIC IMPACT STUDY

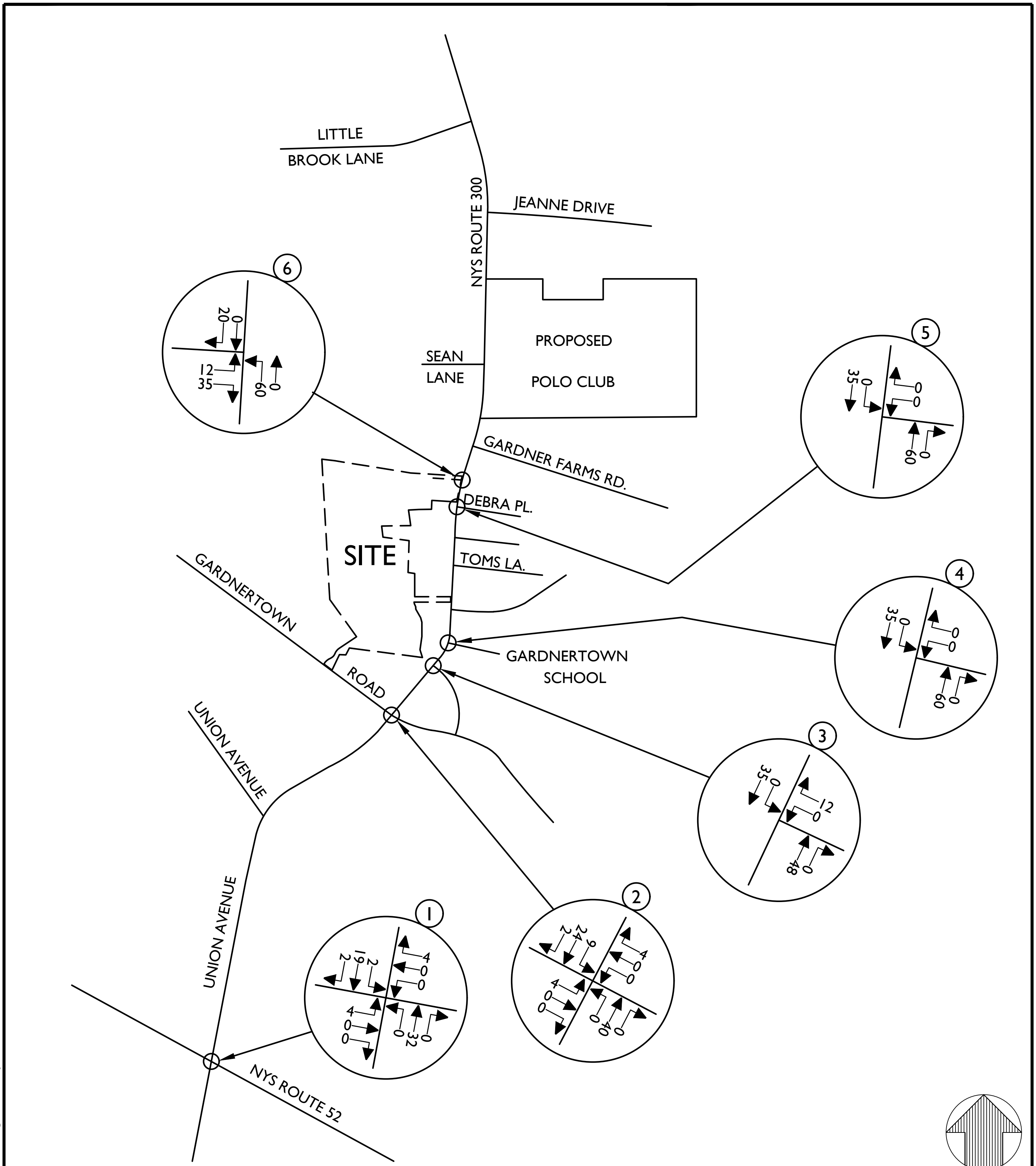
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/17/22	R.H.	P.J.G.

PROJECT NUMBER:	DRAWING NAME:
22011000A	221017RH_FIGURE

SHEET TITLE:
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

SHEET NUMBER:
12

1000A\Reports\Traffic\Figures\221017RH_FIGURE.dwg\12 By: RHILARIO



NOTE: LINE DIAGRAM NOT TO SCALE

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ENGINEERING & LAND SURVEYING

TRAFFIC IMPACT STUDY

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	10/17/22	R.H.	P.J.G.

PROJECT NUMBER:	DRAWING NAME:
22011000A	221017RH_FIGURE

SHEET TITLE:
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

SHEET NUMBER:
13

1000A\Reports\Traffic\Figures\221017RH_FIGURE.dwg\13 By: RHILARIO

Table No. 1
Hourly Trip Generation Rates (HTGR) and
Anticipated Site Generated Traffic Volumes

NYS Route 300 & Gardnertown Road Newburgh, NY	Entry		Exit		Total
	HTGR[1]	Volume	HTGR[1]	Volume	
Residential (247 dwelling units)					
Peak AM Hour	0.11	28	0.35	87	115
Peak PM Hour	0.32	80	0.19	47	127

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 11TH EDITION, 2021. ITE LAND USE CODE - 220 - MULTIFAMILY HOUSING.

Hillside Land Development – ITE Estimates

Table OD-1
Hillside Land Development Warehouse
Hourly Trip Generation Rates (HTGR) and
Anticipated Site Generated Traffic Volumes

	Entry		Exit	
	HTGR[1]	Volume	HTGR1	Volume
Warehouse (26,578 sq. ft.)				
Peak AM Hour	0.79	21	0.38	10
Peak PM Hour	0.23	6	0.68	18

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 11TH EDITION, 2021. ITE LAND USE CODE - 150 - WAREHOUSING.

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Threatened and Endangered Species
Habitat Suitability Assessment Report

Fabulous Events Site
Crab Apple Court
Town of Newburgh
Orange County, NY

March 31, 2023

Prepared by:

Michael Nowicki
Ecological Solutions, LLC
121 Leon Stocker Drive
Stratton, VT 05360
(203) 910-4716

1.0 INTRODUCTION

The proposed project is the development of 4 existing tax parcels totaling approximately 5.24 acres of land within the B zoning district in the Town of Newburgh. The project proposes to develop the properties into a 56,000 sf for Fabulous Events, Inc, a party rental company. The building would be comprised of office space, shipping and receiving office space, mechanical space, repair office and area and storage of the event materials. The proposed building would have 4 loading areas at the rear of the building. Access to the property would be proposed via a new curb cut along NYS Route 32. The property would be serviced by municipal water and a private sewage disposal system.

A Habitat Suitability Assessment was completed for Federal and State listed species including the small whorled pogonia (*Isotria medeoloides*), Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), and bog turtle (*Glyptemys muhlenbergii*) as part of the environmental review for the project and US Fish and Wildlife Service (USFWS) and New York State Department of Environmental Conservation (NYSDEC) species list for the site (*Attachment 1*). A field assessment was completed on March 30, 2023 to determine whether suitable habitat for these species is present on the site. Habitat cover types were also observed and are described below.

TABLE 1
COVER TYPES IDENTIFIED ON THE SITE

HABITAT COVER TYPES		
DESCRIPTION	**COVERAGE (ACRES)**	**DISTURBANCE (ACRES)**
Wetlands/Waters	0.1	0.00
Mixed Upland Forest	3.5	3.2
Upland Meadow	1.4	1.4

Wetlands/waters - There is a forested wetland drainage area at the western area of the site. This drainage is wooded and a red maple wetland with trees in the 3-5 inch dbh range.

Mixed Upland Forest - The trees in the forested areas on the site range in size but are mainly from 3-6 inches dbh with a few larger 6+ inch dbh located throughout the canopy. Trees identified in this forest type included red maple, red cedar, sugar maple, oaks (black, red, white, pin - oaks were the largest dbh trees found on the site mostly in the 6 inch dbh range), and black cherry. None of trees throughout the site were observed to posses exfoliating or flaking bark crevices, holes, and some splitting/cracking of branches.

Upland meadow - a large cleared maintained area with grasses and forbs exists on the site.

2.0 HABITAT SUITABILITY ASSESSMENT/CONCLUSION

2.1 Small whorled pogonia

The small whorled pogonia is a member of the orchid family. It usually has a single grayish-green stem that grows about 10 inches tall when in flower and about 14 inches when bearing fruit. The plant is named for the whorl of five or six leaves near the top of the stem and beneath the flower. The leaves are grayish-green, somewhat oblong and 1 to 3.5 inches long. The single or paired greenish-yellow flowers are about 0.5 to 1 inch long and appear in May or June. The fruit, an upright ellipsoid capsule, appears later in the year. This orchid grows in older hardwood stands of beech, birch, maple, oak, and hickory that have an open understory. Sometimes it grows in stands of softwoods such as hemlock. It prefers acidic soils with a thick layer of dead leaves, often on slopes near small streams.

Conclusion - Two transects were walked through the site on to assess habitat on the site. This species was not observed on the site where ground layer vegetation was more open field and the forested areas are not potential habitat.

2.2 Indiana bats

The Indiana bat typically hibernates in caves/mines in the winter and roosts under bark or in tree crevices in the spring, summer, and fall. Suitable potential summer roosting habitat is characterized by trees (dead, dying, or alive) or snags with exfoliating or defoliating bark, or containing cracks or crevices that could potentially be used by Indiana bats as a roost. The minimum diameter of roost trees observed to date is 2.5 inches for males and 4.3 inches for females. However, maternity colonies generally use trees greater than or equal to 9 inches dbh. Overall, roost tree structure appears to be more important to Indiana bats than a particular tree species or habitat type. Females appear to be more habitat specific than males presumably because of the warmer temperature requirements associated with gestation and rearing of young. As a result, they are generally found at lower elevations than males may be found. Roosts are warmed by direct exposure to solar radiation, thus trees exposed to extended periods of direct sunlight are preferred over those in shaded areas. However, shaded roosts may be preferred in very hot conditions. As larger trees afford a greater thermal mass for heat retention, they appear to be preferred over smaller trees.

Streams associated with floodplain forests, and impounded water bodies (ponds, wetlands, reservoirs, etc.) where abundant supplies of flying insects are likely found provide preferred foraging habitat for Indiana bats, some of which may fly up to 2-5 miles from upland roosts on a regular basis. Indiana bats also forage within the canopy of upland forests, over clearings with early successional vegetation (*e.g.,* old fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures. While Indiana bats appear to forage in a wide variety of habitats, they seem to tend to stay fairly close to tree cover.

Conclusion - Approximately 3.2 acres of mixed upland forest will be impacted as a result of the proposed project. The trees in the forested areas on the site range in size but are mainly from 3-6 inches dbh with a few larger 6+ inch dbh located throughout the canopy. Trees identified in this forest type included red maple, red cedar, sugar maple, oaks (black, red, white, pin - oaks were the largest dbh trees found on the site mostly in the 6 inch dbh range), and black cherry. None of trees throughout the site were observed to posses exfoliating or flaking bark crevices, holes, and some splitting/cracking of branches.

The project sponsor proposes to avoid, minimize, and mitigate for these effects by:

- Seasonally restricting construction including tree clearing and grubbing to avoid direct mortality of roosting Indiana bats from October 1 to March 31 and utilizing orange snowfencing to demarcate wooded area to remain so these areas are not inadvertently cleared or completing an emergence survey prior to the removal of trees with consent from the NYSDEC;
- Implementing soil conservation and dust control best management practices, such as watering dry disturbed soil areas to keep dust down, and using staked, recessed silt fence and anti tracking pads to prevent erosion and sedimentation in surface waters on the site;
- Minimizing site lighting by having light fixtures only on the buildings that have tops to direct light downward, and;
- Not using chemicals on the site for stormwater management basins.

These measures will result in avoiding and minimizing impacts that may affect Indiana bats.

2.3 Northern long-eared bat

Winter Habitat: Same as the Indiana bat northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.

Summer Habitat: During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds.

Feeding Habits: Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation. This bat also feeds by gleaning motionless insects from vegetation and water surfaces.

Conclusion - The northern long eared bat requires/occupies practically the same habitat niche as the Indiana bat. Impacts to habitat and mitigation would be consistent with the recommendations for the Indiana bat.

2.4 Bog turtle

The bog turtle is a semi-aquatic freshwater turtle that prefers open, shallow wetlands with soft soils that are saturated by perennial groundwater discharge. Habitat and associated flora vary throughout the bog turtle's range; however, in the northern part of its range (Connecticut, Massachusetts, New York, New Jersey, Pennsylvania) the bog turtle exhibits a strong preference for fens fed by calcium-rich groundwater from limestone, marble or other calcareous material. These palm-sized, secretive turtles spend much of their lives hidden in soft soils or under plant material, which serves as a refuge and aids in thermoregulation. The bog turtle is one of the few turtles that remain within its core wetland habitat to nest, typically selecting hummock-forming plants on which to deposit its eggs. Bog turtles living in groundwater-fed, calcareous wetland habitats with low open vegetation may use areas of apparently less suitable habitat seasonally. Bog turtles are omnivorous and can live more than 50 years (Ernst et al. 1994). The U.S. Fish and Wildlife Service listed the bog turtle as *Threatened* in 1997 because of loss of habitat (USFWS 2001). It is listed as *Endangered* by the New York State Department of Environmental Conservation (NYSDEC).

A Phase 1 habitat evaluation was completed during March 2023 at the wetland area. Suitable bog turtle habitat is defined by the presence of the following habitat criteria consistent with the federal bog turtle survey guidelines contained in the Bog Turtle Recovery Plan (USFWS 2001):

- Substrate of saturated organic and/or mineral soil
- Groundwater derived hydrologic regime
- Herbaceous and scrub/shrub vegetation including sedges and hummock forming vegetation

One wetland area was surveyed at the western section of the site and included a small forested wetland (red maple swamp) formed by road drainage. The Web Soil Survey identifies the wetlands as Alden and Erie soils (*Figure 2*). Vegetation in the wetlands is red maple (*Acer rubrum*), pin oak (*Quercus palustris*), highbush blueberry (*Vaccinium corymbosum*), winter berry (*Ilex verticillata*), and red osier dogwood (*Cornus stolonifera*). This wetland was not suitable for bog turtles.

Conclusion - The forested wetland was surveyed to determine the presence of bog turtle habitat. The small forested wetland does not contain the habitat components (stable continuous groundwater hydrology, mucky soils, open fen area) associated with potential bog turtle habitat. Soils in the wetland are Alden extremely stony silt loam and Erie gravelly loam which does not contain a suitable mucky surface. In addition to the lack of suitable soil for bog turtles, a thick canopy renders this wetland as not potential habitat. This wetland provides no habitat for bog turtles. The proposed project will have no adverse impact to bog turtles or habitat.

3.0 PHOTOGRAPHS

Upland area in near wetland boundary area

Woods at center of the site

Meadow area

Figure 1 Location Map

Figure 2 Soil Map

Map Unit Symbol	Map Unit Name
AC	Alden extremely stony soils
BnB	Bath-Nassau channery silt loams, 3 to 8 percent slopes
ErB	Erie gravelly silt loam, 3 to 8 percent slopes
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes

Attachment 1 - USFWS List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
Email Address: fw5es_nyfo@fws.gov

In Reply Refer To: March 31, 2023
Project Code: 2023-0063042
Project Name: Fabulous Events

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

PROJECT SUMMARY

Project Code: 2023-0063042
Project Name: Fabulous Events
Project Type: Commercial Development
Project Description: Commercial Development
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.5484576,-74.05605419434329,14z

Counties: Orange County, New York

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

REPTILES

NAME	STATUS
Bog Turtle *Glyptemys muhlenbergii* Population: Wherever found, except GA, NC, SC, TN, VA No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6962	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Small Whorled Pogonia *Isotria medeoloides* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1890	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Ecological Solutions, LLC
Name: Michael Nowicki
Address: 121 Leon Stocker Drive
City: Stratton
State: VT
Zip: 05360
Email ecolsol@aol.com
Phone: 2039104716

STORMWATER POLLUTION PREVENTION PLAN
FOR
FABULOUS EVENTS, INC.
TOWN OF NEWBURGH, ORANGE COUNTY, NEW YORK

PREPARED BY

LANC & TULLY ENGINEERING AND SURVEYING, P.C.

August 24, 2023

I. INTRODUCTION

The Fabulous Events project consists of the development of a 56,000 square foot building on five parcels (SBL: 34-2-25.2, 34-2-45, 34-2-74, 34-2-76, 34-2-77) totaling 6.18 acres. The building will be comprised of office space, a showroom, staging area, repair area and storage area. The project is located on NYS Route 32, approximately 2,500 feet south of NYS Route 300. The project will consist of the structure, access drive, parking lots, landscaping, sidewalks and utilities. The project will be serviced by municipal water and a private subsurface sewage disposal system. Access to the project will be provided from NYS Route 32. The project site disturbance is anticipated to be a total of approximately 4.69 acres. Stormwater for the project will be collected and treated on-site using an approved New York State Department of Environmental Conservation (NYSDEC) stormwater management practice before discharging off-site.

The impacts of this type of development must be evaluated, and if necessary, mitigated to ensure minimal impact on the stormwater drainage patterns within the site watershed areas. The purpose of this study is to evaluate if any impacts are associated with the proposed development, ensure treatment of the water quality volume as per current NYSDEC stormwater standards, and make certain that no increases in the peak discharge from the proposed construction are created as part of SPDES General Stormwater Permit GP-0-20-001.

II. APPENDICES TO THIS PLAN

The following is a list of the Appendices included with this report.

A. Site Location Map
   Soils Report for Project
   Rainfall Data
B. Pre- and Post-Development Watershed Model
C. Pre- and Post-Development Watershed Maps
D. Calculations:
   Water Quality Volume
   Runoff Reduction Volume
   Stormwater Practice Design
E. Excerpts - "New York State Standards and Specifications for Erosion & Sediment Control" for General Site Practices
F. "New York State Stormwater Design Manual" Construction Specifications for Selected Practices
G. NYSDEC General Permit (GP-0-20-001)
H. Standard Construction and Maintenance Inspections Forms
I. Notice of Intent, MS4 Acceptance Form
   Notice of Termination (blank)
J. Construction Site Log Book (blank)
   Contractor's Certification Statement (blank)
K. Site Plan

III. CURRENT REGULATIONS

Current NYSDEC regulations under General Stormwater Permit GP-0-20-001 require that any construction site proposing a disturbance of one acre or greater prepare a Stormwater Pollution Prevention Plan. This SWPPP consists of the following: water quality treatment and control, water quantity control and an Erosion and Sediment Control Plan. Preparation of each portion of the SWPPP depends on the type and level of construction proposed. The proposed development requires the preparation of a full Stormwater Pollution Prevention Plan that includes all of the items mentioned above. Also, as part of the SWPPP, the filing of a Notice of Intent ten days prior to construction to the NYSDEC Bureau of Water Permits located at 625 Broadway, Albany, New York (see Appendix I) is required. This NOI identifies all of the major requirements and design criteria that are necessary for the site drainage design. This form shall be signed and certified by the owner/operator of the site. A contractor's certification statement (see Appendix H) shall also be completed by the general contractor and subcontractors and submitted to the Town of Newburgh Building Department to ensure on-site compliance with local regulations.

IV. METHODOLOGY

The analysis presented in this report was developed using the computer software program called HydroCAD. HydroCAD is based upon and implements the Soil Conservation Service Technical Release 20 (SCS TR-20) "Computer Program for Project Formulation Hydrology" (SCS, 1982) for computing CN, Tc, Runoff values, and hydrographs for the development of drainage and hydraulic calculations. For purposes of this report and in accordance with the regulations set forth by the NYSDEC as part of a SPDES Permit for Stormwater Discharges from Construction Activities, the 1-(Channel Protection), 10-(Overbank Flood), and 100-year (Extreme Storm) storm events were analyzed. This analysis is specific for this site and is based on current and proposed land cover, underlying soil types, weighted runoff coefficients, theoretical flow paths, and rain events. These parameters were used as input to the computer model, which then developed hydrographs for both pre- and post-development conditions. This information is provided in Appendix B.

V. WATER QUANTITY

The NYSDEC has selected three criteria as part of the stormwater quantity regulations. They are summarized as follows:

Channel Protection:	24-hour extended detention of post-developed one-year, 24-hour storm event
Overbank Flood:	Control the peak discharge from the 10-year storm to 10-year pre-development rates
Extreme Storm:	Control the peak discharge from 100-year storm to 100-year pre-development rates

The site has been designed to limit the post-development flow rate to less than or equal to the pre-development flow rate at the study point. The pre-development model of the site consists of one catchment area (A-1) that discharge to the one study point, Study Point A. In post-development conditions, the overall watershed was split into six sub areas to represent the flow paths created by the proposed construction. The study point used for pre-development analysis was maintained in post-development analysis. All watershed areas within the site have detailed summations of the characteristics for both pre- and post-development in Section VI & VII of this report.

VI. PRE-DEVELOPMENT CONDITIONS

With the information available from OCWA mapping and the field survey, the drainage occurring on and through the project site has been modeled. Figures are provided within Appendix C which depict the watershed areas that were utilized in the hydraulic model. The soil boundaries and types shown have been provided by the U.S. Department of Agriculture National Resources Conservation Service, a detailed soil classification report including maps is provided in Appendix A.

Pre-Development Area 1 consists of approximately 7.01 acres of land contributing to Study Point 'A'. This watershed contains approximately 0.38 acres of impervious cover in pre-development conditions consisting of New York State Route 32 and buildings on adjacent properties. Stormwater runoff in the watershed generally flows south to ultimately be conveyed beneath NYS Route 32 through an existing 32" culvert (Study Point 1). The pre-development peak discharge for this watershed is summarized in Table 2, as well as in the pre-development model located in Appendix B.

Watershed Area	Area (Ac.)	CN	Tc (hrs.)	Impervious Cover (Ac.)	1 Year Peak Runoff (cfs)	10 Year Peak Runoff (cfs)	100 Year Peak Runoff (cfs)
Pre A-1	7.01	77	0.18	0.38	5.65	16.66	36.28
Study Point A	**7.01**	-	-		**5.65**	**16.66**	**36.28**

Table 2: Pre-Development Conditions

VII. POST-DEVELOPMENT CONDITIONS

The proposed development includes the construction of the buildings, access drive roads, parking lots, sidewalks, and associated utilities. Stormwater quality treatment (WQv) and runoff reduction volume credit (RRv) will be provided by the proposed bio retention area. Two underground stormwater detention facilities will be used for quantity control. The study point utilized for pre-development conditions was maintained and evaluated for post-development conditions. Below is a description of each watershed subarea that correlates with the post-development drainage area map provided in Appendix C.

Post-Development Area A-1 consists of approximately 1.76 acres of land. The area consists of some offsite area, some of NYS Route 32 and a portion of the entrance. There are 0.19 acres of impervious cover (some existing and some proposed) in post-development conditions. This catchment area generally flows

Southwest and ultimately discharges at Study Point 'A', the existing 32" culvert. There are no stormwater management practices proposed to serve this catchment. The post-development peak discharge for this area is summarized in Table 3, as well as in the post-development model located in Appendix B.

Post-Development Area A-2 consists of approximately 0.89 acres of land. Proposed improvements within this catchment include the northern parking lot and some of the access drive. Approximately 0.77 acres of impervious cover is proposed in post-development conditions. The runoff from this area is conveyed to the proposed bio retention area and underground stormwater detention system UG A-2, where it is treated and detained prior to discharging to Study Point 'A'. The post-development peak discharge for this area is summarized in Table 3, as well as in the post-development model located in Appendix B.

Post-Development Area A-3 consists of approximately 1.74 acres of land. The majority of this area is located off-site and is outside of the limit of disturbance. There are approximately 0.31 acres of impervious cover in post-development conditions. The runoff from this area sheet flows to the proposed bio retention area, where it is treated prior to discharging to Study Point 'A'. The post-development peak discharge for this area is summarized in Table 3, as well as in the post-development model located in Appendix B.

Post-Development Area A-4 consists of approximately 1.64 acres of land, this consists of half of the proposed building, some parking and some of the access drive. Approximately 1.05 acres of impervious cover are proposed in post-development conditions. The runoff from this area is conveyed to the proposed bio retention area and underground stormwater detention system UG A-5, where it is treated and detained prior to discharging to Study Point 'A'. The post-development peak discharge for this area is summarized in Table 3, as well as in the post-development model located in Appendix B.

Post-Development Area A-5 consists of approximately 0.65 acres of area, this consists of half of the proposed building and a small portion of grass. Approximately 0.64 acres of impervious cover are proposed in post-development conditions. The runoff form this area is conveyed to the proposed bio retention area and underground detention system UG A-5, where it is treated and detained prior to discharging to Study Point 'A'. The post-development peak discharge for this area is summarized in Table 3, as well as in the post-development model located in Appendix B.

Post-Development Area A-6 consists of approximately 0.33 acres of land, this consists of some of the parking area and access drive. Approximately 0.28 acres of impervious cover is proposed in post-development conditions. The runoff from this area is conveyed to the proposed underground detention system UG A-5, where it is detained prior to discharging to Study Point 'A'. The post-development peak discharge for this area is summarized in Table 3, as well as in the post-development model located in Appendix B.

Watershed Area	Area (Ac.)	CN	Tc (hrs.)	Impervious Cover (Ac.)	1 Year Peak Runoff (cfs)	10 Year Peak Runoff (cfs)	100 Year Peak Runoff (cfs)
Catchment A-1	1.76	77	0.11	0.19	1.73	5.02	10.79
Catchment A-2	0.89	95	0.083	0.77	2.58	4.52	7.47
Catchment A-3	1.74	83	0.14	0.307	1.94	5.09	10.44
Catchment A-4	1.64	89	0.16	1.05	2.96	6.03	10.80
Catchment A-5	0.65	98	0.083	0.64	2.03	3.39	5.48

Catchment A-6	0.33	95	0.083	0.28	0.95	1.66	2.74
Study Point 1	**7.01**	-	-	**3.24**	**4.89**	**15.44**	**35.94**

Table 3: Post-Development Conditions

VIII. WATER QUALITY AND RUNOFF REDUCTION

The water quality volume denoted as WQ_v is designed to improve water quality by capturing and treating 90% of the average annual stormwater runoff volume. The WQ_V is directly related to the amount impervious cover created at a site. The NYSDEC requires that the water quality volume be treated through use of specific green infrastructure practices. The design of these practices is based on promoting infiltration of the water quality volume. The treatment provided by the green infrastructure practices is called the runoff reduction volume (RR_V). Table 4 describes the feasibility of the NYSDEC's Green Infrastructure Techniques.

Table 4: Green Infrastructure Technique Feasibility

Conservation of Natural Areas	
Retain the pre-development hydrologic and water quality characteristics of undisturbed natural areas, stream and wetland buffers by restoring and/or permanently conserving these areas on a site.	Predevelopment conditions were held to the maximum extent practical.
Sheet flow to Riparian Buffers or Filter Strips	
Undisturbed natural areas such as forested conservation areas and stream buffers or vegetated filter strips and riparian buffers can be used to treat and control stormwater runoff from some areas of a development project.	Existing site drainage patterns and proposed topography do not allow for this method.
Vegetated Open Swale	
The natural drainage paths, or properly designed vegetated channels, can be used instead of constructing underground storm sewers or concrete open channels to increase time of concentration, reduce the peak discharge, and provide infiltration.	Project proposes the use of grass swales where applicable but does not take credit for this practice.
Tree Planting / Tree Box	
Plant or conserve trees to reduce stormwater runoff, increase nutrient uptake, and provide bank stabilization. Trees can be used for applications such as landscaping, stormwater management practice areas, conservation areas and erosion and sediment control.	Roadside tree planting has been incorporated in this project design. Since runoff reduction volume has been provided using other methods, credit was not taken for tree planting.
Disconnection of Rooftop Runoff	
Direct runoff from residential rooftop areas and upland overland runoff flow to designated pervious areas to reduce runoff volumes and rates.	Existing site topography does not allow for this method.
Stream Daylighting for Redevelopment Projects	

Stream Daylight previously-culverted/piped streams to restore natural habitats, better attenuate runoff by increasing the storage size, promoting infiltration, and help reduce pollutant loads.	The previously culverted stream must be maintained in order to maintain function of the public road.
Rain Garden	
Manage and treat small volumes of stormwater runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression.	Runoff from the building roof is being treated by other means.
Green Roof	
Capture runoff by a layer of vegetation and soil installed on top of a conventional flat or sloped roof. The rooftop vegetation allows evaporation and evapotranspiration processes to reduce volume and discharge rate of runoff entering conveyance system.	The structural design of the proposed buildings does not allow this technique.
Stormwater Planter	
Small landscaped stormwater treatment devices that can be designed as infiltration or filtering practices. Stormwater planters use soil infiltration and biogeochemical processes to decrease stormwater quantity and improve water quality.	Runoff from the building roof is being treated by other means.
Rain Tank / Cistern	
Capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities.	Landscape irrigation or rainwater reuse is not proposed, no cisterns are proposed.
Porous Pavement	
Pervious types of pavements that provide an alternative to conventional paved surfaces, designed to infiltrate rainfall through the surface, thereby reducing stormwater runoff from a site and providing some pollutant uptake in the underlying soils.	Underlying soils are not suitable for porous pavement

Below are calculations developed specifically for the site. Details for the water quality volume and runoff reduction volume calculations are provided in Appendix D of this report. Below is summary of the required and provided water quality and runoff reduction volumes.

Required Water Quality Volume (WQ_V) = 14,194 cubic feet

Required Minimum Runoff Reduction Volume (RR_V) = 2,060 cubic feet
<u>Provided Runoff Reduction Volume (RR_V) = 6,380 cubic feet</u>
Required WQ_V minus the provided RR_V = 7,814 cubic feet
<u>Provided Water Quality Volume (WQ_V) = 9,570 cubic feet</u>
<u>Total Treatment Volume Provided (WQ_V + RR_V) = 15,949 cubic feet</u>

To provide treatment of the water quality and runoff reduction volumes, this site is utilizing a Bio-retention area. See the site plan in Appendix K for details of the stormwater practice. Description of the proposed stormwater management practice are shown below.

Bio Retention Areas

There is a proposed Bioretention area with approximately 13,949 SF of bed area. The bio retention area has been designed to treat runoff from the majority of the site – catchment areas A-2, A-3, A-4 & A-5. The underlying soil types at the locations of these areas are classified as hydrologic soil group D. Therefore, up to 40% of the treatment volume of the Bioretention areas can be claimed as runoff reduction volume and the remaining volume will be claimed as water quality volume. The proposed bioretention areas will have an underdrain installed as shown in the detail on the site plan. The Bioretention areas provide a total of 15,949 CF of treatment, 6,380 CF of which will be considered runoff reduction volume.

<u>IX. Erosion and Sediment Control Measures</u>

The SPDES General Permit (GP-0-20-001) for construction activities requires that an Erosion and Sediment Control Plan be developed. This plan has provided as part of the Site Plans, and will be available at Village Hall and the project site at the time of construction. The plan will also be in compliance with current regulations, including construction sequence, both short- and long-term maintenance of facilities, storage of materials and temporary and permanent structures.

The following temporary erosion control practices are to be used during the course of construction.

A. Stabilized Construction Entrance:
A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets. Stabilized construction entrances will be placed as shown on the Sediment and Erosion Control Plans.

B. Siltation Fence:
A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil. The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment loads. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used

(approximately one year). Silt fence will be placed as shown on the Sediment and Erosion Control Plans.

C. Sediment Traps:
A temporary sediment control device formed by excavation and/or embankment to intercept sediment laden runoff and retain the sediment. The purpose of the structure is to intercept sediment-laden runoff and trap the sediment in order to protect drainage ways, properties, and rights-of-way below the sediment trap from sedimentation. Sediment traps will be placed as shown on the Erosion and Sediment Control Plans.

D. Diversion Swales:
A temporary excavated drainage way. The purpose of a temporary swale is to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet or to intercept sediment laden water and divert it to a sediment trapping device. Diversion swales will be used for diverting clean runoff around the project area and for intercept sediment laden runoff and directing it to sediment traps/basins. Diversion swales will be placed as necessary during construction.

E. Slope Stabilization Matting:
Matting made synthetic or natural fibers that is placed on steep slopes to allow newly planted vegetation to take root and protect the slope from erosion before vegetation is fully established. Slope stabilization mating will be placed as necessary during construction.

F. Concrete Washout:
A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

X. IMPLEMENTATION SCHEDULE & MAINTENANCE

A. Schedule

As part of the development of the Erosion and Sediment Control Plans for the project, preparation of construction sequencing was completed to ensure water quality discharges are maintained during construction. The following construction schedule for implementing stormwater management during construction is proposed. Please refer to the Site Plans for specific sequencing and scheduling. The proposed construction phases are shown on the Erosion and Sediment Control Plan in Appendix C.

Limit of Disturbance: Total 4.69

1. Pre-construction meeting: Before construction activities an evaluation of the site will be performed with the site contractor, Town personnel and site design engineer to discuss general construction procedures and sequencing. During this meeting sensitive areas of the property

shall be delineated and marked-out with orange construction fence (i.e.: trees, wetlands, wells, etc.).

2. Protect existing buffers: Installation of orange construction fencing along the site perimeter. Place erosion control devices (silt fencing, diversion berms, etc.) upstream of any existing watercourse within or outside of construction areas, prior to the start of any construction.
3. Construction entrance/siltation controls: A temporary construction entrance will be installed at the site entrances as shown on the Site Plans. In addition, any other siltation control devices, as shown on the erosion control plan are to be installed adjacent to the temporary entrance and staging area.
4. Construction of temporary sediment traps: Construction of the temporary sediment traps prior to the start of any major earthwork movement or site construction.
5. Clearing/grubbing: Clearing and grubbing will occur within the area of disturbance.
6. Strip topsoil: Topsoil will be stripped from this phase and will be stockpiled for later reuse.
7. Land grading: Bulk soil grading in this phase will commence. At this time, temporary stockpile areas should be utilized.
8. Road and Utility installation: Install septic, water and stormwater within phase limits. Inlet protection will be installed at all stormwater catch basins.
9. Building construction: Construct buildings, utility connections will be installed concurrently.
10. Pavement construction: Construct driveways.
11. Landscaping and final stabilization: All open areas to be stabilized with topsoil and seeded as per the seeding schedule specified on the erosion and sediment control plans. Removal of all temporary measures, flushing/cleaning of all catch basins, piping and stormwater facilities, and removal and disposal of all trapped sediment on site shall be completed.
12. Final site inspection and certification: At the end of construction a site evaluation of the site will be performed with site contractor, Town personnel, and site engineer to ensure that all stormwater facilities were constructed as per the SWPPP design and that the site has been stabilized. A Notice of Termination will be submitted to the NYSDEC.

Please refer to the Erosion and Sediment Control Plans within the Site Plans for construction notes and seeding schedule for disturbance and final stabilization.

B. Pollution Prevention Measures:

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner conforms to all applicable Federal and State regulations that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well-organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

1. All vehicles, equipment, and petroleum product storage/dispensing areas will be observed regularly during site observations to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.

2. On-site fueling tanks and petroleum product storage containers shall include secondary containment.

3. Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.

4. In order to perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.

5. Contaminated surfaces shall be cleaned immediately following any discharge or spill incident. Contaminated soil shall be removed from site and disposed of in accordance with all current Federal and State Regulations.

Chemical storage:

1. Any chemicals stored in the construction areas will conform to the appropriate manufacturer's recommendations and or the appropriate State/Federal Regulations. All chemicals shall have cover, containment, and protection provided on site, per all Federal and NYSDEC regulations.

2. Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations for application procedures and rates shall be followed.

Demolition:

1. Dust released from demolished sidewalks, buildings, structures or on site grading operations will be controlled using Dust Control measures as specified in the N.Y.S. Erosion and Sediment Control Specification Manual.

2. Storm drain inlets vulnerable to stormwater discharge carrying dust, soil, or debris will be protected using Storm Drain Inlet Protection.

3. Process water and slurry resulting from saw cutting and surfacing operations will be prevented from entering the waters of the State by implementing Saw cutting and Surfacing Pollution Prevention measures.

Concrete and grout:

1. Process water and slurry resulting from concrete work will be prevented from entering the waters of the State by implementing Concrete Handling measures.

Sanitary wastewater:

1. Portable sanitation facilities will be firmly secured, regularly maintained, and emptied when necessary.

2. Wheel wash or tire bath wastewater shall be discharged to a temporary erosion and sediment control facility which has been constructed on site.

Solid Waste:

1. Solid waste will be stored in secure, clearly marked containers.

Litter/Trash:

1. Litter and Trash shall be cleaned and disposed of in secure clearly marked dumpsters or trash receptacles.

2. Site is to be cleaned daily of debris and disposed of on a daily basis.

Other:

1. Other BMPs will be administered as necessary to address any other additional pollutant sources on site.

C. Maintenance (Construction/Long-Term)

1. During construction the owner/operator is responsible for the installation and maintenance of all stormwater management components.

2. Maintenance of permanent stormwater facilities shall be the responsibility of the Property Owner.

3. A standalone Operation and Maintenance Plan will be prepared prior to filing of the NOTs and will include the following: schedules, procedures, forms for inspections, maps showing stormwater practice areas, and the maintenance agreement. Please refer to Appendix H for standard Inspection and Maintenance Forms.

4. Construction and long-term maintenance shall be carried out in accordance with the following notes:

   a. Swales: Inspection shall be made weekly during construction by a qualified inspector. During the first growing season inspections shall be conducted monthly, and on an annual basis thereafter. The following tasks shall be performed as needed:

      (1) Removal of accumulated sediment and cleaning and/or restoration whenever accumulated sediment reaches a volume of 50% of the available capacity.

      (2) Restoration of any eroded embankments. Infrequent reshaping of the swale line should be completed as needed.

      (3) Removal of accumulated debris/trash within the swale and at all inlet and outfall structures.

      (4) Seasonal mowing of the swale bottom and surrounding side slopes. Removal of any fallen trees or limbs. Replacement and/or restoration of proposed grasses shall occur if more than 50% of the coverage of the facility is not achieved. Grasses should be kept at a maximum height of 6" – 8".

   b. Underground detention facility: Inspection shall be made weekly by a qualified inspector and daily by the owner or contractor during construction. During the first operational season inspections shall be conducted monthly and annually thereafter. The following tasks shall be performed as needed:

      (1) Removal of accumulated sediment and cleaning and/or restoration of the sediment forebays every 5 or 6 years or whenever accumulated sediment reaches a volume of 50% of the available capacity.

      (2) Restoration of any disturbed plant material and any eroded embankments. Replacement of proposed plants shall occur if more than 50% of the coverage of the facility is not achieved.

      (3) Removal of accumulated debris within the basin and at all inlet and outfall structures.

      (4) Annual mowing of the berm and surrounding area of the basins. Removal of any fallen trees or limbs.

      (5) Inspection of the outlet structure to ensure structural stability and removal of any accumulated trash within the structure.

c. Roadway Pavements: Roadway pavements shall be swept on a regular basis to remove accumulated sediment. Collected sediment shall be removed, which will not allow the re-entrance of silt into the storm water drainage system.

d. Vegetative Stabilization:

(1) All vegetative planting on areas that have been disturbed and are finish graded shall be inspected monthly during the first growing season and annually thereafter. Planting (or seeding) shall be maintained in viable conditions to stabilize the soil and to prevent soil erosion. Restore all site planting and/or seeding which has been damaged to a viable condition.

(2) If vegetative stabilization has been damaged from storm water erosion, correct upstream conditions that caused the erosion. Check dams may be required in drainage ways and stone outfall aprons may be required to be repaired on storm water outfall sites.

e. Temporary erosion and sediment control maintenance:

(1) All erosion and sediment control practices will be checked for stability and operation following every runoff-producing rainfall, but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed and installed for their appropriate phase of the project.

(2) Sediment will be removed from the sediment trap and inlet protection device when storage capacity has been approximately 50% filled.

(3) Sediment will be removed from behind the sediment fence when it becomes about 0.5 ft deep at the fence. The sediment fence will be repaired as necessary to maintain a barrier.

XI. ANALYSIS AND CONCLUSION

As can be seen from the calculations provided within this report, chosen practices for stormwater management will provide the required water quality treatment, runoff reduction, and quantity control in accordance with the stormwater quality management guidelines set forth by the NYSDEC. The proposed stormwater practices and the post-development layout of the site results in zero net increase in peak runoff at the study point. Based upon the results of this analysis, the site has demonstrated the ability to meet all requirements for stormwater quantity and quality and any impacts to the existing watershed and downstream waters should be negligible.

Table 5 summarizes the pre- and post-development peak flow rates at the study points for the development. Please refer to Appendix B for detailed analysis and calculations of the individual watershed subareas. Post-development peak flow rates are less than pre-development conditions at the study points for all analyzed storms.

	Condition	1 Year Peak Runoff (cfs)	10 Year Peak Runoff (cfs)	100 Year Peak Runoff (cfs)
Study Point 1	Pre-Development	5.65	16.66	36.28
	Post-Development	4.89	15.44	35.94
	Difference	**-0.76 (-13.5%)**	**-1.22 (-7.3%)**	**-0.34 (-0.9%)**

Table 5: Comparison of Pre- and Post-Development Conditions at Study Points

By implementing both the Stormwater Pollution Prevention Plan and Erosion and Sediment Control Plans during the construction of the proposed project, current NYSDEC and Town regulations can be met. However, the owner and contractor are responsible for implementation of the project's erosion and sedimentation controls and any required maintenance. In addition, this also includes filing the NOI and meeting all requirements of the General Permit, including necessary site assessments and inspections.

LIST OF APPENDICES

APPENDIX A

SITE LOCATION MAP

SOILS REPORT FOR PROJECT

RAINFALL DATA

LOCATION PLAN

1 INCH = 1,000 FEET

LANC & TULLY
Engineering and Surveying, P.C.

P.O. Box 687, Rt. 207
Goshen, N.Y. 10924
(845) 294-3700

LOCATION MAP FOR

FABULOUS EVENTS, INC.

TOWN OF NEWBURGH
ORANGE COUNTY, NEW YORK

Date:	AUGUST 11, 2023
Revisions:	
CAD File:	LOCATION.DWG
Layout:	LOC
Sheet No.:	1 OF 1

Drawn By:	Checked By:	Scale:	Tax Map No.:	Drawing No.:
CMF	JQ	1" = 1000'	34-2-25.2, 54, 76, 77	F- 22 - 0138 - 00

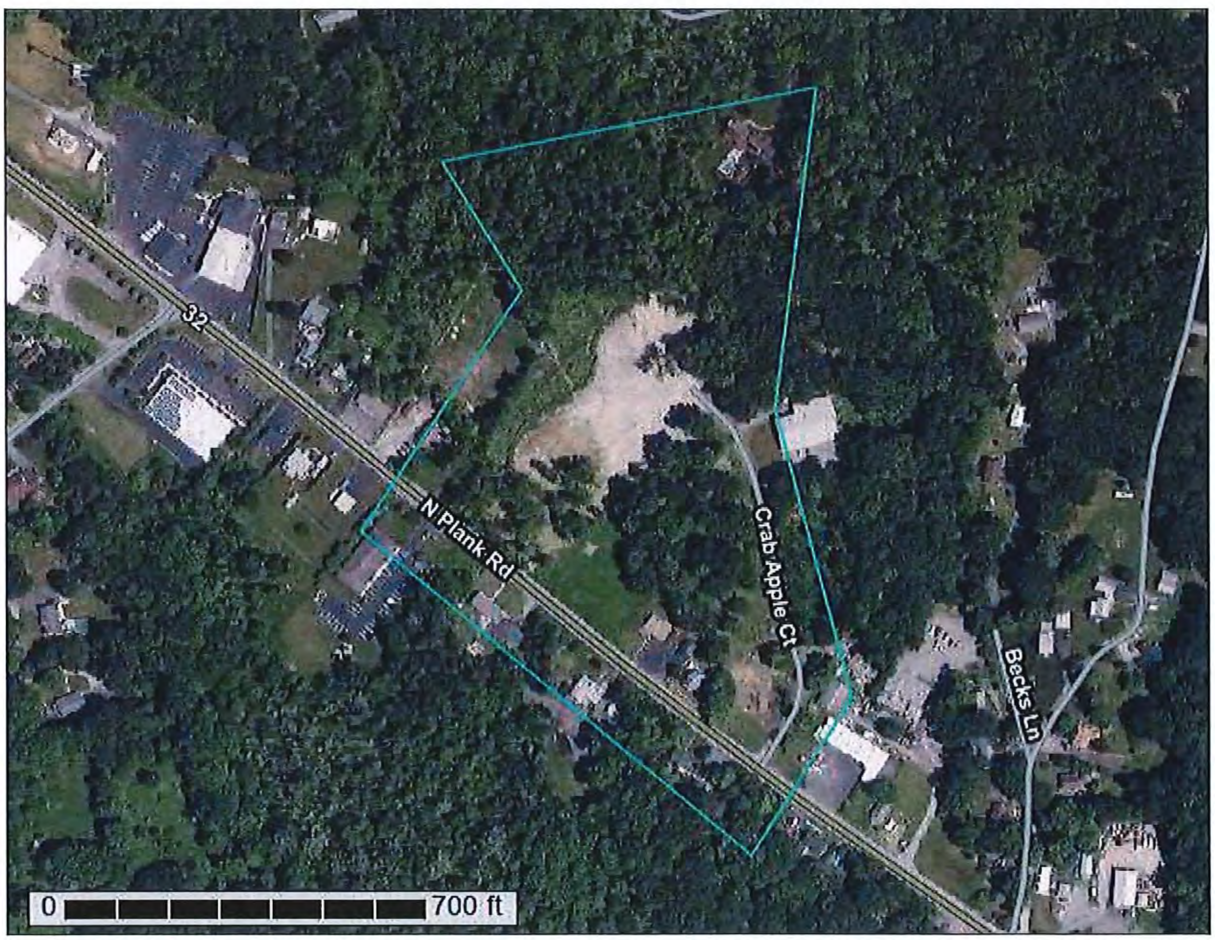
United States Department of Agriculture

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

Orange County, New York



August 10, 2023

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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Contents

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.

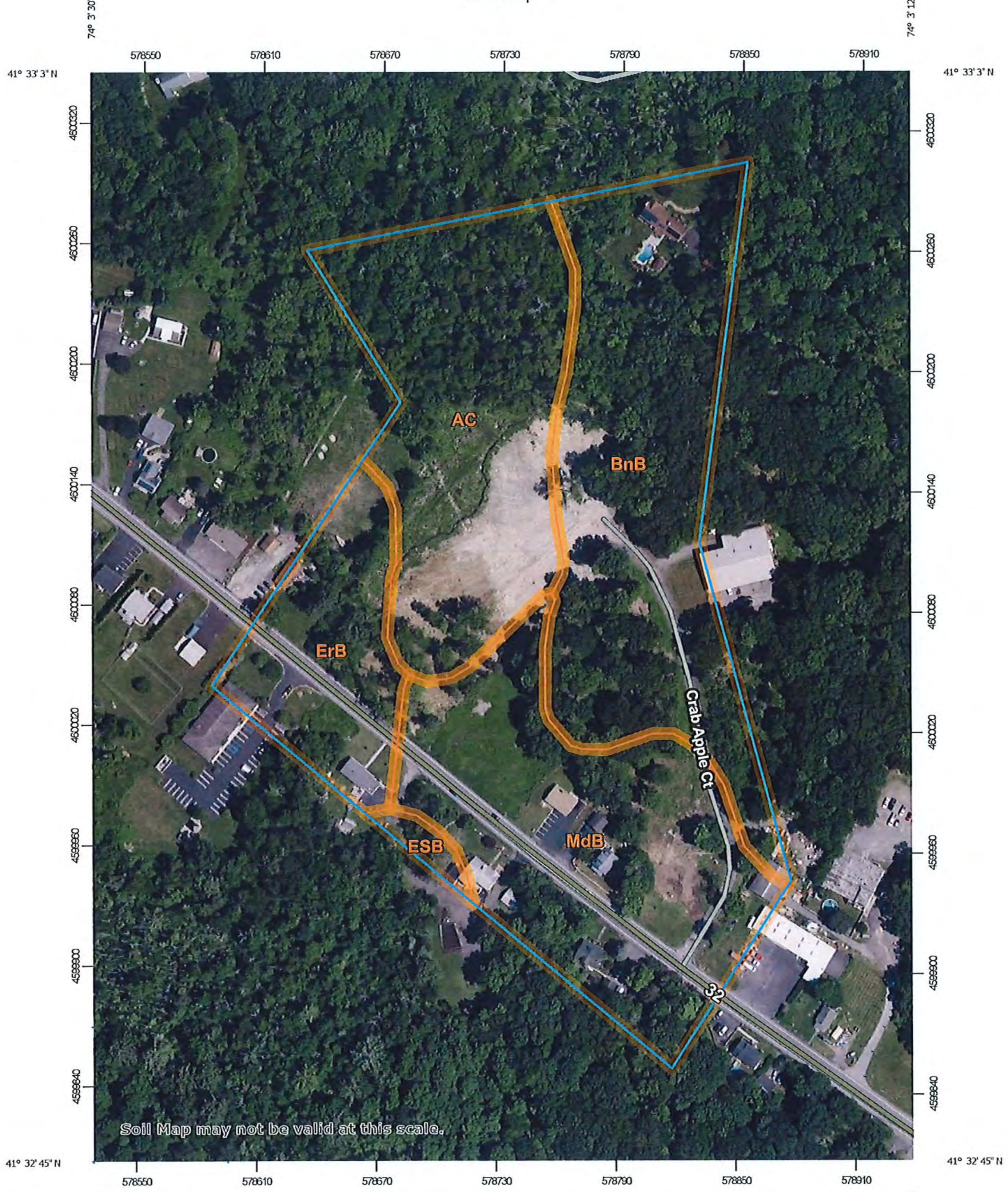
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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 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.

Soil Map



Map Scale: 1:2,650 if printed on A portrait (8.5" x 11") sheet.

N

0 35 70 140 210 Meters

0 100 200 400 600 Feet

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- 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
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Orange County, New York
Survey Area Data: Version 23, Sep 10, 2022

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

Date(s) aerial images were photographed: May 31, 2022—Oct 27, 2022

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
AC	Alden extremely stony soils	5.0	26.2%
BnB	Bath-Nassau channery silt loams, 3 to 8 percent slopes	6.1	31.9%
ErB	Erie gravelly silt loam, 3 to 8 percent slopes	2.3	12.1%
ESB	Erie extremely stony soils, gently sloping	0.2	1.1%
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	5.5	28.8%
Totals for Area of Interest		**19.1**	**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.

Orange County, New York

AC—Alden extremely stony soils

Map Unit Setting

National map unit symbol: 9vtd
Elevation: 130 to 1,480 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Alden, extremely stony, and similar soils: 75 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alden, Extremely Stony

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: A silty mantle of local deposition overlying loamy till

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 36 inches: silt loam
H3 - 36 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Ecological site: F144AY040NY - Semi-Rich Very Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Lyons

Percent of map unit: 5 percent

Landform: Depressions
Hydric soil rating: Yes

Palms
Percent of map unit: 5 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Canandaigua
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wayland
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

BnB—Bath-Nassau channery silt loams, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9vtn
Elevation: 600 to 1,800 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Bath and similar soils: 50 percent
Nassau and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting
Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile
H1 - 0 to 9 inches: channery silt loam
H2 - 9 to 29 inches: channery silt loam
H3 - 29 to 53 inches: very channery silt loam
H4 - 53 to 57 inches: unweathered bedrock

Properties and qualities
Slope: 3 to 8 percent

Depth to restrictive feature: 22 to 38 inches to fragipan; 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 24 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Description of Nassau

Setting
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile
H1 - 0 to 10 inches: channery silt loam
H2 - 10 to 19 inches: very channery silt loam
H3 - 19 to 23 inches: unweathered bedrock

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

ErB—Erie gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vv9
Elevation: 100 to 1,390 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Erie and similar soils: 80 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Erie

Setting

Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, sandstone, shale, and limestone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 18 inches: channery silt loam
H3 - 18 to 54 inches: channery silt loam
H4 - 54 to 70 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 21 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Alden

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

ESB—Erie extremely stony soils, gently sloping

Map Unit Setting

National map unit symbol: 9vvb
Elevation: 180 to 1,460 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Erie, extremely stony, and similar soils: 80 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Erie, Extremely Stony

Setting

Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, sandstone, shale, and limestone

Typical profile

H1 - 0 to 4 inches: gravelly silt loam
H2 - 4 to 18 inches: channery silt loam
H3 - 18 to 50 inches: channery silt loam
H4 - 50 to 70 inches: channery silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 10 to 21 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Alden

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

MdB—Mardin gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2v30j
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop, interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

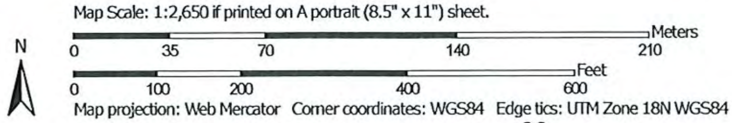
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map—Hydrologic Soil Group

Map Scale: 1:2,650 if printed on A portrait (8.5" x 11") sheet.



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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
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Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AC	Alden extremely stony soils	C/D	5.0	26.2%
BnB	Bath-Nassau channery silt loams, 3 to 8 percent slopes	C	6.1	31.9%
ErB	Erie gravelly silt loam, 3 to 8 percent slopes	D	2.3	12.1%
ESB	Erie extremely stony soils, gently sloping	D	0.2	1.1%
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	D	5.5	28.8%
Totals for Area of Interest			**19.1**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	New York
Location	New York, United States
Latitude	41.548 degrees North
Longitude	74.056 degrees West
Elevation	130 feet
Date/Time	Thu Aug 17 2023 09:38:35 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.32	0.50	0.62	0.81	1.01	1.26	1yr	0.87	1.18	1.44	1.76	2.14	2.61	2.98	1yr	2.31	2.86	3.33	3.97	4.60	1yr
2yr	0.39	0.59	0.74	0.97	1.22	1.52	2yr	1.06	1.42	1.74	2.14	2.60	3.15	3.56	2yr	2.79	3.43	3.93	4.63	5.26	2yr
5yr	0.45	0.71	0.89	1.19	1.52	1.91	5yr	1.31	1.75	2.19	2.69	3.26	3.94	4.50	5yr	3.49	4.33	4.96	5.72	6.48	5yr
10yr	0.51	0.80	1.01	1.37	1.79	2.26	10yr	1.54	2.06	2.61	3.20	3.88	4.67	5.37	10yr	4.13	5.17	5.92	6.71	7.58	10yr
25yr	0.59	0.95	1.21	1.67	2.22	2.84	25yr	1.92	2.55	3.28	4.04	4.89	5.84	6.80	25yr	5.17	6.53	7.50	8.31	9.34	25yr
50yr	0.68	1.09	1.39	1.95	2.62	3.38	50yr	2.26	2.99	3.91	4.81	5.81	6.93	8.12	50yr	6.14	7.81	8.97	9.77	10.95	50yr
100yr	0.77	1.24	1.60	2.27	3.10	4.02	100yr	2.68	3.52	4.66	5.74	6.92	8.23	9.71	100yr	7.28	9.34	10.73	11.49	12.84	100yr
200yr	0.87	1.43	1.85	2.65	3.67	4.78	200yr	3.17	4.14	5.56	6.84	8.24	9.77	11.62	200yr	8.65	11.18	12.86	13.53	15.07	200yr
500yr	1.05	1.73	2.26	3.28	4.59	6.02	500yr	3.96	5.14	7.01	8.63	10.38	12.28	14.74	500yr	10.87	14.18	16.34	16.79	18.64	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.45	0.55	0.74	0.91	1.07	1yr	0.78	1.05	1.23	1.54	1.99	2.14	2.41	1yr	1.89	2.31	2.75	3.26	3.82	1yr
2yr	0.37	0.58	0.71	0.96	1.18	1.41	2yr	1.02	1.38	1.59	2.04	2.57	3.05	3.42	2yr	2.70	3.29	3.74	4.44	5.07	2yr
5yr	0.42	0.64	0.80	1.10	1.39	1.64	5yr	1.20	1.60	1.86	2.39	2.99	3.62	4.09	5yr	3.20	3.93	4.51	5.15	5.97	5yr
10yr	0.46	0.71	0.88	1.23	1.59	1.83	10yr	1.37	1.79	2.08	2.68	3.35	4.11	4.65	10yr	3.64	4.47	5.15	5.74	6.73	10yr
25yr	0.53	0.81	1.00	1.43	1.89	2.11	25yr	1.63	2.06	2.40	3.04	3.90	4.85	5.52	25yr	4.29	5.31	6.12	6.60	7.95	25yr
50yr	0.59	0.90	1.12	1.61	2.16	2.34	50yr	1.87	2.29	2.69	3.39	4.38	5.50	6.27	50yr	4.87	6.03	7.00	7.33	9.04	50yr
100yr	0.66	1.00	1.25	1.81	2.48	2.61	100yr	2.14	2.55	3.02	3.78	4.94	6.23	7.12	100yr	5.51	6.84	8.01	8.10	10.31	100yr
200yr	0.75	1.12	1.43	2.06	2.88	2.91	200yr	2.48	2.84	3.38	4.25	5.57	7.02	8.08	200yr	6.22	7.77	9.17	8.90	11.79	200yr
500yr	0.89	1.32	1.70	2.46	3.50	3.37	500yr	3.02	3.29	3.95	4.96	6.54	8.27	9.53	500yr	7.32	9.16	10.98	10.06	14.12	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.35	0.55	0.67	0.90	1.10	1.33	1yr	0.95	1.30	1.52	1.93	2.40	2.86	3.28	1yr	2.54	3.15	3.71	4.25	5.07	1yr
2yr	0.40	0.62	0.76	1.03	1.27	1.53	2yr	1.10	1.49	1.73	2.23	2.78	3.31	3.71	2yr	2.93	3.57	4.16	4.84	5.51	2yr
5yr	0.49	0.76	0.94	1.30	1.65	1.95	5yr	1.42	1.91	2.25	2.87	3.62	4.27	4.92	5yr	3.78	4.73	5.44	6.30	7.04	5yr
10yr	0.58	0.90	1.11	1.55	2.01	2.38	10yr	1.73	2.33	2.74	3.52	4.43	5.22	6.08	10yr	4.62	5.84	6.73	7.71	8.51	10yr
25yr	0.73	1.11	1.38	1.98	2.60	3.09	25yr	2.24	3.02	3.58	4.72	5.79	6.82	8.08	25yr	6.03	7.77	8.96	10.11	10.94	25yr
50yr	0.86	1.32	1.64	2.35	3.17	3.78	50yr	2.74	3.69	4.39	5.82	7.09	8.34	10.02	50yr	7.38	9.64	11.15	12.43	13.22	50yr
100yr	1.03	1.55	1.94	2.81	3.85	4.62	100yr	3.32	4.52	5.37	7.18	8.68	10.23	12.46	100yr	9.05	11.98	13.86	15.31	15.97	100yr
200yr	1.22	1.83	2.32	3.36	4.68	5.64	200yr	4.04	5.52	6.59	8.86	10.64	12.54	15.51	200yr	11.10	14.92	17.25	18.89	19.29	200yr
500yr	1.53	2.28	2.94	4.26	6.06	7.36	500yr	5.23	7.19	8.63	11.72	13.91	16.46	20.75	500yr	14.57	19.95	23.06	25.00	24.73	500yr

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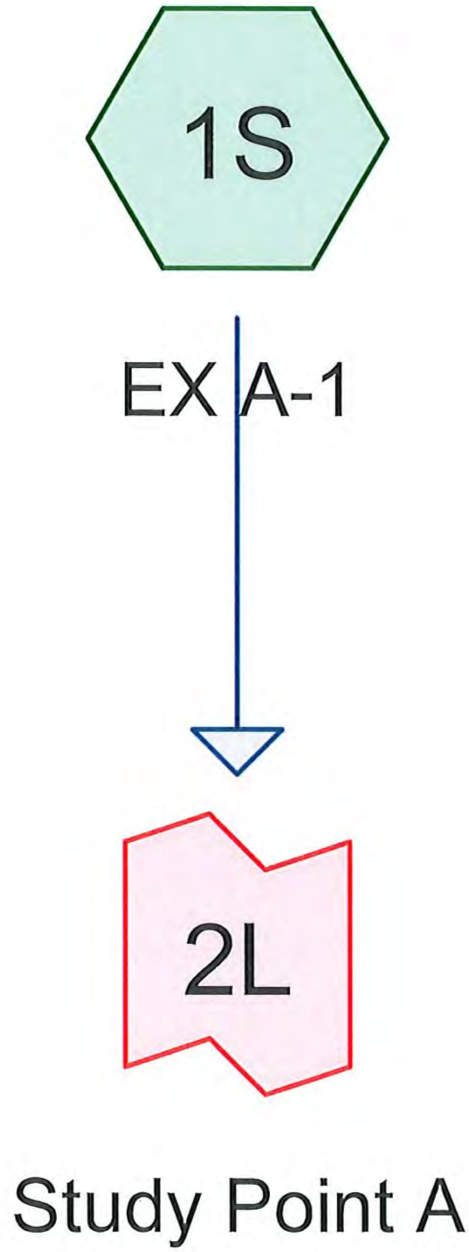
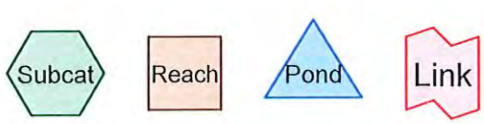
<u>APPENDIX B</u>

PRE/POST-DEVELOPMENT WATERSHED MODELS





Routing Diagram for 220138-PRE
Prepared by Lanc & Tully Engineering, Printed 8/24/2023
HydroCAD® 10.20-3f s/n 12630 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	220138-RAIN 24-hr S1	1-yr	Default	24.00	1	2.61	2
2	10-yr	220138-RAIN 24-hr S1	10-yr	Default	24.00	1	4.67	2
3	100-yr	220138-RAIN 24-hr S1	100-yr	Default	24.00	1	8.23	2

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EX A-1 Runoff Area=7.008 ac 5.39% Impervious Runoff Depth>0.81"
Flow Length=685' Tc=10.6 min CN=77 Runoff=5.65 cfs 0.471 af

Link 2L: Study Point A Inflow=5.65 cfs 0.471 af
Primary=5.65 cfs 0.471 af

Total Runoff Area = 7.008 ac Runoff Volume = 0.471 af Average Runoff Depth = 0.81"
94.61% Pervious = 6.630 ac 5.39% Impervious = 0.378 ac

Summary for Subcatchment 1S: EX A-1

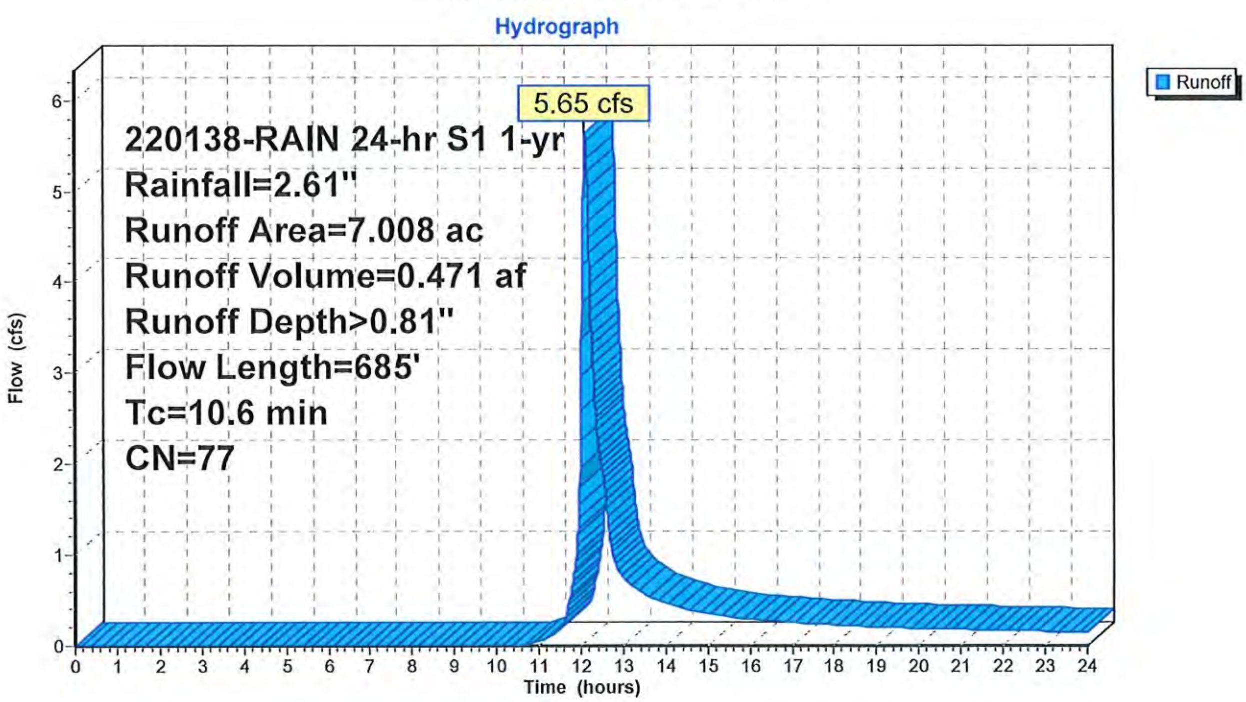
Runoff = 5.65 cfs @ 12.10 hrs, Volume= 0.471 af, Depth> 0.81"
Routed to Link 2L : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 1-yr Rainfall=2.61"

Area (ac)	CN	Description
3.781	80	>75% Grass cover, Good, HSG D
0.557	74	>75% Grass cover, Good, HSG C
2.292	70	Woods, Good, HSG C
0.378	98	Paved parking, HSG D
7.008	77	Weighted Average
6.630		94.61% Pervious Area
0.378		5.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0500	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
3.1	585	0.0375	3.12		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.6	685	Total			

Subcatchment 1S: EX A-1

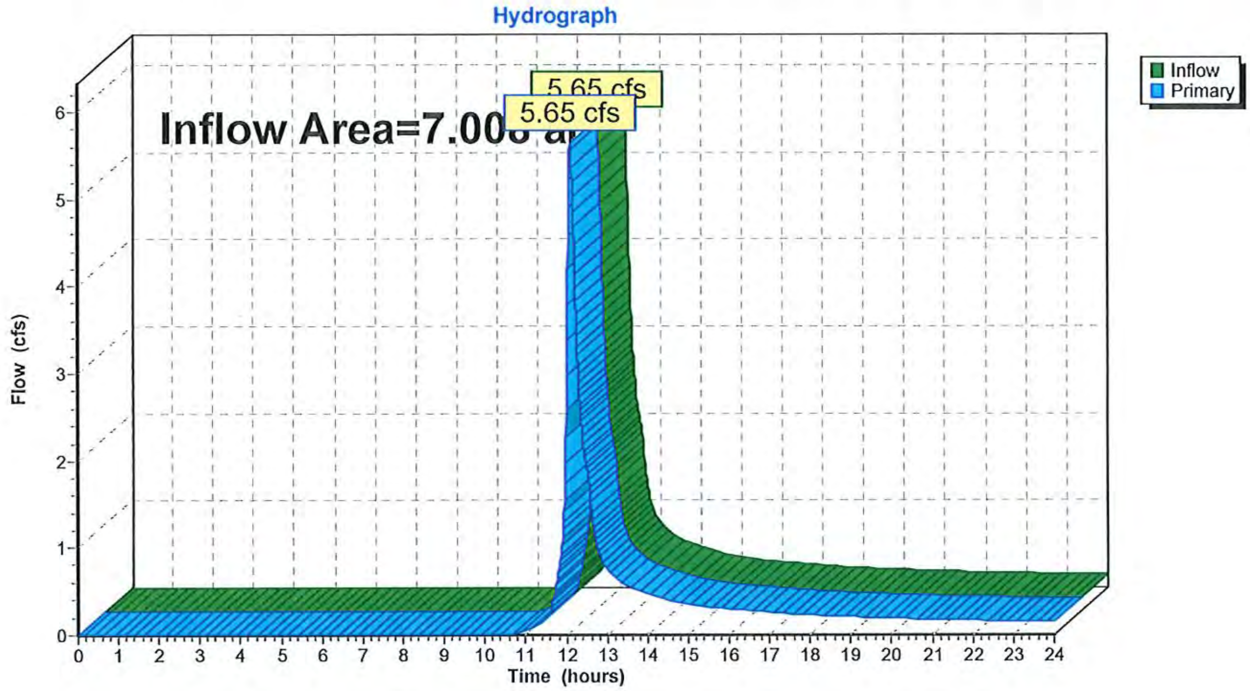


Summary for Link 2L: Study Point A

Inflow Area =	7.008 ac,	5.39% Impervious,	Inflow Depth > 0.81"	for 1-yr event
Inflow =	5.65 cfs @	12.10 hrs, Volume=	0.471 af	
Primary =	5.65 cfs @	12.10 hrs, Volume=	0.471 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 2L: Study Point A



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EX A-1 Runoff Area=7.008 ac 5.39% Impervious Runoff Depth>2.34"
Flow Length=685' Tc=10.6 min CN=77 Runoff=16.66 cfs 1.368 af

Link 2L: Study Point A Inflow=16.66 cfs 1.368 af
Primary=16.66 cfs 1.368 af

Total Runoff Area = 7.008 ac Runoff Volume = 1.368 af Average Runoff Depth = 2.34"
94.61% Pervious = 6.630 ac 5.39% Impervious = 0.378 ac

Summary for Subcatchment 1S: EX A-1

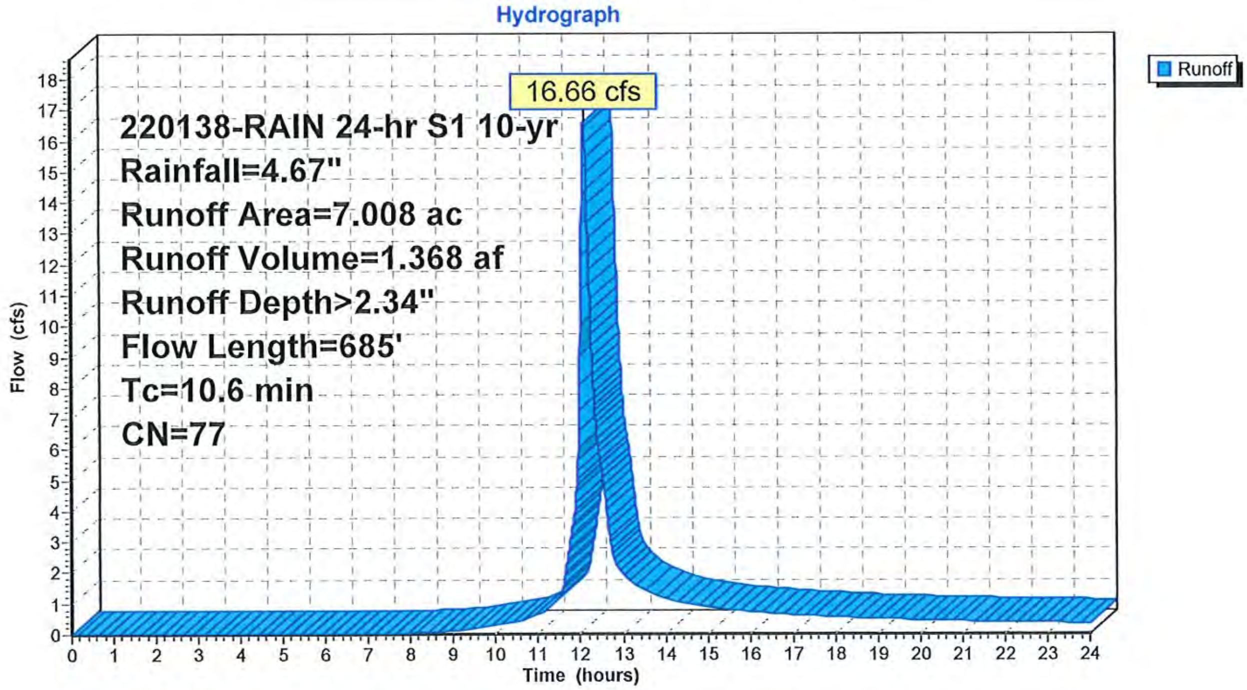
Runoff = 16.66 cfs @ 12.10 hrs, Volume= 1.368 af, Depth> 2.34"
Routed to Link 2L : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 10-yr Rainfall=4.67"

Area (ac)	CN	Description
3.781	80	>75% Grass cover, Good, HSG D
0.557	74	>75% Grass cover, Good, HSG C
2.292	70	Woods, Good, HSG C
0.378	98	Paved parking, HSG D
7.008	77	Weighted Average
6.630		94.61% Pervious Area
0.378		5.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0500	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
3.1	585	0.0375	3.12		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.6	685	Total			

Subcatchment 1S: EX A-1

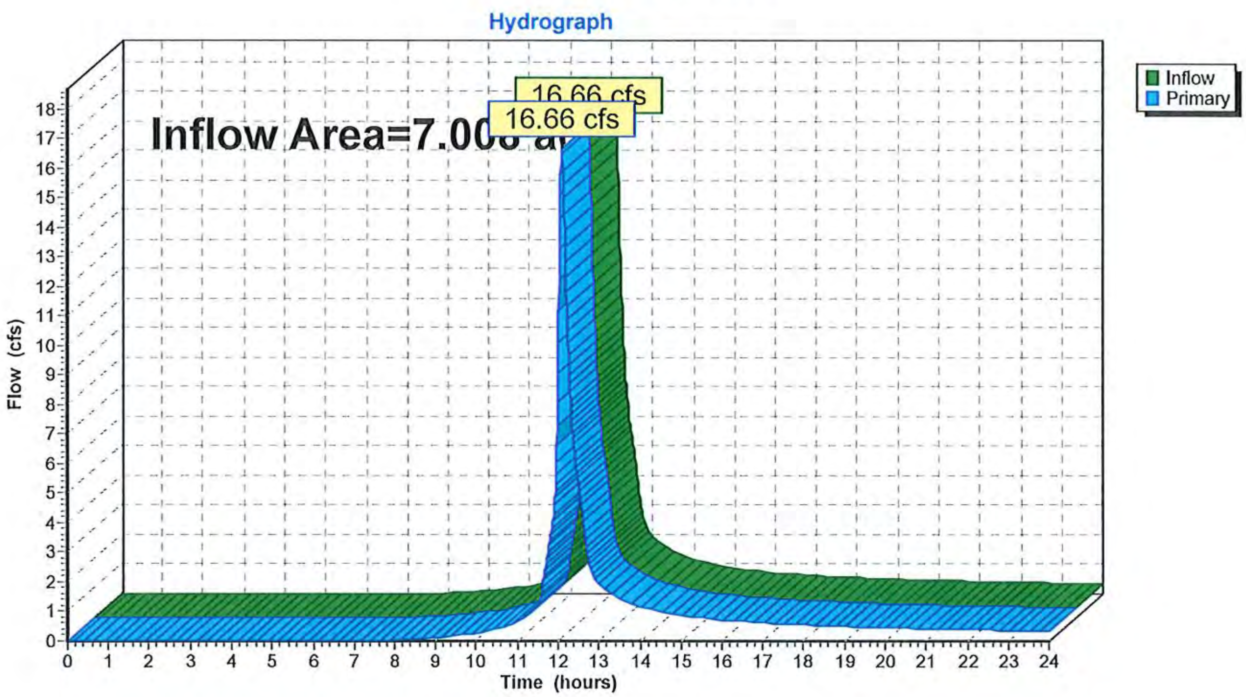


Summary for Link 2L: Study Point A

Inflow Area =	7.008 ac,	5.39% Impervious, Inflow Depth > 2.34"	for 10-yr event
Inflow =	16.66 cfs @	12.10 hrs, Volume=	1.368 af
Primary =	16.66 cfs @	12.10 hrs, Volume=	1.368 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 2L: Study Point A



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EX A-1 Runoff Area=7.008 ac 5.39% Impervious Runoff Depth>5.47"
Flow Length=685' Tc=10.6 min CN=77 Runoff=36.28 cfs 3.195 af

Link 2L: Study Point A Inflow=36.28 cfs 3.195 af
Primary=36.28 cfs 3.195 af

Total Runoff Area = 7.008 ac Runoff Volume = 3.195 af Average Runoff Depth = 5.47"
94.61% Pervious = 6.630 ac 5.39% Impervious = 0.378 ac

Summary for Subcatchment 1S: EX A-1

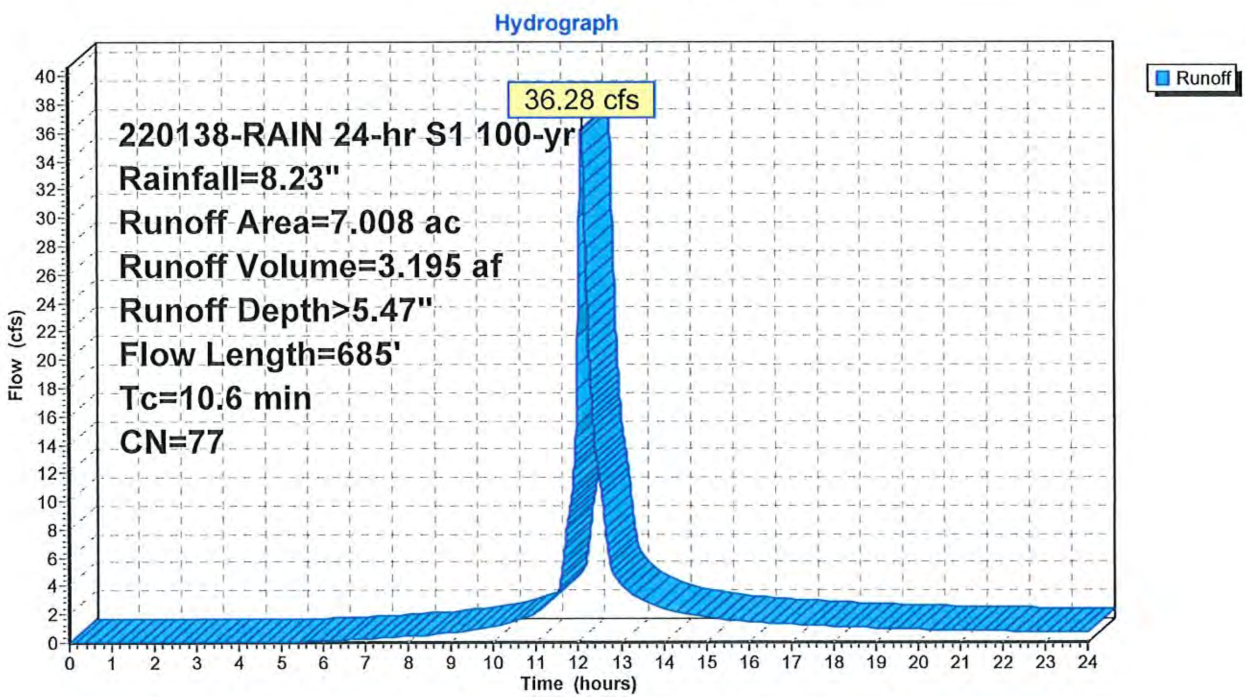
Runoff = 36.28 cfs @ 12.10 hrs, Volume= 3.195 af, Depth> 5.47"
Routed to Link 2L : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 100-yr Rainfall=8.23"

Area (ac)	CN	Description
3.781	80	>75% Grass cover, Good, HSG D
0.557	74	>75% Grass cover, Good, HSG C
2.292	70	Woods, Good, HSG C
0.378	98	Paved parking, HSG D
7.008	77	Weighted Average
6.630		94.61% Pervious Area
0.378		5.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0500	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
3.1	585	0.0375	3.12		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.6	685	Total			

Subcatchment 1S: EX A-1

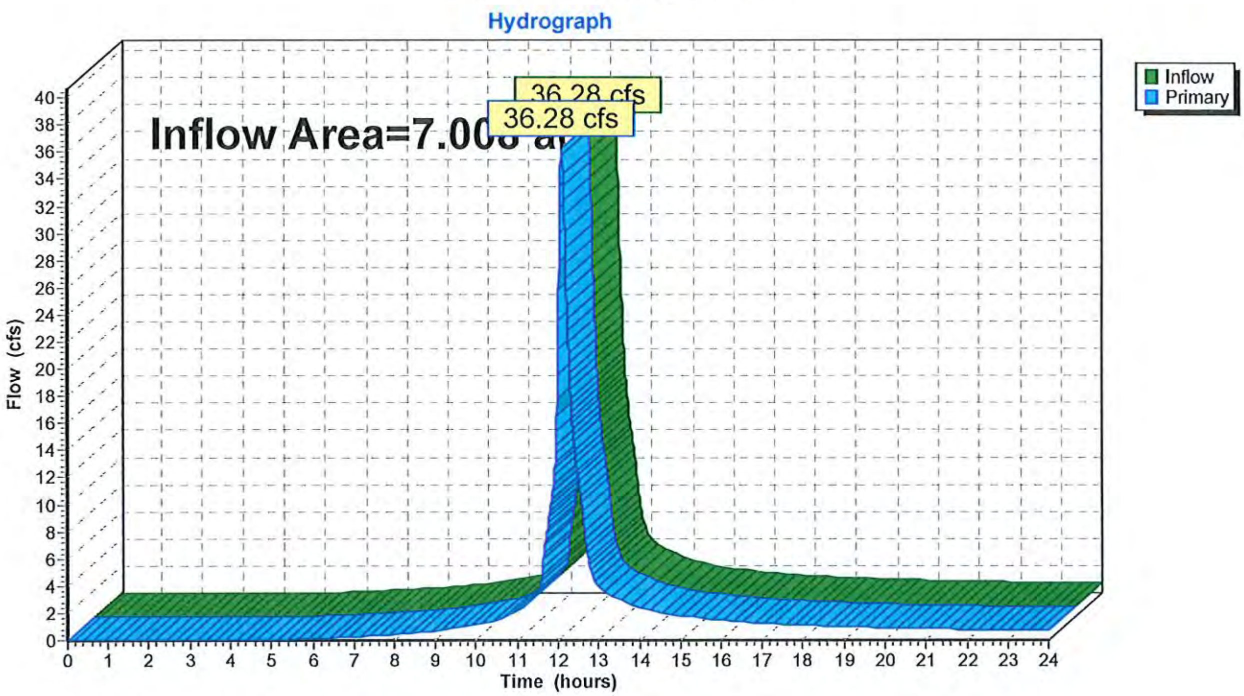


Summary for Link 2L: Study Point A

Inflow Area =	7.008 ac,	5.39% Impervious,	Inflow Depth > 5.47"	for 100-yr event	
Inflow =	36.28 cfs @	12.10 hrs,	Volume=	3.195 af	
Primary =	36.28 cfs @	12.10 hrs,	Volume=	3.195 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 2L: Study Point A



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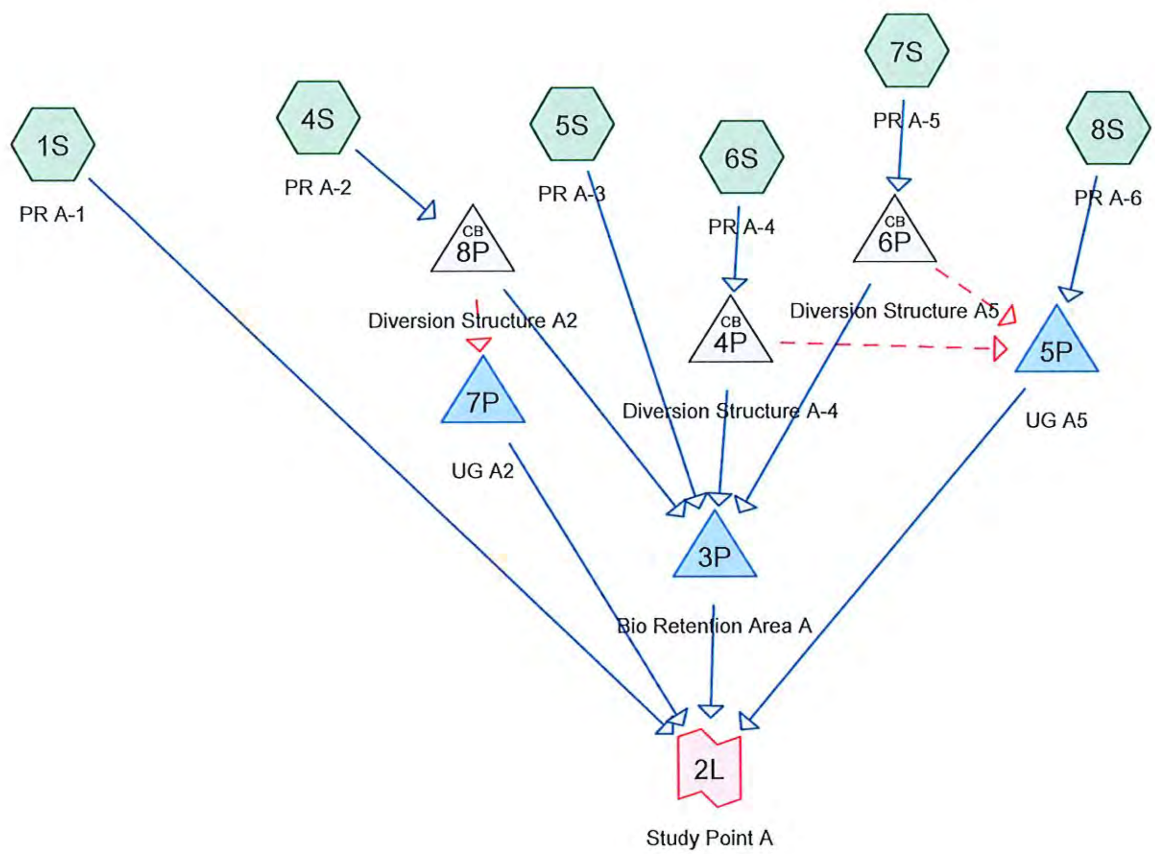
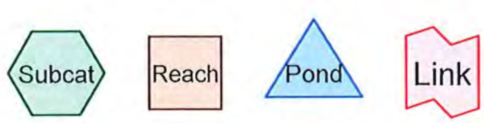




Routing Diagram for 220138-POST
Prepared by Lanc & Tully Engineering, Printed 8/24/2023
HydroCAD® 10.20-3f s/n 12630 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	220138-RAIN 24-hr S1	1-yr	Default	24.00	1	2.61	2
2	10-yr	220138-RAIN 24-hr S1	10-yr	Default	24.00	1	4.67	2
3	100-yr	220138-RAIN 24-hr S1	100-yr	Default	24.00	1	8.23	2

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PR A-1 Runoff Area=1.757 ac 11.04% Impervious Runoff Depth>0.81"
Flow Length=515' Tc=6.6 min CN=77 Runoff=1.73 cfs 0.118 af

Subcatchment 4S: PR A-2 Runoff Area=0.893 ac 86.23% Impervious Runoff Depth>2.07"
Flow Length=327' Tc=5.0 min CN=95 Runoff=2.58 cfs 0.154 af

Subcatchment 5S: PR A-3 Runoff Area=1.737 ac 5.12% Impervious Runoff Depth>0.96"
Flow Length=303' Tc=8.3 min CN=80 Runoff=1.94 cfs 0.139 af

Subcatchment 6S: PR A-4 Runoff Area=1.644 ac 63.75% Impervious Runoff Depth>1.55"
Flow Length=129' Tc=9.3 min CN=89 Runoff=2.96 cfs 0.212 af

Subcatchment 7S: PR A-5 Runoff Area=0.648 ac 99.23% Impervious Runoff Depth>2.38"
Flow Length=227' Tc=5.0 min CN=98 Runoff=2.03 cfs 0.128 af

Subcatchment 8S: PR A-6 Runoff Area=0.328 ac 85.37% Impervious Runoff Depth>2.07"
Flow Length=301' Tc=5.0 min CN=95 Runoff=0.95 cfs 0.057 af

Pond 3P: Bio Retention Area A Peak Elev=447.67' Storage=9,426 cf Inflow=5.29 cfs 0.589 af
Outflow=3.10 cfs 0.424 af

Pond 4P: Diversion Structure A-4 Peak Elev=452.40' Inflow=2.96 cfs 0.212 af
Primary=1.31 cfs 0.190 af Secondary=1.65 cfs 0.022 af Outflow=2.96 cfs 0.212 af

Pond 5P: UG A5 Peak Elev=446.11' Storage=1,400 cf Inflow=3.12 cfs 0.086 af
Outflow=0.88 cfs 0.085 af

Pond 6P: Diversion Structure A5 Peak Elev=450.25' Inflow=2.03 cfs 0.128 af
Primary=1.08 cfs 0.121 af Secondary=0.95 cfs 0.008 af Outflow=2.03 cfs 0.128 af

Pond 7P: UG A2 Peak Elev=445.68' Storage=0.012 af Inflow=1.54 cfs 0.015 af
Outflow=0.40 cfs 0.010 af

Pond 8P: Diversion Structure A2 Peak Elev=450.88' Inflow=2.58 cfs 0.154 af
Primary=1.04 cfs 0.139 af Secondary=1.54 cfs 0.015 af Outflow=2.58 cfs 0.154 af

Link 2L: Study Point A Inflow=4.89 cfs 0.637 af
Primary=4.89 cfs 0.637 af

Total Runoff Area = 7.007 ac Runoff Volume = 0.808 af Average Runoff Depth = 1.38"
56.84% Pervious = 3.983 ac 43.16% Impervious = 3.024 ac

Summary for Subcatchment 1S: PR A-1

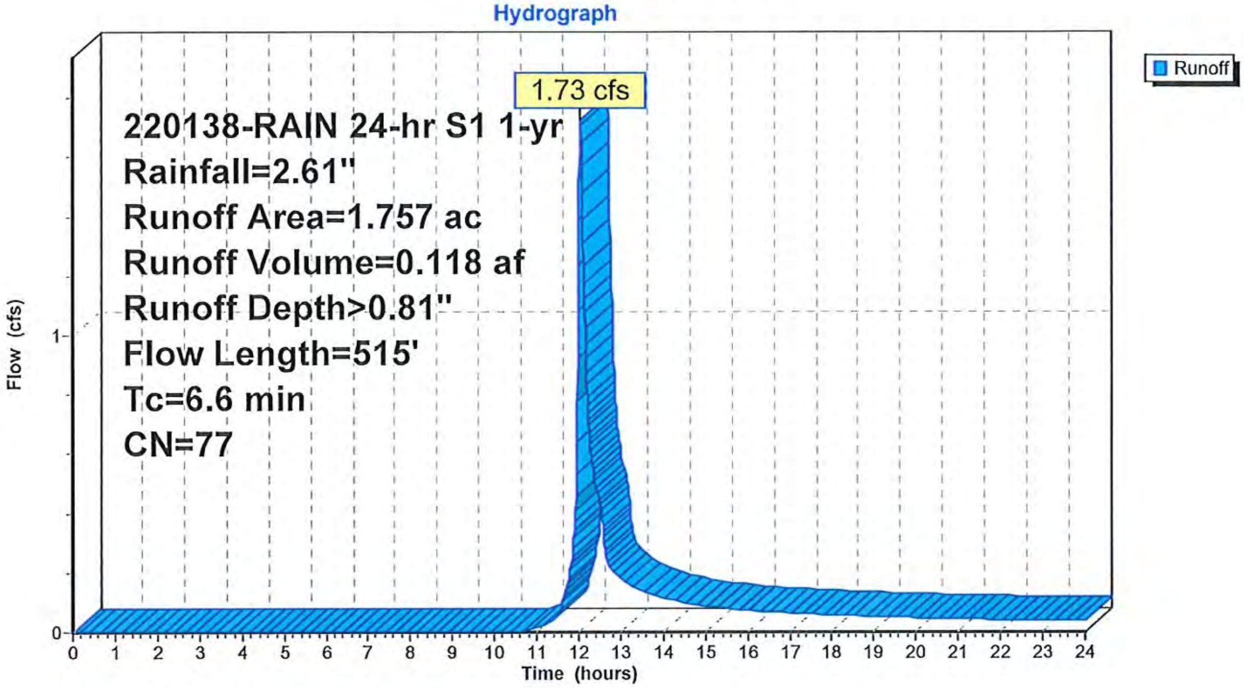
Runoff = 1.73 cfs @ 12.05 hrs, Volume= 0.118 af, Depth> 0.81"
Routed to Link 2L : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 1-yr Rainfall=2.61"

Area (ac)	CN	Description
0.595	80	>75% Grass cover, Good, HSG D
0.087	74	>75% Grass cover, Good, HSG C
0.881	70	Woods, Good, HSG C
0.194	98	Paved parking, HSG D
1.757	77	Weighted Average
1.563		88.96% Pervious Area
0.194		11.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.1400	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
1.5	265	0.0340	2.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	150	0.0667	17.81	213.76	**Channel Flow,** Area= 12.0 sf Perim= 9.6' r= 1.25' n= 0.025 Earth, grassed & winding
6.6	515	Total			

Subcatchment 1S: PR A-1



Summary for Subcatchment 4S: PR A-2

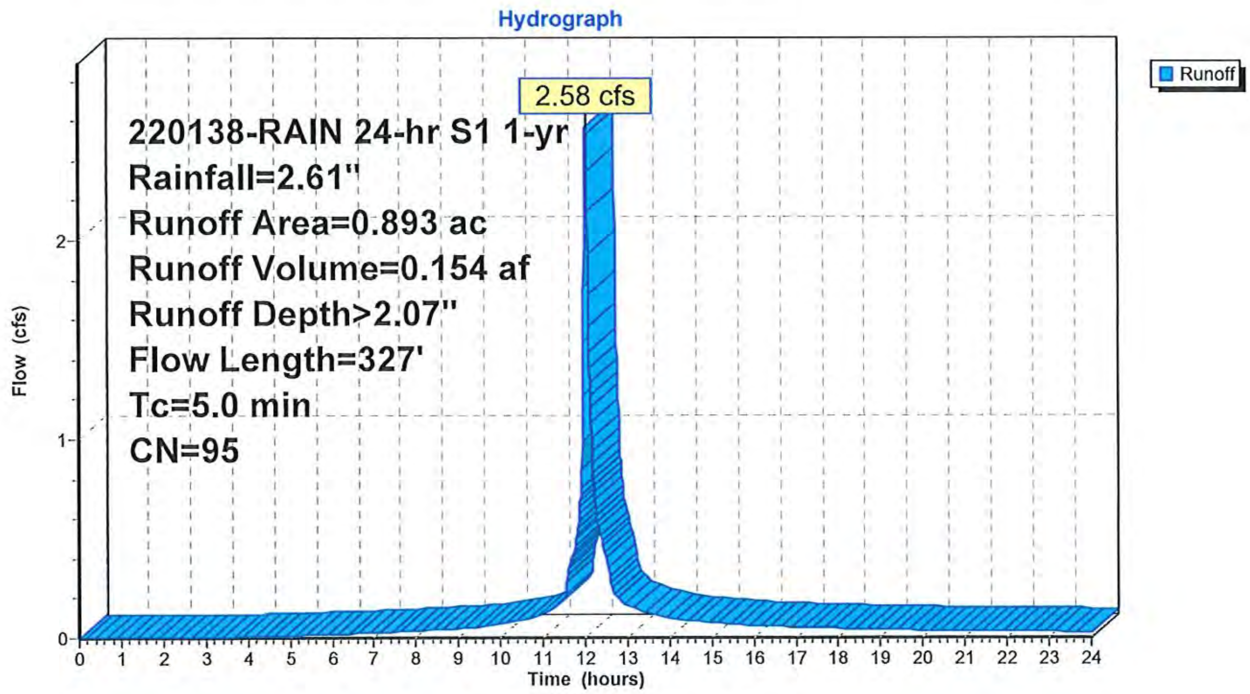
Runoff = 2.58 cfs @ 12.03 hrs, Volume= 0.154 af, Depth> 2.07"
Routed to Pond 8P : Diversion Structure A2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 1-yr Rainfall=2.61"

Area (ac)	CN	Description
0.069	80	>75% Grass cover, Good, HSG D
0.054	74	>75% Grass cover, Good, HSG C
0.770	98	Paved parking, HSG D
0.893	95	Weighted Average
0.123		13.77% Pervious Area
0.770		86.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0375	1.59		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.60"
0.1	227	0.0132	31.22	121.74	**Channel Flow,** Area= 3.9 sf Perim= 1.2' r= 3.25' n= 0.012
1.1	327	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: PR A-2



Summary for Subcatchment 5S: PR A-3

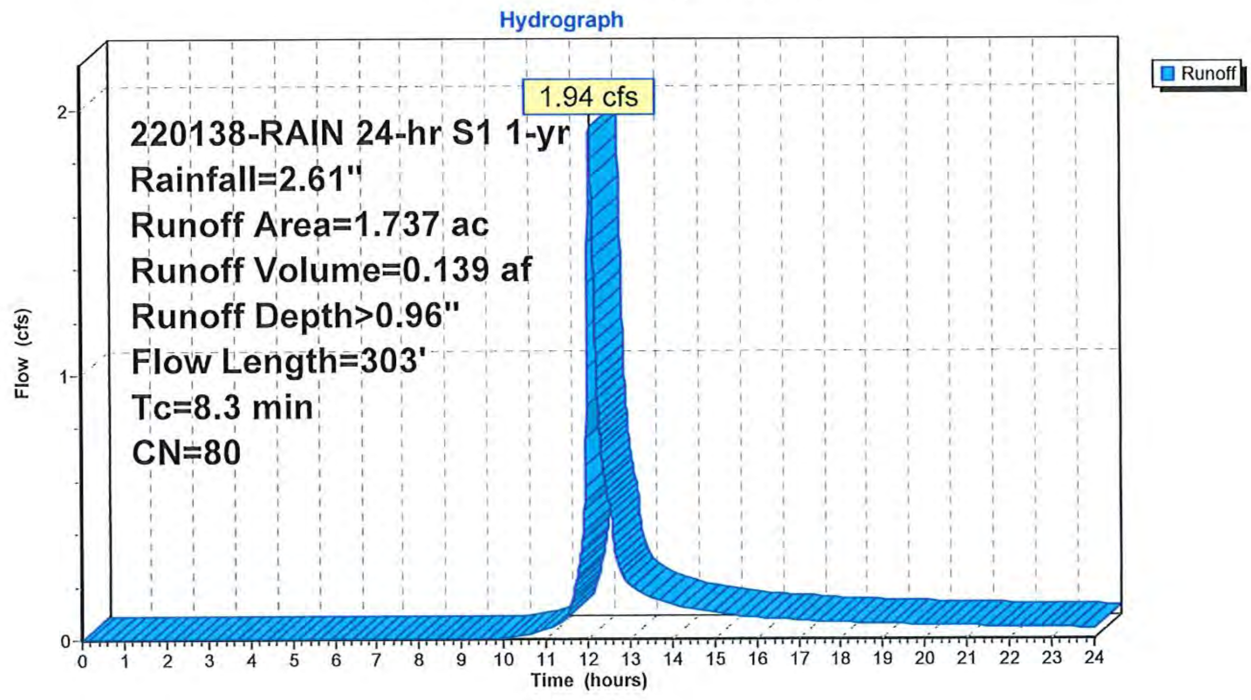
Runoff = 1.94 cfs @ 12.07 hrs, Volume= 0.139 af, Depth> 0.96"
Routed to Pond 3P : Bio Retention Area A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 1-yr Rainfall=2.61"

Area (ac)	CN	Description
1.467	80	>75% Grass cover, Good, HSG D
0.181	74	>75% Grass cover, Good, HSG C
0.089	98	Paved parking, HSG D
1.737	80	Weighted Average
1.648		94.88% Pervious Area
0.089		5.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0500	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
0.7	178	0.0730	4.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	25	0.2000	7.20		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.3	303	Total			

Subcatchment 5S: PR A-3



Summary for Subcatchment 6S: PR A-4

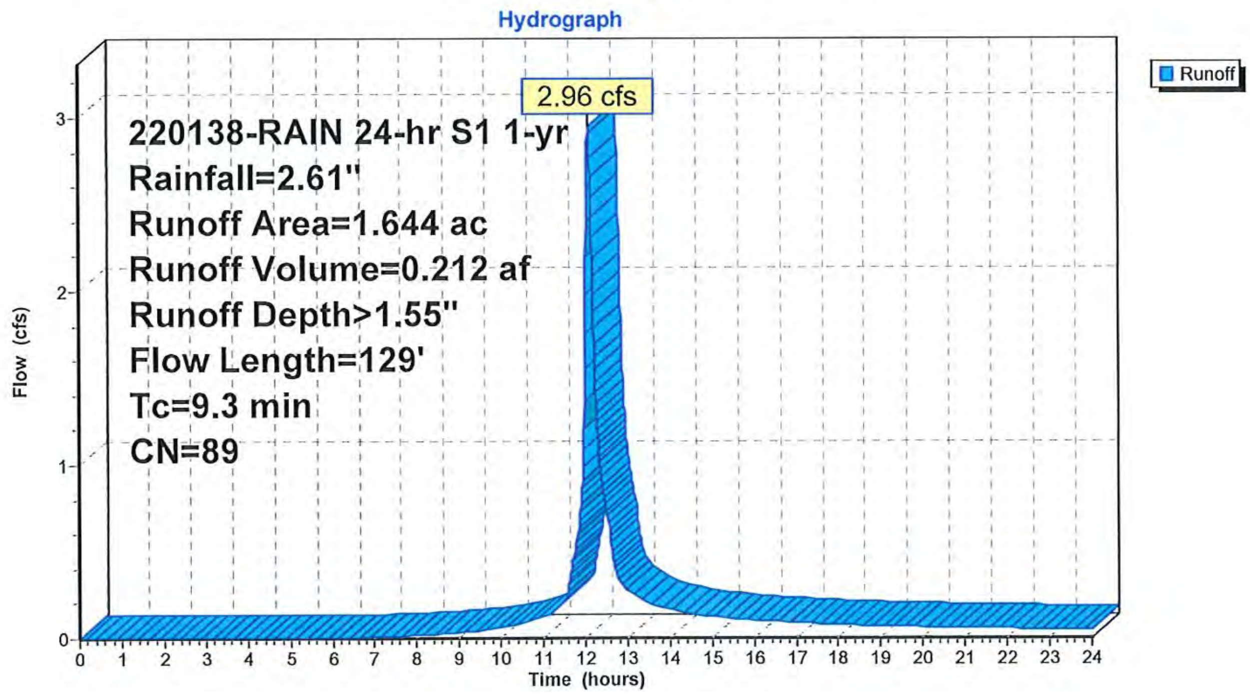
Runoff = 2.96 cfs @ 12.08 hrs, Volume= 0.212 af, Depth> 1.55"
Routed to Pond 4P : Diversion Structure A-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 1-yr Rainfall=2.61"

Area (ac)	CN	Description
0.596	74	>75% Grass cover, Good, HSG C
1.048	98	Paved parking, HSG D
1.644	89	Weighted Average
0.596		36.25% Pervious Area
1.048		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
0.0	9	0.0970	5.01		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	20	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	129	Total			

Subcatchment 6S: PR A-4



Summary for Subcatchment 7S: PR A-5

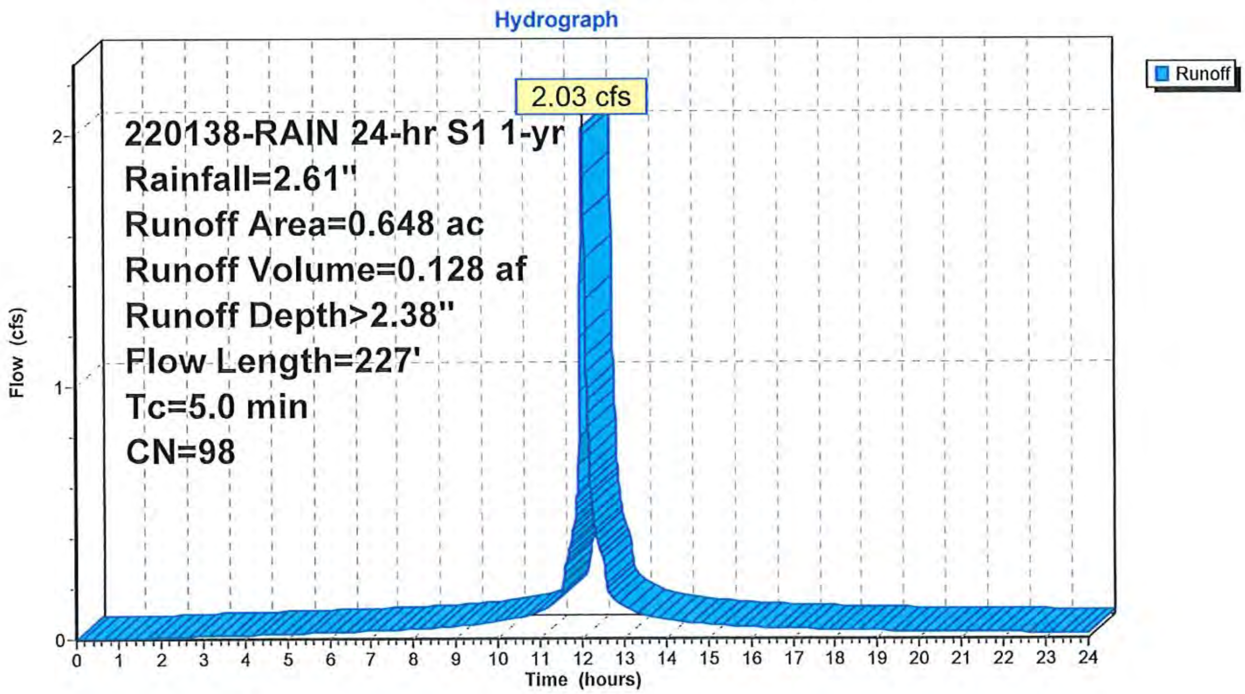
Runoff = 2.03 cfs @ 12.03 hrs, Volume= 0.128 af, Depth> 2.38"
Routed to Pond 6P : Diversion Structure A5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 1-yr Rainfall=2.61"

Area (ac)	CN	Description
0.005	80	>75% Grass cover, Good, HSG D
0.643	98	Paved parking, HSG D
0.648	98	Weighted Average
0.005		0.77% Pervious Area
0.643		99.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	92	0.3300	11.66		**Shallow Concentrated Flow, roof pitch** Paved Kv= 20.3 fps
0.5	135	0.0200	4.38	0.88	**Channel Flow,** Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.012
0.6	227	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 7S: PR A-5



Summary for Subcatchment 8S: PR A-6

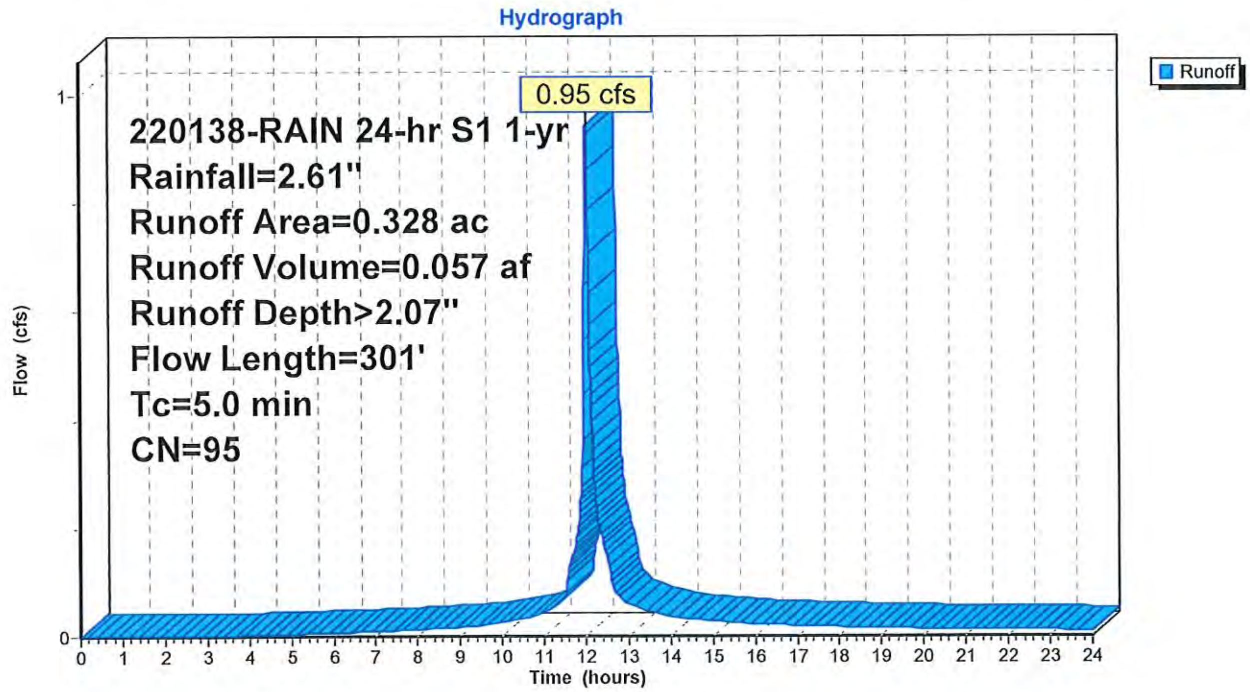
Runoff = 0.95 cfs @ 12.03 hrs, Volume= 0.057 af, Depth> 2.07"
Routed to Pond 5P : UG A5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 1-yr Rainfall=2.61"

Area (ac)	CN	Description
0.044	80	>75% Grass cover, Good, HSG D
0.004	74	>75% Grass cover, Good, HSG C
0.280	98	Paved parking, HSG D
0.328	95	Weighted Average
0.048		14.63% Pervious Area
0.280		85.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0150	1.11		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.60"
1.1	201	0.0224	3.04		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.6	301	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 8S: PR A-6



Summary for Pond 3P: Bio Retention Area A

Inflow Area = 4.922 ac, 51.81% Impervious, Inflow Depth > 1.44" for 1-yr event
Inflow = 5.29 cfs @ 12.06 hrs, Volume= 0.589 af
Outflow = 3.10 cfs @ 12.28 hrs, Volume= 0.424 af, Atten= 41%, Lag= 13.0 min
Primary = 3.10 cfs @ 12.28 hrs, Volume= 0.424 af
Routed to Link 2L : Study Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 447.67' @ 12.28 hrs Surf.Area= 14,652 sf Storage= 9,426 cf

Plug-Flow detention time= 196.8 min calculated for 0.424 af (72% of inflow)
Center-of-Mass det. time= 85.1 min (909.5 - 824.4)

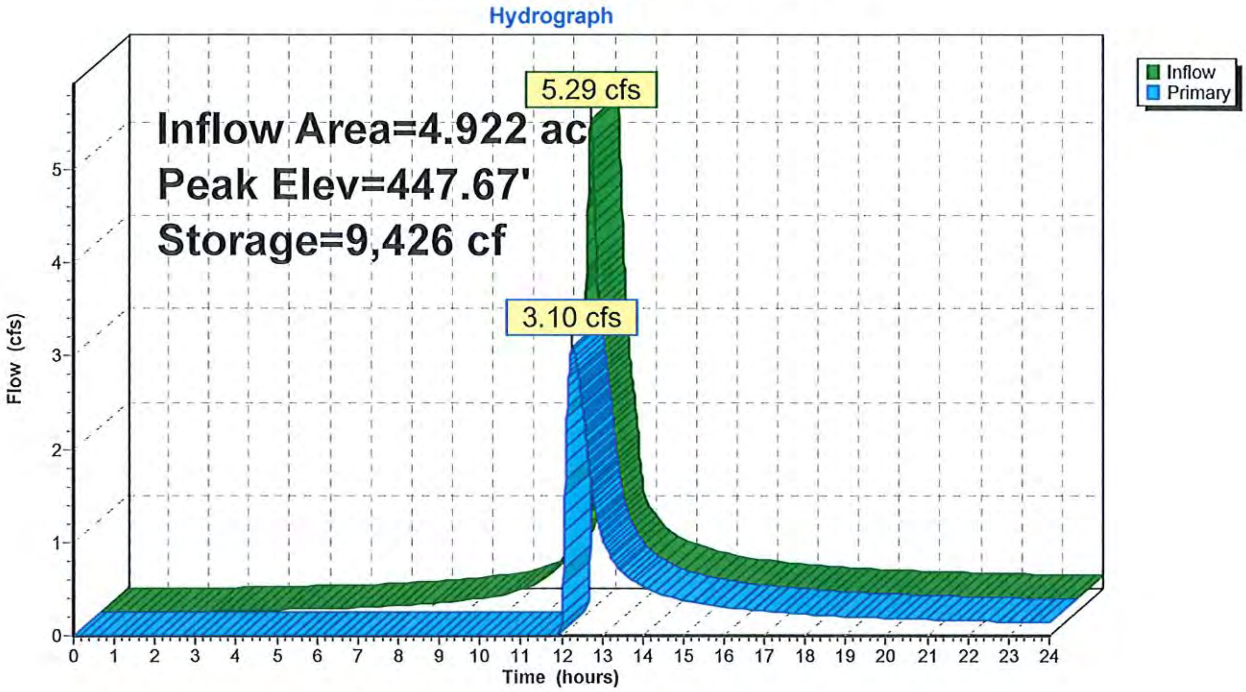
Volume	Invert	Avail.Storage	Storage Description
#1	447.00'	14,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
447.00	13,291	0	0
448.00	15,308	14,300	14,300

Device	Routing	Invert	Outlet Devices
#1	Primary	444.00'	**24.0" Round Culvert** L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 444.00' / 443.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	447.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.10 cfs @ 12.28 hrs HW=447.67' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.10 cfs of 24.74 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 3.10 cfs @ 1.37 fps)

Pond 3P: Bio Retention Area A



Summary for Pond 4P: Diversion Structure A-4

Inflow Area = 1.644 ac, 63.75% Impervious, Inflow Depth > 1.55" for 1-yr event
Inflow = 2.96 cfs @ 12.08 hrs, Volume= 0.212 af
Outflow = 2.96 cfs @ 12.08 hrs, Volume= 0.212 af, Atten= 0%, Lag= 0.0 min
Primary = 1.31 cfs @ 12.08 hrs, Volume= 0.190 af
Routed to Pond 3P : Bio Retention Area A
Secondary = 1.65 cfs @ 12.08 hrs, Volume= 0.022 af
Routed to Pond 5P : UG A5

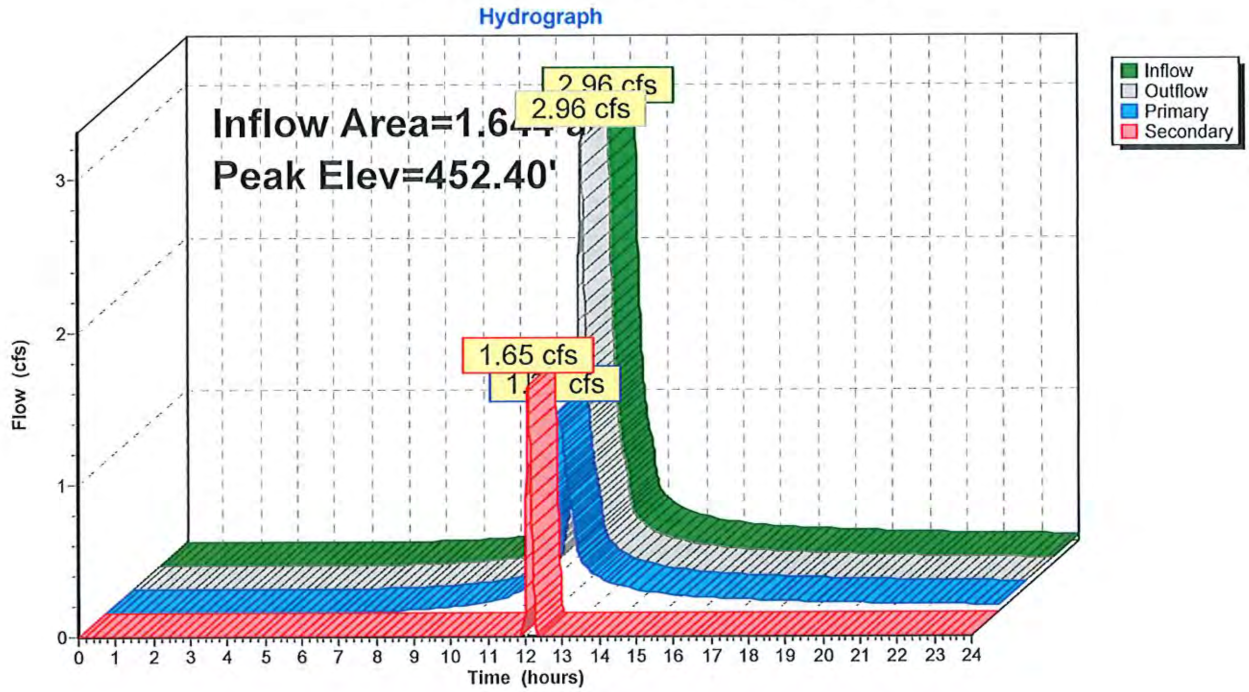
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 452.40' @ 12.08 hrs
Flood Elev= 456.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	449.40'	**6.0" Round Culvert** L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 449.40' / 449.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	451.82'	**18.0" Round Culvert** L= 150.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 451.82' / 449.50' S= 0.0155 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.31 cfs @ 12.08 hrs HW=452.40' TW=447.60' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.31 cfs @ 6.67 fps)

Secondary OutFlow Max=1.65 cfs @ 12.08 hrs HW=452.40' TW=445.93' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 1.65 cfs @ 2.60 fps)

Pond 4P: Diversion Structure A-4



Summary for Pond 5P: UG A5

```
Inflow Area =      0.328 ac, 85.37% Impervious, Inflow Depth >  3.15"   for 1-yr event
Inflow    =       3.12 cfs @  12.04 hrs, Volume=         0.086 af
Outflow   =       0.88 cfs @  12.20 hrs, Volume=         0.085 af, Atten= 72%, Lag= 9.2 min
Primary   =       0.88 cfs @  12.20 hrs, Volume=         0.085 af
   Routed to Link 2L : Study Point A
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 446.11' @ 12.20 hrs Surf.Area= 2,316 sf Storage= 1,400 cf

Plug-Flow detention time= 33.8 min calculated for 0.085 af (99% of inflow)
Center-of-Mass det. time= 24.5 min (793.8 - 769.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.00'	3,287 cf	**29.92'W x 77.40'L x 5.50'H Field A** 12,736 cf Overall - 4,517 cf Embedded = 8,218 cf x 40.0% Voids
#2A	445.75'	4,517 cf	**ADS_StormTech MC-3500 d +Cap** x 40 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 40 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		7,805 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	444.50'	**18.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 444.50' / 440.00' S= 0.0600 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	445.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	448.50'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Device 1	446.50'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.88 cfs @ 12.20 hrs HW=446.11' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.88 cfs of 7.90 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.88 cfs @ 4.47 fps)
  ├─**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 5P: UG A5 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

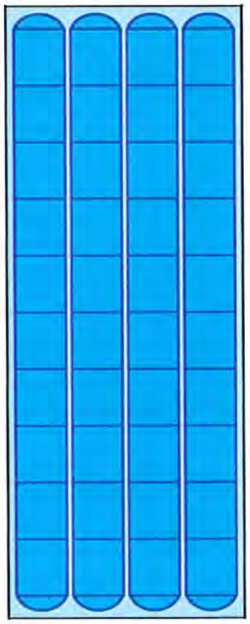
10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

40 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 4,517.3 cf Chamber Storage

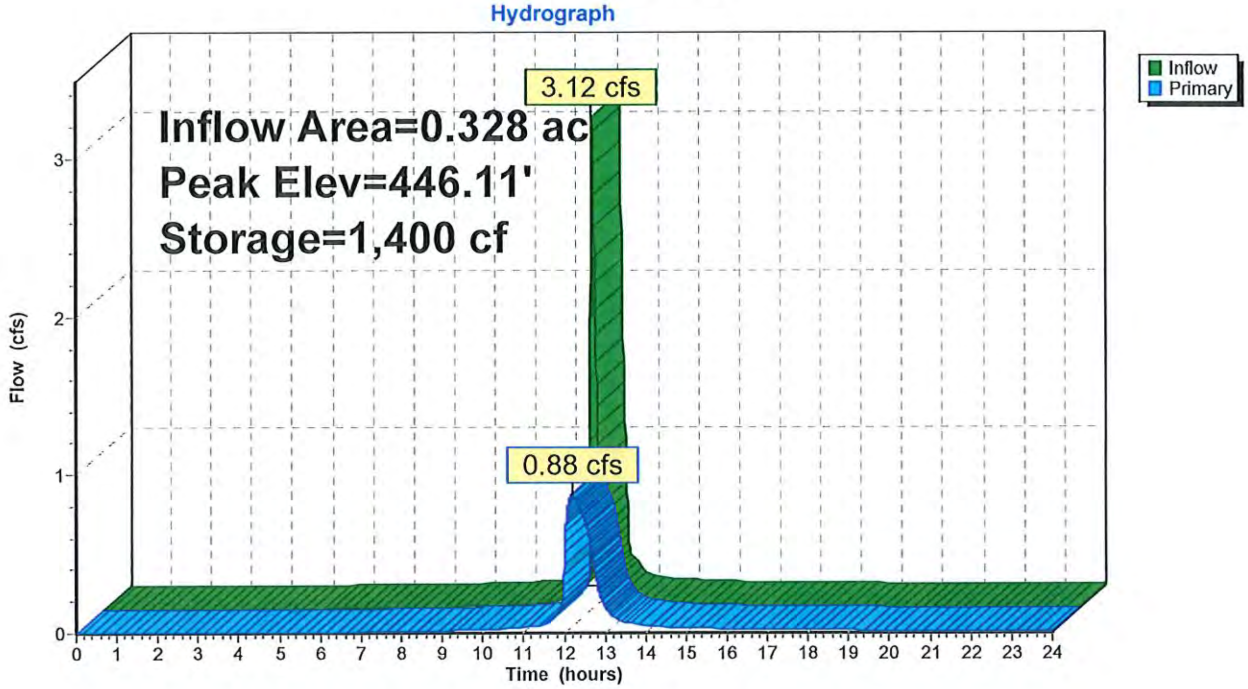
12,735.5 cf Field - 4,517.3 cf Chambers = 8,218.2 cf Stone x 40.0% Voids = 3,287.3 cf Stone Storage

Chamber Storage + Stone Storage = 7,804.6 cf = 0.179 af
Overall Storage Efficiency = 61.3%
Overall System Size = 77.40' x 29.92' x 5.50'

40 Chambers
471.7 cy Field
304.4 cy Stone



Pond 5P: UG A5


Hydrograph
3.12 cfs
Inflow Area=0.328 ac
Peak Elev=446.11'
Storage=1,400 cf
0.88 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Summary for Pond 6P: Diversion Structure A5

Inflow Area = 0.648 ac, 99.23% Impervious, Inflow Depth > 2.38" for 1-yr event
Inflow = 2.03 cfs @ 12.03 hrs, Volume= 0.128 af
Outflow = 2.03 cfs @ 12.03 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.03 hrs, Volume= 0.121 af
Routed to Pond 3P : Bio Retention Area A
Secondary = 0.95 cfs @ 12.03 hrs, Volume= 0.008 af
Routed to Pond 5P : UG A5

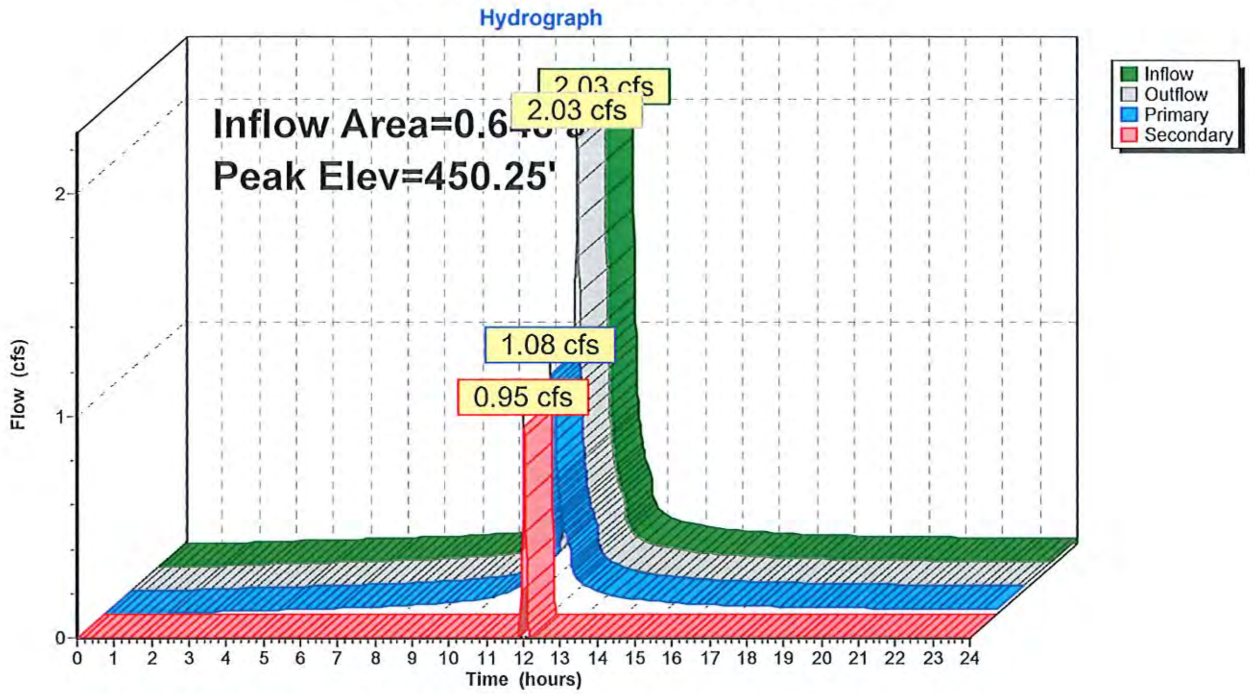
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 450.25' @ 12.03 hrs
Flood Elev= 453.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	448.50'	**6.0" Round Culvert** L= 25.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 448.50' / 448.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	449.75'	**12.0" Round Culvert** L= 12.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 449.75' / 449.50' S= 0.0208 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.08 cfs @ 12.03 hrs HW=450.25' TW=447.54' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.08 cfs @ 5.51 fps)

Secondary OutFlow Max=0.94 cfs @ 12.03 hrs HW=450.25' TW=445.67' (Dynamic Tailwater)
↑—**2=Culvert** (Inlet Controls 0.94 cfs @ 2.41 fps)

Pond 6P: Diversion Structure A5



Summary for Pond 7P: UG A2

Inflow	=	1.54 cfs @	12.03 hrs, Volume=	0.015 af
Outflow	=	0.40 cfs @	12.11 hrs, Volume=	0.010 af, Atten= 74%, Lag= 5.0 min
Primary	=	0.40 cfs @	12.11 hrs, Volume=	0.010 af

Routed to Link 2L : Study Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 445.68' @ 12.11 hrs Surf.Area= 0.022 ac Storage= 0.012 af

Plug-Flow detention time= 30.4 min calculated for 0.010 af (69% of inflow)
Center-of-Mass det. time= 29.2 min (751.3 - 722.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	444.75'	0.016 af	**18.17'W x 53.04'L x 2.33'H Field A** 0.052 af Overall - 0.012 af Embedded = 0.040 af x 40.0% Voids
#2A	445.25'	0.012 af	**ADS_StormTech SC-310 +Cap** x 35 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 35 Chambers in 5 Rows
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	444.75'	**15.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 444.75' / 444.20' S= 0.0110 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	445.25'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.40 cfs @ 12.11 hrs HW=445.68' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.40 cfs of 3.22 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.40 cfs @ 2.23 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 7P: UG A2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)
Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

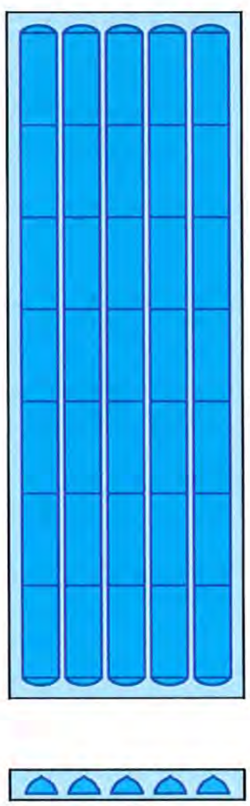
7 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 51.04' Row Length +12.0" End Stone x 2 = 53.04' Base Length
5 Rows x 34.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 18.17' Base Width
6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

35 Chambers x 14.7 cf = 516.0 cf Chamber Storage

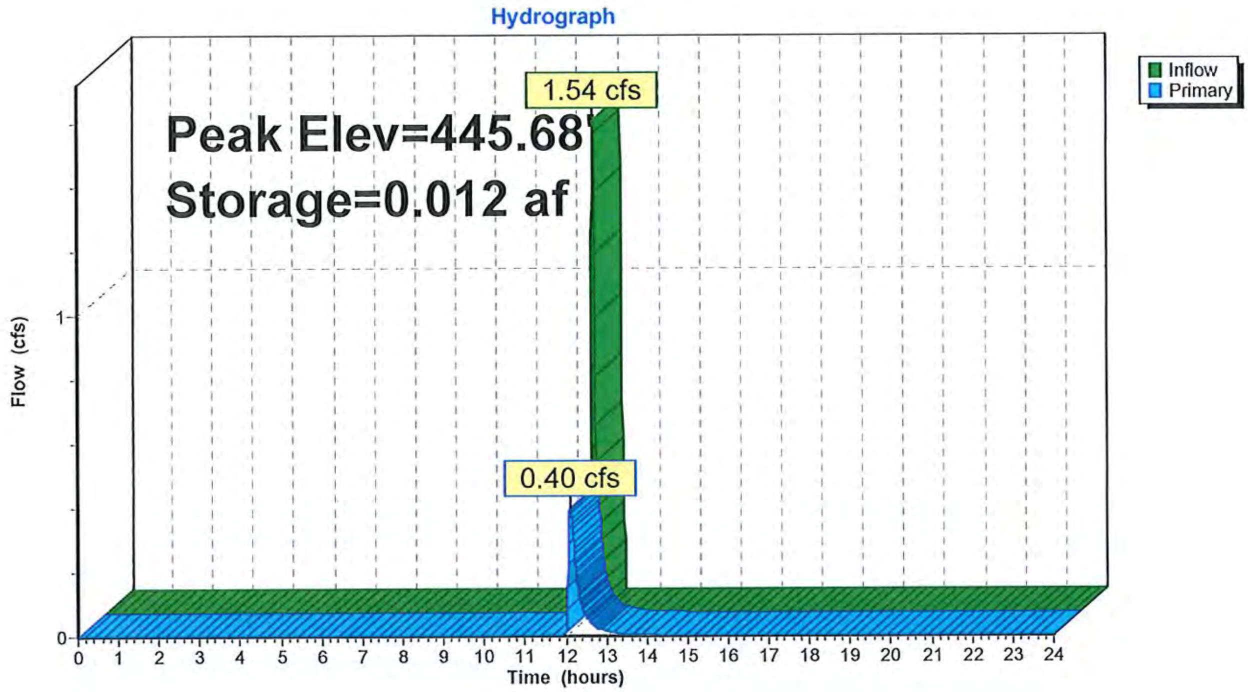
2,248.3 cf Field - 516.0 cf Chambers = 1,732.3 cf Stone x 40.0% Voids = 692.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,208.9 cf = 0.028 af
Overall Storage Efficiency = 53.8%
Overall System Size = 53.04' x 18.17' x 2.33'

35 Chambers
83.3 cy Field
64.2 cy Stone



Pond 7P: UG A2


Hydrograph
Inflow
Primary
1.54 cfs
0.40 cfs
Peak Elev=445.68'
Storage=0.012 af
Flow (cfs)
1
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time (hours)

Summary for Pond 8P: Diversion Structure A2

Inflow Area = 0.893 ac, 86.23% Impervious, Inflow Depth > 2.07" for 1-yr event
Inflow = 2.58 cfs @ 12.03 hrs, Volume= 0.154 af
Outflow = 2.58 cfs @ 12.03 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min
Primary = 1.04 cfs @ 12.03 hrs, Volume= 0.139 af
Routed to Pond 3P : Bio Retention Area A
Secondary = 1.54 cfs @ 12.03 hrs, Volume= 0.015 af
Routed to Pond 7P : UG A2

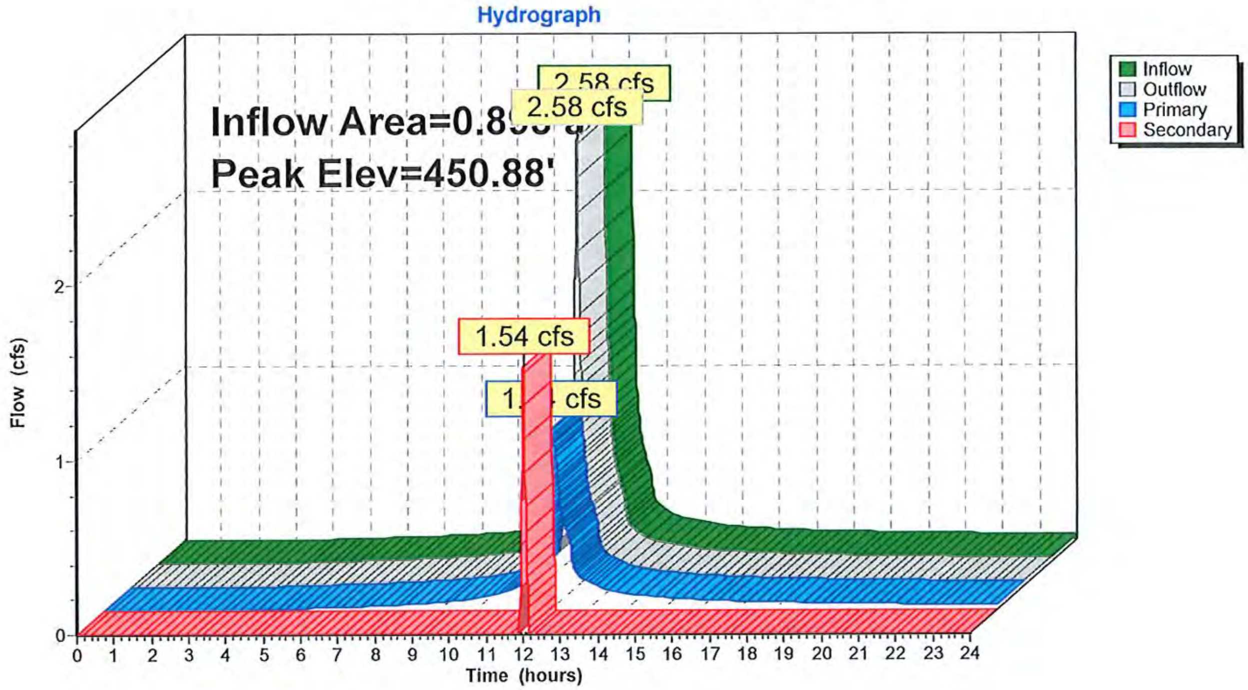
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 450.88' @ 12.03 hrs
Flood Elev= 452.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	448.75'	**6.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 448.75' / 448.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	450.28'	**15.0" Round Culvert** L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 450.28' / 448.00' S= 0.1520 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.04 cfs @ 12.03 hrs HW=450.88' TW=447.54' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.04 cfs @ 5.31 fps)

Secondary OutFlow Max=1.53 cfs @ 12.03 hrs HW=450.88' TW=445.39' (Dynamic Tailwater)
2=Culvert (Inlet Controls 1.53 cfs @ 2.64 fps)

Pond 8P: Diversion Structure A2

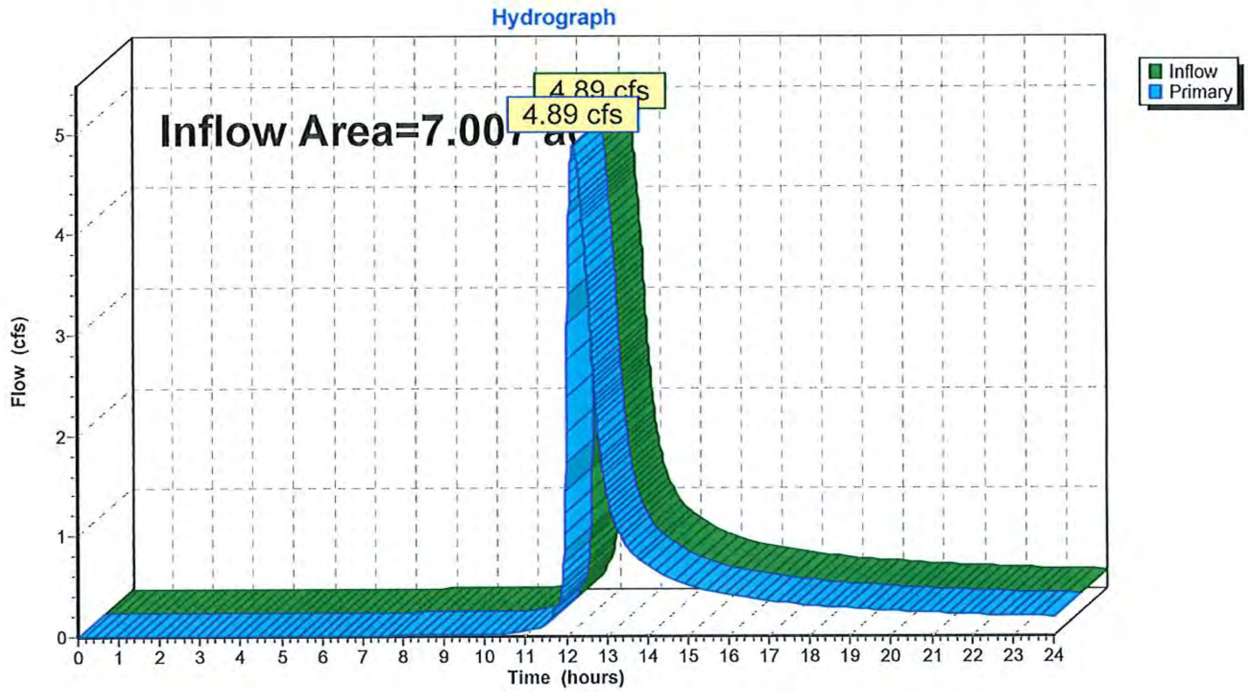


Summary for Link 2L: Study Point A

Inflow Area =	7.007 ac, 43.16% Impervious, Inflow Depth > 1.09" for 1-yr event		
Inflow =	4.89 cfs @ 12.20 hrs, Volume=	0.637 af	
Primary =	4.89 cfs @ 12.20 hrs, Volume=	0.637 af, Atten= 0%, Lag= 0.0 min	

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 2L: Study Point A



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PR A-1 Runoff Area=1.757 ac 11.04% Impervious Runoff Depth>2.34"
Flow Length=515' Tc=6.6 min CN=77 Runoff=5.02 cfs 0.343 af

Subcatchment 4S: PR A-2 Runoff Area=0.893 ac 86.23% Impervious Runoff Depth>4.09"
Flow Length=327' Tc=5.0 min CN=95 Runoff=4.52 cfs 0.304 af

Subcatchment 5S: PR A-3 Runoff Area=1.737 ac 5.12% Impervious Runoff Depth>2.60"
Flow Length=303' Tc=8.3 min CN=80 Runoff=5.09 cfs 0.376 af

Subcatchment 6S: PR A-4 Runoff Area=1.644 ac 63.75% Impervious Runoff Depth>3.45"
Flow Length=129' Tc=9.3 min CN=89 Runoff=6.03 cfs 0.473 af

Subcatchment 7S: PR A-5 Runoff Area=0.648 ac 99.23% Impervious Runoff Depth>4.43"
Flow Length=227' Tc=5.0 min CN=98 Runoff=3.39 cfs 0.239 af

Subcatchment 8S: PR A-6 Runoff Area=0.328 ac 85.37% Impervious Runoff Depth>4.09"
Flow Length=301' Tc=5.0 min CN=95 Runoff=1.66 cfs 0.112 af

Pond 3P: Bio Retention Area A Peak Elev=447.80' Storage=11,290 cf Inflow=8.74 cfs 1.215 af
Outflow=7.01 cfs 1.045 af

Pond 4P: Diversion Structure A-4 Peak Elev=452.87' Inflow=6.03 cfs 0.473 af
Primary=1.41 cfs 0.371 af Secondary=4.62 cfs 0.102 af Outflow=6.03 cfs 0.473 af

Pond 5P: UG A5 Peak Elev=447.38' Storage=3,784 cf Inflow=7.72 cfs 0.239 af
Outflow=3.73 cfs 0.238 af

Pond 6P: Diversion Structure A5 Peak Elev=450.60' Inflow=3.39 cfs 0.239 af
Primary=1.20 cfs 0.213 af Secondary=2.18 cfs 0.026 af Outflow=3.39 cfs 0.239 af

Pond 7P: UG A2 Peak Elev=446.30' Storage=0.020 af Inflow=3.39 cfs 0.050 af
Outflow=2.97 cfs 0.045 af

Pond 8P: Diversion Structure A2 Peak Elev=451.24' Inflow=4.52 cfs 0.304 af
Primary=1.13 cfs 0.254 af Secondary=3.39 cfs 0.050 af Outflow=4.52 cfs 0.304 af

Link 2L: Study Point A Inflow=15.44 cfs 1.671 af
Primary=15.44 cfs 1.671 af

Total Runoff Area = 7.007 ac Runoff Volume = 1.847 af Average Runoff Depth = 3.16"
56.84% Pervious = 3.983 ac 43.16% Impervious = 3.024 ac

Summary for Subcatchment 1S: PR A-1

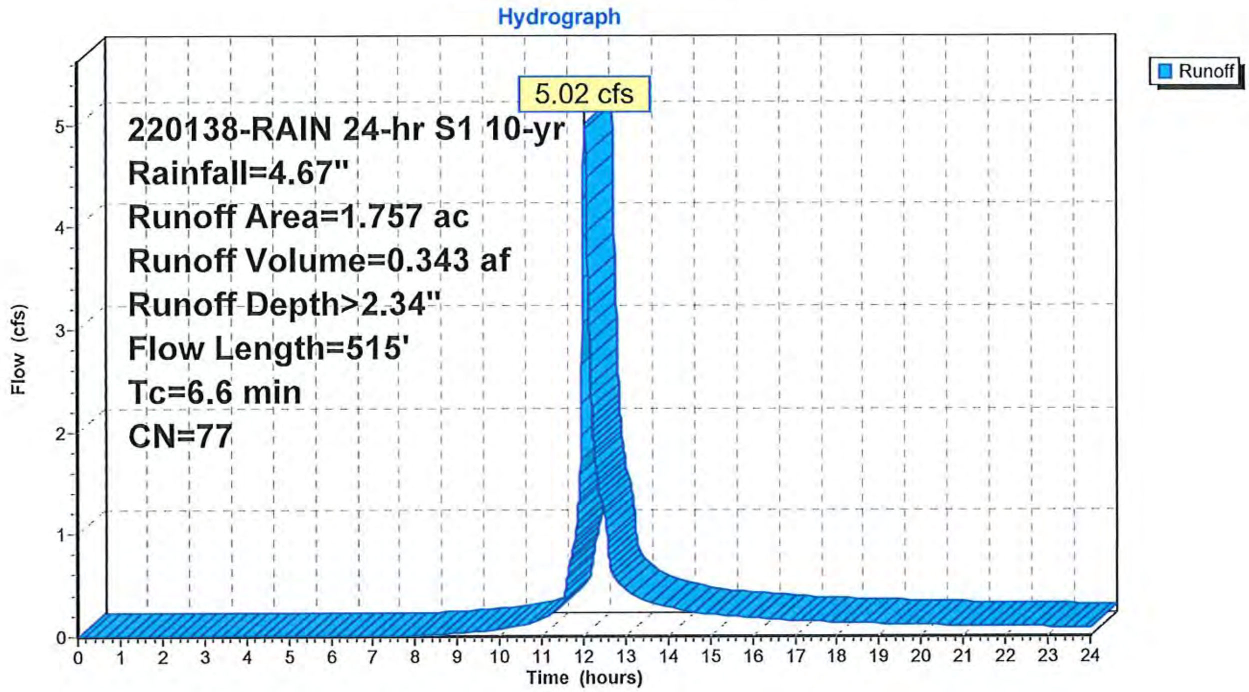
Runoff = 5.02 cfs @ 12.05 hrs, Volume= 0.343 af, Depth> 2.34"
Routed to Link 2L : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 10-yr Rainfall=4.67"

Area (ac)	CN	Description
0.595	80	>75% Grass cover, Good, HSG D
0.087	74	>75% Grass cover, Good, HSG C
0.881	70	Woods, Good, HSG C
0.194	98	Paved parking, HSG D
1.757	77	Weighted Average
1.563		88.96% Pervious Area
0.194		11.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.1400	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
1.5	265	0.0340	2.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	150	0.0667	17.81	213.76	**Channel Flow,** Area= 12.0 sf Perim= 9.6' r= 1.25' n= 0.025 Earth, grassed & winding
6.6	515	Total			

Subcatchment 1S: PR A-1



Summary for Subcatchment 4S: PR A-2

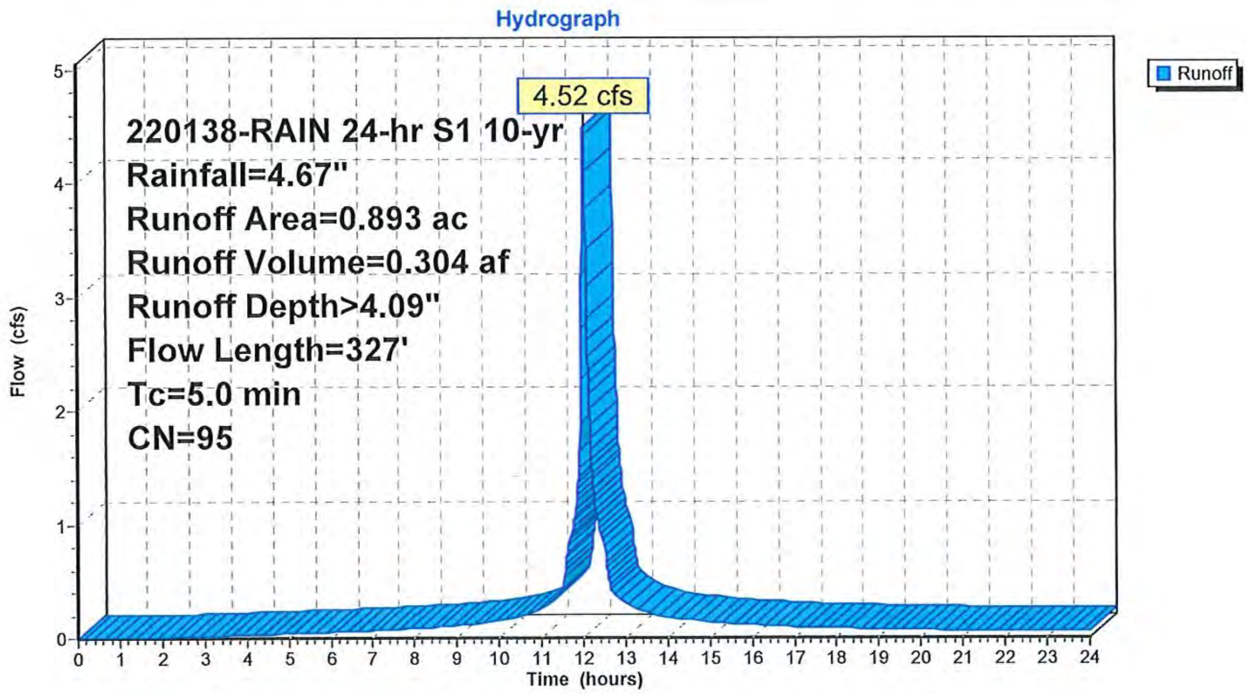
Runoff = 4.52 cfs @ 12.03 hrs, Volume= 0.304 af, Depth> 4.09"
Routed to Pond 8P : Diversion Structure A2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 10-yr Rainfall=4.67"

Area (ac)	CN	Description
0.069	80	>75% Grass cover, Good, HSG D
0.054	74	>75% Grass cover, Good, HSG C
0.770	98	Paved parking, HSG D
0.893	95	Weighted Average
0.123		13.77% Pervious Area
0.770		86.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0375	1.59		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.60"
0.1	227	0.0132	31.22	121.74	**Channel Flow,** Area= 3.9 sf Perim= 1.2' r= 3.25' n= 0.012
1.1	327	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: PR A-2



Summary for Subcatchment 5S: PR A-3

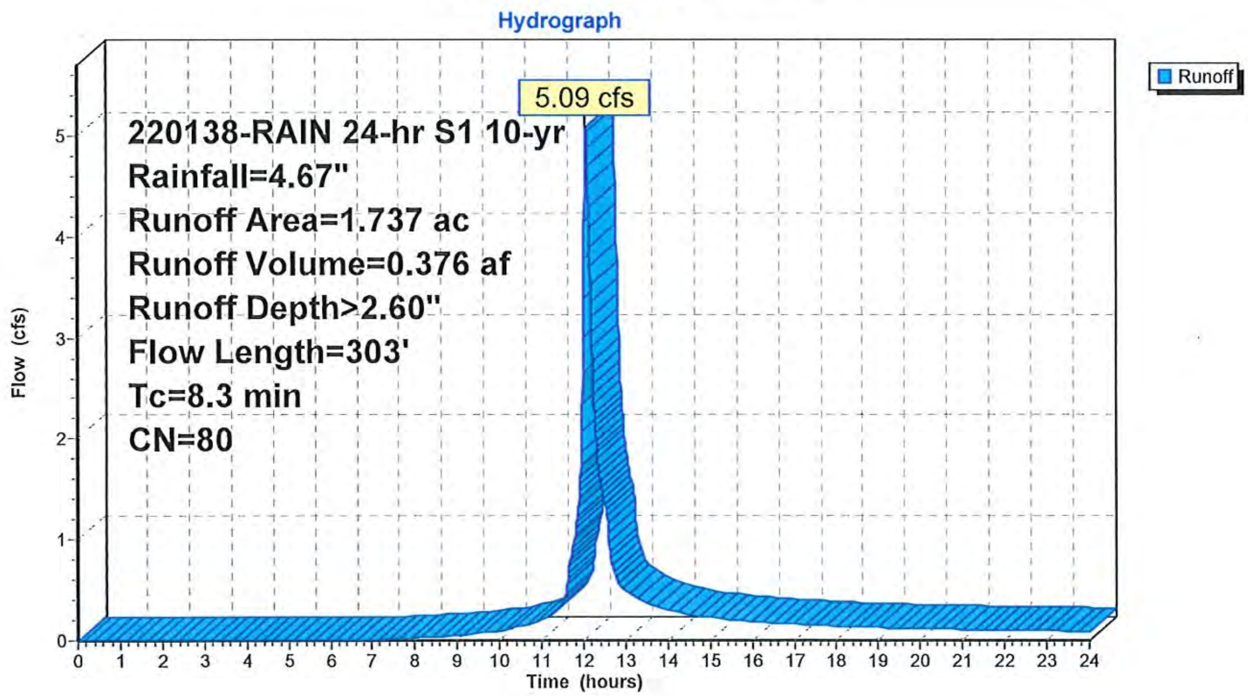
Runoff = 5.09 cfs @ 12.07 hrs, Volume= 0.376 af, Depth> 2.60"
Routed to Pond 3P : Bio Retention Area A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 10-yr Rainfall=4.67"

Area (ac)	CN	Description
1.467	80	>75% Grass cover, Good, HSG D
0.181	74	>75% Grass cover, Good, HSG C
0.089	98	Paved parking, HSG D
1.737	80	Weighted Average
1.648		94.88% Pervious Area
0.089		5.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0500	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
0.7	178	0.0730	4.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	25	0.2000	7.20		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.3	303	Total			

Subcatchment 5S: PR A-3



Summary for Subcatchment 6S: PR A-4

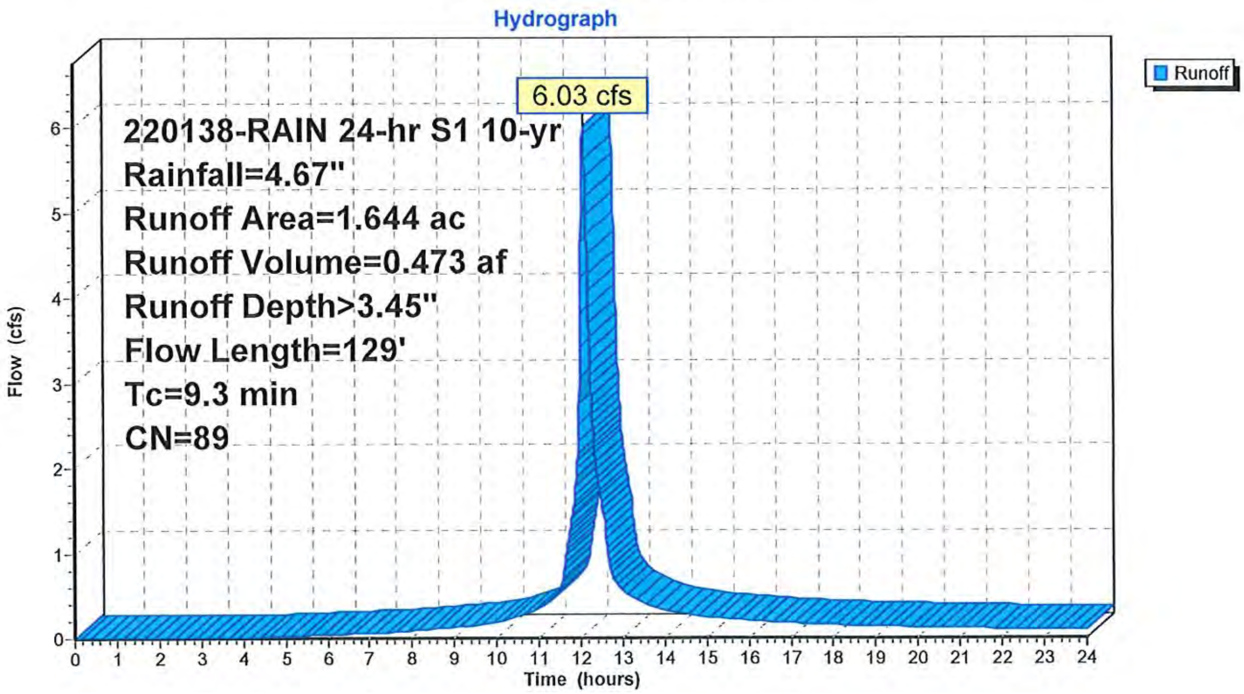
Runoff = 6.03 cfs @ 12.08 hrs, Volume= 0.473 af, Depth> 3.45"
Routed to Pond 4P : Diversion Structure A-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 10-yr Rainfall=4.67"

Area (ac)	CN	Description
0.596	74	>75% Grass cover, Good, HSG C
1.048	98	Paved parking, HSG D
1.644	89	Weighted Average
0.596		36.25% Pervious Area
1.048		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
0.0	9	0.0970	5.01		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	20	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	129	Total			

Subcatchment 6S: PR A-4



Summary for Subcatchment 7S: PR A-5

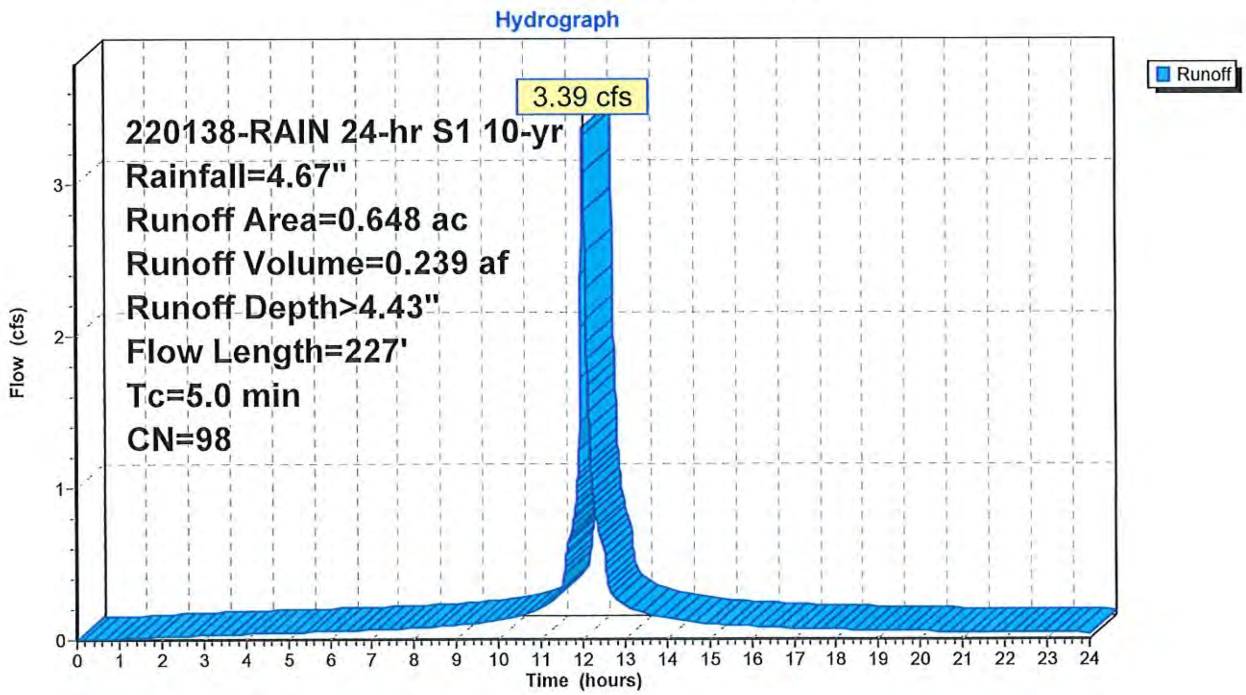
Runoff = 3.39 cfs @ 12.03 hrs, Volume= 0.239 af, Depth> 4.43"
Routed to Pond 6P : Diversion Structure A5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 10-yr Rainfall=4.67"

Area (ac)	CN	Description
0.005	80	>75% Grass cover, Good, HSG D
0.643	98	Paved parking, HSG D
0.648	98	Weighted Average
0.005		0.77% Pervious Area
0.643		99.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	92	0.3300	11.66		**Shallow Concentrated Flow, roof pitch** Paved Kv= 20.3 fps
0.5	135	0.0200	4.38	0.88	**Channel Flow,** Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.012
0.6	227	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 7S: PR A-5



Summary for Subcatchment 8S: PR A-6

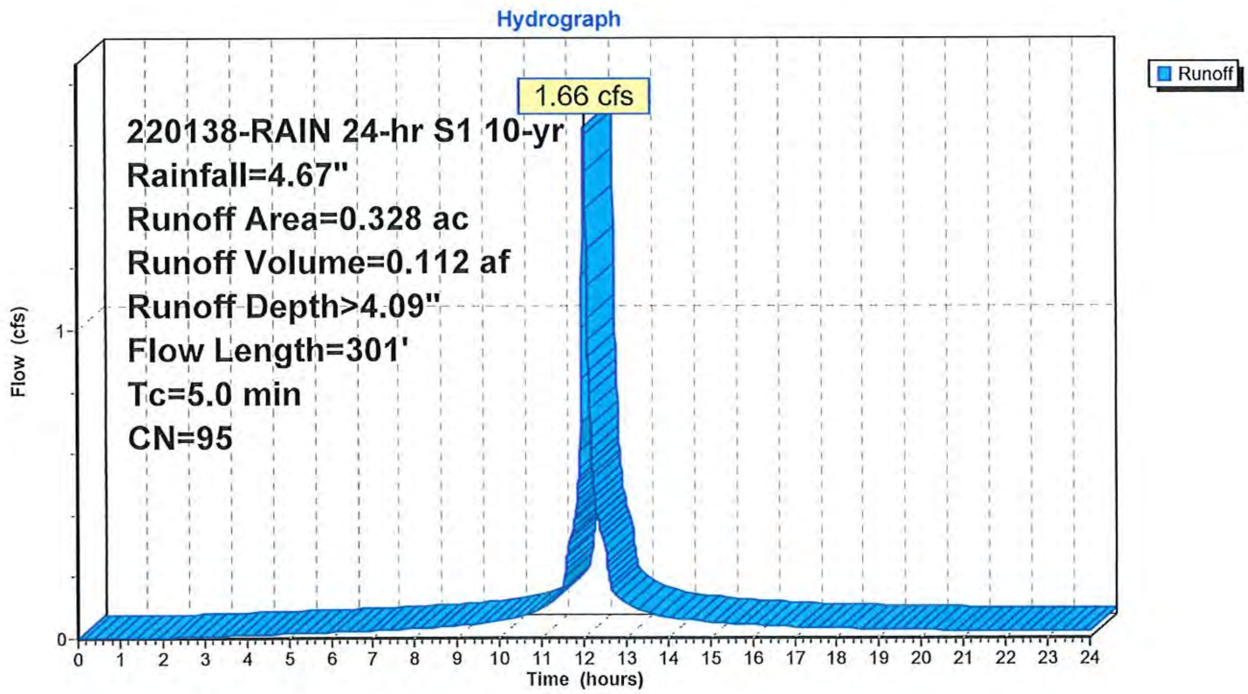
Runoff = 1.66 cfs @ 12.03 hrs, Volume= 0.112 af, Depth> 4.09"
Routed to Pond 5P : UG A5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 10-yr Rainfall=4.67"

Area (ac)	CN	Description
0.044	80	>75% Grass cover, Good, HSG D
0.004	74	>75% Grass cover, Good, HSG C
0.280	98	Paved parking, HSG D
0.328	95	Weighted Average
0.048		14.63% Pervious Area
0.280		85.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0150	1.11		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.60"
1.1	201	0.0224	3.04		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.6	301	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 8S: PR A-6



Summary for Pond 3P: Bio Retention Area A

Inflow Area = 4.922 ac, 51.81% Impervious, Inflow Depth > 2.96" for 10-yr event
Inflow = 8.74 cfs @ 12.06 hrs, Volume= 1.215 af
Outflow = 7.01 cfs @ 12.16 hrs, Volume= 1.045 af, Atten= 20%, Lag= 5.5 min
Primary = 7.01 cfs @ 12.16 hrs, Volume= 1.045 af
Routed to Link 2L : Study Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 447.80' @ 12.16 hrs Surf.Area= 14,906 sf Storage= 11,290 cf

Plug-Flow detention time= 130.2 min calculated for 1.044 af (86% of inflow)
Center-of-Mass det. time= 59.5 min (868.3 - 808.8)

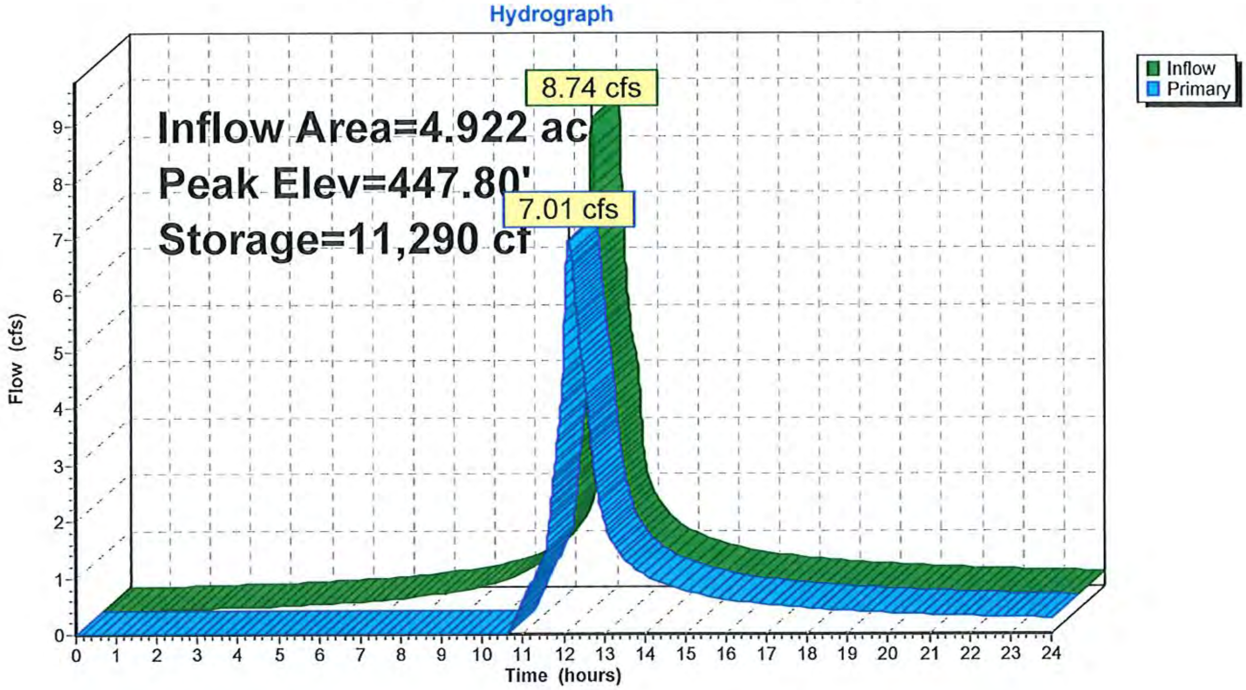
Volume	Invert	Avail.Storage	Storage Description
#1	447.00'	14,300 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
447.00	13,291	0	0
448.00	15,308	14,300	14,300

Device	Routing	Invert	Outlet Devices
#1	Primary	444.00'	**24.0" Round Culvert** L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 444.00' / 443.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	447.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.01 cfs @ 12.16 hrs HW=447.80' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 7.01 cfs of 25.32 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 7.01 cfs @ 1.79 fps)

Pond 3P: Bio Retention Area A



Summary for Pond 4P: Diversion Structure A-4

Inflow Area = 1.644 ac, 63.75% Impervious, Inflow Depth > 3.45" for 10-yr event
Inflow = 6.03 cfs @ 12.08 hrs, Volume= 0.473 af
Outflow = 6.03 cfs @ 12.08 hrs, Volume= 0.473 af, Atten= 0%, Lag= 0.0 min
Primary = 1.41 cfs @ 12.08 hrs, Volume= 0.371 af
Routed to Pond 3P : Bio Retention Area A
Secondary = 4.62 cfs @ 12.08 hrs, Volume= 0.102 af
Routed to Pond 5P : UG A5

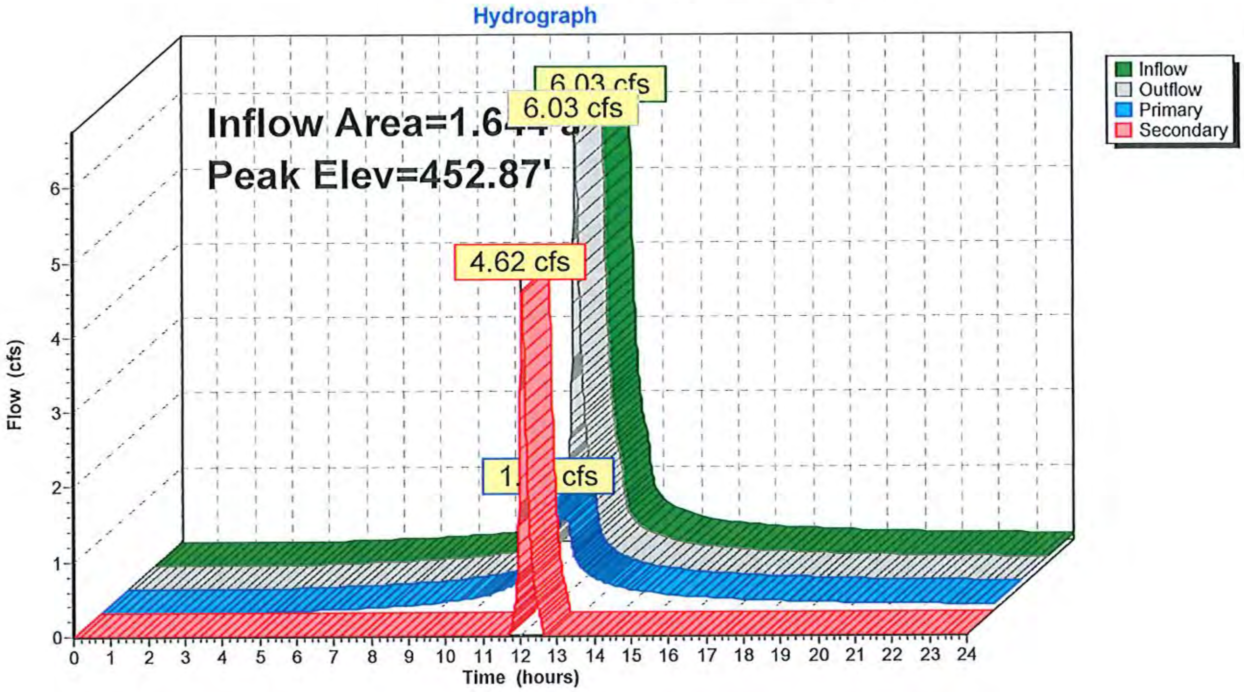
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 452.87' @ 12.08 hrs
Flood Elev= 456.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	449.40'	**6.0" Round Culvert** L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 449.40' / 449.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	451.82'	**18.0" Round Culvert** L= 150.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 451.82' / 449.50' S= 0.0155 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.41 cfs @ 12.08 hrs HW=452.87' TW=447.78' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.41 cfs @ 7.19 fps)

Secondary OutFlow Max=4.61 cfs @ 12.08 hrs HW=452.87' TW=446.96' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 4.61 cfs @ 3.49 fps)

Pond 4P: Diversion Structure A-4



Summary for Pond 5P: UG A5

Inflow Area = 0.328 ac, 85.37% Impervious, Inflow Depth > 8.76" for 10-yr event
Inflow = 7.72 cfs @ 12.04 hrs, Volume= 0.239 af
Outflow = 3.73 cfs @ 12.18 hrs, Volume= 0.238 af, Atten= 52%, Lag= 7.8 min
Primary = 3.73 cfs @ 12.18 hrs, Volume= 0.238 af
Routed to Link 2L : Study Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 447.38' @ 12.18 hrs Surf.Area= 2,316 sf Storage= 3,784 cf

Plug-Flow detention time= 27.8 min calculated for 0.238 af (99% of inflow)
Center-of-Mass det. time= 23.0 min (771.0 - 748.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.00'	3,287 cf	**29.92'W x 77.40'L x 5.50'H Field A** 12,736 cf Overall - 4,517 cf Embedded = 8,218 cf x 40.0% Voids
#2A	445.75'	4,517 cf	**ADS_StormTech MC-3500 d +Cap** x 40 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 40 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		7,805 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	444.50'	**18.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 444.50' / 440.00' S= 0.0600 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	445.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	448.50'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Device 1	446.50'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.73 cfs @ 12.18 hrs HW=447.38' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.73 cfs of 12.43 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 1.38 cfs @ 7.03 fps)
├─**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
└─**4=Orifice/Grate** (Orifice Controls 2.35 cfs @ 3.20 fps)

Pond 5P: UG A5 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

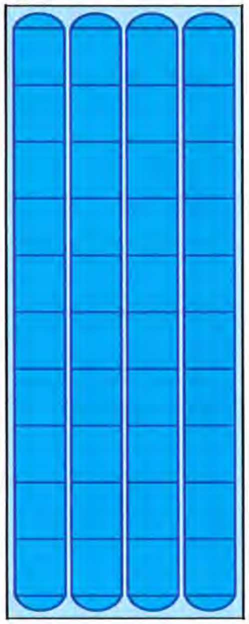
10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

40 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 4,517.3 cf Chamber Storage

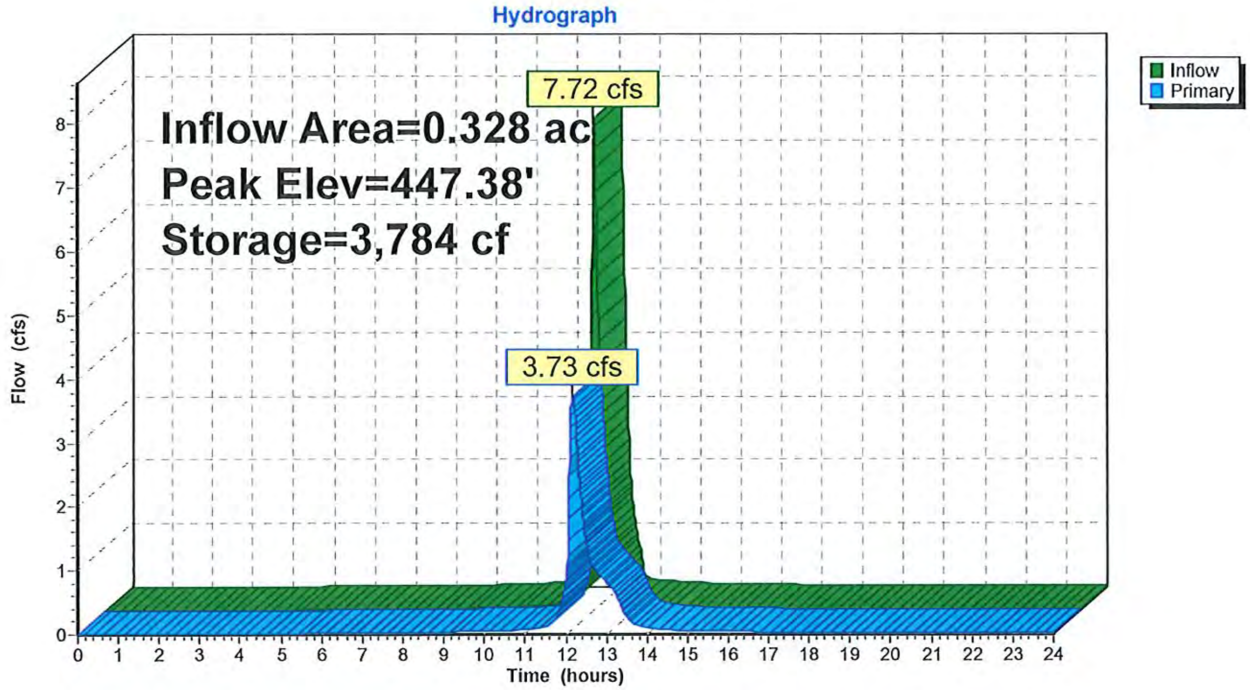
12,735.5 cf Field - 4,517.3 cf Chambers = 8,218.2 cf Stone x 40.0% Voids = 3,287.3 cf Stone Storage

Chamber Storage + Stone Storage = 7,804.6 cf = 0.179 af
Overall Storage Efficiency = 61.3%
Overall System Size = 77.40' x 29.92' x 5.50'

40 Chambers
471.7 cy Field
304.4 cy Stone



Pond 5P: UG A5


Hydrograph
7.72 cfs
3.73 cfs
Inflow Area=0.328 ac
Peak Elev=447.38'
Storage=3,784 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
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24

Summary for Pond 6P: Diversion Structure A5

Inflow Area = 0.648 ac, 99.23% Impervious, Inflow Depth > 4.43" for 10-yr event
Inflow = 3.39 cfs @ 12.03 hrs, Volume= 0.239 af
Outflow = 3.39 cfs @ 12.03 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min
Primary = 1.20 cfs @ 12.03 hrs, Volume= 0.213 af
Routed to Pond 3P : Bio Retention Area A
Secondary = 2.18 cfs @ 12.03 hrs, Volume= 0.026 af
Routed to Pond 5P : UG A5

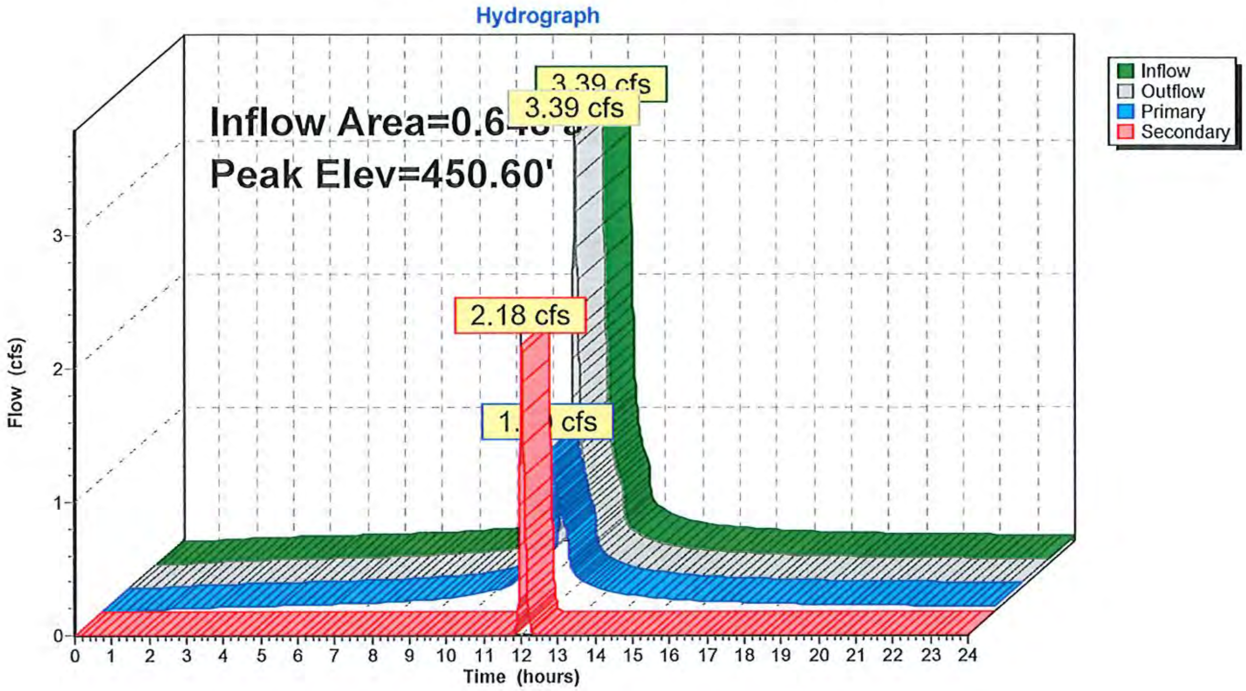
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 450.60' @ 12.03 hrs
Flood Elev= 453.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	448.50'	**6.0" Round Culvert** L= 25.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 448.50' / 448.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	449.75'	**12.0" Round Culvert** L= 12.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 449.75' / 449.50' S= 0.0208 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.20 cfs @ 12.03 hrs HW=450.60' TW=447.75' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.20 cfs @ 6.12 fps)

Secondary OutFlow Max=2.17 cfs @ 12.03 hrs HW=450.60' TW=446.36' (Dynamic Tailwater)
2=Culvert (Barrel Controls 2.17 cfs @ 4.10 fps)

Pond 6P: Diversion Structure A5



Summary for Pond 7P: UG A2

Inflow	=	3.39 cfs @	12.03 hrs, Volume=	0.050 af
Outflow	=	2.97 cfs @	12.05 hrs, Volume=	0.045 af, Atten= 12%, Lag= 1.6 min
Primary	=	2.97 cfs @	12.05 hrs, Volume=	0.045 af

Routed to Link 2L : Study Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 446.30' @ 12.05 hrs Surf.Area= 0.022 ac Storage= 0.020 af

Plug-Flow detention time= 13.9 min calculated for 0.045 af (91% of inflow)
Center-of-Mass det. time= 13.0 min (735.8 - 722.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	444.75'	0.016 af	**18.17'W x 53.04'L x 2.33'H Field A** 0.052 af Overall - 0.012 af Embedded = 0.040 af x 40.0% Voids
#2A	445.25'	0.012 af	**ADS_StormTech SC-310 +Cap** x 35 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 35 Chambers in 5 Rows
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	444.75'	**15.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 444.75' / 444.20' S= 0.0110 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	445.25'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.94 cfs @ 12.05 hrs HW=446.30' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.94 cfs of 5.68 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.84 cfs @ 4.30 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.10 cfs @ 1.78 fps)

Pond 7P: UG A2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length)
Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

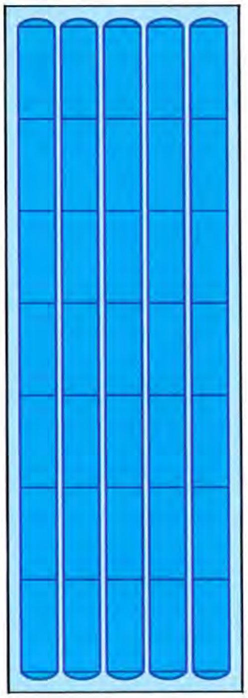
7 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 51.04' Row Length +12.0" End Stone x 2 = 53.04' Base Length
5 Rows x 34.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 18.17' Base Width
6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

35 Chambers x 14.7 cf = 516.0 cf Chamber Storage

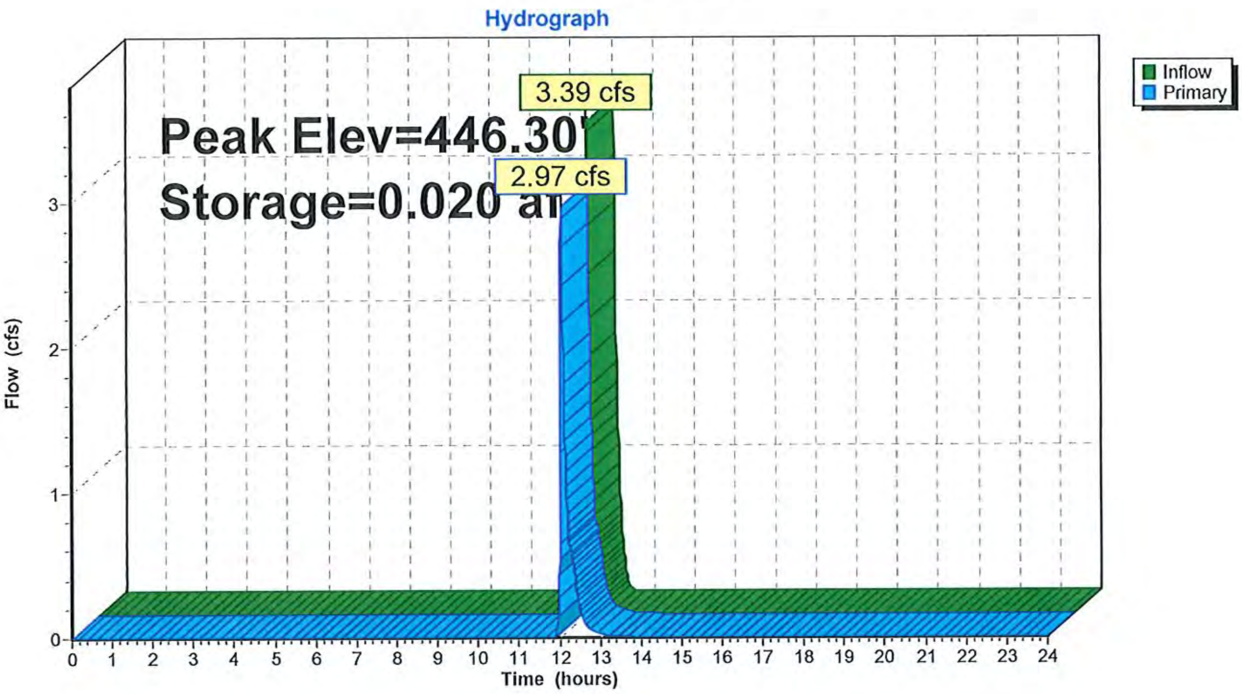
2,248.3 cf Field - 516.0 cf Chambers = 1,732.3 cf Stone x 40.0% Voids = 692.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,208.9 cf = 0.028 af
Overall Storage Efficiency = 53.8%
Overall System Size = 53.04' x 18.17' x 2.33'

35 Chambers
83.3 cy Field
64.2 cy Stone



Pond 7P: UG A2


Hydrograph
3.39 cfs
2.97 cfs
Peak Elev=446.30'
Storage=0.020 af
Inflow
Primary
Flow (cfs)
0
1
2
3
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond 8P: Diversion Structure A2

Inflow Area = 0.893 ac, 86.23% Impervious, Inflow Depth > 4.09" for 10-yr event
Inflow = 4.52 cfs @ 12.03 hrs, Volume= 0.304 af
Outflow = 4.52 cfs @ 12.03 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.0 min
Primary = 1.13 cfs @ 12.03 hrs, Volume= 0.254 af
Routed to Pond 3P : Bio Retention Area A
Secondary = 3.39 cfs @ 12.03 hrs, Volume= 0.050 af
Routed to Pond 7P : UG A2

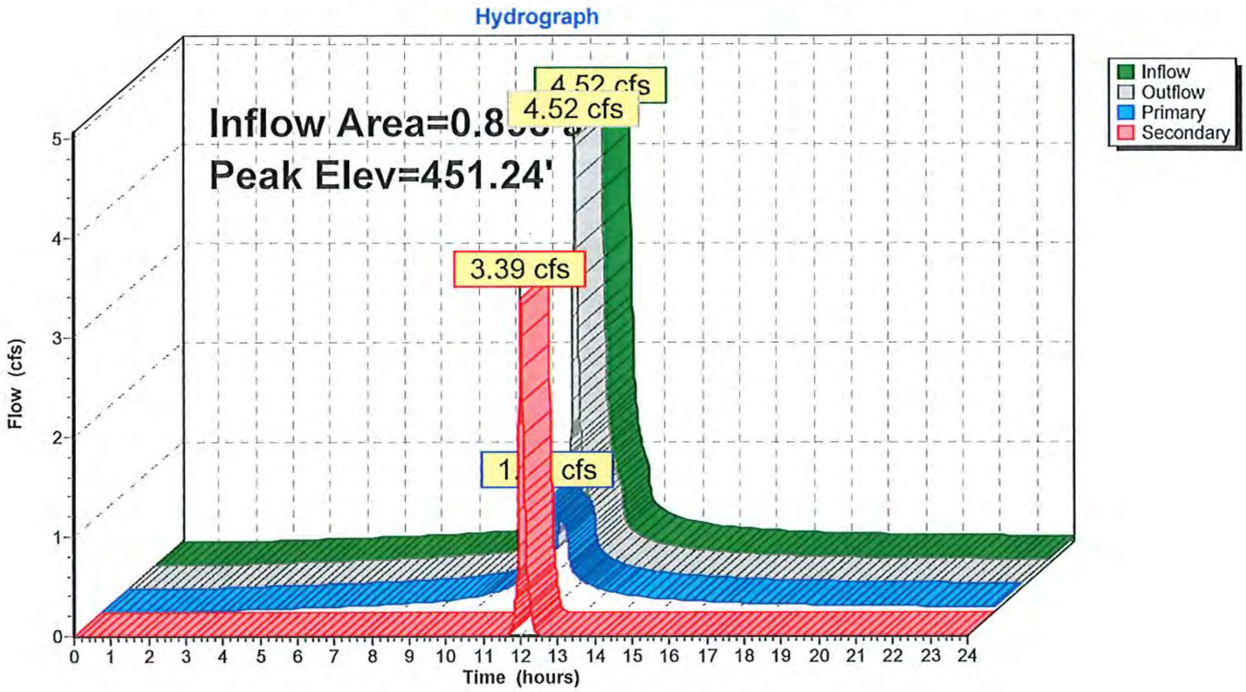
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 451.24' @ 12.03 hrs
Flood Elev= 452.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	448.75'	**6.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 448.75' / 448.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	450.28'	**15.0" Round Culvert** L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 450.28' / 448.00' S= 0.1520 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.13 cfs @ 12.03 hrs HW=451.24' TW=447.75' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.13 cfs @ 5.74 fps)

Secondary OutFlow Max=3.37 cfs @ 12.03 hrs HW=451.24' TW=446.18' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 3.37 cfs @ 3.34 fps)

Pond 8P: Diversion Structure A2

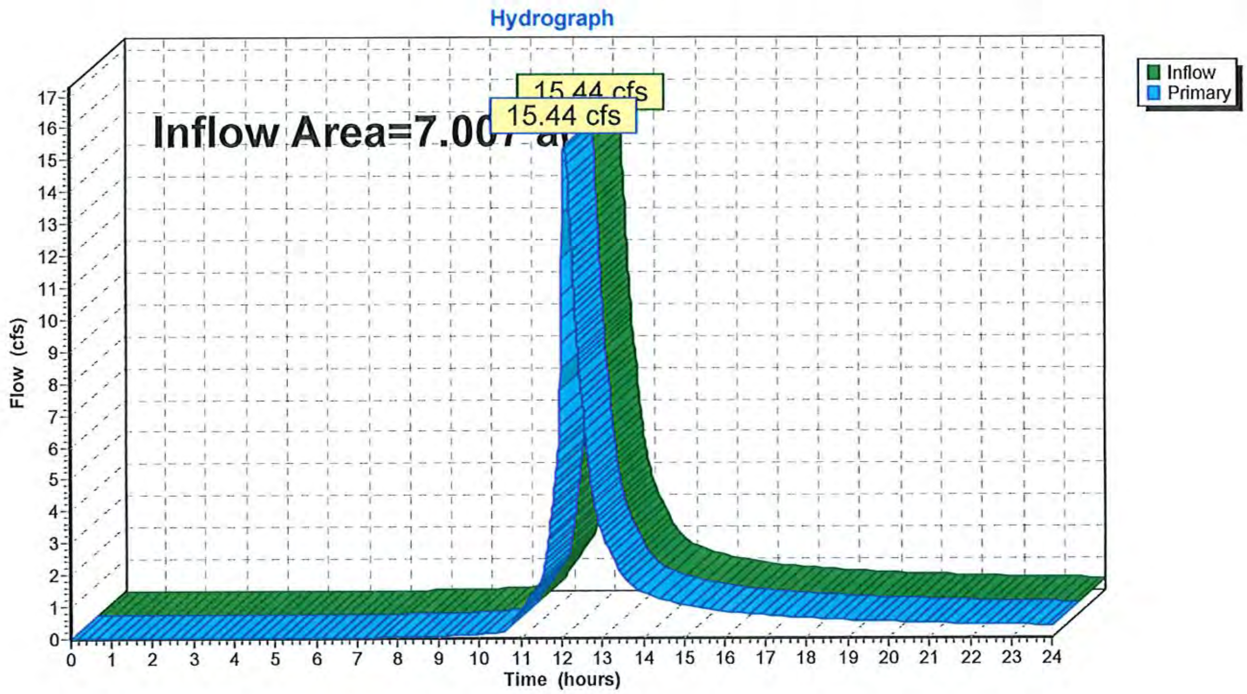


Summary for Link 2L: Study Point A

Inflow Area =	7.007 ac, 43.16% Impervious, Inflow Depth > 2.86"	for 10-yr event
Inflow =	15.44 cfs @ 12.08 hrs, Volume=	1.671 af
Primary =	15.44 cfs @ 12.08 hrs, Volume=	1.671 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 2L: Study Point A



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: PR A-1 Runoff Area=1.757 ac 11.04% Impervious Runoff Depth>5.48"
Flow Length=515' Tc=6.6 min CN=77 Runoff=10.79 cfs 0.802 af

Subcatchment 4S: PR A-2 Runoff Area=0.893 ac 86.23% Impervious Runoff Depth>7.62"
Flow Length=327' Tc=5.0 min CN=95 Runoff=7.47 cfs 0.567 af

Subcatchment 5S: PR A-3 Runoff Area=1.737 ac 5.12% Impervious Runoff Depth>5.83"
Flow Length=303' Tc=8.3 min CN=80 Runoff=10.44 cfs 0.844 af

Subcatchment 6S: PR A-4 Runoff Area=1.644 ac 63.75% Impervious Runoff Depth>6.90"
Flow Length=129' Tc=9.3 min CN=89 Runoff=10.80 cfs 0.945 af

Subcatchment 7S: PR A-5 Runoff Area=0.648 ac 99.23% Impervious Runoff Depth>7.98"
Flow Length=227' Tc=5.0 min CN=98 Runoff=5.48 cfs 0.431 af

Subcatchment 8S: PR A-6 Runoff Area=0.328 ac 85.37% Impervious Runoff Depth>7.62"
Flow Length=301' Tc=5.0 min CN=95 Runoff=2.74 cfs 0.208 af

Pond 3P: Bio Retention Area A Peak Elev=447.92' Storage=13,147 cf Inflow=14.54 cfs 2.283 af
Outflow=11.75 cfs 2.108 af

Pond 4P: Diversion Structure A-4 Peak Elev=453.74' Inflow=10.80 cfs 0.945 af
Primary=1.58 cfs 0.659 af Secondary=9.22 cfs 0.286 af Outflow=10.80 cfs 0.945 af

Pond 5P: UG A5 Peak Elev=449.03' Storage=6,382 cf Inflow=14.86 cfs 0.572 af
Outflow=12.22 cfs 0.570 af

Pond 6P: Diversion Structure A5 Peak Elev=451.40' Inflow=5.48 cfs 0.431 af
Primary=1.44 cfs 0.353 af Secondary=4.05 cfs 0.078 af Outflow=5.48 cfs 0.431 af

Pond 7P: UG A2 Peak Elev=446.55' Storage=0.023 af Inflow=6.18 cfs 0.140 af
Outflow=6.13 cfs 0.135 af

Pond 8P: Diversion Structure A2 Peak Elev=452.00' Inflow=7.47 cfs 0.567 af
Primary=1.29 cfs 0.427 af Secondary=6.18 cfs 0.140 af Outflow=7.47 cfs 0.567 af

Link 2L: Study Point A Inflow=35.94 cfs 3.615 af
Primary=35.94 cfs 3.615 af

Total Runoff Area = 7.007 ac Runoff Volume = 3.797 af Average Runoff Depth = 6.50"
56.84% Pervious = 3.983 ac 43.16% Impervious = 3.024 ac

Summary for Subcatchment 1S: PR A-1

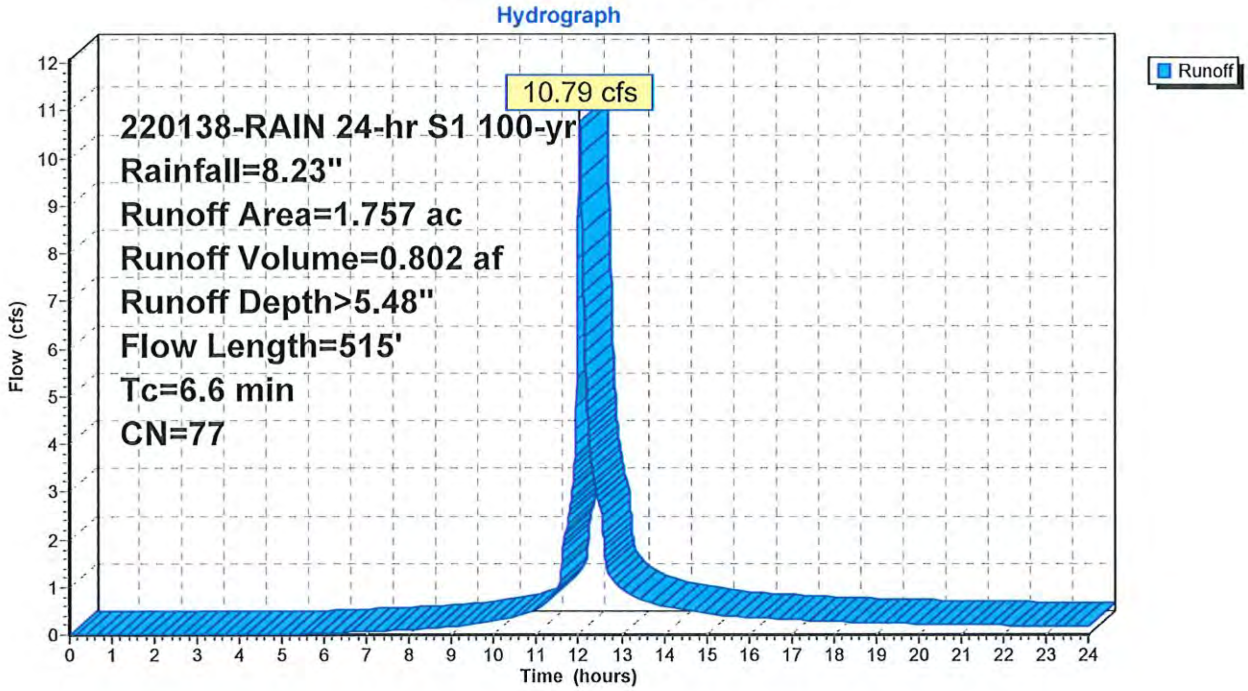
Runoff = 10.79 cfs @ 12.04 hrs, Volume= 0.802 af, Depth> 5.48"
Routed to Link 2L : Study Point A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 100-yr Rainfall=8.23"

Area (ac)	CN	Description
0.595	80	>75% Grass cover, Good, HSG D
0.087	74	>75% Grass cover, Good, HSG C
0.881	70	Woods, Good, HSG C
0.194	98	Paved parking, HSG D
1.757	77	Weighted Average
1.563		88.96% Pervious Area
0.194		11.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.1400	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
1.5	265	0.0340	2.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	150	0.0667	17.81	213.76	**Channel Flow,** Area= 12.0 sf Perim= 9.6' r= 1.25' n= 0.025 Earth, grassed & winding
6.6	515	Total			

Subcatchment 1S: PR A-1



Summary for Subcatchment 4S: PR A-2

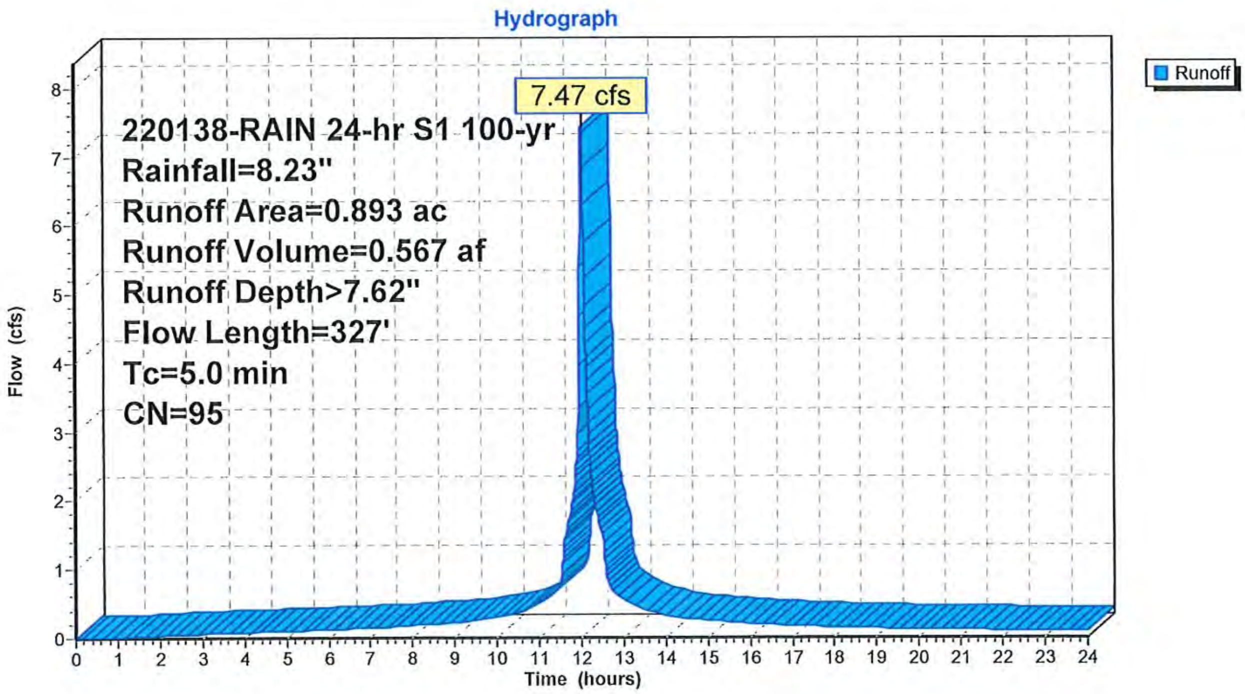
Runoff = 7.47 cfs @ 12.03 hrs, Volume= 0.567 af, Depth> 7.62"
Routed to Pond 8P : Diversion Structure A2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 100-yr Rainfall=8.23"

Area (ac)	CN	Description
0.069	80	>75% Grass cover, Good, HSG D
0.054	74	>75% Grass cover, Good, HSG C
0.770	98	Paved parking, HSG D
0.893	95	Weighted Average
0.123		13.77% Pervious Area
0.770		86.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	100	0.0375	1.59		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.60"
0.1	227	0.0132	31.22	121.74	**Channel Flow,** Area= 3.9 sf Perim= 1.2' r= 3.25' n= 0.012
1.1	327	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: PR A-2



Summary for Subcatchment 5S: PR A-3

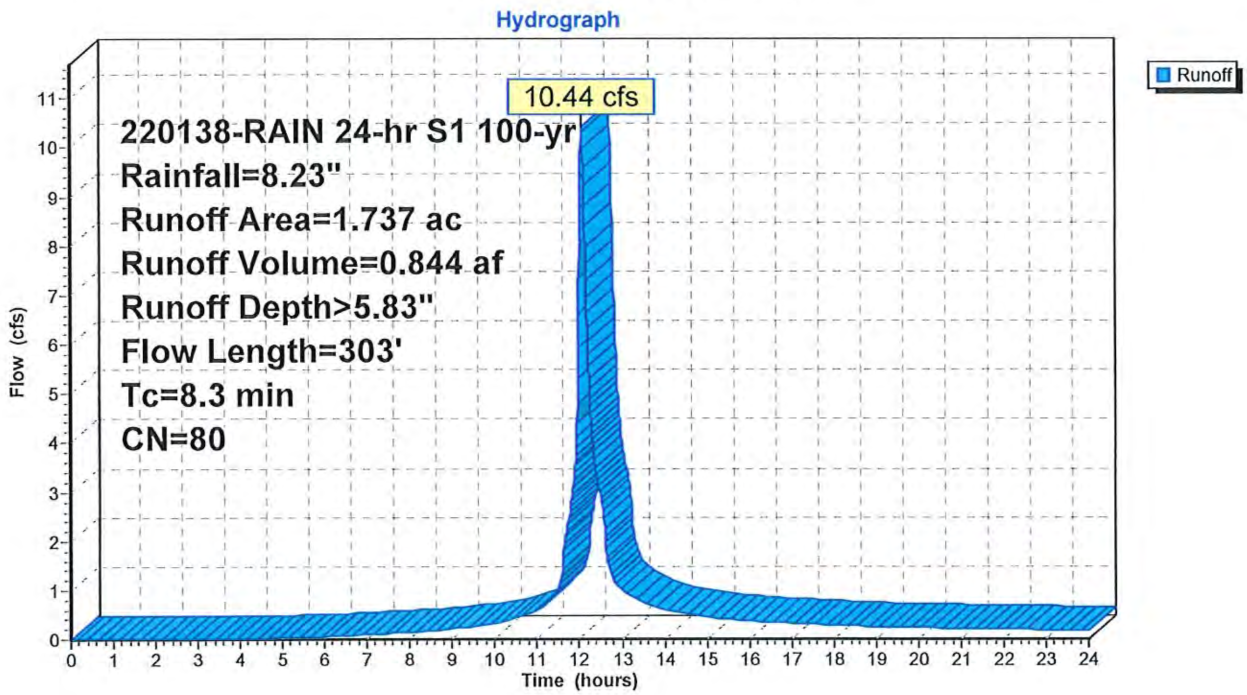
Runoff = 10.44 cfs @ 12.07 hrs, Volume= 0.844 af, Depth> 5.83"
Routed to Pond 3P : Bio Retention Area A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 100-yr Rainfall=8.23"

Area (ac)	CN	Description
1.467	80	>75% Grass cover, Good, HSG D
0.181	74	>75% Grass cover, Good, HSG C
0.089	98	Paved parking, HSG D
1.737	80	Weighted Average
1.648		94.88% Pervious Area
0.089		5.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0500	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
0.7	178	0.0730	4.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	25	0.2000	7.20		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
8.3	303	Total			

Subcatchment 5S: PR A-3



Summary for Subcatchment 6S: PR A-4

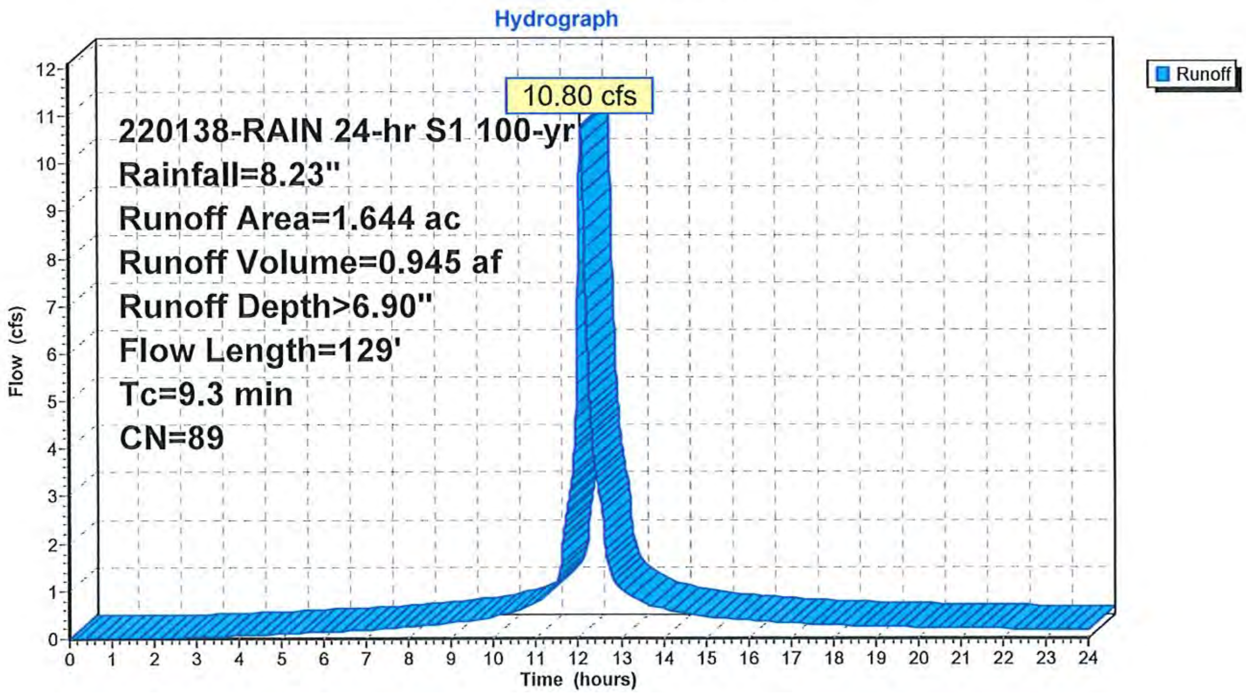
Runoff = 10.80 cfs @ 12.08 hrs, Volume= 0.945 af, Depth> 6.90"
Routed to Pond 4P : Diversion Structure A-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 100-yr Rainfall=8.23"

Area (ac)	CN	Description
0.596	74	>75% Grass cover, Good, HSG C
1.048	98	Paved parking, HSG D
1.644	89	Weighted Average
0.596		36.25% Pervious Area
1.048		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.60"
0.0	9	0.0970	5.01		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	20	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.3	129	Total			

Subcatchment 6S: PR A-4



Summary for Subcatchment 7S: PR A-5

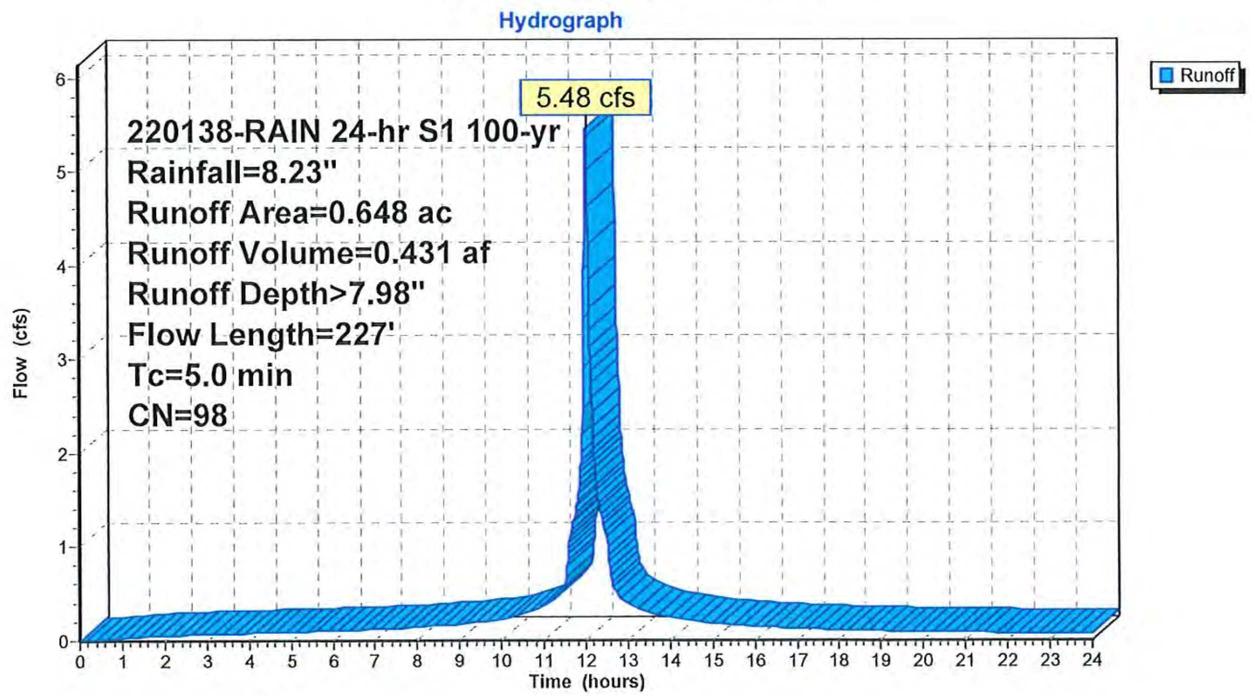
Runoff = 5.48 cfs @ 12.03 hrs, Volume= 0.431 af, Depth> 7.98"
Routed to Pond 6P : Diversion Structure A5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 100-yr Rainfall=8.23"

Area (ac)	CN	Description
0.005	80	>75% Grass cover, Good, HSG D
0.643	98	Paved parking, HSG D
0.648	98	Weighted Average
0.005		0.77% Pervious Area
0.643		99.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	92	0.3300	11.66		**Shallow Concentrated Flow, roof pitch** Paved Kv= 20.3 fps
0.5	135	0.0200	4.38	0.88	**Channel Flow,** Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.012
0.6	227	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 7S: PR A-5



Summary for Subcatchment 8S: PR A-6

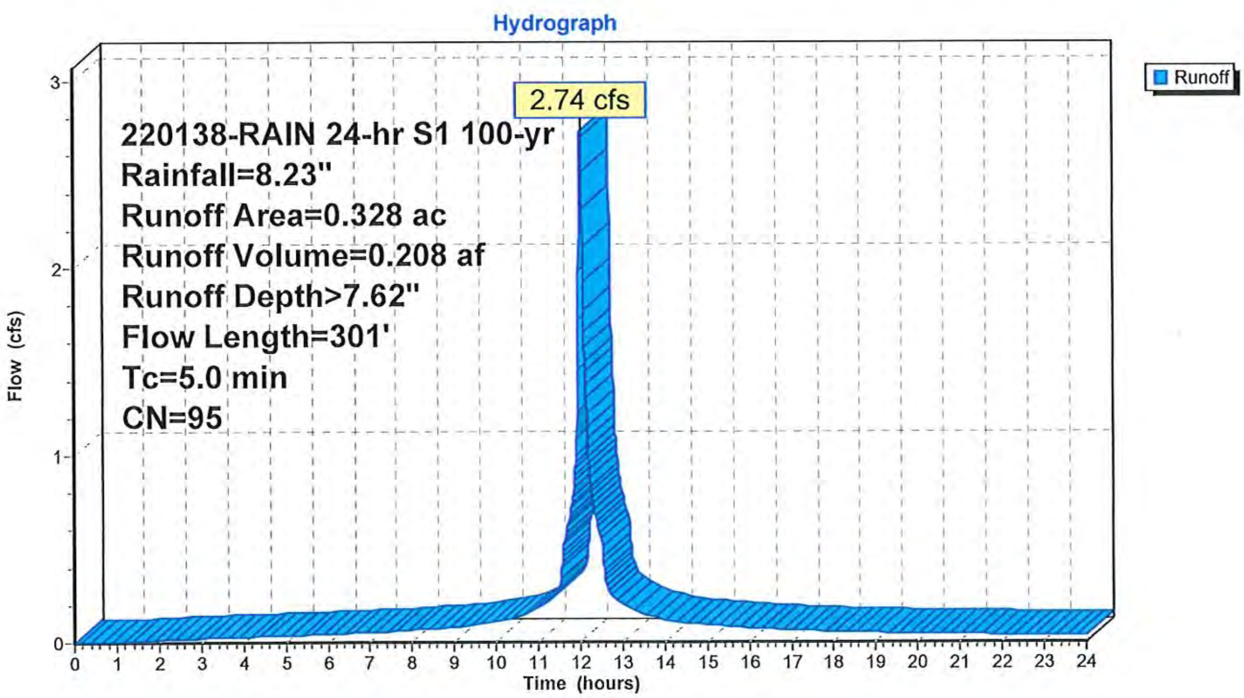
Runoff = 2.74 cfs @ 12.03 hrs, Volume= 0.208 af, Depth> 7.62"
Routed to Pond 5P : UG A5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
220138-RAIN 24-hr S1 100-yr Rainfall=8.23"

Area (ac)	CN	Description
0.044	80	>75% Grass cover, Good, HSG D
0.004	74	>75% Grass cover, Good, HSG C
0.280	98	Paved parking, HSG D
0.328	95	Weighted Average
0.048		14.63% Pervious Area
0.280		85.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0150	1.11		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.60"
1.1	201	0.0224	3.04		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.6	301	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 8S: PR A-6



Summary for Pond 3P: Bio Retention Area A

Inflow Area = 4.922 ac, 51.81% Impervious, Inflow Depth > 5.57" for 100-yr event
Inflow = 14.54 cfs @ 12.06 hrs, Volume= 2.283 af
Outflow = 11.75 cfs @ 12.14 hrs, Volume= 2.108 af, Atten= 19%, Lag= 4.8 min
Primary = 11.75 cfs @ 12.14 hrs, Volume= 2.108 af
Routed to Link 2L : Study Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 447.92' @ 12.14 hrs Surf.Area= 15,155 sf Storage= 13,147 cf

Plug-Flow detention time= 89.2 min calculated for 2.107 af (92% of inflow)
Center-of-Mass det. time= 45.0 min (838.1 - 793.1)

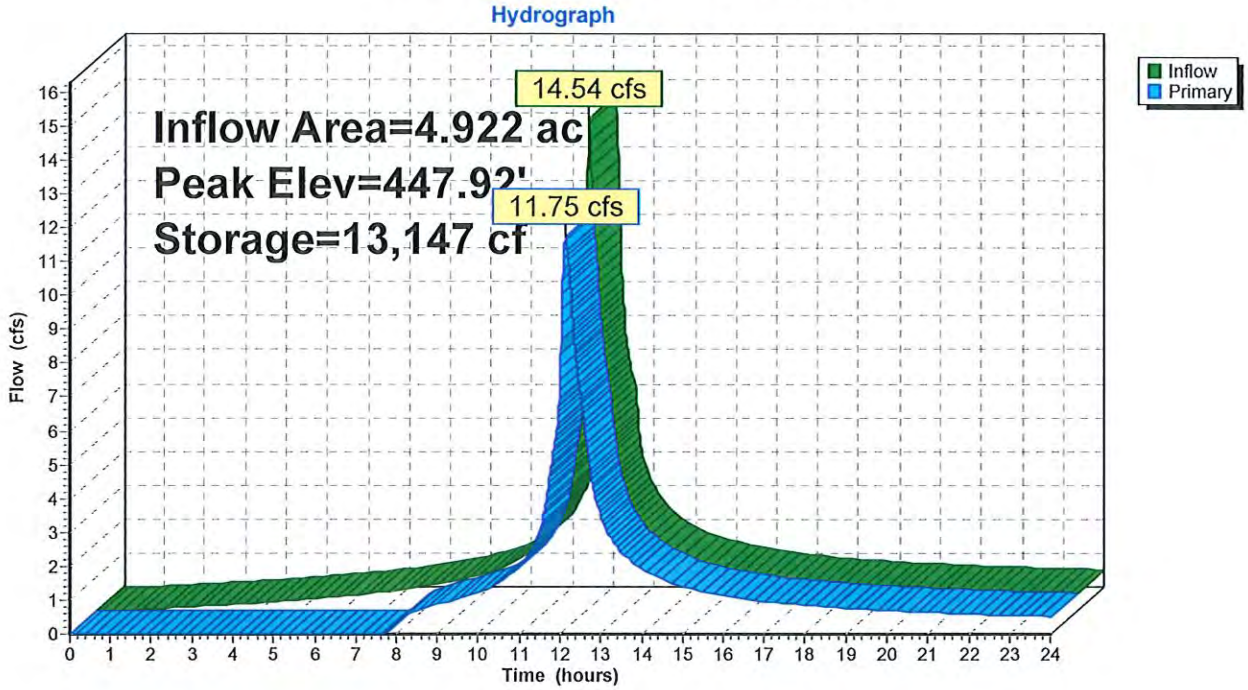
Volume	Invert	Avail.Storage	Storage Description
#1	447.00'	14,300 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
447.00	13,291	0	0
448.00	15,308	14,300	14,300

Device	Routing	Invert	Outlet Devices
#1	Primary	444.00'	**24.0" Round Culvert** L= 100.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 444.00' / 443.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	447.50'	**30.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=11.75 cfs @ 12.14 hrs HW=447.92' TW=0.00' (Dynamic Tailwater)
└1=**Culvert** (Passes 11.75 cfs of 25.87 cfs potential flow)
└2=**Orifice/Grate** (Weir Controls 11.75 cfs @ 2.13 fps)

Pond 3P: Bio Retention Area A



Summary for Pond 4P: Diversion Structure A-4

Inflow Area = 1.644 ac, 63.75% Impervious, Inflow Depth > 6.90" for 100-yr event
Inflow = 10.80 cfs @ 12.08 hrs, Volume= 0.945 af
Outflow = 10.80 cfs @ 12.08 hrs, Volume= 0.945 af, Atten= 0%, Lag= 0.0 min
Primary = 1.58 cfs @ 12.08 hrs, Volume= 0.659 af
Routed to Pond 3P : Bio Retention Area A
Secondary = 9.22 cfs @ 12.08 hrs, Volume= 0.286 af
Routed to Pond 5P : UG A5

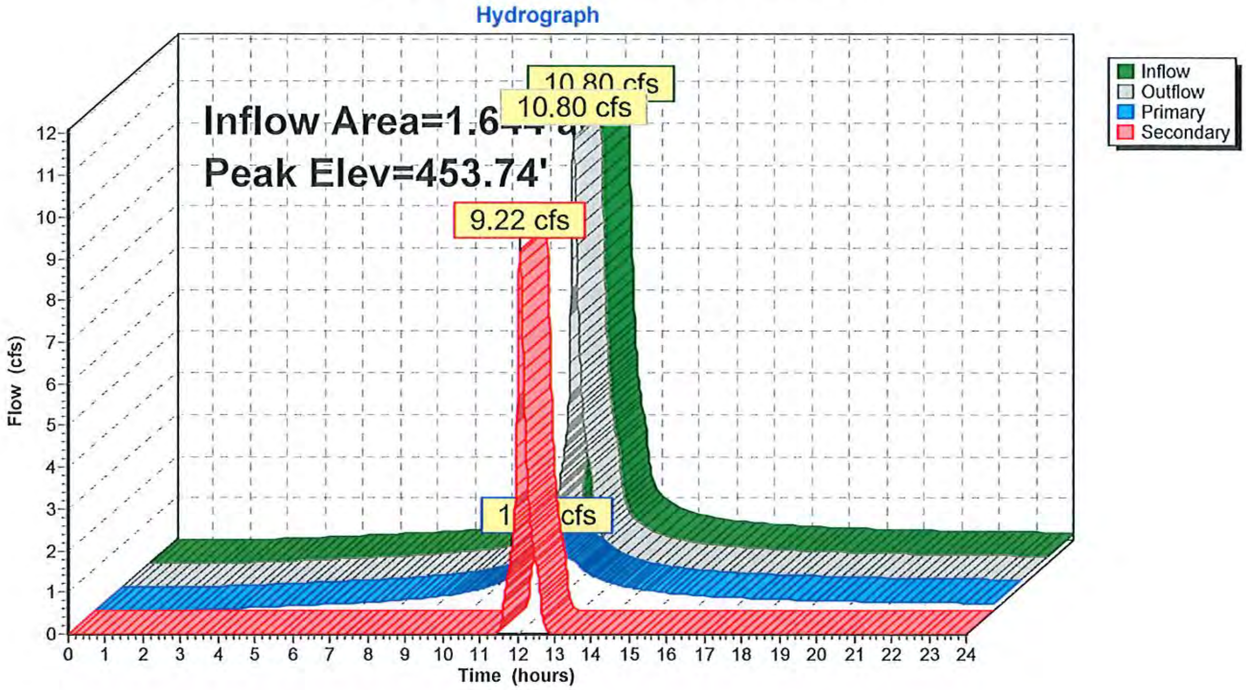
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 453.74' @ 12.08 hrs
Flood Elev= 456.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	449.40'	**6.0" Round Culvert** L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 449.40' / 449.00' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	451.82'	**18.0" Round Culvert** L= 150.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 451.82' / 449.50' S= 0.0155 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.58 cfs @ 12.08 hrs HW=453.74' TW=447.90' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.58 cfs @ 8.07 fps)

Secondary OutFlow Max=9.20 cfs @ 12.08 hrs HW=453.74' TW=448.90' (Dynamic Tailwater)
2=Culvert (Inlet Controls 9.20 cfs @ 5.21 fps)

Pond 4P: Diversion Structure A-4



Summary for Pond 5P: UG A5

Inflow Area = 0.328 ac, 85.37% Impervious, Inflow Depth > 20.93" for 100-yr event
Inflow = 14.86 cfs @ 12.05 hrs, Volume= 0.572 af
Outflow = 12.22 cfs @ 12.11 hrs, Volume= 0.570 af, Atten= 18%, Lag= 3.7 min
Primary = 12.22 cfs @ 12.11 hrs, Volume= 0.570 af
Routed to Link 2L : Study Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 449.03' @ 12.11 hrs Surf.Area= 2,316 sf Storage= 6,382 cf

Plug-Flow detention time= 19.6 min calculated for 0.570 af (100% of inflow)
Center-of-Mass det. time= 16.9 min (754.7 - 737.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	445.00'	3,287 cf	**29.92'W x 77.40'L x 5.50'H Field A** 12,736 cf Overall - 4,517 cf Embedded = 8,218 cf x 40.0% Voids
#2A	445.75'	4,517 cf	**ADS_StormTech MC-3500 d +Cap** x 40 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 40 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		7,805 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	444.50'	**18.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 444.50' / 440.00' S= 0.0600 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	445.00'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	448.50'	**4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Device 1	446.50'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.21 cfs @ 12.11 hrs HW=449.03' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 12.21 cfs of 16.53 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.84 cfs @ 9.36 fps)
  ├─**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 4.99 cfs @ 2.37 fps)
  └─**4=Orifice/Grate** (Orifice Controls 5.38 cfs @ 6.85 fps)

Pond 5P: UG A5 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

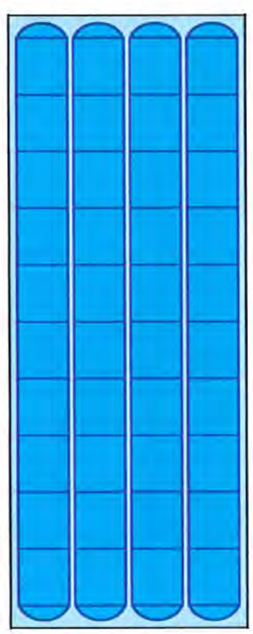
10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

40 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 4,517.3 cf Chamber Storage

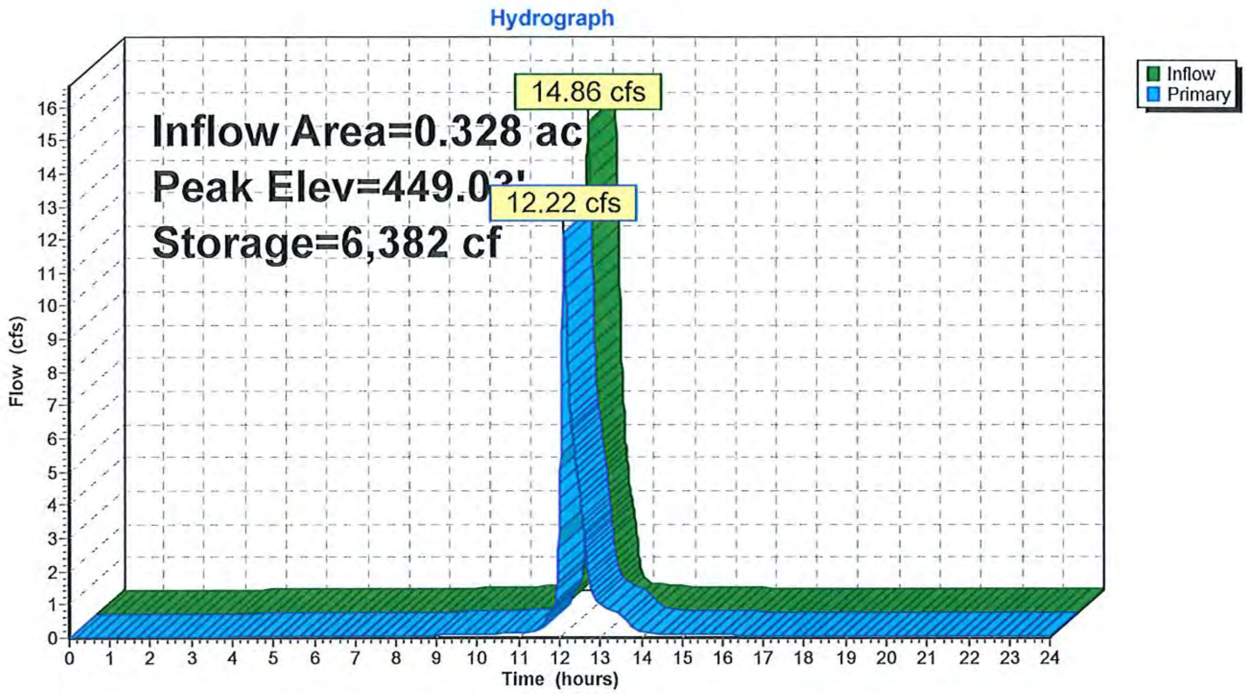
12,735.5 cf Field - 4,517.3 cf Chambers = 8,218.2 cf Stone x 40.0% Voids = 3,287.3 cf Stone Storage

Chamber Storage + Stone Storage = 7,804.6 cf = 0.179 af
Overall Storage Efficiency = 61.3%
Overall System Size = 77.40' x 29.92' x 5.50'

40 Chambers
471.7 cy Field
304.4 cy Stone



Pond 5P: UG A5


Hydrograph
Inflow
Primary
14.86 cfs
12.22 cfs
Inflow Area=0.328 ac
Peak Elev=449.0
Storage=6,382 cf
Flow (cfs)
Time (hours)

Summary for Pond 6P: Diversion Structure A5

Inflow Area = 0.648 ac, 99.23% Impervious, Inflow Depth > 7.98" for 100-yr event
Inflow = 5.48 cfs @ 12.03 hrs, Volume= 0.431 af
Outflow = 5.48 cfs @ 12.03 hrs, Volume= 0.431 af, Atten= 0%, Lag= 0.0 min
Primary = 1.44 cfs @ 12.03 hrs, Volume= 0.353 af
Routed to Pond 3P : Bio Retention Area A
Secondary = 4.05 cfs @ 12.03 hrs, Volume= 0.078 af
Routed to Pond 5P : UG A5

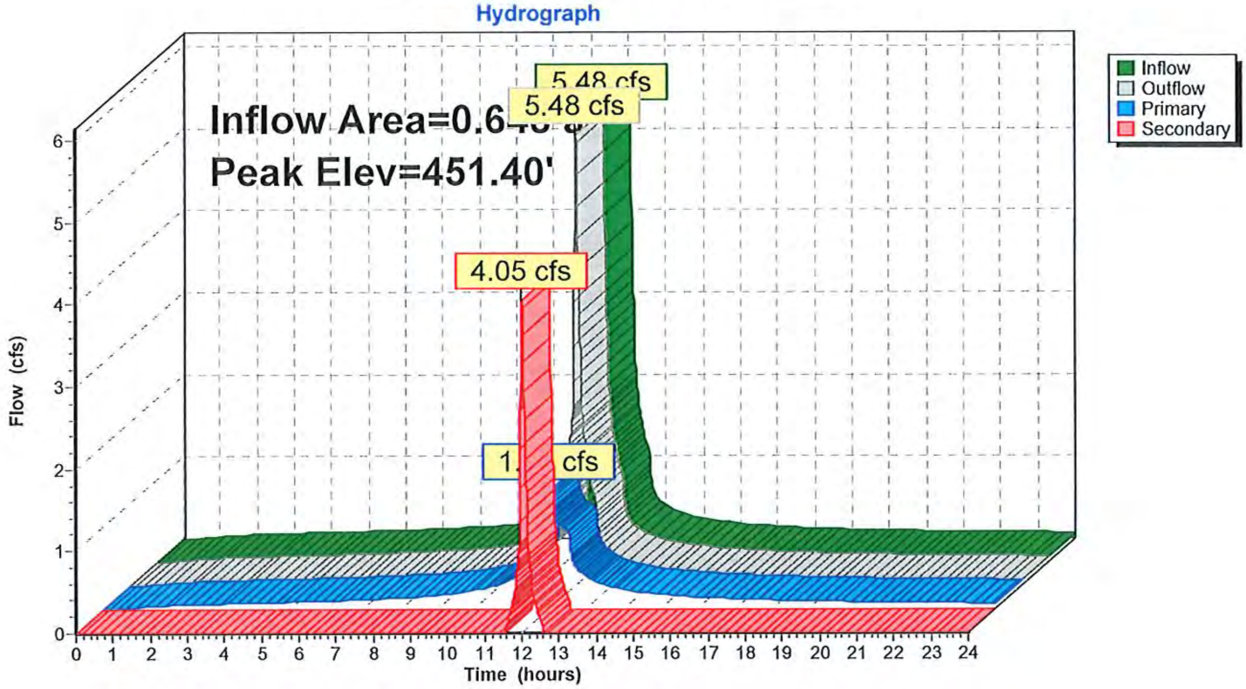
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 451.40' @ 12.03 hrs
Flood Elev= 453.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	448.50'	**6.0" Round Culvert** L= 25.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 448.50' / 448.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	449.75'	**12.0" Round Culvert** L= 12.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 449.75' / 449.50' S= 0.0208 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.43 cfs @ 12.03 hrs HW=451.39' TW=447.84' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.43 cfs @ 7.30 fps)

Secondary OutFlow Max=4.03 cfs @ 12.03 hrs HW=451.39' TW=448.00' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 4.03 cfs @ 5.13 fps)

Pond 6P: Diversion Structure A5



Summary for Pond 7P: UG A2

Inflow	=	6.18 cfs @	12.03 hrs, Volume=	0.140 af
Outflow	=	6.13 cfs @	12.03 hrs, Volume=	0.135 af, Atten= 1%, Lag= 0.4 min
Primary	=	6.13 cfs @	12.03 hrs, Volume=	0.135 af

Routed to Link 2L : Study Point A

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 446.55' @ 12.03 hrs Surf.Area= 0.022 ac Storage= 0.023 af

Plug-Flow detention time= 8.6 min calculated for 0.135 af (97% of inflow)
Center-of-Mass det. time= 7.9 min (731.2 - 723.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	444.75'	0.016 af	**18.17'W x 53.04'L x 2.33'H Field A** 0.052 af Overall - 0.012 af Embedded = 0.040 af x 40.0% Voids
#2A	445.25'	0.012 af	**ADS_StormTech SC-310 +Cap** x 35 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 35 Chambers in 5 Rows
		0.028 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	444.75'	**15.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 444.75' / 444.20' S= 0.0110 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	445.25'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	446.00'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=6.11 cfs @ 12.03 hrs HW=446.55' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 6.11 cfs of 6.40 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.97 cfs @ 4.93 fps)
3=Sharp-Crested Rectangular Weir (Weir Controls 5.14 cfs @ 2.42 fps)

Pond 7P: UG A2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)
Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

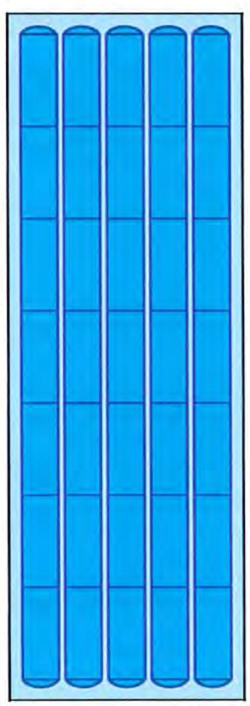
7 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 51.04' Row Length +12.0" End Stone x 2 = 53.04' Base Length
5 Rows x 34.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 18.17' Base Width
6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

35 Chambers x 14.7 cf = 516.0 cf Chamber Storage

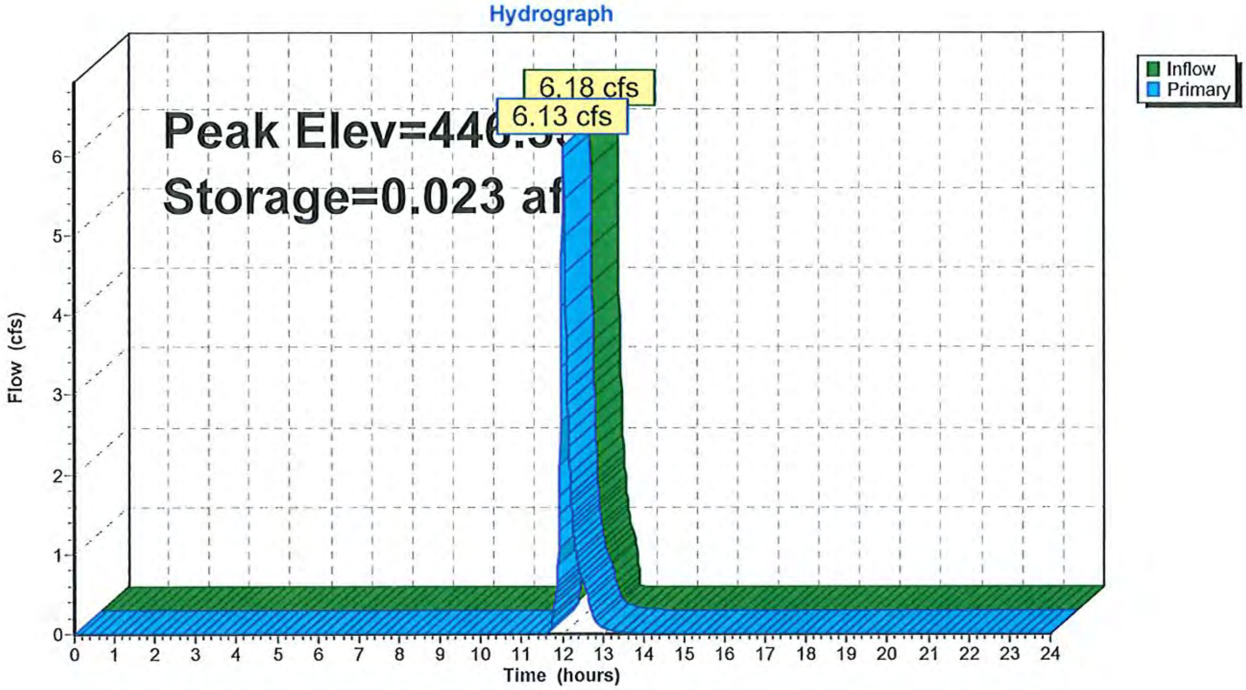
2,248.3 cf Field - 516.0 cf Chambers = 1,732.3 cf Stone x 40.0% Voids = 692.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,208.9 cf = 0.028 af
Overall Storage Efficiency = 53.8%
Overall System Size = 53.04' x 18.17' x 2.33'

35 Chambers
83.3 cy Field
64.2 cy Stone



Pond 7P: UG A2


Hydrograph
6.18 cfs
6.13 cfs
Peak Elev=446.5
Storage=0.023 af
Inflow
Primary
Flow (cfs)
0
1
2
3
4
5
6
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Summary for Pond 8P: Diversion Structure A2

Inflow Area =	0.893 ac,	86.23% Impervious,	Inflow Depth > 7.62"	for 100-yr event
Inflow =	7.47 cfs @	12.03 hrs, Volume=	0.567 af	
Outflow =	7.47 cfs @	12.03 hrs, Volume=	0.567 af, Atten= 0%, Lag= 0.0 min	
Primary =	1.29 cfs @	12.03 hrs, Volume=	0.427 af	
Routed to Pond 3P : Bio Retention Area A				
Secondary =	6.18 cfs @	12.03 hrs, Volume=	0.140 af	
Routed to Pond 7P : UG A2				

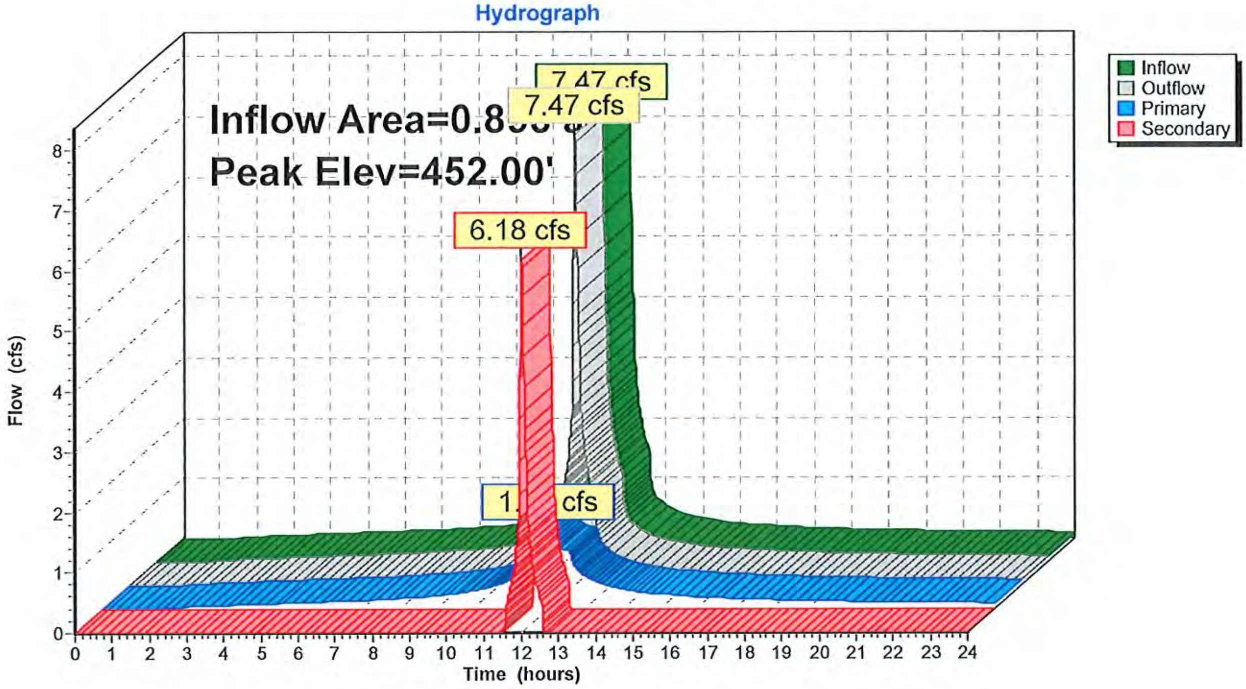
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 452.00' @ 12.03 hrs
Flood Elev= 452.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	448.75'	**6.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 448.75' / 448.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	450.28'	**15.0" Round Culvert** L= 15.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 450.28' / 448.00' S= 0.1520 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.29 cfs @ 12.03 hrs HW=451.99' TW=447.84' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.29 cfs @ 6.55 fps)

Secondary OutFlow Max=6.16 cfs @ 12.03 hrs HW=451.99' TW=446.54' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 6.16 cfs @ 5.02 fps)

Pond 8P: Diversion Structure A2



Summary for Link 2L: Study Point A

Inflow Area =	7.007 ac, 43.16% Impervious,	Inflow Depth > 6.19"	for 100-yr event
Inflow =	35.94 cfs @ 12.09 hrs,	Volume=	3.615 af
Primary =	35.94 cfs @ 12.09 hrs,	Volume=	3.615 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 2L: Study Point A

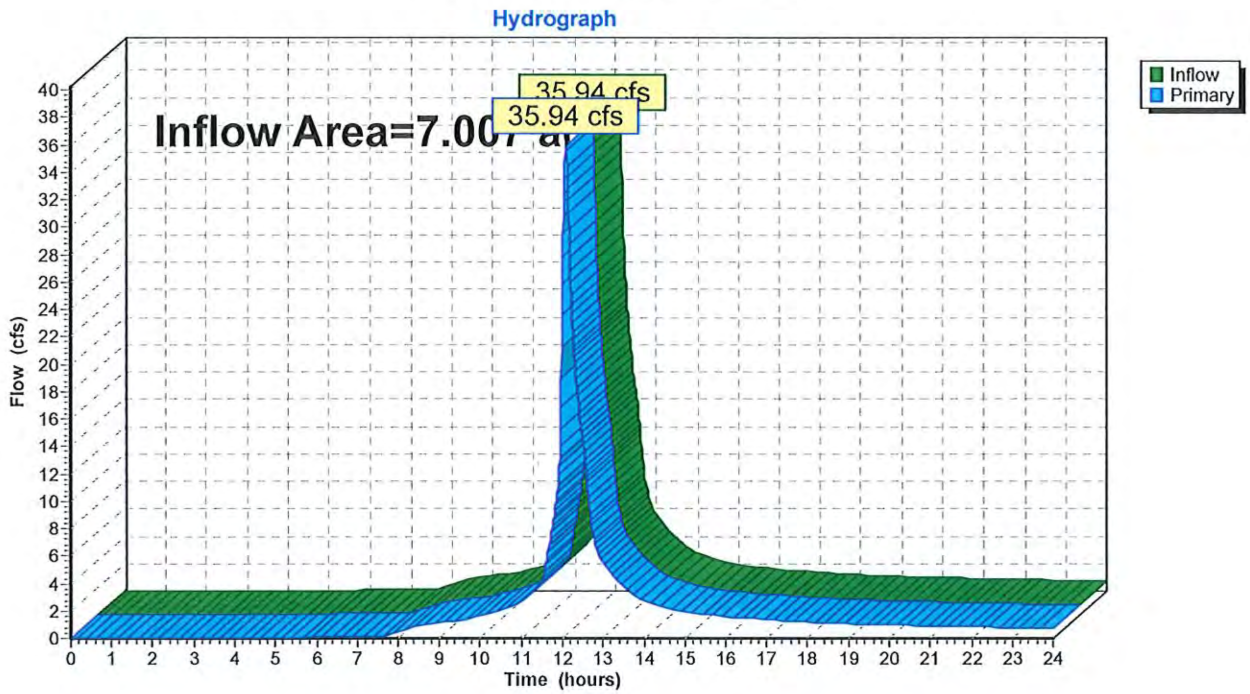
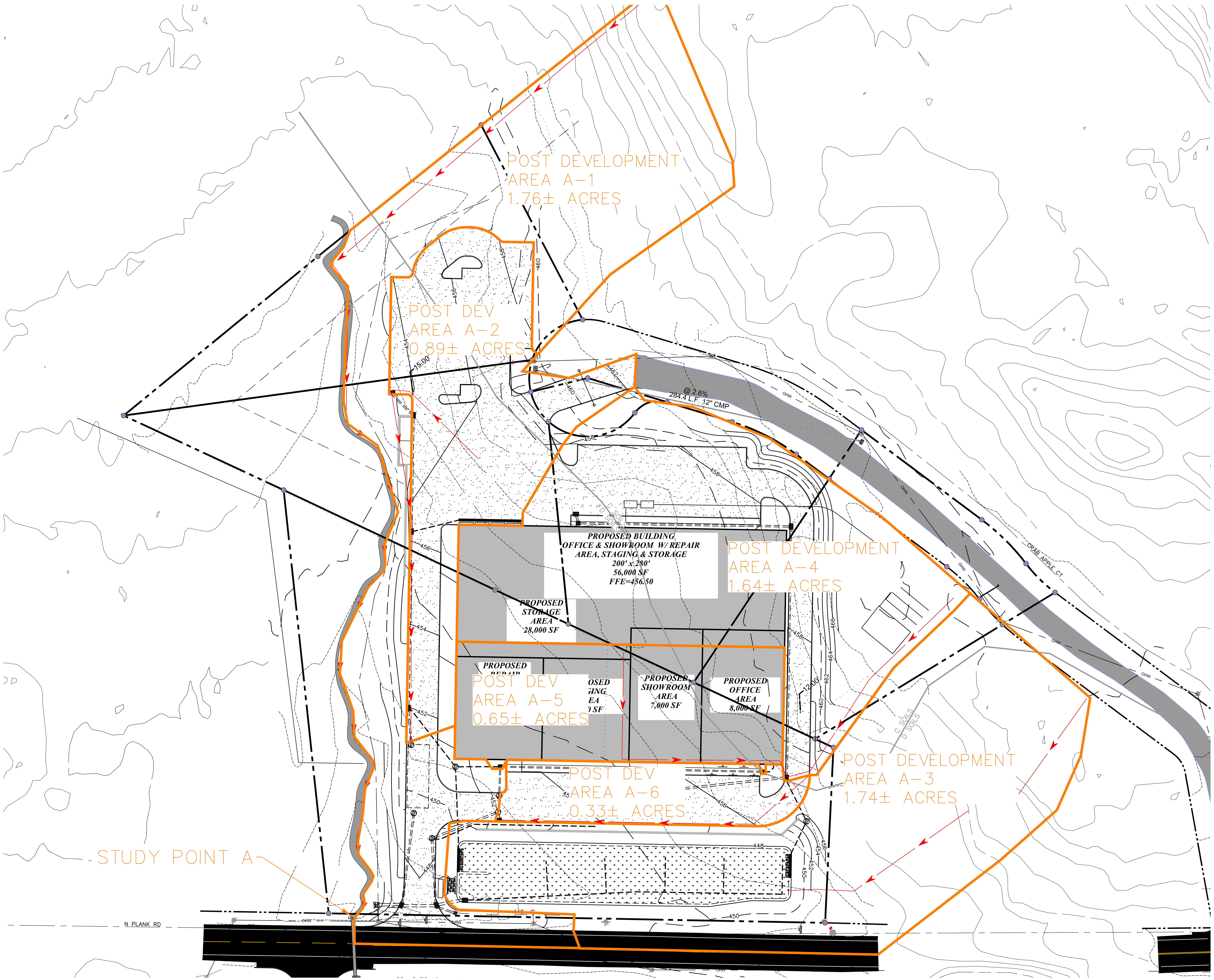


TABLE OF CONTENTS

APPENDIX C

PRE/POST-DEVELOPMENT WATERSHED MAPS



LEGEND

WATERSHED AREA BOUNDARY
DRAINAGE FLOW PATH

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

LANC & TULLY
Engineering and Surveying, P.C.
P.O. Box 687, Rt. 207
Goshen, N.Y. 10924
(845) 294-3700

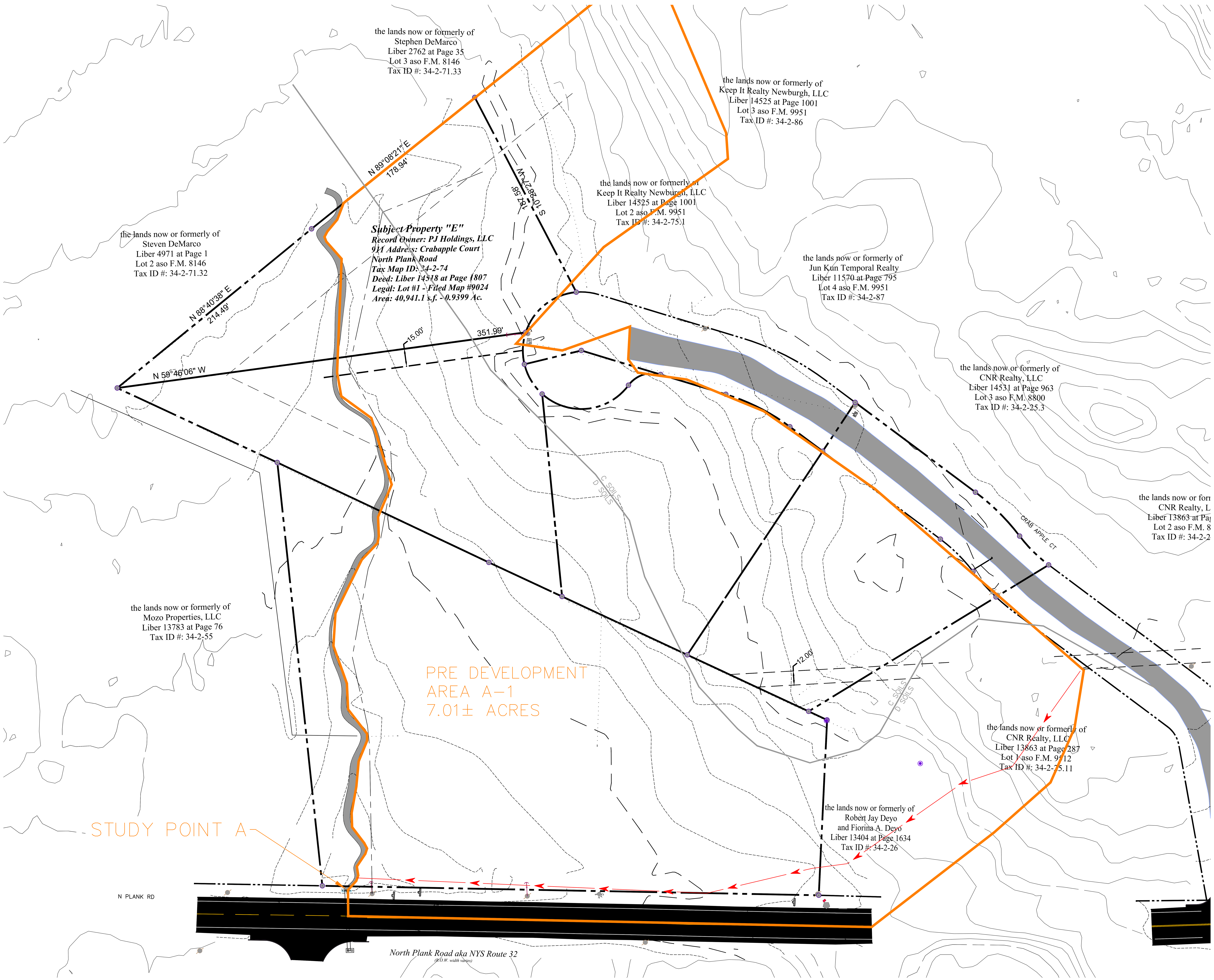
POST-DEVELOPMENT WATERSHED MAP PREPARED FOR

FABULOUS EVENTS, INC.

TOWN OF NEWBURGH
ORANGE COUNTY, NEW YORK

Drawn By:	Checked By:	Scale:	Tax Map No.:
CMF	JQ	1" = 40'	34-2-25.2, 54, 74, 76, 77

Date: AUGUST 15, 2023
Revisions:
CAD File: 220138-DRAINAGE.DWG
Layout: POST
Sheet No.: 1 OF 1
Drawing No.: C3D B- 22 - 0138 - 01



LEGEND

EXISTING MAJOR CONTOUR
EXISTING MINOR CONTOUR
WATERSHED AREA BOUNDARY
DRAINAGE FLOW PATH

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

LANC & TULLY
Engineering and Surveying, P.C.
P.O. Box 687, Rt. 207
Goshen, N.Y. 10924
(845) 294-3700

PRE-DEVELOPMENT WATERSHED MAP
PREPARED FOR

FABULOUS EVENTS, INC.

TOWN OF NEWBURGH
ORANGE COUNTY, NEW YORK

Drawn By:	Checked By:	Scale:	Tax Map No.:
CMF	JQ	1" = 40'	34-2-25.2, 54, 74, 76, 77

Date: AUGUST 15, 2023
Revisions:
CAD File: 220138-DRAINAGE.DWG
Layout: POST
Sheet No.: 1 OF 1
Drawing No.: C3D
B- 23 - 0138 - 01

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SAFE DIGGING STARTS HERE

APPENDIX D

CALCULATIONS:

WATER QUALITY/RUNOFF REDUCTION VOLUME

STORMWATER PRACTICE DESIGN

Catchment Summary							
Catchment	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious	Rv Value	WQv (ft³)	Precipitation (in)	Notes
PR A-1	1.76	0.19	11.05%	0.15	1,333	1.46	
PR A-2	0.89	0.77	86.52%	0.83	3,747	1.46	
PR A-3	1.74	0.31	17.97%	0.21	1,939	1.46	
PR A-4	1.54	1.35	63.77%	0.82	5,252	1.46	
PR A-5	0.93	0.84	90.57%	0.86	3,133	1.46	
PR A-6	0.33	0.29	85.27%	0.82	1,368	1.46	

Total Site Water Quality Volume Calculation						
Precipitation (in)	Total Area of Disturbance	Total Area of Impervious within LOD	% Imp	Rv Value	WQv (ft³)	
1.46	4.607	2.843	60.66%	0.60	14,164	Total Site WQv

Identify Runoff Reduction Techniques by Area			
Technique	Total Contributing Area (Acres)	Contributing Impervious Area (Acres)	
Conservation of Natural Areas	0.00	0.00	
Riparian Buffers	0.00	0.00	
Filter Strips	0.00	0.00	
Tree Planting / Tree Pit	0.00	0.00	
Total	0.00	0.00	

Recalculation of WQv after Application of Area Reduction Techniques					
	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious	Runoff Coefficient	WQv
Initial WQv Calculation	4.66	2.84	61%	0.598	14,124
Area Reduction Techniques	0.00	0.00			
WQv adjusted after Area Reductions	4.66	2.84	61%	0.598	14,124
Disconnection of Rooftops					
Adjusted WQv after Area Reduction and Rooftop Disconnect	4.66	2.84	61%	0.598	14,124
WQv reduced by Area Reduction techniques					0.00

Calculate the Required RRv						
Enter the Soils Data for the site				Calculate the Minimum RRv		
Soil Group	Acres	S		S	0.24	
A		0.55		Impervious	2.84	acre
B		0.40		Precipitation	1.46	in
C	1.784	0.30		Rv	0.95	
D	2.823	0.20		Minimum RRv	3,040	cf
Total Area	4.607				0.06	af

		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		4.657	2.543	2.063	14,124
[illegible]	[illegible]	0.036	0.969		
[illegible]	[illegible]	0.036	0.969		
[illegible]	[illegible]	0.036	0.969		
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[illegible]	[illegible]	0.036	0.969	0	
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[illegible]	[illegible]	0.036	0.969	0	
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[illegible]	[illegible]				
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[illegible]	[illegible]				
[illegible]	[illegible]				
[illegible]	[illegible]				
Total of Area Reductions	→	[illegible]	[illegible]		
Total of Volume Reductions	→	[illegible]	[illegible]	0	
Total Reductions by Standard SMPs with Capacity	→	[illegible]	[illegible]	[illegible]	[illegible]
Total Reductions by Standard SMPs	→	[illegible]	[illegible]		0
Total Reductions (Area + Volume + SMPs)	→	[illegible]	[illegible]	[illegible]	[illegible]
Total Treatment Provided	→				[illegible]

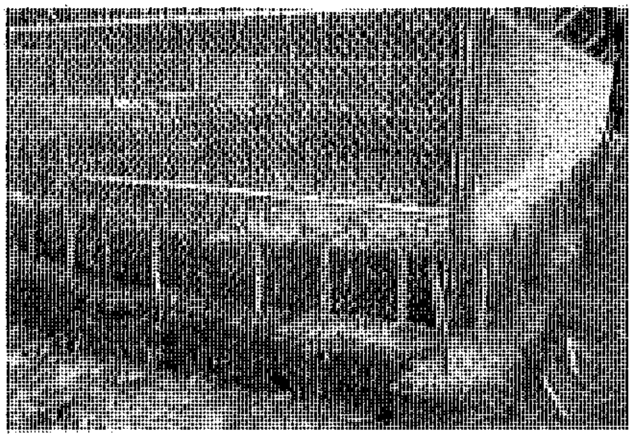
Bio-Retention Area #1

Study Point	[illegible] A						
[illegible] Areas	Total Area (acres)	Impervious Area (acres)	Percent Impervious	Rv Value	WQv (cf)	[illegible] (in)	[illegible]
[illegible] A-2, A-3, A-4, A-5	4.087	2.343	66.66%	0.650	14594	1.40	
[illegible]		0	66.66%	0.650	14594	[illegible]	
[illegible]					0	[illegible]	
Soil Information							
Soil Group		0					
[illegible]			[illegible]				
[illegible]		Yes		[illegible]			
Calculate the Minimum Filter Area							
WQv			14594	[illegible]			
Depth of Soil Media		df	2.5	[illegible]	2.5 - 4.0 feet		
Hydraulic Conductivity		k	0.5	[illegible]	Bio-Retention Filter Media		
Average Ponding Height		hf	0.5	[illegible]	6 inches Maximum		
[illegible]		tf	2	[illegible]	Bio-Retention		
Required Filter Area		Af	15958	[illegible]			
Determine Actual Bio-Retention Area Dimensions							
[illegible]		20.44		25% of WQv			
[illegible]		0		Hydrodynamic Separator provided on inlets			
Required Storage Volume		10946		75% of WQv			
Provided Storage Volume							
[illegible]		13261					
Actual Volume Provided		15944.2					
[illegible]				No	[illegible]		
Determine Runoff Reduction							
RRv		6383	Cu.Ft.				
RRv Applied		6383	Cu.Ft.	This is 44% of the WQv provided			
Volume Treated		9829	Cu.Ft.	This is the portion of the WQv that is not reduced by the practice			
Volume Directed		0	Cu.Ft.	This volume is directed to another practice			

APPENDIX E

EXCERPTS FROM THE "NEW YORK STATE STANDRADS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL"

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT



Definition & Scope

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

Capacity: The washout facility should be sized to contain solids, wash water, and rainfall and sized to allow for the evaporation of the wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the side slopes shall be 2 horizontal to 1 vertical.

Location: Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.

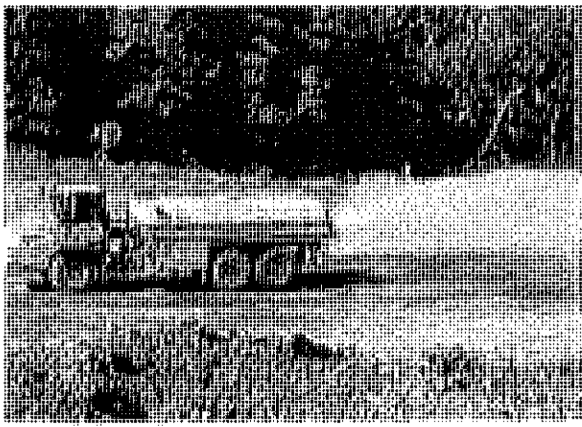
Liner: All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

STANDARD AND SPECIFICATIONS FOR DUST CONTROL



Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. **Non-driving Areas** – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. **Driving Areas** – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

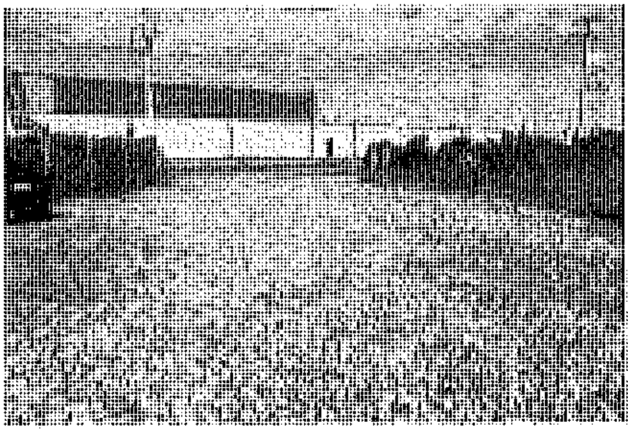
Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS



Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

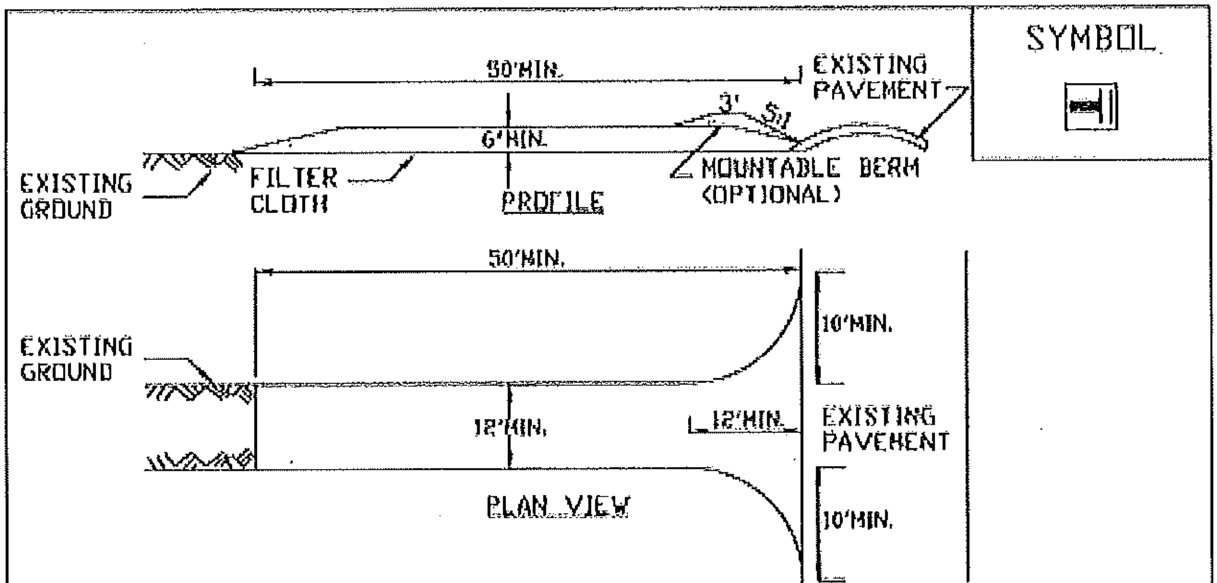
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 2.1
Stabilized Construction Access

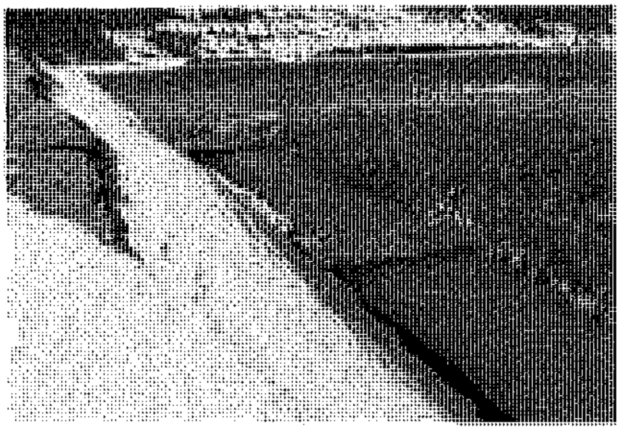


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STABILIZED CONSTRUCTION ACCESS

STANDARD AND SPECIFICATIONS FOR WINTER STABILIZATION



Definition & Scope

A temporary site specific, enhanced erosion and sediment control plan to manage runoff and sediment at the site during construction activities in the winter months to protect off-site water resources.

Conditions Where Practice Applies

This standard applies to all construction activities involved with ongoing land disturbance and exposure between November 15th to the following April 1st.

Design Criteria

1. Prepare a snow management plan with adequate storage for snow and control of melt water, requiring cleared snow to be stored in a manner not affecting ongoing construction activities.

2. Enlarge and stabilize access points to provide for snow management and stockpiling. Snow management activities must not destroy or degrade installed erosion and sediment control practices.

3. A minimum 25 foot buffer shall be maintained from all perimeter controls such as silt fence. Mark silt fence with tall stakes that are visible above the snow pack.

4. Edges of disturbed areas that drain to a waterbody within 100 feet will have 2 rows of silt fence, 5 feet apart, installed on the contour.

5. Drainage structures must be kept open and free of snow and ice dams. All debris, ice dams, or debris from plowing operations, that restrict the flow of runoff and meltwater, shall be removed.

6. Sediment barriers must be installed at all appropriate perimeter and sensitive locations. Silt fence and other practices requiring earth disturbance must be installed before the ground freezes.

7. Soil stockpiles must be protected by the use of established vegetation, anchored straw mulch, rolled stabilization matting, or other durable covering. A barrier must be installed at least 15 feet from the toe of the stockpile to prevent soil migration and to capture loose soil.

8. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures should be initiated by the end of the next business day and completed within three (3) days. Rolled erosion control blankets must be used on all slopes 3 horizontal to 1 vertical or steeper.

9. If straw mulch alone is used for temporary stabilization, it shall be applied at double the standard rate of 2 tons per acre, making the application rate 4 tons per acre. Other manufactured mulches should be applied at double the manufacturer's recommended rate.

10. To ensure adequate stabilization of disturbed soil in advance of a melt event, areas of disturbed soil should be stabilized at the end of each work day unless:

    a. work will resume within 24 hours in the same area and no precipitation is forecast or;

    b. the work is in disturbed areas that collect and retain runoff, such as open utility trenches, foundation excavations, or water management areas.

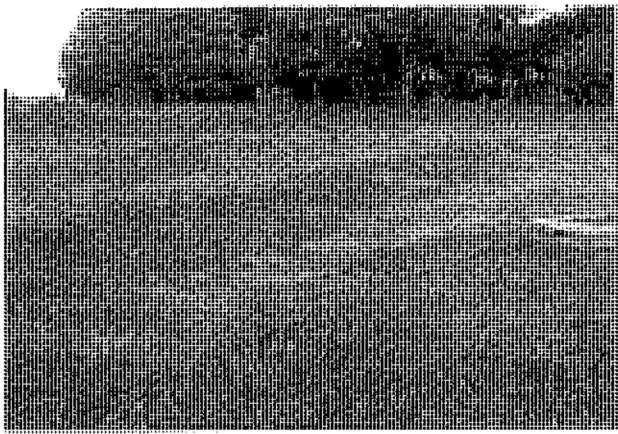
11. Use stone paths to stabilize access perimeters of buildings under construction and areas where construction vehicle traffic is anticipated. Stone paths should be a minimum 10 feet in width but wider as necessary to accommodate equipment.

Maintenance

The site shall be inspected frequently to ensure that the erosion and sediment control plan is performing its winter stabilization function. If the site will not have earth disturbing activities ongoing during the "winter season", all bare exposed soil must be stabilized by established vegetation, straw or other acceptable mulch, matting, rock, or other approved material such as rolled erosion control products. Seeding of areas with mulch cover is preferred but seeding alone is not acceptable for proper stabilization.

Compliance inspections must be performed and reports filed properly in accordance with the SWPPP for all sites under a winter shutdown.

STANDARD AND SPECIFICATIONS FOR DIVERSION



Definition & Scope

A drainage way of parabolic or trapezoidal cross-section with a supporting ridge on the lower side that is constructed across the slope to intercept and convey runoff to stable outlets at non-erosive velocities.

Conditions Where Practice Applies

Diversions are used where:

1. Runoff from higher areas has potential for damaging properties, causing erosion, or interfering with, or preventing the establishment of, vegetation on lower areas.

2. Surface and/or shallow subsurface flow is damaging sloping upland.

3. The length of slopes needs to be reduced so that soil loss will be kept to a minimum.

Diversions are only applicable below stabilized or protected areas. Avoid establishment on slopes greater than fifteen percent. Diversions should be used with caution on soils subject to slippage. Construction of diversions shall be in compliance with state and local drainage and water laws.

Design Criteria

Location

Diversion location shall be determined by considering outlet conditions, topography, land use, soil type, length of slope, seep planes (when seepage is a problem), and the development layout.

Capacity

Peak rates of runoff values used in determining the capacity requirements shall be calculated using the most current hydrologic data from the Northeast Regional Climate Center in an appropriate model.

The constructed diversion shall have capacity to carry, as a minimum, the peak discharge from a 10 year frequency rainfall event with freeboard of not less than 0.3 feet.

Diversions designed to protect homes, schools, industrial buildings, roads, parking lots, and comparable high-risk areas, and those designed to function in connection with other structures, shall have sufficient capacity to carry peak runoff expected from a storm frequency consistent with the hazard involved.

Cross Section

The diversion channel shall be parabolic or trapezoidal in shape. Parabolic Diversion design charts are provided in Tables 3.2, 3.3 and 3.4 on pages 3.10, 3.12 and 3.13. The diversion shall be designed to have stable side slopes. The side slopes shall not be steeper than 2:1 and shall be flat enough to ensure ease of maintenance of the diversion and its protective vegetative cover.

The ridge shall have a minimum width of four feet at the design water elevation; a minimum of 0.3 feet freeboard and a reasonable settlement factor shall be provided.

Velocity and Grade

The permissible velocity for the specified method of stabilization will determine the maximum grade. Maximum permissible velocities of flow for the stated conditions of stabilization shall be as shown in Table 3.1 on page 3.10 of this standard.

Diversions are not usually applicable below high sediment producing areas unless land treatment practices or structural measures, designed to prevent damaging accumulations of sediment in the channels, are installed with, or before, the diversions.

Outlets

Each diversion must have an adequate outlet. The outlet may be a grassed waterway, vegetated or paved area, grade stabilization structure, flow spreader, flow diffuser, stable watercourse, or subsurface drain outlet. In all cases, the outlet must convey runoff to a point where outflow will not cause damage. Vegetated outlets shall be installed before diversion construction, if needed, to ensure establishment of vegetative cover in the outlet channel.

The design elevation of the water surface in the diversion shall not be lower than the design elevation of the water surface in the outlet at their junction when both are operating at design flow.

Stabilization

Vegetated diversions shall be stabilized in accordance with the following tables.

Table 3.1
Diversion Maximum Permissible Design Velocities Table

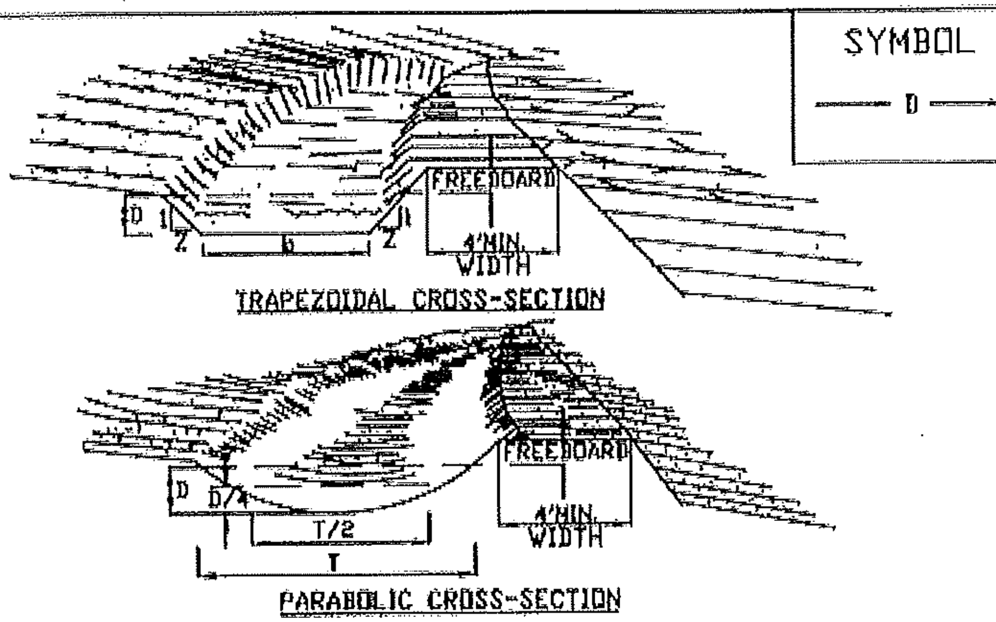
Soil Texture	Retardance and Cover	Permissible Velocity (ft / second) for Selected Channel Vegetation
Sand, Silt, Sandy loam, silty loam, loamy sand (ML, SM, SP, SW)	C-Kentucky 31 tall fescue and Kentucky bluegrass	3.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	2.5
Silty clay loam, Sandy clay loam (ML-CL, SC)	C-Kentucky 31 tall fescue and Kentucky bluegrass	4.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	3.5
Clay (CL)	C-Kentucky 31 tall fescue and Kentucky bluegrass	5.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	4.0

[1] Annuals—Use only as temporary protection until permanent vegetation is established.

Table 3.2 - Retardance Factors for Various Grasses and Legumes Table

Retardance	Cover	Condition
A	Reed canarygrass	Excellent stand, tall (average 36 inches)
B	Smooth bromegrass	Good stand, mowed (average 12 to 15 inches)
	Tall fescue	Good stand, unmowed (average 18 inches)
	Grass-legume mixture—Timothy, smooth bromegrass, or Orchard grass with birdsfoot trefoil	Good stand, uncut (average 20 inches)
	Reed canarygrass	Good stand, mowed (average 12 to 15 inches)
	Tall fescue, with birdsfoot trefoil or ladino clover	Good stand, uncut (average 18 inches)
C	Redtop	Good stand, headed (15 to 20 inches)
	Grass-legume mixture—summer (Orchard grass, redtop, Annual ryegrass, and ladino or white clover)	Good stand, uncut (6 to 8 inches)
	Kentucky bluegrass	Good stand, headed (6 to 12 inches)
D	Red fescue	Good stand, headed (12 to 18 inches)
	Grass-legume mixture—fall, spring (Orchard grass, redtop, Annual ryegrass, and white or ladino clover)	Good stand, uncut (4 to 5 inches)

Figure 3.4
Diversion Detail

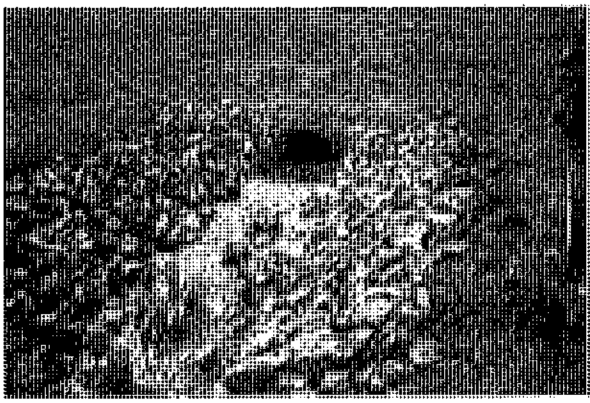


CONSTRUCTION SPECIFICATIONS

1. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIVERSION.
2. THE DIVERSION SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN, AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
3. FILLS SHALL BE COMPACTED AS NEEDED TO PREVENT UNEQUAL SETTLEMENT THAT WOULD CAUSE DAMAGE IN THE COMPLETE DIVERSION.
4. ALL EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIVERSION.
5. STABILIZATION SHALL BE DONE ACCORDING TO THE APPROPRIATE STANDARD AND SPECIFICATIONS FOR VEGETATIVE PRACTICES.
   A. FOR DESIGN VELOCITIES OF LESS THAN 3.5 FT. PER. SEC., SEEDING AND MULCHING MAY BE USED FOR THE ESTABLISHMENT OF THE VEGETATION. IT IS RECOMMENDED THAT, WHEN CONDITIONS PERMIT, TEMPORARY DIVERSIONS OR OTHER MEANS SHOULD BE USED TO PREVENT WATER FROM ENTERING THE DIVERSION DURING THE ESTABLISHMENT OF THE VEGETATION.
   B. FOR DESIGN VELOCITIES OF MORE THAN 3.5 FT. PER. SEC., THE DIVERSION SHALL BE STABILIZED WITH SOD, WITH SEEDING PROTECTED BY JUTE OR EXCELSIOR MATTING OR WITH SEEDING AND MULCHING INCLUDING TEMPORARY DIVERSION OF THE WATER UNTIL THE VEGETATION IS ESTABLISHED.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	DIVERSION

STANDARD AND SPECIFICATIONS FOR ROCK OUTLET PROTECTION



Definition & Scope

A permanent section of rock protection placed at the outlet end of the culverts, conduits, or channels to reduce the depth, velocity, and energy of water, snch that the flow will not erode the receiving downstream reach.

Conditions Where Practice Applies

This practice applies where discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This applies to:

1. Culvert outlets of all types.

2. Pipe conduits from all sediment basins, dry storm water ponds, and permanent type ponds.

3. New channels constructed as outlets for culverts and conduits.

Design Criteria

The design of rock outlet protection depends entirely on the location. Pipe outlet at the top of cuts or on slopes steeper than 10 percent, cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron.

Many counties and state agencies have regulations and design procedures already established for dimensions, type and size of materials, and locations where outlet protection is required. Where these requirements exist, they shall be followed.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet must be determined for the design capacity of the pipe. If the tailwater depth is less than half the diameter of the outlet pipe, and the receiving stream is wide enough to accept divergence of the flow, it shall be classified as a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example. If the tailwater depth is greater than half the pipe diameter and the receiving stream will continue to confine the flow, it shall be classified as a Maximum Tailwater Condition; see Figure 3.17 on page 3.43 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example.

Apron Size

The apron length and width shall be determined from the curves according to the tailwater conditions:

Minimum Tailwater – Use Figure 3.16 on page 3.42
Maximum Tailwater – Use Figure 3.17 on page 3.43

If the pipe discharges directly into a well defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank, whichever is less.

The upstream end of the apron, adjacent to the pipe, shall have a width two (2) times the diameter of the outlet pipe, or conform to pipe end section if used.

Bottom Grade

The outlet protection apron shall be constructed with no slope along its length. There shall be no overfall at the end of the apron. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

Alignment

The outlet protection apron shall be located so that there are no bends in the horizontal alignment.

Materials

The outlet protection may be done using rock riprap, grouted riprap, or gabions. Outlets constructed on the bank of a stream or wetland shall not use grouted rip-rap, gabions or concrete.

Riprap shall be composed of a well-graded mixture of rock size so that 50 percent of the pieces, by weight, shall be larger than the d_{50} size determined by using the charts. A well-graded mixture, as used herein, is defined as a mixture composed primarily of larger rock sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the rocks. The diameter of the largest rock size in such a mixture shall be 1.5 times the d_{50} size.

Thickness

The minimum thickness of the riprap layer shall be 1.5 times the maximum rock diameter for d_{50} of 15 inches or less; and 1.2 times the maximum rock size for d_{50} greater than 15 inches. The following chart lists some examples:

D_{50} (inches)	d_{max} (inches)	Minimum Blanket Thickness (inches)
4	6	9
6	9	14
9	14	20
12	18	27
15	22	32
18	27	32
21	32	38
24	36	43

Rock Quality

Rock for riprap shall consist of field rock or rough unhewn quarry rock. The rock shall be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual rocks shall be at least 2.5.

Filter

A filter is a layer of material placed between the riprap and the underlying soil surface to prevent soil movement into and through the riprap. Riprap shall have a filter placed under it in all cases.

A filter can be of two general forms: a gravel layer or a plastic filter cloth. The plastic filter cloth can be woven or non-woven monofilament yarns, and shall meet these base requirements: thickness 20-60 mils, grab strength 90-120 lbs; and shall conform to ASTM D-1777 and ASTM D-1682.

Gravel filter blanket, when used, shall be designed by comparing particle sizes of the overlying material and the base material. Design criteria are available in Standard and Specification for Anchored Slope and Channel Stabilization on page 4.7.

Gabions

Gabions shall be made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum linear dimension of the mesh opening shall not exceed 4 ½ inches and the area of the mesh opening shall not exceed 10 square inches.

Gabions shall be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes. Gabions shall be of single unit construction and shall be installed according to manufacturer's recommendations.

The area on which the gabion is to be installed shall be graded as shown on the drawings. Foundation conditions shall be the same as for placing rock riprap, and filter cloth shall be placed under all gabions. Where necessary, key, or tie, the structure into the bank to prevent undermining of the main gabion structure.

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap or for dislodged rocks. Repairs should be made immediately.

Design Procedure

1. Investigate the downstream channel to assure that nonerosive velocities can be maintained.

2. Determine the tailwater condition at the outlet to establish which curve to use.

3. Use the appropriate chart with the design discharge to determine the riprap size and apron length required. It is noted that references to pipe diameters in the charts are based on full flow. For other than full pipe flow, the parameters of depth of flow and velocity must be used to adjust the design discharges.

4. Calculate apron width at the downstream end if a flare section is to be employed.

Design Examples are demonstrated in Appendix B.

Construction Specifications

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grad-

ing limits when installed respectively in the riprap or filter.

3. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps, whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.

4. Rock for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The rock for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller rocks and spalls filling the voids between the larger rocks. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

STANDARD AND SPECIFICATIONS FOR ANCHORED STABILIZATION MATTING

Definition and Scope

A temporary or permanent protective covering placed on a prepared, seeded planting area that is anchored in place by staples or other means to aid in controlling erosion by absorbing rain splash energy and withstand overland flow as well as provide a microclimate to protect and promote seed establishment.

Conditions Where Practice Applies

Anchored stabilization mats are required for seeded earthen slopes steeper than 3 horizontal to 1 vertical; in vegetated channels where the velocity of the design flow exceeds the allowable velocity for vegetation alone (usually greater than 5 feet per second); on streambanks and shorelines where moving water is likely to erode newly seeded or planted areas; and in areas where wind prevents standard mulching with straw. This standard does not apply to slopes stabilized with sod, rock riprap or hard armor material.

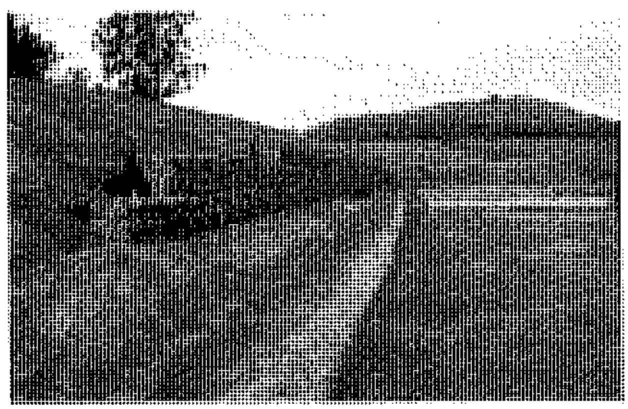
Design Criteria

Slope Applications - Anchored stabilization mats for use on slopes are primarily used as mulch blankets where the mesh material is within the blanket or as a netting over previously placed mulch. These stabilization mats are NOT effective in preventing slope failures.

1. Required on all slopes steeper than 3:1
2. Matting will be designed for proper longevity need and strength based on intended use.
3. All installation details and directions will be included on the site erosion and sediment control plan and will follow manufactures specifications.

Channel Applications - Anchored stabilization mats, for use in supporting vegetation in flow channels, are generally a non-degradable, three dimensional plastic structure which can be filled with soil prior to planting. This structure provides a medium for root growth where the matting and roots become intertwined forming a continuous anchor for the vegetated lining.

1. Channel stabilization shall be based on the tractive force method.
2. For maximum design shear stresses less than 2 pounds per square foot, a temporary or bio-degradable mat may be used.
3. The design of the final matting shall be based on the mats ability to resist the tractive shear stress at bank full flow.
4. The installation details and procedures shall be included on the site erosion and sediment control plan and will follow manufacturers specifications.



Construction Specifications

1. Prepare soil before installing matting by smoothing the surface, removing debris and large stone, and applying lime, fertilizer and seed. Refer to manufacturers installation details.
2. Begin at the top of the slope by anchoring the mat in a 6" deep x 6" wide trench. Backfill and compact the trench after stapling.
3. In channels or swales, begin at the downslope end, anchoring the mat at the bottom and top ends of the blanket. When another roll is needed, the upslope roll

should overlay the lower layer, shingle style, so that channel flows do not peel back the material.

4. Roll the mats down a slope with a minimum 4" overlap. Roll center mat in a channel in direction of water flow on bottom of the channel. Do not stretch blankets. Blankets shall have good continuous contact with the underlying soil throughout its entire length.

5. Place mats end over end (shingle style) with a 6" overlap, use a double row of staggered staples 4" apart to secure mats.

6. Full length edge of mats at top of side slopes must be anchored in 6" deep x 6" wide trench; backfill and compact the trench after stapling.

7. Mats on side slopes of a channel must be overlapped 4" over the center mat and stapled.

8. In high flow channel applications, a staple check slot is recommended at 30 to 40 foot intervals. Use a row of staples 4" apart over entire width of the channel. Place a second row 4" below the first row in a staggered pattern.

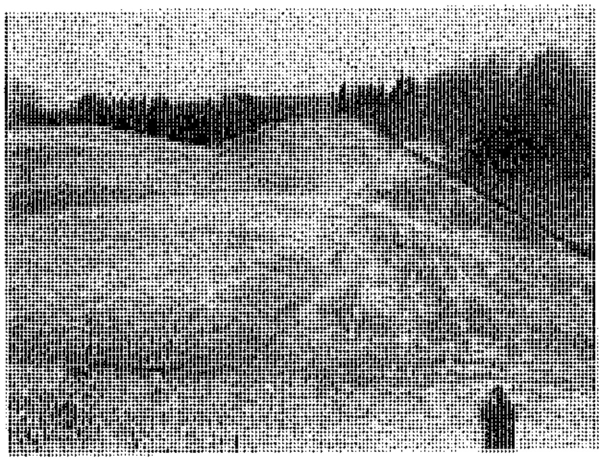
9. The terminal end of the mats must be anchored in a 6"x6" wide trench. Backfill and compact the trench after stapling.

10. Stapling and anchoring of blanket shall be done in accordance with the manufactures recommendations.

Maintenance

Blanketed areas shall be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 80% coverage throughout the blanketed area. Damaged or displaced blankets shall be restored or replaced within 2 calendar days.

STANDARD AND SPECIFICATIONS FOR LANDGRADING



Definition & Scope

Permanent reshaping of the existing land surface by grading in accordance with an engineering topographic plan and specification to provide for erosion control and vegetative establishment on disturbed, reshaped areas.

Design Criteria

The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surrounding to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and water removal, and vegetative treatment, etc.

Many municipalities and counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed.

The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope benches (include grade and cross section), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated into the plan:

1. Provisions shall be made to safely convey surface runoff to storm drains, protected outlets, or to stable water courses to ensure that surface runoff will not damage slopes or other graded areas; see standards and specifications for Grassed Waterway, Diversion, or Grade Stabilization Structure.

2. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. When slopes exceed 2:1, special design and stabilization consideration are required and shall be adequately shown on the plans. (Note: Where the slope is to be mowed, the slope should be no steeper than 3:1, although 4:1 is preferred because of safety factors related to mowing steep slopes.)

3. Reverse slope benches or diversion shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.

   A. Benches shall be a minimum of six feet wide to provide for ease of maintenance.

   B. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and computations.

   C. The flow length within a bench shall not exceed 800 feet unless accompanied by appropriate design and computations; see Standard and Specifications for Diversion on page 3.9

4. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of diversions, ditches and swales or conveyed downslope by the use of a designed structure, except where:

   A. The face of the slope is or shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.

   B. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainage ways, graded ditches, downspouts, etc.

   C. The face of the slope will be protected by anchored stabilization matting, sod, gravel, riprap, or other stabilization method.

5. Cut slopes occurring in ripable rock shall be serrated as shown in Figure 4.9 on page 4.26. The serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have steps cut at nominal two-foot intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope line is 1 ½: 1. These steps will weather and act to hold moisture, lime, fertilizer, and seed thus producing a much quicker and longer-lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carried to a suitable outlet.

6. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.

7. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence, or other related damages.

8. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two (2) inches in diameter where compacted by hand or mechanical tampers or over eight (8) inches in diameter where compacted by rollers or other equipment. Frozen material shall not be placed in the fill nor shall the fill material be placed on a frozen foundation.

9. Stockpiles, borrow areas, and spoil shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

10. All disturbed areas shall be stabilized structurally or vegetatively in compliance with the Permanent Construction Area Planting Standard on page 4.42.

Construction Specifications

See Figures 4.9 and 4.10 for details.

1. All graded or disturbed areas, including slopes, shall be protected during clearing and construction in accordance with the erosion and sediment control plan until they are adequately stabilized.

2. All erosion and sediment control practices and measures shall be constructed, applied and maintained in accordance with the erosion and sediment control plan and these standards.

3. Topsoil required for the establishment of vegetation shall be stockpiled in amount necessary to complete finished grading of all exposed areas.

4. Areas to be filled shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material.

5. Areas that are to be topsoiled shall be scarified to a minimum depth of four inches prior to placement of topsoil.

6. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence, or other related problems. Fill intended to support buildings, structures, and conduits, etc., shall be compacted in accordance with local requirements or codes.

7. All fill shall be placed and compacted in layers not to exceed 9 inches in thickness.

8. Except for approved landfills or nonstructural fills, fill material shall be free of frozen particles, brush, roots, sod, or other foreign objectionable materials that would interfere with, or prevent, construction of satisfactory fills.

9. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills.

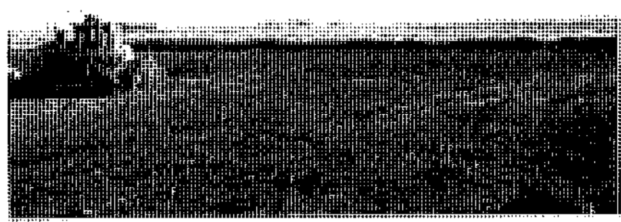
10. Fill shall not be placed on saturated or frozen surfaces.

11. All benches shall be kept free of sediment during all phases of development.

12. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain on page 3.48 or other approved methods.

13. All graded areas shall be permanently stabilized immediately following finished grading.

14. Stockpiles, borrow areas, and spoil areas shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.



STANDARD AND SPECIFICATIONS FOR MULCHING

Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/ acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

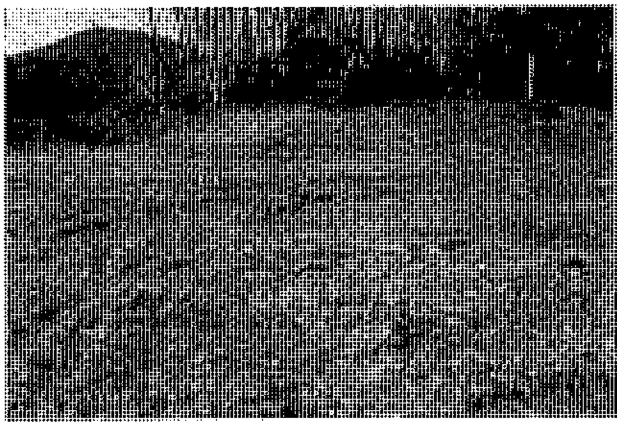
Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7"	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2"	9 cu. yds.	405 cu. yds.	3"	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/yd. 60-90 lbs./roll	48" x 50 yds. or 48" x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4' x 112.5' or 8' x 112.5'.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR TEMPORARY CONSTRUCTION AREA SEEDING



Definition & Scope

Providing temporary erosion control protection to disturbed areas and/or localized critical areas for an interim period by covering all bare ground that exists as a result of construction activities or a natural event. Critical areas may include but are not limited to steep excavated cut or fill slopes and any disturbed, denuded natural slopes subject to erosion.

Conditions Where Practice Applies

Temporary seedings may be necessary on construction sites to protect an area, or section, where final grading is complete, when preparing for winter work shutdown, or to provide cover when permanent seedings are likely to fail due to mid-summer heat and drought. The intent is to provide temporary protective cover during temporary shutdown of construction and/or while waiting for optimal planting time.

Criteria

Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are usually removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

Fertilizer or lime are not typically used for temporary seedings.

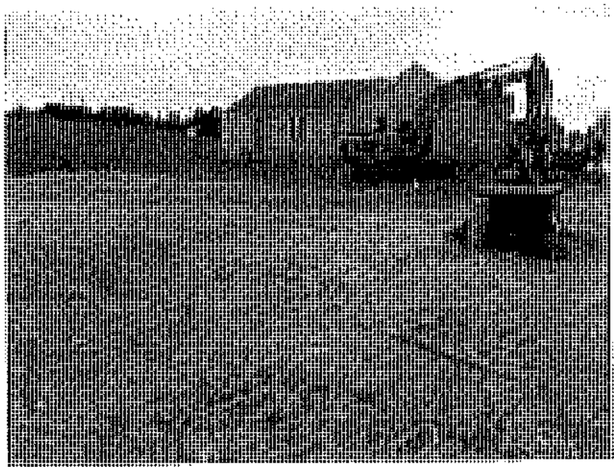
IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb./1000 sq. ft. or use 1 lb./1000 sq. ft.).

IF: Late fall or early winter, then seed Certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs./1000 sq. ft.).

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

Mulch the area with hay or straw at 2 tons/acre (approx. 90 lbs./1000 sq. ft. or 2 bales). Quality of hay or straw mulch allowable will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied according to manufacturers' specification. Caution is advised when using nylon or other synthetic products. They may be difficult to remove prior to final seeding and can be a hazard to young wildlife species.

STANDARD AND SPECIFICATIONS FOR TOPSOILING



Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.
2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.
3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.
2. Complete rough grading and final grade, allowing for depth of topsoil to be added.
3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.
4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

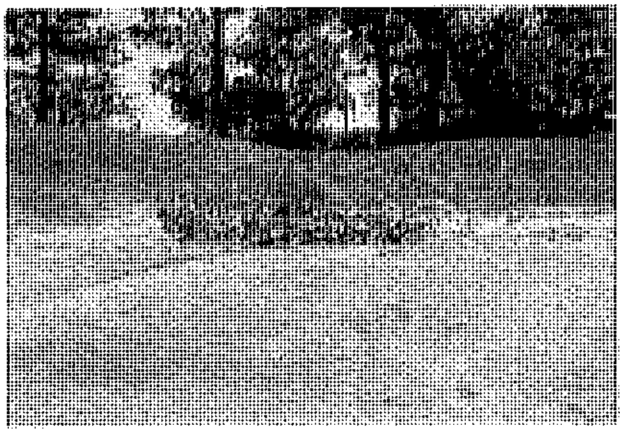
1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.
2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.
3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.
4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.
5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.
6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.
2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by "tracking" with suitable equipment.
3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

STANDARD AND SPECIFICATIONS FOR SEDIMENT TRAP



Definition & Scope

A temporary sediment control device formed by excavation and/or embankment to intercept sediment-laden runoff and trap the sediment in order to protect drainageways, properties, and rights-of-way below the sediment trap from sedimentation.

Conditions Where Practice Applies

A sediment trap is usually installed in a drainageway, at a storm drain inlet, or other points of collection from a disturbed area for one construction season.

Sediment traps should be used to artificially break up the natural drainage area into smaller sections where a larger device (sediment basin) would be less effective.

Design Criteria

If the drainage area to the proposed trap location exceeds 5 acres, or the trap is in place beyond one construction season, or any of the additional design criteria presented here cannot be met, a full Sediment Basin must be used. See Standard and Specification for Sediment Basin on page 5.19.

Drainage Area

The maximum drainage area for all sediment traps shall be 5 acres.

Location

Sediment traps shall be located so that they can be installed prior to grading or filling in the drainage area they are to protect. Traps must not be located any closer than 20 feet from a proposed building foundation if the trap is to function during building construction. Locate traps to obtain maximum storage benefit from the terrain and for ease of cleanout and disposal of the trapped sediment.

Trap Size

The volume of a sediment trap as measured at the elevation of the crest of the outlet shall be at least 3,600 cubic feet per acre of drainage area. A minimum length to width ratio of 2:1 should be provided. The volume of a constructed trap shall be calculated using standard mathematical procedures. The volume of a natural sediment trap may be approximated by the equation: Volume (cu.ft.) = 0.4 x surface area (sq.ft.) x maximum depth (ft.).

Trap Cleanout

Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to ½ of the design depth of traps I-II, and 1/3 the depth for trap III. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.

Embankment

All earth embankments for sediment traps shall not exceed five (5) feet in height as measured at the low point of the original ground along the centerline of the embankment. Embankments shall have a minimum four (4) foot wide top and side slopes of 2:1 or flatter. The embankment shall be compacted by traversing with equipment while it is being constructed. The embankment shall be stabilized with seed and mulch as soon as it is completed.

The elevation of the top of any dike directing water to any sediment trap will equal or exceed the maximum height of the outlet structure along the entire length of the trap.

Excavation

All excavation operations shall be carried out in such a manner that erosion and water pollution shall be minimal. Excavated portions of sediment traps shall have 1:1 or flatter slopes.

Outlet

The outlet shall be designed, constructed, and maintained in such a manner that sediment does not leave the trap and that erosion at or below the outlet does not occur.

Sediment traps must outlet onto stabilized (preferable undisturbed) ground, into a watercourse, stabilized channel, or into a storm drain system. Distance between inlet and outlet should be maximized to the longest length practicable.

All traps must be seeded and mulched immediately after construction.

Trap Details Needed on Erosion and Sediment Control Plans

Each trap shall be delineated on the plans in such a manner that it will not be confused with any other features. Each trap on a plan shall indicate all the information necessary to properly construct and maintain the structure. If the drawings are such that this information cannot be delineated on the drawings, then a table shall be developed. If a table is developed, then each trap on a plan shall have a number and the numbers shall be consecutive.

The following information shall be shown for each trap in a summary table format on the plans.

1. Trap number
2. Type of trap
3. Drainage area
4. Storage required
5. Storage provided (if applicable)
6. Outlet length or pipe sizes
7. Storage depth below outlet or cleanout elevation
8. Embankment height and elevation (if applicable)

Type of Sediment Traps

There are three (3) specific types of sediment traps which vary according to their function, location, or drainage area.

I. Pipe Outlet Sediment Trap
II. Stone Outlet Sediment Trap
III. Compost Filter Sock Sediment Trap

I. Pipe Outlet Sediment Trap

A Pipe Outlet Sediment Trap consists of a trap formed by embankment or excavation. The outlet for the trap is through a perforated riser and a pipe through the embankment. The outlet pipe and riser shall be made of steel, corrugated metal or other suitable material. The top of the embankment shall be at least 1 ½ feet above the crest of the riser. The preferred method of dewatering the sediment trap is by surface skimmer. See Dewatering Device Standard, page 5.10. If the riser alone is used for dewatering, the top 2/3 of the riser shall be perforated with one (1) inch nominal diameter holes or slits spaced six (6) inches vertically and horizontally placed in the concave portion of the corrugated pipe.

No holes or slits will be allowed within six (6) inches of the top of the horizontal barrel. All pipe connections shall be watertight. The riser shall be wrapped with ½ to ¼ inch hardware cloth wire then wrapped with filter cloth with a sieve size between #40-80 and secured with strapping or connecting band at the top and bottom of the cloth. The cloth shall cover an area at least six (6) inches above the highest hole and six (6) inches below the lowest hole. The top of the riser pipe shall not be covered with filter cloth. The riser shall have a base with sufficient weight to prevent flotation of the riser. Two approved bases are:

1. A concrete base 12 in. thick with the riser embedded 9 in. into the concrete base, or
2. One quarter inch, minimum, thick steel plate attached to the riser by a continuous weld around the circumference of the riser to form a watertight connection. The plate shall have 2.5 feet of stone, gravel, or earth placed on it to prevent flotation. In either case, each side of the square base measurement shall be the riser diameter plus 24 inches.

Pipe outlet sediment traps shall be limited to a five (5) acre maximum drainage area. Pipe outlet sediment trap is interchangeable in the field with stone outlet provided that these sediment traps are constructed in accordance with the detail and specifications for that trap.

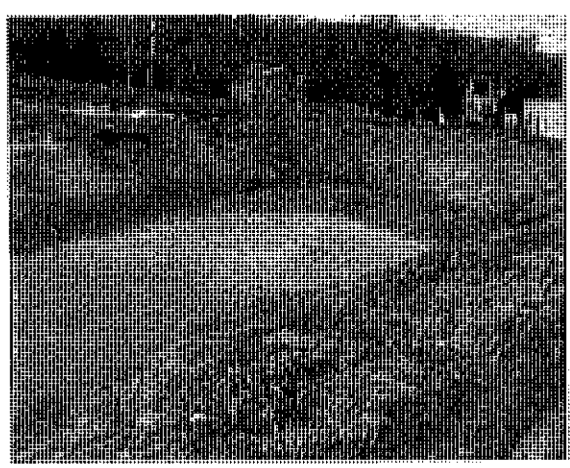
Select pipe diameter from the following table:
See details for Pipe Outlet Sediment Trap ST-I in Figure 5.25 and 5.26 on pages 5.49 and 5.50.

Optional sediment trap dewatering devices are shown on Figure 5.29 on Page 5.53.

Minimum Sizes

Barrel Diameter[1] (in.)	Riser Diameter[1] (in.)	Maximum Drainage Area (ac.)
12	15	1
15	18	2
18	21	3
21	24	4
21	27	5

[1] Barrel diameter may be same size as riser diameter



II. Stone Outlet Sediment Trap

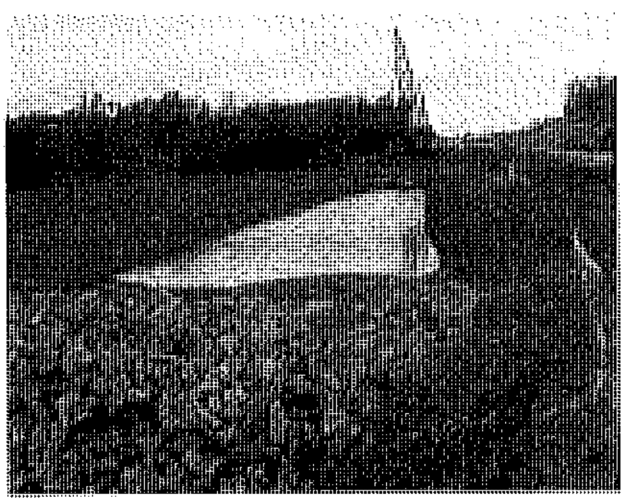
A Stone Outlet Sediment Trap consists of a trap formed by an embankment or excavation. The outlet of this trap is over a stone section placed on level ground. The minimum length (feet) of the outlet shall be equal to four (4) times the drainage area (acres).

Required storage shall be 3,600 cubic feet per acre of drainage area.

The outlet crest (top of stone in weir section) shall be level, at least one (1) foot below top of embankment and no more than one (1) foot above ground beneath the outlet. Stone used in the outlet shall be small riprap (4 in. x 8 in.). To provide more efficient trapping effect, a layer of filter cloth should be embedded one (1) foot back into the upstream face of the outlet stone or a one (1) foot thick layer of two (2) inch or finer aggregate shall be placed on the upstream face of the outlet.

Stone Outlet Sediment Traps may be interchangeable in the field with pipe outlet sediment traps provided they are constructed in accordance with the detail and specifications for those traps. Stone outlet sediment traps shall be limited to a five (5) acre maximum drainage area.

See details for Stone Outlet Sediment Trap ST-II in Figure 5.27 on page 5.51



III. Compost Sock Sediment Trap

A compost sock sediment trap consists of a trap formed by creating an enclosure of geotextile mesh tubes filled with a compost filter media. These traps are used in locations where there is no opportunity to direct runoff into larger traps or well vegetated areas. This could occur at site entrances and access points or in tight areas due to construction boundary limits.

Surface runoff can be directed to the trap with standard conveyance practices. Groundwater or surface ponding in low areas can be pumped into the compost sock sediment trap with appropriate energy dissipation at the pump outlet to prevent scour.

Design criteria for Compost Sock Sediment Trap

1. The maximum drainage area tributary to the trap shall be 5 acres.

2. The minimum settled height above ground shall be 2.0 feet formed by staking 3 compost filter socks in a pyramid as shown in Figure 5.28 on page 5.52.

3. The storage volume provided in the compost sock sediment trap shall be 3,600 cubic feet per tributary drainage acre.

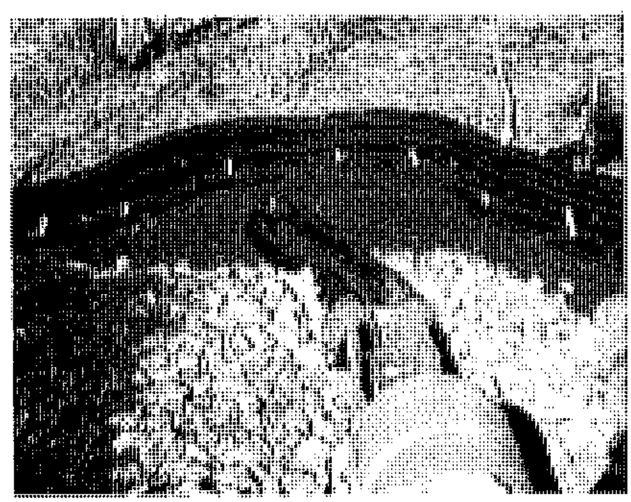
4. If necessary, additional storage area can be created by excavating a sump 1 foot deep beginning at least 5 feet away from the inside sock.

5. All compost filter sock materials, mesh, and compost, will meet the material specifications listed in the Compost Filter Sock standard. No spillway is required.

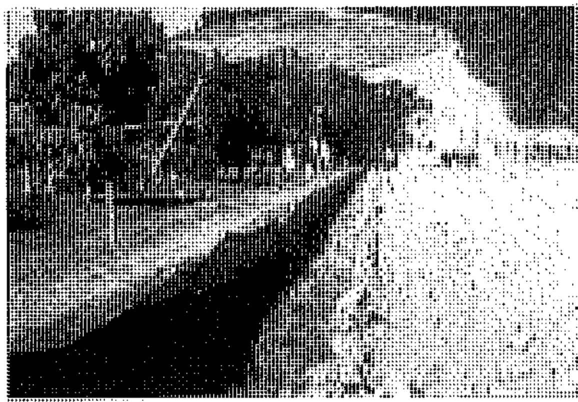
6. Compost filter sock sediment traps shall be inspected weekly and after every rainfall event. Sediment shall be removed when it reaches one third, 1/3, the height of the trap.

7. The maximum limit of use for a compost sock sediment trap is one (1) year. The existing trap shall be replaced if there is a need for a trap beyond that time limit.

8. Upon completion of the work, the compost sock sediment trap shall be removed. The compost within the socks may be used during cleanup as a vegetative growth medium in accordance with the site stabilization plan.



STANDARD AND SPECIFICATIONS FOR SILT FENCE



Definition & Scope

A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and

2. Maximum ponding depth of 1.5 feet behind the fence; and

3. Erosion would occur in the form of sheet erosion; and

4. There is no concentration of water flowing to the barrier; and

5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.

2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.

3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

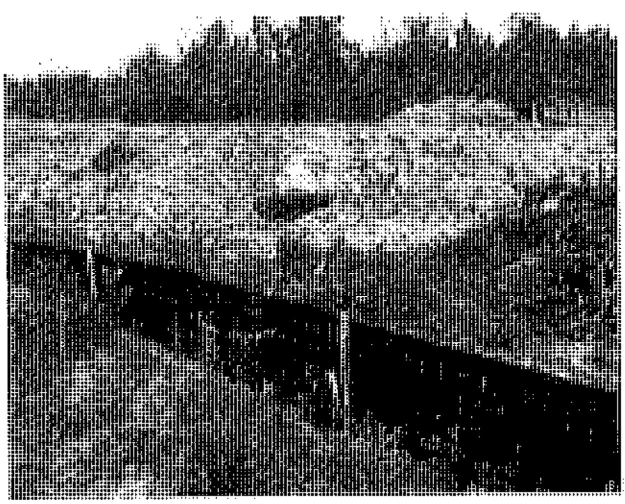
Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/ min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

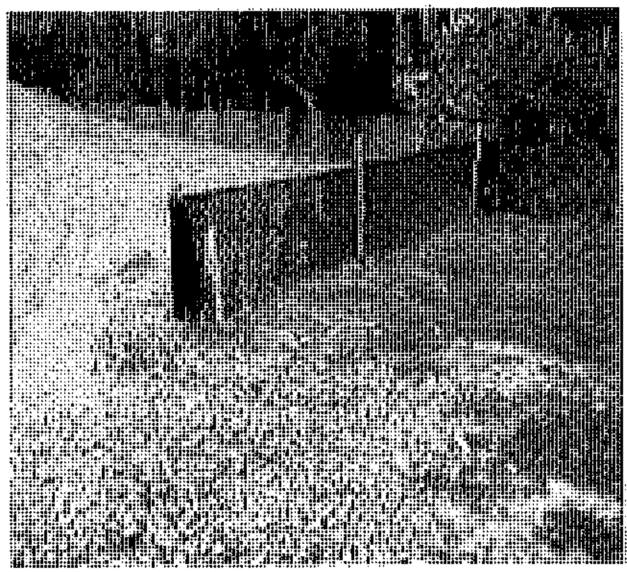
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

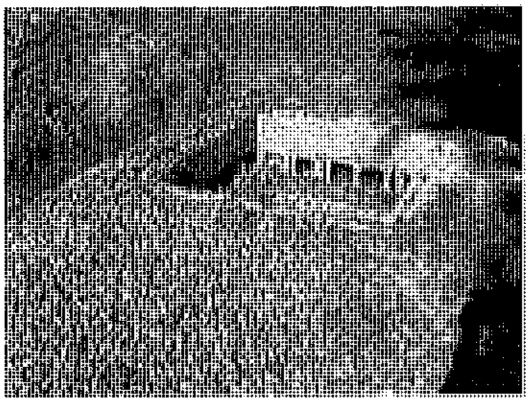
Reinforced Silt Fence



Super Silt Fence



STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION



Definition & Scope

A temporary barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Paved Surface Inlet Protection
V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

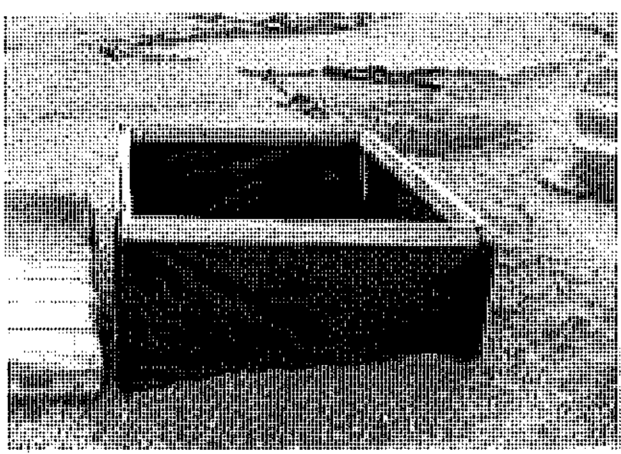
Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection



This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

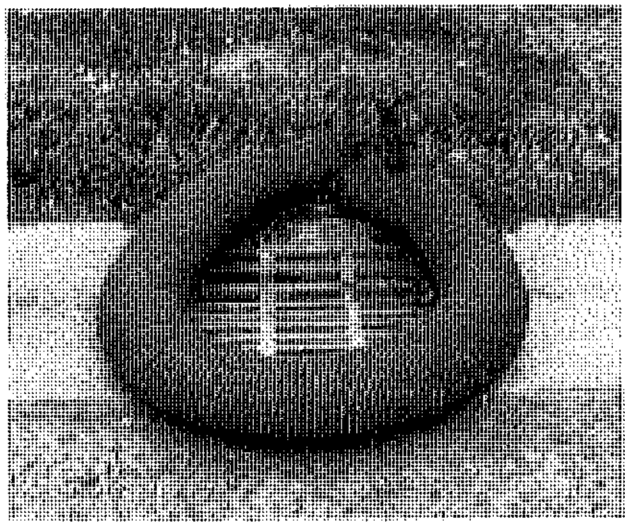
The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet ("doughnut"). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

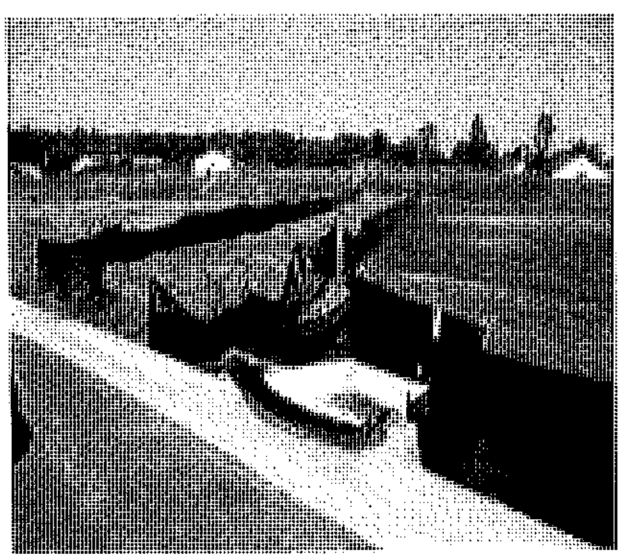
The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection



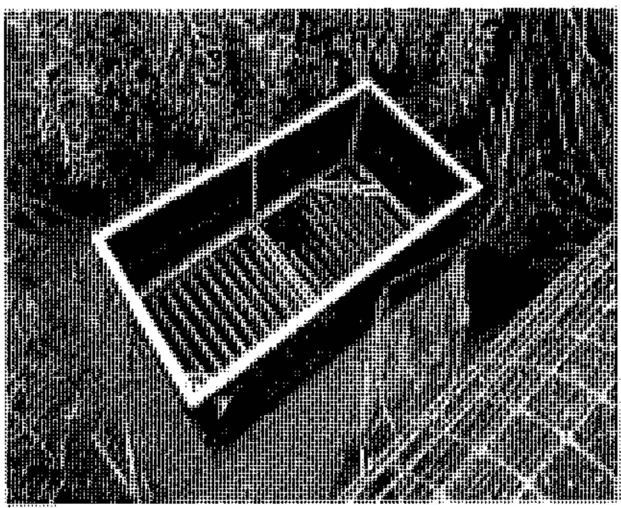
This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.



The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection



The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

APPENDIX F

EXCERPTS FROM THE "NEW YORK STATE STORMWATER DESIGN MANUAL"
CONSTRUCTION SPECIFICATIONS

C.3 Construction Specifications for Bioretention, Sand Filters and Open Channels

Sand Filter Specifications

Material Specifications for Sand Filters

The allowable materials for sand filter construction are detailed in Table 1.

Sand Filter Testing Specifications

Underground sand filters, facilities within sensitive groundwater aquifers, and filters designed to serve urban hot spots are to be tested for water tightness prior to placement of filter layers. Entrances and exits should be plugged and the system completely filled with water to demonstrate water tightness.

All overflow weirs, multiple orifices and flow distribution slots to be field-tested as to verify adequate distribution of flows.

Sand Filter Construction Specifications

Provide sufficient maintenance access; 12-foot-wide road with legally recorded easement. Vegetated access slopes to be a maximum of 10%; gravel slopes to 15%; paved slopes to 25%.

Absolutely no runoff is to enter the filter until all contributing drainage areas have been stabilized.

Surface of filter bed to be *completely level.*

All sand filters should be clearly delineated with signs so that they may be located when maintenance is due.

Surface sand filters shall be planted with appropriate grasses as specified in your local NRCS Standards and Specifications guidance.

Pocket sand filters (and residential bioretention facilities treating areas larger than an acre) shall be sized with an ornamental stone window covering approximately 10% of the filter area. This surface shall be 2" to 5" size stone on top of a pea gravel layer (3/4 inch stone) approximately 4 to 6" of pea gravel.

Specifications Pertaining to Underground Sand Filters

Provide manhole and/or grates to all underground and below grade structures. Manholes shall be in compliance with standard specifications for each jurisdiction but diameters should be 30" minimum (to comply with OSHA confined space requirements) but not too heavy to lift. Aluminum and steel louvered doors are also acceptable. Ten-inch long (minimum) manhole steps (12" o.c.) shall be cast in place or drilled and mortared into the wall below each manhole. A 5= minimum height clearance (from the top of the sand layer to the bottom of the slab) is required for all permanent underground structures. Lift rings are to be supplied to remove/replace top slabs. Manholes may need to be grated to allow for proper ventilation; if required, place manholes *away* from areas of heavy pedestrian traffic.

Underground sand filters shall be constructed with a dewatering gate valve located just above the top of the filter bed should the bed clog.

Underground sand beds shall be protected from trash accumulation by a wide mesh geotextile screen to be placed on the surface of the sand bed; screen is to be rolled up, removed, cleaned and re-installed during maintenance operations.

Table C-1 Sand Filter Material Specifications

Parameter	Specification	Size	Notes
Sand	Clean AASHTO M-6 or ASTM C-33 concrete sand	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. "Rock dust" cannot be substituted for sand.
Peat	Ash content: < 15% PH range: 5.2 to 4.9 Loose bulk density 0.12 to 0.15 g/cc	n/a	The material must be Reed-Sedge Hemic Peat, shredded, uncompacted, uniform, and clean.
Underdrain Gravel	AASHTO M-43 No. 67	0.25" to 0.75"	
Geotextile Fabric (if required)	ASTM D-751 (puncture strength - 125 lb.) ASTM D-1117 (Mullen Burst Strength - 400 psi) ASTM D-1682 (Tensile Strength - 300 lb.)	0.08" thick equivalent opening size of #80 sieve	Must maintain 125 gpm per sq. ft. flow rate. Note: a 4" pea gravel layer may be substituted for geotextiles meant to separate sand filter layers.
Impermeable Liner (if required)	ASTM D 751 (thickness) ASTM D 412 (tensile strength 1,100 lb., elongation 200%) ASTM D 624 (Tear resistance - 150 lb./in) ASTM D 471 (water adsorption: +8 to -2% mass)	30mil thickness	Liner to be ultraviolet resistant. A geotextile fabric should be used to protect the liner from puncture.
Underdrain Piping	ASTM D-1785 or AASHTO M-278	6" rigid schedule 40 PVC	3/8" perf. 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes
Concrete (Cast-in-place)	See local DOT Standards and Specs. f=c = 3500 psi, normal weight, air-entrained; re-inforcing to meet ASTM 615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a licensed professional structural engineer.
Concrete (pre-cast)	per pre-cast manufacturer	n/a	SEE ABOVE NOTE
Non-rebar steel	ASTM A-36	n/a	structural steel to be hot-dipped galvanized ASTM A123

Specifications for Bioretention

Material Specifications

The allowable materials to be used in bioretention area are detailed in Table G.2.

Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bioretention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of noxious weeds.

The planting soil shall be tested and shall meet the following criteria:

pH range	5.2 - 7.0
organic matter	1.5 - 4%
magnesium	35 lb./ac
phosphorus P_2O_5	75 lb./ac
potassium K_2O	85 lb./ac
soluble salts	not to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the top soil was excavated.

Since different labs calibrate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

Compaction

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use excavation hoes to remove original soil. If bioretention areas are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and storage volumes and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before back filling the required sand layer. Pump any ponded water before preparing (rototilling) base.

When back filling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When back filling the bioretention facility, place soil in lifts 12" or greater. Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials by hand or with light equipment such as a compact loader or a dozer/loader with marsh tracks.

Plant Installation

Mulch around individual plants only. Shredded hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

The plant root ball should be planted so 1/8th of the ball is above final grade surface.

Root stock of the plant material shall be kept moist during transport and on-site storage. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" X 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed shall be tilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch is used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

Underdrains

Under drains to be placed on a 3'-0" wide section of filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of under drain pipes not terminating in an observation well shall be capped.

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

Miscellaneous

The bioretention facility may not be constructed until all contributing drainage area has been stabilized.

Table C.2 Materials Specifications for Bioretention

Parameter	Specification	Size	Notes
Plantings	see your local NRCS Standards and Specifications guidance.	n/a	plantings are site-specific
Planting Soil [4= deep]	sand 35 - 60% silt 30 - 55% clay 10 - 25%	n/a	USDA soil types loamy sand, sandy loam or loam
Mulch	shredded hardwood		aged 6 months, minimum
pea gravel diaphragm and curtain drain	pea gravel: ASTM D 448 ornamental stone: washed cobbles	pea gravel: No. 6 stone: 2" to 5"	
Geotextile	Class "C" apparent opening size (ASTM-D-4751) grab tensile strength (ASTM-D-4632) burst strength (ASTM-D-4833)	n/a	for use as necessary beneath underdrains only
underdrain gravel	AASHTO M-43. No. 67.	0.25" to 0.75"	
underdrain piping	ASTM D 1785 or AASHTO M-278	6" rigid schedule 40 PVC	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes
poured in place concrete (if required)	See local DOT Standards and Specs.; f=c = 3500 psi. @ 28 days, normal weight, air-entrained; re-inforcing to meet ASTM 615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a licensed professional structural engineer.
sand [1= deep]	AASHTO M-6 or ASTM C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

APPENDIX G

NYSDEC GERENAL PERMIT (GP-0-20-001)

Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020 Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* ("SWPPP") the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;

   (ii) Control stormwater *discharges*, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharges* from the site;

   (vi) Provide and maintain *natural buffers* around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization.** In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering.** *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures.** Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharges* are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharges* directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. **Sizing Criteria for Combination of Redevelopment Activity and New Development**

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges* from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

   (i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

   (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of a *construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4*, the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

   a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

   a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria*, Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

   c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site,* and all points of *discharge* from the *construction site.*

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

    a. Total project completion - All *construction activity* identified in the SWPPP has been completed; <u>and</u> all areas of disturbance have achieved *final stabilization*; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; <u>and</u> all areas disturbed as of the project shutdown date have achieved *final stabilization*; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator*, its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

   a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity.*

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities*" and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres: • Single family home <u>not</u> located in one of the watersheds listed in Appendix C or <u>not</u> *directly discharging* to one of the 303(d) segments listed in Appendix E • Single family residential subdivisions with 25% or less impervious cover at total site build-out and <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E • Construction of a barn or other *agricultural building*, silo, stock yard or pen.
The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land: All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
The following construction activities that involve soil disturbances of one (1) or more acres of land: • Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains • Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects • Pond construction • Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover • Cross-country ski trails and walking/hiking trails • Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development; • Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path. • Slope stabilization projects • Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land: • Spoil areas that will be covered with vegetation • Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions, • Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions • Demolition project where vegetation will be established, and no redevelopment is planned • Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover* • Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area • Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

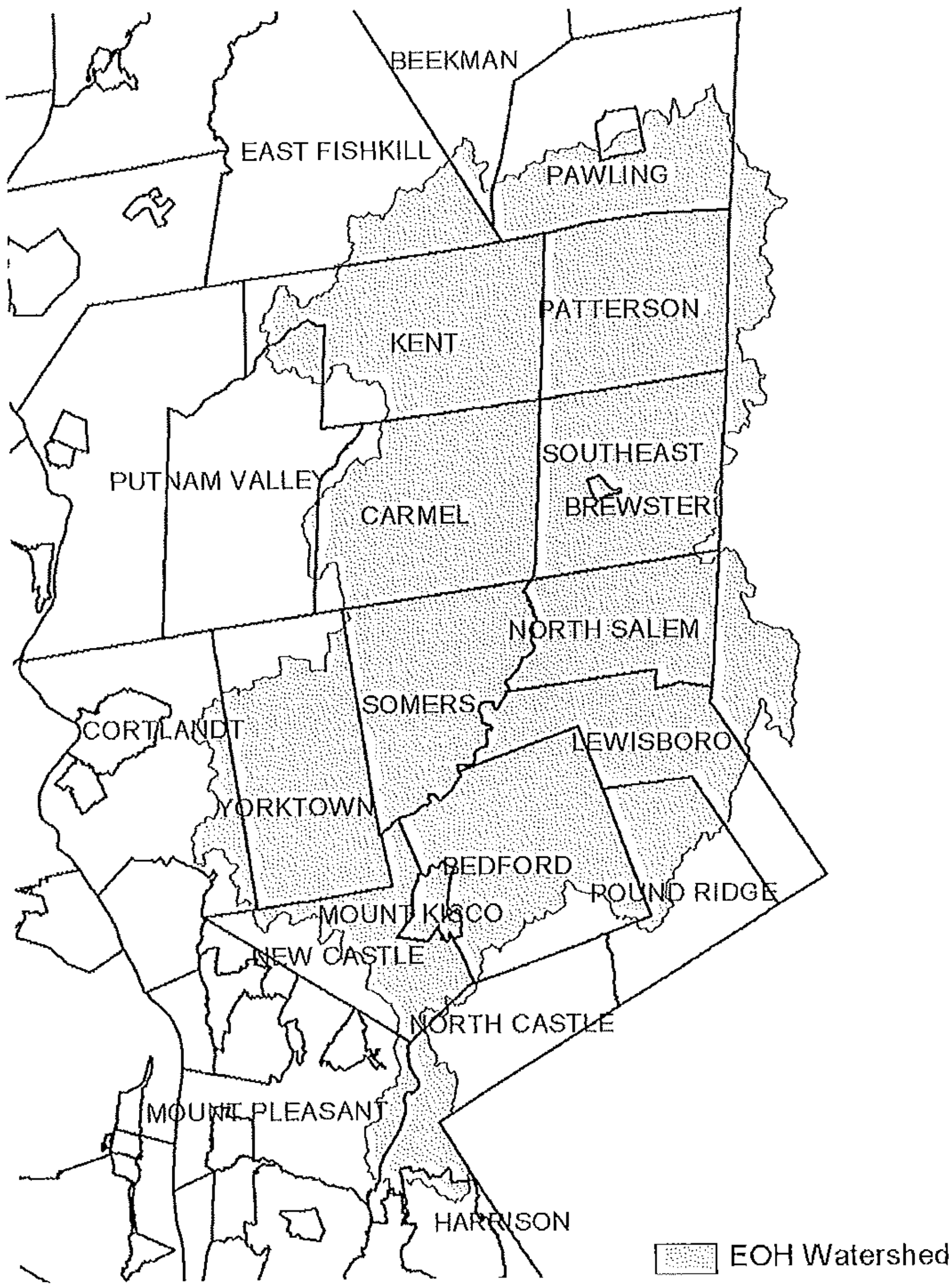
- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* <u>or</u> *alter the hydrology from pre to post development* conditions, <u>and</u> are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson



<u>**Figure 2 - Onondaga Lake Watershed**</u>

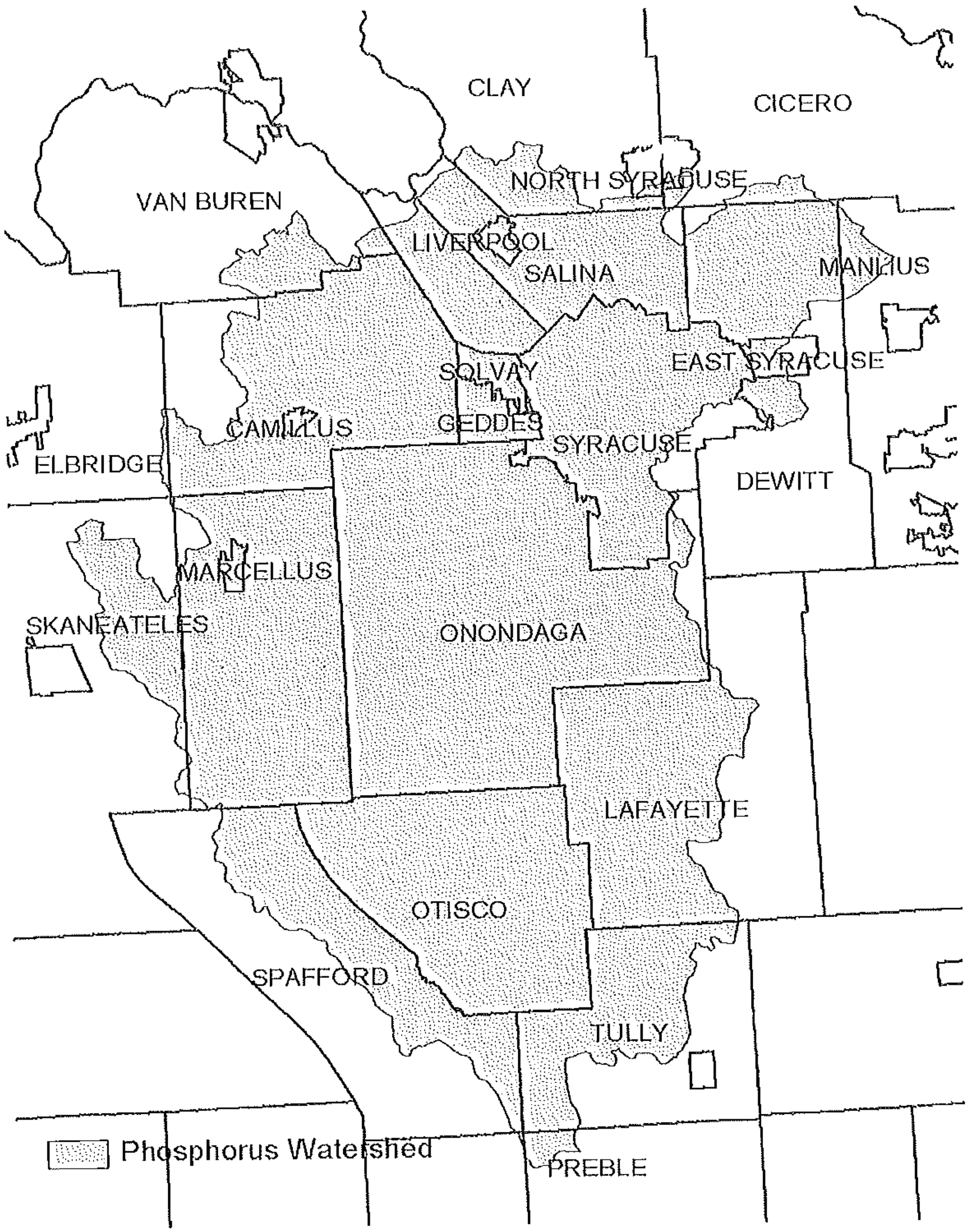


Figure 3 - Greenwood Lake Watershed

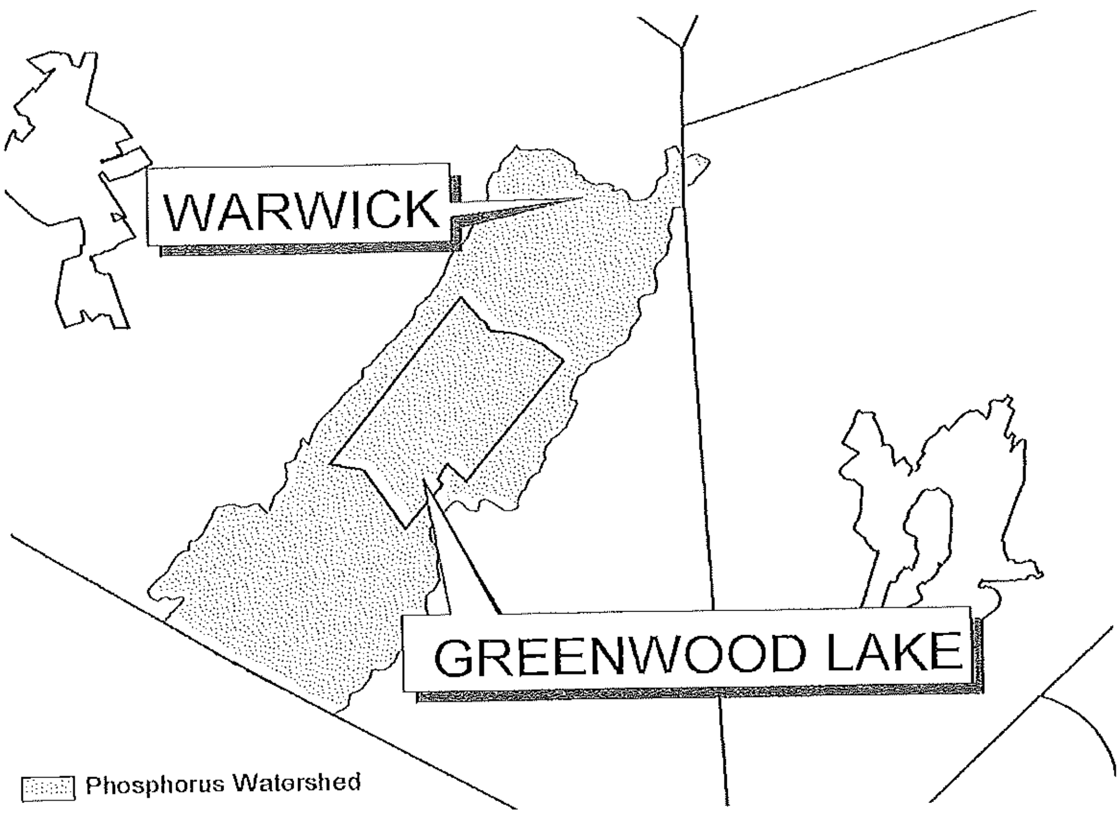


Figure 4 - Oscawana Lake Watershed

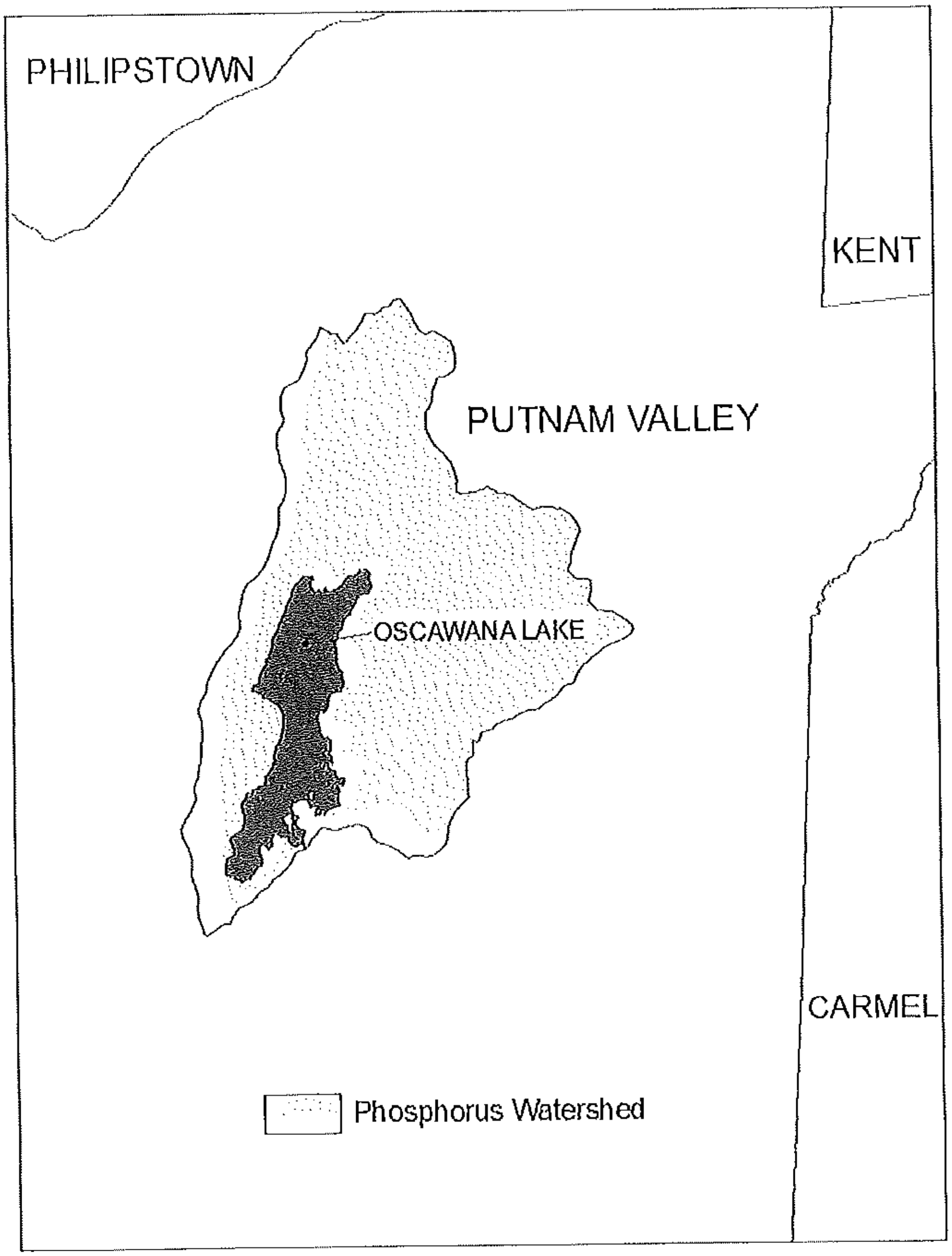
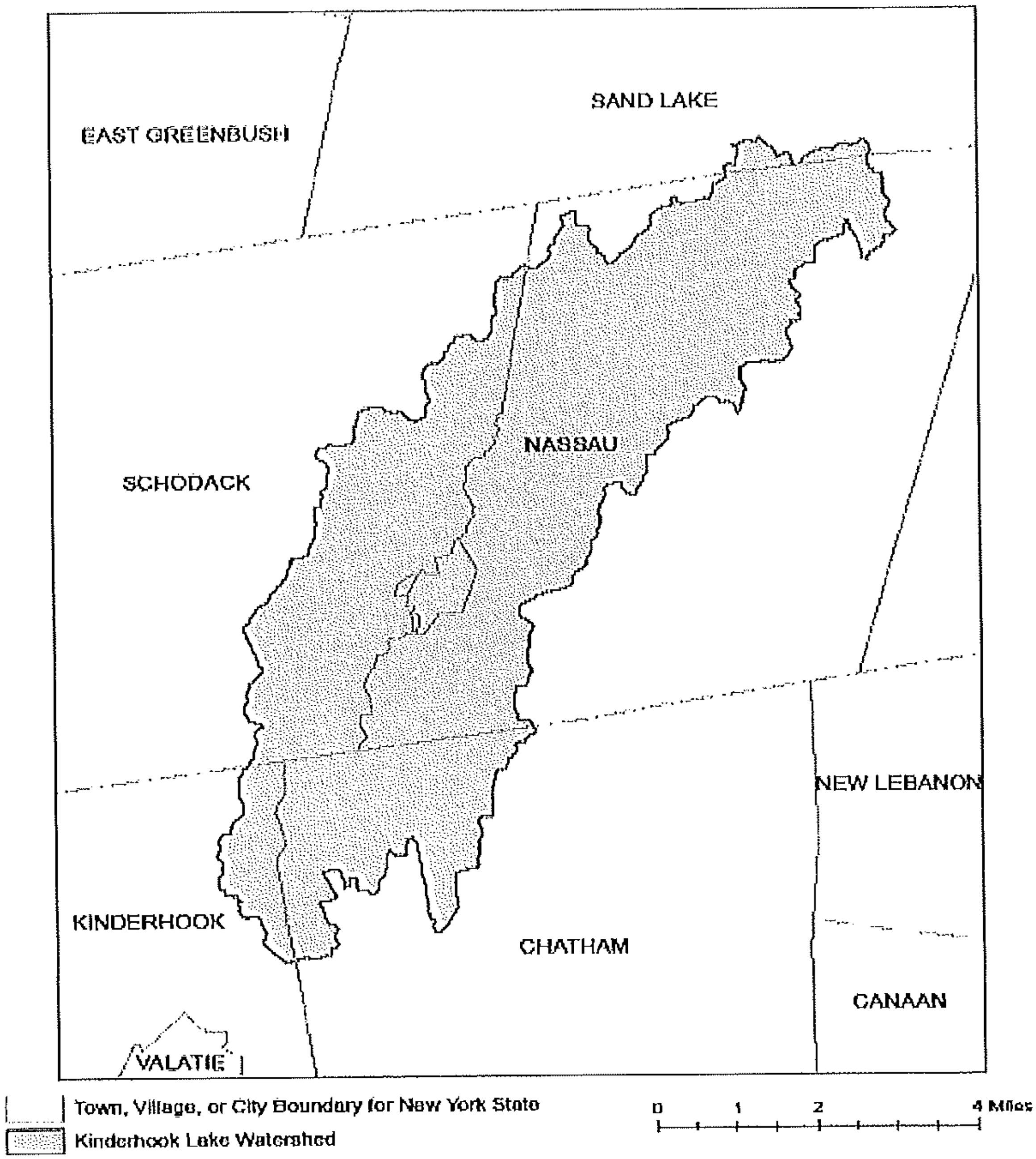


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	Division of Environmental Permits (DEP) Permit Administrators	Division of Water (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1W White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX H

STANDARD CONSTRUCTION & MAINTENANCE INSPECTION FORMS

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Bioretention Stormwater Management Practices Level 1 Inspection Checklist

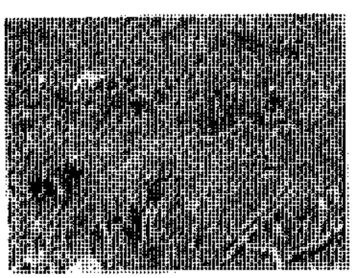
SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	

Party Responsible for Maintenance	System Type		Type of Site
☐ Same as SMP Owner ☐ Other ______________	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		Inspection Time	
Inspector			
Date of Last Inspection			

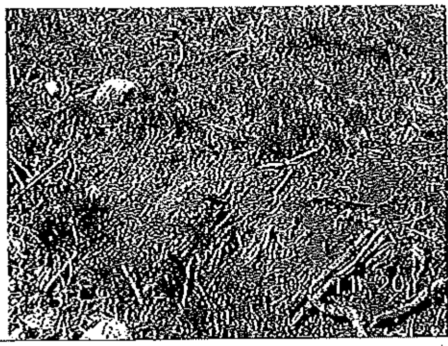
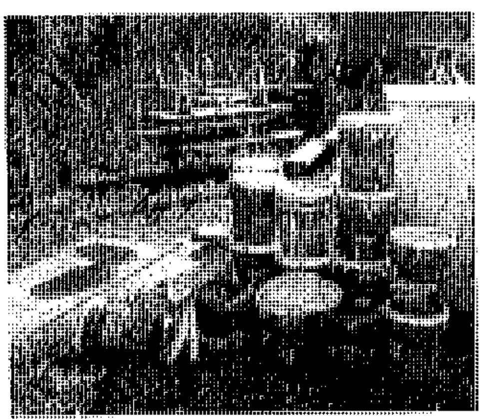
BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)		Follow-Up Actions
	☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other:

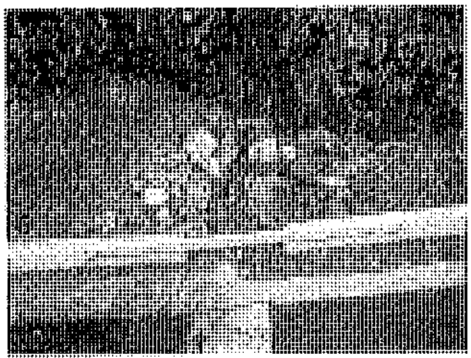
BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check If Present)	Follow-Up Actions
	☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

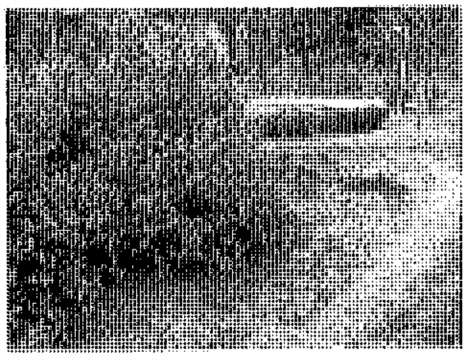
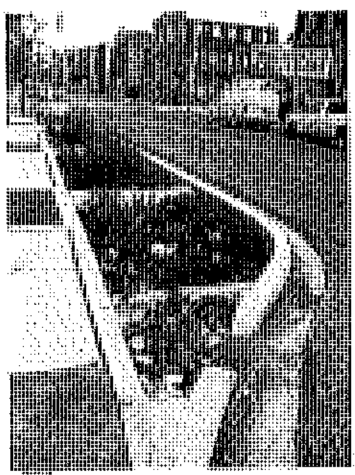
BR Inlets

Stand in the Bioretention cell itself and look for all the places where water flows in. Often there will be multiple points of inflow to the practice.

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets collect grit and debris or grass/weeds. Some water may not be getting into the Bioretention cell. The objective is to have a clear pathway for water to flow into the cell.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Bioretention cell. ☐ Dispose of all material properly where it will not re-enter the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Bioretention cell.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Bioretention cell.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets, and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

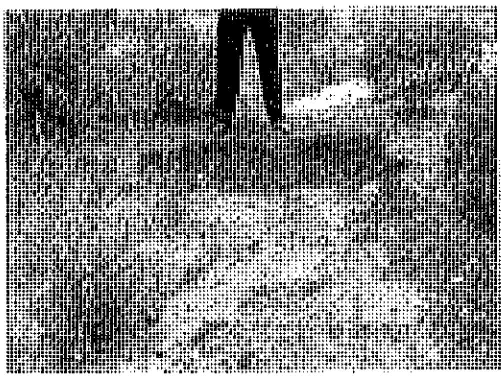
BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ Mulch (if used) needs to be replaced or replenished. The mulch layer had decomposed or is less than 1-inch thick.	☐ Add new mulch to a total depth (including any existing mulch that is left) of 2 to 3 inches. The mulch should be shredded hardwood mulch that is less likely to float away during rainstorms. ☐ Avoid adding too much mulch so that inlets are obstructed or certain areas become higher than the rest of the Bioretention surface. ☐ Other:
 ☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the bottom.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the Bioretention cell . ☐ If removing the material creates a hole or low area, fill with soil mix that matches original mix and cover with mulch so that the Bioretention surface area is as flat as possible. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the Bioretention surface. ☐ Kick-Out to Level 2 Inspection: The Bioretention cell is too densely vegetated to assess sediment accumulation or ponding; see BR-4, Vegetation.

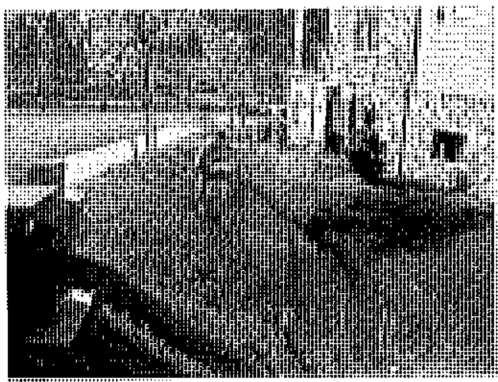
BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows across the Bioretention surface or on the slopes, or sinkholes are forming in certain areas. ☐ Source: Stormwater Maintenance, LLC.	☐ Try filling the eroded areas with clean topsoil or sand, and cover with mulch. ☐ If the problem recurs, you may have to use stone (e.g., river cobble) to fill in problem areas. ☐ If the erosion is on a side slope, fill with clay that can be compacted and seed and mulch the area. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the Bioretention cell. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.
 ☐ The bottom of the Bioretention cell is not flat, and the water pools at one end, along an edge, or in certain pockets. The whole bottom is not uniformly covered with water. See design plan to verify that bioretention surface is intended to be flat. Check during or immediately after a rainstorm.	☐ If the problem is minor (just small, isolated areas are not covered with water), try raking the surface OR adding mulch to low spots to create a more level surface. You may need to remove and replace plantings in order to properly even off the surface. ☐ Check the surface with a string and bubble level to get the surface as flat as possible. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Ponding water is isolated to less than half of the Bioretention surface area, and there seem to be elevation differences of more than a couple of inches across the surface.

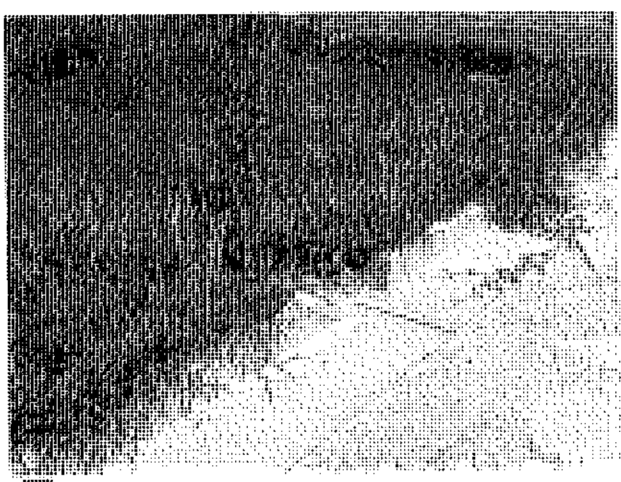
BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ Water stands on the surface more than 72 hours after a rainstorm and /or wetland-type vegetation is present. The Bioretention cell does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

BR Vegetation

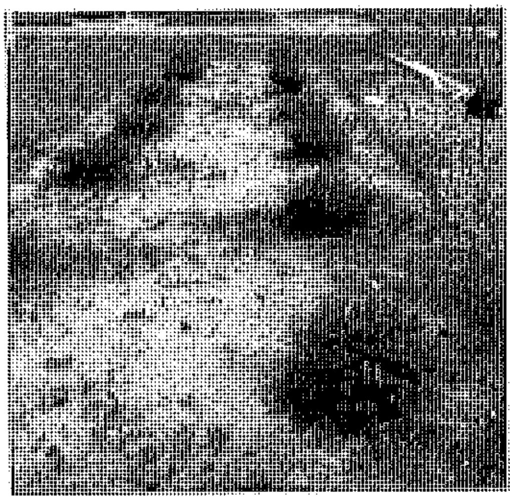
Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance—pulling weeds, removing dead and diseased plants, replacing mulch around plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole Bioretention cell , bush-hog the entire area before seedheads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Re-plant with species that are aesthetically pleasing and seem to be doing well in the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design, or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)



☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.

Follow-Up Actions

☐ The original plants are likely not suited for the actual conditions within the Bioretention cell . If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season.

☐ Other:

☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., rain gardens), this task will likely require a landscape design professional or horticulturalist.

BR Outlets

Examine outlets that release water out of the Bioretention cell.

Problem (Check if Present)

☐ Erosion at outlet

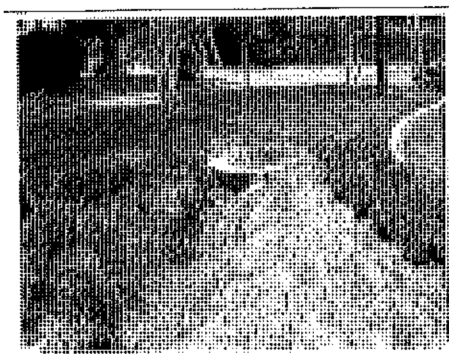
Follow-Up Actions

☐ Add stone to reduce the impact from the water flowing out of the outlet pipe or weir during storms.

☐ Other:

☐ Kick-Out to Level 2 Inspection: Rills have formed and erosion problem becomes more severe.

Problem (Check if Present)



☐ Outlet obstructed with mulch, sediment, debris, trash, etc.

Follow-Up Actions

☐ Remove the debris and dispose of it where it cannot re-enter the Bioretention cell .

☐ Other:

☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Additional Notes:

Inspector:_______________________________________ Date: ___________________

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____________ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _______________________________ Date: ___________________

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Bioretention Stormwater Management Practices
Level 2 Inspection Checklist

SMP ID #		SMP Owner		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		Longitude	

Party Responsible for Maintenance	System Type		Type of Site
☐ Same as SMP Owner ☐ Other ____________	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		Inspection Time	
Inspector			
Date of Last Inspection			

Level 2 Inspection: BIORETENTION
NOTE: Key Source for this Information (CSN, 2013)

Recommended Repairs	Triggers for Level 3 Inspection
Observed Condition: Water Stands on Surface for More than 72 Hours after Storm	
☐ Condition 1: Small pockets of standing water Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have bad soil media, try scraping off top 3 inches of media and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas. ☐ Condition 2: Standing water is widespread or covers entire surface Requires diagnosis and resolution of problem: • Clogged underdrain? • Filter fabric between soil media and underdrain stone? • Need to install underdrain if not present? • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Improper soil media?	• Soil media is clogged and problem is not evident from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice. ☐ Level 3 inspection necessary
Observed Condition: Vegetation is sparse or out of control	
☐ Condition 1: Original design planting plan seems good but has not been maintained, so there are many invasives and/or dead plants Will require some horticultural experience to restore vegetation to intended condition by weeding, pruning, removing plants, and adding new plants. ☐ Condition 2: Original design planting plan is unknown or cannot be actualized A landscape architect or horticulturalist will be needed to redo the planting plan. Will likely require analysis of soil pH, moisture, organic content, sun/shade, and other conditions to make sure plants match conditions. Plan should include invasive plant management and maintenance plan to include mulching, watering, disease intervention, periodic thinning/pruning, etc.	• Vegetation deviates significantly from original planting plan; Bioretention has been neglected and suffered from deferred maintenance. • Owner/responsible party does not know how to maintain the practice. ☐ Level 3 inspection necessary
Observed Condition: Bioretention does not conform to original design plan in surface area or storage	
☐ Condition 1: Level 2 Inspection reveals that practice is too small based on design dimension, does not have adequate storage (e.g., ponding depth) based on the plan, and/or does not treat the drainage area runoff as indicated on the plan Small areas of deviation can be corrected by the property owner or responsible party, but it is likely that a Qualified Professional will have to revisit the design and attempt a redesign that meets original objectives or that can be resubmitted to the municipality for approval.	• More than a 25% departure from the approved plan in surface area, storage, or drainage area; sometimes less than this threshold at the discretion of the Level 2 inspector. ☐ Level 3 inspection necessary

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Level 2 Inspection: BIORETENTION
NOTE: Key Source for this Information *(CSN, 2013)*

Recommended Repairs	Triggers for Level 3 Inspection
Observed Condition: Severe erosion of filter bed, inlets, or around outlets	
☐ Condition 1: Erosion at inlets The lining (e.g., grass, matting, stone, rock) may not be adequate for the actual flow velocities coming through the inlets. First line of defense is to try a more non-erosive lining and/or to extend the lining further down to where inlet slopes meet the Bioretention surface. If problem persists, analysis by a Qualified Professional is warranted. ☐ Condition 2: Erosion of Bioretention filter bed This is often caused by "preferential flow paths" through and along the Bioretention surface. The source of flow should be analyzed and methods employed to dissipate energy and disperse the flow (e.g., check dams, rock splash pads). ☐ Condition 3: Erosion on side slopes Again, the issue is likely linked with unanticipated flow paths down the side slopes (probably overland flow that concentrates as it hits the edge of the slope). For small or isolated areas, try filling, compacting, and re-establishing healthy ground cover vegetation. If the problem is more widespread, further analysis is required to determine how to redirect the flow.	• Erosion (rills, gullies) is more than 12 inches deep at inlets or the filter bed or more than 3 inches deep on side slopes. • If the issue is not caused by moving water but some sort of subsurface defect. This may manifest as a sinkhole or linear depression and be associated with problems with the underdrain stone or pipe or underlying soil. ☐ Level 3 inspection necessary
Observed Condition: Significant sediment accumulation, indicating an uncontrolled source of sediment	
☐ Condition 1: Isolated areas of sediment accumulation, generally less than 3-inches deep Sediment source may be from a one-time or isolated event. Remove accumulated sediment and top 2 to 3 inches of Bioretention soil media; replace with clean material. Check drainage area for any ongoing sources of sediment. ☐ Condition 2: Majority of the surface is caked with "hard pan" (thin layer of clogging material) or accumulated sediment that is 3-inches deep or more This can be caused by an improper construction sequence (drainage area not fully stabilized prior to installation of Bioretention soil media) or another chronic source of sediment in the drainage area. Augering several holes down through the media can indicate how severe the problem is; often the damage is confined to the first several inches of soil media. Removing and replacing this top layer (or to the depth where sediment incursion is seen in auger holes) can be adequate, as long as the problem does not recur.	• More than 2 inches of accumulated sediment cover 25% or more of the Bioretention surface area. • "Hard pan" of thin, crusty layer covers majority of Bioretention surface area and seems to be impeding flow of water down through the soil media. • New sources of sediment seem to be accumulating with each significant rainfall event. ☐ Level 3 inspection necessary

Notes:

Inspector:______________________________ Date: ______________

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on __________ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: ______________________________ Date: ______________

<u>APPENDIX I</u>

NOTICE OF INTENT

NOTICE OF TERMINATION

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.35

(Submission #: HPX-5G27-0XM8N, version 1)

Details

Originally Started By	CHRISTOPHER FRITZL
Alternate Identifier	Fabulous Events, Inc.
Submission ID	HPX-5G27-0XM8N
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
temp

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
NONE PROVIDED

Owner/Operator Contact Person First Name
NONE PROVIDED

Owner/Operator Mailing Address
NONE PROVIDED

City
NONE PROVIDED

State
NONE PROVIDED

Zip
NONE PROVIDED

Phone
NONE PROVIDED

Email
NONE PROVIDED

Federal Tax ID
NONE PROVIDED

Project Location

Project/Site Name
Fabulous Events, Inc.

Street Address (Not P.O. Box)
NYS Route 32

Side of Street
North

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Town of Newburgh

State
NY

Zip
12550

DEC Region
3

County
ORANGE

Name of Nearest Cross Street
Crab Apple Court

Distance to Nearest Cross Street (Feet)
1500

Project In Relation to Cross Street
West

Tax Map Numbers Section-Block-Parcel
34-2-25.2,54,74,76,77

Tax Map Numbers
NONE PROVIDED

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.

- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
41.548660066863,-74.05601696097852

Project Details

2. What is the nature of this project?
New Construction

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Pasture/Open Land

Post-Development Future Land Use
Commercial

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
6.18

Total Area to be Disturbed (acres)
4.687

Existing Impervious Area to be Disturbed (acres)
0.00

Future Impervious Area Within Disturbed Area (acres)
2.84

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
0

C (%)
37.6

D (%)
62.4

7. Is this a phased project?
No

8. Enter the planned start and end dates of the disturbance activities.

Start Date
11/01/2024

End Date
05/01/2024

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Federal Wetland

9a. Type of waterbody identified in question 9?
Wetland/Federal Jurisdiction On Site (Answer 9b)

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
Delineated by Consultant

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
NONE PROVIDED

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Yes

16. What is the name of the municipality/entity that owns the separate storm sewer system?
Town of New Windsor

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Lanc & Tully Engineering

Contact Name (Last, Space, First)
Queenan, John

Mailing Address
P.O. Box 687

City
Goshen

State
NY

Zip
10924

Phone
8452943700

Email
jq@lanctully.com

Download SWPPP Preparer Certification Form
Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
NONE PROVIDED
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
Check Dams
Sediment Traps
Silt Fence
Stabilized Construction Entrance
Temporary Swale
Storm Drain Inlet Protection
Dust Control

Biotechnical
None

Vegetative Measures
Mulching
Topsoiling
Seeding

Permanent Structural
Land Grading
Retaining Wall
Rock Outlet Protection

Other
NONE PROVIDED

Post-Construction Criteria

*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Locating Development in Less Sensitive Areas

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.326

29. Post-construction SMP Identification
Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.146

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
No

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
0.047

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
Yes

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs
Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
0.220

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
0.366

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
Yes

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)
0.241

CPv Provided (acre-feet)
0.241

36a. The need to provide channel protection has been waived because:
NONE PROVIDED

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
16.66

Post-Development (CFS)
15.44

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
36.28

Post-Development (CFS)
35.94

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
Property Owner

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
NONE PROVIDED

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
NONE PROVIDED

Total Contributing Impervious Acres for Bioretention (F-5)
2.84

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
Yes

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
0.1

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
No

MS4 SWPPP Acceptance Form Download
Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download
Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
NONE PROVIDED
Comment
NONE PROVIDED

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed (month/year):** ______________

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? ______________________
(acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no
(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:	
Title/Position:	
Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

APPENDIX J

CONSTRUCTION SITE LOG BOOK

CONTRACTOR'S CERTIFICATION STATEMENT

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name ____

Permit No. ______________________ **Date of Authorization** ____________

Name of Operator ____

Prime Contractor ____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified inspector[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements. A preconstruction meeting should be held to review all of the SWPPP requirements with construction personnel.

When construction starts, site inspections shall be conducted by the qualified inspector at least every 7 calendar days. The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified inspector perform a final site inspection. The qualified inspector shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 Refer to "Qualified Inspector" inspection requirements in the current SPDES General Permit for Stormwater Discharges from Construction Activity for complete list of inspection requirements.
2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.
3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?________________________________
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_______________
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_______________
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Access

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page ______
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? __________________

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:

Inspection Forms will be filled out during the entire construction phase of the project.

Required Elements:

1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

Inspector (print name)	Date of Inspection
Qualified Inspector (print name)	Qualified Inspector Signature

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions at the outfalls?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease at the outfalls?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA
[ ] [ ] [ ] Is construction site litter, debris and spoils appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

3. Stabilized Construction Access

Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

Runoff Control Practices

1. Excavation Dewatering

Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

Runoff Control Practices (continued)

2. Flow Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Silt Fence and Linear Barriers

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

2. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated; Filter Sock or Manufactured practices)

Yes No NA
[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ] [ ] [ ] Manufactured insert fabric is free of tears and punctures.
[ ] [ ] [ ] Filter Sock is not torn or flattened and fill material is contained within the mesh sock.
Sediment accumulation ___% of design capacity.

3. Temporary Sediment Trap

Yes No NA
[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
[ ] [ ] [ ] Sediment trap slopes and disturbed areas are stabilized.
Sediment accumulation is ___% of design capacity.

4. Temporary Sediment Basin

Yes No NA
[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
[ ] [ ] [ ] Sediment basin dewatering pool is dewatering at appropriate rate.
Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. All practices shall be maintained in accordance with their respective standards.

Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

Contractor/Subcontractor Certification Statement

Site Name: ____

Site Address: ____

In accordance with Part III.A.6 of the General Permit GP-0-20-001, all contractors and subcontractors identified in the SWPPP shall sign a copy of the following certification statement before undertaking any construction activity at the site identified in the SWPPP.

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings."

Contractor Name: ____

Contractor Address: ____

Contractor Phone Number: ____

Name (please print): ______________________________ **Title:** ____________________

Signature: ______________________________ **Date:** ____________________

<u>Contractor/Subcontractor SWPPP Responsibilities</u>

The above reference contractor/subcontractor is responsible for the following elements of the SWPPP:

APPENDIX K

SITE PLANS

(ATTACHED)