

THOMAS J. EVANS
Director of Revenue and Finance



CODE ENFORCEMENT DEPT.

DAVID BERRY
Construction Official
Zoning Official

TOWNSHIP OF NUTLEY

1 KENNEDY DRIVE
NUTLEY, NEW JERSEY 07110

BUILDING
PLUMBING
ELECTRICAL
FIRE
ZONING

TELEPHONE: (973) 284-4957 · FACSIMILE: (973) 284-0071

May 6, 2026

REVISED

Mr. Benjamin L. Lindeman
536-544 Washington Avenue
Nutley, NJ 07110

**RE: Preliminary and Final Major Site Plan
Proposed Use: Industrial/Warehouse/Office
536-544 Washington Avenue
Block/Lot: 1502/12**

Dear Mr. Lindeman,

Your request for a zoning permit, on behalf of your client Galaxy Invest, Inc., at the above referenced address, to construct a new 24, 740 sf. industrial warehouse and office space, with site improvements, parking lot, lighting, landscaping, etc. as shown on the preliminary and final major site plan by MCB Engineering Associates LLC date March 18, 2026 and plans by Sanbardesign dated March 18, 2026 is denied for the following reasons:

This property is located in a M-O district as shown on the Nutley Zoning Map.

Chapter 700, Article XIII, Section 700-94 A. (3) of the Codes of Nutley states each property shall not have more than one driveway and one curb cut.

Chapter 700, Article XIII, Section 700-94 A. (3) (b) of the Codes of Nutley states curb cuts in all other districts shall not exceed 24 feet in length.

The property is proposed to have two driveways and two curb cuts and will exceed 24' each.

A preliminary review of the preliminary and final major site plan by MCB Engineering Associates dated March 18, 2026 indicates the following items are missing from the Township site plan checklist (Attachment 600-1).

- B. 23 copies of application and site plan (hard copy and digital).
- C. Fee: in accordance with Schedule of Fees 85-42.
- E. Date certified as complete.
- F. (3) A place for signatures of the Chairman and Secretary of the approving board.
- (6) The zone district and the zone districts of adjoining properties within 400 feet.
- (7) All entrances and exits to public streets on site and within 400 feet thereof.
- (8) All property lines, streets, roads, retaining walls, rock outcrops, marsh areas, ponds and streams within 400 feet.
- (26) All existing easements, deed restrictions, other covenants and previous variances granted for the property.
- (27) The floor plan of proposed structures, with accompanying front, rear, and side elevations drawn to scale.
- (29) A soil erosion and sediment control plan.
- (30) Applications filed with the county.

(31) Construction Official will require building elevation views of adjacent properties. [**Added 5-5-2015 y Ord. No. 3305**]

Waivers may be requested and approved only by the Planning Board.

Once the plans are revised and resubmitted, the following will be required to schedule a hearing with the Planning Board.

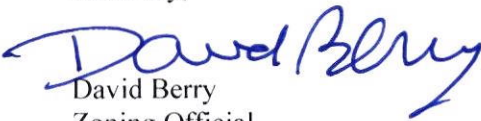
1. 23 copies of the Architect and Engineer Plans (hardcopies and a digital copy)
2. 23 copies of the application (hardcopies and a digital copy)
3. 23 copies of the Site plan checklist
4. Building elevation views of adjacent properties
5. All fees must be paid

A non-refundable variance fee of \$500 and an escrow fee of \$750 for professional review and a fee of \$1,500 for preliminary and final site plan approval, and an escrow fee of \$3,000 for professional review, in connection with your appeal is to be paid to the Code Enforcement Office in order to begin the application process. **All tax and water bills must be paid to date prior to the processing of a variance fee.**

Information on procedures for an appeal of this decision to the Planning Board can be obtained from Jessica Liebold at (973) 284-4957 or jliebold@nutleynj.org. It should be noted that, under State Statute, notice of appeal of this decision must be filed with this office no later than twenty (20) calendar days from the date of this notice.

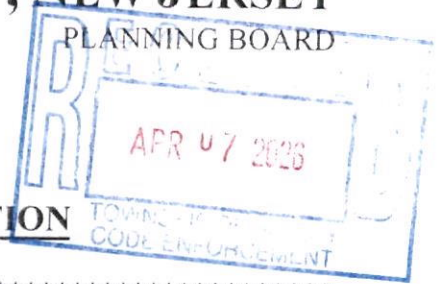
Any changes to the proposed plans must be submitted prior the applications being returned to the Code Enforcement Office. No changes can be made once the application is received by this office.

Sincerely,


David Berry
Zoning Official



TOWNSHIP OF NUTLEY, NEW JERSEY



APPLICATION FOR LAND USE ACTION

To be completed by Township staff only

Date of Denial Letter 5/10/20

Application No. PB-20-00002

Application Fees \$500/\$1500

Escrow Fees \$750/\$3,000

Date Filed 4/7/20

Reviewed for completeness DB

Hearing Date _____

1. SUBJECT PROPERTY

Location 536-544 Washington Avenue Zoning District _____

Tax Map Page _____ Block 1501 Lot(s) 12

Page _____ Block _____ Lot(s) _____

Dimensions Frontage _____ Depth _____ Total Area _____

2. APPLICANT

Name Galaxy Invest, Inc.

Address PO Box 190, Fort Lee, NJ 07024

Telephone Number 551-404-0559 Social Security No. _____

Applicant is a Corporation Partnership Individual

LLC

6. **APPLICANT'S ATTORNEY**

Name: Benjamin Lindeman, Esq., Murphy, Schiller, & Wilkes, LLP
Address: One Gateway Center, Suite 400, Newark, NJ 07102
Telephone: 862-481-2395 Fax: _____

7. **APPLICANT'S ENGINEER**

Name: MCB Engineering Associates, LLC
Address: 11 Furler Street; P.O. Box 588, Totowa, NJ 07511-0588
Telephone: 973-812-6680 Fax: _____

8. **APPLICANT'S PLANNING CONSULTANT**

Name: _____
Address: _____
Telephone: _____ Fax: _____

9. **APPLICANT'S TRAFFIC ENGINEER**

Name: _____
Address: _____
Telephone: _____ Fax: _____

10. **OTHER EXPERTS**

List any other expert who will submit a report or who will testify for the Applicant: (Attach additional sheets as may be necessary)

Name: Sanbar Design
Field of Expertise: Architect
Address: 1516 North 5th Street, Philadelphia, PA 19122
Telephone: _____ Fax: _____

11. APPLICATION REPRESENTS A REQUEST FOR THE FOLLOWING:

SUBDIVISION:

- Minor Subdivision Approval
- Subdivision Approval (Preliminary)
- Subdivision Approval (Final)

Number of lots to be created _____
(including remainder lot)

Number of dwelling units _____
(if applicable)

SITE PLAN:

- Minor Site Plan Approval
- Preliminary Site Plan Approval [Phases (if applicable)] _____
- Final Site Plan Approval [Phases (if applicable)] _____
- Amendment of Revision to an Approved Site Plan

Area to be disturbed (square feet) _____

Total number of proposed dwelling units _____

- Request for waiver from site plan review and approval

Reason for request: _____

- Informal Review
- Appeal decision of an Administrative Officer [N.J.S. 40:55D-70a]
- Map or ordinance interpretation of special question [N.J.S. 40:55D-70b]
- Variance Relief (hardship) [N.J.S. 40:55D-70c(1)]
- Variance Relief (substantial benefit) [N.J.S. 40:55D-70c(2)]
- Variance Relief (use) [N.J.S. 40:55D-70d]
- Conditional use approval [N.J.S. 40:550-67]
- Direct issuance of a permit for a structure in bed of a mapped street, public drainage way, or flood control basis [N.J.S. 40:550-34]
- Direct issuance of a permit for a lot lacking street frontage [N.J.S. 40:550-35]

12. VARIANCE INFORMATION

Sections of Ordinance from which a variance is requested: No municipal variances requested.

13. WAIVERS

Waivers requested of development standards and/or submission requirements: [attach additional pages as needed] See site plan for design waivers. Zoning Denial not included, as same was not timely provided by zoning officer.

14. Explain in detail the exact nature of the application and the changes to be made at the premises, including the proposed use of the premises [attach pages as needed].

Proposed industrial/warehouse and office space.

15. Is a public water line available? Yes No

16. Is a public sanitary sewer available? Yes No

17. Does the application proposed a well and septic system? Yes No

18. Have any proposed new lots been reviewed with the Tax Assessor to determine appropriate lot and block numbers? Yes No

19. Are any off tract improvements required or proposed? Yes No

20. Is the subdivision to be filed by Deed or Plat? N/A; NO subdivision

21. What form of security does the applicant proposed to provide as performance and maintenance guarantees? N/A

22. Other approvals which may be required and date plans submitted:

	Yes	No	Date Plans Submitted
Nutley Municipal Utilities Authority	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Post PB Approval
Essex County Health Department	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Post PB Approval
Essex County Planning Board	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Post PB Approval
Essex County Soil Conservation District	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Post PB Approval
NJ Department of Environmental Protection	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Sewer Extension Permit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Sanitary Sewer Connection Permit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Stream Encroachment Permit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
Other _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>	N/A
NJ Department of Transportation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Post PB Approval
Public Service Electric & Gas Company	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Post PB Approval

23. Certification from the Tax Collector that all taxes due on the subject property have been paid.

24. List of maps, reports and other materials accompanying the application (attach additional pages as required for complete listing).

It is the responsibility of the applicant to mail or deliver copies of the application form and all supporting documents to the members of the professional staff [Engineer, Planning Consultant, Attorney for the Board to which the application is submitted] for their review. The documentation must be received by the code enforcement office for the professional staff prior to the application being deemed incomplete.

Quantity	Description of Item
<u>18</u>	<u>Preliminary & Final Major Site Plan Sets</u>
<u>18</u>	<u>Architectural Plan Sets</u>
<u>18</u>	<u>Topographical Surveys</u>
<u>18</u>	<u>Storm Water Management Plan Reports</u>

CERTIFICATION OF APPLICANT

STATE OF NEW JERSEY }
 } ss.
COUNTY OF ESSEX }

I, MICHAEL EVAR being duly sworn, hereby certify that the foregoing statements and the materials submitted are true. I further certify that I am the individual applicant or that I am an Officer of the Corporate applicant and that I am authorized to sign the application for the Corporation or that I am a general partner of the partnership applicant.

[If the applicant is a corporation this must be signed by an authorized corporate officer. If the applicant is a partnership, this must be signed by a general partner]

Michael Evar
Applicant/ Applicant's Authorized
Officer or Representative

Subscribed and sworn to before me
This 6th day of April, 2026.

Jahynis Cabral
Signature of person authorized to take oaths

JAHYNIS CABRAL
A Notary Public of New Jersey
My Commission Expires December 9, 2026



CERTIFICATION OF ESCROW

STATE OF NEW JERSEY }
 }
 } ss.
COUNTY OF ESSEX }

I, MICHAEL EVAR, understand that the sum of \$ 3000 has been deposited in an escrow account (Builder's Trust Account). In accordance with the Ordinances of the Township of Nutley, I further understand that the escrow account is established to cover the cost of professional services including engineering, planning, legal and other expenses associated with the review of submitted materials. Sums not utilized in the review process shall be returned. If additional sums are deemed necessary, I understand that I will be notified of the required additional amount and shall add that sum to the escrow account within fifteen (15) days.

4/6/26
Date


Owner/ Owner's Authorized
Officer or Representative



TOWNSHIP OF NUTLEY, NEW JERSEY
 ZONING BOARD OF ADJUSTMENT
 PLANNING BOARD

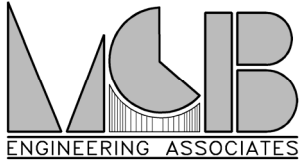
CHECKLIST FOR SITE PLAN APPLICATION
600 Attachment I

	COMPLIES	DEFICIENT	WAIVER SOUGHT
A. Type of site plan:			
(1) Repairs (interior).			
(2) Renovation or alteration (exterior).			
(3) Certificate of continued use.			
(4) Zoning permit.			
(5) Change of use.			
(6) Sign.			
(7) Addition.			
(8) Percent or size of addition			
(9) New structure			
(10) New accessory structure.	X		
(11) Use group.			
B. Eighteen copies of application and site plan	X		
C. Fee: in accordance with Schedule of Fees	X		
D. Date received application			
E. Date certified as complete			

	COMPLIES	DEFICIENT	WAIVER SOUGHT
F. All plans submitted shall be drawn at a scale not smaller than one inch equals 20 feet, signed and sealed by a professional engineer, architect or professional planner, and shall bear the signature and seal of the licensed land surveyor as to topography and boundary survey data and shall contain the following:			
(1) The name and title of the applicant owner and the person preparing the map.	X		
(2) The date, scale and North point.	X		
(3) A place for the signatures of the Chairman and Secretary of the approving board.	X		
(4) The Tax Map lot and block numbers.	X		
(5) The bearing of all property lines with reference to north and south and the length of these lines. And streams within 400 feet.	X		
(6) The zone district and the zone districts of adjoining properties within 400 feet.	X		
(7) All entrances and exits to public streets on site and within 400 feet thereof.			X*
(8) All property lines, streets, roads, retaining walls, rock outcrops, marsh areas, ponds.			X*
(9) The location of principal and accessory structures, with dimensions of the structures and distances to lot lines.	X		
(10) All setback dimensions, landscaped areas, fencing and trees over six inches in caliper.	X		
(11) The location of all signs and exterior lighting, with the size and height of signs and light fixtures and the strength in lumens and direction of illumination.	X		
(12) The stormwater system, including roof leaders and inlets, and design data supporting the adequacy of the system to handle twenty-five-year storm flows.	X		
(13) The sanitary sewage disposal system.	X		
(14) The water supply system and all other utilities.	X		
(15) All curbs, sidewalks, driveways, parking space layouts and off-street loading areas, with dimensions.	X		
(16) The rights-of-way, easements and all lands to be dedicated to the county.	X		
(17) The names of owners and use of property of all lands adjacent to the property and block and lot numbers.	X		
(18) The site plan drawn on a sheet size of 8.5 inches by 13 inches, 15 inches by 21 inches or 24 inches by 36 inches.	X		

	COMPLIES	DEFICIENT	WAIVER SOUGHT
(19) The entire property shall be shown; when impossible on the required sheet size, a key map is permitted.	X		
(20) Existing and proposed contours, with a contour interval not more than two feet for slopes less than 10%; existing contours by dashed lines, proposed by solid lines.	X		
(21) The proposed finished grade elevations at all corners of existing and proposed buildings.	X		
(22) The proposed use of the building.	X		
(23) The proposed use of the outdoor area.	X		
(24) The floor space of each building and the total number of parking spaces and estimated occupancy of employees.	X		
(25) The distances along right-of-way lines of existing streets abutting the property to the nearest intersection.	X		
(26) All existing easements, deed restrictions, other covenants and previous variances granted for the property.	X		
(27) The floor plan of proposed structures, with accompanying front, rear and side elevations drawn to scale.	X		
(28) A landscaping plan, buffer plan and landscaping schedule showing the number, size and species of plantings.	X		
(29) A soil erosion and sediment control plan.	X		
(30) Applications filed with the county.			X*
(31) Construction Official may require building elevation views of adjacent properties. [Added 5-5-2015 by Ord. No. 3305] 600			X*

*See attached Waiver Memorandum



MCB ENGINEERING ASSOCIATES, L.L.C.

P.O. Box 588, 11 Furler Street, Totowa, New Jersey 07511-0588

Phone: (973) 812-6680 • Facsimile: (973) 812-6681

email: mcbea@mcbea.com • Certificate of Authorization Number 24GA28108300

MEMORANDUM

To: Township of Nutley Planning Board
From: Matthew Clark
Date: 05/13/2026
Subject: 536-544 Washington Avenue
(Site Plan Checklist Waiver Comments); Site Plan Application

Below are comments associated with the site plan checklist waivers:

Township of Nutley – Checklist for Site Plan Application:

F. (7) & (8)

A boundary & topographic survey has been provided as part of the site plan application. These checklist items have been provided for onsite and for the immediate adjacent properties that adjoin the project tract. In addition, the first sheet of the site plan set provides for aerial & tax key maps depicting these checklist items within the requested 400' limits. Based on such & the scope of the development program which is a permitted use a checklist waiver is requested from providing a "surveyed" depiction of these items within 400 feet of the site.

F. (30)

It is our understanding that approval from the Essex County Planning Board is not required for the project based on its location (not fronting along a county road) nor is it not impacting a county facility. Therefore, a checklist waiver is requested from providing an application for approval to the county.

F. (31)

The Construction official "has" requested building elevation views of adjacent properties based on the Zoning Official's May 4, 2026, letter. Such will be provided before the pending board hearing as exhibits to the application. Based on such a checklist waiver is requested from providing these at the time of application submission.

STORM WATER MANAGEMENT PLAN

FOR

536-544 WASHINGTON AVENUE PROJECT

BLOCK 1502 LOT 12

536-544 WASHINGTON AVENUE, TOWNSHIP OF NUTLEY, ESSEX COUNTY, NEW JERSEY



Prepared By:



P.O. Box 588, 11 Furler Street, Totowa, New Jersey 07511-0588
Phone: (973) 812-6680 • Facsimile: (973) 812-6681

Date: March 18, 2026

Project Number: 4703

Matthew G. Clark, P.E.
N.J. License Number 40394

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Grand Summary

This project exceeds the threshold of major development and must comply with the rules of the Township of Nutley ordinance section 622. The following grand summary provides the results of this design. All supporting details are contained throughout this report.

Storm Water Quantity Reduction

Storm water quantity reduction is accomplished by utilizing the strategy outlined in the Township of Nutley, ordinance §622-4R(2)(a), which states to “Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the two-, ten-, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events”.

This is accomplished by utilizing a green roof on a portion of the proposed building.

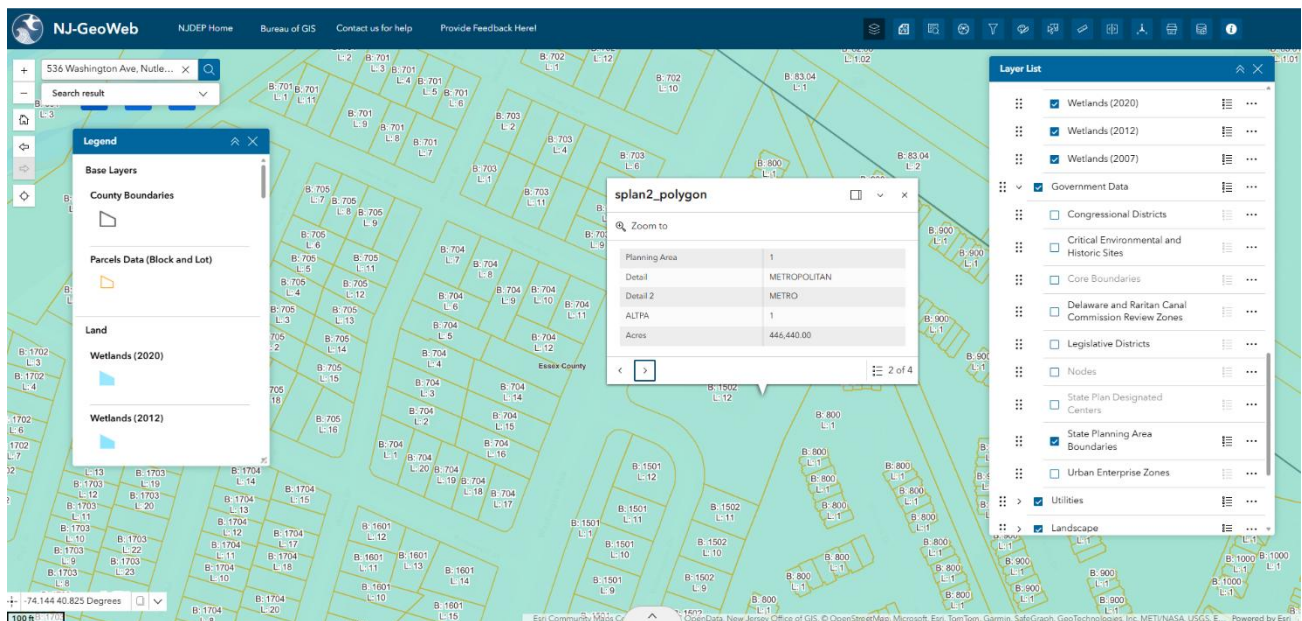
Storm Water Quality Enhancement

Water quality enhancement is accomplished by designing an overall reduction of motor vehicle surfaces.

	Area
Existing Conditions	38,222 sf
Proposed Conditions	33,198 sf

Ground Water Recharge

Ground water recharge is not applicable to this project because the site is located in a Metropolitan Planning area, see excerpt of the NJ Geo-Web mapping below.



Green Infrastructure

The Township of Nutley ordinance requires that green infrastructure devices be used to mitigate the storm water impacts due to development. For this project, the following strategies are proposed:

- Green Roof

Best Management Strategies																					
	Cisterns	Drywells	Grass Swales	Green Roofs	Manufactured Treatment Devices [G]	Pervious Paving Systems	Small-Scale Bio Retention System	Small-Scale Infiltration System	Small-Scale-Sand Filter	Vegetative Filter Strips	Bioretention Systems [Large Scale]	Infiltration Basins [Large Scale]	Sand Filters [Large Scale]	Standard Constructed Wetlands	Wetponds [G]	Blue Roofs	Extended Detention Basins	Manufactured Treatment Devices [Non-G]	Sand Filters [Non-G]	Subsurface Gravel Wetlands	Wet Pond [Non-G]
BMP Section	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10.1	10.2	10.3	10.4	10.5	11.1	11.2	11.3	11.4	11.5	11.6
Green Infrastructure Device	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁶	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Stormwater Quantity Runoff	Yes	Not Allowed	Not Allowed	Yes	Not Allowed	Yes	Yes ²	Yes ²	Yes ²	Not Allowed	Yes ²	Yes ²	Yes ²	Yes ⁵	Yes ⁵	Waiver	Waiver	Not Allowed	Waiver	Not Allowed	Waiver
Groundwater Recharge	Not Allowed	Yes	Not Allowed	Not Allowed	Not Allowed	Yes ¹	Yes ¹	Yes	Yes	Not Allowed	Waiver Required	Waiver Required	Waiver Required	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Stormwater Quality Runoff	Not Allowed	Not Allowed	<= 50% TSS	Not Allowed	80% TSS Removal	80% TSS Removal	80%-80% TSS Removal ¹	80% TSS Removal	80% TSS Removal	60%-80% TSS Removal ¹	Waiver Required	Waiver Required	Waiver Required	Waiver Required	Waiver Required	Not Allowed	Waiver	Waiver	Waiver	Waiver	Waiver

Project Description, Location and Scope

On behalf of our Client, regarding the above-mentioned development project, this storm water management report is being submitted in conjunction with an application for site plan approval to the Township of Nutley. The applicant proposes to remove the existing on-site buildings and improvements and construct one (1) new warehouse and office building including the associated site improvements. Because the proposed development changes the ground cover characteristics of the site, a storm water management design is required to evaluate the proposed runoff and offer methods to mitigate any additional runoff. The design for this system is as follows.

Reference Plans

The development documents prepared by this office are entitled, *"Preliminary and Final Major Site Plan for 536-544 Washington Avenue, Block 1502 – Lot 12, Township of Nutley, Essex County, New Jersey"*, seven (7) sheets, dated March 18, 2026.

The drainage area maps prepared by this office contain two (2) sheets and are dated March 19, 2026. A reduced copy of these plans are included in appendix H.

Regulatory Documents

Document	New Jersey Admin. Code / Source Documents	Website / Hyperlink
Storm Water Management Regulations	N.J.A.C. 7:8	Storm Water Management
Best Management Practices	Support to N.J.A.C. 7:8	NJ BMP Manual
Surface Water Quality Standards	N.J.A.C. 7:9B	Water Quality Standards
Residential Site Improvement Standards	N.J.A.C. 5:21	RSIS 2023
NOAA Atlas 14	NOAA National Weather Service Web Site	NOAA Atlas 14 Point Precipitation
TR-55 Runoff Curve Numbers	HEC-HMS Technical Manual	TR-55 Runoff Coefficients
Current Year Rainfall Factors	N.J.A.C. 7:8, Table 5-5	Storm Water Management Page 45
Future Year Rainfall Factors	N.J.A.C. 7:8, Table 5-6	Storm Water Management Page 46
Local Ordinance	Township of Nutley Chapter 622 Stormwater Control	Nutley Storm Water Management

Storm Water Management Report Revision History

Date	Comments
March 18, 2026	Initial Submission

Note: this submission supersedes all previous versions of the drainage reports for this project.

Project Jurisdiction

The project exceeds the threshold of major development. However, the project does not require permits from the NJDEP Division of Land Use Regulation. The proposed use is non-residential. The governing ordinance for this project is the Township of Nutley Storm Water Control [chapter 622].

Major vs. Non-Major Development

Per N.J.A.C. 7:8, a land development project is determined to be "major development" if it satisfies one of the following criteria:

1. The disturbance of one or more acres of land since February 2, 2004;
2. The creation of one-quarter acre or more of "regulated impervious surface" since February 2, 2004;
3. The creation of one-quarter acre or more of "regulated motor vehicle surface" since March 2, 2021; or
4. A combination of 2 and 3 above that totals an area of one-quarter acre or more. The same surface shall not be counted twice when determining if the combination area equals one-quarter acre or more.

With consideration of these four (4) criteria, because the area of disturbance exceeds one (1) acre, this project is considered 'major development'. Thus, the design must satisfy the criteria outlined in the Township of Nutley ordinance for Storm Water Control, chapter 622.

Methodology / Design Criteria

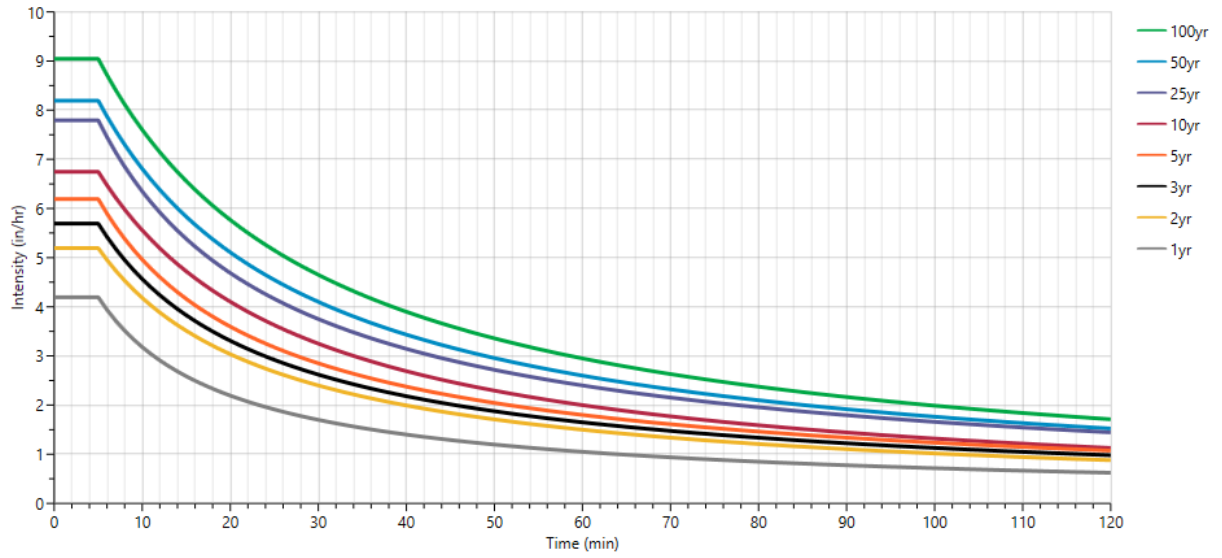
Because the development scope is classified as major development, the methods and procedures in section 622 of the Township of Nutley ordinance apply. Accordingly, per §622-5A(1)(b), the rational method is being used to compute the peak flows. For stormwater quantity reduction, the following method is used to evaluate this component of the storm water management plan:

- **§622-4R(2)(a)** – Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the two-, ten-, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events.
- Water quantity reduction is accomplished by use of a green roof.
- Water quality enhancement is accomplished by a reduction of motor vehicle surface.
- Ground water recharge is not required on this site as it is designated as a metropolitan planning area.
- Regarding the incorporation of green infrastructure, the proposed building is designed with a green roof over a portion of the structure.

Hydrographs generated for this design are prepared with the assistance of the software, "Hydrology Studio" (www.hydrologystudio.com) and custom worksheets in Microsoft Excel.

Rainfall Data

The project is located in the Township of Nutley, Essex County, New Jersey. Since the rational method was used for the design, the New Jersey IDF curves were used for the computations, see below.



Existing Conditions

The total existing drainage study area is equal to the site and is approximately 67,833 sf / 1.5572 acres. The NRCS web soil survey indicates the following soil on site is a Boonton silt loam, which has a hydrologic soil class rating of C. A copy of the web soil survey is provided in appendix A.

Mapping Symbol	Map Unit Name	Percentage of Site	Hydrologic Soil Class
BooB	Boonton silt loam, red sandstone lowland, 3 to 8 percent slopes	100%	C

The time of concentration for existing conditions is computed to be less than 10 minutes, thus, 10 minutes is used as it is the statutory minimum for use with the rational method as per several documents, including the NJDEP Stormwater BMP manual, chapter 5.

The weighted curve number for existing conditions is 0.91 and is based on the following spreadsheet:

Surface Calculator								
Existing Conditions								
Per Lakeland Survey								
Totals:	67,833 SF		Cwt = 0.91		38,222 SF		57,794 SF	
Surfaces	Area	Runoff Coefficient	C*A	Motor Vehicle Surface?	Area of Regulated Motor Vehicle Surface	Impervious Cover?	Area of Impervious Cover	Comments
1 Story Brick Building	7,307 SF	0.98	7,160.9	No		Yes	7,307 sf	
2 Story Brick Building	5,410 SF	0.98	5,301.8	No		Yes	5,410 sf	
Parking Lot Pavement	38,222 SF	0.98	37,457.6	Yes	38,222 sf	Yes	38,222 sf	
Concrete around Building 2	4,439 SF	0.98	4,350.2	No		Yes	4,439 sf	
Grass Around Building 2	711 SF	0.51	362.6	No		No		
Concrete Around Building 1	2,416 SF	0.98	2,367.7	No		Yes	2,416 sf	
Grass Around Building 1	1,554 SF	0.51	792.5	No		No		
Grass Around Site	7,774 SF	0.51	3,964.7	No		No		

- The corresponding hydrographs for the existing conditions flow rates are provided in appendix B for the two-, ten- and one-hundred-year storm events.
- Reduced copies of the drainage area maps are provided in appendix H. Full size copies are provided under separate cover.

Proposed Conditions

The total proposed drainage study area is equal to the site and is approximately 67,833 sf / 1.5572 acres. The NRCS web soil survey indicates the following soil on site is a Boonton silt loam, which has a hydrologic soil class rating of C. A copy of the web soil survey is provided in appendix A.

Mapping Symbol	Map Unit Name	Percentage of Site	Hydrologic Soil Class
BooB	Boonton silt loam, red sandstone lowland, 3 to 8 percent slopes	100%	C

The time of concentration for proposed conditions is computed to be less than 10 minutes, thus, 10 minutes is used as it is the statutory minimum for use with the rational method as per several documents, including the NJDEP Stormwater BMP manual, chapter 5.

The weighted curve number for proposed conditions is 0.91 and is based on the following spreadsheet:

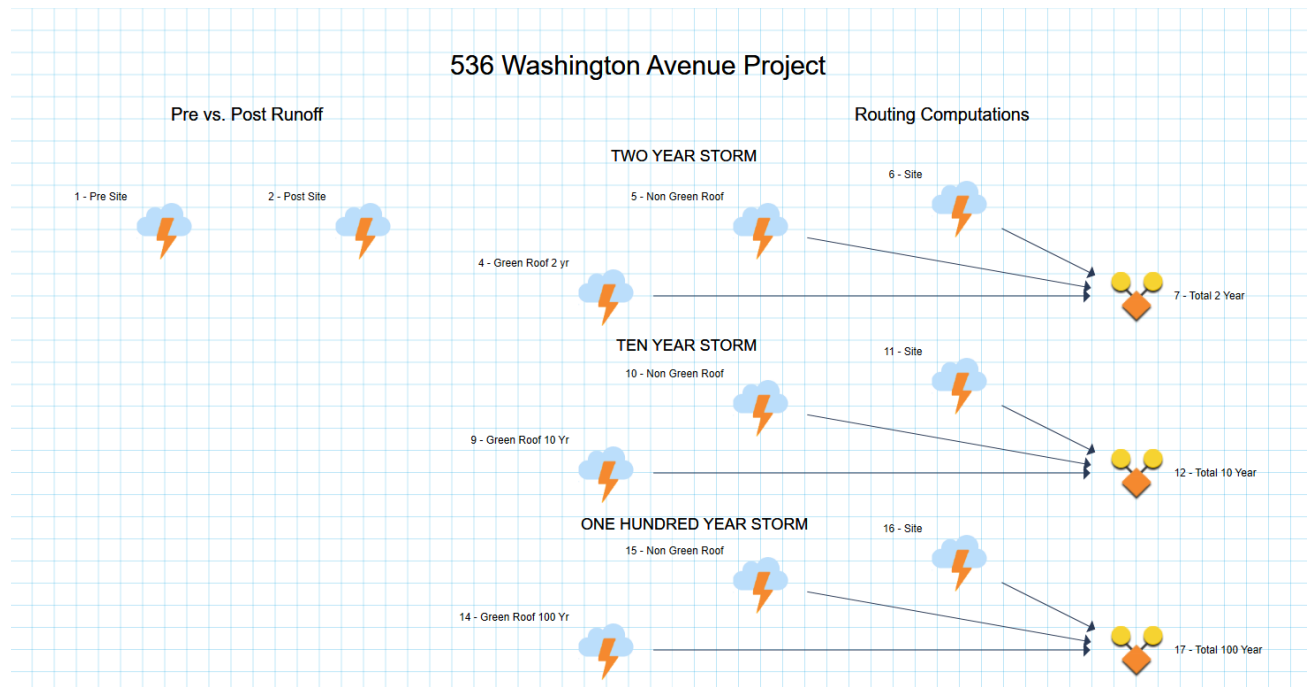
Surface Calculator								
Proposed Conditions								
Per Site Plan Prepared By MCB Engineering Associates								
Totals:	67,833 SF		Cwt = 0.91		33,198 SF		59,069 SF	
Surfaces	Area	Runoff Coefficient	C*A	Motor Vehicle Surface?	Area of Regulated Motor Vehicle Surface	Impervious Cover?	Area of Impervious Cover	Comments
Proposed Building	24,739 SF	0.98	24,244.2	No		Yes	24,739 sf	
Parking Lot Pavement	29,622 SF	0.98	29,029.6	Yes	29,622 sf	Yes	29,622 sf	
Concrete Loading Area	3,576 SF	0.98	3,504.5	Yes	3,576 sf	Yes	3,576 sf	
Concrete Walk In Front of Site	1,132 SF	0.51	577.3	No		Yes	1,132 sf	
Grass	8,764 SF	0.51	4,469.6	No		No		

- Note that when rounded to two decimal places, the proposed weighted runoff coefficient is equal to the existing weighted runoff coefficient. However, the amount of impervious cover has increased slightly [57,794 sf existing, 59,069 sf proposed]. Thus, storm water quantity reduction must be addressed.
- The corresponding hydrographs for the proposed conditions flow rates are provided in appendix B for the two-, ten- and one-hundred-year storm events.
- Reduced copies of the drainage area maps are provided in appendix H. Full size copies are provided under separate cover.

Storm Water Quantity Reduction

The sketch below outlines a schematic of how the hydrology of the storm water management system is designed.

- Hydrographs 1 and 2 are a comparison of the pre and post conditions showing that the peak flow is increased as a result of the proposed development.
- Hydrographs 4-6 are combined into hydrograph 7 to compute the peak runoff under proposed conditions for the two-year storm event.
- Hydrographs 9-11 are combined into hydrograph 12 to compute the peak runoff under proposed conditions for the ten-year storm event.
- Hydrographs 14-16 are combined into hydrograph 17 to compute the peak runoff under proposed conditions for the one-hundred-year storm event.
- Hydrograph numbers 3, 8 and 13 are intentionally not used.



Storm water quantity reduction is addressed by way of using 20,000 square feet of green roof on the proposed building. The green roof is designed to be 8" thick with a porosity of 28%. The site plan drawings provide the necessary details. The green roof reduces the runoff coefficient for each of the 2, 10 and 100 year storm events. The resulting hydrographs show that the peak flow for each node of the hydrograph for proposed conditions is lower than the peak flow under existing conditions. The result of this is a reduction of peak flow and runoff volume for each of the 2-, 10- and 100-year storm events. A summary of the hydrograph comparisons is provided in Appendix F.

The reduction of peak flow under proposed conditions at each node of the hydrograph vs the existing conditions satisfies the criteria for storm water quantity reduction.

Water Quality Enhancement

Because this project is deemed as major development, water quality enhancement must be considered into the storm water management design. This is accomplished for this project by reducing the amount of surface that come into contact with motor vehicles.

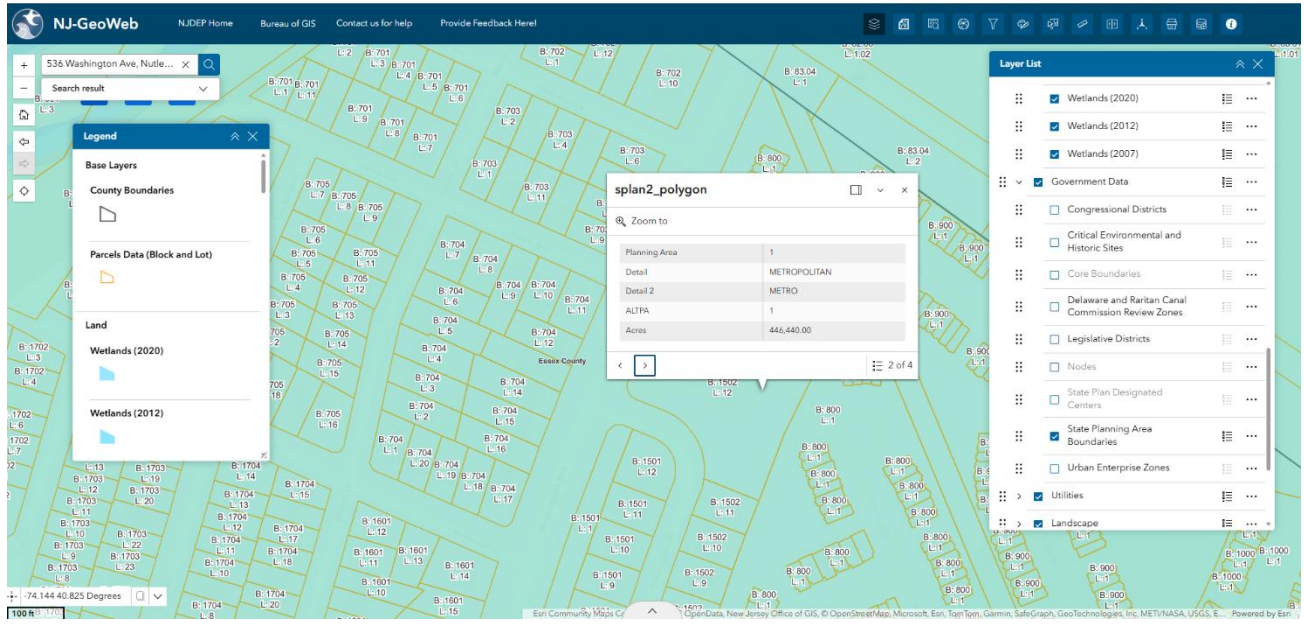
The following table indicated the area of motor vehicle surfaces under 'current' conditions vs. the area of motor vehicle surfaces under 'proposed' conditions.

	Area
Existing Conditions	38,222 sf
Proposed Conditions	33,198 sf

This differential is accomplished by increasing the size of the building [non-motor vehicle surface] over areas that were previously existing as surfaces that come into contact with motor vehicles. The net reduction of motor vehicle surfaces is 5,024 square feet.

Ground Water Recharge


Per section 7:8-5.4(a)2ii, ground water recharge requirements do not apply to properties located in an urban redevelopment area. As this property is identified as Metropolitan Planning Area 1, ground water recharge requirements do not need to be met. See the provided excerpt from the New Jersey Geo-Web site confirming the planning designation.



Green Infrastructure

The Township of Nutley ordinance requires that green infrastructure devices be used to mitigate the storm water impacts due to development. For this project, the following strategies are proposed:

- Green Roof

Best Management Strategies																					
	Cisterns	Drywells	Grass Swales	Green Roofs	Manufactured Treatment Devices [G]	Pervious Paving Systems	Small-Scale Bio Retention System	Small-Scale Infiltration System	Small Scale-Sand Filter	Vegetative Filter Strips	Bioretention Systems [Large Scale]	Infiltration Basins [Large Scale]	Sand Filters [Large Scale]	Standard Constructed Wetlands	Wetponds [G]	Blue Roofs	Extended Detention Basins	Manufactured Treatment Devices [Non G]	Sand Filters [Non-G]	Subsurface Gravel Wetlands	Wet Pond [Non-G]
BMP Section	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10.1	10.2	10.3	10.4	10.5	11.1	11.2	11.3	11.4	11.5	11.6
Green Infrastructure Device	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes ⁶	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Stormwater Quantity Runoff	Yes	Not Allowed	Not Allowed	Yes	Not Allowed	Yes	Yes ²	Yes ²	Yes ²	Not Allowed	Yes ²	Yes ²	Yes ²	Yes ⁵	Yes ⁵	Waiver	Waiver	Not Allowed	Waiver	Not Allowed	Waiver
Groundwater Recharge	Not Allowed	Yes	Not Allowed	Not Allowed	Not Allowed	Yes ¹	Yes ¹	Yes	Yes	Not Allowed	Waiver Required	Waiver Required	Waiver Required	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Stormwater Quality Runoff	Not Allowed	Not Allowed	<= 50% TSS	Not Allowed	80% TSS Removal	80% TSS Removal	80%-90% TSS Removal ³	80% TSS Removal	80% TSS Removal	80%-80% TSS Removal ⁴	Waiver Required	Waiver Required	Waiver Required	Waiver Required	Waiver Required	Not Allowed	Waiver	Waiver	Waiver	Waiver	Waiver

Footnotes
¹ For systems designed to infiltration into the subsoil
² When designed as an on-line system
³ Depending on vegetation selection and depth of the soil bed
⁴ Depending on type of vegetation
⁵ When designed to receive runoff from all storm events as an online system
⁶ Provided the system is designed to maintain at least a 10 foot wide area of native vegetation along at least 50 percent of the shoreline and to include a stormwater runoff retention component designed to capture stormwater runoff for beneficial reuse.

The green roof is designed to occupy 20,000 square feet of the proposed roof. This equates to approximately 80% of the total roof area, thus leaving room for roof infrastructure / access on the roof. The depth of growing medium designed is eight (8) inches with a design porosity of 28%. The table below computes the effective runoff curve number that results from this design.

Storm Event	Essex Co. 24-hr rainfall (in)	G.R. area (sf)	Media depth (in)	Porosity	Eff. Stor. vol. (CF)	Normal Runoff Vol. (CF)	Reduced Runoff (cf)	Effective Runoff Coeff.
8" Extensive green roof								
2-yr	3.47	20,000	8	28%	3,733	5,783	2,050	0.35
10-yr	5.38	20,000	8	28%	3,733	8,967	5,233	0.58
100-yr	9.18	20,000	8	28%	3,733	15,300	11,567	0.76

Detailed information regarding this green infrastructure is provided in Appendix G.

Appendix A – Subsurface Soil Data

Web Soil Survey

This report relies upon the data included in a search of the USDA Natural Resources Conservation Service Web Soil Survey [[Web Soil Survey Website](#)]. The report generated from this resource is included in this appendix. The web soil survey was relied upon for general data, such as existing vs. proposed peak flow analysis and ground water recharge calculations.

Site Specific Subsurface Soil Investigation

This report also relies upon the site-specific data provided by the firm ANS Consultants, Inc. in a report prepared by them in April 2025. This report has been provided under separate cover and includes site specific data, such as soil permeability rating and depth to ground water / bedrock. The field testing results in the soil report reflect direct observations which were made between the months of January and April.



United States
Department of
Agriculture

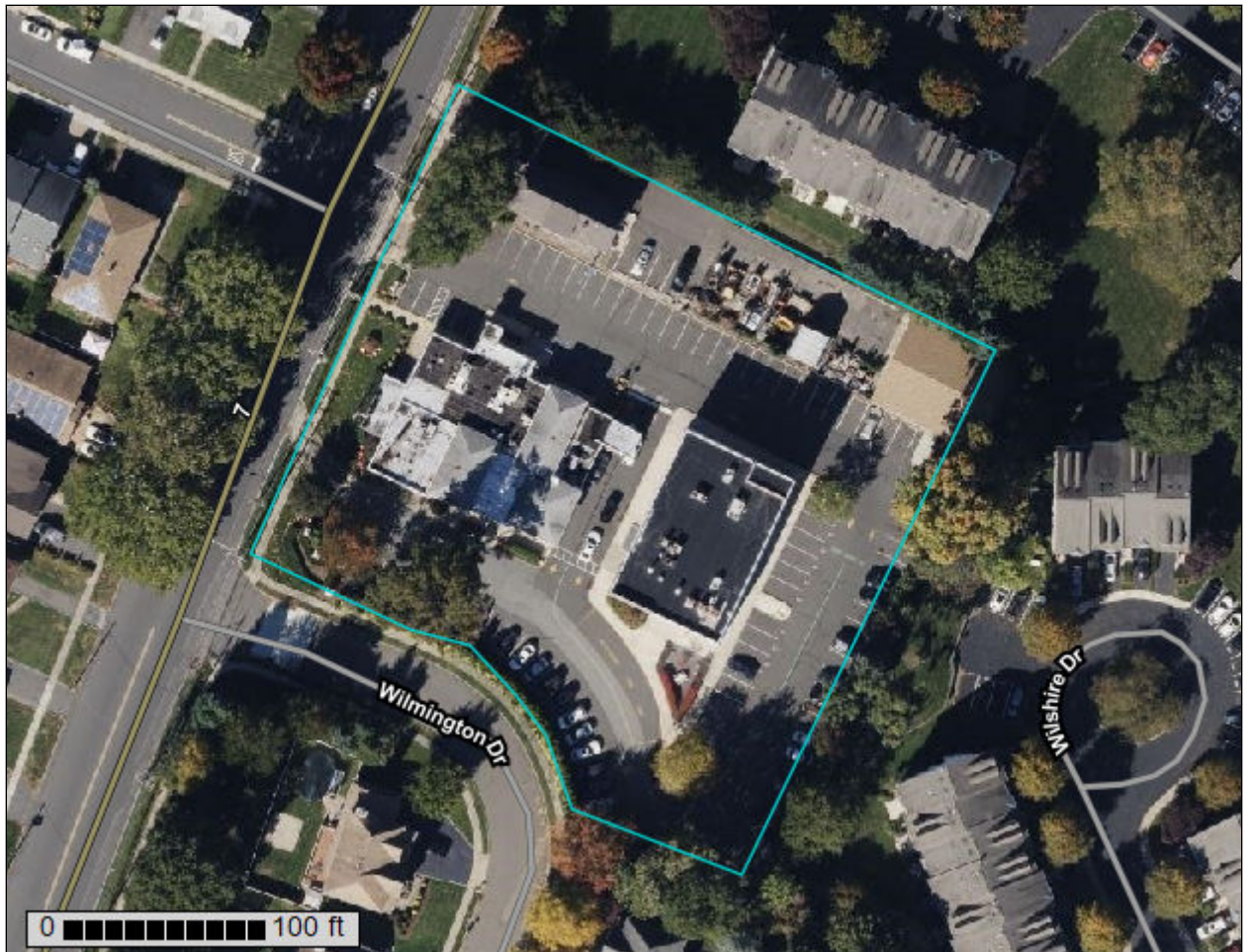
NRCS

Natural
Resources
Conservation
Service

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

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

536 Washington Avenue, Nutley



Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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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

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

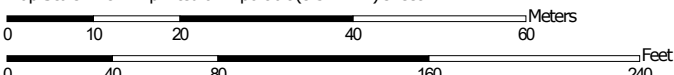
Soil Map

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.

Custom Soil Resource Report Soil Map




































Map Scale: 1:874 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)	 Spoil Area
Soils	 Soil Map Unit Polygons	 Stony Spot
	 Soil Map Unit Lines	 Very Stony Spot
	 Soil Map Unit Points	 Wet Spot
Special Point Features	 Blowout	 Other
	 Borrow Pit	 Special Line Features
	 Clay Spot	Water Features
	 Closed Depression	 Streams and Canals
	 Gravel Pit	Transportation
	 Gravelly Spot	 Rails
	 Landfill	 Interstate Highways
	 Lava Flow	 US Routes
	 Marsh or swamp	 Major Roads
	 Mine or Quarry	 Local Roads
	 Miscellaneous Water	Background
	 Perennial Water	 Aerial Photography
	 Rock Outcrop	
	 Saline Spot	
	 Sandy Spot	
	 Severely Eroded Spot	
	 Sinkhole	
	 Slide or Slip	
	 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: Essex County, New Jersey
 Survey Area Data: Version 21, Aug 28, 2025

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

Date(s) aerial images were photographed: Oct 10, 2022—Oct 16, 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
BooB	Boonton silt loam, red sandstone lowland, 3 to 8 percent slopes	1.8	100.0%
Totals for Area of Interest		1.8	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,

Custom Soil Resource Report

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.

Essex County, New Jersey

BooB—Boonton silt loam, red sandstone lowland, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: qxj3
Landscape: Till plains
Elevation: 20 to 310 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Boonton, red sandstone lowland, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boonton, Red Sandstone Lowland

Setting

Landscape: Till plains
Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from sandstone and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: silt loam
BE - 3 to 10 inches: loam
Bw - 10 to 27 inches: gravelly loam
Bx1 - 27 to 40 inches: gravelly fine sandy loam
Bx2 - 40 to 67 inches: gravelly fine sandy loam
BCx - 67 to 83 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 36 inches to fragipan
Drainage class: Well drained
Runoff class: Medium
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Boonton moderately well drained, red sandstone lowland

Percent of map unit: 5 percent

Landscape: Till plains

Landform: Ground moraines

Landform position (three-dimensional): Lower third of mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

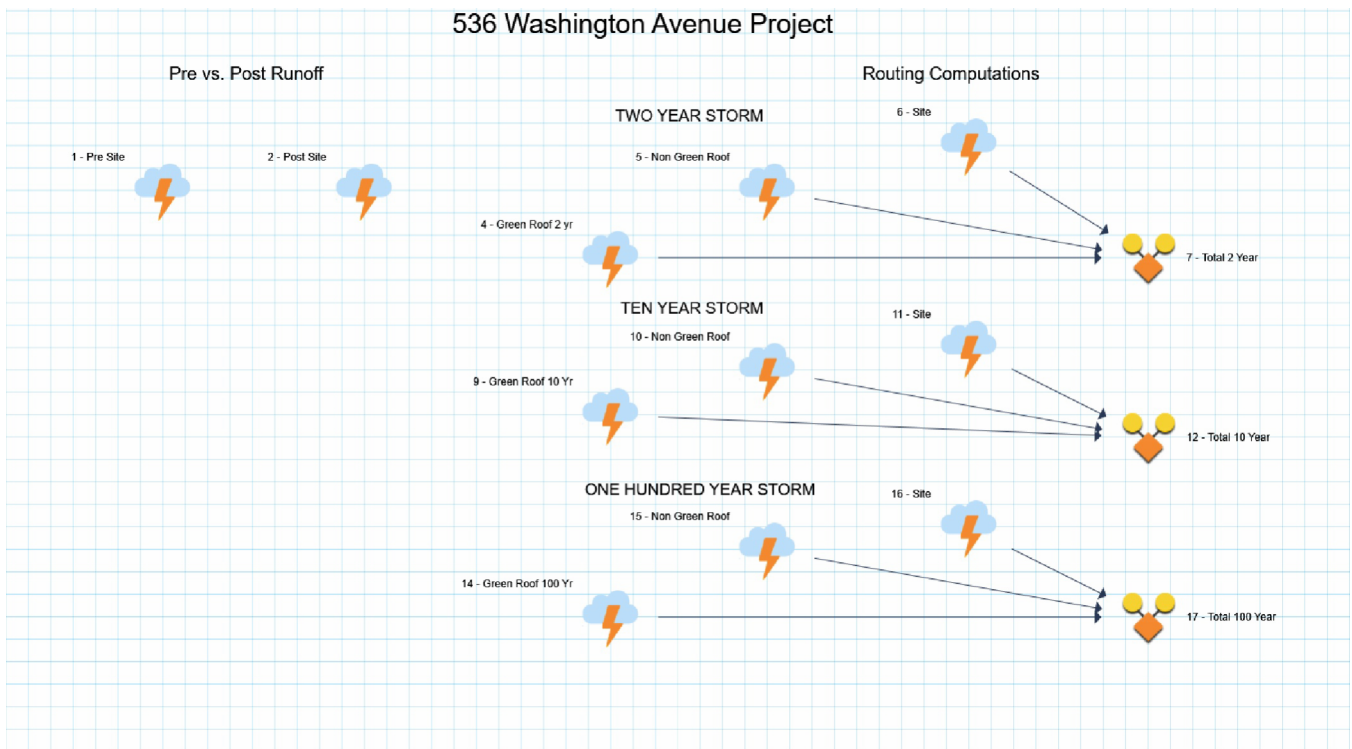
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United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix B – Existing vs. Proposed Conditions

Table of Contents

Basin Model Schematic	B-3
2 - Year	
Hydrograph Reports	
Hydrograph No. 1, Rational, Pre Site	B-4
Hydrograph No. 2, Rational, Post Site	B-5
10 - Year	
Hydrograph Reports	
Hydrograph No. 1, Rational, Pre Site	B-6
Hydrograph No. 2, Rational, Post Site	B-7
100 - Year	
Hydrograph Reports	
Hydrograph No. 1, Rational, Pre Site	B-8
Hydrograph No. 2, Rational, Post Site	B-9



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

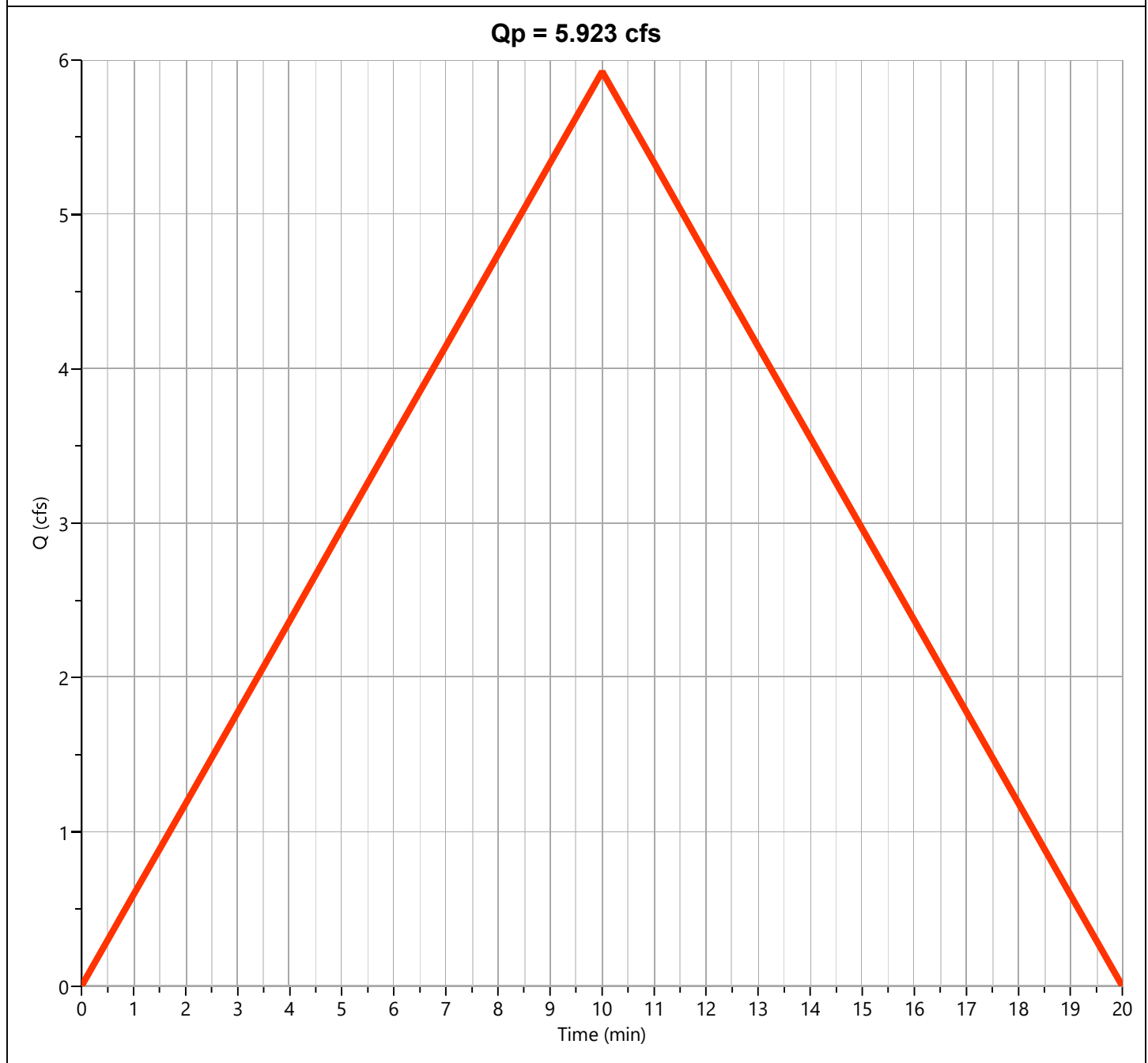
File: 4703 2026-03-16.hys

03-18-2026

Pre Site

Hyd. No. 1

Hydrograph Type	= Rational	Peak Flow	= 5.923 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 3,554 cuft
Drainage Area	= 1.557 ac	Runoff Coeff.	= 0.91
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 4.18 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

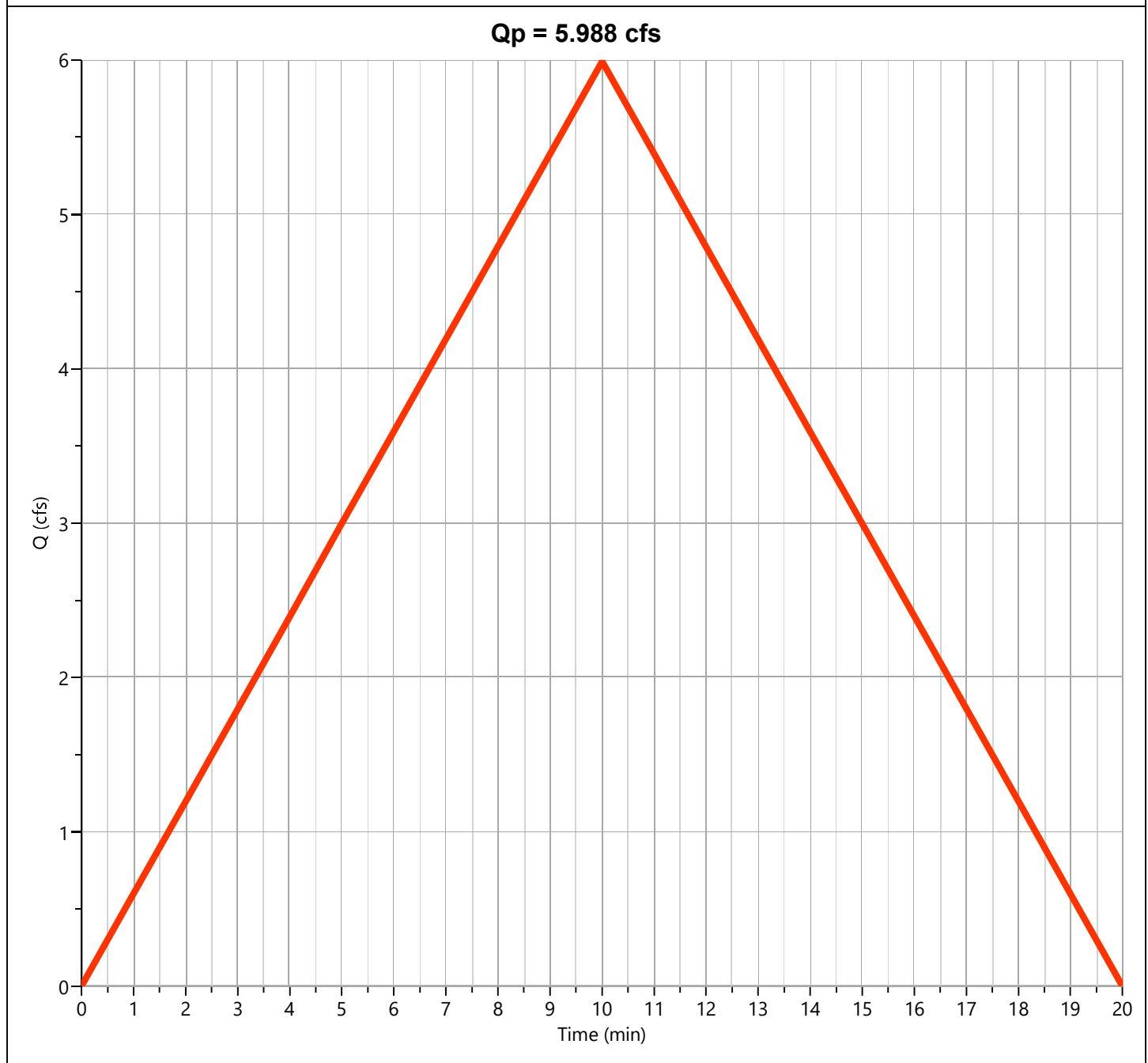
File: 4703 2026-03-16.hys

03-18-2026

Post Site

Hyd. No. 2

Hydrograph Type	= Rational	Peak Flow	= 5.988 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 3,593 cuft
Drainage Area	= 1.557 ac	Runoff Coeff.	= 0.92
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 4.18 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

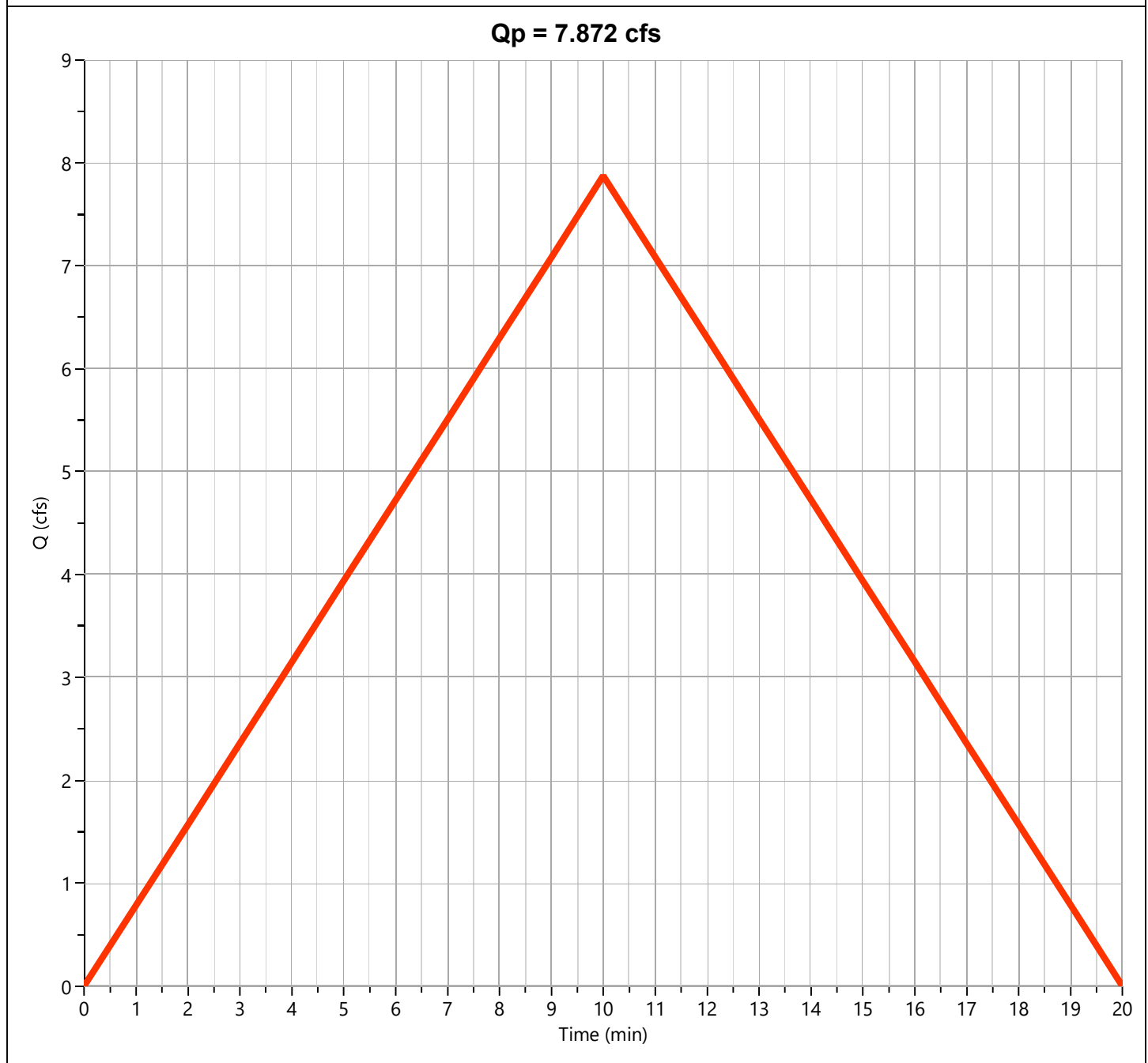
File: 4703 2026-03-16.hys

03-18-2026

Pre Site

Hyd. No. 1

Hydrograph Type	= Rational	Peak Flow	= 7.872 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 4,723 cuft
Drainage Area	= 1.557 ac	Runoff Coeff.	= 0.91
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 5.56 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

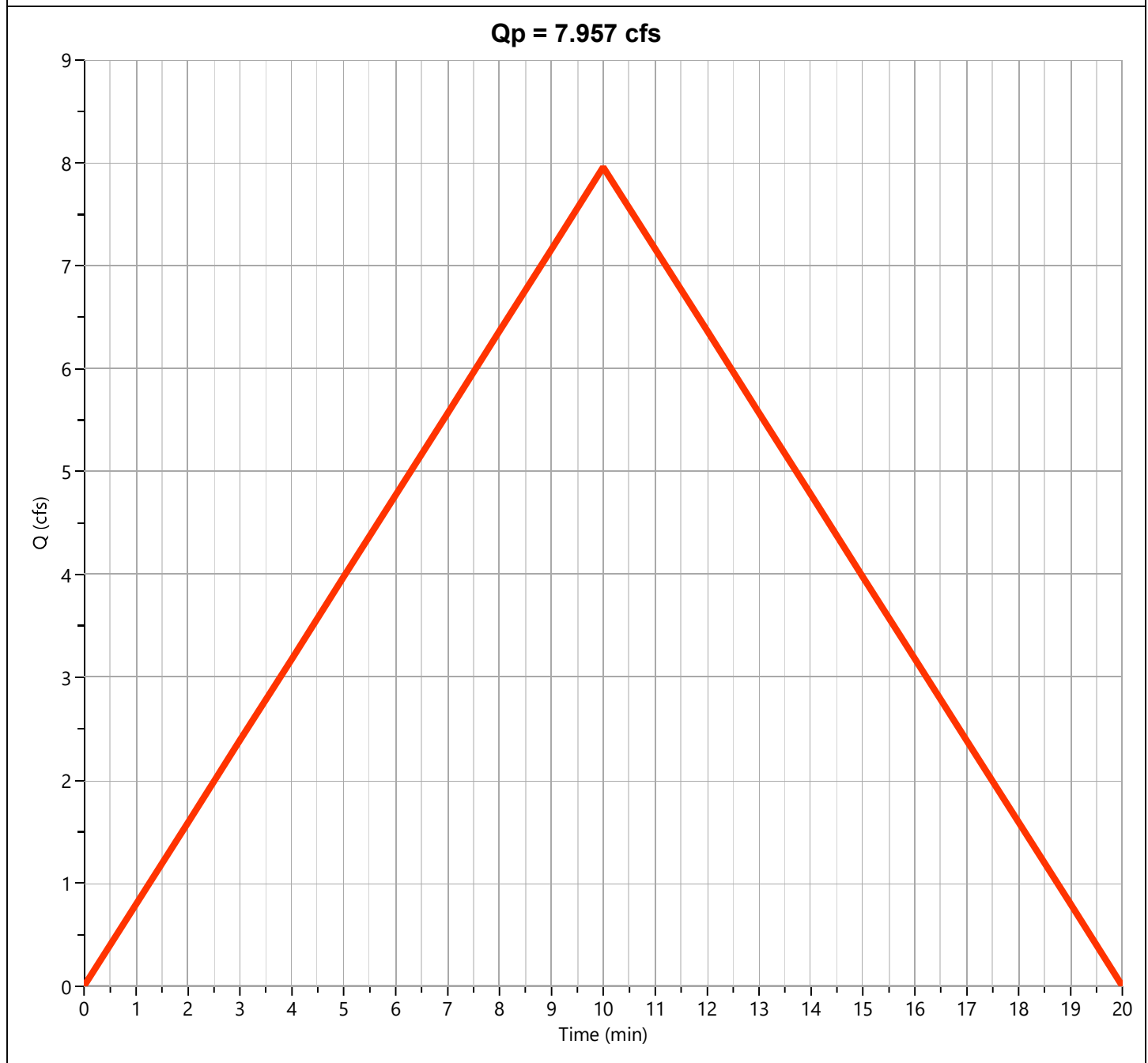
File: 4703 2026-03-16.hys

03-18-2026

Post Site

Hyd. No. 2

Hydrograph Type	= Rational	Peak Flow	= 7.957 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 4,774 cuft
Drainage Area	= 1.557 ac	Runoff Coeff.	= 0.92
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 5.56 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

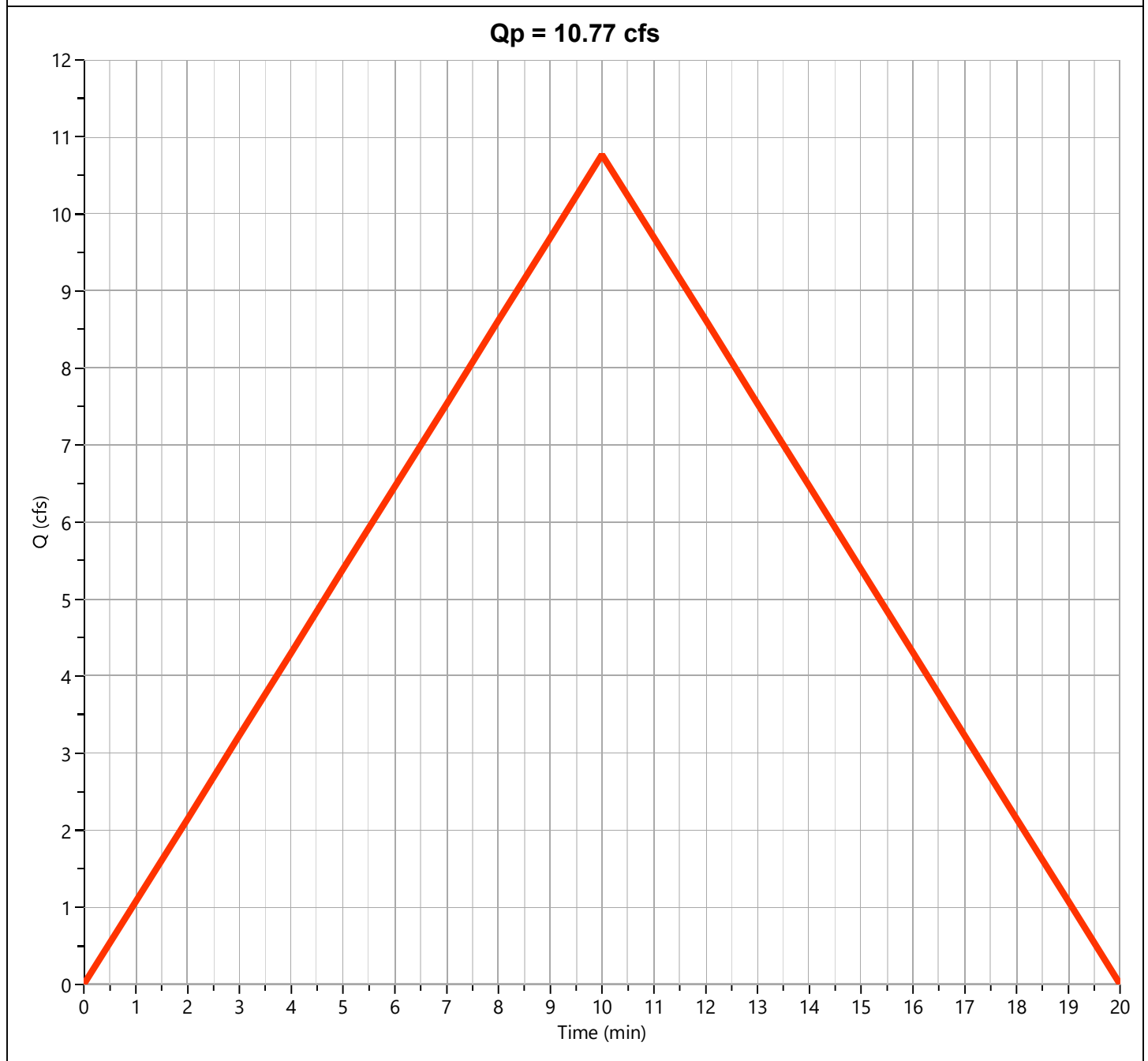
File: 4703 2026-03-16.hys

03-18-2026

Pre Site

Hyd. No. 1

Hydrograph Type	= Rational	Peak Flow	= 10.77 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 6,461 cuft
Drainage Area	= 1.557 ac	Runoff Coeff.	= 0.91
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 7.60 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

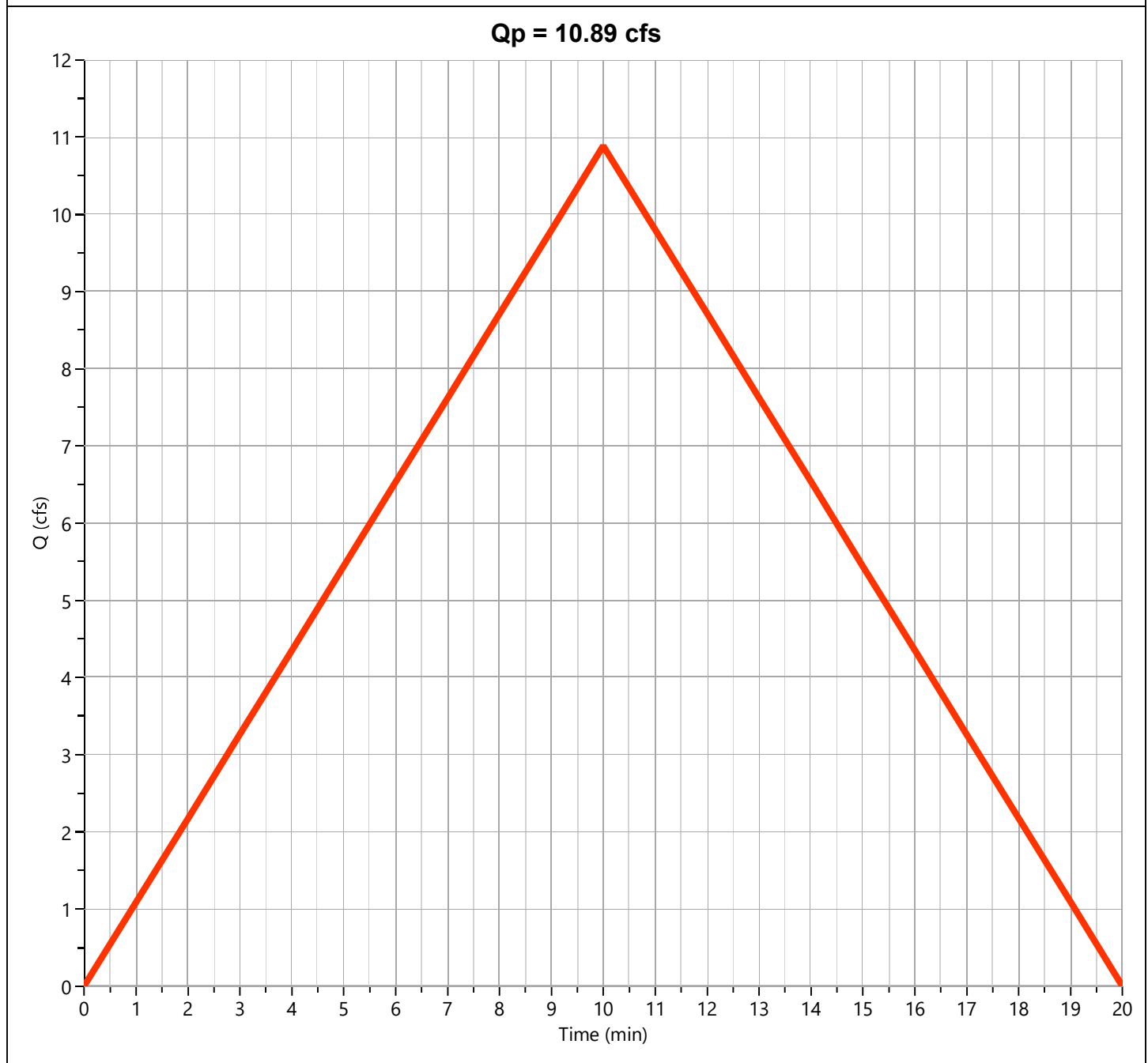
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03-18-2026

Post Site

Hyd. No. 2

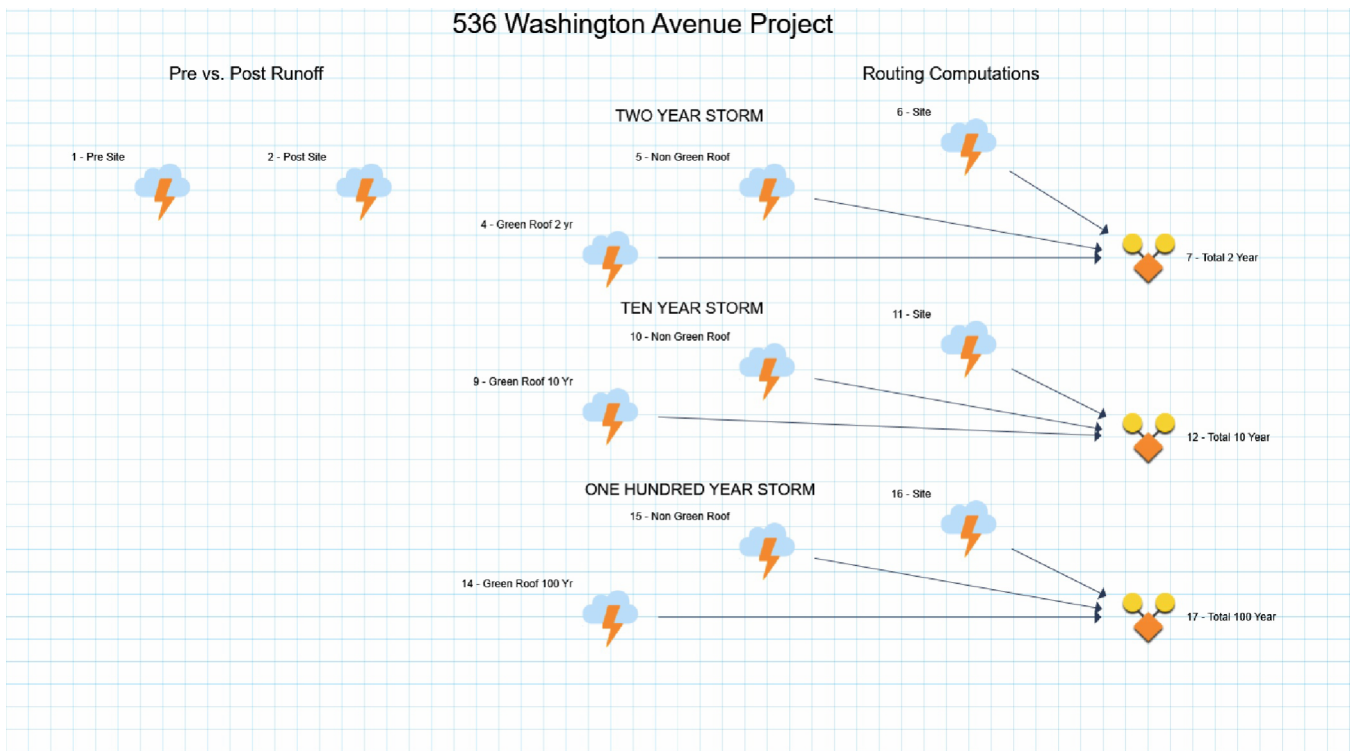
Hydrograph Type	= Rational	Peak Flow	= 10.89 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 6,531 cuft
Drainage Area	= 1.557 ac	Runoff Coeff.	= 0.92
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 7.60 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Appendix C – Two Year Storm Event

Table of Contents

Basin Model Schematic	C-3
2 - Year	
Hydrograph Reports	
Hydrograph No. 4, Rational, Green Roof 2 yr	C-4
Hydrograph No. 5, Rational, Non Green Roof	C-5
Hydrograph No. 6, Rational, Site	C-6
Hydrograph No. 7, Junction, Total 2 Year	C-7



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

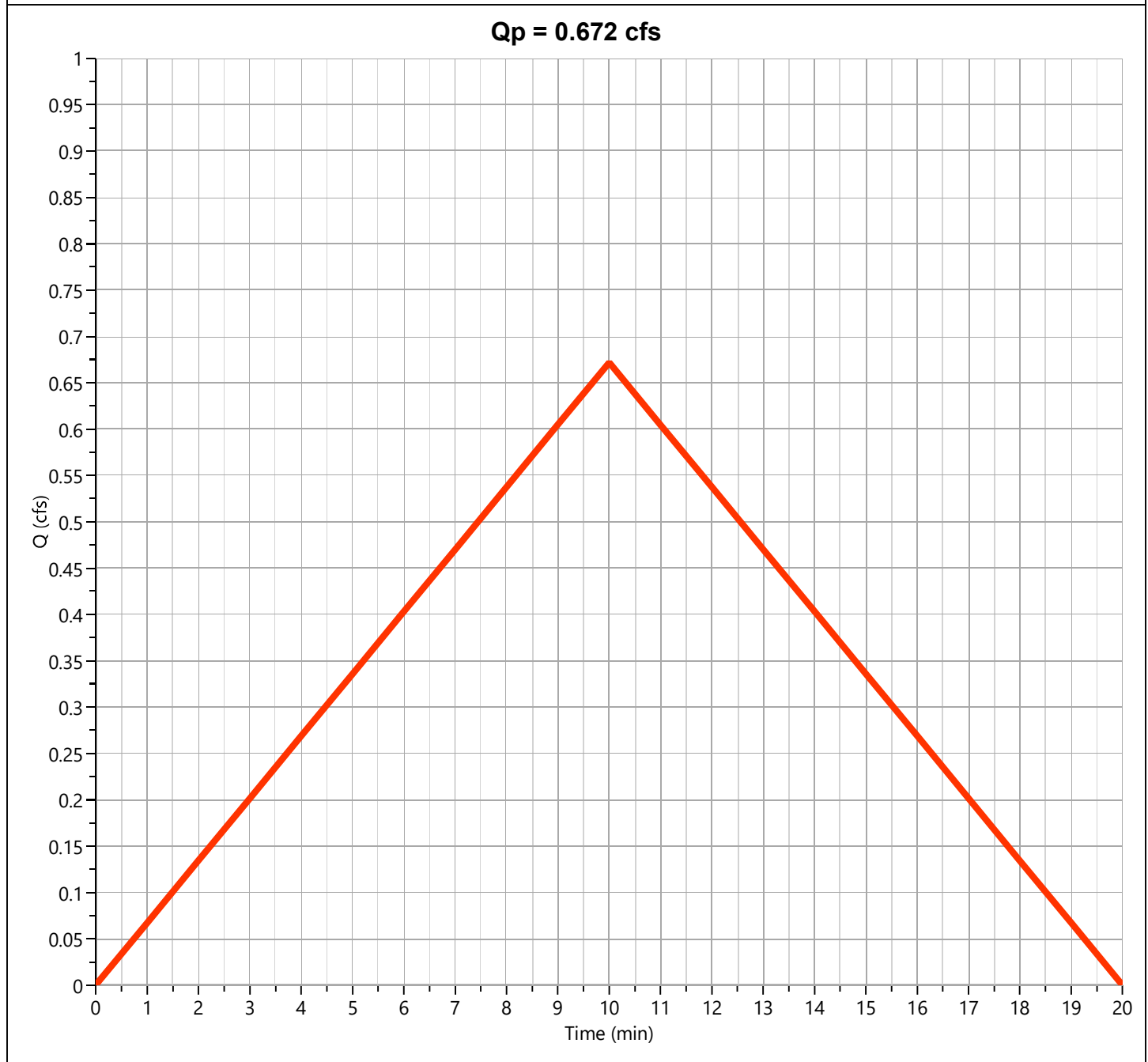
File: 4703 2026-03-16.hys

03-18-2026

Green Roof 2 yr

Hyd. No. 4

Hydrograph Type	= Rational	Peak Flow	= 0.672 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 403 cuft
Drainage Area	= 0.459 ac	Runoff Coeff.	= 0.35
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 4.18 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

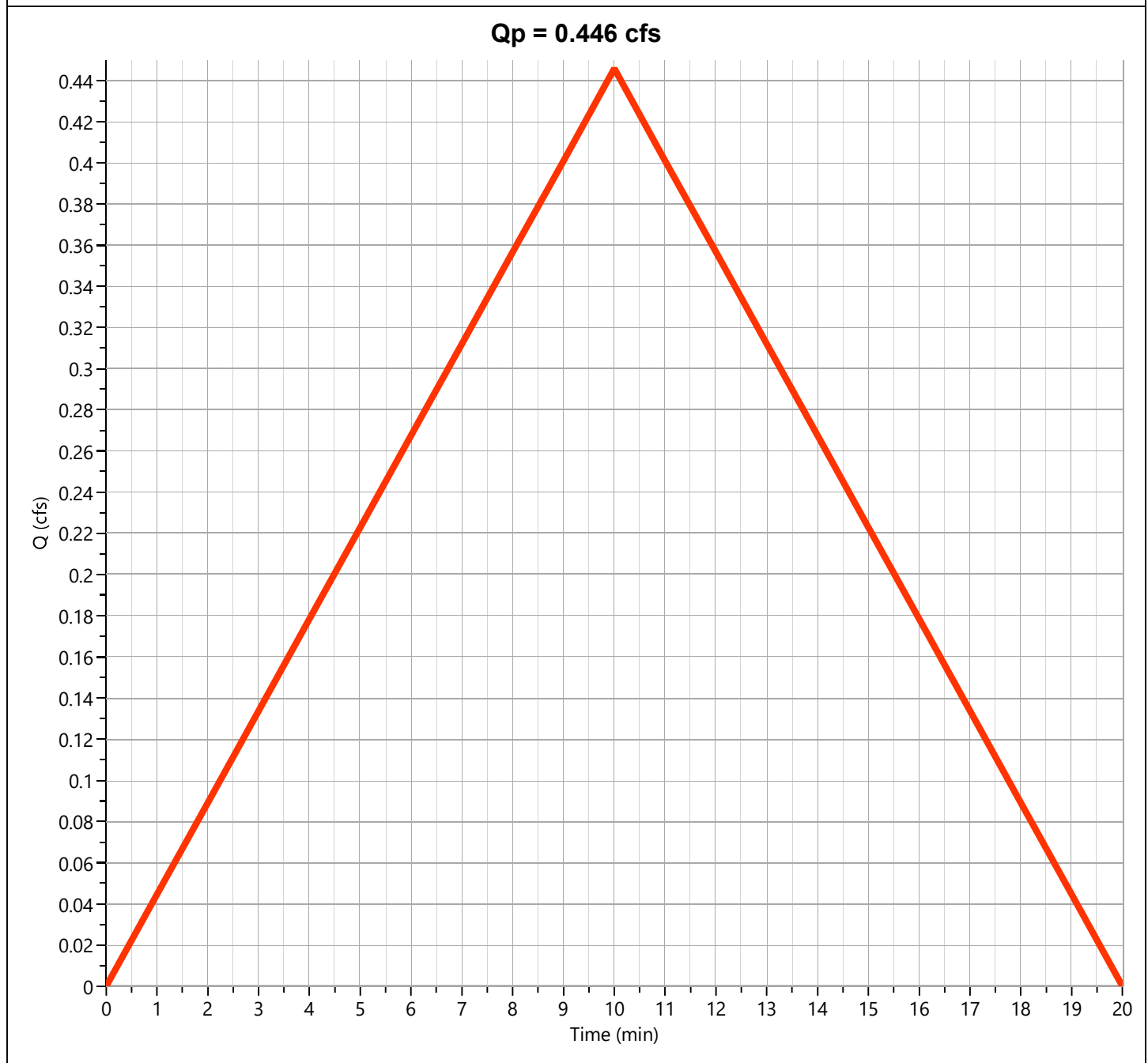
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03-18-2026

Non Green Roof

Hyd. No. 5

Hydrograph Type	= Rational	Peak Flow	= 0.446 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 267 cuft
Drainage Area	= 0.109 ac	Runoff Coeff.	= 0.98
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 4.18 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

File: 4703 2026-03-16.hys

03-18-2026

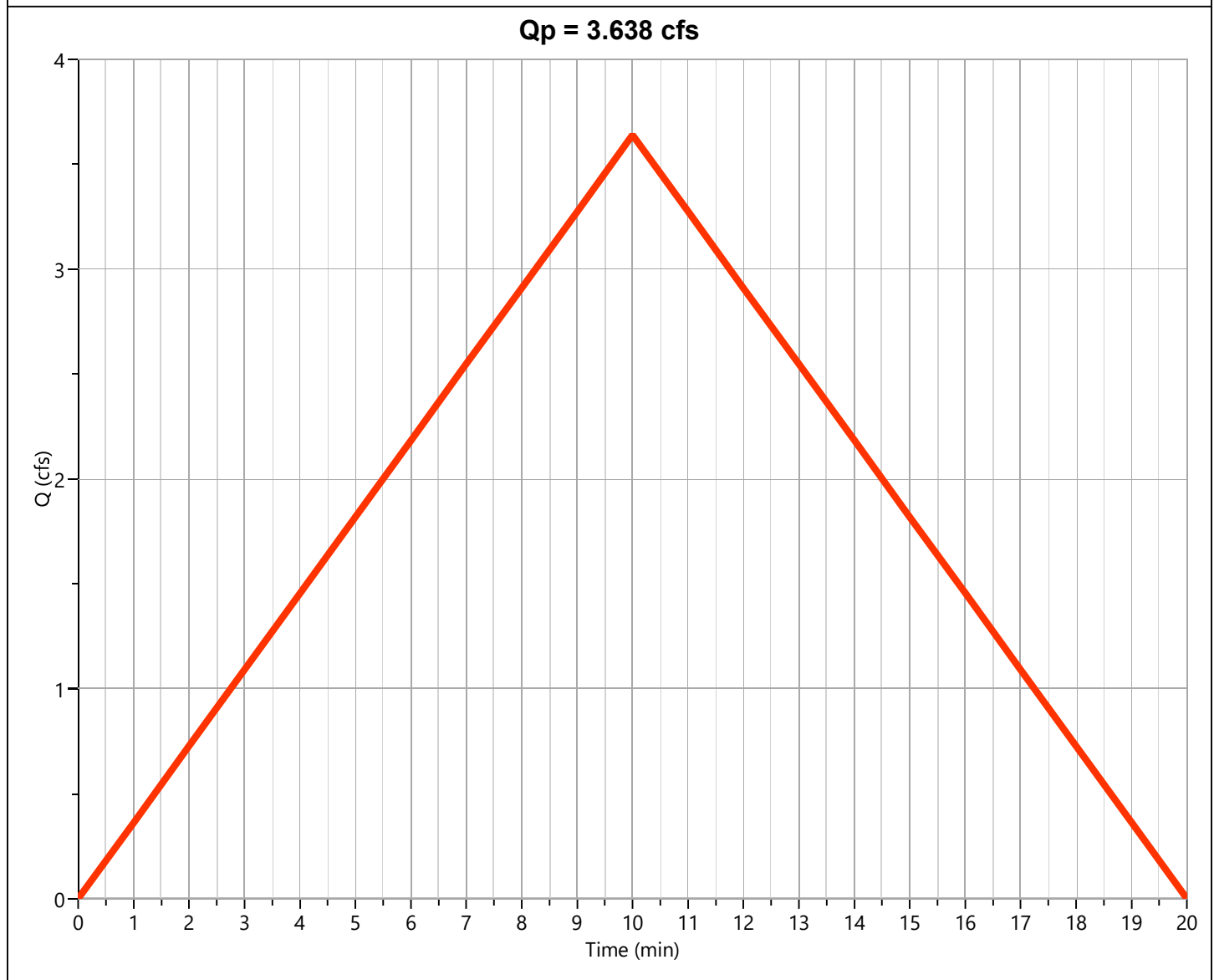
Site

Hyd. No. 6

Hydrograph Type	= Rational	Peak Flow	= 3.638 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 2,183 cuft
Drainage Area	= 0.989 ac	Runoff Coeff.	= 0.88*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 4.18 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

* Composite C Worksheet

AREA (ac)	C	DESCRIPTION
0.68	0.98	Parking Area
0.108	0.98	Concrete Walk
0.201	0.51	Grass
0.989	0.88	



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

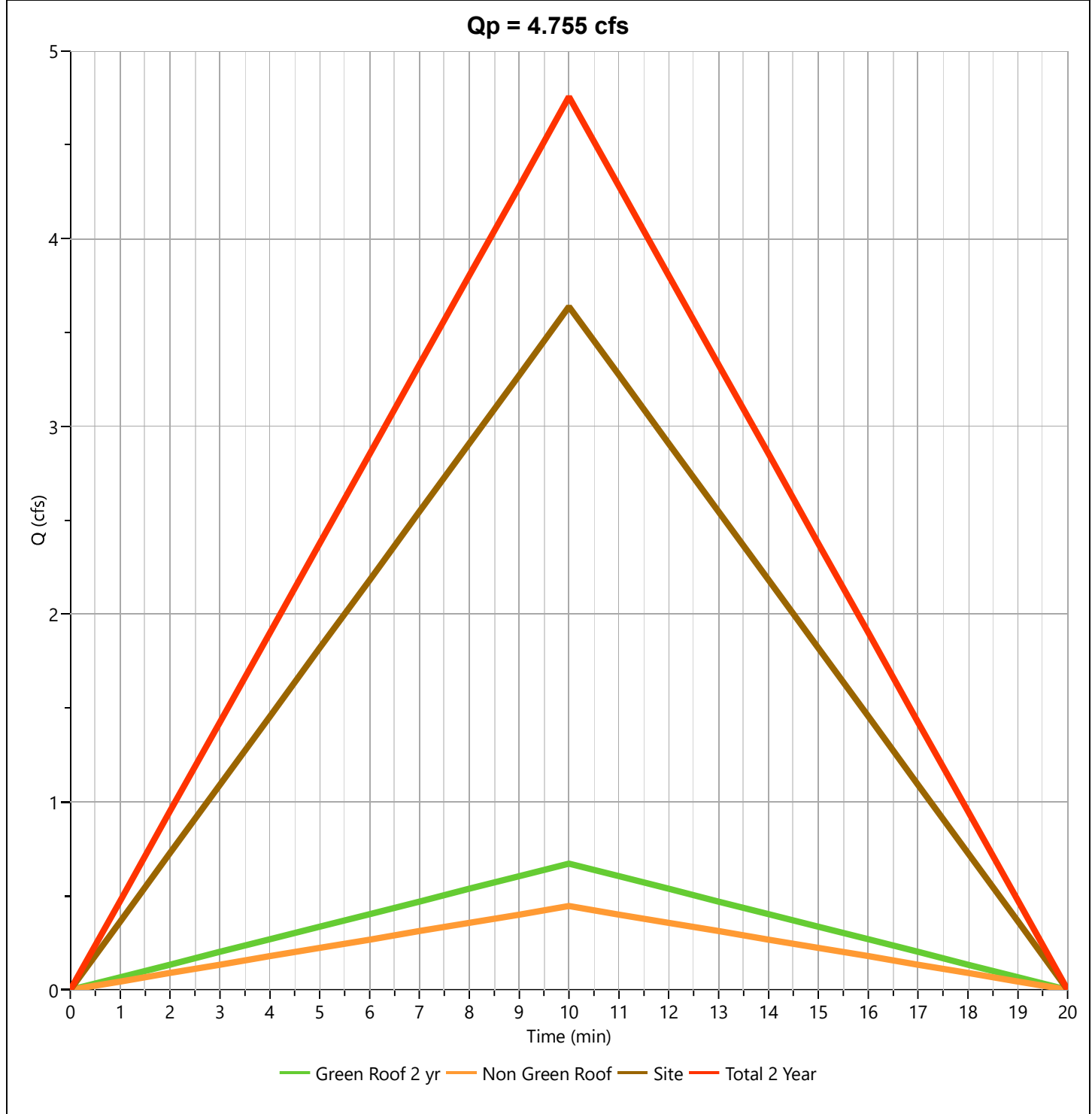
File: 4703 2026-03-16.hys

03-18-2026

Total 2 Year

Hyd. No. 7

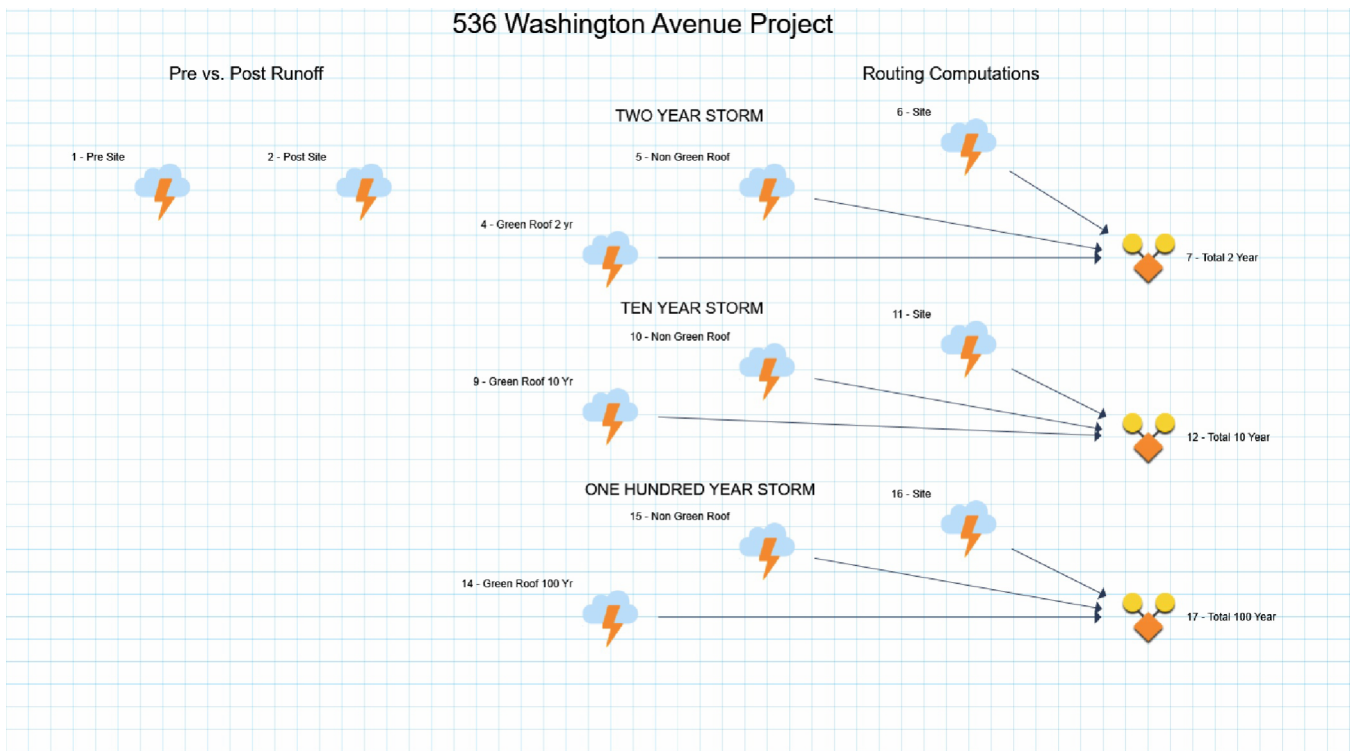
Hydrograph Type	= Junction	Peak Flow	= 4.755 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Hydrograph Volume	= 2,853 cuft
Inflow Hydrographs	= 4, 5, 6	Total Contrib. Area	= 1.557 ac



Appendix D – Ten Year Storm Event

Table of Contents

Basin Model Schematic	D-3
10 - Year	
Hydrograph Reports	
Hydrograph No. 9, Rational, Green Roof 10 Yr	D-4
Hydrograph No. 10, Rational, Non Green Roof	D-5
Hydrograph No. 11, Rational, Site	D-6
Hydrograph No. 12, Junction, Total 10 Year	D-7



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

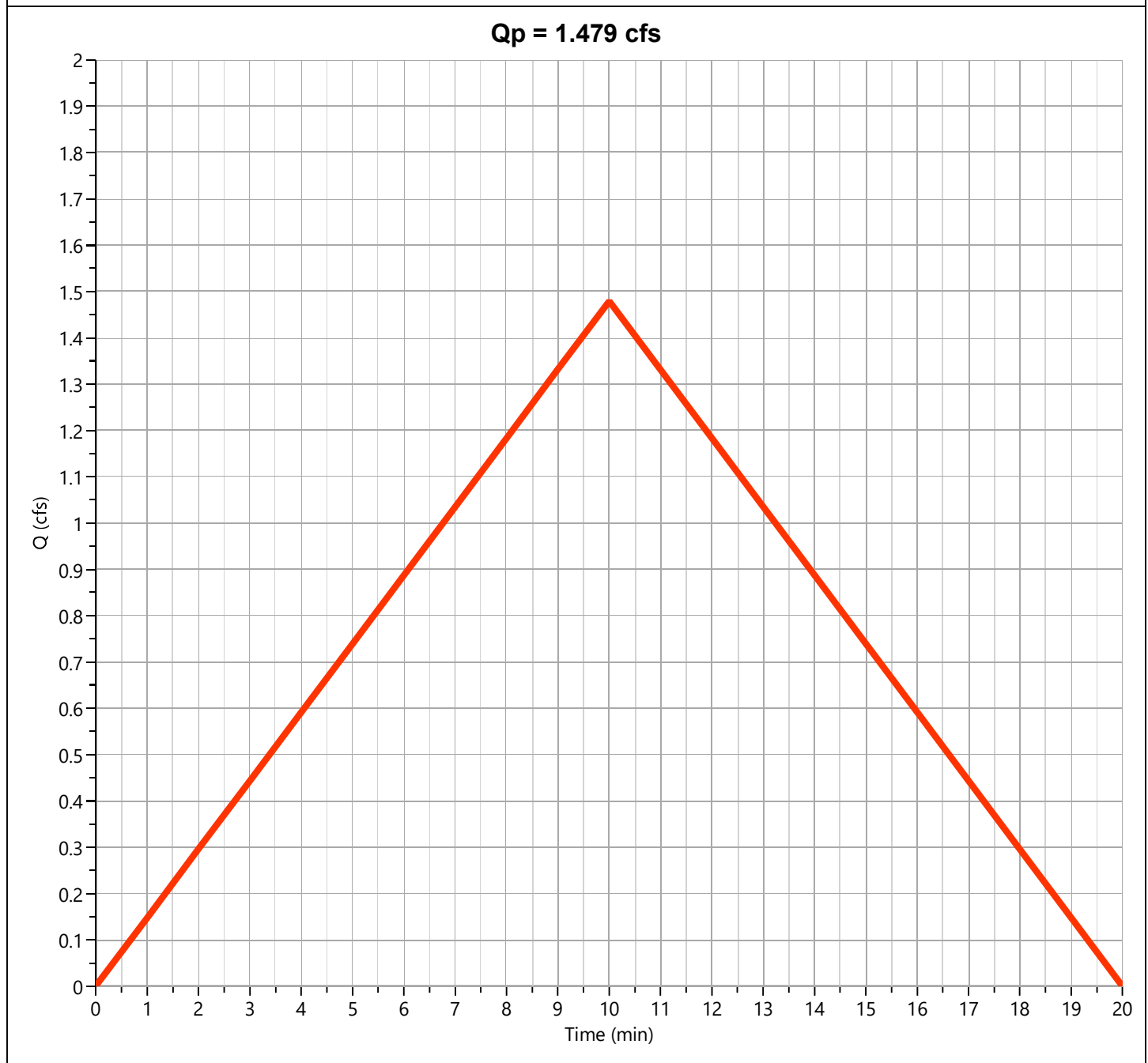
File: 4703 2026-03-16.hys

03-18-2026

Green Roof 10 Yr

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 1.479 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 887 cuft
Drainage Area	= 0.459 ac	Runoff Coeff.	= 0.58
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 5.56 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

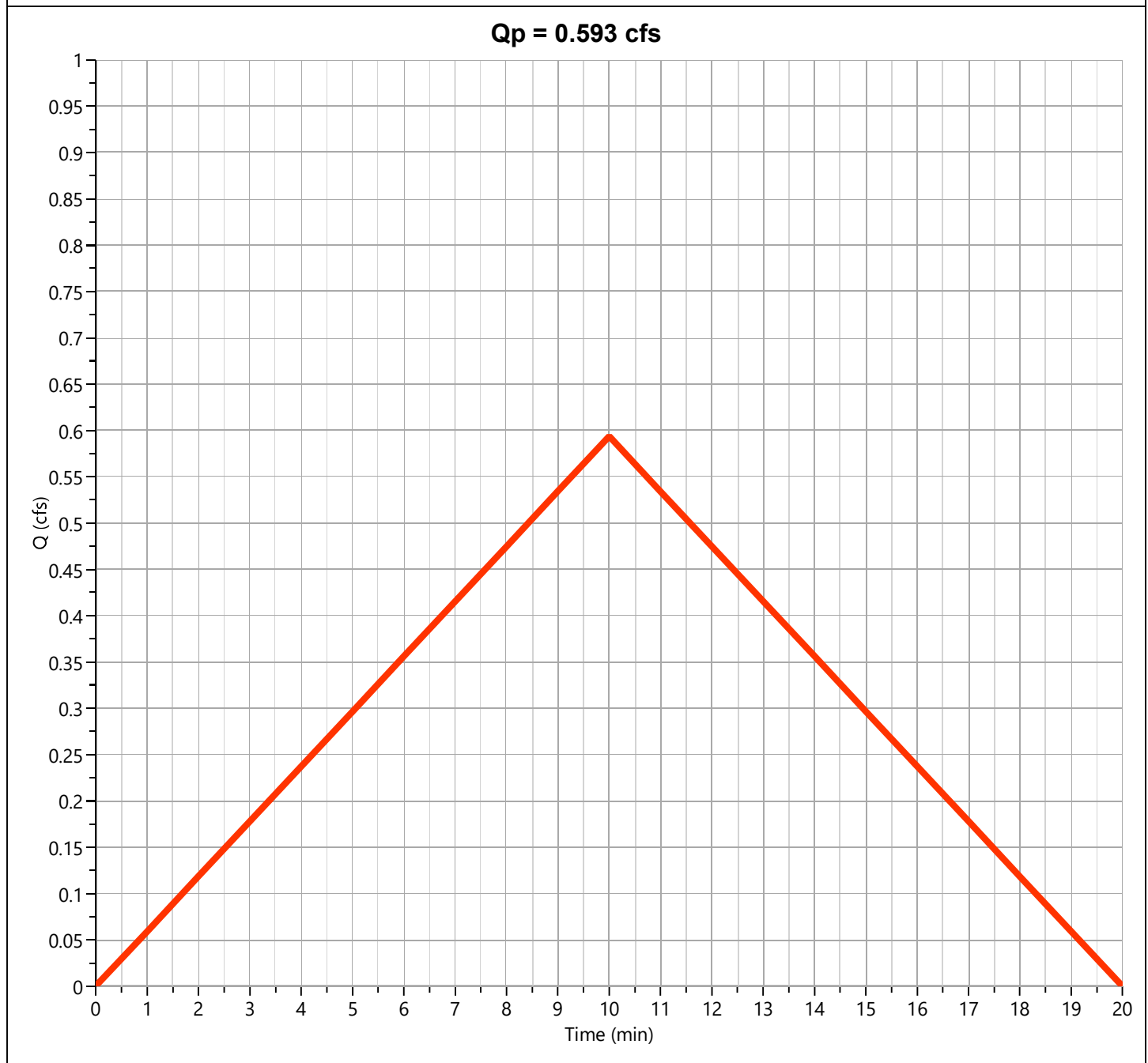
File: 4703 2026-03-16.hys

03-18-2026

Non Green Roof

Hyd. No. 10

Hydrograph Type	= Rational	Peak Flow	= 0.593 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 356 cuft
Drainage Area	= 0.109 ac	Runoff Coeff.	= 0.98
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 5.56 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

File: 4703 2026-03-16.hys

03-18-2026

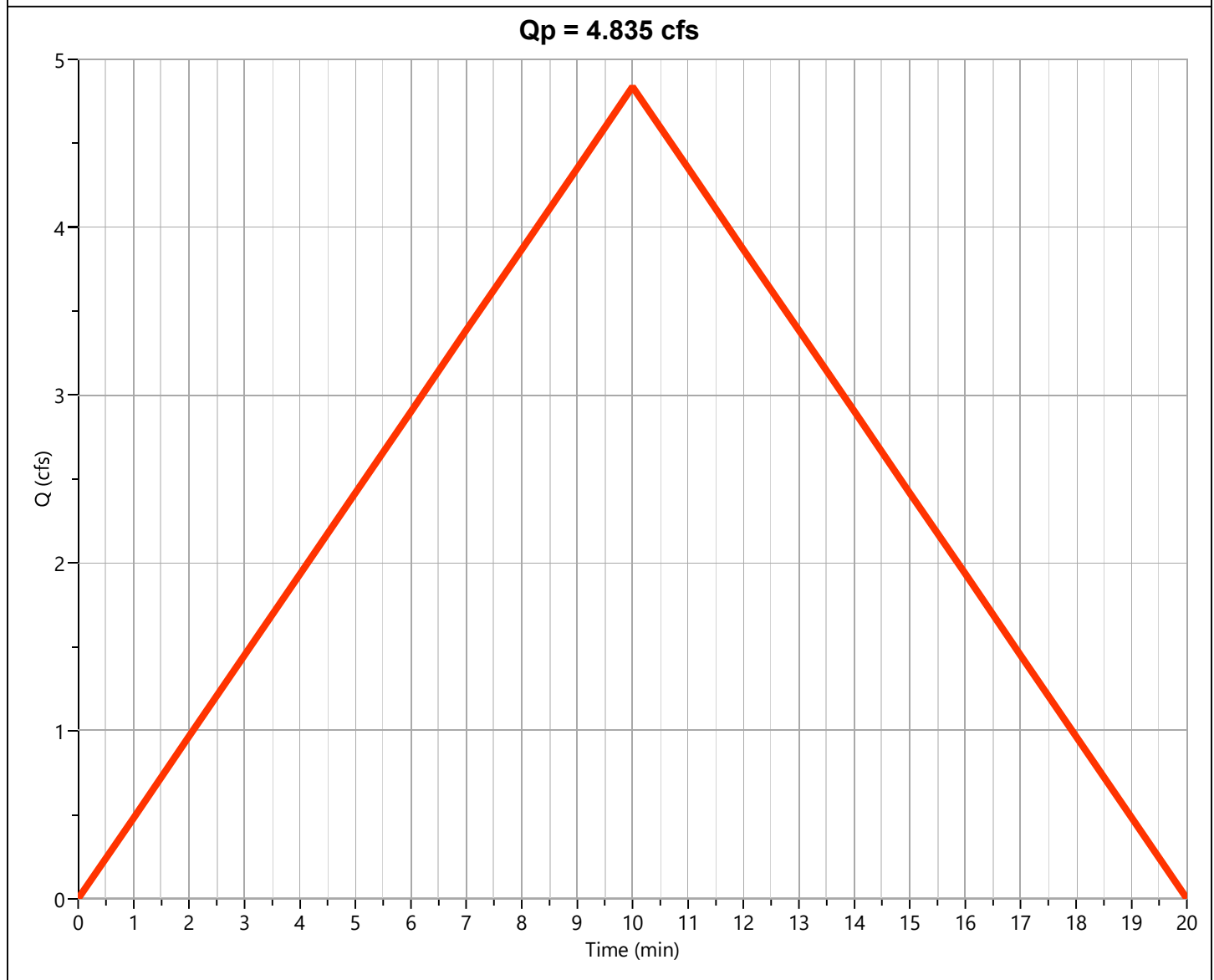
Site

Hyd. No. 11

Hydrograph Type	= Rational	Peak Flow	= 4.835 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 2,901 cuft
Drainage Area	= 0.989 ac	Runoff Coeff.	= 0.88*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 5.56 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

* Composite C Worksheet

AREA (ac)	C	DESCRIPTION
0.68	0.98	Parking Area
0.108	0.98	Concrete Walk
0.201	0.51	Grass
0.989	0.88	



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

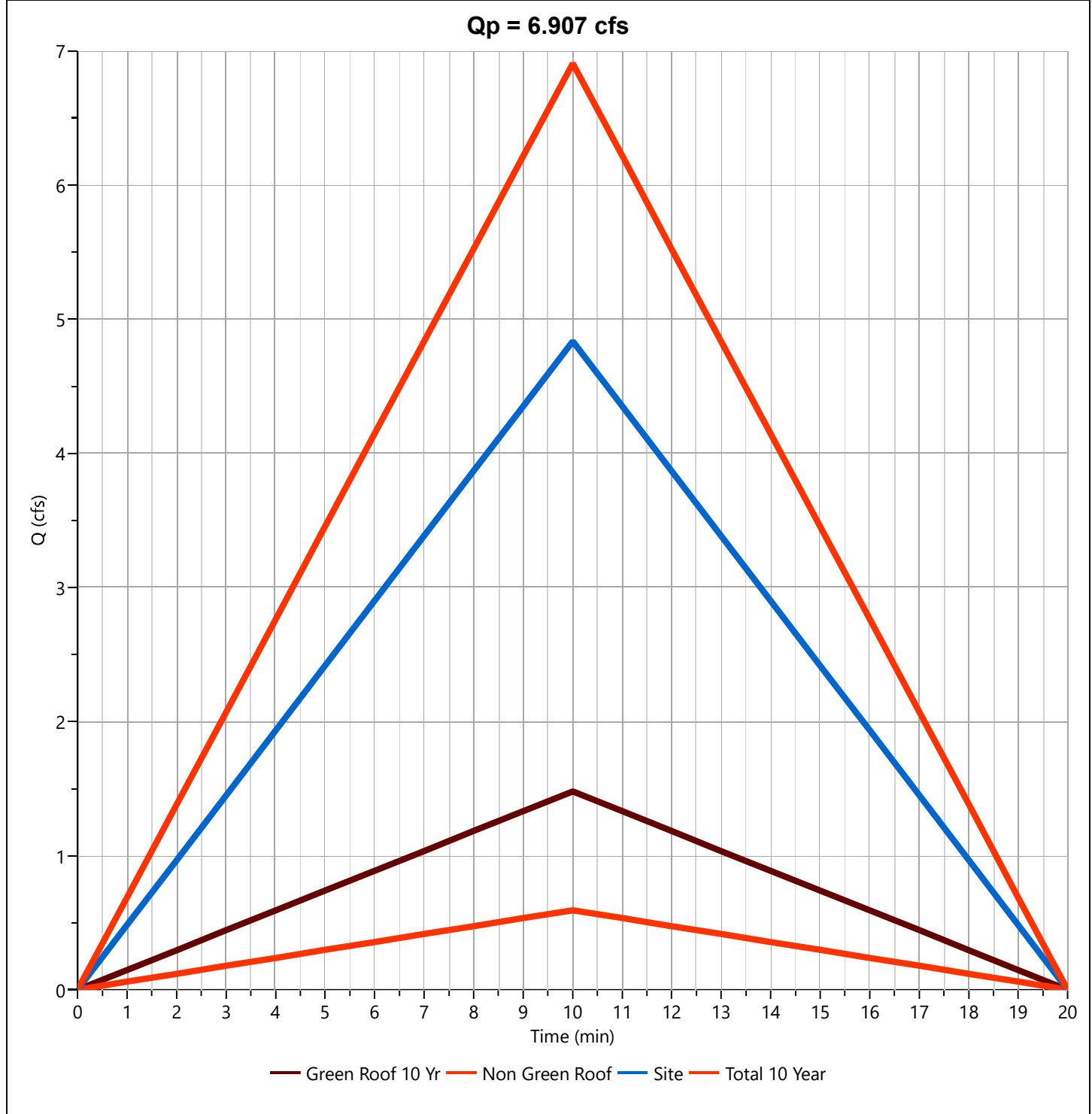
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03-18-2026

Total 10 Year

Hyd. No. 12

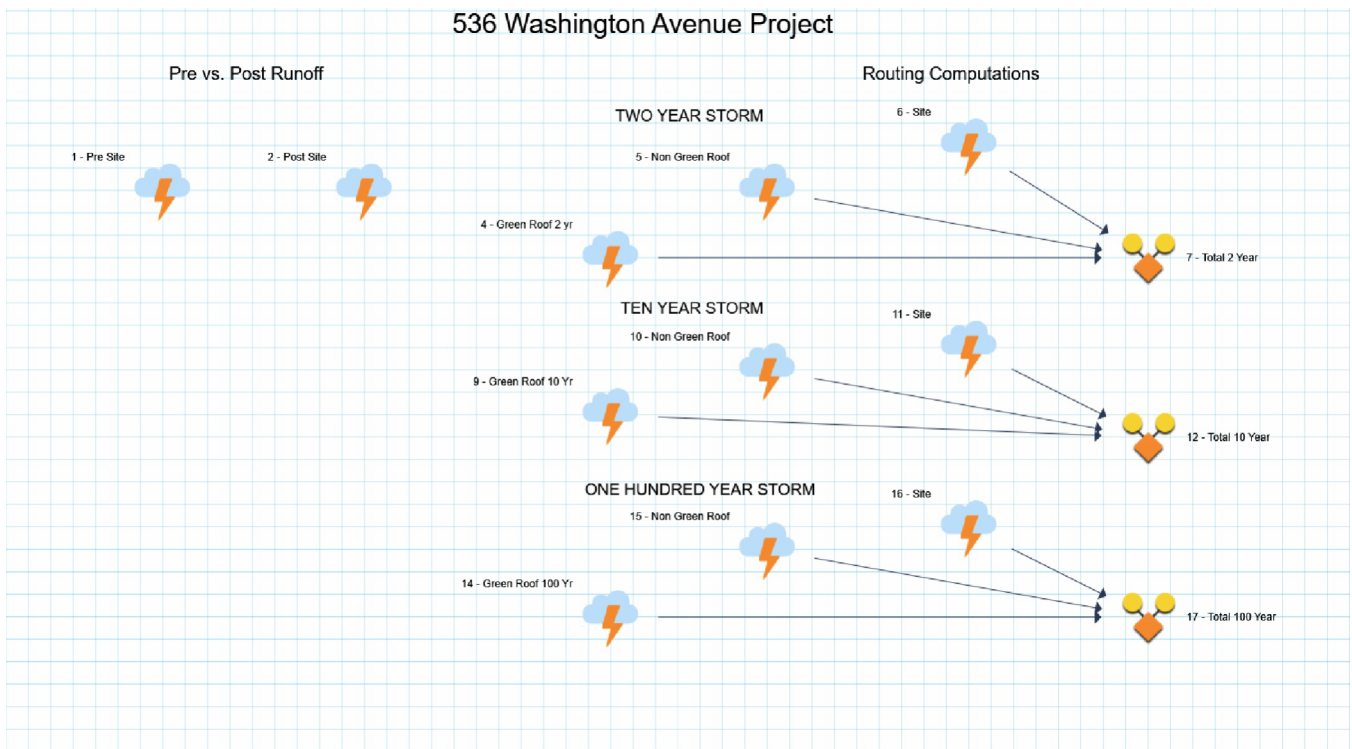
Hydrograph Type	= Junction	Peak Flow	= 6.907 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Hydrograph Volume	= 4,144 cuft
Inflow Hydrographs	= 9, 10, 11	Total Contrib. Area	= 1.557 ac



Appendix E – One Hundred Year Storm Event

Table of Contents

Basin Model Schematic	E-3
100 - Year	
Hydrograph Reports	
Hydrograph No. 14, Rational, Green Roof 100 Yr	E-4
Hydrograph No. 15, Rational, Non Green Roof	E-5
Hydrograph No. 16, Rational, Site	E-6
Hydrograph No. 17, Junction, Total 100 Year	E-7



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

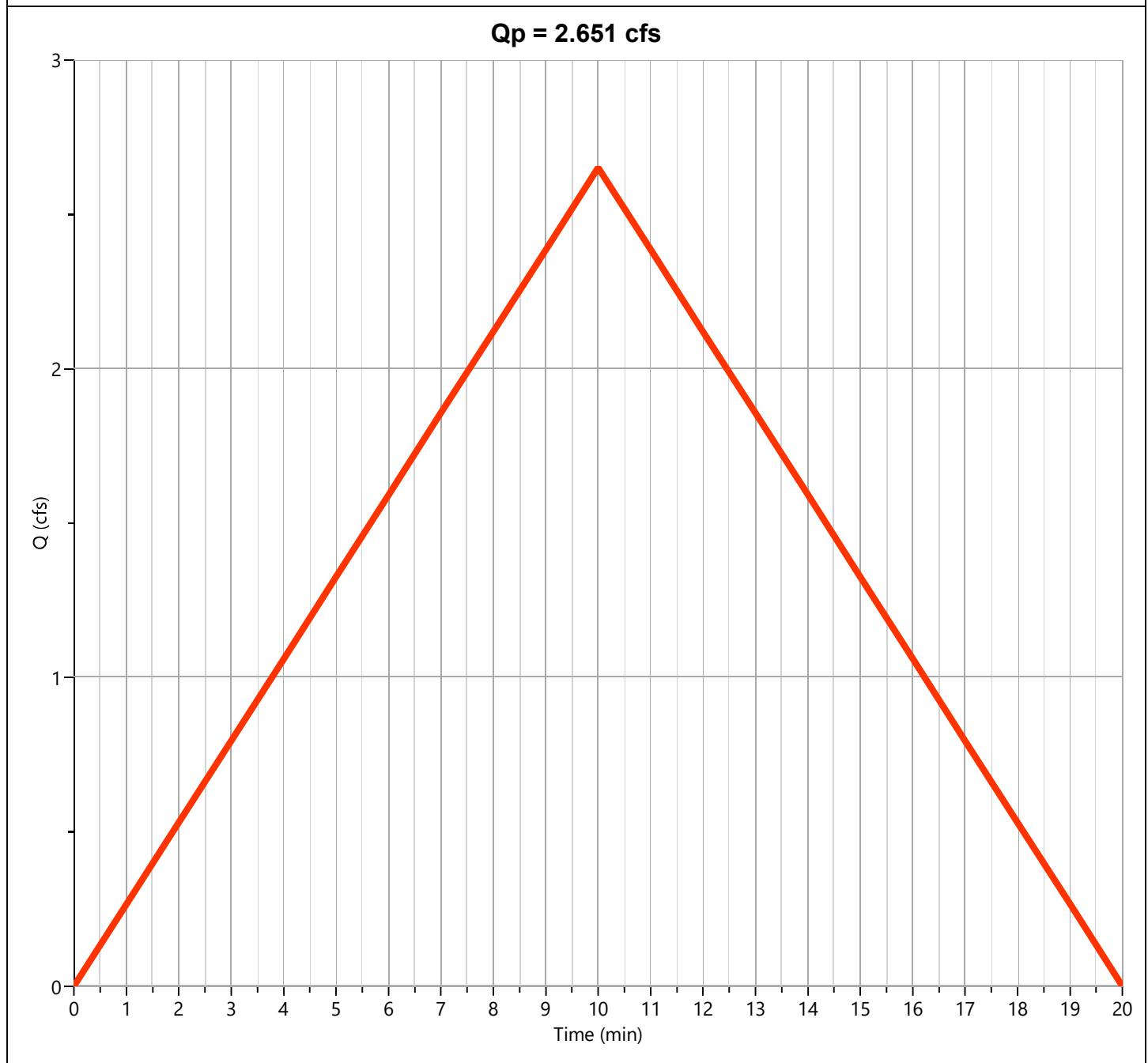
File: 4703 2026-03-16.hys

03-18-2026

Green Roof 100 Yr

Hyd. No. 14

Hydrograph Type	= Rational	Peak Flow	= 2.651 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 1,590 cuft
Drainage Area	= 0.459 ac	Runoff Coeff.	= 0.76
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 7.60 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

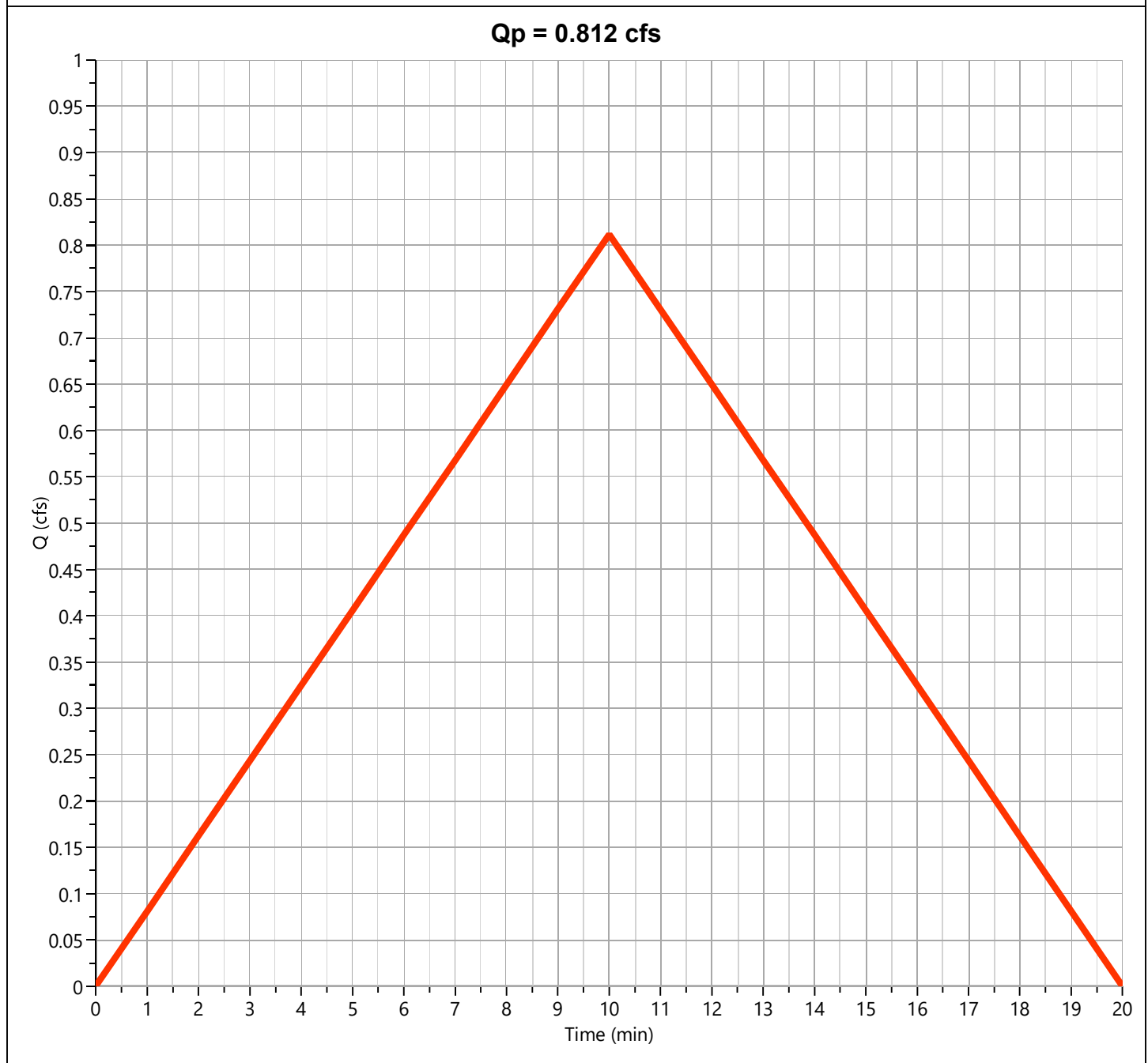
File: 4703 2026-03-16.hys

03-18-2026

Non Green Roof

Hyd. No. 15

Hydrograph Type	= Rational	Peak Flow	= 0.812 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 487 cuft
Drainage Area	= 0.109 ac	Runoff Coeff.	= 0.98
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 7.60 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

File: 4703 2026-03-16.hys

03-18-2026

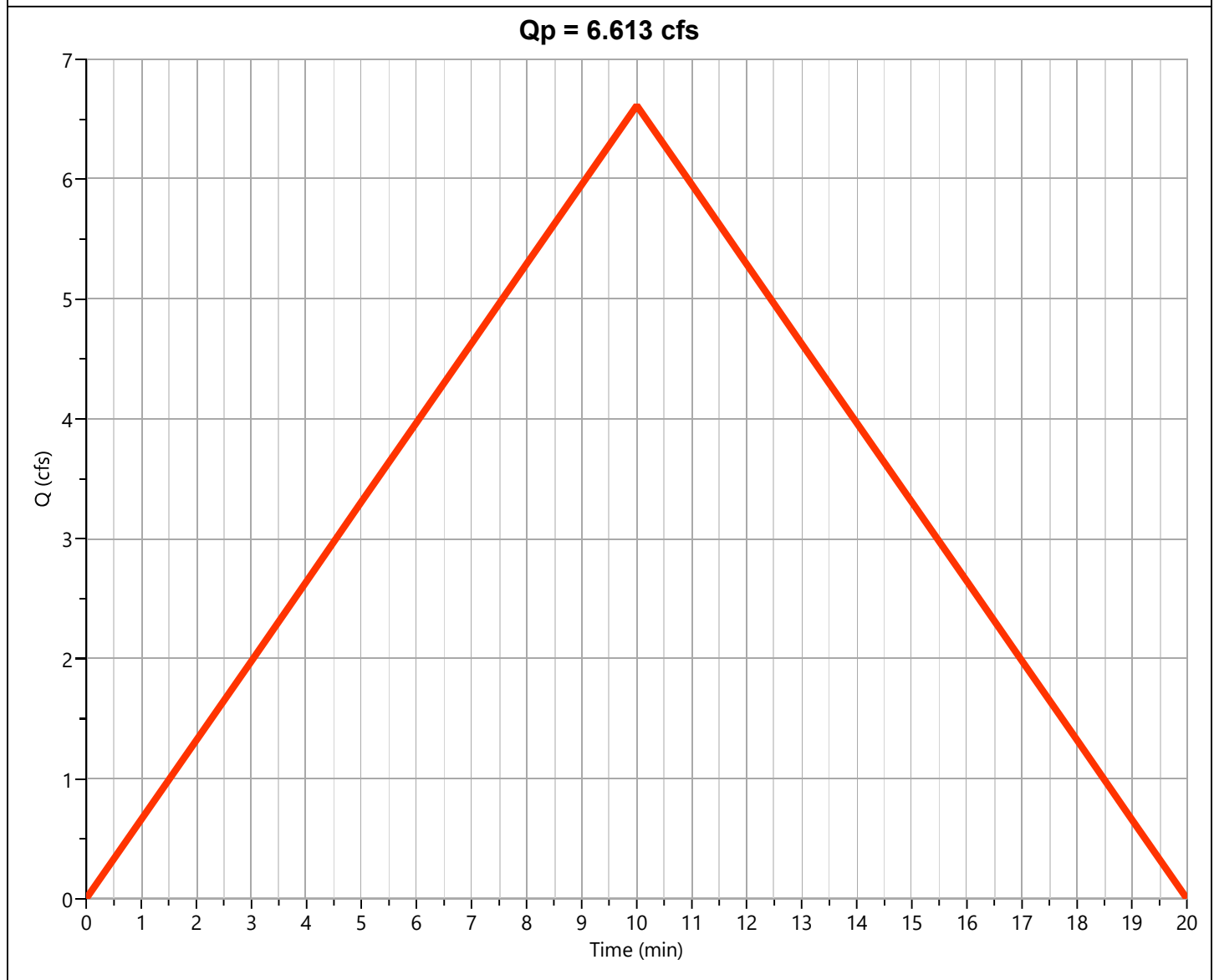
Site

Hyd. No. 16

Hydrograph Type	= Rational	Peak Flow	= 6.613 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Runoff Volume	= 3,968 cuft
Drainage Area	= 0.989 ac	Runoff Coeff.	= 0.88*
Tc Method	= User	Time of Conc. (Tc)	= 10.0 min
IDF Curve	= NJ RSIS 2017 IDF.idf	Intensity	= 7.60 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1

* Composite C Worksheet

AREA (ac)	C	DESCRIPTION
0.68	0.98	Parking Area
0.108	0.98	Concrete Walk
0.201	0.51	Grass
0.989	0.88	



Hydrograph Report

Hydrology Studio v 3.0.0.43

Project Name: 536 Washington Avenue Project

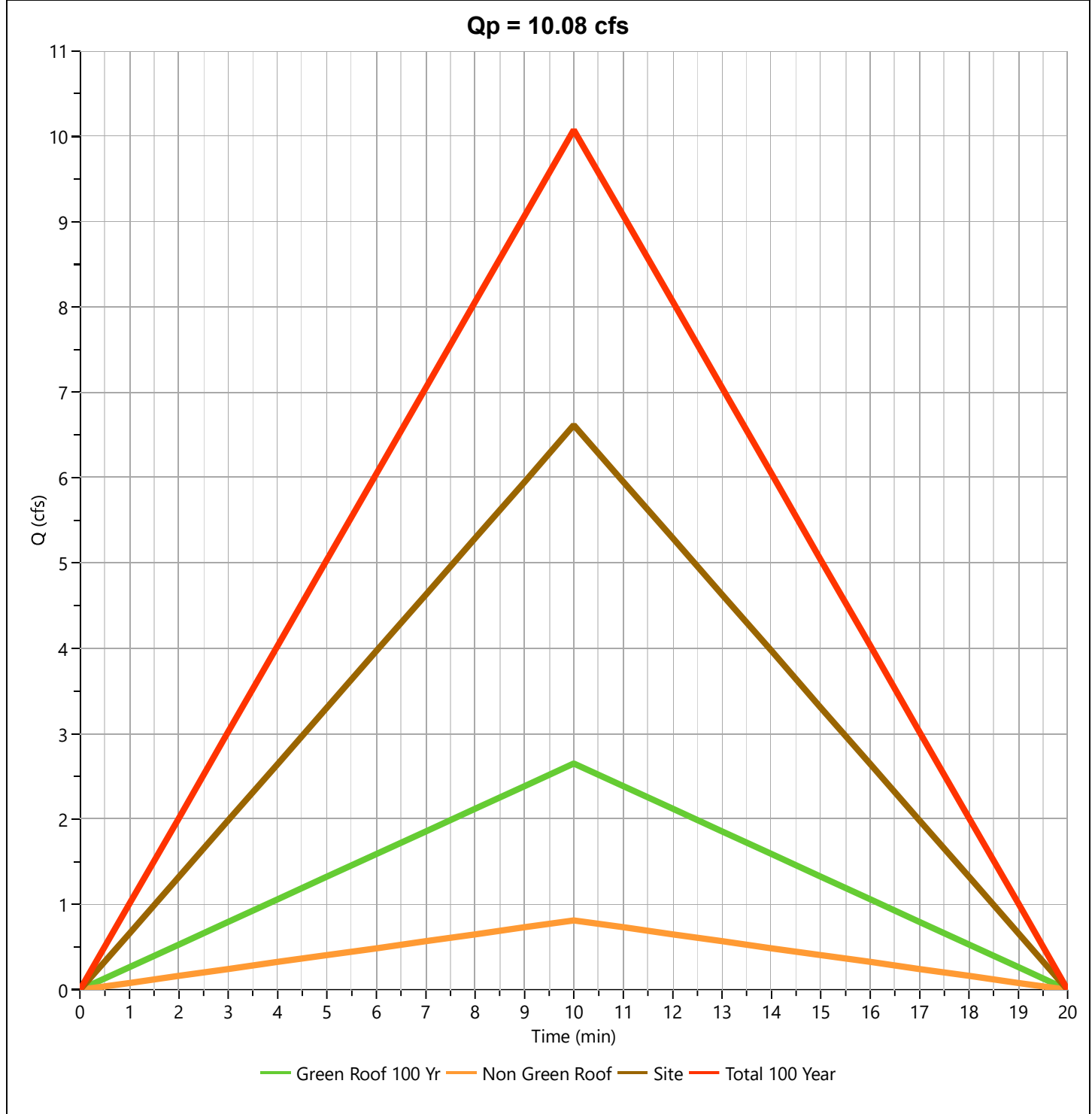
File: 4703 2026-03-16.hys

03-18-2026

Total 100 Year

Hyd. No. 17

Hydrograph Type	= Junction	Peak Flow	= 10.08 cfs
Storm Frequency	= 100-yr	Time to Peak	= 0.17 hrs
Time Interval	= 1 min	Hydrograph Volume	= 6,046 cuft
Inflow Hydrographs	= 14, 15, 16	Total Contrib. Area	= 1.557 ac



Appendix F – Two, Ten and One-Hundred Year Comparisons

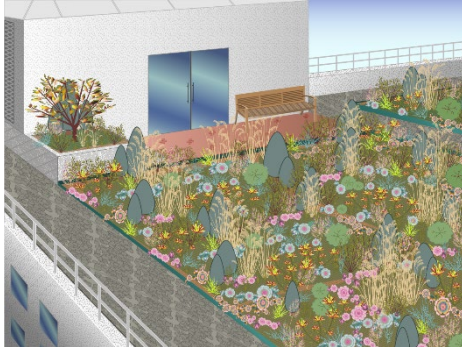
Tabular Hydrograph Comparison

Ten Year Storm Event Comparison





Node	Time	Existing Flow Rates	Proposed Flow Rates	Flow Differences	Comments
1	0 minutes	0.000 cfs	0.000 cfs	0.000 cfs	OK
2	1 minutes	0.787 cfs	0.691 cfs	0.096 cfs	OK
3	2 minutes	1.574 cfs	1.381 cfs	0.193 cfs	OK
4	3 minutes	2.362 cfs	2.072 cfs	0.290 cfs	OK
5	4 minutes	3.149 cfs	2.763 cfs	0.386 cfs	OK
6	5 minutes	3.936 cfs	3.453 cfs	0.483 cfs	OK
7	6 minutes	4.723 cfs	4.144 cfs	0.579 cfs	OK
8	7 minutes	5.510 cfs	4.835 cfs	0.675 cfs	OK
9	8 minutes	6.297 cfs	5.526 cfs	0.771 cfs	OK
10	9 minutes	7.085 cfs	6.216 cfs	0.869 cfs	OK
11	10 minutes	7.872 cfs	6.907 cfs	0.965 cfs	OK
12	11 minutes	7.085 cfs	6.216 cfs	0.869 cfs	OK
13	12 minutes	6.297 cfs	5.526 cfs	0.771 cfs	OK
14	13 minutes	5.510 cfs	4.835 cfs	0.675 cfs	OK
15	14 minutes	4.723 cfs	4.144 cfs	0.579 cfs	OK
16	15 minutes	3.936 cfs	3.453 cfs	0.483 cfs	OK
17	16 minutes	3.149 cfs	2.763 cfs	0.386 cfs	OK
18	17 minutes	2.362 cfs	2.072 cfs	0.290 cfs	OK
19	18 minutes	1.574 cfs	1.381 cfs	0.193 cfs	OK
20	19 minutes	0.787 cfs	0.691 cfs	0.096 cfs	OK
21	20 minutes	0.000 cfs	0.000 cfs	0.000 cfs	OK

Appendix G – Green Roof Infrastructure [GI] Literature

9.4 GREEN ROOFS



A green roof, also known as a vegetated roof, is a roof that has been covered with a growing medium and vegetation. Green roofs are effective for reducing the amount of stormwater runoff leaving a site. A green roof consists of vegetation planted in growing media on top of a drainage layer that intercepts stormwater runoff and reduces the total volume of runoff through evapotranspiration.

N.J.A.C. 7:8 Stormwater Management Rules – Applicable Design and Performance Standards		
	Green Infrastructure	Yes
	Stormwater Runoff Quantity	Yes
	Groundwater Recharge	Not Allowed
	Stormwater Runoff Quality	Not Allowed

Stormwater Runoff Quantity Control Mechanisms and Corresponding Criteria	
Volume Reduction*	
Reduced Curve Number	Based on the available water capacity of the growing medium
Growing Medium	Must meet the design criteria specifications. See Pages 6 and 7, plus either Page 9 for Extensive Green Roofs or Page 10 for Intensive Green roofs, as appropriate
Maximum Roof Slope	20%
Evapo-transpiration	
Appropriate Species Selection	See Page 6
Minimum Density of Vegetation	85%

Introduction

A green roof, also known as a vegetated roof, is a roof that has been covered with a growing medium and vegetation. Green roofs are effective for reducing the amount of stormwater runoff leaving a site, mitigating urban heat island effects and reducing local air pollution, as well lowering energy costs by providing additional insulation. A green roof consists of vegetation planted in growing media on top of a drainage layer that intercepts stormwater runoff and reduces the total volume of runoff through evapotranspiration. Additionally, studies have indicated that green roofs can extend the lifespan of roofing systems compared to conventional roofs, because the vegetation and growing media protect the roof and the waterproofing layer from physical damage and ultra-violet radiation. Green roofs are generally referred to as either intensive or extensive based on the depth of the growing medium.

Green roofs may be used on newly constructed buildings or on existing structures. Their use may be limited by the bearing capacity of the roof; therefore, it is important to analyze the structural integrity of the roof before deciding whether to use a green roof and what type is most appropriate. Green roofs are most effective on sites where roofs make up the majority of the impervious surface on the site or for sites which have little space available at-grade to build other BMPs. A green roof must have a maintenance plan and must be reflected in a deed notice recorded in the county clerk's office to prevent alteration or removal.

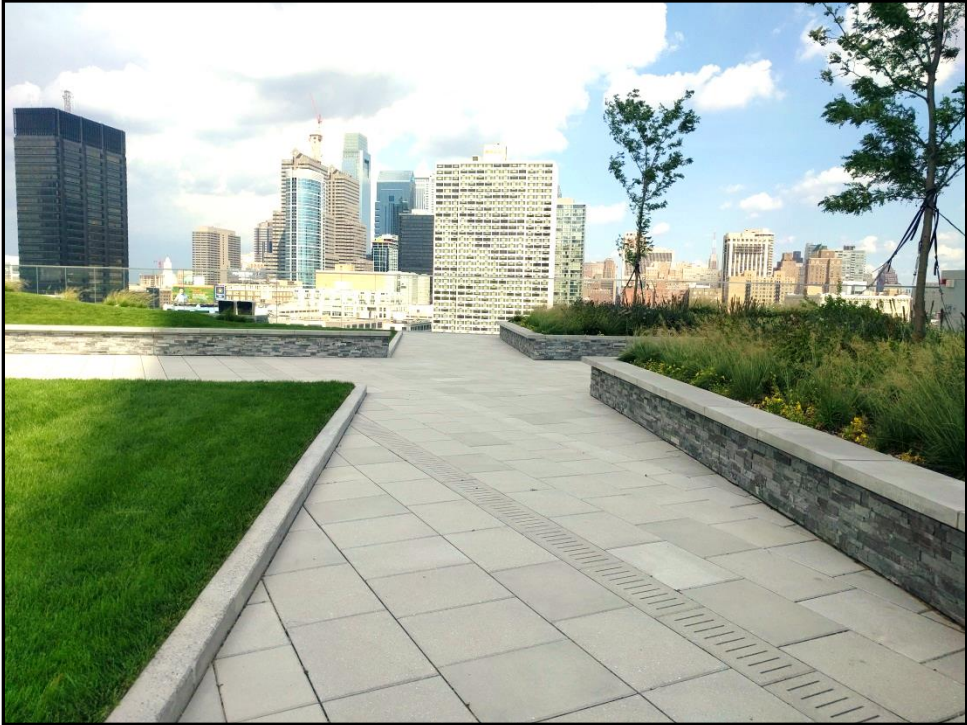
The following series of images depict the variety of vegetation that used on a green roof. Like the main area of the green roof shown below, low-lying vegetation can be planted



or a variety of taller plants can also be used, like that shown below.



It is even possible to use turf grass or trees on a green roof. The photo below shows an example of a green roof with both.



Here is another example of a green roof incorporating a wide variety of plants.



Applications



Pursuant to N.J.A.C. 7:8-5.2(a)(2), the minimum design and performance standards for groundwater recharge, stormwater runoff quality and stormwater quantity at N.J.A.C. 7:8- 5.4, 5.5 and 5.6 shall be met by incorporating green infrastructure in accordance with N.J.A.C. 7:8-5.3.



Green roofs may be designed to convey storm events larger than the Water Quality Design Storm (WQDS); however, regardless of the design storm chosen, all green roofs must be designed for stability and capacity in accordance with the *Standards for Soil Erosion and Sediment Control in New Jersey*, as required by N.J.A.C. 7:8 Stormwater Management rules.



Green roofs may be designed to reduce peak runoff rates by reducing the the volume of stormwater runoff generated by a clean roof from storm events. For more information on calculating the volume reduction, refer to the methodology beginning on Page 13.

Design Criteria

Basic Requirements

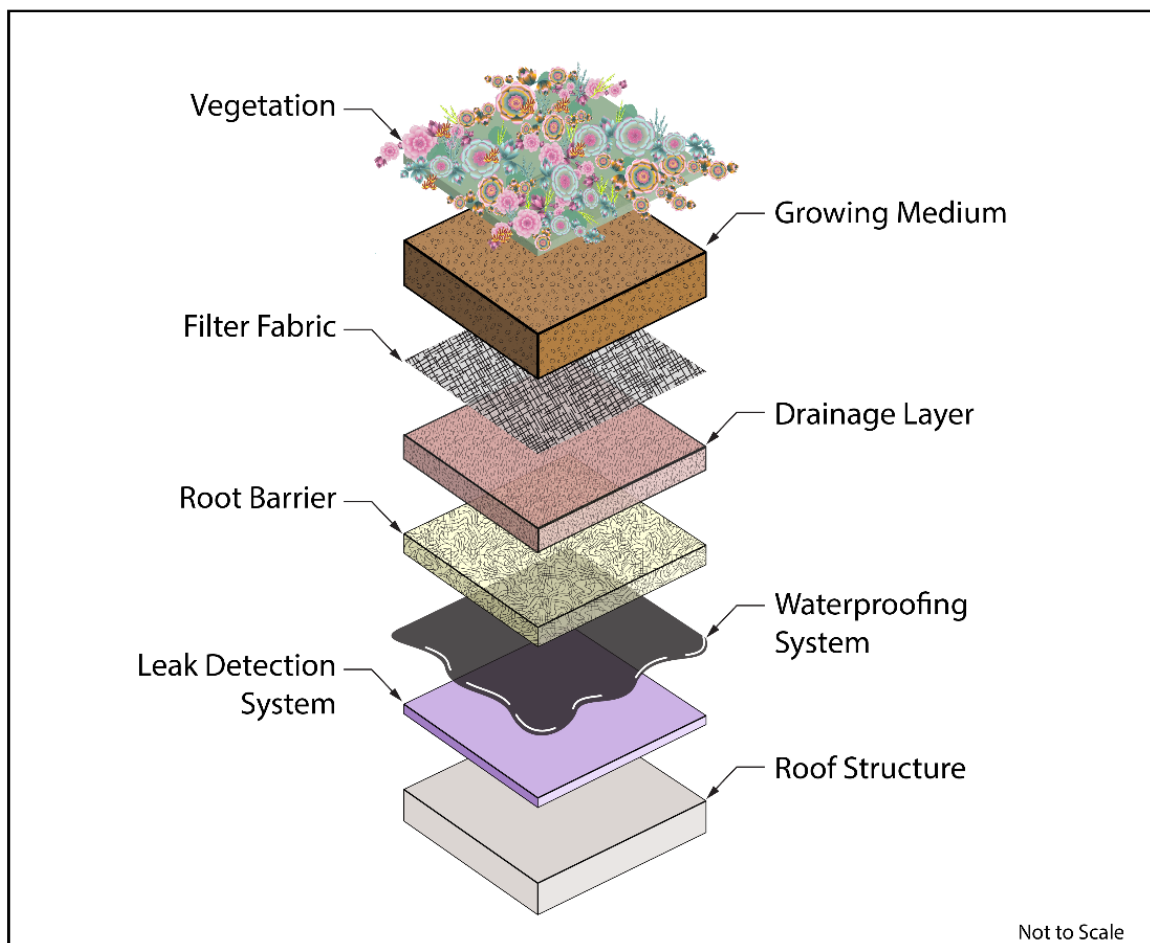
A green roof proposed to meet any of the design and performance standards at N.J.A.C. 7:8-5 must be designed in accordance with the following design criteria.

Contributory Drainage Area

A green roof manages the precipitation that falls directly on the vegetated surface and any surrounding walkways, but has no maximum contributory drainage area limitation. Runoff from other surfaces and structures should not be directed onto the green roof.

Green Roof Layer Requirements

The following illustration depicts the various component layers typically incorporated into a green roof. Each layer is discussed in the text below and continues further through Page 8.



Vegetation

Evapo-transpiration by plants makes the vegetation on a green roof one of the most important factors in reducing the volume of runoff. Selected species must be able to tolerate a broad range of conditions, including wide variations in water depth and inundation, high wind speed and extreme temperature fluctuations. Except in rare cases, typical grass species used for lawns are not acceptable species for a green roof. Some other important factors are listed below.

- Native species are preferred, but it is best when choosing plants to select those with the highest prospects for establishing a healthy plant community. Sedums are often chosen for use on green roofs, as are a variety of native plant species. A list of potential native species is available from New York City's Department of Parks and Recreation at:

http://www.nycgovparks.org/sub_about/parks_divisions/gnpc/pdf/green_roof_species_list.pdf.

Be aware that since this list was developed for New York City, not all of the plants listed are native in all areas of New Jersey.

- The amount of direct sunlight is of particular importance when selecting plant species. The presence or absence of surrounding structures determines which plant species will survive the specific site conditions. When configuring the layout of plants on the roof, analyze the roof to determine the hours of sunlight versus shade. For example, the presence of some types of solar panels, partitions, overhangs and awnings may block plant access to sunlight during certain portions of the day or growing season. The results of this analysis should be used in determining appropriate plant species for the available sunlight.
- The slope of the roof must also be a factor in plant selection and placement. Roofs with higher slopes tend to drain faster and may therefore require plant species that are more drought-tolerant.
- Final plant species selection must be discussed with the reviewing agency to ensure that the selections are appropriate for the area where the green roof will be located.

Growing Medium

The growing medium affects the ability of the installation to support vegetation, retain stormwater runoff, and provide heat and noise insulation for the building; therefore, the composition of the medium is a crucial design parameter. In general, growing media for green roofs are different from at-grade gardens in that they are light-weight, engineered mixes. Green roof growing media can vary widely in their composition; however, they must also be light-weight and retain sufficient water to sustain vegetation. These mixes are generally composed of approximately 80 - 90%, by weight, lightweight aggregate, such as, but not limited to expanded shale, expanded clay, expanded slate, pumice, zeolite, perlite or vermiculite. The remaining 10 - 20% is composed of stable organic matter. Biochar may also be used as an additive to increase the absorption of water, lighten the weight of the growing medium, aid in the reduction of turbidity, suspended solids and carbon and even assist in decreasing pollutant discharge from green roofs. The growing medium needs sufficient water storage capacity to support vegetation. The growing medium also needs sufficient permeability to prevent ponding or logging. To meet these requirements, the required physical characteristics of the growing medium are as follows:

- The tested permeability of the growing medium must be at least 1 inch per hour, as determined by the method established in ASTM E2399 or in the *Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau*, hereafter referred to as the *FLL*.
- The pH must be between 6 and 8.5.
- No more than 10% by mass of particles of the growing medium shall have a grain diameter less than 0.063 mm to prevent fine particles clogging the filter fabric.
- No grain diameter shall be greater than 12 mm to prevent piping of the runoff through the growing medium.
- Additional physical characteristics specific to one of the different types of green roofs are found on Pages 9 through 11.

Filter Fabric

- Filter fabric is required and must be installed directly beneath the planting media to prevent the migration of fine particles.
- Any filter fabric used must have sufficient density to physically support the weight of the growing medium. For installations requiring a deeper growing medium depth or on steeply graded roofs, the filter fabric density must be increased to provide increased tensile strength.
- Any filter fabric selected must permit root penetration.

Drainage Layer

- The drainage layer shall either be made of a non-carbonate, coarse granular material or a synthetic layer.
- The drainage layer must be resistant to freeze-thaw cycles.
- The hydraulic conductivity of the drainage layer must exceed that of the growing medium.

Root Barrier

- A root barrier must be included in the design to ensure that the growth of roots does not damage the roof.
- The root barrier must not interfere with the roots' access to water.
- The root barrier must be durable and not contain chemicals that will contaminate runoff. Herbicides must not be used.

Waterproofing System

- A waterproofing system must be included in the design to ensure that water does not damage the roof or leak into the building. An impermeable root barrier or other membrane may act as the waterproofing system.

- A method for detecting leaks must be included in the green roof's maintenance plan. Location of physical leak detection systems will depend on the manufacturer's specifications and shall be placed accordingly. A flood test is generally insufficient for detecting small leaks and must not be used. Electronic leak detection and moisture monitoring systems are recommended.
- It may be necessary to seek additional guidance from a roofing specialist when selecting the waterproofing system.

Environmental Constraints

Erosion Protection and Stability Requirements

- Due to higher wind speeds expected on a rooftop, the effects of wind erosion must be addressed in the design of a green roof. Vegetation must be established as quickly as possible, especially around the perimeter and corners of the roof.
- Temporary erosion protection, such as mats or mesh, must be provided until mature plant cover is established.
- If erosion becomes an issue, permanent stabilization must be installed. All stabilization measures must be included in the maintenance plan.

Roof Slope

- The maximum roof slope is 20%.

Safety

- All green roofs must be designed to safely convey overflows, up to and including the 100-year storm, to downstream drainage systems. The design of any overflow structure must be sufficient to provide safe and stable discharge of stormwater runoff in the event of an overflow. Safe and stable discharge minimizes the possibility of adverse impacts, including erosion and flooding in down-gradient areas.
- All drains and scuppers must be protected to prevent clogging; one such method is a gravel apron, as shown in the image below.



Types of Green Roofs

There are two main types of green roofs:

1. Intensive Green Roofs
2. Extensive Green Roofs

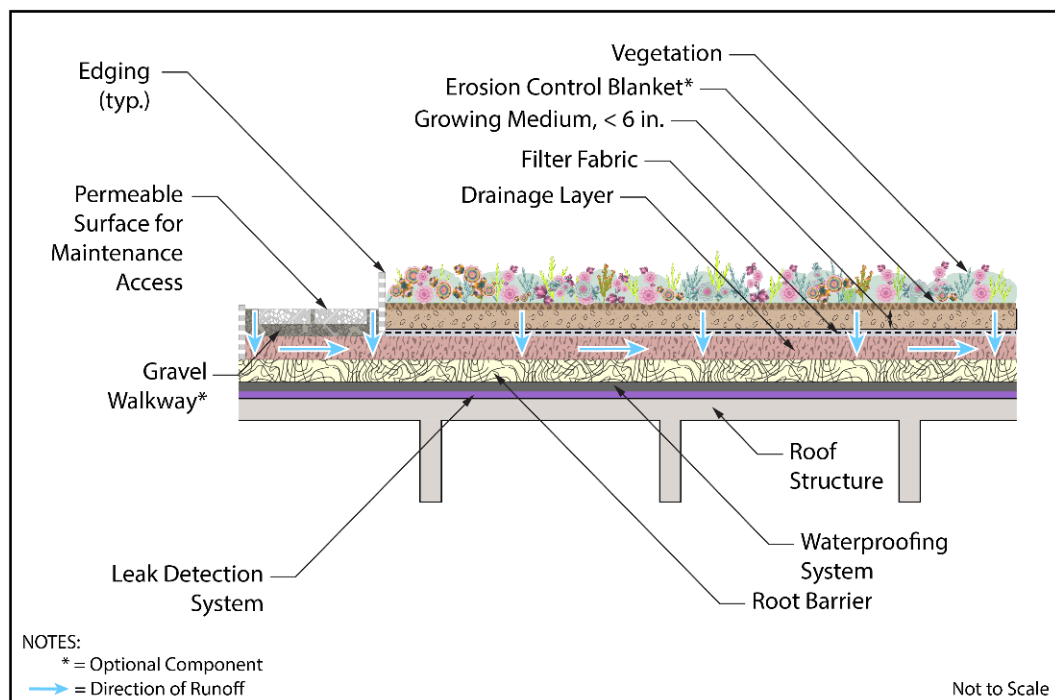
Individual Types of Green Roofs

The following section provides detailed design criteria for each type of green roof; the illustrations show possible configurations and flow paths and are not intended to limit the design.

Extensive Green Roofs

Typically, extensive green roofs are the least expensive type of green roof, and they may be more suitable for retrofits. The illustration below depicts a cross-sectional view of an extensive green roof for which the growing medium layer must be designed to be six (6) inches or less in depth. This shallow depth of growing medium generally makes extensive green roofs the lowest in unit weight when compared to the various other types of green roofs and typically limits the variety of vegetation that may be selected. When designing an extensive green roof, it is crucial that the growing medium depth be sufficient to support the selected vegetation.

Extensive Green Roof – Cross-Section View:



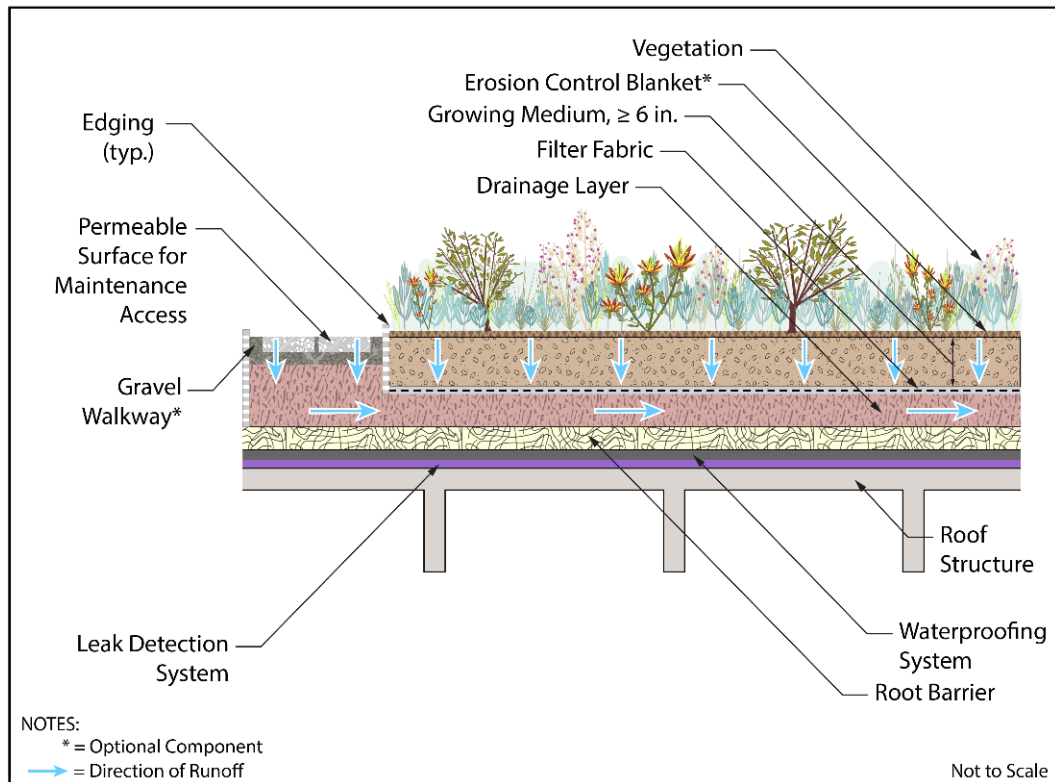
The following growing media design criteria apply only to extensive green roofs:

- The tested maximum media water retention, when using the ASTM E2399 method, or the maximum water capacity, when using the FLL method, must be at least 35% by volume but no greater than 65%, also by volume.
- The organic content must be less than 4.06 pounds per cubic foot or 65 grams per liter.

Intensive Green Roofs

Unlike extensive green roofs, intensive green roofs are designed with a growing medium layer six (6) inches or greater in depth, which allows this type of green roof to support a wide variety of vegetation, including shrubs and trees. Due to the increased overall depth, intensive green roofs provide significant benefits for stormwater management, habitat creation and heat and noise insulation; however, this additional depth also adds significant weight to this type of roof. Therefore, intensive green roofs may not be suitable for retrofit projects. Additionally, intensive green roofs may also require more irrigation than extensive green roofs to maintain vegetation; therefore, prior to selection of this type of green roof, the structural integrity of the building and access to water must be analyzed. The illustration below depicts a cross-sectional view of an intensive green roof.

Intensive Green Roof – Cross-Section View:



The following growing media design criteria apply only to intensive green roofs:

- The tested maximum media water retention, when using the ASTM E2399 method, or the maximum water capacity, when using the *FLL* method, must be at least 45% by volume but no greater than 65%, also by volume.
- The organic content must be less than 5.62 pounds per cubic foot or 90 grams per liter.

Note that the maximum media water retention and maximum water capacity are used only as indicators for growing medium selection. They cannot be used as the parameters to calculate the runoff to be retained in the growing media. For the calculation of stormwater runoff volume reduction, refer to the subsection regarding Volume Reduction beginning on Page 13.

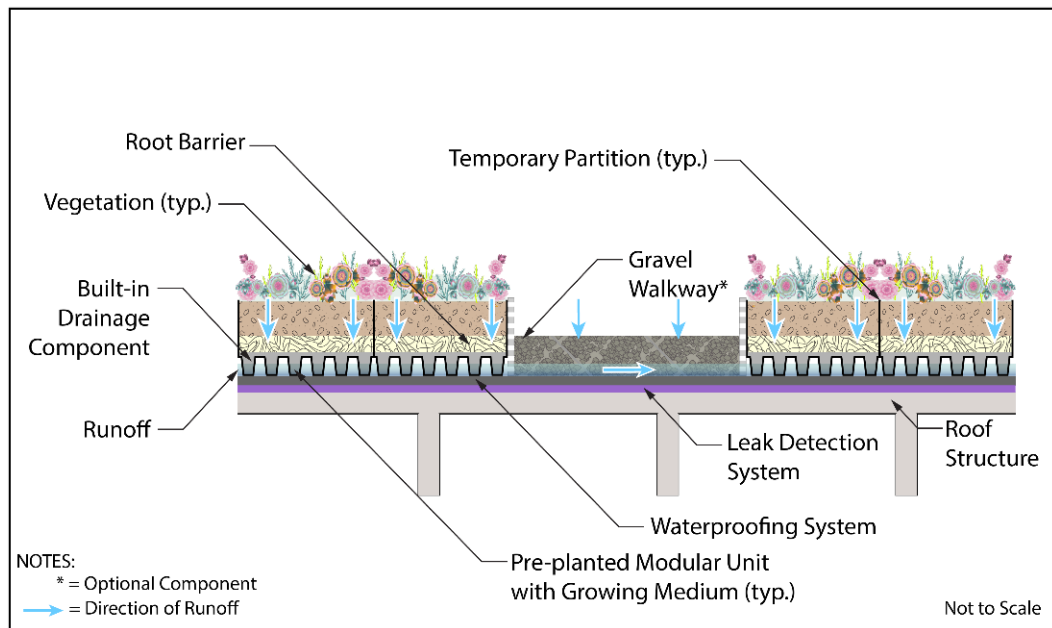
Green Roof Design Options

Green roofs are versatile, and there are a number of options that make the construction of green roofs feasible in on most projects.

Modular Green Roofs

Modular green roofs are either extensive or intensive and consist of pre-fabricated trays, or units, containing green roof components that can be placed on a traditional roof in a variety of configurations. Modular systems tend to be easy to install, are easily removed for roof maintenance and the vegetation is typically established in the units prior to installation. The illustration below depicts a cross-sectional view of a modular green roof. The gravel walkway between units is optional. The temporary partitions serve to keep the contents of an individual module intact during placement.

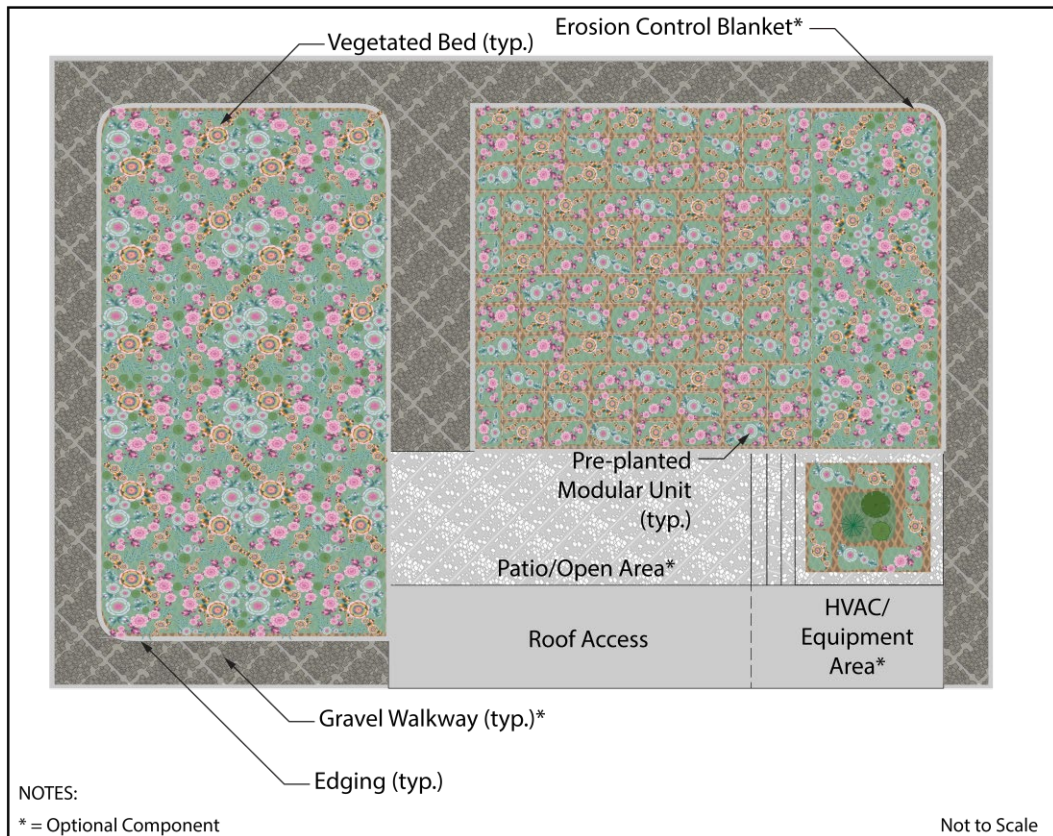
Modular Green Roof – Cross-Section View:



Combination Green Roofs

Depending on site specific conditions, the individual types of green roofs may be combined to create a functional and aesthetically pleasing open space area. The following illustration incorporates intensive and extensive green roof design with modular zones; however, it is only a suggested approach and is not meant to limit the design in any way. Access walkways are shown, along with an open area and a stepped planter box which serves as a wind screen for the open area.

Combination Green Roof – Plan View:



Volume Reduction

The growing medium on a green roof will absorb and retain a portion of the rainfall that lands on it, thus reducing the volume of runoff that will reach downstream stormwater facilities. For the calculation of runoff retention, the available water capacity for runoff reduction is the difference in the water content between the *field capacity* and the *wilting point*, both of which are defined below. Therefore, the values for field capacity and the wilting point of the selected growing medium must be obtained either from a published research article or tested in accordance with either the ASTM D-6836 method or the Soil Survey Investigations Report No. 42, Kellogg Soil Survey Laboratory Methods Manual, published by NRCS. The field capacity is tested at -10 KPa, for sandy material, or -0.33 KPa, for other materials. The wilting point is tested at 1,500 KPa under the ASTM D-6836 method or Kellogg Soil Survey Laboratory Methods Manual by NRCS. Information regarding some examples of growing media mixes are provided below.

Growing Medium and Composition (% by Volume)	*Effective Porosity (cf/cf)	*Field Capacity (cf/cf)	*Wilting Point (cf/cf)	Maximum Water Capacity, Using FLL Method, (% by Volume)	Maximum Available Water Capacity For Runoff Retention (cf/cf)
<ul style="list-style-type: none"> ▪ 20% 1-7 mm pumice ▪ 60% 4-10 mm pumice ▪ 20% composted pine bark fines 	0.30	0.349	0.118	49.6	0.231
<ul style="list-style-type: none"> ▪ 50% 4-10 mm pumice ▪ 30% 1-8 mm zeolite ▪ 20% composted pine bark fines 	0.30	0.295	0.053	46.6	0.242
<ul style="list-style-type: none"> ▪ 70% 4-10 mm pumice ▪ 10% zeolite <3 mm ▪ 15% pine bark fines + mushroom compost ▪ 5% sphagnum peat 	0.35	0.358	0.069	63	0.289

*Note: *Effective porosity* is the porosity available to fluid flow and is typically less than the total porosity.

Field capacity is the water content of the soil after free drainage has ceased.

Wilting point is the minimum soil moisture required by a plant to not wilt.

Note the assumption that the maximum available water capacity for runoff retention assumes the growing medium has dried to the wilting point of the plants between each storm event. In many storm events, especially in the case of back-to-back storms, the green roof may not provide the full calculated volume reduction, as stormwater runoff from the first storm may still be retained within the growing medium

when the second storm occurs. Therefore, a lower value of the maximum available water capacity for stormwater runoff retention may be needed when modeling back-to-back storm conditions.

The steps to calculate the adjusted CN, after considering the available water capacity for stormwater runoff retention, are as follows:

Step 1: Calculate the runoff retention of the green roof

$$S_v = \frac{SA \times [(d \times \eta_1) + (DL \times \eta_2)]}{12 \text{ in/ft}}, \text{ where:}$$

S_v = storage volume (cf)

SA = green roof area (sf)

d = media depth (in)

η_1 = available water capacity for runoff retention

DL = drainage layer depth (in)

η_2 = drainage layer field capacity

Step 2: Calculate the discharged runoff volume

- a. Calculate stormwater runoff volume produced by the Water Quality Design Storm (WQDS), 2-, 10- and 100-year storms using the method described in the NRCS Methodology section of *Chapter 5: Stormwater Management Quantity and Quality Standards and Computations*. Note that the Rational and Modified Rational Methods cannot be used for this calculation.
- b. Subtract the storage volume, S_v , in Step 1 from the stormwater runoff volume for the different storm events. The result is the runoff volume to be discharged from the green roof during the different storm events.

Step 3: Calculate the direct runoff depth

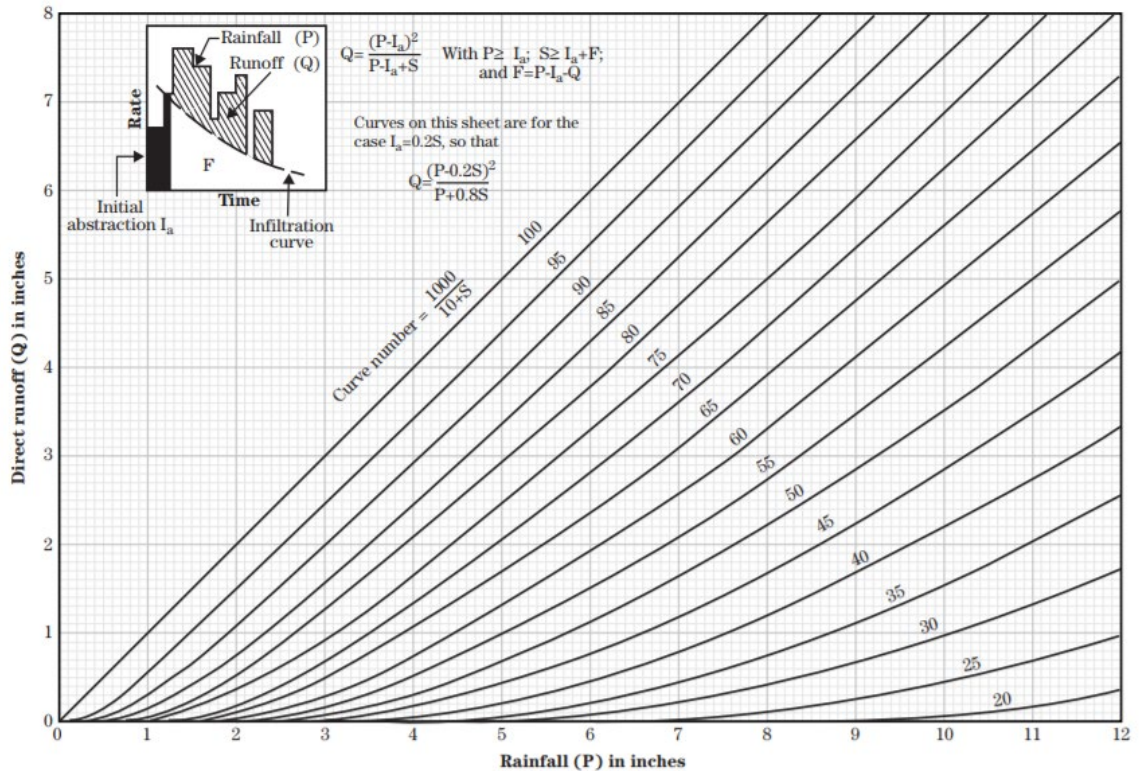
Divide the discharged runoff volume for each of the storm events calculated in Step 2b by the green roof area. The result is the direct runoff, Q (in), in the NRCS method or in equation 10-11 of the *National Engineering Handbook, Part 630, Hydrology (NEH)*.

$$Q = \frac{\text{reduced runoff volume (cf)} \times 12 \text{ in/ft}}{\text{green roof area (sf)}}$$

Step 4: Determine the Adjusted Curve Number

Use the direct runoff, Q , calculated in Step 3 and the rainfall precipitation for each of the storm events, P_n , to find corresponding CN value in Figure 10-2 from the *NEH*, as reproduced on the following page:

Figure 10-2 ES-1001 graphical solution of the equation $Q = \frac{(P - 0.2S)^2}{P + 0.8S}$



Step 5: Calculate Peak Flow Rates by Adjusted Curve Number

Calculate the time of concentration and use it along with the adjusted curve numbers determined in Step 4 to calculate the peak flow rates of each of the storm events using NRCS methodology.

Note that the time of concentration of a green roof must be calculated based on the vegetation condition, roof slope and drainage path. A green roof with dense vegetation and a milder slope may provide a longer time of concentration, which will slow down the discharge of the roof runoff and lower the peak rate of the runoff. The time of concentration must be calculated in accordance with the velocity method described in the *NEH, Chapter 15 - Time of Concentration*.

Incorporation with other BMPs

Green roofs may be incorporated with other BMPs to retain the entire roof runoff from the WQDS or to reduce roof runoff produced by larger storms. For example, dry wells may be designed to receive and infiltrate some discharge from the downspouts of a green roof in order to achieve retention of the entire WQDS volume. Cisterns, rain gardens and pervious paving systems may also be incorporated with green roofs. Note that if the discharge from a green roof is mixed with runoff that must be treated to reduce the total suspended solids (TSS), the entire mixed runoff volume is subject to the 80% removal rate for TSS.

Designing a Green Roof

The following example illustrates how to use a green roof to reduce the volume of runoff generated by the WQDS, plus the 2-, 10- and 100-year storms. The example shows a possible configuration and flow path and is not intended to limit the design.

Example: A 1 acre roof of a building in Camden County is to be designed as a green roof based on the following parameters, assuming the entire roof is vegetated:

Roof Area:	1	acre
WQDS rainfall, P_{WQ} :	1.25	inches
2-year storm rainfall, P_2 :	3.31	inches
10-year storm rainfall, P_{10} :	5.06	inches
100-year storm rainfall, P_{100} :	8.52	inches
Drainage layer depth:	6	inches
Drainage layer field capacity:	0.02%	by volume
Slope	2.5%	
Vegetation	dense native grass	

Growing Medium:

The growing medium has a composition of 20% 1 - 7 mm pumice by volume, 60% 4 - 10 mm pumice by volume, and 20% composted pine bark fines by volume. The characteristics of the growing medium are as the follows:

Growing medium depth:	6	inches
Field capacity:	0.349%	by volume
Wilting point:	0.118%	by volume
Available Water Capacity for Stormwater Runoff Retention	0.231%	by volume

Step 1: Calculate the stormwater runoff retention by the green roof

The volume of rainfall stored in the green roof system is calculated using the following equation:

$$S_v = \frac{SA \times [(d \times \eta_1) + (DL \times \eta_2)]}{12 \text{ in/ft}}, \text{ where:}$$

- S_v = storage volume (cf)
- SA = green roof area (sf)
- d = media depth (in)
- η_1 = available water capacity for runoff retention
- DL = drainage layer depth (in)
- η_2 = drainage layer field capacity

The storage volume, which is also the maximum stormwater runoff volume reduction, is then calculated as follows:

$$S_v = \frac{43,560 \times [(6 \times 0.231) + (6 \times 0.02)]}{12} = 5,467 \text{ cf}$$

Step 2: Calculate the discharged runoff volume

Using the storage volume calculated above, the discharged runoff volume for each storm is calculated by subtracting the storage volume calculated in Step 1 from the stormwater runoff volume from a traditional roof of the same area, as shown in the following table:

Storm Event	(A) Runoff Volume (cf) (Impervious Surface)	(B) Storage Volume (cf)	(A)-(B) Discharged Runoff Volume (cf) (Green Roof)
WQDS	3,755	5,467	0
2-year	11,170	5,467	5,703
10-year	17,508	5,467	12,041
100-year	30,056	5,467	24,589

Step 3: Calculate the direct runoff depth

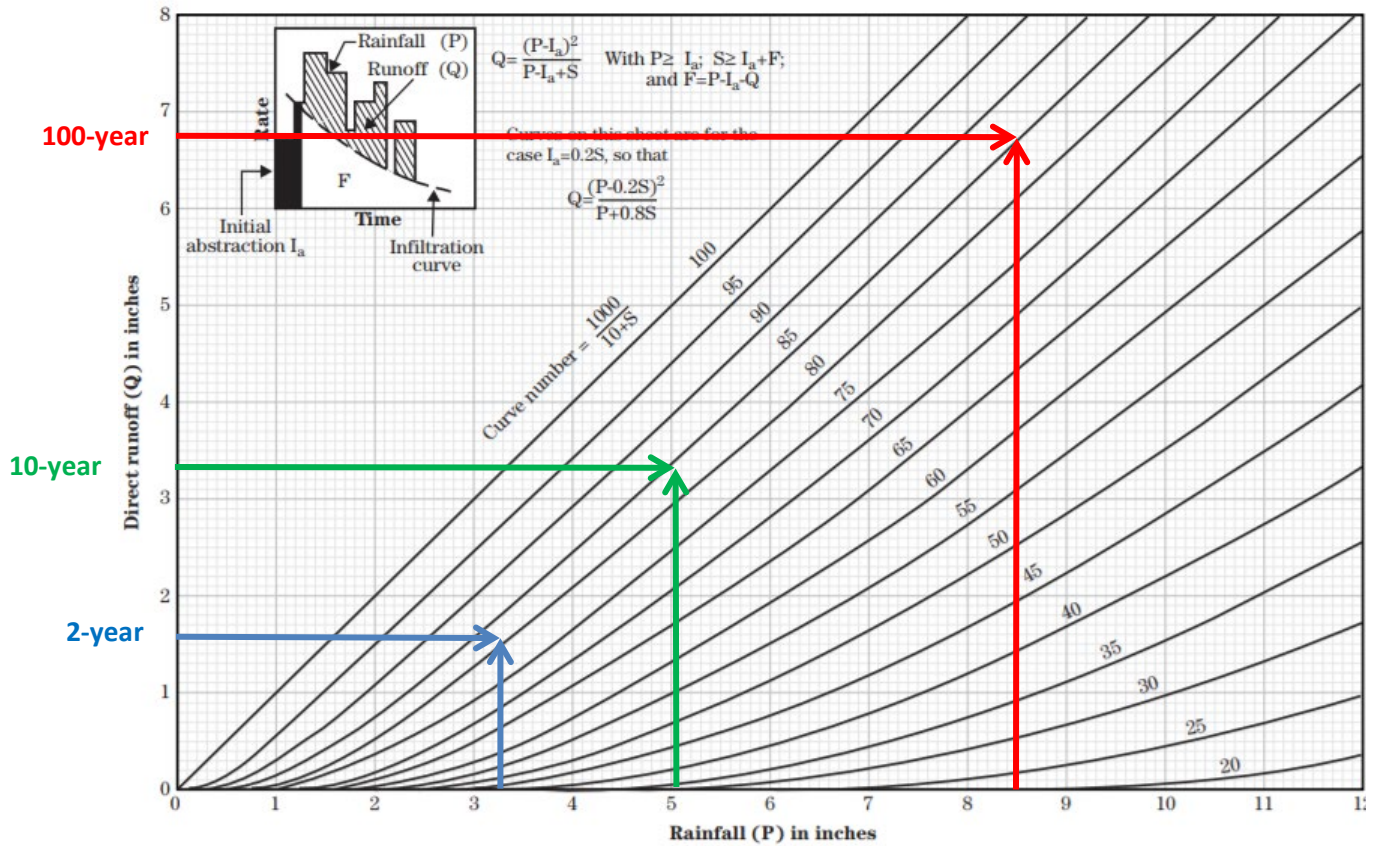
Next, the direct runoff depth, Q , is calculated by dividing the discharged runoff volume by the roof area, yielding the following results:

Storm Event	Discharged Runoff Volume (cf) (Green Roof)	Green Roof Area (sf)	Direct Runoff Depth (in)
WQDS	0	43,560	0
2-year	5,703	43,560	1.57
10-year	12,041	43,560	3.32
100-year	24,589	43,560	6.77

Step 4: Determine the Adjusted Curve Number

From Figure 10-2 in the *NEH*, the adjusted curve number can be found using the rainfall depths and the stormwater runoff depths calculated in Step 3 for each storm, as depicted below, in blue, green and red for the 2-, 10- and 100-year storms, respectively.

Figure 10-2 ES-1001 graphical solution of the equation $Q = \frac{(P - 0.2S)^2}{P + 0.8S}$



From the figure above, the adjusted curve numbers for the 2-, 10- and 100-year storm events are approximately 81, 84 and 85, respectively. For the WQDS, there is no runoff, so the curve number should be 61, which produces no runoff in the WQDS.

Storm Event	Rainfall Depth (in)	Direct Runoff Depth (in)	Adjusted Curve Number
WQDS	1.25	0	61
2-year	3.31	1.57	81
10-year	5.06	3.32	84
100-year	8.52	6.77	85

Step 5: Calculated Peak Flow Rates by Adjusted Curve Number

Next, the peak flow rate can be calculated by using the adjusted curve number with the NRCS method. The time of concentration must be calculated based on the vegetation condition, roof slope and drainage path. In order to avoid potential erosion that may result from the concentration of flow on the rooftop, drains are located on the roof so that the maximum flow length is 100 feet. The Manning's roughness for sheet flow is 0.24. Under these conditions, the green roof will have a time of concentration of 12.8 minutes. Note that the time of concentration for a traditional impervious surface under the post-construction condition has a default value of 6 minutes.

The peak flow rates for different storms under the adjusted curve numbers and estimated time of concentration were calculated by hydrologic modeling software and the results are as follows:

Storm Event	Adjusted CN	Runoff Volume Discharged from the Green Roof (cf)	Peak Flow (cfs)
WQDS	61	0	0
2-year	81	5,703	1.45
10-year	84	12,041	3.11
100-year	85	24,589	6.10

Compare these results with that from an impervious roof:

Storm Event	CN	Runoff Volume Discharged From an Impervious Roof (cf)	Peak Flow (cfs)
WQDS	98	3,755	2.93
2-year	98	11,170	3.22
10-year	98	17,508	4.95
100-year	98	30,056	8.37

Considerations

A number of factors should be considered when using a green roof to manage stormwater runoff.

Structural Strength

Green roofs can add a significant amount of weight to a roof including the dead load of the green roof layers, as well as the added live loads as a result of rainfall, pedestrians, maintenance personnel and equipment. Therefore, the structural load capacity of the roof is a crucial consideration when designing a green roof.

Access

Green roofs, like all other stormwater BMPs require maintenance; therefore, it is important all maintenance personnel are able to access the roof. Additionally, if the roof is open to the public, measures should be included to ensure public safety. Many large buildings use the roof as the access point for window washing; therefore, the green roof should be designed to provide access and safe working conditions for maintenance personnel.

Physical Impacts

The ability of the green roof vegetation to absorb moisture, undergo evapotranspiration and survive depend upon the architectural features of the building. If a green roof is adjacent to reflective surfaces, for example, the additional reflected heat may jeopardize the ability of the plants to thrive. Similarly, high wind velocities across or shading of the planting bed caused by adjacent roof structures may damage plants. Therefore, practicality and aesthetics must be properly balanced for successful green roof design.

Longevity

When designing a green roof, it is important to consider the longevity of all parts of the system, as well as the roof and all structural supports. The waterproofing layer of a green roof is especially important, as failures can create serious structural problems. Care should be taken during construction to ensure that the waterproofing membrane is not damaged.

Irrigation

In some instances, green roofs may require irrigation to maintain vegetative cover. Intensive green roofs tend to require more irrigation than extensive green roofs. If the vegetative cover fails to establish or cannot be maintained by rainfall alone, irrigation should be installed. Rainwater harvesting from unplanted areas may be an option to consider.

System Monitoring

Monitoring may be necessary to ensure the percentage of organic material in the growing medium does not increase over time. Too high a percentage of organic material may conflict with fire regulations regarding smoldering burns. Additionally, although a high percentage of organic material may support a more diverse plant population on a given green roof, it tends to increase moisture storage and hence weight. Too much organic material may also promote the growth of less drought-tolerant species and lead to the growth of aggressive species, thereby lowering plant diversity in the long term.

Use of Non-Native Plant Species

While native plants are preferred, in some cases a non-native plants may be needed. If they are used, extra care should be taken to ensure that these non-native plants do not spread to surrounding sites. Deadheading or other measures to control the spread of seeds should be implemented.

Maintenance

Regular and effective maintenance is crucial to ensure effective green roof performance. A green roof used to meet any State requirement must have a maintenance plan. For projects that are major developments, there are a number of required elements in all maintenance plans, pursuant to N.J.A.C. 7:8-5.8; these are discussed in more detail in *Chapter 8: Maintenance of Stormwater Management Measures*. Furthermore, maintenance activities are required through various regulations, including the New Jersey Pollutant Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A. Specific maintenance activities for green roofs are presented below; these activities must be included in the green roof's maintenance plan. Detailed inspection and maintenance logs must be maintained.

General Maintenance

- Green roofs must be inspected at least four times annually and after every storm event exceeding 1 inch of rainfall. Check for and clear debris, sediment, dead vegetation, and check whether the growing medium has eroded or been transported to the drainage gutter or outlets.
- All structural components must be inspected for cracking, subsidence, spalling, erosion and deterioration at least once annually.
- Disposal of debris, trash, sediment and other waste material must be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.
- Access points for maintenance are required on all green roofs; these access points must be clearly identified in the maintenance plan. In addition, any special training required for maintenance personnel to perform specific tasks must be included in the plan.
- A detailed, written log of all preventative and corrective maintenance performed on the green roof must be kept, including a record of all inspections and copies of maintenance-related work orders. Additional maintenance guidance can be found online at:

https://www.njstormwater.org/maintenance_guidance.htm.

Vegetated Areas

- Bi-weekly inspections are required when establishing/restoring vegetation.
- A minimum of one inspection during the growing season and one inspection during the non-growing season is required to ensure the health, density and diversity of the vegetation. Additional inspections are required after major weather events, such as but not limited to, high wind events and lightning strikes.
- Trimming of the vegetation must be performed on a regular schedule based on specific site conditions.
- Vegetative cover must be maintained at 85%; damage must be immediately addressed through replanting in accordance with the original specifications.

- Vegetated areas must be inspected at least once annually for erosion, scour and unwanted growth; any unwanted growth must be removed with minimum disruption to the remaining vegetation.
- All use of fertilizers, pesticides, mechanical treatments and other means to ensure optimum vegetation must not compromise the intended purpose of the green roof.

Drain Time

- Water ponding on the surface and the drainage layer of green roofs must fully drain within 72 hours; ponding in excess of 72 hours may render the green roof ineffective and may result in anaerobic conditions, odor and both water quality and mosquito breeding issues.

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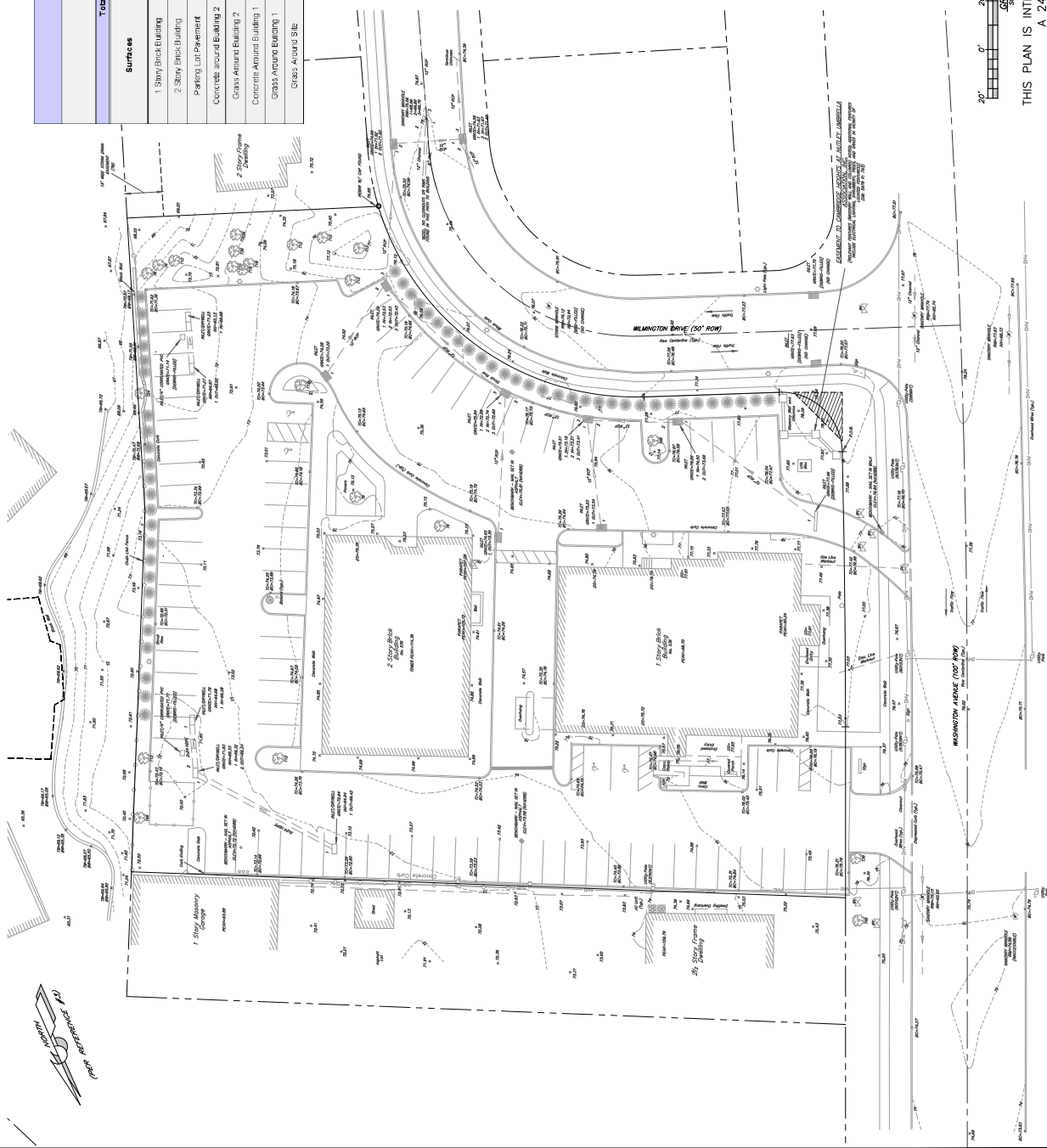
Appendix H – Miscellaneous Mapping Exhibits

Pre-Development Drainage Area Map [Reduced Version].....	H-2
Post Development Drainage Area Map [Reduced Version].....	H-3
Existing Conditions Surface Calculator / Weighted Curve Number	H-4
Proposed Conditions Surface Calculator / Weighted Curve Number.....	H-5

Surface Calculator

Existing Conditions
Per Lakeland Survey

Surfaces	Total: 67,853 SF		Runoff Coefficient	CVA	Motor Vehicle Spillout	Area of Enclosed Impervious Surfaces	Impervious Cover	Area of Impervious Cover
	Area	Runoff Coefficient						
1 Story Brick Building	7,307 SF	0.98	7,160.9	No	Yes	7,307 sf	57,784 SF	
2 Story Brick Building	5,410 SF	0.98	5,301.0	No	Yes	5,410 sf		
Parking Lot Pavement	38,222 SF	0.98	37,457.6	Yes	Yes	38,222 sf		
Concrete around Building 2	4,439 SF	0.98	4,350.2	No	Yes	4,439 sf		
Grass around Building 2	711 SF	0.51	362.6	No	No			
Concrete around Building 1	2,416 SF	0.98	2,367.7	No	Yes	2,416 sf		
Grass around Building 1	1,648 SF	0.51	792.3	No	No			
Grass around Site	7,774 SF	0.51	3,958.7	No	No			



THIS PLAN IS INTENDED TO BE PRINTED ON
A 24"x36" SHEET.

DATE: REVISIONS:
DRAWN BY: MC
CHECKED BY: PAC
APPROVED BY: MATTHEW G. CLARK

EXISTING CONDITIONS DRAINAGE AREA MAP
536-544 WASHINGTON AVENUE
BLOCK 1502 - LOT 12
TOWNSHIP OF NUTLEY
ESSEX COUNTY, NEW JERSEY

MSB
M.C.B. ENGINEERING ASSOCIATES, LLC
P.O. BOX 5584, 114 FURLER STREET
ESSEX COUNTY, NEW JERSEY
PHONE: (973) 912-6300 - FACSIMILE: (973) 912-6881
WWW.MSBENGINEERING.COM
DATE: 03/18/2026
SHEET NO. 4703
OF 1

Surface Calculator

Existing Conditions Per Lakeland Survey

Totals:	67,833 SF		Cwt = 0.91		38,222 SF		57,794 SF	
Surfaces	Area	Runoff Coefficient	C*A	Motor Vehicle Surface?	Area of Regulated Motor Vehicle Surface	Impervious Cover?	Area of Impervious Cover	Comments
1 Story Brick Building	7,307 SF	0.98	7,160.9	No		Yes	7,307 sf	
2 Story Brick Building	5,410 SF	0.98	5,301.8	No		Yes	5,410 sf	
Parking Lot Pavement	38,222 SF	0.98	37,457.6	Yes	38,222 sf	Yes	38,222 sf	
Concrete around Building 2	4,439 SF	0.98	4,350.2	No		Yes	4,439 sf	
Grass Around Building 2	711 SF	0.51	362.6	No		No		
Concrete Around Building 1	2,416 SF	0.98	2,367.7	No		Yes	2,416 sf	
Grass Around Building 1	1,554 SF	0.51	792.5	No		No		
Grass Around Site	7,774 SF	0.51	3,964.7	No		No		

Surface Calculator

Proposed Conditions

Per Site Plan Prepared By MCB Engineering Associates

Totals:	67,833 SF		Cwt = 0.91		33,198 SF		59,069 SF	
Surfaces	Area	Runoff Coefficient	C*A	Motor Vehicle Surface?	Area of Regulated Motor Vehicle Surface	Impervious Cover?	Area of Impervious Cover	Comments
Proposed Building	24,739 SF	0.98	24,244.2	No		Yes	24,739 sf	
Parking Lot Pavement	29,622 SF	0.98	29,029.6	Yes	29,622 sf	Yes	29,622 sf	
Concrete Loading Area	3,576 SF	0.98	3,504.5	Yes	3,576 sf	Yes	3,576 sf	
Concrete Walk In Front of Site	1,132 SF	0.51	577.3	No		Yes	1,132 sf	
Grass	8,764 SF	0.51	4,469.6	No		No		

PRELIMINARY & FINAL MAJOR SITE PLAN

FOR

536-544 WASHINGTON AVENUE

BLOCK 1502 - LOT 12

TOWNSHIP OF NUTLEY ESSEX COUNTY, NEW JERSEY

GENERAL NOTES

- CONTRACTOR SHALL VERIFY THAT ALL APPLICABLE STATE AND LOCAL PERMITS HAVE BEEN OBTAINED PRIOR TO BIDDING / COMMENCING WORK.
- THE SUBJECT PROPERTY IS IDENTIFIED AS LOT 12 IN BLOCK 1502 AS SHOWN ON THE TOWNSHIP OF NUTLEY TAX MAP SHEET 15.
- TOPOGRAPHIC AND BOUNDARY INFORMATION BASED ON REFERENCE NUMBER 3.
- LOT 12 IS LOCATED WITHIN THE "M-O INDUSTRY AND OFFICE & PRD PROPOSED RESIDENTIAL DEVELOPMENT (PARTIAL) DISTRICTS" AS PER REFERENCE 2.
- THE SUBJECT PROPERTY IS LOCATED IN FLOOD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER THE FIRM FLOOD INSURANCE RATE MAP, ESSEX COUNTY, NEW JERSEY (ALL JURISDICTIONS) PANEL 109 OF 200, MAP NUMBER 34013001096, MAP REVISED APRIL 3, 2020.
- VERTICAL AND HORIZONTAL DATUMS PER REFERENCE NUMBER 3 (VERTICAL DATUM NAVD83; HORIZONTAL DATUM PER FILED MAP).
- THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ALL EXISTING CONDITIONS REPRESENTED ON THE PLANS. HE SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF VARIATIONS ARE FOUND.
- ALL WORK SHALL BE SUBJECT TO INSPECTION BY AND APPROVAL OF THE MUNICIPALITY & NJDOT. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE REQUIREMENTS OF THESE INSPECTIONS WITH THE MUNICIPALITY & NJDOT PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL WORK WITH THE TOWNSHIP OF NUTLEY & NJDOT.
- EXISTING CONDITIONS ARE REPRESENTED WITH AN "ITALIC" FONT AND PROPOSED CONDITIONS ARE REPRESENTED WITH AN "UPRIGHT" FONT.
- THE CONTRACTOR SHALL COMPLY WITH THE NEW JERSEY ONE CALL REGULATIONS BY CALLING 1 (800) 272-1000 PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION.
- ALL WORK SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE LATEST APPLICABLE FEDERAL, STATE, COUNTY & MUNICIPAL ORDINANCES, REGULATIONS & SPECIFICATIONS.
- REFERENCE THE LATEST APPROVED ARCHITECTURAL DRAWINGS FOR BUILDING:
 - DIMENSIONS
 - DETAILS
 - FOUNDATION DESIGN & DETAILS
 - UTILITY CONNECTIONS
 - CONSTRUCTION PURPOSES (INCLUDING BUILDING STAKEOUT)
- AS PER THE USDA NATURAL RESOURCES CONSERVATION SERVICE THE GENERAL SOIL TYPES IN THE VICINITY OF THE PROJECT ARE AS FOLLOWS:
 - BooB: BOONTON SILT LOAM, RED SANDSTONE LOWLAND, 3 TO 8 PERCENT SLOPES (100%)
- ALL FIELD ADJUSTMENTS AND / OR DEVIATIONS FROM THE APPROVED PROJECT DOCUMENTS / PLANS MUST BE APPROVED BY THE MUNICIPALITY & NJDOT. FIELD ADJUSTMENTS AND / OR DEVIATIONS MADE WITHOUT THE APPROVAL OF THE MUNICIPALITY & NJDOT ARE PERFORMED AT THE RISK OF THE PROJECT OWNER AND / OR CONTRACTOR. THE PROJECT OWNER / CONTRACTOR SHALL BE RESPONSIBLE TO SUBMIT THESE ADJUSTMENTS AND / OR DEVIATIONS TO THE MUNICIPALITY & NJDOT FOR APPROVAL.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE ADJACENT PROPERTY OWNERS FOR ANY WORK THAT MAY IMPACT THEIR PROPERTY PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE MUNICIPALITY & NJDOT AS REQUIRED PRIOR TO CONSTRUCTION REGARDING CONSTRUCTION SCHEDULING AND PHASING; IF REQUIRED HE SHALL BE RESPONSIBLE TO SUBMIT FOR APPROVAL TO THE MUNICIPALITY & NJDOT A PROPOSED MAINTENANCE AND PROTECTION OF TRAFFIC PLAN AND CONSTRUCTION PHASING PLAN FOR THE PROPOSED CONSTRUCTION PRIOR TO THE COMMENCEMENT OF WORK.
- SUBSURFACE ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THESE PLANS.
- REFER TO REFERENCE NUMBER 3 FOR ALL EXISTING BUILDING, FENCE & WALL OFFSET DIMENSIONS TO THE PROPERTY LINES AND FOR KNOWN EXISTING SITE COVENANTS, DEED RESTRICTIONS, EASEMENTS OR EXCEPTIONS.
- EXISTING STRUCTURES WITHIN 200' OF THE PROJECT TRACT ARE BASED ON REFERENCE NUMBER 3 AND GOOGLE EARTH 10/10/2024 AERIAL IMAGE OBTAINED 03/17/2026.

"CHAPTER 700 ZONING" VARIANCES REQUESTED

NO VARIANCES ARE REQUESTED AS PART OF THIS APPLICATION.
(REFER TO THE ARCHITECTURAL PLANS FOR ANY WALL SIGNS & THEIR RESPECTIVE ZONING SUMMARY)

"CHAPTER 600 SITE PLAN REVIEW" DESIGN WAIVERS REQUESTED

SECTION 600-6 A. (4) (c) [2]
MINIMUM DRIVEWAY OFFSET FROM INTERSECTING STREET CENTERLINES REQUIRED, 100'; REQUESTED, 83.1'

SECTION 600-6 A. (4) (c) [4]
MINIMUM DRIVEWAY OFFSET FROM SIDE LOT LINE REQUIRED, 10'; REQUESTED, 0'

SECTION 600-6 A. (4) (c) [5]
MINIMUM DRIVEWAY CLEAR DISTANCE REQUIRED, 25'; REQUESTED, 20.7'

PROJECT DIRECTORY

ATTORNEY
MURPHY SCHILLER & WILKES, LLP
ONE GATEWAY CENTER, SUITE 400
NEWARK, NEW JERSEY 07102

ARCHITECT
SANBAR DESIGN
1516 NORTH 5TH STREET
PHILADELPHIA, PA 19122

CIVIL ENGINEERING
MCB ENGINEERING ASSOCIATES, L.L.C.
11 FURLER STREET, P.O. BOX 588
TOWANA, NEW JERSEY 07511-0588

SURVEYOR
LAKELAND SURVEYING
4 WEST MAIN STREET
ROCKAWAY, NEW JERSEY 07866

LIST OF DRAWINGS

- TITLE SHEET
- SITE PLAN
- GRADING & UTILITY PLAN
- LIGHTING PLAN
- LANDSCAPING PLAN
- SOIL EROSION & SEDIMENT CONTROL PLAN
- SITE DETAILS
- SITE DETAILS
- SITE DETAILS
- SITE DETAILS

REFERENCES

- THE TOWNSHIP OF NUTLEY TAX MAP SHEETS 7, 8, 9, 14, 15, 16 & 17.
- THE TOWNSHIP OF NUTLEY ZONE MAP, REVISED MAY 10, 2007.
- SURVEY ENTITLED: "TOPOGRAPHIC SURVEY OF PROPERTY, TAX LOT 12 - BLOCK 1502, 536-544 WASHINGTON AVENUE, TOWNSHIP OF NUTLEY, ESSEX COUNTY, NEW JERSEY", PREPARED BY LAKELAND SURVEYING, REVISED DECEMBER 5, 2025.
- ARCHITECTURAL PLANS ENTITLED: "536-544 WASHINGTON AVE., NUTLEY NJ, ZONING", PREPARED BY SANBARDESIGN, DATED MARCH 17, 2026.
- FIRM FLOOD INSURANCE RATE MAP, ESSEX COUNTY, NEW JERSEY (ALL JURISDICTIONS) PANEL 109 OF 200, MAP NUMBER 34013001096, MAP REVISED APRIL 3, 2020.
- UNITED STATES DEPARTMENT OF AGRICULTURE (NRCS) NATURAL RESOURCES CONSERVATION SERVICE SOILS REPORT FOR ESSEX COUNTY FEBRUARY 2, 2026.
- THE CITY OF CLIFTON TAX MAP SHEET 83.
- THE CITY OF CLIFTON ZONE MAP, REVISED SEPTEMBER 5, 2006.

TOWNSHIP OF NUTLEY PLANNING BOARD

THIS PLAN IS APPROVED BY THE TOWNSHIP OF NUTLEY PLANNING BOARD ON _____ DATE _____

CHAIRMAN _____ DATE _____

SECRETARY _____ DATE _____

CLERK _____ DATE _____

BOARD ENGINEER _____ DATE _____

PROPERTY INFORMATION

BLOCK: 1502
LOT: 12
ADDRESS: 536-544 WASHINGTON AVENUE
NUTLEY, NEW JERSEY 07110
LOT AREA: 67,833.40 SF. [1.557 (±) ACRES]
(ADDRESS & AREA PER REFERENCE NUMBER 3)

SITE OWNER

PROponent FEDERAL CREDIT UNION
100 METRO BOULEVARD, 4TH FLOOR
NUTLEY, NEW JERSEY 07110

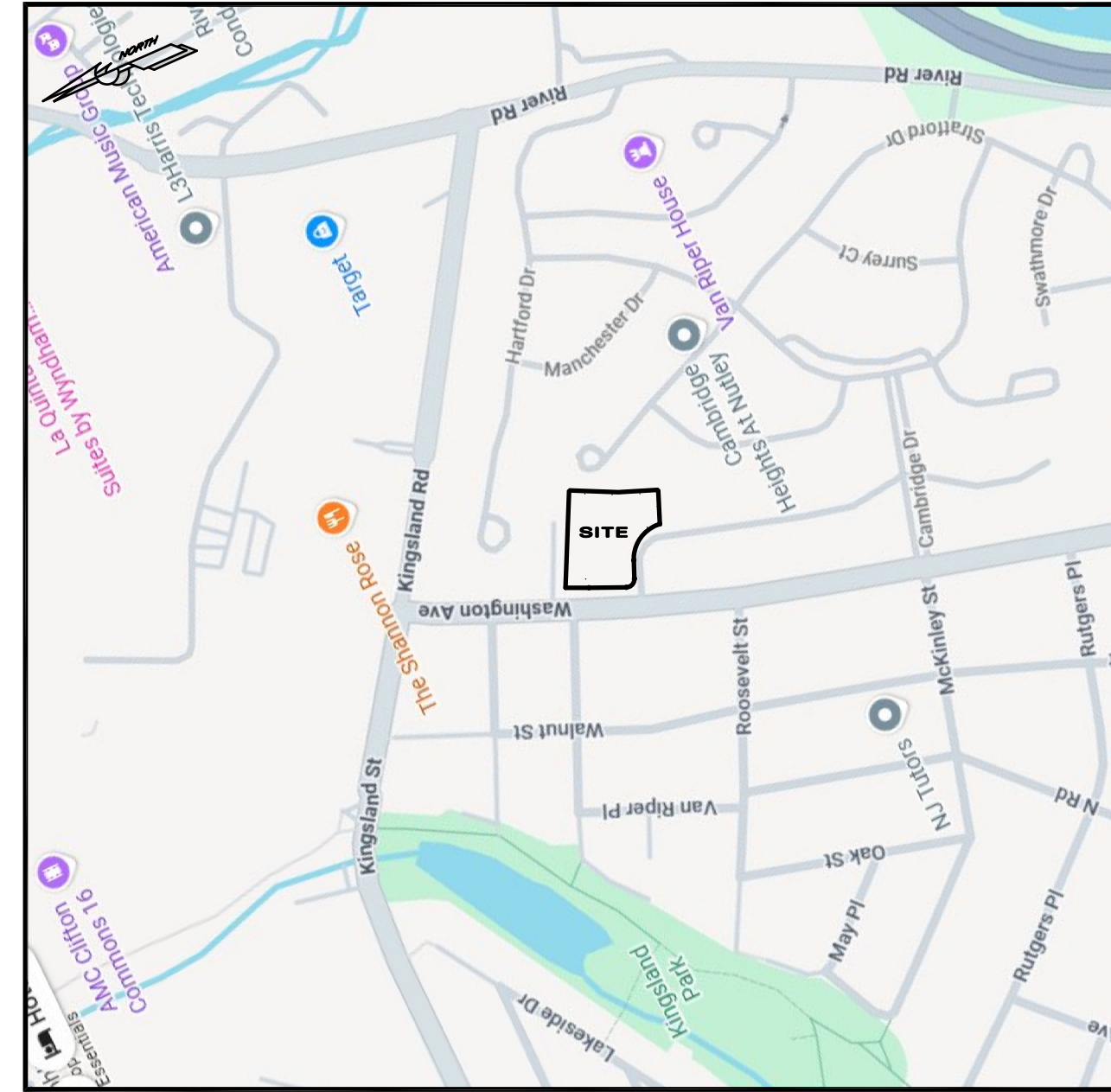
APPLICANT

GALAXY INVEST INC.
PO BOX 190
FORT LEE, NEW JERSEY 07024
(CONTACT PERSON: MICHAEL EVAR 551-404-0559)



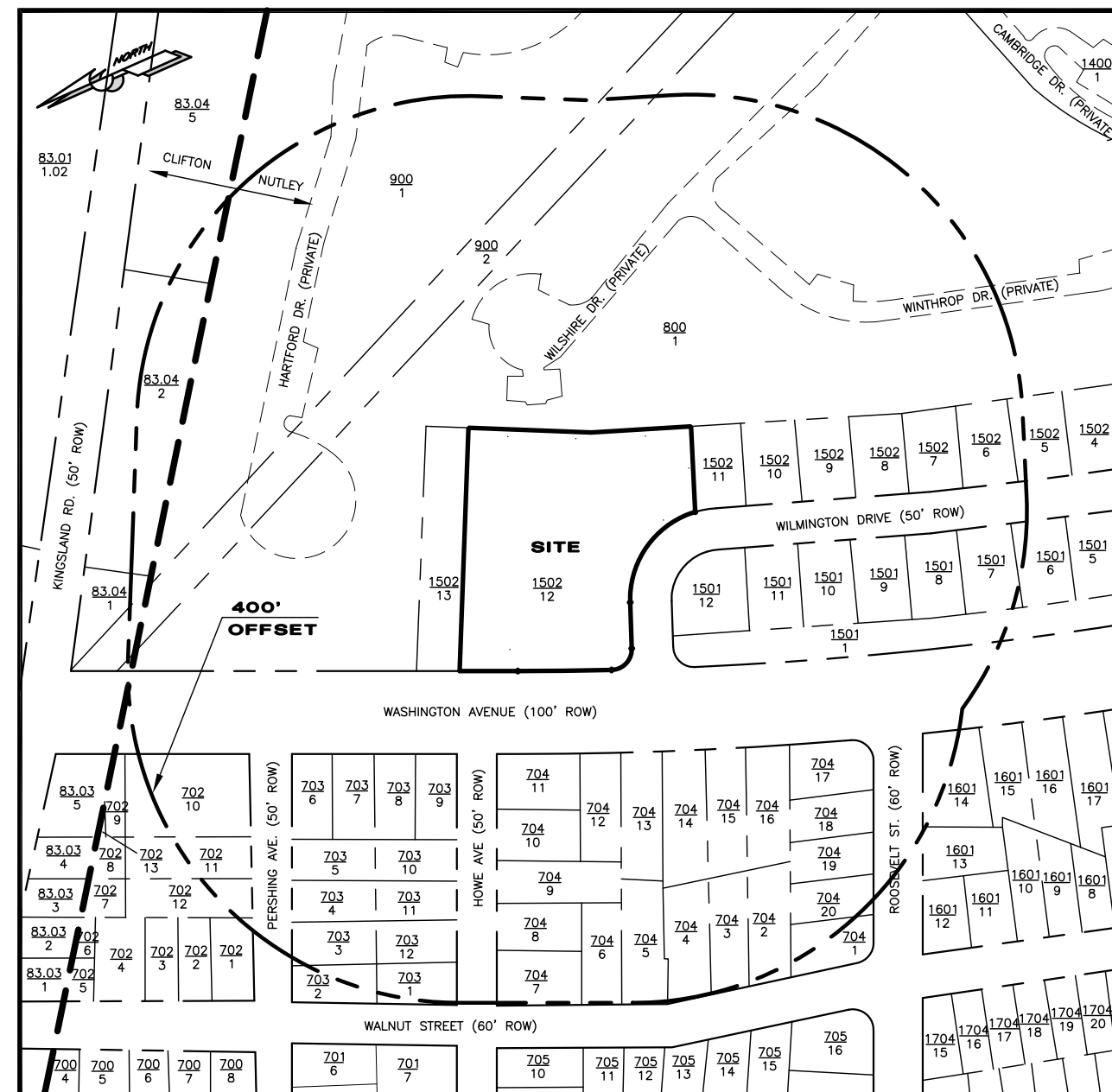
AERIAL MAP

(SCALE: 1" = 200'±)
(BASED ON GOOGLE EARTH 10/10/2024 AERIAL IMAGE OBTAINED 03/17/2026)



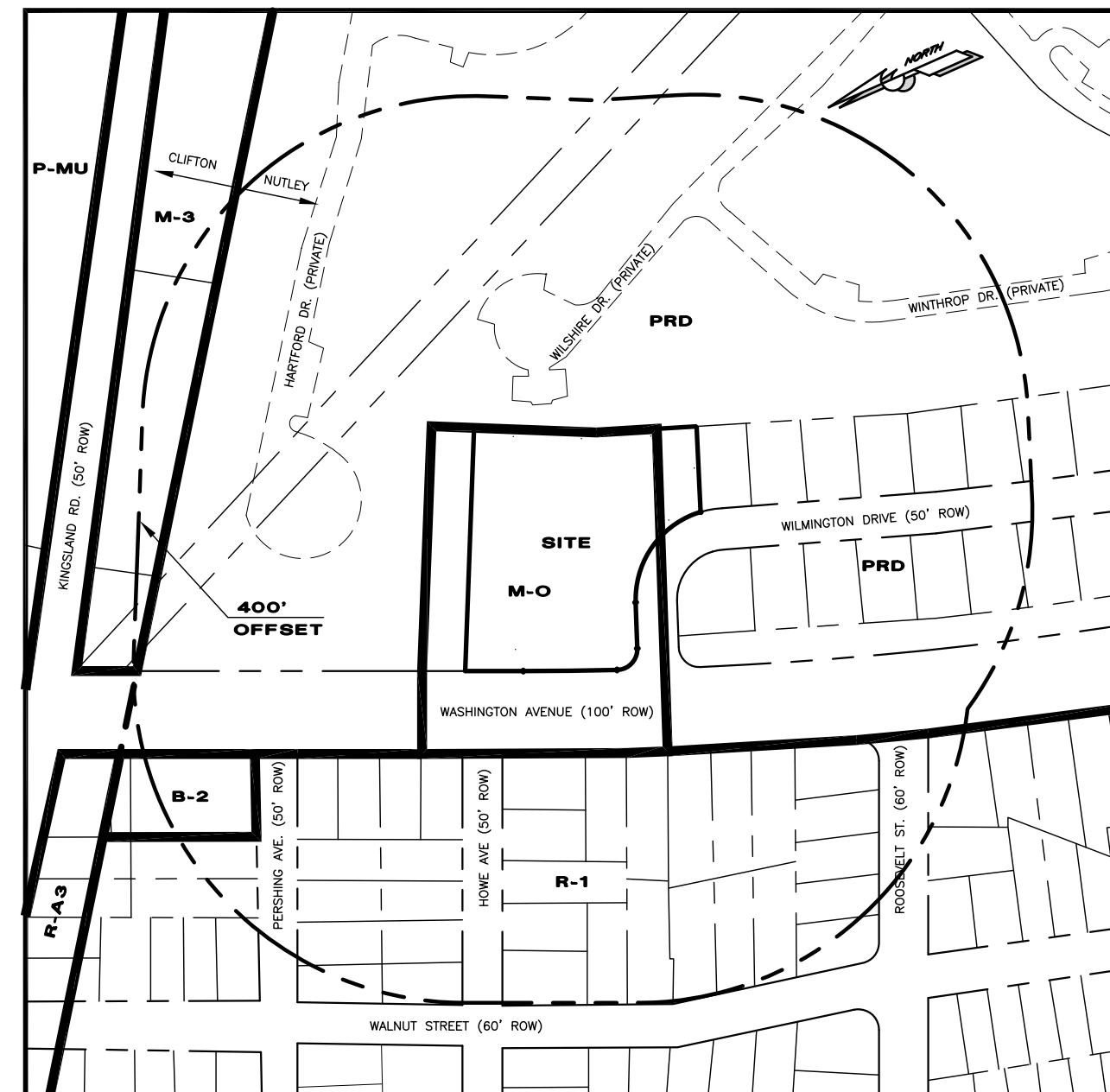
STREET MAP

(SCALE: 1" = 500'±)
(BASED ON GOOGLE MAPS IMAGE OBTAINED 03/17/2026)



TAX MAP

(SCALE: 1" = 200'±)
(BASED ON THE TOWNSHIP OF NUTLEY TAX MAP SHEETS 7, 8, 9, 14, 15, 16 & 17)
(BASED ON THE CITY OF CLIFTON TAX MAP SHEET 83)



ZONING MAP

(SCALE: 1" = 200'±)
(BASED ON THE TOWNSHIP OF NUTLEY ZONE MAP, REVISED MAY 10, 2007)
(BASED ON THE CITY OF CLIFTON ZONE MAP, REVISED SEPTEMBER 5, 2006)

PLANS PREPARED BY:

MCB ENGINEERING ASSOCIATES, L.L.C.
P.O. BOX 588, 11 FURLER STREET
TOWANA, NEW JERSEY 07511-0588
PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681
Email: mcbeo@mcbeo.com - Certificate of Authorization No. 24628108300

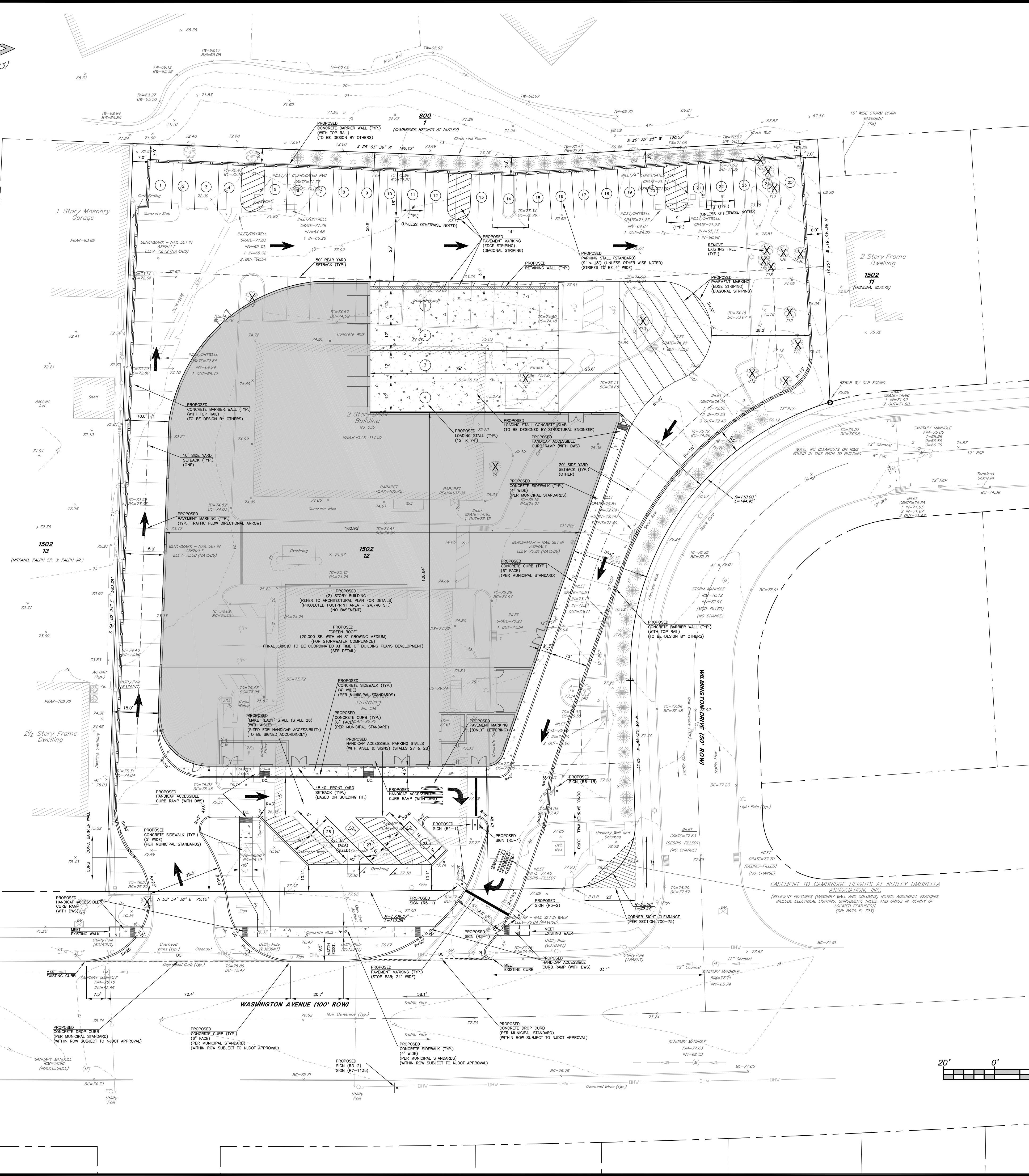
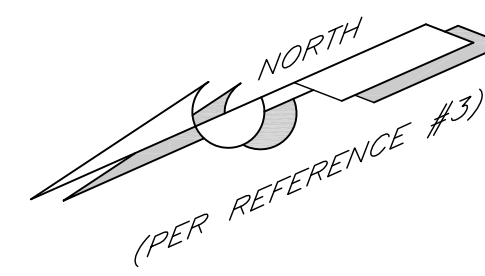
03/18/2026



THESE PLANS ARE FOR GOVERNMENT AGENCY REVIEW, AND SHOULD NOT BE USED FOR BIDDING OR CONSTRUCTION UNTIL FULLY COORDINATED WITH THE OTHER CONSTRUCTION TRADES AND A REVISION BOX NOTE IS ADDED STATING "ISSUED FOR BIDS" AND / OR "ISSUED FOR CONSTRUCTION"

drawn by **MC** checked by **PMcC**
MATTHEW G. CLARK
N.J. PROFESSIONAL ENGINEER
LICENSE No. 40394

DATE	REVISIONS
TITLE SHEET	
536-544 WASHINGTON AVENUE	
BLOCK 1502 - LOT 12 TOWNSHIP OF NUTLEY ESSEX COUNTY, NEW JERSEY	
MCB ENGINEERING ASSOCIATES, LLC	
P.O. BOX 588, 11 FURLER STREET TOWANA, NEW JERSEY 07511-0588 PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681 Certificate of Authorization No.: 24628108300	
scale AS NOTED	date 03/18/2026
project no. 4703	sheet no. 1 OF 10



ZONING SCHEDULE OF REGULATIONS

ZONE: M-O INDUSTRIAL AND OFFICE & PROPOSED RESIDENTIAL DEVELOPMENT (PARTIAL)
 PROPOSED USE: WAREHOUSE & OFFICE (PRINCIPAL USES)

REGULATION	REQUIRED	PROPOSED
MINIMUM LOT AREA (SF.)	43,560	67,833.40
MINIMUM LOT WIDTH (FT.)	150	205.0 (2)
MINIMUM LOT DEPTH (SF.)	100	289.57 (3)
DENSITY DWELLING UNITS (PER FEET)	NA	NA
MINIMUM FRONT YARD SETBACK (FT.)	48.40 (4)	48.43
MINIMUM REAR YARD SETBACK (FT.)	50 (5)	50.5
MINIMUM SIDE YARD SETBACK (ONE) (FT.)	10	18.0
MINIMUM SIDE YARD SETBACK (OTHER) (FT.)	20	30.0
MAXIMUM BUILDING HEIGHT (STORY)	2.5	2
MAXIMUM BUILDING HEIGHT (FT.)	100	48.40 (6)
MAXIMUM LOT COVERAGE (%)	50	36.5
MAXIMUM IMPROVED LOT COVERAGE (%)	NA	-

- NOTES:
- BASED ON THE TOWNSHIP OF NUTLEY "INDUSTRIAL DISTRICT" SCHEDULE OF REGULATIONS FOR M-O DISTRICT.
 - MEASURED AT THE REQUIRED FRONT YARD SETBACK.
 - MEASURED FROM THE MIDPOINT OF THE FRONTAGE ALONG WASHINGTON AVENUE PERPENDICULAR TO THE REAR LOT LINE.
 - FRONT YARD SETBACK GOVERNED BY BUILDING HEIGHT.
 - REAR OF SITE ABUTS AN "R" DISTRICT THEREFORE 50 FEET GOVERNS (BUILDING HEIGHT = 48.40').
 - SEE "BUILDING HEIGHT SUMMARY" THIS SHEET.

BUILDING HEIGHT SUMMARY

BUILDING HEIGHT IS DEFINED AS: THE VERTICAL DISTANCE MEASURED, IN THE CASE OF FLAT ROOFS EXCLUSIVE OF BULKHEADS, FROM THE NATURAL AVERAGE LEVEL OF THE GROUND ALONG THE FRONT WALL OF THE MAIN STRUCTURE TO THE HIGHEST POINT OF THE ROOF BEAMS ADJACENT TO THE STREET WALL. WHEN A BUILDING FACES ON MORE THAN ONE STREET, THE HEIGHT SHALL BE MEASURED FROM THE AVERAGE OF THE NATURAL GRADES AT THE CENTER OF THE WALL OF THE MAIN STRUCTURE WHICH FACES EACH STREET.

THE NATURAL AVERAGE LEVEL OF THE GROUND ALONG THE FRONT WALL OF THE MAIN STRUCTURE ALONG WASHINGTON AVENUE & WILMINGTON ROAD = 76.60.

THE HEIGHT OF THE BUILDING FROM THE FINISHED FIRST FLOOR TO THE TOP OF THE ROOF = 47.00 FEET (PER THE PROJECT ARCHITECT).

THE FINISHED FIRST FLOOR ELEVATION = 78.00.

THE ELEVATION AT THE TOP OF THE ROOF = (78.00 + 47.00) = 125

THE BUILDING HEIGHT = (125 - 76.60) = 48.40.

NOTE: ANY PARAPETS ARE NOT INCLUDED IN BUILDING HEIGHT CALCULATION.

NOTE: "NATURAL AVERAGE LEVEL OF THE GROUND" TAKEN AS "EXISTING" ELEVATIONS.

OFFSTREET PARKING COMPUTATIONS

MINIMUM REQUIRED STALLS PER SECTION 700-91 OF THE TOWNSHIP OF NUTLEY LAND DEVELOPMENT

OFFICE: 1 FOR EACH 300 SQUARE FEET OF TOTAL FLOOR AREA

WAREHOUSE: 1 FOR EACH 4 EMPLOYEES, BUT IN NO CASE LESS THAN 1 FOR EACH 3,000 SQUARE FEET OF TOTAL FLOOR AREA...

OFFICE (2ND FLOOR): (5,354 SF.) x (1 STALL / 300 SF.) = 17.8 = 18 STALLS

WAREHOUSE (1ST FLOOR): (10 EMPLOYEES) x (1 STALL / 4 EMPLOYEES) = 2.5 = 3 STALLS

WAREHOUSE (1ST FLOOR): (24,740 SF.) x (1 STALL / 3,000 SF.) = 8.2 = 9 STALLS [GOVERNS]

TOTAL REQUIRED = (18 + 9) = 27 STALLS

OFFSTREET LOADING COMPUTATIONS

MINIMUM REQUIRED STALLS PER SECTION 700-102 OF THE TOWNSHIP OF NUTLEY LAND DEVELOPMENT

OFFICE: 1 PER BUILDING OF 2,000 SQUARE FEET OF FLOOR AREA OR MORE.

WAREHOUSE: 1 FOR EACH 5,000 SQUARE FEET OF TOTAL FLOOR AREA, PLUS ONE FOR EACH 10,000 SQUARE FEET TO TOTAL FLOOR AREA, OR FRACTION THEREOF IN EXCESS OF THE FIRST 10,000 SQUARE FEET.

OFFICE (2ND FLOOR): (5,354 SF.) = 1 SPACE REQUIRED.

WAREHOUSE (1ST FLOOR): (24,740 SF.) = 3 SPACES REQUIRED

TOTAL REQUIRED = (1 + 3) = 4 STALLS

ELECTRIC VEHICLE PARKING AND CHARGING STATIONS

MINIMUM REQUIRED "MAKE READY" STALLS (PER THE STATE WIDE MODEL ORDINANCE)

FOR PARKING LOTS WITH 50 OR FEWER STALLS INSTALL AT LEAST ONE (1) MAKE-READY PARKING SPACE

PROVIDED: ONE (1) MAKE-READY STALL

"MAKE READY" STALL CREDIT

BASED ON EACH "MAKE READY" STALL COUNTING AS 2 STALLS

CREDIT = (1 MAKE READY STALLS PROPOSED) = 1 STALL [GOVERNS]

BASED ON CREDIT "UP TO 10% OF THE TOTAL REQUIRED PARKING"

CREDIT = (0.10 x 27 STALLS) = 2.7 = 2 STALLS

GENERAL NOTES

- ALL PROPOSED HANDICAP ACCESSIBLE CURB RAMPS & BLENDED TRANSITIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE NEW JERSEY BARrier FREE SUBCODE NAC 5:2-7, CHAPTER 11 OF THE NEW JERSEY (BC 2015) AND AMERICAN WITH DISABILITIES ACT.
- ALL REGULATORY, DIRECTIONAL, WARNING & TRAFFIC CONTROL SIGNS, STRIPING AND PAVEMENT MARKINGS SHALL BE FABRICATED & CONSTRUCTED IN ACCORDANCE WITH THE MOST RECENT ADDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- THE PROJECT OWNER SHALL BE RESPONSIBLE TO SCHEDULE ALL DELIVERIES AND GARBAGE PICK-UPS SO AS NOT TO INTERFERE WITH THE OPERATION OF THE PROPERTY.
- REFER TO THE PROJECT TITLE SHEET FOR SURROUNDING ZONE AND BLOCK & LOTS DESIGNATIONS.
- ALL REFUSE & RECYCLING SHALL BE STORED WITHIN THE PROPOSED BUILDING.
- FENCING SHALL BE ERECTED IN A MANNER SO AS TO PERMIT THE FLOW OF NATURAL DRAINAGE AND SHALL NOT CAUSE SURFACE WATER TO BE BLOCKED OR DAMMED SO AS TO CREATE PONDING.

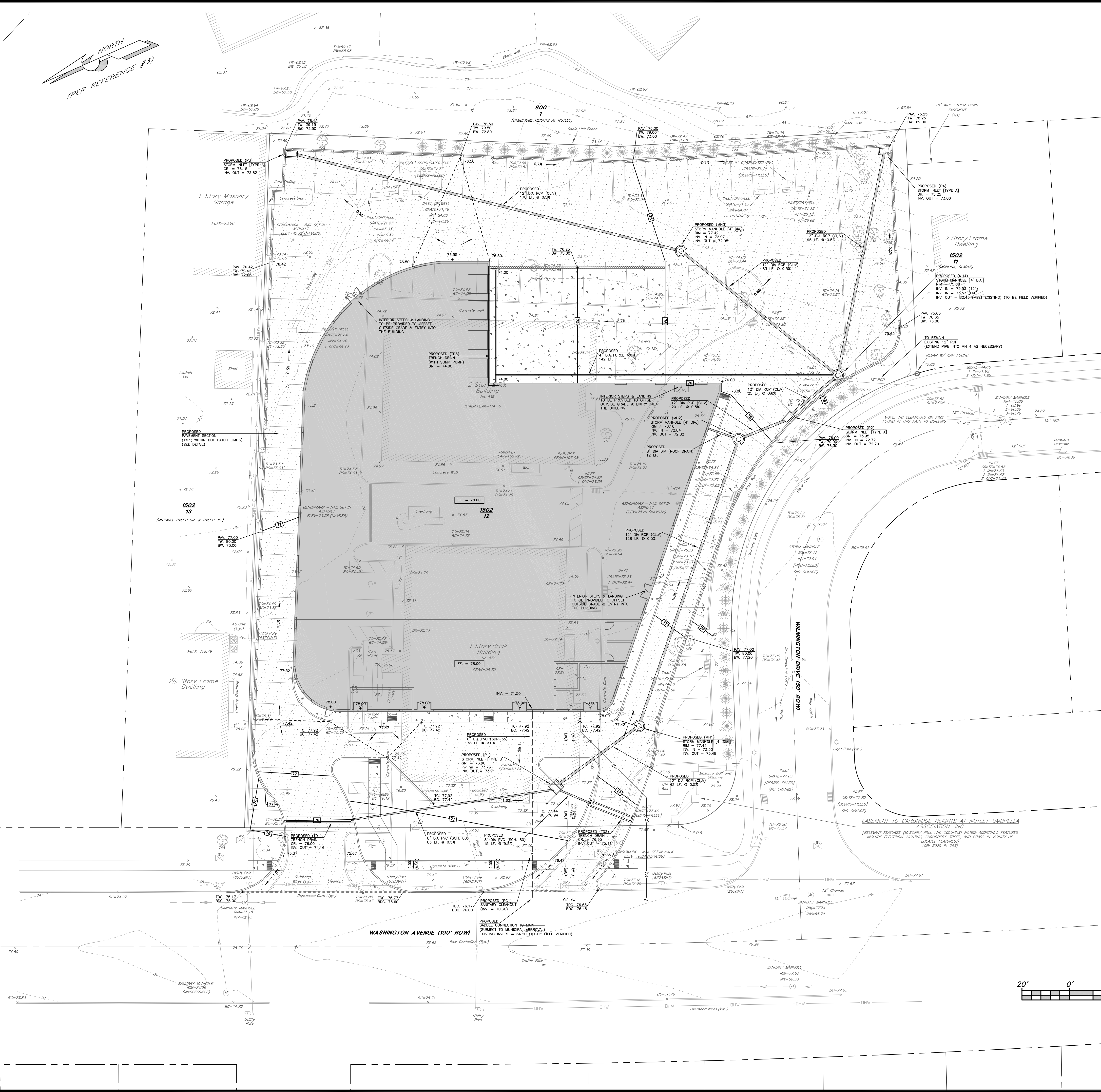
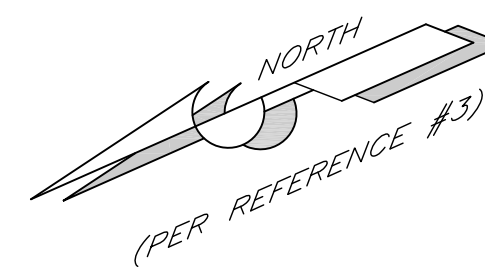
BUILDING SUMMARY

WAREHOUSE (1ST FLOOR) = 24,740 SQUARE FEET
 OFFICE (2ND FLOOR) = 5,354 SQUARE FEET

IMPERVIOUS AREA SUMMARY

EXISTING IMPERVIOUS AREA = 57,794 SF.
 PROPOSED IMPERVIOUS AREA = 59,069 SF.
 DIFFERENCE IN IMPERVIOUS AREA = [59,069 SF. - 57,794 SF.] = + 1,275 SF. [0.029 AC.]
 (NOTE: GREEN ROOF LIMITS CONSIDERED IMPERVIOUS IN THE ABOVE MATH)

DATE	REVISIONS
<p>SITE PLAN</p> <p>536-544 WASHINGTON AVENUE</p> <p>BLOCK 1502 - LOT 12</p> <p>TOWNSHIP OF NUTLEY</p> <p>ESSEX COUNTY, NEW JERSEY</p>	
<p>MCB ENGINEERING ASSOCIATES, LLC</p> <p>P.O. BOX 588, 11 FURLER STREET</p> <p>TOTOWA, NEW JERSEY 07511-0588</p> <p>PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681</p> <p>EMAIL: mcb@mcbea.com</p>	
<p>drawn by MC</p> <p>checked by PMcC</p> <p>MATTHEW G. CLARK</p> <p>N.J. PROFESSIONAL ENGINEER LICENSE No. 40394</p>	<p>scale 1" = 20'</p> <p>date 03/18/2026</p> <p>project no. 4703</p> <p>sheet no. 2 OF 10</p>



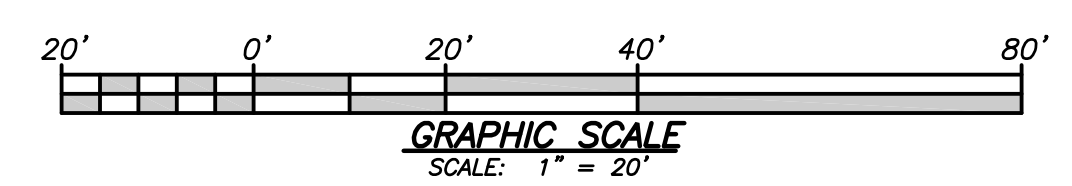
GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE LOCATION (HORIZONTAL & VERTICAL) OF ANY UTILITY (ABOVE OR BELOW GRADE) WITHIN THE PROJECT LIMITS AND ITS VICINITY (INCLUDING WITHIN THE ROW FOR ALL PROJECT FRONTAGES) PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY OF ANY CONFLICTS WITH THE PROPOSED CONSTRUCTION. TEST PITS SHALL BE PERFORMED AS NECESSARY.
2. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL REQUIRED UTILITY COMPANIES PRIOR TO CONSTRUCTION.
3. ALL EXISTING VALVES, CLEANOUTS AND SIMILAR ITEMS TO REMAIN LOCATED WITHIN THE LIMITS OF THE PROPOSED CONSTRUCTION ARE TO BE RESET IN THE FIELD BY THE CONTRACTOR TO MEET FINISHED GRADE.
4. THE PROPOSED CURB AT THE BASE OF ALL HANDICAP ACCESSIBLE CURB RAMP & BLENDED TRANSITIONS SHALL BE SET FLUSH WITH THE ADJUTING PAVEMENT SURFACE.
5. THE MAXIMUM CROSS SLOPE FOR ALL WALKS & HANDICAP ACCESSIBLE PATHS IS TO BE 2.0%.
6. THE CONTRACTOR SHALL BE RESPONSIBLE TO GRADE THE SITE IN SUCH A MANNER TO (1) INSURE THAT SURFACE WATER RUNOFF DOES NOT ADVERSELY IMPACT THE ADJACENT PROPERTIES AND (2) DIRECT STORM WATER RUNOFF AWAY FROM THE PROPOSED BUILDING.
7. ALL EXISTING UTILITIES THAT ARE TO BE REMOVED OR ABANDONED SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE GOVERNING AGENCY REGULATIONS.
8. PRIOR TO CONSTRUCTION A REFERENCE BENCH MARK SHALL BE PROVIDED ONSITE BY A LICENSED PROFESSIONAL SURVEYOR IN THE STATE OF NEW JERSEY.
9. THE WATER, GAS & SANITARY SERVICE LATERALS ARE SHOWN FOR FEASIBILITY PURPOSES ONLY. THEIR FINAL DESIGN SHALL BE BASED ON THE BUILDING CONSTRUCTION PLANS.
10. THE ROOF DRAINAGE SYSTEM OF THE NEW BUILDING IS TO CONNECT INTO THE ONSITE STORMWATER MANAGEMENT SYSTEM.
11. THE PROJECT OWNER PRIOR TO CONSTRUCTION SHALL CONFIRM THAT ALL EXISTING UTILITY SYSTEMS (I.E. WATER, GAS, ELECTRIC & SANITARY) HAVE SUFFICIENT CAPACITY TO HANDLE THE PROPOSED DEMANDS OF THE PROJECT.
12. THE PROJECT OWNER SHALL BE RESPONSIBLE TO MAINTAIN ALL ONSITE UTILITIES AT ALL TIMES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE TO DISPOSE OF ALL EXCAVATED MATERIAL IN ACCORDANCE WITH LAW AND ALL APPLICABLE LOCAL ORDINANCES.
14. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN AND SUBMIT TO THE MUNICIPALITY, FOR APPROVAL, WALL STABILITY AND STRUCTURAL CALCULATIONS SIGNED & SEALED BY A NEW JERSEY PROFESSIONAL ENGINEER FOR THE PROPOSED DESIGN & CONSTRUCTION OF ANY PROPOSED RETAINING WALL EXCEEDING FOUR (4) FEET IN HEIGHT.
15. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE SCHEDULING AND ROUTE OF THE TRUCKING OF THE EXCAVATED MATERIAL FROM THE SITE WITH THE MUNICIPAL POLICE DEPARTMENT AND THE MUNICIPAL ENGINEER.
16. THE PROJECT OWNER SHALL ARRANGE FOR CONSTRUCTION INSPECTION SERVICES SO THAT CONSTRUCTION COMPLIANCE CERTIFICATIONS CAN BE ACCOMPLISHED IF / WHEN REQUIRED FOR WATER & SEWER SYSTEMS AND RETAINING WALLS.
17. ALL PROPOSED STORM & SANITARY PIPE BEDDING & BACKFILL TO BE PROVIDED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS FOR PIPE DEPTH & MATERIAL.
18. PRIOR TO CONSTRUCTION THE PROJECT OWNER OR CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN AND SUBMIT TO THE MUNICIPALITY, FOR APPROVAL, WALL STABILITY AND STRUCTURAL CALCULATIONS SIGNED & SEALED BY A NEW JERSEY PROFESSIONAL ENGINEER FOR THE PROPOSED DESIGN & CONSTRUCTION OF ANY PROPOSED RETAINING WALL EXCEEDING FOUR (4) FEET IN HEIGHT.
19. ALL RETAINING WALLS GREATER THAN FOUR (4) FEET IN EXPOSED HEIGHT SHALL REQUIRE A CERTIFICATION BY A NEW JERSEY PROFESSIONAL ENGINEER THAT HE / SHE HAS PROVIDED ONSITE INSPECTION DURING THE WALL CONSTRUCTION, THAT PROPER METHODS WERE UTILIZED IN THE CONSTRUCTION, THE WALLS HAVE BEEN PROPERLY STABILIZED AND THAT THE WALLS WILL PROVE ADEQUATE FOR THE INTENDED PURPOSE. COPY OF SUCH CERTIFICATION MUST BE PROVIDED TO THE PROJECT OWNER & MUNICIPALITY. THE CONTRACTOR SHALL BE RESPONSIBLE TO ASSURE SUCH INSPECTIONS ARE PERFORMED AND CERTIFICATIONS PROVIDED.

UTILITY LEGEND

- (FW) FIRE WATER SERVICE LATERAL (ESTIMATED 6" DIP)
- (DW) DOMESTIC WATER SERVICE LATERAL (ESTIMATED 4" DIP)
- (G) GAS SERVICE LATERAL

NOTE:
UNLESS OTHERWISE APPROVED BY THE MUNICIPALITY, COUNTY AND GOVERNING UTILITY AGENCY THE ELECTRIC SERVICE IS TO BE PROVIDED UNDERGROUND. THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE SUCH PRIOR TO CONSTRUCTION.



DATE	REVISIONS

drawn by **MC** checked by **PMcC**

MATTHEW G. CLARK

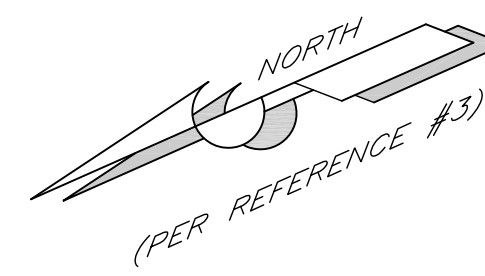
GRADING & UTILITY PLAN

536-544 WASHINGTON AVENUE
BLOCK 1502 - LOT 12
TOWNSHIP OF NUTLEY
ESSEX COUNTY, NEW JERSEY

MCB ENGINEERING ASSOCIATES, LLC
P.O. BOX 588, 11 FURLER STREET
TOTOWA, NEW JERSEY 07511-0588
PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681
Email: mcbca@mcbea.com

N.J. PROFESSIONAL ENGINEER LICENSE No. 40394

scale 1" = 20' date 03/18/2026 project no. 4703 sheet no. 3 OF 10



LUMINAIRE SCHEDULE

Qty	Type	Arrangement	Symbol	Manufacturer	Light Fixture Spec	CCT	Lum. Lumens	LF	Lum. Watts	Arr. Watts	Pole/Backet Spec	Mounting AFG (FT)
1	P1	Single	●	BEACON PRODUCTS	VP-S1-1-40L-35-4K7-4F-VOLTS-ADU-BLT-MBC-NKWS16F-M58	3000K	2707	0.920	34.4	34.4	SSS-B-15'-40-A-1-52-BLT	15
3	P2	Single	●	BEACON	VP-ST-1-36L-39-3K7-4F-VOLTS-ADU-BLT-BC-NKWS16F-M58	3000K	3923	0.900	45.5	45.5	SSS-B-15'-40-A-1-52-BLT	15
1	P3	Single	●	BEACON	VP-ST-1-36L-39-3K7-4F-VOLTS-ADU-BLT-BC-NKWS16F-M58	3000K	4525	0.900	45.4	45.4	SSS-B-15'-40-A-1-52-BLT	15
2	P4	Single	●	BEACON	VP-ST-1-36L-39-3K7-50W-VOLTS-ADU-BLT-NKWS16F-M58	3000K	5084	0.920	39.2	39.2	SSS-B-15'-40-A-1-52-BLT	15
2	W1	Single	⊠	BEACON	VPW2-18L-25-3K7-3-VOLTS-FINISH-NKWS12F-M58	3000K	3171	0.900	22.6	22.6		12
3	W2	Single	⊠	BEACON	VPW2-18L-25-3K7-3-VOLTS-FINISH-NKWS12F-M58	3000K	3212	0.675	22.6	22.6		12
3	W3	Single	⊠	BEACON	VPW2-18L-50-3K7-4F-VOLTS-FINISH-NKWS12F-M58	3000K	6149	0.920	52.6	52.6		15

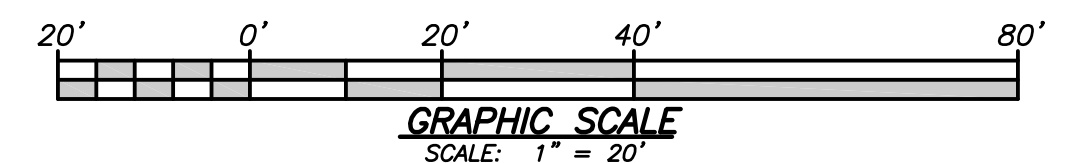
CALCULATION SUMMARY

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
PARKING AND DRIVE ASLE	luminaire	Ft	1.33	4.3	0.2	6.65	31.50

DIVERSIFIED GROUP
55 LANE ROAD
FAIRFIELD, NJ 07004
LIGHTING DESIGNER: MATTHEW STERNER
PHONE: (908) 907-8462
EMAIL: MSTERNER@DIVGRP.COM

LIGHTING GENERAL NOTES

- SITE LIGHTING CONTROLS SEQUENCE OF OPERATION IN COMPLIANCE WITH ASHRAE 90.1-2019
- EACH SITE FIXTURE TO BE EQUIPPED WITH NX CONTROLS, WHICH IS A WIRELESS BLUETOOTH MESH CONTROL SYSTEM.
 - CONTROL SYSTEM IS TO BE ACCESSIBLE VIA IOS APP FOR PROGRAMMING.
 - EACH SITE FIXTURE TO HAVE AN INTEGRAL MOTION AND PHOTO SENSOR MODULE TO PROVIDE MULTI-LEVEL CONTROL BASED ON MOTION AND/OR DAYLIGHT. SENSOR MODULE ALSO TO HAVE BUILT-IN TIME KEEPER FUNCTIONALITY TO ALLOW THE SCHEDULING OF DIMMING EVENTS BASED ON TIME OF DAY.
 - ALL SITE LIGHTS TO TURN ON AT DUSK AND OFF AT DAWN.
 - LIGHTS TO REMAIN FULL BRIGHTNESS UNTIL 12 A.M., AT WHICH TIME THE LIGHTS WILL DIM TO 50% OUTPUT UNTIL DAWN.
 - ANY MOTION DETECTED ON SITE AFTER 12 A.M. WILL KICK THE POWER UP TO 100% BRIGHTNESS. AFTER A DURATION OF 15 MINUTES WITH NO MOTION DETECTION, THE LIGHTS WILL RESUME BACK TO THE DIMMED 50% STATE.
 - MULTIPLE LIGHT FIXTURES TO BE GROUPED TOGETHER INTO ZONES BASED ON AREA AND TRAFFIC PATTERNS. MOTION DETECTION WILL ACTIVATE THE ENTIRE ZONE, NOT THE INDIVIDUAL FIXTURE, TO ENSURE UNIFORM COVERAGE IN THE AREA.
 - EVERY LIGHT FIXTURE SHALL BE INDIVIDUALLY ADDRESSABLE IN CASE CIRCUMSTANTIAL DIMMING IS REQUIRED.



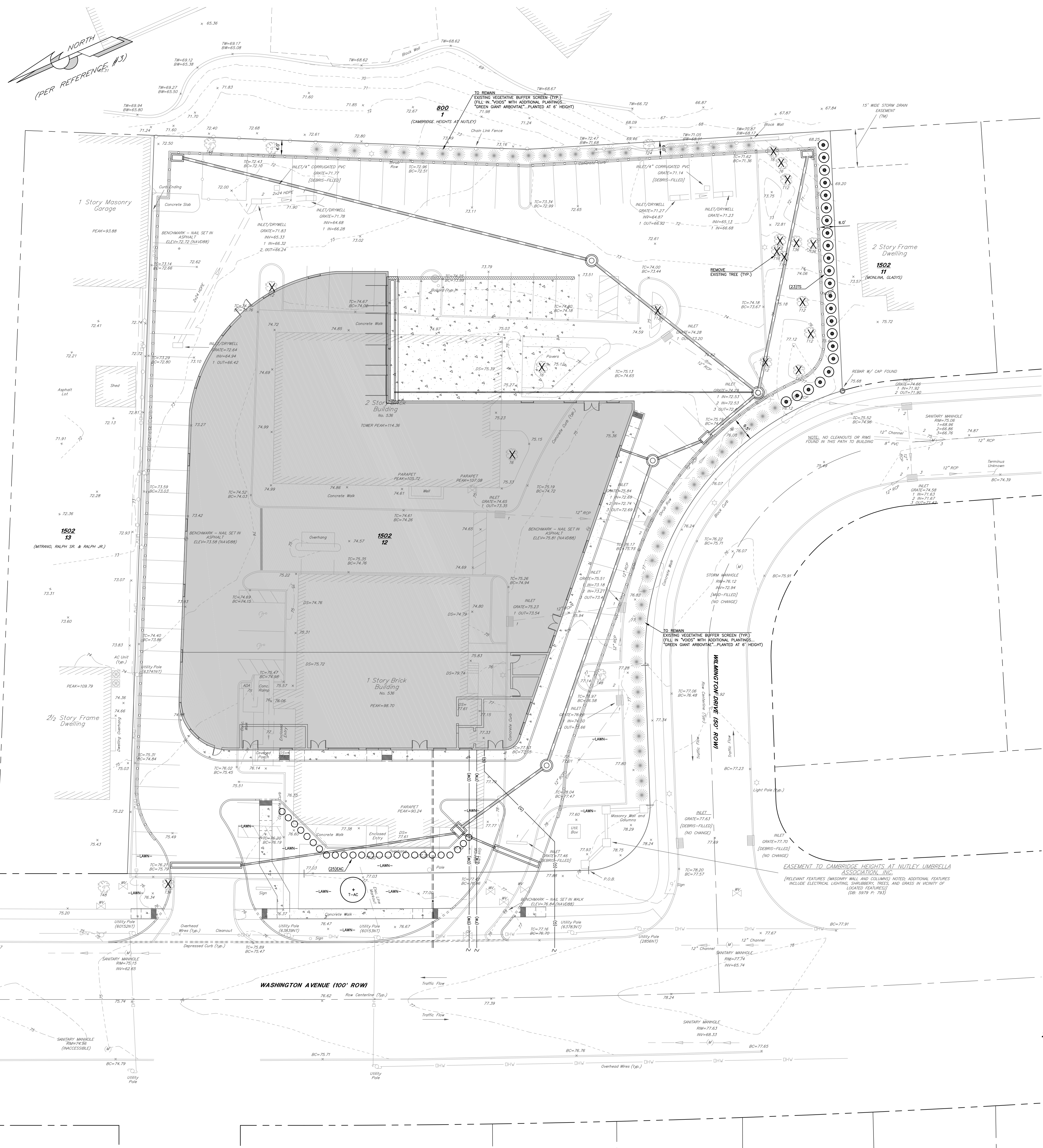
DATE	REVISIONS

drawn by **MC** checked by **PMcC**
MATTHEW G. CLARK
N.J. PROFESSIONAL ENGINEER
LICENSE No. 40394

LIGHTING PLAN
536-544 WASHINGTON AVENUE
BLOCK 1502 - LOT 12
TOWNSHIP OF NUTLEY
ESSEX COUNTY, NEW JERSEY

MCB ENGINEERING ASSOCIATES, LLC
P.O. BOX 588, 11 FURLER STREET
TOTOWA, NEW JERSEY 07511-0588
PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681
Email: mcb@mcbea.com
Certificate of Authorization No. 240A28108300

scale 1" = 20' date 03/18/2026 project no. 4703 sheet no. 4 OF 10



LANDSCAPE PLANTING NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ALL EXISTING VEGETATION TO REMAIN FROM DAMAGE DURING CONSTRUCTION.
2. USE EXTREME CAUTION TO PROTECT UNDERGROUND UTILITIES.
3. ALL PLANT MATERIAL SHALL BE NURSERY GROWN UNLESS OTHERWISE NOTED.
4. ALL PLANT MATERIAL SHALL CONFORM TO THE RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARDS FOR NURSERY STOCK" LATEST REVISION.
5. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE LOCATION OF MECHANICAL EQUIPMENT AND UTILITIES, EXISTING OR PROPOSED, IN THE AREA TO BE PLANTED AND WHERE NECESSARY, RELOCATE PLANTS AT THE DIRECTION OF THE LANDSCAPE CONSULTANT.
6. QUANTITIES GIVEN IN THE PLANT LIST ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES SHOWN ON THE LIST AND SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIALS REQUIRED TO COMPLETE THE PLANS.
7. NO SUBSTITUTIONS OF ANY PLANT MATERIAL PERMITTED UNLESS WRITTEN APPROVAL IS RECEIVED FROM PROJECT LANDSCAPE CONSULTANT.
8. THE CONTRACTOR SHALL VERIFY ALL GRADES, DIMENSIONS AND EXISTING CONDITIONS AND REPORT ANY DISCREPANCIES TO THE LANDSCAPE CONSULTANT.
9. LOCATIONS OF NEW PLANTS SHALL BE STAKED BY THE CONTRACTOR AND APPROVED BY THE LANDSCAPE CONSULTANT BEFORE PROCEEDING WITH THE WORK.
10. ALL PLANTS SHALL BE SUBJECT TO THE LANDSCAPE CONSULTANT'S INSPECTION AND APPROVAL AT THE NURSERY AND AT THE SITE BEFORE PLANTING IS BEGUN.
11. ALL BEDS AND TREE SAUCERS AND OTHER AREAS NOTED SHALL RECEIVE 3 INCH MINIMUM OF SHREDDED CEDAR BARK MULCH.
12. THE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL FOR TWO YEARS FROM THE TIME OF PLANTING.
13. TOP SOIL MIX SHALL INCLUDE:
 - 3 PARTS SCREENED TOPSOIL
 - 1 PART SAND
 - 1 PART PEAT MOSS
 - 5 LBS SUPERPHOSPHATE PER CU. YD. OF MIX.

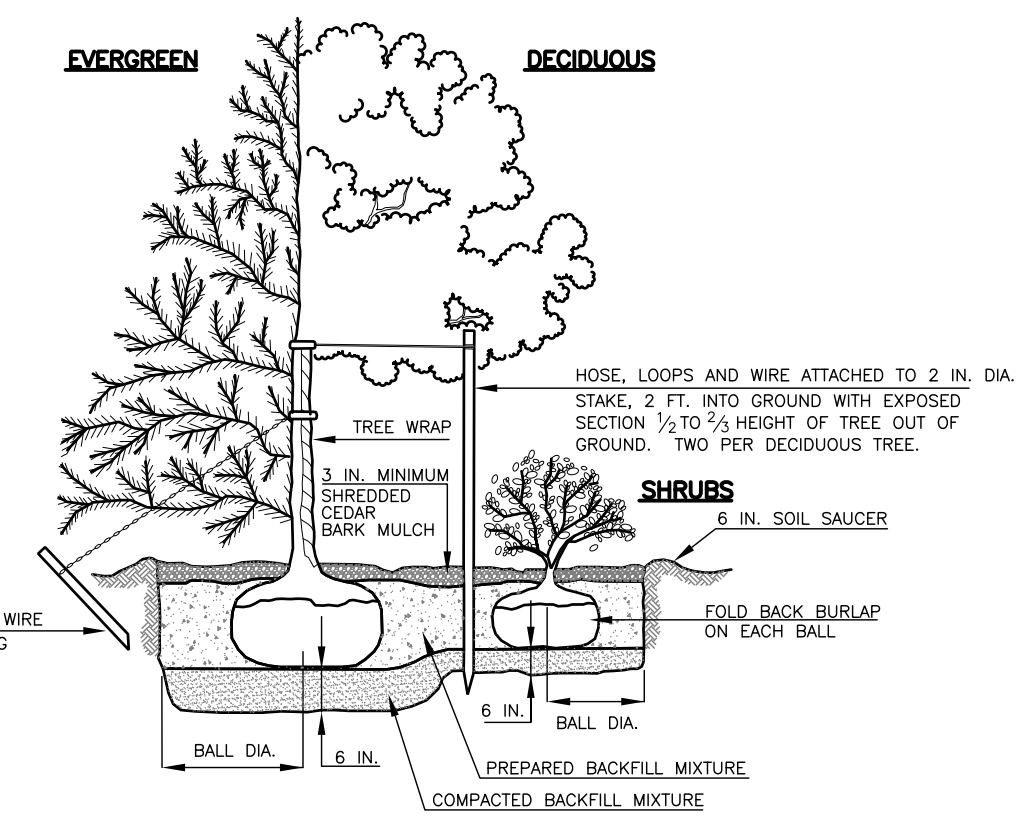
IRRIGATION GENERAL NOTES

1. ALL LANDSCAPE BEDS, PLANTED AREAS AND SOD / LAWN AREAS, INCLUDING ISOLATED PARKING LOT ISLANDS, TO BE SERVICED BY AN UNDERGROUND SPRINKLER SYSTEM.
2. ALL WORK SHALL COMPLY WITH ALL APPLICABLE LOCAL, COUNTY, STATE AND FEDERAL CODES AND STANDARDS. WHERE DISCREPANCIES OCCUR BETWEEN CODES, THE MORE STRINGENT SHALL APPLY.
3. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER AND LANDSCAPE CONSULTANT OF ANY CONFLICTS BETWEEN IRRIGATION PLAN AND ANY EXISTING OR PROPOSED SITE FEATURES.
5. CONTRACTOR TO PROVIDE AS-BUILT DRAWINGS OF IRRIGATION SYSTEM INCLUDING WIRING DIAGRAMS AND OPERATION INSTRUCTION TO THE PROJECT OWNER AT COMPLETION OF WORK.
6. WIRE SPLICE CONNECTIONS TO BE WATERPROOF.
7. WHERE PIPING CROSSES PAVED SURFACES SUCH AS SIDEWALKS, PIPING SHALL BE INSTALLED IN SLEEVES.
8. IRRIGATION SYSTEM TO INCLUDE EPA COMPLIANT "WATER SENSE" IRRIGATION CONTROLLER. SYSTEM TO INCLUDE RAIN SENSOR AND SOIL MOISTURE SENSORS. SYSTEM TO USE "CYCLE AND SOAK" METHOD.
9. IRRIGATION HEADS TO BE ADJUSTED TO AVOID OVERSPRAY ONTO HARDSCAPE ELEMENTS.
10. SYSTEM TO BE ROUTINELY INSPECTED FOR DAMAGED OR CLOGGED EQUIPMENT. SYSTEM TO BE ADJUSTED AS NEEDED FOR PLANT GROWTH OR CHANGES TO SITE FEATURES.

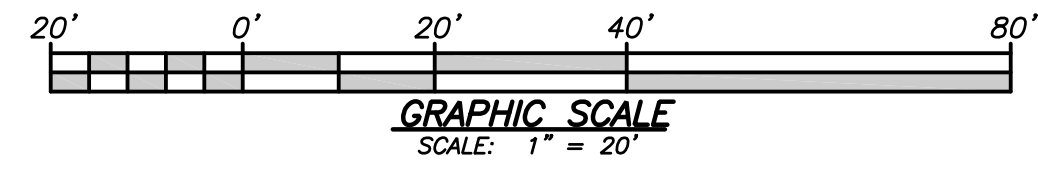
PLANTING SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT
SHRUBS					
TS	23	THILIA GREEN GIANT	GREEN GIANT ARBOVITAE	6'	B+B
EAC	25	EUONYMUS ALATIC COMPACTUS	BURNING BUSH	24"-30"	B+B
TREES					
T-AC	1	AMELANCHIER X GRANDIFLORA "ROBIN HILL"	"ROBIN'S HILL" SERVICEBERRY	2.5" CAL.	B+B

MULCHED BEDS TO BE 3" MINIMUM SHREDDED HARDWOOD BARK

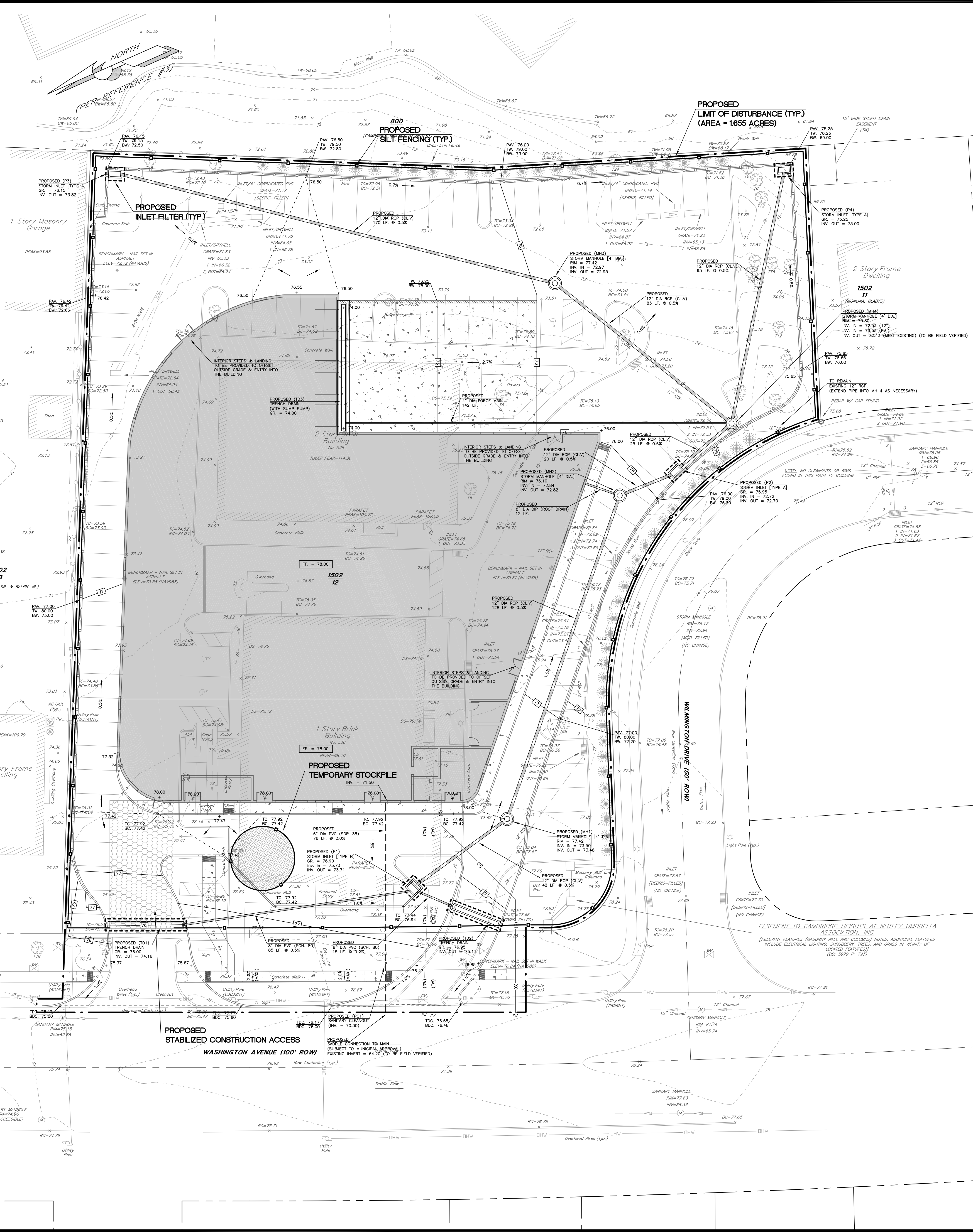


PLANTING DETAIL
(N.T.S.)



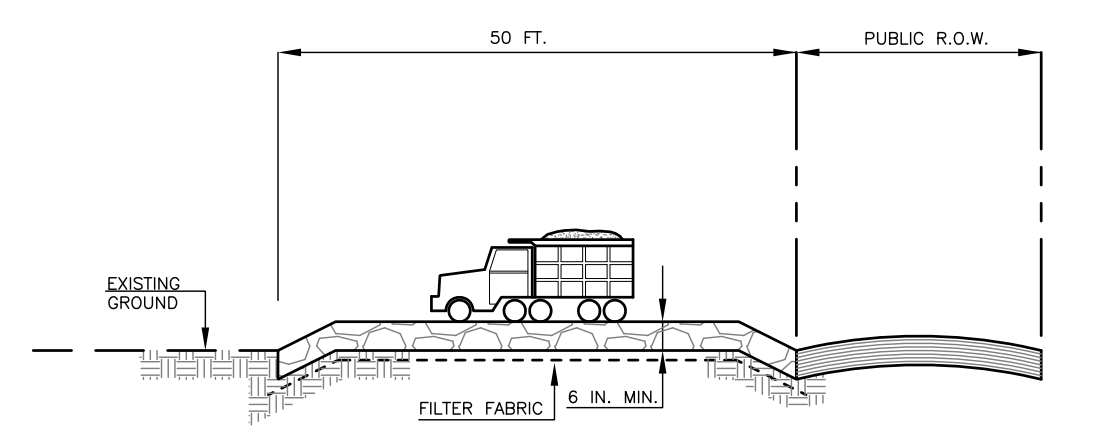
drawn by **MC** checked by **PMcC**
MATTHEW G. CLARK
N.J. PROFESSIONAL ENGINEER LICENSE No. 40394

DATE	REVISIONS
LANDSCAPING PLAN	
536-544 WASHINGTON AVENUE	
BLOCK 1502 - LOT 12 TOWNSHIP OF NUTLEY ESSEX COUNTY, NEW JERSEY	
MCA ENGINEERING ASSOCIATES, LLC	
P.O. BOX 588, 11 FURLER STREET TOTOWA, NEW JERSEY 07511-0588 PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681 Email: mcbca@mcbca.com Certificate of Authorization No. 240A28108300	
scale 1" = 20'	date 03/18/2026
project no. 4703	sheet no. 5 OF 10

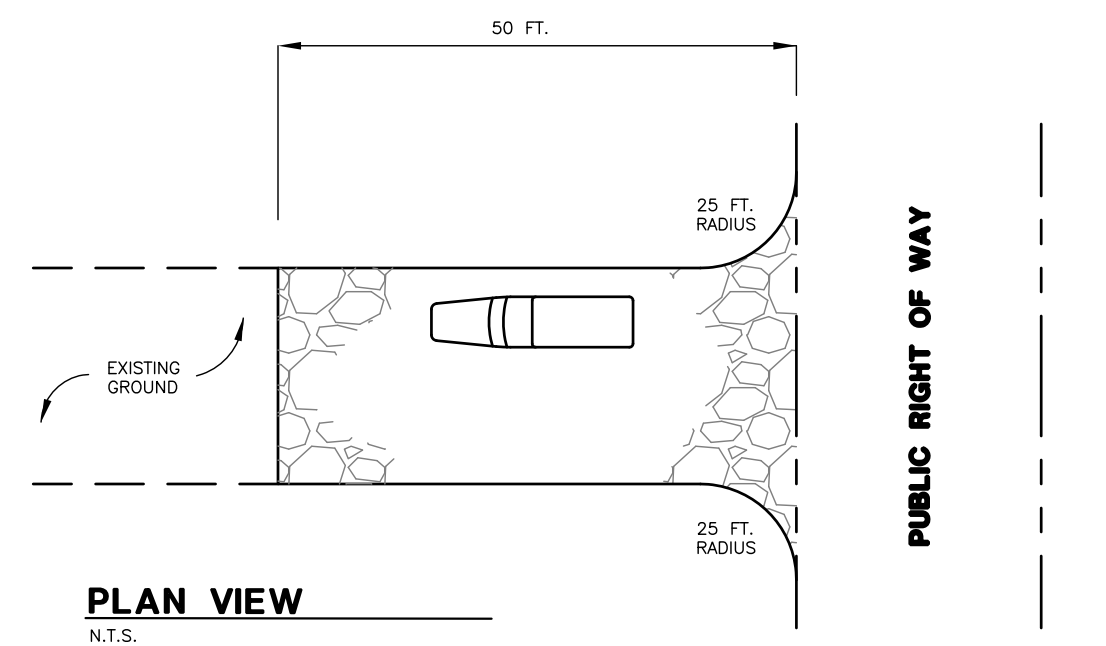


SOIL EROSION AND SEDIMENT CONTROL NOTES
(TO BE INCLUDED ON THE SIGNED EROSION CONTROL PLAN SHEET)

1. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ON THIS PLAN WILL BE CONSTRUCTED IN ACCORDANCE WITH THE "NEW JERSEY STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL" 7TH EDITION LAST REVISED DECEMBER 2017. THESE MEASURES WILL BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE OR IN THEIR PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
2. ALL SOIL TO BE EXPOSED OR STOCKPILED FOR A PERIOD OF GREATER THAN 14 DAYS, AND NOT UNDER ACTIVE CONSTRUCTION, WILL BE TEMPORARILY SEEDED AND MULCHED OR OTHERWISE COVERED. THIS TEMPORARY COVER SHALL BE MAINTAINED UNTIL SUCH TIME WHEREBY PERMANENT RESTABILIZATION IS ESTABLISHED.
3. SEEDING DATES: THE FOLLOWING SEEDING DATES ARE RECOMMENDED TO BEST ESTABLISH PERMANENT VEGETATIVE COVER WITHIN MOST LOCATIONS IN THE HEPCOZ SEEDING - 3/1 - 5/15 AND 8/15 - 10/1.
4. SEDIMENT FENCES ARE TO BE PROPERLY TRENCHED AND MAINTAINED UNTIL PERMANENT VEGETATIVE COVER IS ESTABLISHED.
5. ALL STORM DRAINAGE INLETS SHALL BE PROTECTED BY ONE OF THE PRACTICES ACCEPTED IN THE STANDARDS, AND PROTECTION SHALL REMAIN UNTIL PERMANENT STABILIZATION HAS BEEN ESTABLISHED. STORM DRAINAGE OUTLET POINTS SHALL BE PROTECTED AS REQUIRED BEFORE THEY BECOME FUNCTIONAL.
6. MULCH MATERIALS SHALL BE UN-ROTTED SMALL GRAIN STRAW APPLIED AT THE RATE OF 70 TO 90 POUNDS PER 1,000 SQUARE FEET AND ANCHORED WITH A MULCH ANCHORING TOOL, LIQUID MULCH BINDERS, OR NETTING. OTHER SUITABLE MATERIALS MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT.
7. ALL EROSION CONTROL DEVICES SHALL BE PERIODICALLY INSPECTED, MAINTAINED AND CORRECTED BY THE CONTRACTOR. ANY DAMAGE INCURRED BY EROSION SHALL BE RECTIFIED IMMEDIATELY.
8. THE HUDSON-ESSEX-PASSAIC SOIL CONSERVATION DISTRICT WILL BE NOTIFIED IN WRITING AT LEAST 48 HOURS PRIOR TO ANY SOIL DISTURBING ACTIVITIES. FAX - (862) 333-5507 OR EMAIL - INFORMATION@HEPCOZ.ORG
9. THE APPLICANT MUST OBTAIN A DISTRICT ISSUED REPORT OF COMPLIANCE PRIOR TO APPLYING FOR THE CERTIFICATE OF OCCUPANCY OR TEMPORARY CERTIFICATE OF OCCUPANCY FROM THE RESPECTIVE MUNICIPALITY, NJ-DOA OR ANY OTHER CONTROLLING AGENCY. CONTACT THE DISTRICT AT 862-333-4505 TO REQUEST A FINAL INSPECTION. GIVING ADVANCED NOTICE OF THE RESTABILIZATION MEASURES. A PERFORMANCE DEPOSIT MAY BE POSTED WITH THE DISTRICT WITHIN 10 BUSINESS DAYS OF THE PROPER APPLICATION OF SEED, MULCH, FERTILIZER OR HYDRO-SEED.
10. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES. DO NOT UTILIZE A FIRE OR GARDEN HOSE TO CLEAN ROADS UNLESS THE FERTILIZER IS DIRECTED TO A PROPERLY DESIGNED AND FUNCTIONING SEDIMENT BASIN. WATER PUMPED OUT OF THE EXCAVATED AREAS CONTAINS SEDIMENTS THAT MUST BE REMOVED PRIOR TO DISCHARGING TO RECEIVING BODIES OF WATER USING REMOVABLE PUMPING STATIONS, SUMP PITS, PORTABLE SEDIMENTATION TANKS AND / OR SILT CONTROL BASINS.
11. ALL SURFACES HAVING LAWN OR LANDSCAPING AS FINAL COVER ARE TO BE PROVIDED TOPSOIL PRIOR TO RE-SEEDING, SOODING OR PLANTING. A DEPTH OF 5 INCHES, FIRMS IN PLACE, IS REQUIRED, AS PER THE STANDARDS FOR TOPSOILING AND LAND GRADING, LAST REVISED DECEMBER 2017.
12. ALL PLAN REVISIONS MUST BE SUBMITTED TO THE DISTRICT FOR PROPER REVIEW AND APPROVAL.
13. A CRUSHED STONE WHEEL CLEANING TRACKING-PAD IS TO BE INSTALLED AT ALL SITE EXITS USING 2 1/2" - 1" CRUSHED ANGULAR STONE (ASTM 2 OR 3) TO A MINIMUM LENGTH OF 50 FEET AND MINIMUM DEPTH OF 6". ALL DRIVEWAYS MUST BE PROVIDED WITH CRUSHED STONE UNITS. PAVING IS COMPLETE.
14. STEEP SLOPES INCURRING DISTURBANCE MAY REQUIRE ADDITIONAL STABILIZATION MEASURES. THESE "SPECIAL" MEASURES SHALL BE DESIGNED BY THE APPLICANT'S ENGINEER AND BE APPROVED BY THE SOIL CONSERVATION DISTRICT.
15. THE HUDSON-ESSEX-PASSAIC SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING, FOR THE SALE OF ANY PORTION OF THE PROJECT OR FOR THE SALE OF INDIVIDUAL LOTS. NEW OWNERS INFORMATION SHALL BE PROVIDED. ADDITIONAL MEASURES DEEMED NECESSARY BY DISTRICT OFFICIALS SHALL BE INCORPORATED AS CONDITIONS. MATERIAL.



- PROFILE**
(N.T.S.)
- NOTES:**
1. PROVIDE APPROPRIATE TRANSITION BETWEEN STABILIZED CONSTRUCTION ENTRANCE AND PUBLIC R.O.W.
 2. STONE SIZE: 1 IN. - 2.5 IN. CRUSHED STONE
 3. STABILIZED CONSTRUCTION ENTRANCE TO BE IN ACCORDANCE WITH SECTION 29, STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY



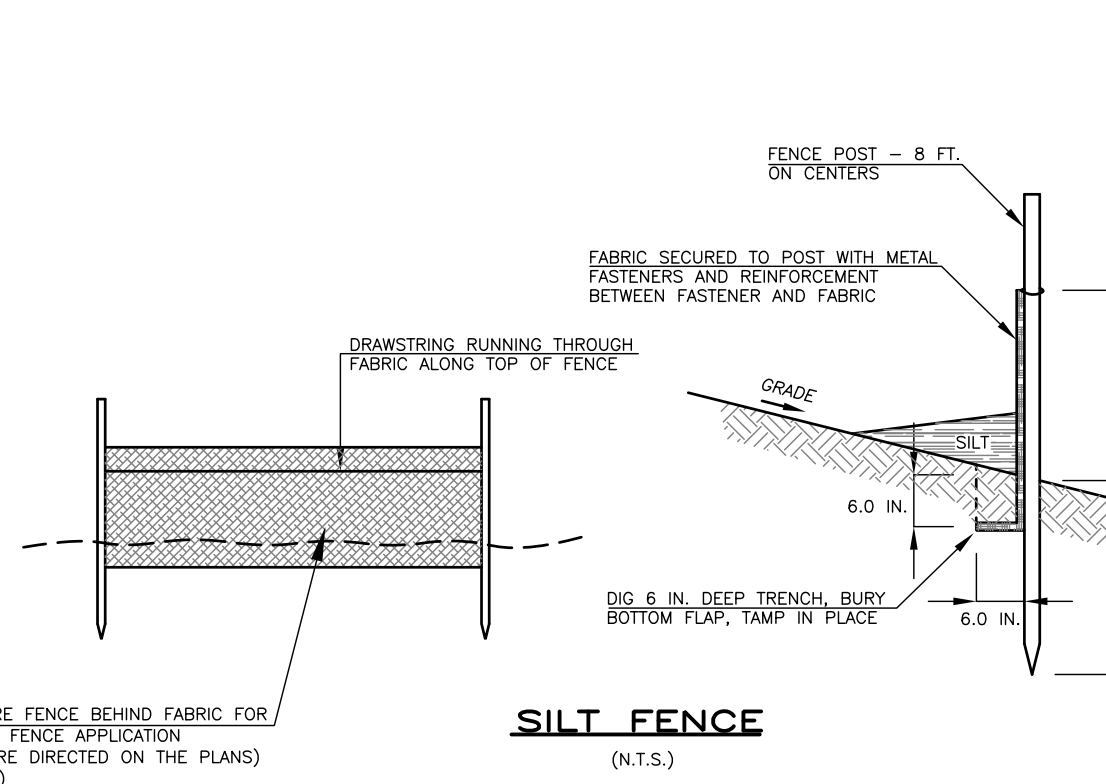
STABILIZED CONSTRUCTION ENTRANCE
(N.T.S.)

ADDITIONAL NOTES

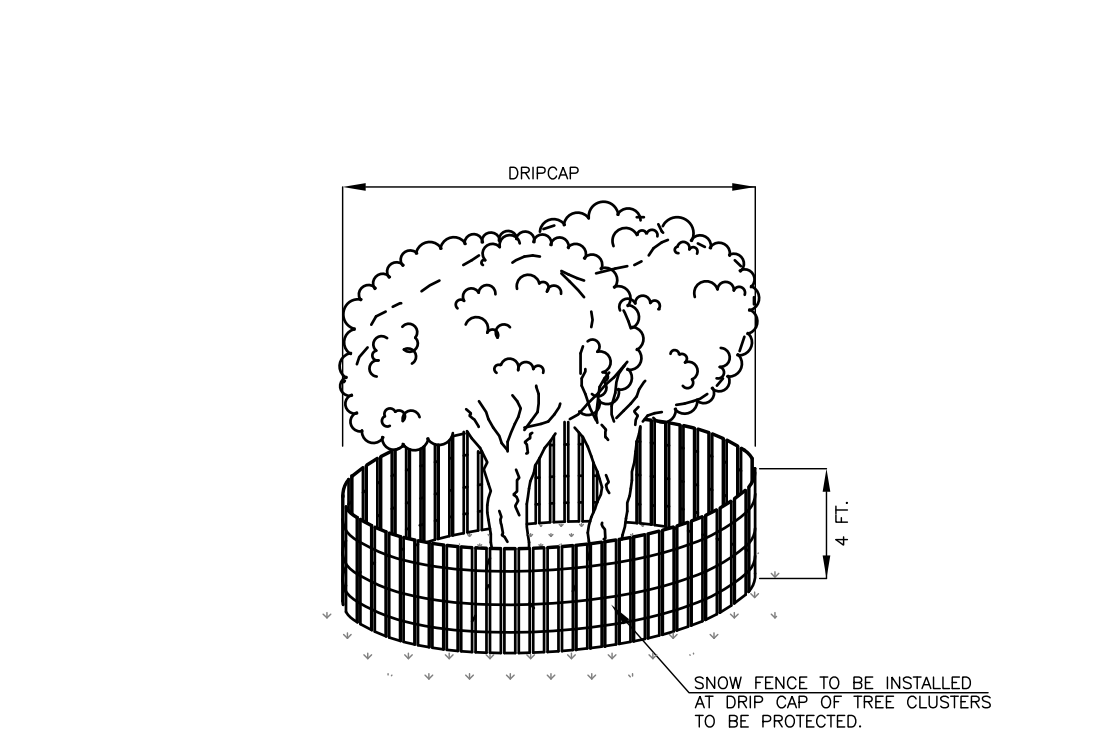
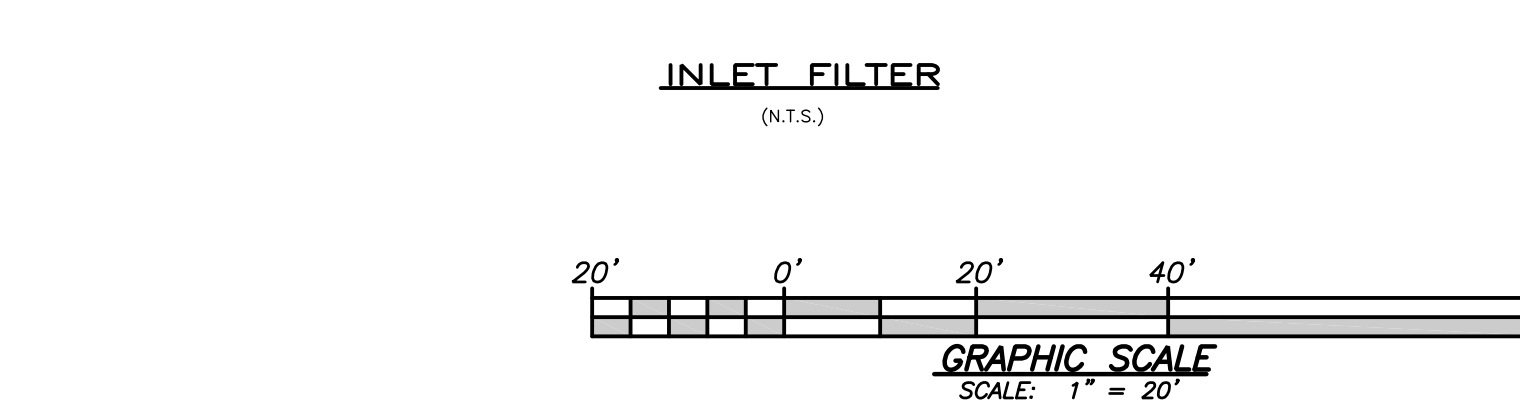
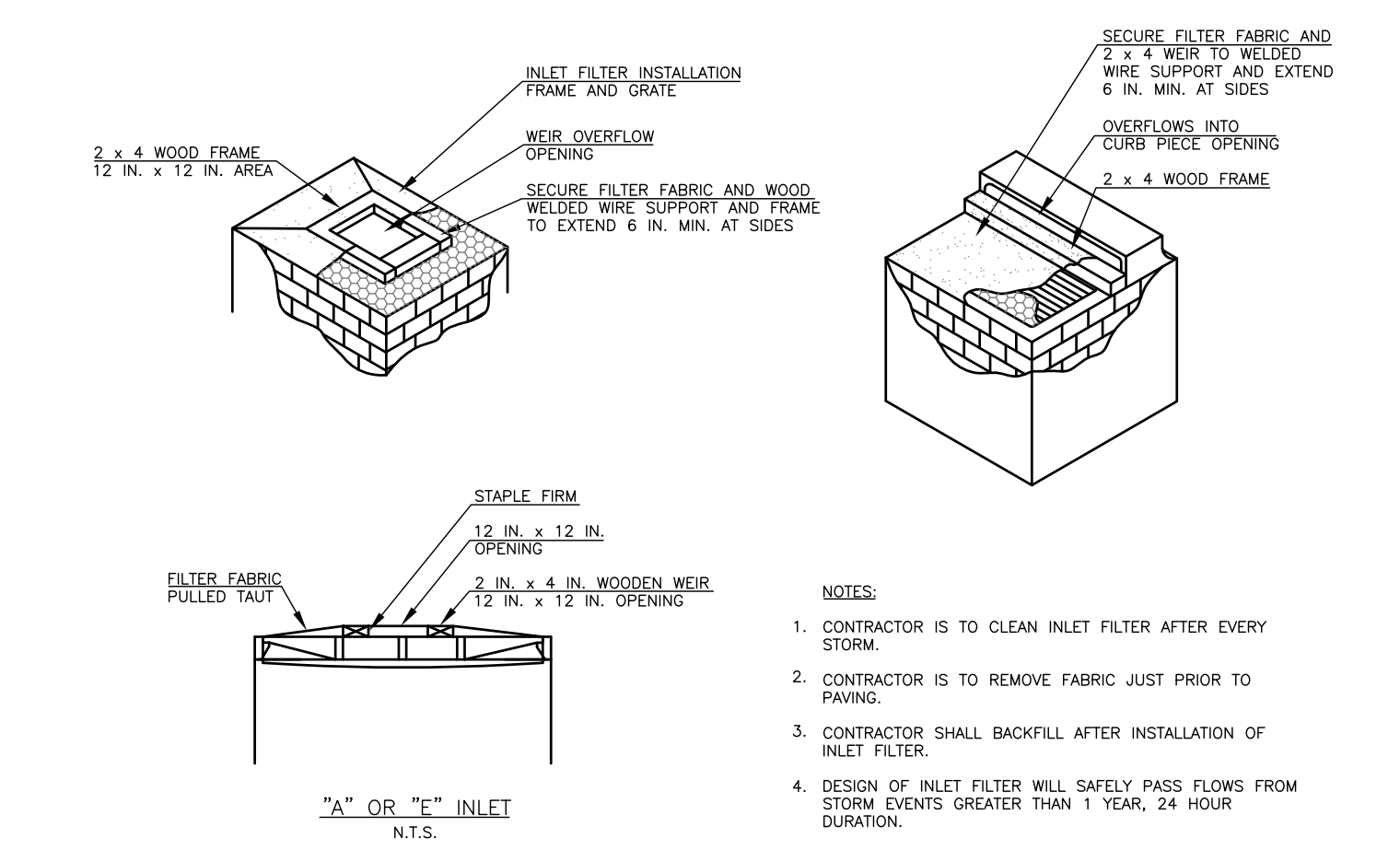
1. THE CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH THE CURRENT RULES AND REGULATIONS OF THE GOVERNING SOIL CONSERVATION DISTRICT AS THEY APPLY TO THE PROPOSED CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN THE AREAS OUTSIDE THE LIMITS OF CONSTRUCTION, INCLUDING WASHINGTON AVENUE & WILMINGTON DRIVE, FREE OF ALL CONSTRUCTION DEBRIS INCLUDING WHEEL TRACKING OF MATERIAL FROM CONSTRUCTION VEHICLES.
3. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES / PRACTICES SHALL BE IN PLACE PRIOR TO ANY GRADING OPERATIONS AND INSTALLATION OF PROPOSED IMPROVEMENTS.
4. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES / PRACTICES SHALL BE LEFT IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND / OR THE AREA IS STABILIZED.
5. WHERE NECESSARY, DISTURBED AREAS SHALL BE TEMPORARILY SEEDED AND / OR MULCHED UNTIL PROPER WEATHER CONDITIONS EXIST FOR ESTABLISHMENT OF A PERMANENT VEGETATIVE COVER.
6. THE BASE OF ALL TEMPORARY STOCKPILES SHALL BE ENCLOSED WITH SILT FENCE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE TO MARK AND PROTECT ALL TREES TO REMAIN WITHIN THE VICINITY OF THE PROPOSED CONSTRUCTION PRIOR TO ANY LAND DISTURBANCE.
8. ALL TREES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE MUNICIPAL ENGINEER REGARDING TREE REPLACEMENT.
9. THIS PLAN IS INTENDED FOR SOIL EROSION & SEDIMENT CONTROL PURPOSES AND CERTIFICATION ONLY.

SEQUENCE OF CONSTRUCTION

1. INSTALLATION / APPLICATION OF PROPER MEASURES FOR THE CONTROL OF SOIL EROSION AND SEDIMENT CONTROL INCLUDING THE STAKING OF SILT FENCE BARRIER WHERE SHOWN ON THE PLANS PRIOR TO ANY LAND DISTURBANCE.
2. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE AT ALL POINTS WHERE CONSTRUCTION VEHICLES ACCESS PAVED ROADWAYS (INCLUDING ALL PAVED SURFACES) FROM UNPAVED AREAS OF THE SITE.
3. CLEARING SITE (INCLUDING THE DEMOLITION OF ALL STRUCTURES AND THE REMOVAL OF BITUMINOUS PAVEMENT, SIDEWALKS, CURBS, WALLS, OVERHEAD WIRING, FENCING AND TREES) AS SHOWN ON THE PROJECT DOCUMENTS PROVIDING AND INSTALLING TEMPORARY STABILIZATION MEASURES AS REQUIRED.
4. INSTALLATION OF BUILDING, UTILITY (INSTALL & MAINTAIN INLET FILTERS), STORM WATER MANAGEMENT SYSTEM, CURB, SIDEWALK, LIGHTING AND ASPHALT IMPROVEMENTS AS PER PLAN.
5. MAINTENANCE OF SOIL EROSION AND SEDIMENT CONTROL.
6. FINAL GRADING OF SITE, INSTALLATION OF LANDSCAPING AND STABILIZATION OF LAWN AND BERM AREAS.
7. IF THE PROJECT REQUIRES SOIL COMPACTION TESTING AND / OR REMEDIAL DE-COMPACTION THEN CONDUCT SOIL COMPACTION TESTING AND REMEDIATE SUBSOIL (COMPACTION FILLAGE TO A MINIMUM DEPTH OF 6") IF NECESSARY.
8. REMOVAL OF ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES UPON THE PERMANENT STABILIZATION OF ALL EXPOSED AREAS.

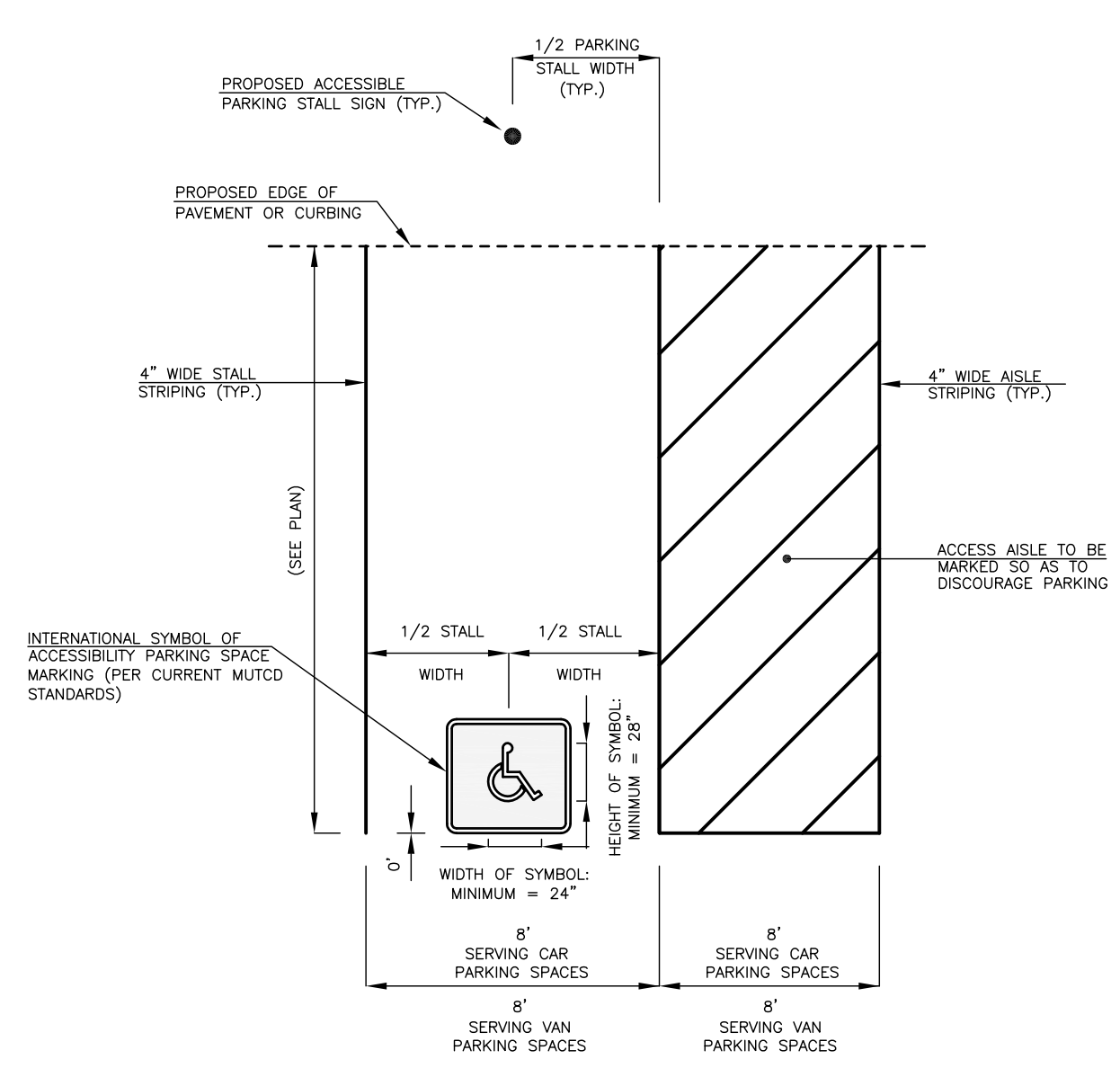


- NOTE:**
1. "SUPER" SILT FENCE - A METAL FENCE WITH 6" OR SMALLER MESH OPENINGS AND AT LEAST 2' HIGH, FASTENED TO THE FENCE POSTS, TO PROVIDE REINFORCEMENT AND SUPPORT TO THE GEOTEXTILE FABRIC. POSTS MAY BE SPACED LESS THAN 8' ON CENTER AND MAY BE CONSTRUCTED OF HEAVY WOOD OR METAL AS NEEDED TO WITHSTAND HEAVIER SEDIMENT LOADING.



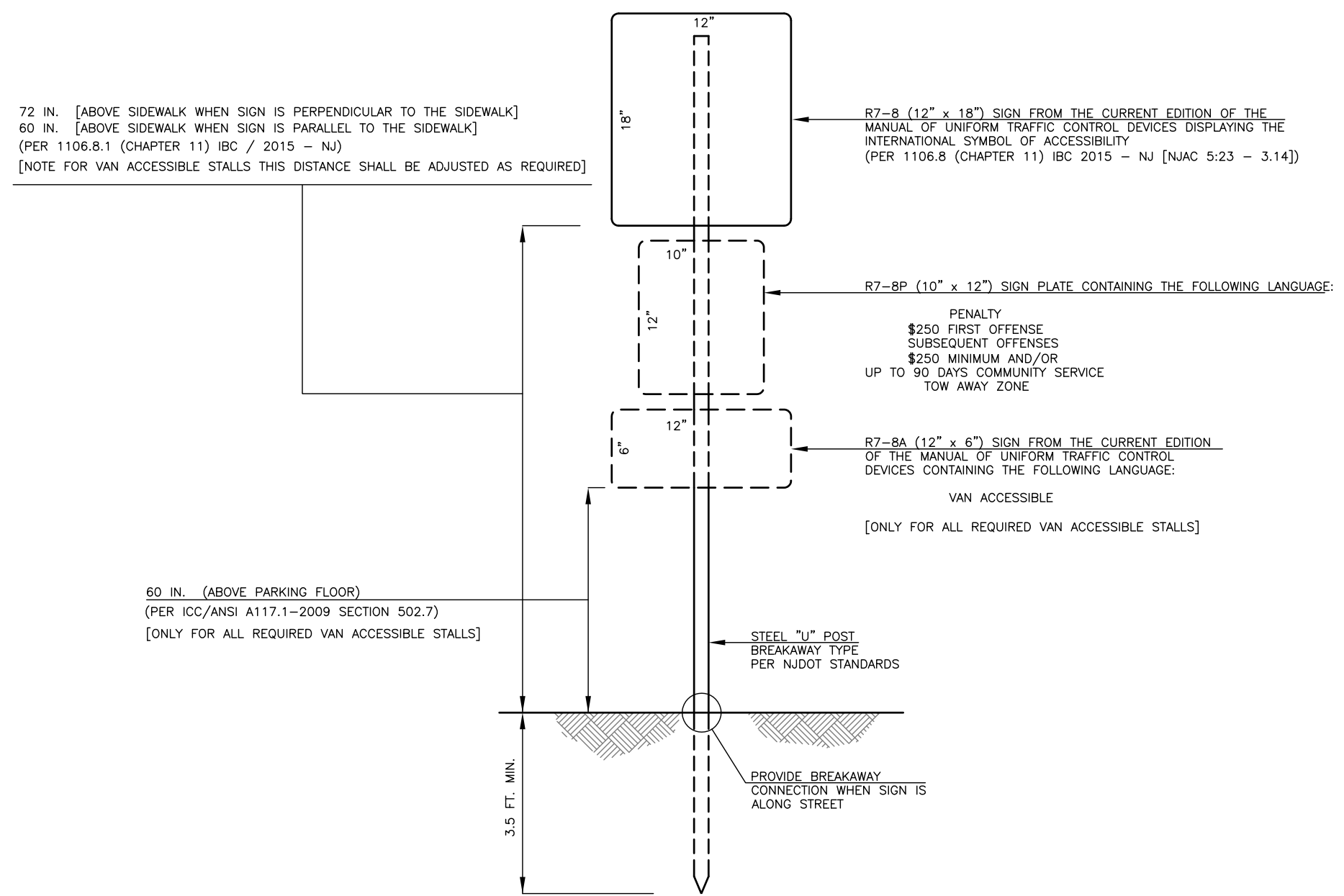
- NOTES:**
1. CONTRACTOR IS TO CLEAN INLET FILTER AFTER EVERY STORM.
 2. CONTRACTOR IS TO REMOVE FABRIC JUST PRIOR TO PAVING.
 3. CONTRACTOR SHALL BACKFILL AFTER INSTALLATION OF INLET FILTER.
 4. DESIGN OF INLET FILTER WILL SAFELY PASS FLOWS FROM STORM EVENTS GREATER THAN 1 YEAR, 24 HOUR DURATION.

drawn by MC	checked by PMcC
MATTHEW G. CLARK	
SOIL EROSION & SEDIMENT CONTROL PLAN	
536-544 WASHINGTON AVENUE	
BLOCK 1502 - LOT 12	
TOWNSHIP OF NUTLEY	
ESSEX COUNTY, NEW JERSEY	
MCEB	
MCEB ENGINEERING ASSOCIATES, LLC	
P.O. BOX 588, 11 FURLER STREET	
TOTOWA, NEW JERSEY 07511-0588	
PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681	
Email: mceba@mceba.com	
Certificate of Authorization No. 240A28108300	
N.J. PROFESSIONAL ENGINEER LICENSE No. 40394	scale 1" = 20'
date 03/18/2026	project no. 4703
sheet no. 6 OF 10	

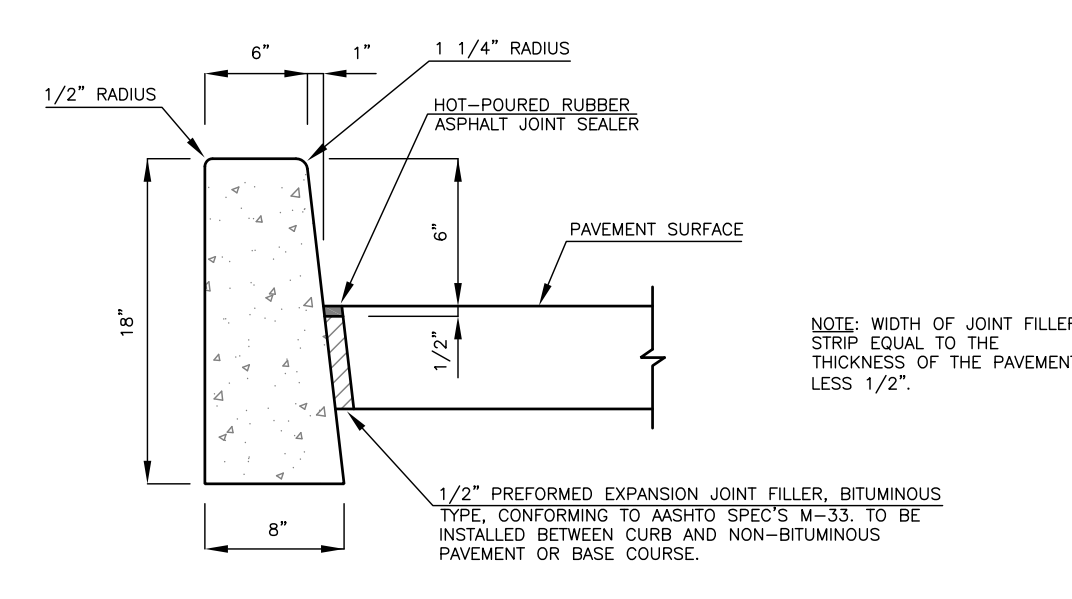


HANDICAP ACCESSIBLE PARKING STALL DETAIL
(N.T.S.)

NOTES:
1. THE CONTRACTOR SHALL ENSURE THAT THE MAXIMUM SLOPE IN ANY DIRECTION SHALL NOT EXCEED 2.0%.
(NOTE: DETAIL SHOWN "NON-ANGLED" FOR ILLUSTRATIVE PURPOSES; SEE SHEET 3 FOR ANGLED LAYOUT)

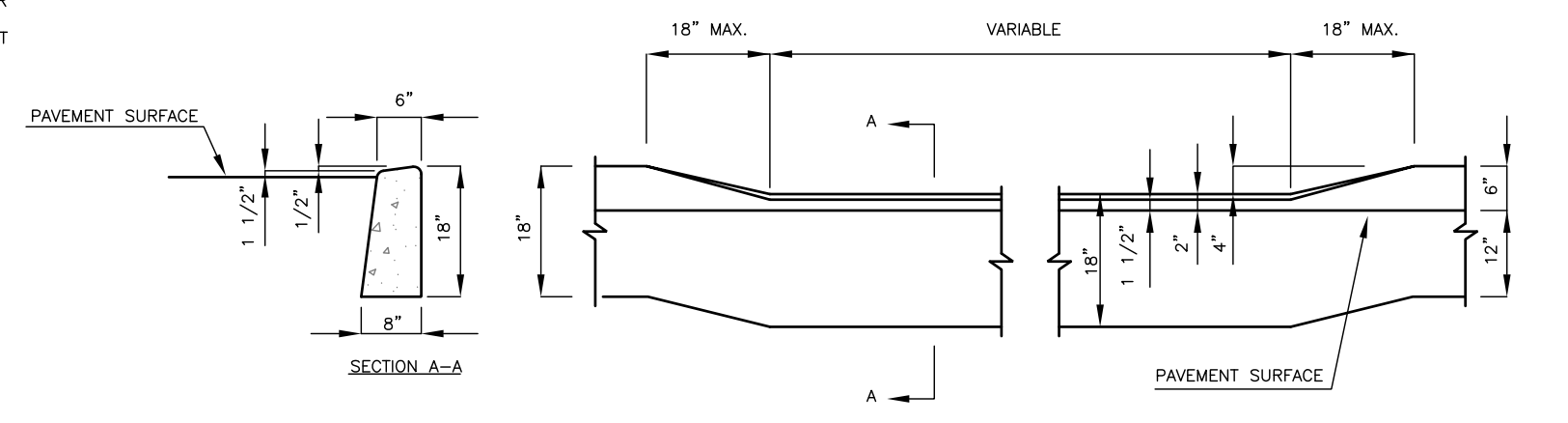


HANDICAP ACCESSIBLE PARKING STALL SIGN DETAIL
(N.T.S.)



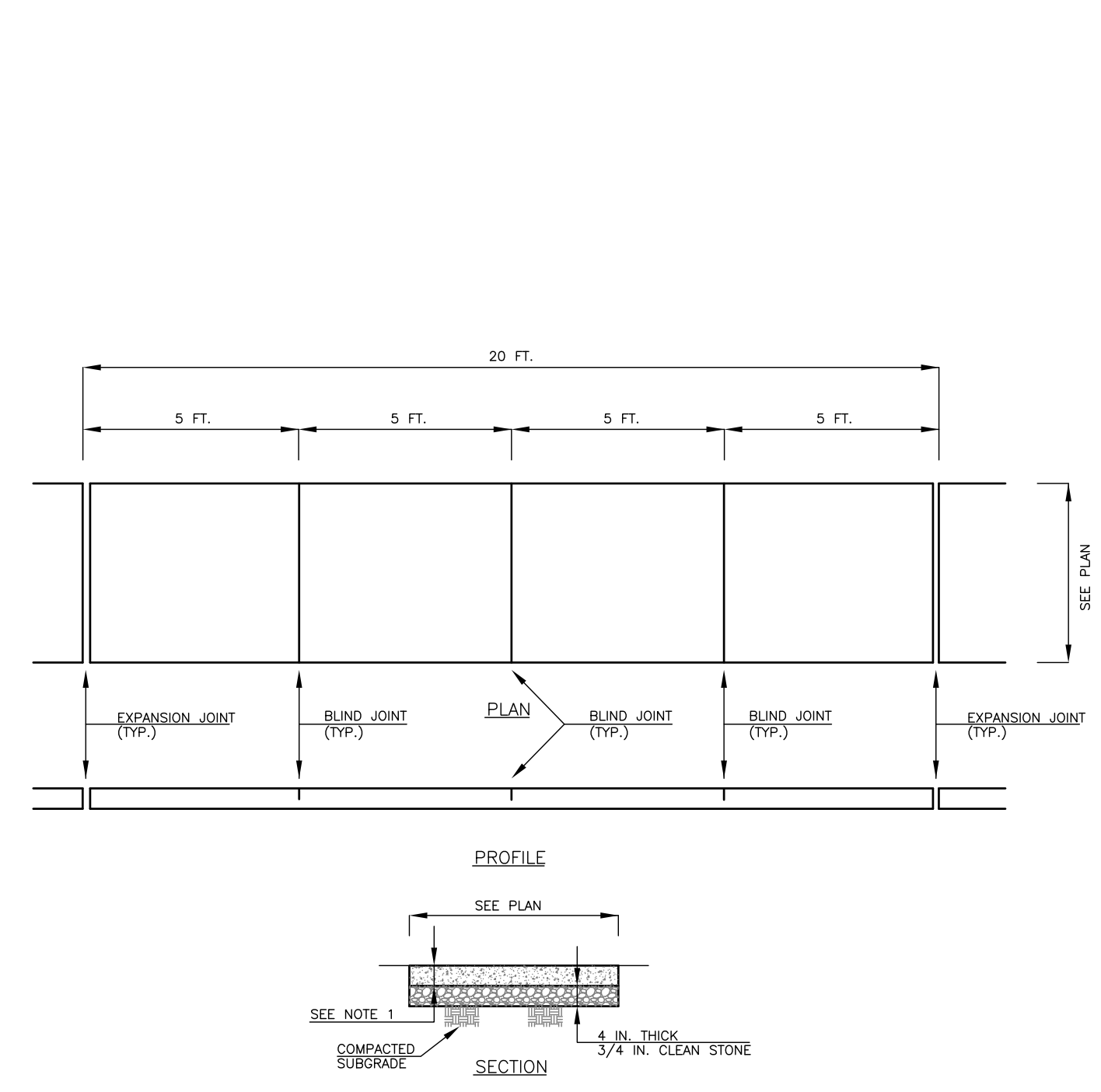
8' x 18' CONCRETE VERTICAL CURB
(WITH 6" FACE)
(N.T.S.)

(SUBJECT TO NJDOT APPROVAL WITHIN THE WASHINGTON AVENUE ROW)



8' x 18' CONCRETE DROP CURB (AT DRIVEWAYS)
(WITH 6" FACE)
(N.T.S.)

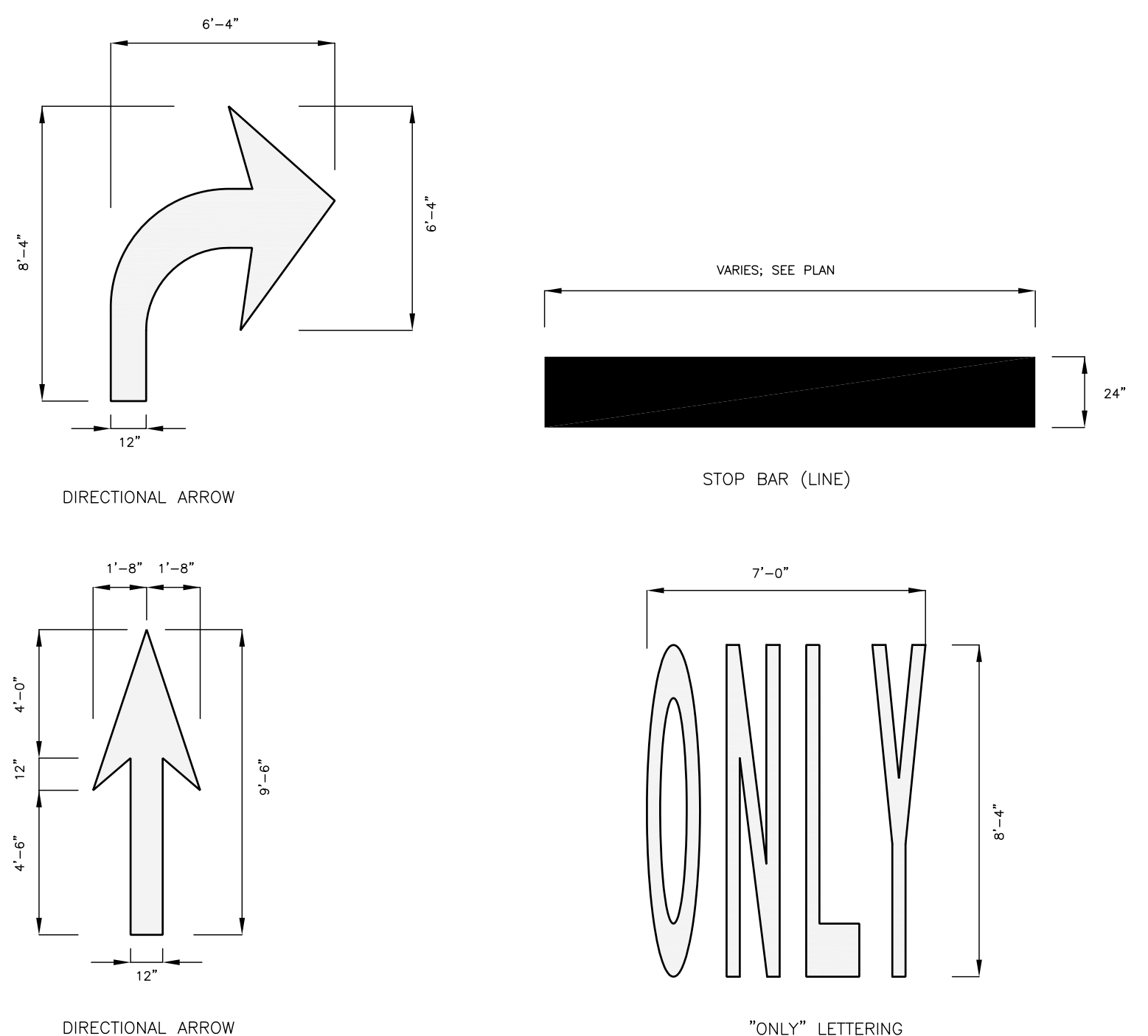
(SUBJECT TO NJDOT APPROVAL WITHIN THE WASHINGTON AVENUE ROW)



CONCRETE SIDEWALK DETAIL
(N.T.S.)

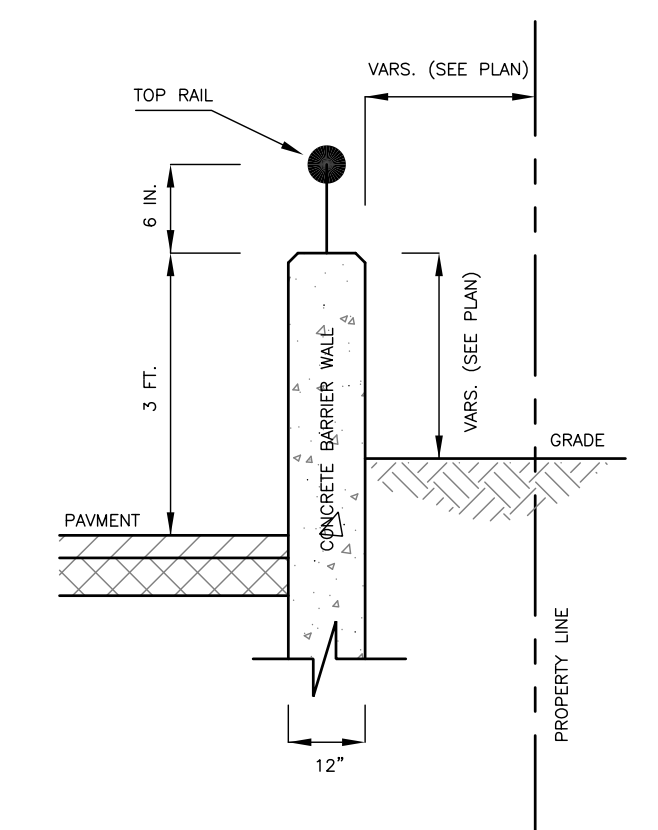
NOTES:
1. SIDEWALKS OF CONCRETE SHALL BE FOUR (4) INCHES THICK EXCEPT AT POINTS OF VEHICULAR CROSSING, WHERE THEY SHALL BE AT LEAST SIX (6) INCHES THICK. AT VEHICULAR CROSSINGS, CONCRETE SIDEWALKS SHALL BE REINFORCED WITH WELDED WIRE FABRIC MESH OR AN APPROVED EQUAL.
2. CONCRETE TO BE AIR-ENTRAINED, CLASS B CONCRETE, HAVING A 28-DAY VERIFICATION STRENGTH OF 4,500 P.S.I. OTHER MATERIALS MAY BE PERMITTED BUT ARE SUBJECT TO THE APPROVAL OF THE MUNICIPAL ENGINEER.
3. SUBGRADE TO BE COMPACTED IN A MANNER ACCEPTABLE TO THE MUNICIPAL ENGINEER.
4. EXPANSION JOINTS ARE TO BE 1/2 INCHES WIDE AND FILLED WITH PREFORMED BITUMINOUS TYPE JOINT FILLER. THE TOP OF THE FILLER SHALL BE 1/4 INCHES BELOW THE TOP OF THE SIDEWALK SURFACE. EXPANSION JOINTS SHALL BE LOCATED 20 FEET ON CENTER.
5. BLIND JOINTS ARE TO BE SURFACE GROVES CUT INTO THE SIDEWALK 1/2 INCH DEEP AND SHALL BE LOCATED 5 FEET ON CENTER (BETWEEN THE LOCATION OF THE EXPANSION JOINTS AS SHOWN ABOVE).

(SUBJECT TO NJDOT APPROVAL WITHIN THE WASHINGTON AVENUE ROW)



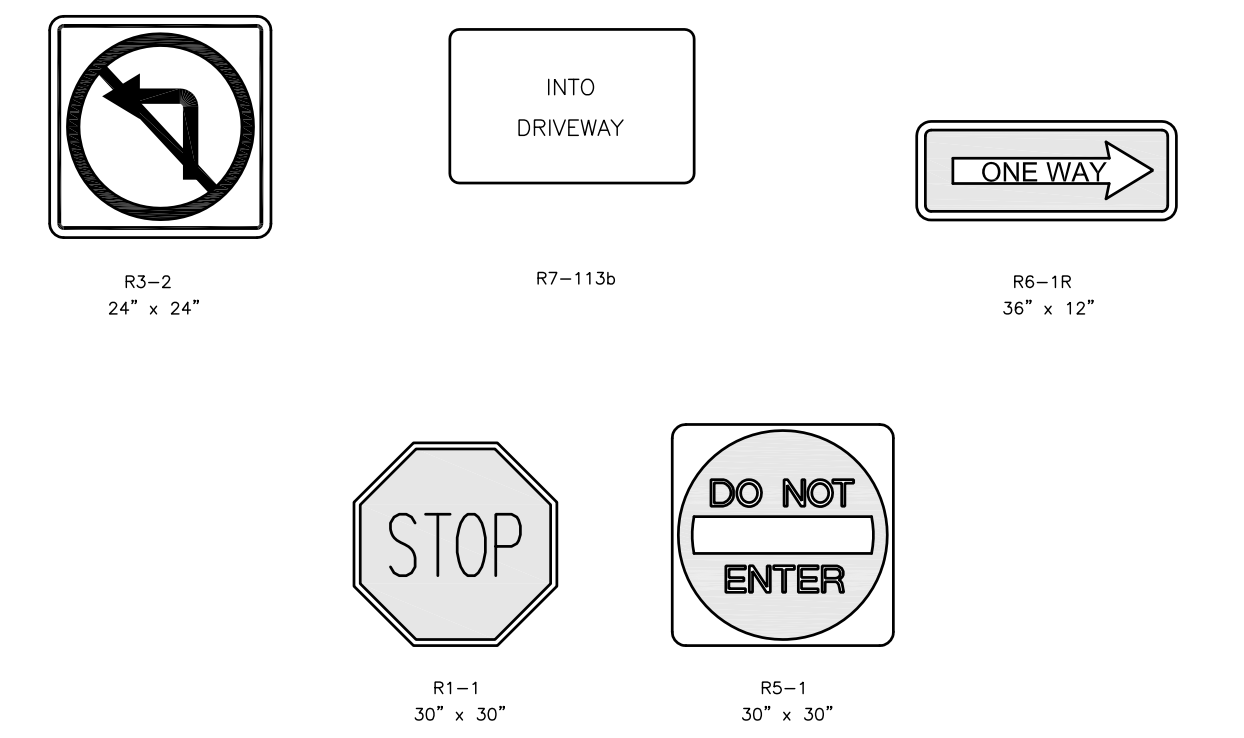
STRIPING & PAVEMENT MARKINGS DETAILS
(N.T.S.)

NOTES:
1. ALL STRIPING AND PAVEMENT MARKINGS SHALL BE FABRICATED & CONSTRUCTED IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. STOP BARS SHALL BE 12" TO 24" WIDE. SEE PLAN FOR PROJECT WIDTH.
3. STOP BARS SHALL BE PLACED A MINIMUM OF 4 FEET IN ADVANCE OF THE NEAREST CROSSWALK.
4. FOR PAVEMENT LETTERING UNLESS OTHERWISE NOTED:
LETTER HEIGHT = 8'-4"
LETTER WIDTH = 1'-4"
LETTER SPACING = 8"
5. PAVEMENT LETTERING TO BE CENTERED IN LANE.
6. ALL STRIPING & PAVEMENT MARKINGS SUBJECT TO LOCAL, COUNTY & STATE APPROVAL AS APPLICABLE.



CONCRETE BARRIER WALL SECTION
(N.T.S.)

NOTES:
1. THIS SECTION IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
2. PRIOR TO CONSTRUCTION THE OWNER AND / OR CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN AND SUBMIT TO THE MUNICIPALITY A STRUCTURAL CALCULATION REPORT SIGNED & SEALED BY A LICENSED ENGINEER IN THE STATE OF NEW JERSEY FOR THE PROPOSED DESIGN & CONSTRUCTION OF PROPOSED CONCRETE BARRIER WALL.



REGULATORY SIGN LEGEND
(N.T.S.)

drawn by **MC** checked by **PMcC**
MATTHEW G. CLARK
N.J. PROFESSIONAL ENGINEER
LICENSE No. 40394

DATE	REVISIONS

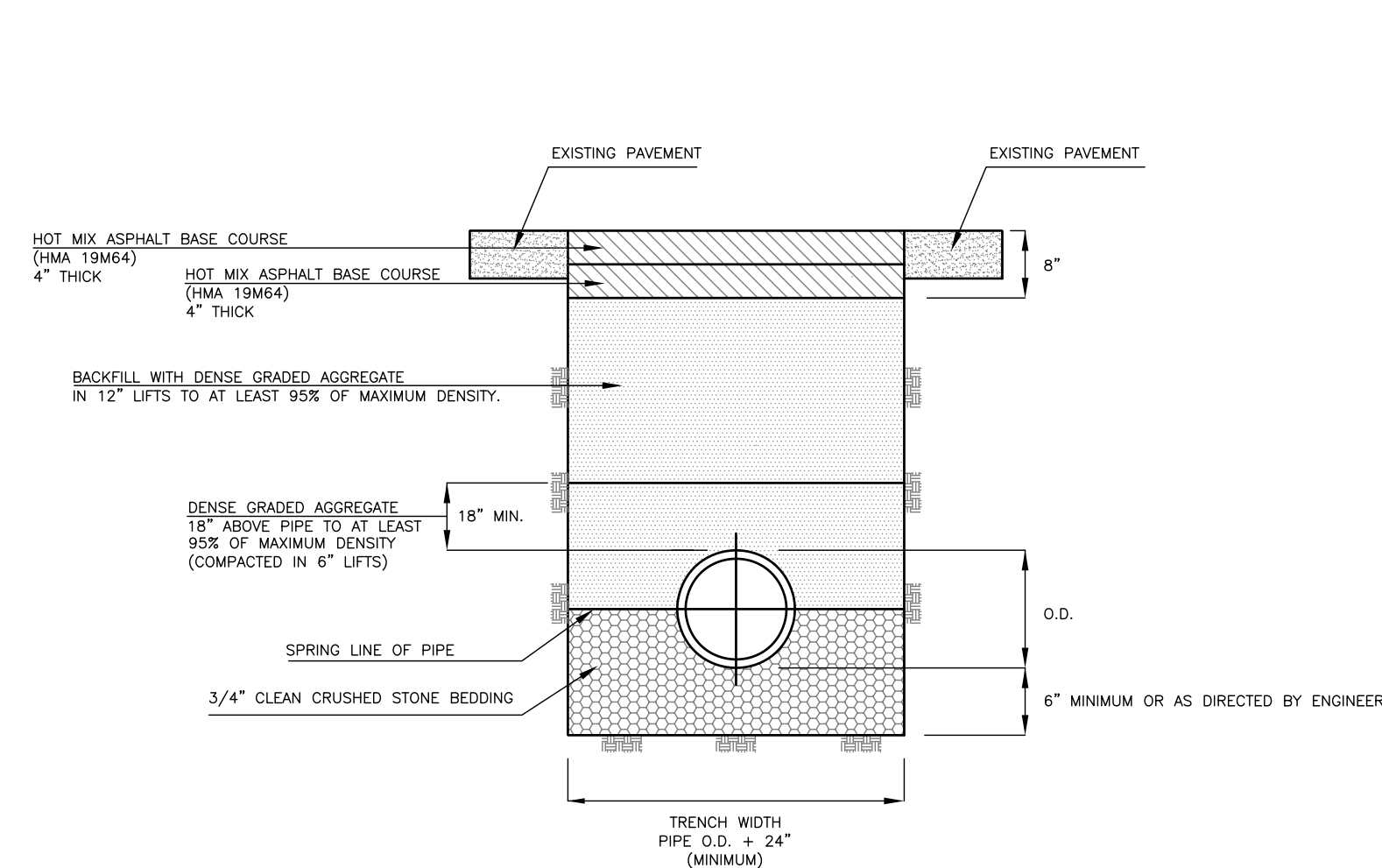
SITE DETAILS

536-544 WASHINGTON AVENUE
BLOCK 1502 - LOT 12
TOWNSHIP OF NUTLEY
ESSEX COUNTY, NEW JERSEY

MCB ENGINEERING ASSOCIATES, LLC
P.O. BOX 588, 11 FURLER STREET
TOTOWA, NEW JERSEY 07511-0588
PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681
Email: mcbea@mcbea.com
Certificate of Authorization No. 240A28108300

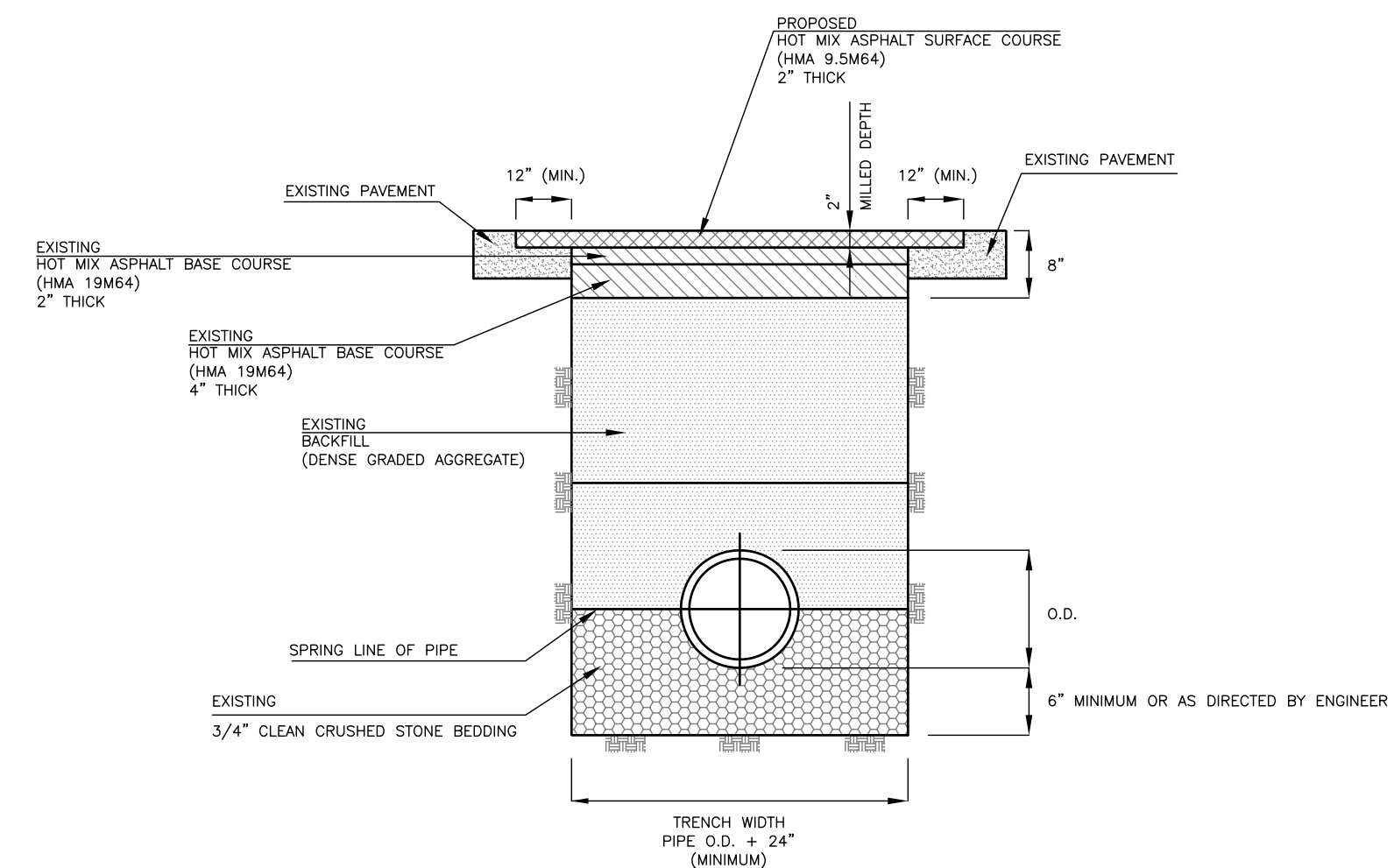
scale	date	project no.	sheet no.
N.T.S.	03/18/2026	4703	7 OF 10





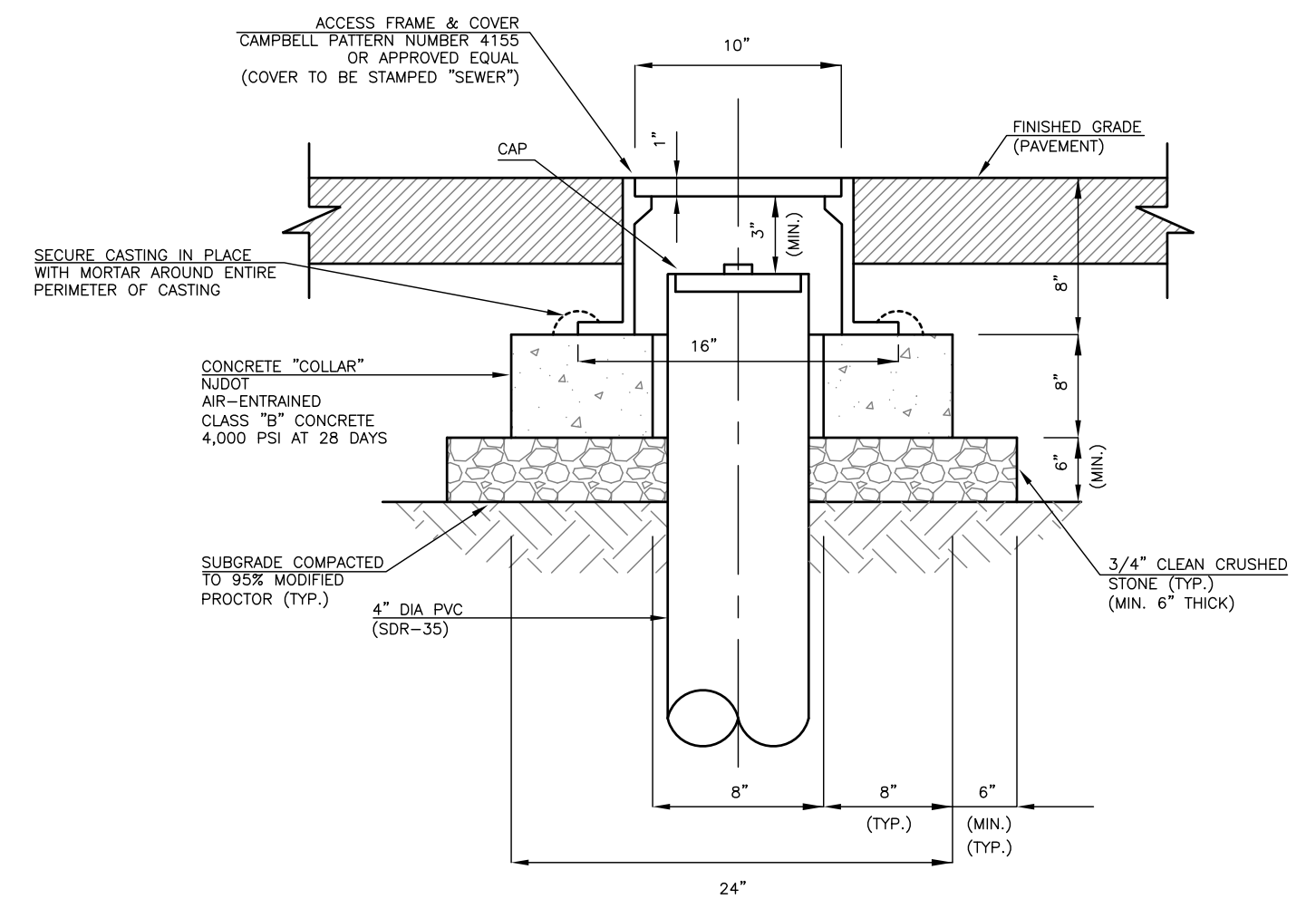
SURFACE RESTORATION & TRENCH DETAIL (TEMPORARY)
(N.T.S.)

- NOTES:
1. THIS DETAIL IS SUBJECT TO THE APPROVAL OF THE MUNICIPALITY, COUNTY & NJDEP. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE SUCH APPROVAL HAS BEEN PROVIDED PRIOR TO ANY WORK.
 2. NO RECYCLED MATERIALS CAN BE USED.

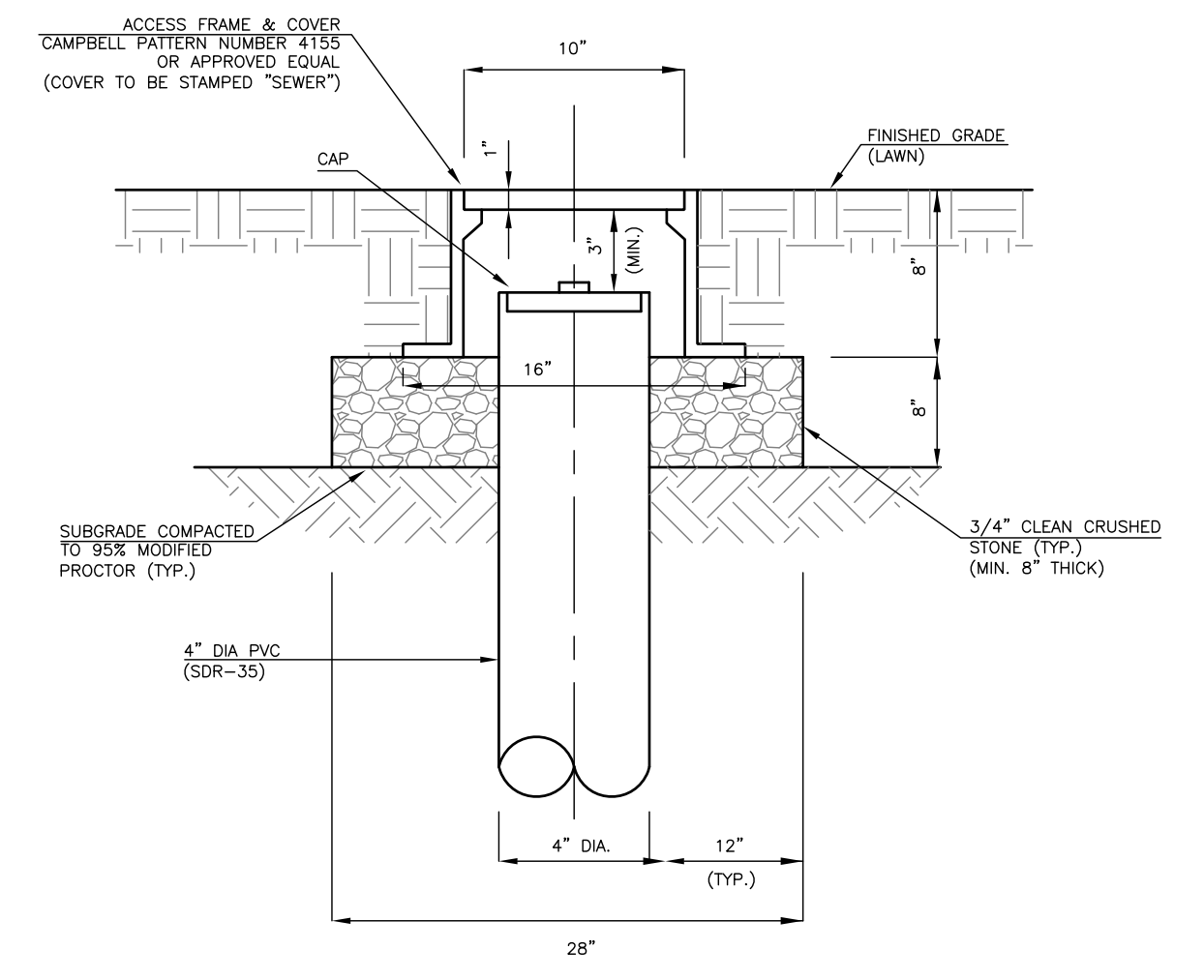


SURFACE RESTORATION & TRENCH DETAIL (PERMANENT)
(N.T.S.)

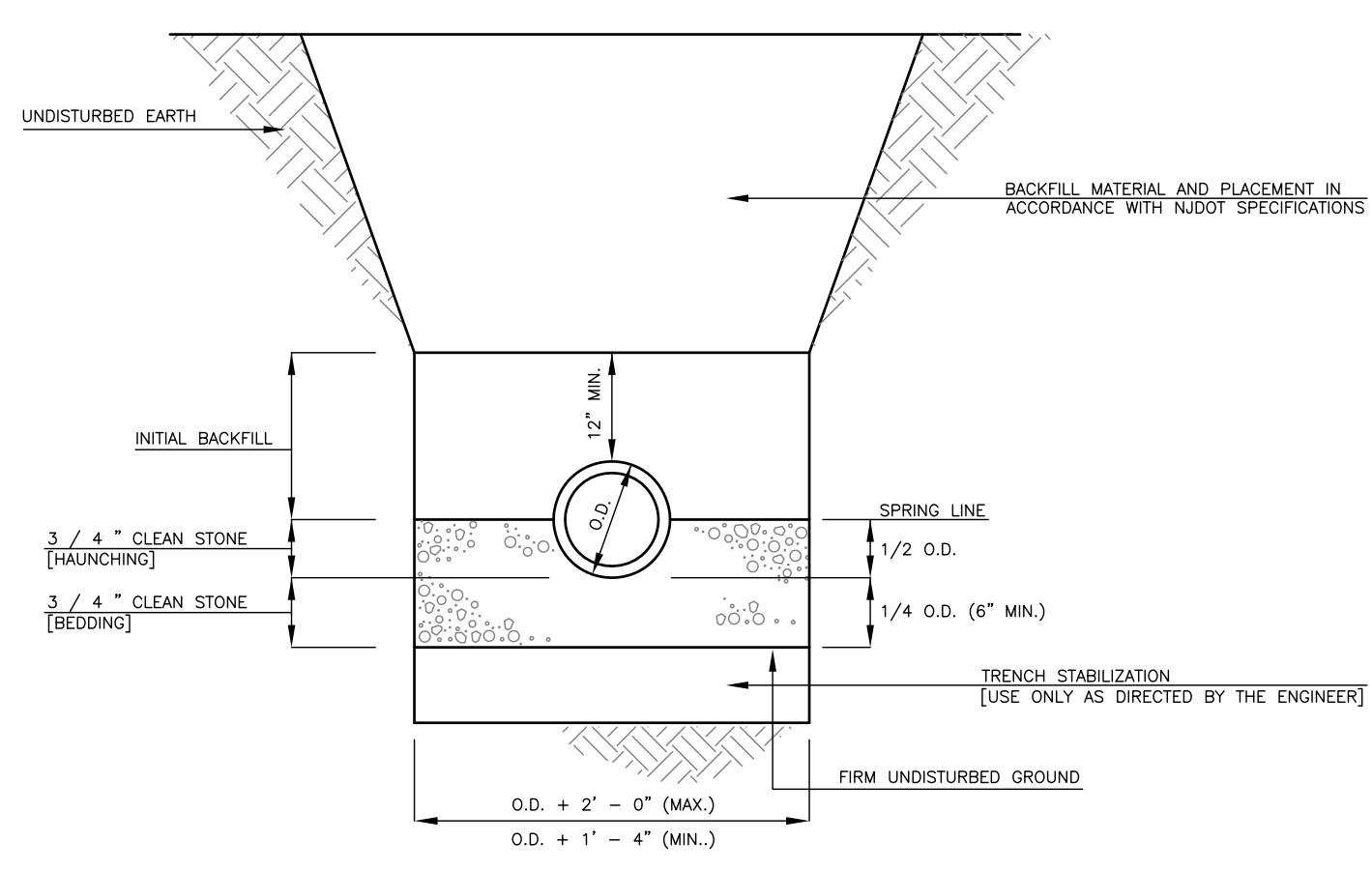
- NOTES:
1. THIS DETAIL IS SUBJECT TO THE APPROVAL OF THE MUNICIPALITY, COUNTY & NJDEP. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE SUCH APPROVAL HAS BEEN PROVIDED PRIOR TO ANY WORK.
 2. A TACK COAT SHALL BE APPLIED TO THE SURFACE OF THE PREPARED BASE COURSE AND TO THE VERTICAL FACES OF THE EXISTING PAVEMENT PRIOR TO THE PLACEMENT OF THE PERMANENT PAVEMENT.
 3. THE JOINT BETWEEN THE NEW PERMANENT SURFACE COURSE AND THE CUT EDGE OF THE EXISTING PAVEMENT SHALL BE WITHOUT VOIDS, SO AS TO CREATE A WATERTIGHT JOINT. THIS JOINT SHALL BE SEALED WITH AN ASPHALT EMULSION.
 4. NO RECYCLED MATERIALS CAN BE USED.



SANITARY SEWER CLEANOUT BOX (PAVED AREAS)
(INCLUDING DRIVEWAYS & SIDEWALKS)
(N.T.S.)

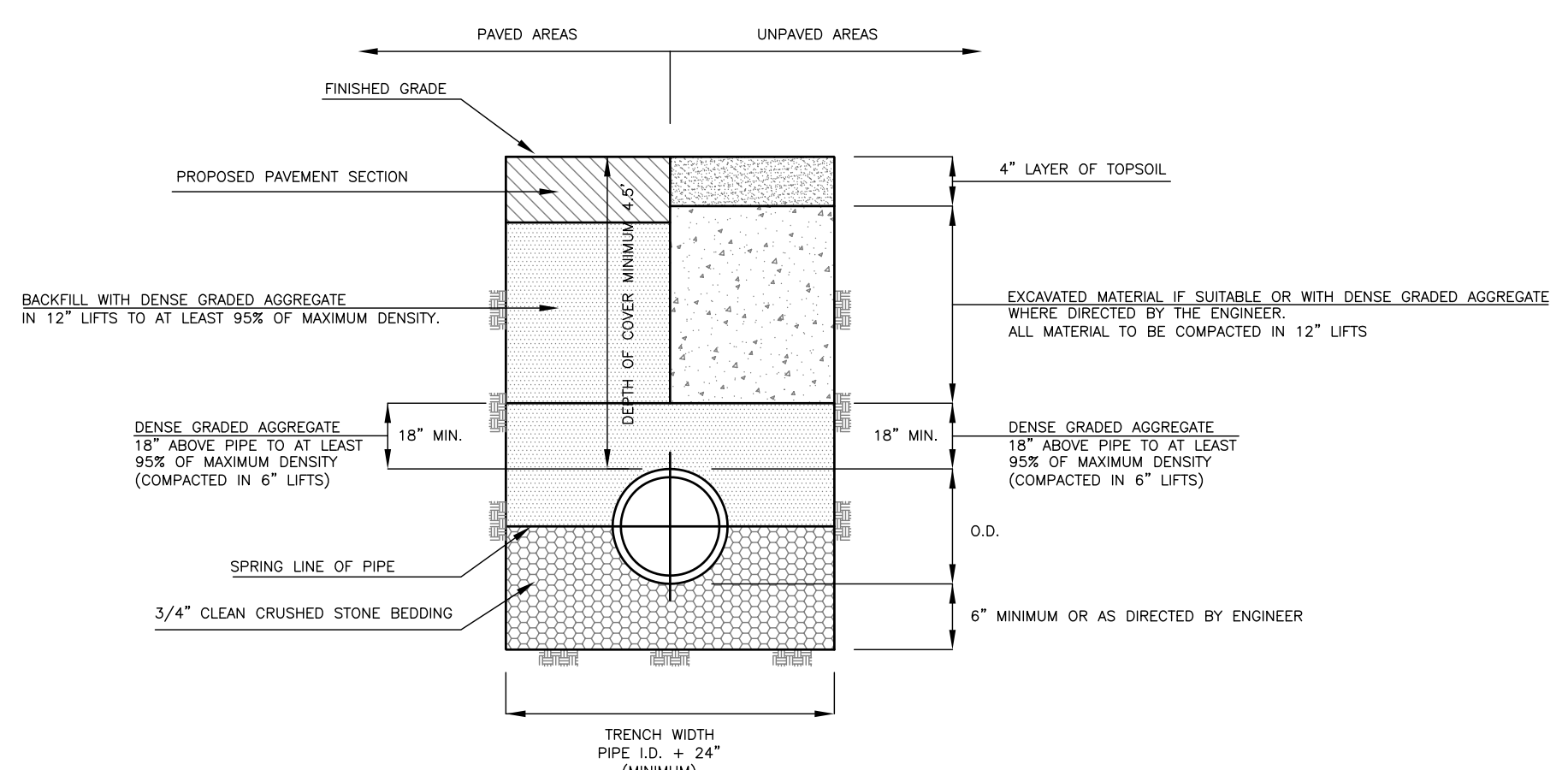


SANITARY SEWER CLEANOUT BOX (UNPAVED AREAS)
(N.T.S.)



SDR - 35 PVC SANITARY SEWER TRENCH DETAIL
(N.T.S.)

- NOTES:
1. INITIAL BACKFILL MATERIAL SHALL BE PLACED IN SIX - INCH LIFTS AND BE CLASS IA, IB OR II EMBEDMENT MATERIAL CONFORMING WITH ASTM D2321.



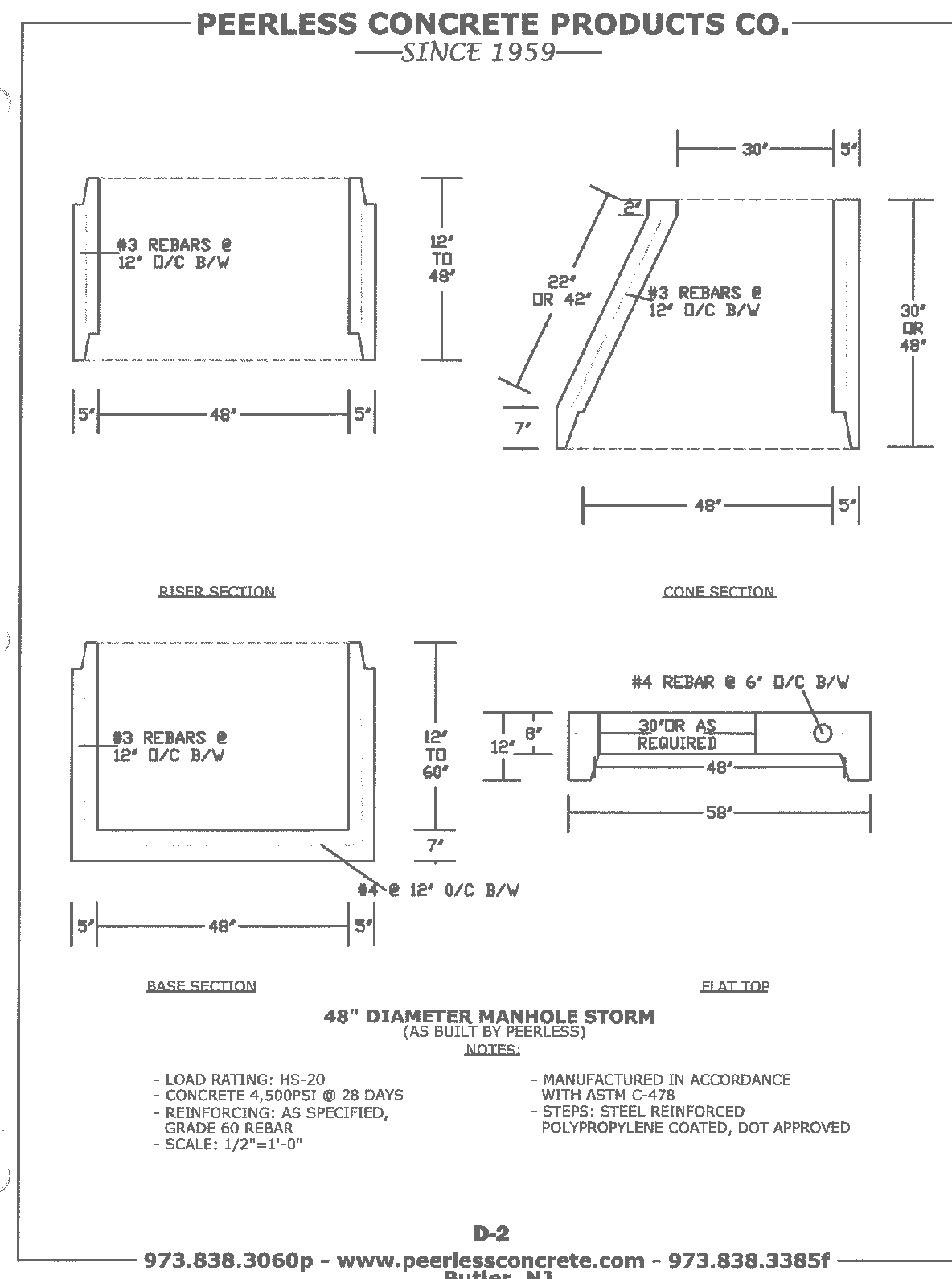
DIP TRENCH DETAIL
(N.T.S.)

- NOTES:
1. THIS DETAIL IS SUBJECT TO THE APPROVAL OF THE MUNICIPAL/LOCAL WATER DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE SUCH APPROVAL HAS BEEN PROVIDED PRIOR TO ANY WORK.

DATE	REVISIONS

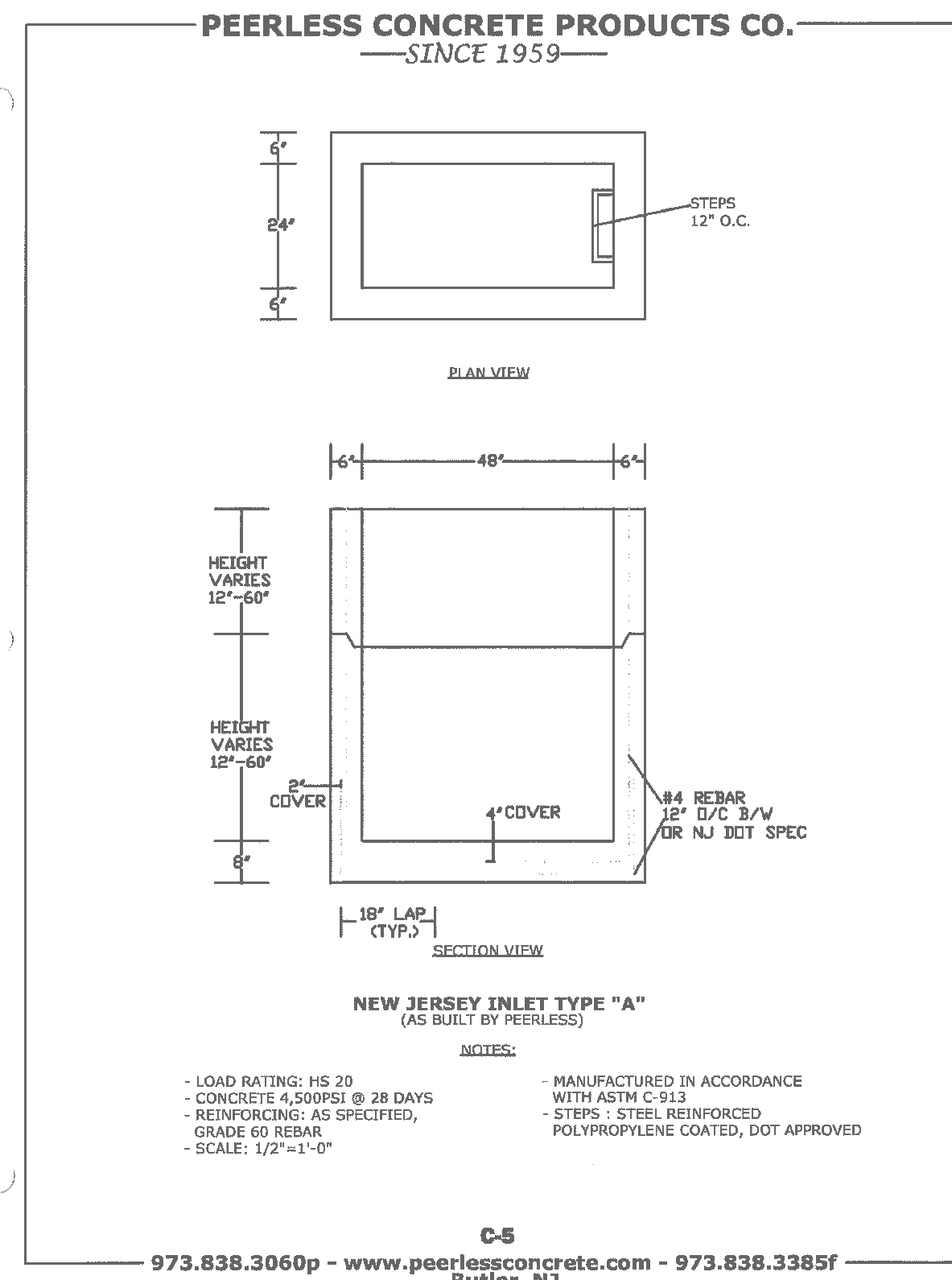
drawn by MC	checked by PMcC
MATTHEW G. CLARK	
SITE DETAILS	
536-544 WASHINGTON AVENUE	
BLOCK 1502 - LOT 12 TOWNSHIP OF NUTLEY ESSEX COUNTY, NEW JERSEY	
MCB ENGINEERING ASSOCIATES, LLC	
P.O. BOX 588, 11 FURLER STREET TOTOWA, NEW JERSEY 07511-0588 PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681 Email: mcbea@mcbea.com	
N.J. PROFESSIONAL ENGINEER LICENSE No. 40394	scale NTS.
date 03/18/2026	project no. 4703
sheet no. 9 OF 10	





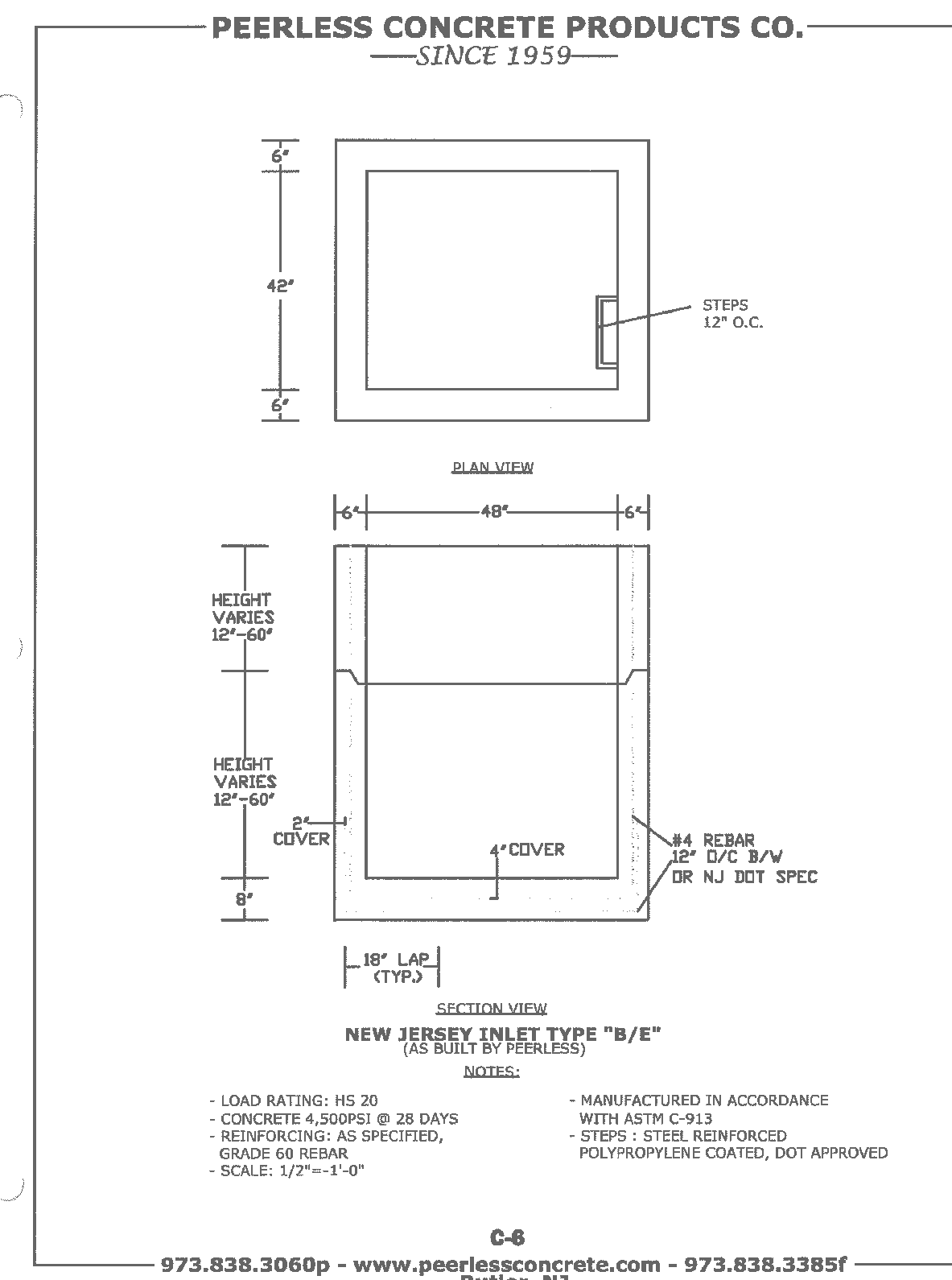
STORM MANHOLE (4' DIAMETER)
(N.T.S.)

- NOTES:
1. STORM MANHOLE FRAME & COVER TO BE CAMPBELL FOUNDRY NUMBER 1202B OR APPROVED EQUAL.
2. STORM MANHOLE FRAME & GRATE TO BE CAMPBELL FOUNDRY NUMBER 2202A OR APPROVED EQUAL.



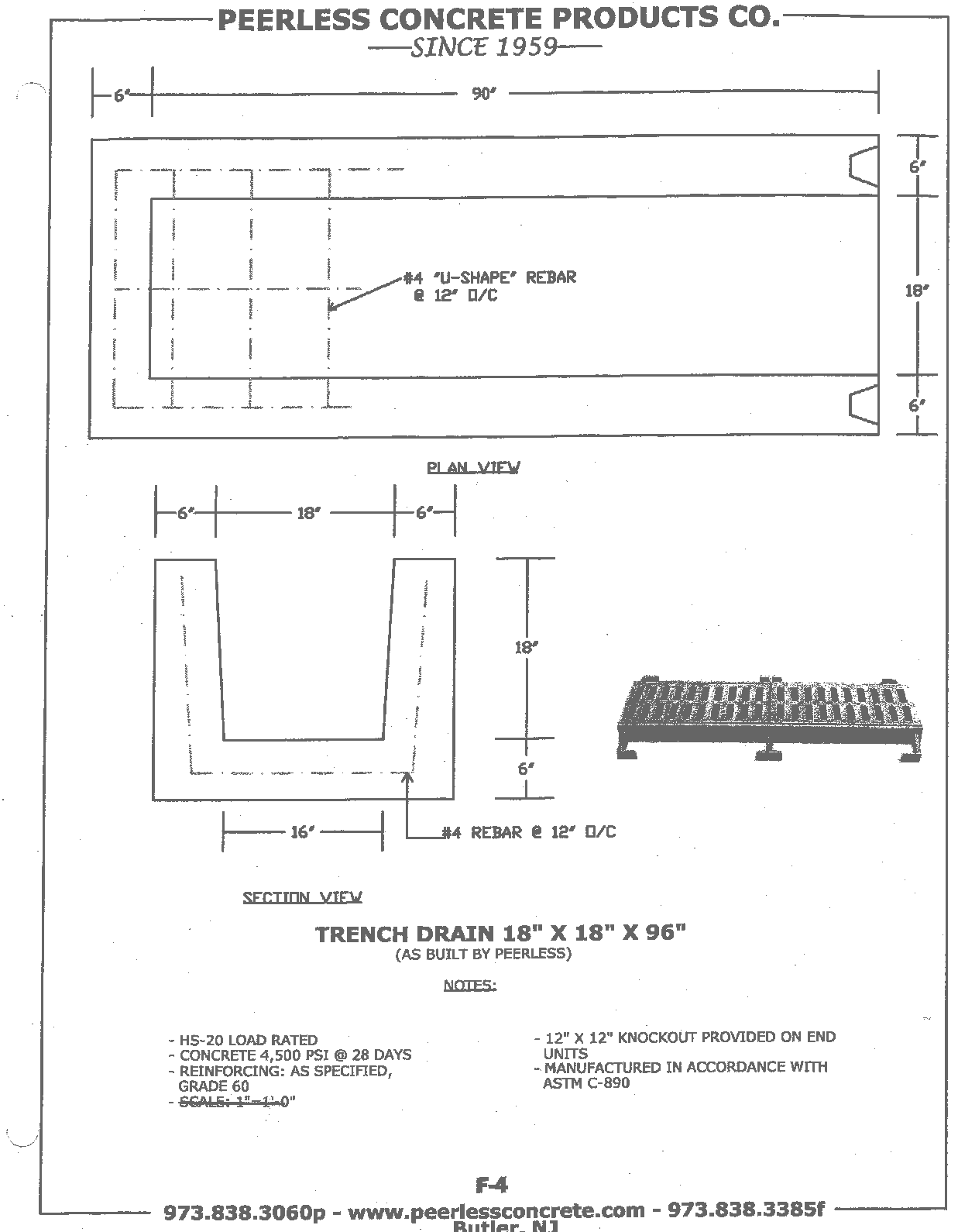
INLET TYPE "A"
(N.T.S.)

- NOTES:
1. FRAME AND GRATE TO BE CAMPBELL FOUNDRY NUMBER 3405 OR APPROVED EQUAL.



INLET TYPE "B"
(N.T.S.)

- NOTES:
1. INLET TYPE "B" FRAME, CURB PIECE, BACK PLATE & GRATE TO BE CAMPBELL FOUNDRY NUMBER 2618 OR APPROVED EQUAL. (CAMPBELL TYPE "N-ECO" CURB PIECE TO BE UTILIZED OR APPROVED EQUAL).



TRENCH DRAIN
(N.T.S.)

- NOTES:
1. FRAME AND GRATE TO BE CAMPBELL FOUNDRY NUMBER 4528 OR APPROVED EQUAL.



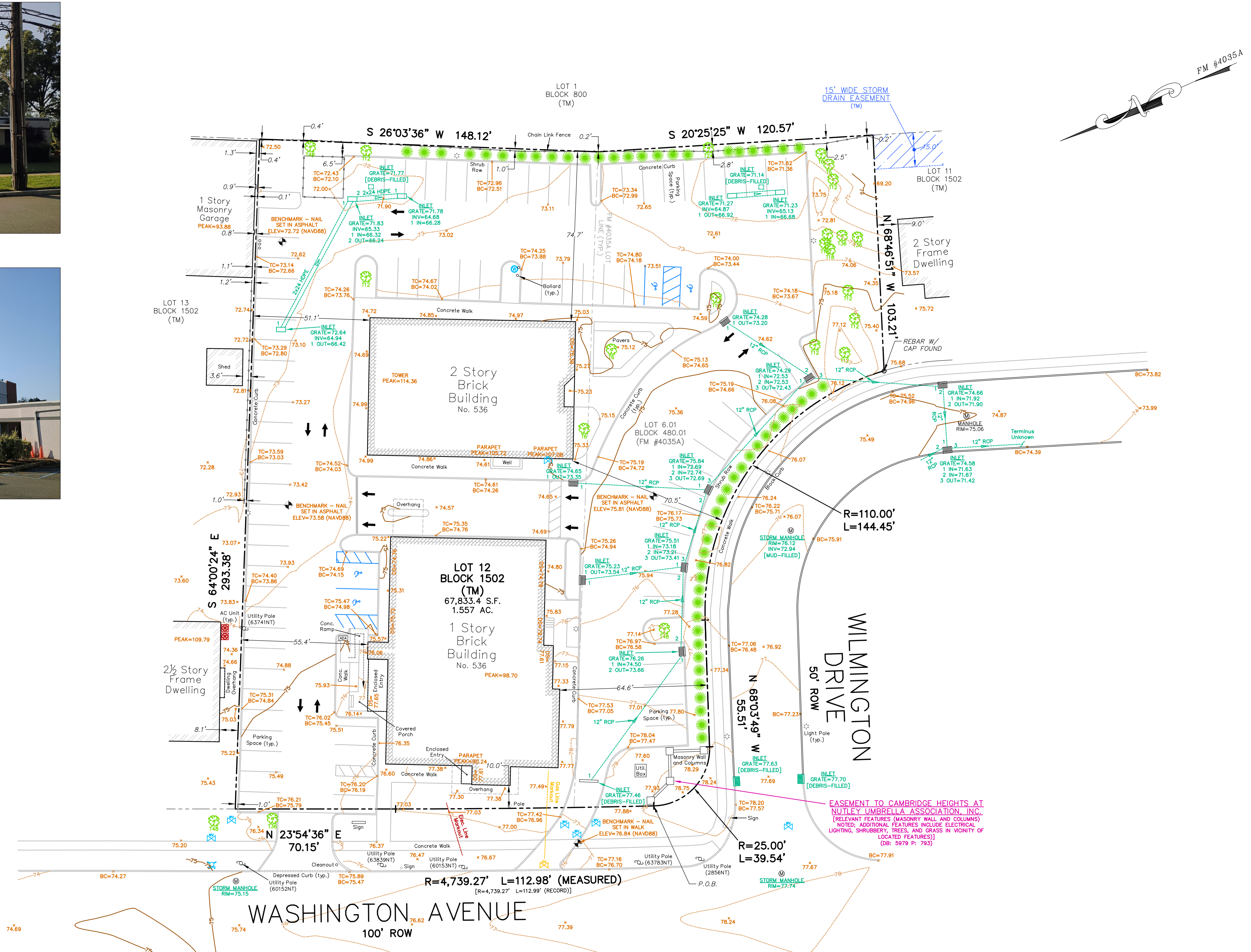
drawn by **MC** checked by **PMcC**
MATTHEW G. CLARK
N.J. PROFESSIONAL ENGINEER
LICENSE No. 40394

DATE	REVISIONS

SITE DETAILS
536-544 WASHINGTON AVENUE
BLOCK 1502 - LOT 12
TOWNSHIP OF NUTLEY
ESSEX COUNTY, NEW JERSEY

MCB ENGINEERING ASSOCIATES, LLC
P.O. BOX 588, 11 FURLER STREET
TOTOWA, NEW JERSEY 07511-0588
PHONE: (973) 812-6680 - FACSIMILE: (973) 812-6681
Certificate of Authorization No.: 240A28108300

scale: **NTS.** date: **03/18/2026** project no.: **4703** sheet no.: **10 OF 10**



This survey certified to:
 Galaxy Invest, Inc.
 United Land Title Agency
 Old Republic National Title Insurance Company
 DeCotiis, Fitzpatrick, Cole & Giblin, LLP

- This survey references:**
- 1) Deed Book 6033 Page 355 (PQ)
 - 2) Deed Book 12200 Page 5465 (Lot 10)
 - 3) Mortgage Book 12338 Page 5300 (Lot 11)
 - 4) Essex County Filed Map No. 4035A
 - 5) Essex County Filed Map No. 4035
 - 6) Site Plan of Tax Lot 12 Block 1502 by CSR Group, dated August 28, 2001

- Notes:**
- 1) Field Survey Performed on 08/11/2025
 - 2) Vertical Datum: NAVD88
 - 3) Subject to documents of record
 - 4) Subject to reservations, covenants, and restrictions (DB: X35 P: 279; DB: X35 P: 285; DB: U49 P: 452)
 - 5) Subject to grants and easements (DB: O35 P: 339; DB: O35 P: 346; DB: O35 P: 477; DB: F62 P: 312; DB: N101 P: 80; DB: 3564 P: 445; DB: 6353 P: 404; DB: 3731 P: 22; DB: 4035 P: 228; DB: 4421 P: 985; DB: 5566 P: 176; DB: 5598 P: 600; DB: 5609 P: 344)
 - 6) Subject to easement to Cambridge Heights at Nutley Umbrella Association, Inc. (DB: 5979 P: 793)
 - 7) This survey is prepared in accordance with a title search provided by United Land Title Agency for Commitment No. NJ-ULT-25-180 and Commitment Date of May 21, 2025.

INTENDED TO BE Lot 6.01 Block 480.01 and additional lands beyond as shown on a certain map entitled, "Subdivision Prepared for Town & Country Developers at Nutley, Inc., (Entrance and Single Family Section), Tax Map Lot 2 Block 458, Lot 1 Block 464, Lot 1 Block 480, Lots 1 & 1A Block 486, Lot 1, 17, 24, 27, 29, 30 & 32 Block 504, Lot 1 Block 510, Lots 1 & 1A Block 512, Town of Nutley, Essex County, New Jersey", filed in the Essex County Clerk's Office on June 25, 1999 as Map No. 4035A.

A written Waiver and Direction Not to Set Corner Markers has been obtained from the ultimate user pursuant to P.L.2003, c.14 (L45-B-36.3) and N.J.A.C. 13-40-5.1 (d).

TOPOGRAPHIC SURVEY OF PROPERTY			
Tax Lot 12 - Block 1502			
536-544 Washington Avenue, Township of Nutley			
Essex County, New Jersey			
FIELD: DN	DWN BY: CMB	CHECKED: WCB	SCALE: 1"=30'
PROJECT NUMBER: 193726[25]		REFERENCE NUMBER: NJ-ULT-25-180	
DATE: 09/09/2025		14 West Main Street Rockaway NJ Ph: (973) 625-5670 Fx: (973) 625-4121	

Lakeland Surveying
 Certificate of Authorization #24GA28090000

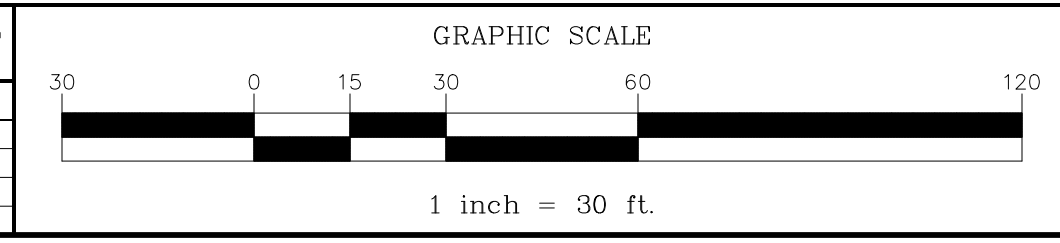
MARC J. CIFONE, N.J. P.L.S.
 JEFFREY S. GRUNN, N.J. P.L.S.
 WILLIAM C. BUCHER, N.J. P.L.S.

14 West Main Street | Rockaway | NJ | Ph: (973) 625-5670 | Fx: (973) 625-4121
 www.LakelandSurveying.com

I declare that this plan is based on actual field survey performed by Lakeland Surveying, Inc., under my direct supervision, in accordance with N.J.A.C. 13-40-5.1 and to the best of my professional knowledge, information, and belief, correctly represents the conditions found on the date of the field survey, except such easements, if any, below the surface of the lands not visible. This declaration is given solely to the above named parties for this transaction only and is not transferable. Survey is valid only if print has original raised seal of the undersigned professional. This plan is made to provide information to the title insurer so that it may insure title to the lands shown hereon.

NO.	INITIALS	DATE	REVISIONS

MARC J. CIFONE, N.J. P.L.S.		JEFFREY S. GRUNN, N.J. P.L.S.		WILLIAM C. BUCHER, N.J. P.L.S.	
N.J. LIC. NO. 24GS04132900		N.J. LIC. NO. 24GS04339900		N.J. LIC. NO. 24GS04341900	



KLEIN

TRAFFIC CONSULTING, LLC

156 Walker Road
West Orange, NJ 07052
973-985-3464
leekleintraffic@gmail.com

June 23, 2026

Jessica Liebold
Code Enforcement Department
Township of Nutley
1 Kennedy Drive
Nutley, NJ 07110

VIA EMAIL: jliefbold@nutleynj.org

**Re: Traffic Engineering Review
Proposed Warehouse Development
536-544 Washington Avenue, Block 1502, Lot 12Nutley, Essex County, NJ
PB-26-00002**

Dear Ms. Liebold:

I reviewed the Preliminary and Final Major Site Plan for 536-544 Washington Avenue, dated 3/18/2026, consisting of 10 sheets, prepared by MCB Engineering Associates, LLC. I reviewed the architectural plans dated 03/18/26, by Sanbar Design. I offer the following comments:

1. The Applicant did not provide a traffic analysis or a trip generation calculation for the proposed 24,740 square foot warehouse. According to the *Trip Generation, 12th Edition*, published by the Institute of Transportation Engineers (ITE), a 30,094 square foot warehouse would generate approximately 17 vehicle trips during the weekday AM peak hour and 23 vehicle trips during the weekday PM peak hour. However, the size of this proposed warehouse at 30,094 square feet is well below the average size of the sample size of 554,000 square feet. Table 1 – Trip Generation Calculations shows the various trip generation results. According to *Transportation Impact Analysis for Site Development*, published by the Institute of Transportation Engineers (ITE), an increase of less than 100 vehicle trips would not change the level of service of the local street network nor appreciably increase the volume-to-capacity ratio of an intersection approach. Also, NJDOT Access Management Code considers a significant increase in trips greater than 100 peak hour trips AND greater than a 10 percent increase in previously anticipated daily trips. Therefore, the proposed development does not require a Traffic Impact Study to assess the operations of the driveway or local streets. However, when large tractor trailers circulate in and out of the site, traffic will slow along Washington Avenue. The Applicant shall opine as to the number of trucks per hour and the number of trucks per day that will access the subject property.

2. The Applicant shall opine as to the separation of 83 feet between the exit driveway and Wilmington Drive and how site-generate traffic and Wilmington Drive traffic will interact.
3. The Applicant shall opine as to the route of travel that any truck traffic arriving to and departing from the subject property would take. If all traffic is expected to be oriented to and from Kingsland Rod, then the entrance driveway should be redesigned to orient traffic entering from the north, like the orientation of the exit driveway oriented toward the north.
4. The Site Plan, sheet 2 of 10 of the site plan set shows the off-street parking computations based on 5,354 square feet of office space at 1 parking space per 300 square feet or 18 parking spaces, and 1 parking space per 3,000 square feet for the 24,740 square feet of warehouse space or 9 parking spaces for a total of 27 parking spaces required. However, the computations show a total of 10 employees or 3 parking spaces required. The Applicant shall provide testimony regarding the actual occupancy of the proposed office and warehouse, including any expectations for visitors. If not all the 26 parking spaces along the rear property line are not required by the end user, then some of those parking spaces should be “banked” and replaced with pervious surface.
5. The Applicant shall describe the walking path between the rear parking spaces and the entrance in the Lobby. There is a 4-foot wide sidewalk along the south side of the building. However, pedestrians will be required to cross in front of the loading dock area. The Applicant shall opine as to what safety measures would be required to create a safe path between the 26 parking spaces in the rear and the Lobby entrance. The Applicant shall provide testimony regarding the walking path for parking spaces 1 through 12. There is no sidewalk on the north side of the building. The Applicant shall provide testimony regarding the hours of operation of the office and hours of operation of the loading docks.
6. The site plan is proposed with 2 ADA parking spaces, which is adequate for 28 parking spaces. The site plan shall show the location of a crosswalk from the ADA parking spaces to the accessible office entrance. The Applicant shall provide testimony regarding the adequacy of the ADA accessible path(s) based on slope.
7. The Applicant shall provide signage to direct motorists to the ADA parking spaces.
8. The Applicant proposes 2 Electric Vehicle Charging Station (EVCS)/make-ready parking spaces on the site plan and takes a credit of 1 additional parking spaces for a total of 29 equivalent parking spaces.
9. The Applicant proposes 4 loading stalls to meet their off-street loading computations.

10. The Applicant shall provide a vehicle turning template for the largest tractor trailer that will access the subject property. The path shall be entering the site, circulating to and maneuvering into the western-most dock, then exiting the dock, and exiting the site. The Applicant shall show tractor trailers in the other 3 loading docks when preparing the turning templates. The Applicant shall provide testimony that the tractor trailer in the turning templates will be the largest anticipated vehicle that will access the subject property.
11. The fire official should provide comments on emergency vehicle access and circulation.
12. The Applicant shall provide testimony regarding the hours and days of operation of the proposed facility, staffing levels, shifts, etc.
13. The Applicant shall testify if customers are expected to visit the warehouse. If so, the Applicant shall provide adequate signage to direct customers to the appropriate parking spaces.

I reserve the right to make additional comments and ask additional questions at the public hearing. If you have any questions, please contact me at 973-985-3464.

Very truly yours,



Lee D. Klein, P.E., PTOE
NJPE 24GE03710400
PTOE Certification 1627

https://d.docs.live.net/aea953f91575cccf/Documents/WORK/Nutley-536-544Washington/Klein-TrafficReview_PB-26-00002_Nutley_062326.docx

TABLE 1 - TRIP GENERATION CALCULATIONS
536-544 Washington Avenue, Nutley, Essex County, NJ

CODE	LAND USE	AMOUNT	WEEKDAY					
			AM PEAK HOUR			PM PEAK HOUR		
			IN	OUT	TOTAL	IN	OUT	TOTAL
PROPOSED								
150	Warehousing (Fitted Curve)(Vehicles)	30,094 SF	13	4	17	6	17	23
150	Warehousing (Average Rate)(Vehicles)	30,094 SF	3	1	4	1	4	5
150	Warehousing (Average Rate)(Trucks)	30,094 SF	1	0	1	1	0	1

SOURCE: *Trip Generation, 12th Edition*, published by the Institute of Transportation Engineers

*Township of Nutley
Zoning Board of Adjustment/Planning Board
Department Plan Review*

**PLEASE RETURN THIS FORM TO JESSICA LIEBOLD IN THE CODE ENFORCEMENT
OFFICE WITHIN 10 DAYS OF RECEIPT OF PLANS**

Docket Number: PB-20-00002

Department: SHADE TREE/PARKS & REC

Date: 5/20/26

Reviewing Official: John Linson

Address: 536-544 Washington Avenue

Application: Preliminary and Final Major Site Plan
Proposed Use: Industrial/Warehouse/Office

At the request of the Township of Nutley Zoning Board of Adjustment/Planning Board, I have reviewed the following plans:

_____ I have no comments (*reviewing official must sign below*)

I have the following comments which should be considered before the Board of Adjustment/Planning Board (*comments could be sent via email to jliebald@nutleynj.org*)

_____ see attached memorandum _____

_____ John Linson 6/17/26
Signature of Reviewing Official



TOWNSHIP OF NUTLEY
DEPARTMENT OF PARKS & PUBLIC PROPERTY
44 PARK AVENUE
NUTLEY, NEW JERSEY 07110
COMMISSIONERTUCCI@NUTLEYNJ.ORG
PHONE: (973) 284-4966
FAX: (973) 284-0631

MAURO G. TUCCI
Commissioner
June 17, 2026

To: Nutley Township Planning Board
From: John Linson, Forester
Re: Comments on PB-26-0002

I have a number of comments and concerns about this application. Here they are in no particular order.

1. The fence along the mutual property line with Mitrano Landscaping should provide screening.
2. The two cut leaf Japanese Maple trees should be preserved.
3. The proposed landscaping of (25) burning bush along the Washington Avenue frontage is insufficient NJDEP recently listed burning bush as an invasive plant species and will soon be illegal to grow or sell in New Jersey. The Washington Avenue landscaping should be much more extensive and provide seasonal interest.
4. The east boarder with Cambridge Heights has some existing gaps and some additional gaps will be cheated with this proposal. Sizeable evergreens will be necessary to fill these gaps.
5. This proposal calls for the removal of the following trees:
 - a. 36" diameter Pin Oak
 - b. 9" diameter Honey Locust
 - c. 15" diameter Honey Locust
 - d. 4" diameter Dogwood
 - e. 5" diameter Dogwood
 - f. 6" diameter Cedar
 - g. 6" diameter Cedar
 - h. 15" diameter Spruce
 - i. Large Clump Sycamore
 - j. 30" diameter Norway Maple
 - k. 30" diameter Pin Oak
 - l. 24" diameter Sycamore
 - m. 10" diameter Spruce
 - n. 6"x12" diameter Spruce
 - o. 21" diameter Red Maple
 - p. Note there is a 40" diameter Pin Oak not shown for removal but threatened by driveway re-orientation.
6. My strongest objection to this application is the reduction of the existing 20' wide buffer to a 6' wide buffer in the Southeast corner of the property adjacent to Block 1502 Lot 11 (Gladys Montana).

The planting of (23) 6' tall Green Giant Arborvitae will not compensate for the loss of the (10) trees matched with an Asterix in the previous comment.

It is my understanding that a 20' buffer between commercial and residential uses is required and I strongly object to the reduction of the buffer.

The side windows of Block 1502 Lot 11 will be totally exposed to the tree loading dock operation.

Sincerely,

John D. Linson

John Linson
Township Forester

CC: Mauro G. Tucci, Commissioner, Parks and Public Property
Frank DeMaio, Superintendent of Recreation
Anthony Gagliardo, Supervisor, Parks

June 16, 2026

Township of Nutley Planning Board
1 Kennedy Drive
Nutley, New Jersey 07110

Attn: Jessica D'Onofrio

Re: 536–544 Washington Avenue – Proposed Industrial/Warehouse/Office Development
Preliminary and Final Major Site Plan
Block 1502, Lot 12 – M-O District

Dear Chairman and Board Members:

We are in receipt of the above-referenced development application filed by Galaxy Invest, Inc., which seeks preliminary and final major site plan approval to remove the existing on-site buildings and improvements and construct a new industrial/warehouse and office building with associated site improvements, parking, lighting, landscaping, utilities and stormwater management facilities at 536–544 Washington Avenue, Block 1502, Lot 12. In connection with the above-referenced application, we have reviewed the plans and supporting documentation submitted with the application, which include:

- Preliminary and Final Major Site Plan for 536–544 Washington Avenue, prepared by MCB Engineering Associates, LLC, dated March 18, 2026, consisting of 10 sheets;
- Architectural Plans entitled “536–544 Washington Ave., Nutley NJ, Zoning,” prepared by Sanbar Design, dated March 17, 2026;
- Stormwater Management Plan for 536–544 Washington Avenue Project, prepared by MCB Engineering Associates, LLC, dated March 18, 2026; and
- Application materials, zoning denial letter and related supporting documents submitted with the application.

1. Description of the Proposed Development and Compliance with Township Development Regulations

- a. The proposed industrial/warehouse/office use is a permitted principal use in the M-O District. Based on the revised zoning denial letter issued by David Berry, Zoning Official, dated May 6, 2026, the application requires relief from Chapter 700, Article XIII, Section 700-94A(3), which permits each property to have no more than one driveway and one curb cut. The applicant proposes two driveways and two curb cuts.
- b. The application also requires relief from Chapter 700, Article XIII, Section 700-94A(3)(b), which provides that curb cuts in all other districts shall not exceed 24 feet in length. The denial letter states that each of the proposed curb cuts will exceed 24 feet.

- c. Based on our conversation with Mr. Berry, although the applicable variances arise from a section titled “Additional regulations on off-street parking for one- and two-family dwellings,” the Township has long interpreted this provision to apply to non-residential applications because it is the only section of the Nutley Code that regulates driveway openings.

2. Planning Considerations

a. Use.

- 1. Use. Warehouses are a principal permitted use in the M-O District. Truck terminals are specifically prohibited in all districts pursuant to Section 700-39.

b. General.

- 1. Operational testimony. As with all applications, we ask that the applicant provide operational testimony associated with the site, including, but not limited to, the anticipated number of employees, hours of operation, and the ability of the tract to accommodate vehicular, truck-delivery and pedestrian traffic. The applicant should clarify whether the proposed building is being constructed on speculation or whether a tenant has been identified. If a tenant has been identified, the applicant should provide testimony regarding the tenant’s proposed operations. The applicant should also clarify whether more than one tenant is anticipated at the site and whether the applicant seeks to operate the facility 24 hours per day.
- 2. Performance standards. To what extent can the applicant demonstrate compliance with the Township’s performance standards in Section 700-42 of the Zoning Ordinance, including standards related to noise, vibration, smoke, fumes, odors, dust, glare, heat, fire and explosion hazards, hazardous materials, waste, drainage, and other potential off-site impacts associated with the proposed industrial/warehouse/office use?
- 3. Hazardous materials. The applicant shall clarify whether any hazardous materials will be stored on site.
- 4. Environmental constraints. General Note 5 on the site plans states that the property is located in FEMA Flood Zone “X,” an area determined to be outside the 0.2% annual chance floodplain, per FIRM Panel 34013C0109G, revised April 3, 2020. The plans do not identify on-site wetlands, transition areas, riparian buffers, or NJDEP land use permit requirements. General Note 18 further states that subsurface environmental conditions were not examined or considered as part of the plans.

c. Circulation/Parking.

- 1. Parking conformance. The site plan requires 27 off-street parking spaces and proposes 28 striped parking spaces, plus one “make-ready” EV stall that receives one parking-space credit, for a total of 29 credited spaces. Based on the submitted parking schedule, the proposed parking supply satisfies the Township’s minimum parking requirement and is acceptable from a planning perspective.

d. Lighting.

- 1. We have reviewed the lighting plan. The lighting schedule identifies Beacon Viper area/site fixtures and wall-mounted fixtures with a 3000K color temperature (warm white). The pole-mounted site fixtures are proposed at a mounting height of 15 feet above finished grade. The

lighting general notes state that each site fixture will be equipped with NX wireless controls, integral motion and photo sensors, time-based dimming, dusk-to-dawn operation, 50 percent dimming after midnight, motion-activated return to full brightness, fixture grouping by lighting zones, and individual fixture addressability. The photometric plan shows minimal to no light trespass at the property lines, with most perimeter readings at or near 0.0 footcandles. From a planning perspective, the proposed lighting levels and controls are acceptable.

2. The submitted fixture information identifies low-profile LED area/site luminaires with specified optical distributions. The plans should be revised, or the applicant should provide testimony from the lighting professional, confirming that all proposed site and building-mounted fixtures are fully shielded/full-cutoff style fixtures and will be installed so that light is directed downward and does not create glare on adjoining properties or public rights-of-way.

e. Landscaping/Screening/Fencing/Walls.

1. Buffer. The landscape plan recognizes an existing vegetative buffer screen along the southerly property edge and proposes to supplement certain “voids” with Green Giant Arborvitae planted at six feet in height. However, the plans also appear to reduce portions of the existing buffer area that currently provide noise and visual separation to the property to the south. The Board should evaluate with the applicant the extent of buffer removal, the proposed replacement plantings, and whether additional evergreen screening, berming, fencing, or other mitigation should be provided to preserve an effective year-round buffer.
2. Buffer 2. The applicant should also clarify whether the loading area and associated trucks will be visible from adjoining properties, particularly the properties to the south and east, and whether additional screening is necessary to reduce any visual impacts. The plans identify a proposed 1.25-foot retaining wall at the easternmost edge of the three-bay loading area. Consideration should be given to increasing the height of this retaining wall, or otherwise modifying the wall design, to provide additional visual screening and noise attenuation for adjoining properties.
3. Concrete barrier wall. The plans indicate, by note and detail, that a three-foot-six-inch concrete barrier wall section will be installed within the side and rear yard areas of the site. The applicant should address this wall as part of its direct testimony, including its location, height, purpose, relationship to the loading and circulation areas, appearance from adjoining properties, and whether the wall is intended primarily as a barrier or guiderail.
4. Front yard landscaping. The widening of the driveways and the installation of the new sidewalk will reduce the amount of green space and landscaping available within the front yard. For this reason, additional shrubbery and low-level landscaping should be provided along the internal sidewalk and within the front yard area to soften the streetscape, enhance the pedestrian environment, and offset the reduction in planted area.
5. Landscape plan. The submitted landscape plan proposes to preserve portions of the existing vegetative buffer screen along the southerly property edge and to fill identified “voids” with supplemental Green Giant Arborvitae. The planting schedule identifies 23 Green Giant Arborvitae for this purpose. The plan also identifies lawn areas in open portions of the site. The landscape plan notes that all landscape beds, planted areas, and sod/lawn areas, including isolated parking lot islands, are proposed to be serviced by an underground sprinkler irrigation system with an EPA-compliant WaterSense controller, rain sensor, soil moisture sensors, and cycle-and-soak operation.

6. The applicant should confirm the long-term maintenance responsibility for the proposed landscaping, including replacement of failed plantings during and after the two-year guarantee period identified in the landscape planting notes.

f. **Architectural/Signs.**

1. The architectural plans should be revised to identify the proposed exterior building materials.
2. The floor plan depicts limited information for the building. The architectural plans indicate that there will be 5,030 square feet of office space. Otherwise, an open floor plan is depicted for the warehouse area.
3. The architectural plans identify proposed wall signage consisting of individual illuminated letters mounted on the building façade, with a total proposed illuminated sign area of approximately 145 square feet. Based on the submitted architectural zoning information, the proposed wall signage appears to conform to Nutley’s sign ordinance; however, the applicant should confirm the final sign type, illumination method, and letter dimensions.
4. Colorized renderings should be brought to the hearing, and the final plans should be amended to include the proposed color scheme.

g. **Trash**

1. Trash and recycling. The applicant shall clarify how trash and recycling will be handled on site and shall submit a recycling plan in accordance with Section 614-7. The applicant should confirm whether refuse and recycling will be stored entirely within the building, whether any outdoor collection area is proposed, and how collection vehicles will access and service the site without interfering with circulation, loading, or parking operations.
2. Trash compactor. The applicant shall clarify whether a trash compactor is intended for the site. If a compactor is intended, the plans should identify its location, dimensions, enclosure, screening, access, and relationship to loading and circulation areas. If no compactor is proposed, the applicant should explain the intended refuse storage and collection method and confirm that the site can accommodate the operational needs of the proposed use.

Should you have any questions, please contact us.

Very truly yours,



Planning Consultant

cc: Barry Koyzra, Esq., Planning Board Attorney
Dipti Raja, P.E., Planning Board Engineer
David Berry, Zoning Official
Salvatore Ferraro, Engineering Coordinator
Benjamin Lindeman, Esq., Applicant’s Attorney



June 15, 2026

NTLYT26204

Mark Arcuti, Chairperson
Township of Nutley
Planning Board
1 Kennedy Drive
Nutley, NJ 07110

**RE: Engineering Review #1
536-544 Washington Avenue
Block 1502, Lot 12
Township of Nutley, Essex County, NJ
Application Number: PB – 26-0002**

Dear Board Members:

Pennoni Associates (Pennoni) is in receipt of the following documents concerning the above-mentioned application:

- "Topographic Survey of Property, Tax Lot 12 – Block 1502, 536-544 Washington Avenue, Township of Nutley, Essex County, New Jersey," prepared by Lakeland Surveying, Revised December 5, 2025.
- Engineering plans entitled "Preliminary and Final Major Site Plan for 536-544 Washington Avenue, Tax Map Block 1502 – Lot 12 Township of Nutley, Essex County, New Jersey," consisting of ten sheets, prepared by Matthew G. Clark, PE, of MCB Engineering Associates, LLC, dated March 18, 2026.
- Stormwater Management Plan for 536-544 Washington Avenue Project", prepared by Mathew G. Clark, PE of MCB Engineering Associates, dated March 18, 2026.
- Architectural plans prepared by Elizabeth E. Johnson, RA, of Sanbardesign, dated 03/18/2026.
- Application for Land Use Action, dated April 7, 2026

INTRODUCTION

The subject site is located on the east side of Washington Avenue, at the intersection with Wilmington Drive., and consists of approximately 1.557 acres. The site is currently fully developed and consists of two buildings with a maximum height of two stories, parking, utilities, landscaping, and lighting. The applicant is proposing to redevelop the site by removing the existing improvements and constructing a 24,740 two story building with 28 parking stalls with an additional four truck loading bays. The proposed use is office/warehouse with 27 parking spaces required by zoning and 29 spaces provided.

PLANNING AND ZONING

We note the applicant has indicated that Planning Board waivers are required for the project and no variances are needed. The proposed waivers should be listed with the Zoning Schedule of Requirements on Sheet 3.

We offer the following regarding the Site Plan application:

GENERAL COMMENTS

- 1) The survey provided for this application was performed on December 05, 2025. This survey is acceptable; we have no comments for the Planning Board.
- 2) The applicant shall provide the recycling tonnage data to the Township on an annual basis as per the state requirements.
- 3) General Note 5 on Sheet 2 states "All refuse and recycling shall be stored within the proposed building." The applicant shall provide testimony regarding public versus private garbage pickup and how sanitation trucks will enter the site and be loaded. Results of the testimony should be added as a map note on Sheet 1.
- 4) Applicant should provide testimony regarding hours of operation and anticipated number of employees.

SITE PLAN COMMENTS (SHEET 2)

- 1) The applicant shall provide both the existing conditions and proposed conditions zoning information on the Zoning Schedule of Regulations on Sheet 2.
- 2) The applicant shall reference on the plans if the site is within a flood hazard area based on the effective and preliminary FEMA mapping. It appears the site is outside a regulated floodplain.
- 3) The applicant shall testify regarding any potential sound impacts from the proposed development, including any mitigation measures if applicable. The testimony shall address if an emergency generator is proposed. Results of testimony should be incorporated into future revisions of the Site Plan.
- 4) The applicant shall testify how the garbage and recycling shall be collected. No turning templates for sanitation vehicles have been provided. The applicant shall clarify if the trash will be hauled to the curb or garbage truck will access the trash location.
- 5) Sight distance measurements shall be provided at the driveway exit to ensure compliance with visibility and safety standards. We note the site design has single separate entrances for ingress and egress at approximately the same location as the existing driveway access points.
- 6) The applicant shall show coordination with the Township of Nutley for road restoration centerline/full width along the road for the proposed development.

- 7) The applicant shall specify the number of proposed EV charging spaces, if any, and indicate any associated parking credits. The total number of proposed EV and make ready spaces shall be listed on the zoning table.
- 8) The applicable Americans with Disabilities Act (ADA) code section shall be cited. The applicant shall specify the number of ADA-compliant parking spaces provided on the zoning table and demonstrate compliant access from the ADA parking spaces.
- 9) A retaining wall is proposed around the perimeter of the parking area with a note "proposed concrete barrier wall to be design by others". Full design and calculations for the wall shall be provided prior to a building permit is issued. The Site Plans contain a Concrete Barrier Wall Section Detail on Sheet 7 that shows a top rail on top of the poured in place concrete wall. The Site Plan shall clarify the construction detail to show the fence rail material and height and how it will be embedded in the wall.
- 10) The location of HVAC system shall be shown on the site plan. All roof HVAC systems shall be set back a minimum of 15 feet from the walkway portion of any sidewalk and screened as to not be visible from any adjacent public street or public property in accordance with the redevelopment plan.

GRADING AND UTILITY PLAN COMMENTS (SHEET 3)

- 1) The proposed parking configuration should be shown on the Grading and Utility Plan (Sheet 3).
- 2) The applicant shall provide cut and fill calculations for the proposed development. It appears the project will be a net import site with no significant excavations.
- 3) Storm drainage utility profiles should be added to the site plan set.

LIGHTING PLAN COMMENTS (SHEET 4)

- 1) The Lighting Plan shows the proposed exterior lighting via seven pole mounted fixtures and eight building mounted fixtures with a maximum mounting height of 15 feet and a maximum illumination along the property lines of 0.1 footcandles. We have no objection to lighting plan proposed; no response necessary.
- 2) The proposed parking configuration should be shown as the background on the Lighting Plan (Sheet 4).
- 3) Applicant should provide testimony regarding hours of operation of the lighting and should provide results of testimony as a note on the Site Plan.
- 4) It appears that no new street lighting is proposed; this should be confirmed via applicant testimony at the Planning Board.

LANDSCAPING PLAN COMMENTS (SHEET 5)

- 1) The Landscaping Plan shows 23 proposed green giant arborvitae planted adjacent to the retaining wall along the southeastern corner of the site, 25 burning bush plantings along the ADA parking in front of the site, and one serviceberry shade tree planted along the Washington Avenue street frontage.

- 2) The applicant should comment on the viability of the existing trees to survive with respect to land disturbance and the construction of the retaining wall adjacent to the treeline.
- 3) The applicant should consider adding landscaping within the site, in particular at the locations of the striped out parking stalls.

ARCHITECTURAL PLAN COMMENTS

- 1) The applicant has provided building elevations for the four sides of the building. The elevations show door and window locations and a maximum building height of 48'-4 13/16".
- 2) The proposed finishes including materials and colors shall be clearly indicated in the architectural plans.

STORMWATER COMMENTS

- 1) Under NJAC 7:8 and §622-2, a Major Development is defined as a project that individually or collectively results in the disturbance of one or more acres of land, creates one-quarter acre or more of regulated impervious surface, creates one-quarter acre or more of regulated motor vehicle surface or a combination of regulated impervious or regulated motor vehicle surface coverage equal to one-quarter acre or more. As noted in the stormwater management report, the project proposes land disturbances over the entire 1.577 acre site, there is a reduction of motor vehicle surface from 38,222 SF to 33,198 SF (a 15.1% reduction), and a reduction in total site impervious area from 60,059 SF to 59,069 SF (a 1.6% reduction). *The project is classified as a Major Development based on the land disturbance of greater than one acre.*
- 2) Under existing conditions it appears much of the site surface water runoff is directed to the catch basin at the south portion of the site with a grate elevation of 74.29, which discharges to the existing catch basin in Wilmington Drive with a grate elevation of 74.68. There are a series of stormwater drywells on the rear (downhill) portion of the site under existing conditions which appear to be removed; this should be clarified on the existing conditions plan. The portion of the site that bypasses Wilmington Drive is being collected by the proposed storm drainage system and diverted to Wilmington Drive. While there may be an overall reduction of peak runoff rates by virtue of the reduction of impervious area, there may be an increase in peak runoff rates at the municipal storm sewer at Wilmington Drive. The drainage calculations should verify that this stormwater diversion does not increase peak runoff rates at Wilmington Drive. Additionally, the drainage calculations should reflect available storage from the existing drywells in the existing conditions model. Provide a revised analysis with hydrographs for existing and proposed conditions for each hydrologic point of interest and a curve under curve analysis showing no increase in stormwater runoff rates at each ordinant on the hydrograph.
- 3) Provide a summary table in the executive summary of the stormwater management report for pre and post condition peak runoff rates at each applicable hydrologic point of interest. Provide a comparison against NJDEP stormwater standards and show that the design exceeds the minimum requirements.
- 4) The Applicant shall clarify if any soils testing in compliance with Chapter 12 of the NJBMP Manual or geotechnical testing has been performed and if the seasonal high-water table (SHWT) has been identified.

- 5) The applicant shall provide a roof drain plan with the roof pipes sized in accordance with the Chapter 11 of the national standard plumbing code. The roof plan shall clearly show the 20,000 green roof area, how the system will drain, and means of conveying overflows.
- 6) The Applicant shall provide a signed and sealed Stormwater Operations and Maintenance Plan in accordance with NJAC 7:8-5.8. The Plan shall include at minimum:
 - a. Include the contact information of the design Engineer and entity responsible for maintenance. If the person responsible for maintenance is not a public agency, the maintenance plan and any future revisions shall be recorded upon the deed of record. This shall be noted in the plan.
 - b. An example maintenance task log along with an estimate of the maintenance tasks shall be included.
 - c. Construction details with stormwater elevations for any stormwater management practice shall be included in the manual.

MISCELLANEOUS

- 1) All disturbed areas within the Township's right-of-way shall be restored in accordance with Township Standards upon completion of utility installations; add a map note on Sheet 1 indicating this condition for construction.
- 2) Water and sanitary sewer demand calculations and associated will serve letters from the utility companies serving the site shall be provided.
- 3) Separate cost estimates for all public and private site improvements for determination of the performance guarantee and inspection escrow fees shall be submitted.
- 4) Water and sanitary sewer service connection design and approvals shall be coordinated with Nutley DPW. The applicant shall arrange for pressure and flow tests with the department prior to final design and construction of the water system connections; add a map note on Sheet 1 indicating this condition for construction.
- 5) The applicant shall specify the size and location of the water meter as well backflow devices in accordance with §685-10. The applicant shall be responsible for obtaining and installing the water meter. The applicant shall coordinate with DPW for installation and location of the water meter and backflow devices. Add a map note on Sheet 1 indicating this requirement.

PERMITS

- 1) **Soil Erosion and Sediment Control Permit** - If not previously provided, the applicant shall submit evidence of approval from the Hudson-Essex-Passaic Soil Conservation District and shall forward a copy of the permit/approval to the Township. The application notes this will be provided post PB approval. We have no objection to this; however, add a map note on Drawing 1 that this approval is required and will be provided post planning board approval and prior to map signature.
- 2) **Nutley Department of Public Works** - The Applicant is required to comply with all DPW requirements pertaining to sewer, water and storm sewer. Add a map note on Drawing 1 that this approval is required and will be provided post planning board approval and prior to map signature.
- 3) Any disturbance along the right of way and roadway shall be restored to the satisfaction of the Township's engineer for any proposed utility improvements.

- 4) Any municipal approvals shall be made contingent on receipt of all outside agency approvals.

The Applicant shall respond to this letter with a point-by-point response addressing the comments listed above. We reserve the right to make additional comments pertaining to this application during the review process.

Please contact this office with any questions or comments.

Sincerely,
PENNONI ASSOCIATES, INC.



Ken DeGennaro, P.E
Senior Engineer



Dipti Raja, PE
Project Engineer

SH/dr

cc: David Berry – Zoning Official
Salvatore Ferraro – Engineering Coordinator
Barry A. Kozyra- Board Attorney